Published in final edited form as:
Int J Quant Res Educ. 2013 ; 1(2): 147–166. doi:10.1504/IJQRE.2013.056463.

Teacher Burnout: A Comparison of Two Cultures Using Confirmatory Factor and Item Response Models

Ellen-ge Denton, PsyD[1], **William F. Chaplin, PhD**[2], and **Melanie Wall, PhD**

[1]Department of Medicine, Columbia University Medical Center, New York, NY

[2]Department of Psychology, St. John's University, Jamaica, Queens, NY

Abstract

The present study addresses teacher burnout and in particular cultural differences and similarities in burnout. We used the Maslach Burnout Inventory Education Survey (MBI-ES) as the starting point for developing a latent model of burnout in two cultures; Jamaica W.I. teachers (N= 150) and New York City teachers (N= 150). We confirm a latent 3 factor structure, using a subset of the items from the MBI-ES that adequately fit both samples. We tested different degrees of measurement invariance (model fit statistics, scale reliabilities, residual variances, item thresholds, and total variance) to describe and compare cultural differences. Results indicate some differences between the samples at the structure and item levels. We found that factor variances were slightly higher in the New York City teacher sample. Emotional Exhaustion (EE) was a more informative construct for differentiating among teachers at moderate levels of burnout, as opposed to extreme high or low levels of burnout, in both cultures. In contrast, Depersonalization in the Workplace (DW) was more informative at the more extreme levels of burnout among both teacher samples. By studying the influence of culture on the experience of burnout we can further our understanding of burnout and potentially discover factors that might prevent burnout among primary and secondary school teachers.

Keywords

burnout; teacher; New York City; Jamaica W.I; culture; MBI-ES

Teacher Burnout

It is estimated that a third of newly hired teachers leave during their first three years and that almost half leave during the first five years ([NCTAF], 2003). Although the reasons that teachers give for leaving the profession are varied one factor that has been repeatedly cited is the experience of burnout (Kyriacou, 1987; Weisberg, 1999). Burnout has been widely studied and the general research consensus is that burnout consists of three correlated components of 1) feelings of overwhelming emotional exhaustion, 2) depersonalization and detachment from the job, and 3) inefficacy or lack of personal accomplishment. These three

Correspondence: Ellen-ge Denton, PsyD, Department of Medicine, Columbia University College of Physicians and Surgeons, Room 9-309, PH9 Center, 622 W 168th St, New York, NY 10032 (ed2426@columbia.edu).

Financial Disclosure: None reported.

components are represented as correlated factors in the Maslach Burnout Inventory (MBI) (Kokkinos, 2006; C. Maslach & Jackson, 1981; Richardsen & Martinussen, 2004). The general MBI is comprised of these 3 components to measure burnout in occupations outside of human service sectors. The specific MBI-ES was adapted to measure the 3 dimensions of burnout as it relates to direct interaction with *students*. Grounded in social-psychological theory, these three components of the MBI capture how teacher related stress may lead to mechanistic treatment of students (Byrne, 1994). Despite an established burnout syndrome in several countries, psychometric comparisons note both similarities and differences of the MBI across several cultures (Abu-Hilal & El-Emadi, 2000; Richardsen & Martinussen, 2005; Schutte, Toppinen, Kalimo, & Schaufeli, 2000). The present study uses the psychometric concept of measurement invariance to compare and understand the experience of burnout in two cultures. Specifically, we apply confirmatory factor and item response models to data collected on the Maslach Burnout Inventory Education Survey (MBI-ES) to identify possible cultural differences in the experience of burnout in two culturally distinct samples.

Teacher Burnout across Cultures

Burnout appears to be a universal phenomenon that has been documented and studied in many different cultures (Maslach, Wilmar, Leiter, & Michael, 2001). However, cross-cultural comparisons of burnout have yielded mixed results. For example, North American samples have been found to have higher average levels of exhaustion and cynicism, when compared to European samples (except Polish counterparts) and the highest incidences of burnout are reported in Japan and Taiwan (C. S. Maslach, Wilmar; Leiter, Michael). However, other cross-cultural comparative studies have failed to find any cultural differences in burnout observed between teachers (Greenglass, 1997); Ispir, 2010).

Common correlates of burnout include work overload, social conflict, and chronic stressors (Maslach et al., 2001), all of which may vary by cultural environment. For example, relatively increased competition on the job and/or higher work demands can explain why North American samples appear to have higher levels of burnout compared to European counterparts (C. S. Maslach, Wilmar; Leiter, Michael, 2001). It has also been suggested that teachers may be better able to cope and accept job related stressors in cultures where there is a dominant role of religion (Koki, S., Broekhuizen, L., & Uehara, D., 2000). Also, cultures marked by collectivism rather than individualism are more apt to resolve work-related conflict using mediators and social supporters (Koki, S., Broekhuizen, L., & Uehara, D., 2000). In a comparative study of teacher burnout between European and Indigenous ancestry South African teachers, the author reports lower depersonalization in the workplace in the Indigenous ancestry group. The author suggested that Indigenous teachers are marked by having opportunities to receive social support and vent their frustrations (Pienaar, 2007). Clearly, the investigation of cultural differences in burnout may provide important insights about risk factors for, and the prevention of, teacher burnout.

However, a major limitation in these cross-cultural comparisons is the assumption that the phenomenology of burnout is the same in all cultures. In the language of psychometrics, the structure of the burnout constructs and its components are *invariant*. Indeed, some

investigators have noted the limitation that cultural comparisons of teacher burnout have been hampered by the tendency to apply American experiences of burnout to other cultures without verifying the cultural invariance of these experiences For example, Kristensen et al. concluded the MBI-ES to be “conceptually flawed and unusable” among respondents in Denmark, as some ideas represented by the items were too “American” (Kristensen, 2005; Kristensen, Borritz, Villadsen, & Christensen, 2005). It remains unclear whether cultural differences, language translations, or a combination of both account for the lack of invariance and the “unusable” nature of the MBI in other countries (Kristensen et al., 2005). Addressing these questions will require both structural and item level comparisons.

Unique to this research, we compare two culturally different teaching environments. New York City has the most diverse school districts in the United States, where teachers may not have uniformed educational backgrounds or preparation for job performance. For example, of the 50,000 New York City teachers hired between 2000 and 2005, 46% were certified, 34% were uncertified, and 20% had alternative teacher certifications (Kane, 2008). Teacher educational backgrounds and teacher training is relatively more uniform in Jamaica WI. Historically Jamaican primary (elementary) school teachers are the most able and ambitious children of Black and Indian populations of modest means in rural areas (Miller, 1989). They are trained to become “Master's Teachers”, who do not leave the classroom for administrative positions, but maintain teaching as a lifelong commitment (Miller, 1989). Comparatively, Jamaican teachers complete at minimum, 3 years of intense and focused teacher training at a Teacher's College to receive a diploma upon completion. In New York City a more diversified education curriculum is offered in Education degree programs.

Up until recently New York City has recruited roughly 10% of international teachers (Kane, 2008). As of 2003, some one thousand teachers or approximately 5% of the total teacher cohort of teachers in Jamaica W.I. have professionally immigrated to the United States (Mitchell, 2003). International teacher recruitment programs address the teacher shortage in the U.S., with 250,000 Jamaicans in the New York City Public School (Brown, 2002).

Brief Psychometric Review of the MBI-ES

Exploratory factor analytic (EFA) and confirmatory analytic (CFA) methods have been used to assess the dimensions of burnout and its construct validity. Worley et al. (2008) in a meta analytic review of 45 studies, included 20 studies specific to the MBI-ES and found that eleven of these studies found exploratory factor analytic support for a 3 factor and 22 item version of the MBI-ES. Criteria specified eigenvalues greater than 1, structure coefficients greater than .40, scree plot ‘elbow’ interpretation and/or a combination of each, to retain 3 factor solutions. The majority of the EFA studies used orthogonal rotations (Worley, 2008). CFA studies (n = 9) consistently showed improved model fit with a correlated 3 factor solution (Worley, 2008) as compared to models with uncorrelated factors. Use of item level modifications improved model fit of the MBI-ES. Specifically, violation of local independence and CFA modification indices suggested cross loading of items or additional item correlates, which would be candidate for item deletion. Previous literature shows item level modifications: item deletion (i.e. omission of items 12 and 16; Maslach and Jackson, 1981. See Table 2), cross-loading of some items (i.e. items 6 and 16 cross loaded on DW;

(Abu-Hilal & Salameh, 1992); (Whitehead, 2000) See Table 2), and residual covariance pairs (i.e. EE items 1 and 2; Boles, 2000) on the MBI-ES. Reliability analyses of the MBI-ES consistently yield similar alpha coefficients for the 3 factor structure; Emotional Exhaustion (EE) .83- .91, Depersonalization in the Workplace (DW): .50 -.79, and Personal Accomplishment (PA): .69-.82, across studies (Aluja, Blanch, & García, 2005). Nonetheless, Wheeler et al. (Wheeler, Vassar, Worley, & Barnes, 2011) cite a need for additional studies on measurement invariance and item level analyses, to explain divergent results across professions and languages.

The Present Study

The MBI-ES is clearly the gold-standard for measuring burnout in the education system. The measure has been widely studied and its three-subscale structure has generally been compelling and robust across cultures. The purpose of the present study is to validate the MBI-ES construct across NYC and Jamaica W.I. teacher samples and to identify items and subscales within the MBI-ES measure that will represent the comparative theoretical nature of burnout for both NYC and Jamaica W.I. teachers. We do not suggest permanent revisions to the MBI-ES, but instead establish a measure that substantively captures the 3 components of burnout syndrome in both teacher samples with possibly some item modifications. Cross-national construct validity, factorial validity, and meta-analytic reviews have also supported some consistency in the MBI-ES to assess burnout syndrome. Based on the general psychometric consensus we plan to retain a 3 factor structure of the MBI-ES, understanding that scale modifications may be warranted to satisfy cross-cultural measurement invariance before comparing burnout across the two cultures. This means that we will begin by exploring if the 22 items and 3 factor structures adequately fit our data, but we will likely modify the measure for cross cultural work. We conduct an EFA before the CFA because there have been no EFA studies done in a Jamaican teacher sample and we will first explore if the 3 factor burnout structure is representative of our teacher sample. We will perform a CFA, in the same sample, to confirm the burnout construct and derive cross-cultural comparisons (Padron et al., 2011; Garcia et al., 2009).

The first goal of this study will be to develop an invariant representation of burnout for the two cultures Secondly; we compare burnout across the two cultures. We seek to understand any scientific differences from an emic (how these events are experienced by members of each teacher group) perspective. That is, we will discuss any cultural differences from an insiders' point of view, we will explain what is meaningful to the teacher and student in the New York City or Jamaican education environment. Considering the underlying manifestations of the teacher burnout experience or using an emic level of analysis, may be useful for intervening on and preventing teacher burnout. For example, if teachers in one culture generally report increased depersonalization compared to a teacher in another culture, we can consider the culture-specific reasons for the observed differences (i.e. longer school days or, increased class sizes, in the respective school environment).

Aims and Hypotheses

Building on the prior validation of the MBI-ES and consistent findings of the MBI-ES measurement invariance across different countries (Maslach et al., 2001), the present study

was designed to (1) verify a 3 factor burnout latent construct that retains the basic subscale structure of the MBI-ES but that generalizes to another English language, Westernized, yet developing culture (Jamaica, W.I.); (2) assess the structural and item equivalence of the MBI in, a Non-Anglo or Non-Asian context, Jamaica W.I.; (3) and compare the similarities and differences in the scale performance between the two countries. Guided by empirical psychometric analyses of the MBI-ES, item level information and a qualitative emic analysis, the overarching goal of the study is to use the results of these analyses to describe similarities and differences between the two cultures in the phenomenology of burnout so that meaningful comparisons across the two teacher samples may further our understanding of burnout and how it might be prevented or reduced in teachers.

To our knowledge, The MBI-ES has not been used in West Indian countries. There has been no previous study that considers the complex social structure of teaching from a West Indian perspective, though many U.S. teachers have been recruited from the West Indies. A cross cultural analysis of the MBI-ES will add to the burnout literature and identify similarities and differences in the MBI-ES 3 factor structure, as noted in the second and third aims. Of course, the results obtained from this study will be specific to New York City and Jamaica, W.I. But the methods and motivation (using psychometric techniques to evaluate and understand cultural differences) of this research can be readily applied to comparisons among any cultures.

Methods

Sample

A convenience sample of 300 teachers was obtained during the middle of the school year. Teachers were recruited from 3 secondary schools and 1 primary school, in Jamaica W.I. and 2 primary schools and 2 secondary schools in New York City. In both samples, group administration of the MBI-ES was conducted at teacher faculty meetings. Teachers ranged from pre K – 12th grade (elementary or primary school through high school teacher cohort). Participants were not asked to report their racial and ethnic composition in either the New York or Jamaica W.I. sample because race and ethnicity is classified and understood differently across the two cultures.

Procedure

Voluntary participation was encouraged at the faculty meetings and teacher participants were compensated $5.00 U.S. dollars ($300 Jamaican dollars equivalent) for their participation. Completion of the measures required approximately 10-20 minutes. The first author, who is familiar with the education system both in New York and Jamaica W.I., was present during scale administration to assure participants' comprehension of the scales.

Measures

The MBI-ES is a 22 item scale, using a seven-point likert-scale. Responses range from 0, ‘never’, to 6 ‘every day’, endorsement of burnout feelings. Three observed subscale scores are Emotional Exhaustion (EE-9 items), Depersonalization (DW-5 items), and Personal Accomplishment (PA-8 items (reverse scored)). Table 2 shows the specific item content of

teacher burnout components and scale items defined by the original authors. Patterns of the scale distributions were the same in both teacher samples. Emotional exhaustion was normally distributed, depersonalization in the workplace and the reverse scored personal accomplishment scale were slightly positively skewed in both teacher samples. Skewness was effectively reduced in the 12 items retained in our analyses.

Analytic Approach

Descriptive statistics were compared across the two samples and chi-square and t-tests were used to test for differences.

Developing and comparing the burnout construct in both cultures was performed in four steps. First, we preliminarily conducted a principal axis exploratory factor analysis with oblique rotation to verify the accepted general 3 factor structure. Second, the three factor 22 item model was modified and fit indices were derived for cross-cultural comparison; Specifically, Multigroup CFA was used to test factor loadings and residual variances to assess construct invariance, between the teacher samples. Items were eliminated to establish an acceptable fit for comparison across the two cultures under consideration. CFI values greater than .90 (Cheung & Rensvold, 2002; Tabachnick, 2007) and RMSEA lower than .07 (Cheung & Rensvold, 2002; Tabachnick, 2007) were considered good fit. The MBI-ES was deemed invariant and useful for cross-cultural comparisons if the observed difference between the constrained and fully unconstrained CFA model was greater than a 5% chance ($p < .05$). Once distinct sets of items measuring the separate factors were identified, item response theory modeling was used to identify any specific differential item functioning (DIF) between the two samples. Total information and item characteristic curve (ICC) figures were derived from IRT (MULTILOG) and examined. MPLUS 5.2, SPSS, and Multilog software were used for all analyses.

Results

Description of teacher groups

A comparison of the samples from the two cultures is shown in Table 1. As indicated in Table 1 the Jamaican sample had more teaching experience and taught at an average higher grade level than the New York City sample. Teachers in Jamaica may attend Teacher Colleges' and typically begin their teaching careers earlier than teachers in New York City.

Exploratory Factor Analysis

We initially explore and compare the factor structure in both samples. The 22 items were subjected to an oblique principle axis factor analysis to empirically explore the underlying structure of burnout in the separate samples. The first three eigenvalues in the Jamaican (NYC) samples were: 6.03 (7.21 NYC), 2.55 (2.60), and 1.63 (1.49) respectively, accounting for 52.66% (57.74%) of the variance. The fourth eigenvalue in both samples were also > 1 and increased the variance explained by 6.26% (6.42%). However the four factor solution was less interpretable than the expected 3 factor solution, only the 3 factor solutions are presented in Table 2. Items that cross loaded and/or had factor loadings <.40 in at least one sample or failed to load on the a priori factor were candidates for deletion.

Confirmatory Factor Analysis

Twelve (4%) subjects were deleted from the analysis due to missing data leaving a final N of 288. The 22 items were then fit to a three correlated factor CFA, using Maximum Likelihood estimation. The first factor included the 7 EE items, the second factor included 7 DW items, and the third factor included 8 PA items. Note that items 6 and 16 were originally on the Maslach EE subscale, but were tested on the DW subscale as suggested by the EFA results. The 3 correlated factor CFA model of these 22 items did not fit well: total sample df = 206, X^2= 587.63, CFI = .83, TLI = .81, RMSEA = .08; NYC teacher sample df = 206, X^2= 462.43, CFI = .81, TLI = .79, RMSEA = .09; and Jamaica W.I. teacher sample df = 206, X^2= 398.48, CFI = .80, TLI = .78, RMSEA = .08. Examination of modification indices, confirmed the deletion of the 6 items flagged from the EFA and revealed inflated residual scaling and cross loading for items 13 (EE), 7 (PA), 17 (PA), and 21 (PA). Thus based on these findings and our goal to identify a parsimonious subset of items which exhibited similar structure across the two cultural groups, 10 items were deleted leaving 12 for further analysis.

We then compared multigroup fit statistics for the confirmatory factor models for the remaining 12 items (see figure 1). The first model constrained factor loadings to be the same across the two teacher groups but allowed factor correlations to vary (X^2= 213.03, df = 120, CFI = .90, TLI = .90, RMSEA = .07; Jamaica, X^2= 97.48; New York City, X^2= 115.56). We then examined a fully unconstrained model, allowing the measurement models to be estimated separately for each teacher group (X^2= 180.98, df = 109, CFI = .93, TLI = .91, RMSEA =.07; Jamaica, X^2= 88.62; New York City, X^2= 92.36, see figure 1). The chi-square difference test (X^2 difference = 32.05, df difference = 11, p-value = .007) led us to conclude that the fully unconstrained model provided a significantly better fit then the constrained factor loadings model. Thus we conclude the overall CFA demonstrates adequate model fit, but is not equivalent across the teacher groups. To further explore the variation between the two teacher groups we used IRT models to identify particular items that might function differently (DIF) between the groups.

IRT Analyses

We estimated discrimination and threshold item parameters using a graded response model for each of the newly developed 4 item components of burnout (Table 3). The range of item difficulty threshold is similar between the samples and indicate satisfactory coverage of the underlying latent trait from -2.37 to 1.83 for Emotional Exhaustion, -7.6 to 9.8 for Depersonalization in the Workplace, and Personal Accomplishment appeared more informative at higher and moderate ends of the latent trait (-1.08 to 5.16) than the lower ends of burnout.

DIF analysis

Differential item functioning was determined using two methods: G^2 test statistic and visual comparisons of the item information curves Item discrimination and item difficulty parameters were constrained to be equal for the two groups. If G^2 exceeded a critical value of 5.99, the item was identified as having DIF. According to this criteria, three items exhibited DIF, EE2, PA9, and PA19. The item EE2 (“I feel used up at the end of the work

day") had a significant difference in discrimination estimation (G^2 (2) = 13.6; New York *a* = 1.94 and Jamaica *a* = 0.50). Visual analysis (Figure 2) supports this finding of DIF with observed differences of slope estimation between the two cultures and comparatively better item discrimination at low to moderate ends of burnout in the New York City teacher sample (as opposed to discriminating fairly well at all levels of burnout in the Jamaica teacher sample). PA9 ("I feel I'm positively influencing other people's lives through my work") was relatively more informative in the Jamaica teacher sample, discriminating well at moderate to higher ends of lack of personal accomplishment (Figure 3). In contrast, PA19 (I have accomplished many worthwhile things in this job) was relatively more informative in the New York City teacher sample, discriminating well for moderate to higher levels of lack of personal accomplishment (Figure 4). Although these three items exhibit DIF, visual analysis of the total information curves suggests overall measurement invariance at the scale level (see Figure 5). The area along the three traits which are well measured by the items (i.e. high information) is similar although personal accomplishment is better measured over a wider range in the NYC teachers rather than the more severe range in the Jamaica teachers.

Latent Factor Mean Scores

Based on the fully unconstrained model, in which the latent mean subscale scores were freely estimated for each teacher group. Among NYC teachers, the average latent emotional exhaustion score was higher than that of Jamaican teachers (Mean difference = .45 (.18), p = .014). Jamaican and New York teacher samples did not significantly differ on latent mean score estimations for Depersonalization in the workplace (Mean difference = .03 (.08), p = . 68) and Personal Accomplishment (Mean difference = .06 (.09), p = .47) subscales.

Discussion

We were able to identify a structural model of burnout based on the standard three correlated factors and 12 of the observed items from the MBI in the total sample that was acceptably equivalent across two teacher groups. The 3 factor structure comprised of 4 items on each latent factor is the foundation for our analysis. Having established a structure of burnout that was overall equivalent between the two groups we can theoretically discuss burnout in context of New York City and Jamaica, W.I. teachers. Although this model is limited and specific to the two cultures studied here, it may serve as a reasonable starting point for a model that examines cultural invariance in other cultures.

EFA, CFA, and IRT analyses substantively contribute to the discussion of measurement invariance across cultural groups. The theoretical and factorial 3 component structure of burnout applies to both Jamaica WI and New York teachers. A significant Chi square difference test and differential factor correlations suggest that measurement invariance was not established and follow up *DIF* analysis details the item level differences across cultures. We use these findings to offer an *emic* discussion about the structural and qualitative differences of burnout across these two cultures.

Analysis of the individual item information estimates and total information characteristic curves support that overall Emotional Exhaustion is a somewhat more coherent component of burnout in the New York teacher sample compared to the Jamaica teacher sample. In

contrast, Depersonalization in the Workplace is a somewhat more coherent construct among the Jamaica sample than the New York sample. Personal accomplishment was equally coherent across both samples of teachers.

Cultural Differences in Burnout

Emotional Exhaustion—Visual analysis of item information curves show that the EE subscale demonstrates increased discrimination at the moderate to upper levels of burnout in the New York teacher sample. In contrast, the Jamaican teacher sample item information curves have flatter slopes. For NYC teachers, EE factor loadings were, also, comparatively higher than Jamaican teachers. Total information estimates for NYC teachers were also higher when compared to total information estimates for Jamaican teachers; with New York City teachers reporting more emotional exhaustion than Jamaican teachers (also supported by the significant, but interpretable, mean score difference on EE between the two cultures . Thus, it appears that teacher burnout is more strongly characterized by feelings of emotional exhaustion in NYC and these teachers experience greater levels of exhaustion compared to Jamaican teachers. Specifically, item level analysis reveals that NYC teachers' burnout is well described by how they feel in the morning preparing for the work day (or at the end of the work day. See DIF analysis results). In a social context, these findings may be related to the understanding that teaching in New York City involves political and bureaucratic pressures along with the professional choice to serve the community through education. In contrast, teaching in Jamaica involves less emotional burden in that, political and administrative factors are not as pronounced. In short, in Jamaica, teachers are able to focus more on their commitment to teaching and less on administrative requirements and political pressures.

Personal Accomplishment—It appears that a feeling of personal accomplishment (or lack thereof) is a vital component among Jamaican teachers. Visual analysis of item information curves, show relatively better discrimination of burnout at the higher end of personal accomplishment for teachers in Jamaica W.I, than in New York City. Notably, factor correlations across the two samples show that personal accomplishment is less related to DW and EE for Jamaican teachers, whereas comparative feelings of personal accomplishment are more strongly associated with feelings of DW and EE among NYC teachers. It appears lack of PA is a more critical component of teacher burnout in Jamaica W.I.

To understand the observed cultural differences in burnout (EE representative for NYC teachers and lack of PA Jamaican teachers) we again consider the social context of teaching in each environment. Teaching in Jamaica is a highly esteemed professional practice that often defines or describes an individual's character and the assigned title of *teacher* is referenced outside of the school setting. For example, in conversation a community member would say, “I saw *Teacher Johnson* today”. This formal use of the teachers' title extends beyond the classroom and is consistent within a community. In contrast, the role of a teacher is not recognized beyond the NYC classroom, as typically, community members would address a teacher no differently from any other person in a social setting. Therefore, a sense of teaching accomplishment in Jamaica is indeed personally ascribed and coupled with

several social reinforcements. This social and contextual difference explains the relative greater informativeness of lack of PA among the Jamaican teachers. Such cultural differences imply that prevention of teacher burnout may exist in the social value of teacher roles in the community and teacher burnout intervention would focus on day-to-day esteem of teachers and the reduction of factors (e.g. administrative burden) that contribute to EE.

Depersonalization in the Workplace—According to subscale correlations, feelings of depersonalization appear to coincide with feelings of emotional exhaustion, across both cultures. These results imply that consistently across cultures, feelings of detachment towards teaching practice are coupled with the day-to-day endorsements of fatigue or weariness. The results affirm, across cultures, that feelings of emotional exhaustion and depersonalization in the workplace go hand in hand for teachers. Therefore, efforts to prevent feelings of exhaustion will simultaneously affect teacher student interactions, such as teachers' depersonalization of students.

It is interesting that modifications to the original MBI-ES items included the deletion of two DW items: items 10 (DW) and 22 (DW), which were not judged to have the same meaning across cultures and did not contribute to the depersonalization in the work place construct. Specifically, we suspect that the term *callous* is less frequently used in Jamaica W.I. than in the U.S. and feeling *blamed* by students, relative to other DW items, is less of a behavioral attribute. These modifications demonstrate that structural indices can be informative about cultural differences as the DW scale operates very similarly among NYC and Jamaica W.I. teachers when these items are deleted.

Conclusion—The 12-item representation of teacher burnout overall demonstrates validity and reliability to explore burnout in both Jamaican and New York City teacher cohorts. However, there are also specific areas of differences in the phenomenology of burnout in the two cultures. For example, teachers in NYC may assess individual feelings of burnout according to emotional exhaustion and define burnout among colleagues in terms of emotional exhaustion. In contrast, teachers in Jamaica may not experience feelings of emotional exhaustion as a basis for burnout as much as NYC teachers, but may increasingly define the experience of burnout in terms of a lack of personal accomplishment. We developed this understanding of this difference in the emphasis of the components that contributed to burnout, in these two cultures, a psychometric approach. These results may be limited to the convenient sample of teachers in this sample, and due to idiosyncratic analyses these findings may not be generalizeable. As such we emphasize that psychometric analysis can be applied not just to measurement development and evaluation, but to an understanding of the substantive constructs that underlie measures. We believe that psychometric methods such as multigroup CFA and IRT models can be particularly fruitful for cross-cultural research. Quantitative methodologies have historically been underused in developing nations. The rapid development of rigorous qualitative methods (i.e. mixed method approaches) may compliment quantitative approaches.

Acknowledgments

Funding/Support: This work was supported by grants NIH 5RZ5BM056821 Institute, Bethesda, Md., USA;

Works Cited

[NCTAF], N. C. o. T. a. A. s. F. No Dream Denied: A Pledge to America's Children. Washington, DC: 2003.

Abu-Hilal MM, El-Emadi AA. Factor structure and reliability of burnout among Emirati and Palestinian teachers. Psychological Reports. 2000; 87(2):597–610. doi: http://dx.doi.org/10.2466/PR0.87.6.597-610. [PubMed: 11086611]

Abu-Hilal MM, Salameh KM. Validity and Reliability of the Maslach Burnout Inventory for a Sample of Non-Western Teachers. Educational and Psychological Measurement. 1992; 52(1):161–169.

Aluja A, Blanch A, García LF. Dimensionality of the Maslach Burnout Inventory in School Teachers: A Study of Several Proposals. European Journal of Psychological Assessment. 2005; 21(1):67–76.

Byrne BM. Burnout: Testing for the Validity, Replication, and Invariance of Causal Structure across Elementary, Intermediate, and Secondary Teachers. American Educational Research Journal. 1994; 31(3):645–673.

Cheung GW, Rensvold RB. Evaluating Goodness-of-Fit Indexes for Testing Measurement Invariance. Structural Equation Modeling. 2002; 9(2):233–255. Article.

Greenglass ER. The impact of social support on the development of burnout in teachers: Examination of a model. Work and stress. 1997; 11(3):267–278.10.1080/02678379708256840

Kane TJ. What does certification tell us about teacher effectiveness? Evidence from New York City. Economics of education review. 2008; 27(6):615–631.10.1016/j.econedurev.2007.05.005

Kokkinos CM. Factor structure and psychometric properties of the maslach burnout inventory - Educators survey among elementary and secondary school teachers in Cyprus. Stress and Health: Journal of the International Society for the Investigation of Stress. 2006; 22(1):25–33. doi: http://dx.doi.org/10.1002/smi.1079.

Kristensen T. The Copenhagen Burnout Inventory: A new tool for the assessment of burnout. Work and stress. 2005; 19(3):192–207.10.1080/02678370500297720

Kristensen T, Borritz M, Villadsen E, Christensen K. The Copenhagen Burnout Inventory: A new tool for the assessment of burnout. Work & Stress. 2005; 19(3):192–207.10.1080/02678370500297720

Kyriacou C. Teacher stress and burnout: an international review. Educational Research. 1987; 29(2): 146–152.10.1080/0013188870290207

Maslach C, Jackson SE. The measurement of experienced burnout. Journal of Organizational Behavior. 1981; 2(2):99–113.10.1002/job.4030020205

Maslach CS, Wilmar, Michael Leiter. Job Burnout. 2001 annurev psych 52.1.pdf.

Pienaar J. Teacher burnout: construct equivalence and the role of union membership. South African journal of education. 2007; 26(4):541.

Richardsen AM, Martinussen M. The Maslach Burnout Inventory: Factorial validity and consistency across occupational groups in Norway. Journal of Occupational and Organizational Psychology. 2004; 77(3):377–384. doi: http://dx.doi.org/10.1348/0963179041752691.

Richardsen AM, Martinussen M. Factorial validity and consistency of the MBI-GS across occupational groups in Norway. International Journal of Stress Management. 2005; 12(3):289–297.10.1037/1072-5245.12.3.289

Schutte N, Toppinen S, Kalimo R, Schaufeli W. The factorial validity of the Maslach Burnout Inventory-General Survey (MBI-GS) across occupational groups and nations. Journal of Occupational and Organizational Psychology. 2000; 73(1):53–66. 10.1348/096317900166877.

Tabachnick, BG.; Fidell, LS., editors. Using Multivariate Statistics. 5th. Boston: Allyn and Bacon; 2007.

Weisberg J. Teachers' Physical, Mental, and Emotional Burnout: Impact on Intention to Quit. The journal of psychology. 1999; 133(3):333–339.10.1080/00223989909599746

Wheeler DL, Vassar M, Worley JA, Barnes LLB. A Reliability Generalization Meta-Analysis of Coefficient Alpha for the Maslach Burnout Inventory. Educational and Psychological Measurement. 2011; 71(1):231–244.

Whitehead ROD. Burnout among New Zealand Primary School Teachers pdf. 2000

Worley JA. Factor Structure of Scores From the Maslach Burnout Inventory: A Review and Meta-Analysis of 45 Exploratory and Confirmatory Factor-Analytic Studies. Educational and Psychological Measurement. 2008; 68(5):797–823.10.1177/0013164408315268

Biographies

Ellen-ge Denton, PsyD, Associate Research Scientist, Department of Medicine, Columbia University, PH 9-309, New York, NY 10032, Office: 212-342-5507, Cell: 917-687-1585, Email address: ed2426@columbia.edu

Ellen-ge Denton has been involved in several research projects such as: racism and cardiovascular risk factors among ethnic minorities, foreign born versus native born cardiovascular disease, cross-cultural teacher burnout, and multivariate design/analysis in research. She currently continues her research investigating ethnic density and related mental health implications, using geographical information software. She continues bio-psychosocial research in the Center for Behavioral and Cardiovascular Health.

Dr. William Chaplin, Professor, Queens campus, Marillac Hall, Room 107A, Phone: (718) 990-5541, Fax: (718) 990-2770, chaplinw@stjohns.edu

Dr. Chaplin has substantive interests in personality psychology, but also has interests in issues involving psychometrics and the analysis of data, particularly in applied research. He is concerned with issues involving the analysis of change and the analysis of latent variables. In addition, he has worked on the appropriate analysis of data generated by designs that combine qualitative experimental variables with quantitative naturalistic ones.

Melanie Wall, Ph.D. Professor of Biostatistics, Mailman School of Public Health, Room R211 Unit/Box: 722 West 168th St. New York, NY 10032, Phone: 212-543-5448, Fax: 212-543-5599, mmwall@columbia.edu

Dr. Wall is a biostatistician with a sustained record of focused, innovative data analysis methods research in the areas of latent variable modeling, spatial, and longitudinal data analysis. She has made distinctive developments in latent variable modeling including a series of methods which allow for nonlinear relationships to be examined among latent variables and an innovative line of research that incorporates latent variables into spatial (i.e. geographical) data analyses. Dr. Wall's unique expertise in the areas of factor analysis, latent class models, structural equation modeling as well as spatial data modeling have led to many fruitful collaborations with health researchers.

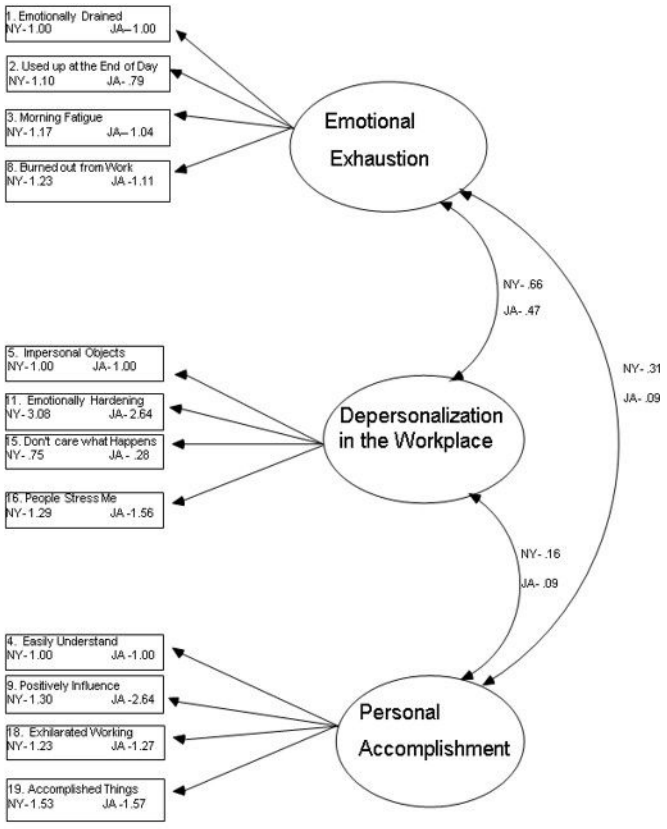

Figure 1.

Multi group CFA. MBI-ES 12 items three factor model. Fully unconstrained model (X^2= 213.03, df = 120, CFI = .904, TLI = .895, RMSEA =.074; New York City, X^2= 115.56; Jamaica, X^2= 97.48). Comparison of teacher burnout constructs between NYC and Jamaica WI teachers.

EE2

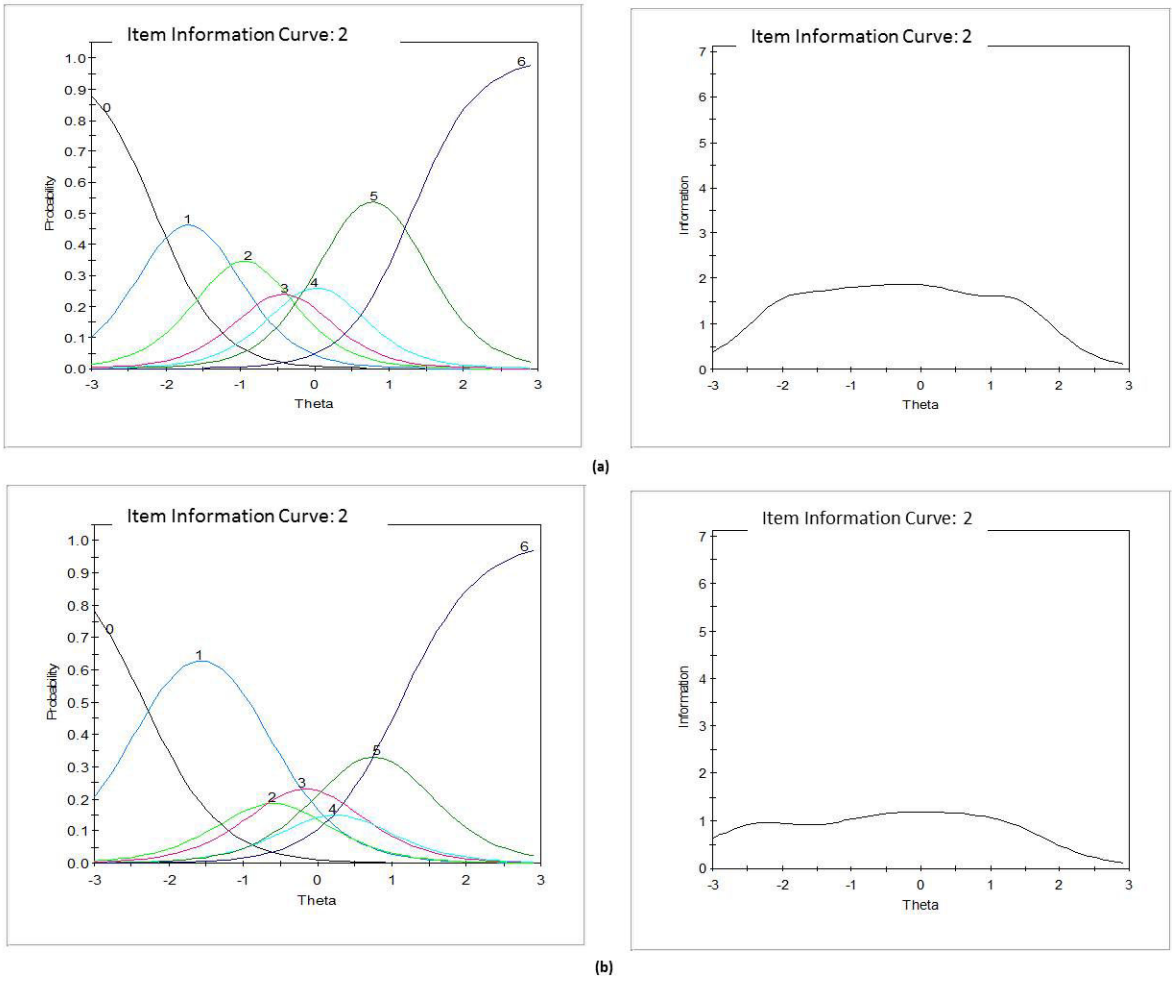

Figure 2.

Comparative Item Characteristic Curve and Item Information Curve for EE2 - I feel used up at the end of the work day. X- axis – probability of participant response. Y-axis – emotional exhaustion severity.

PA9

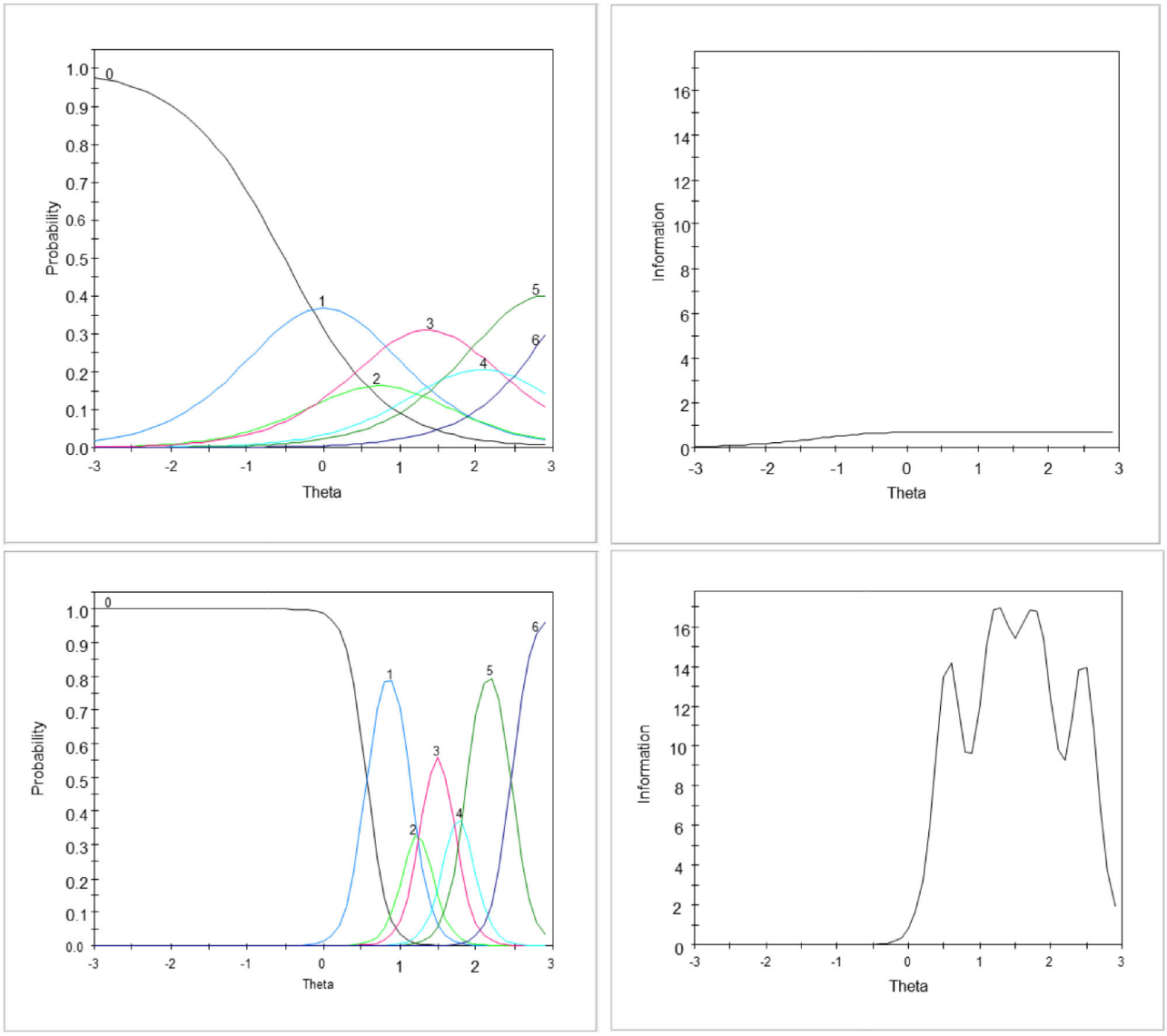

Figure 3.

Comparative item characteristic curve and item information curve for PA9 – I feel I am positively influencing other people's lives through my work, (a) New York City (b) Jamaica W.I.

Notes: X-axis – probability of participant response

Y-axis – lack of personal accomplishment severity.

PA19

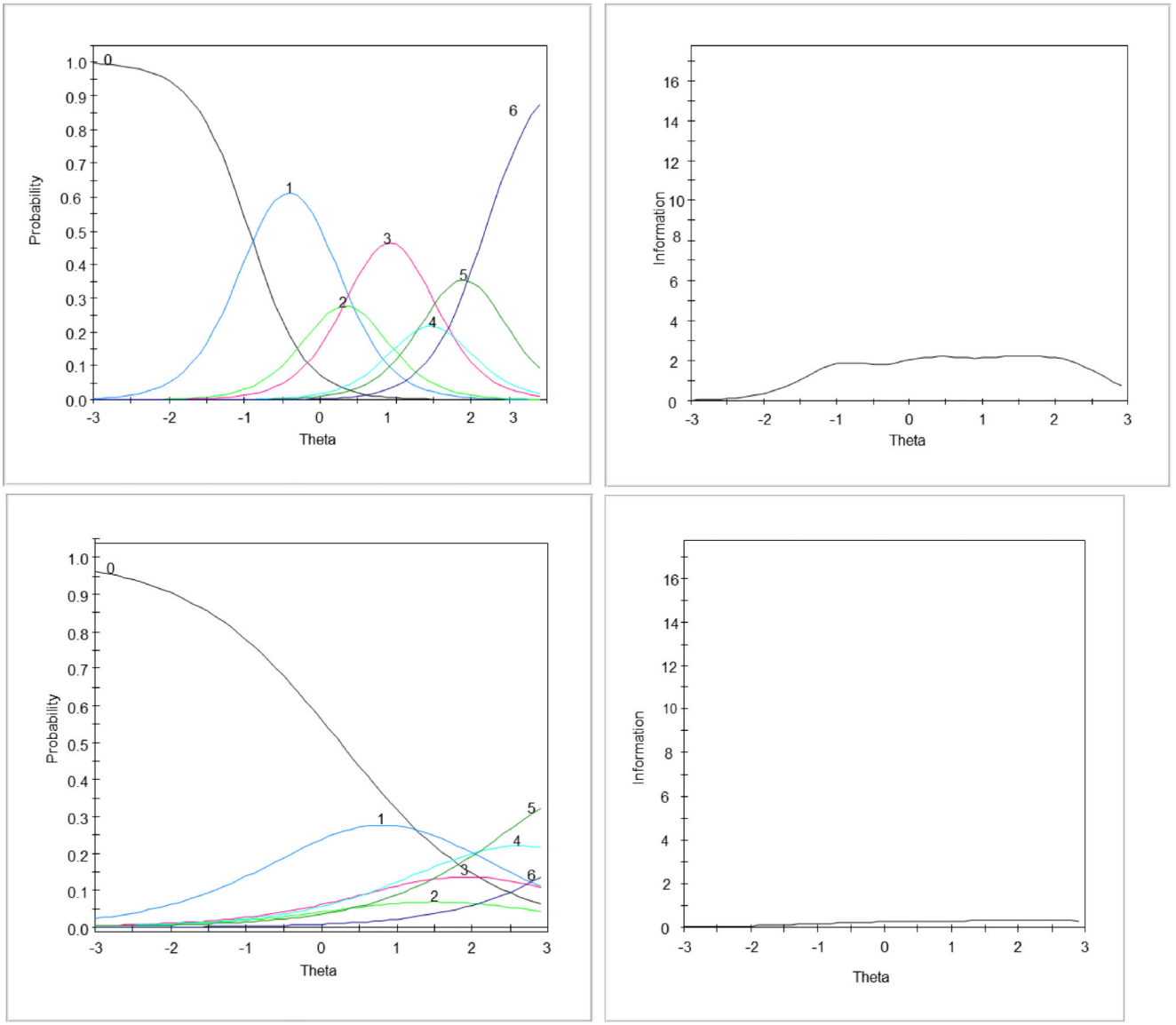

Figure 4.

Comparative item characteristic curve and item information curve for PA19 – I have accomplished many worthwhile things in this job, (a) New York City (b) Jamaica W.I.

Notes: X-axis – probability of participant response

Y-axis – lack of personal accomplishment severity.

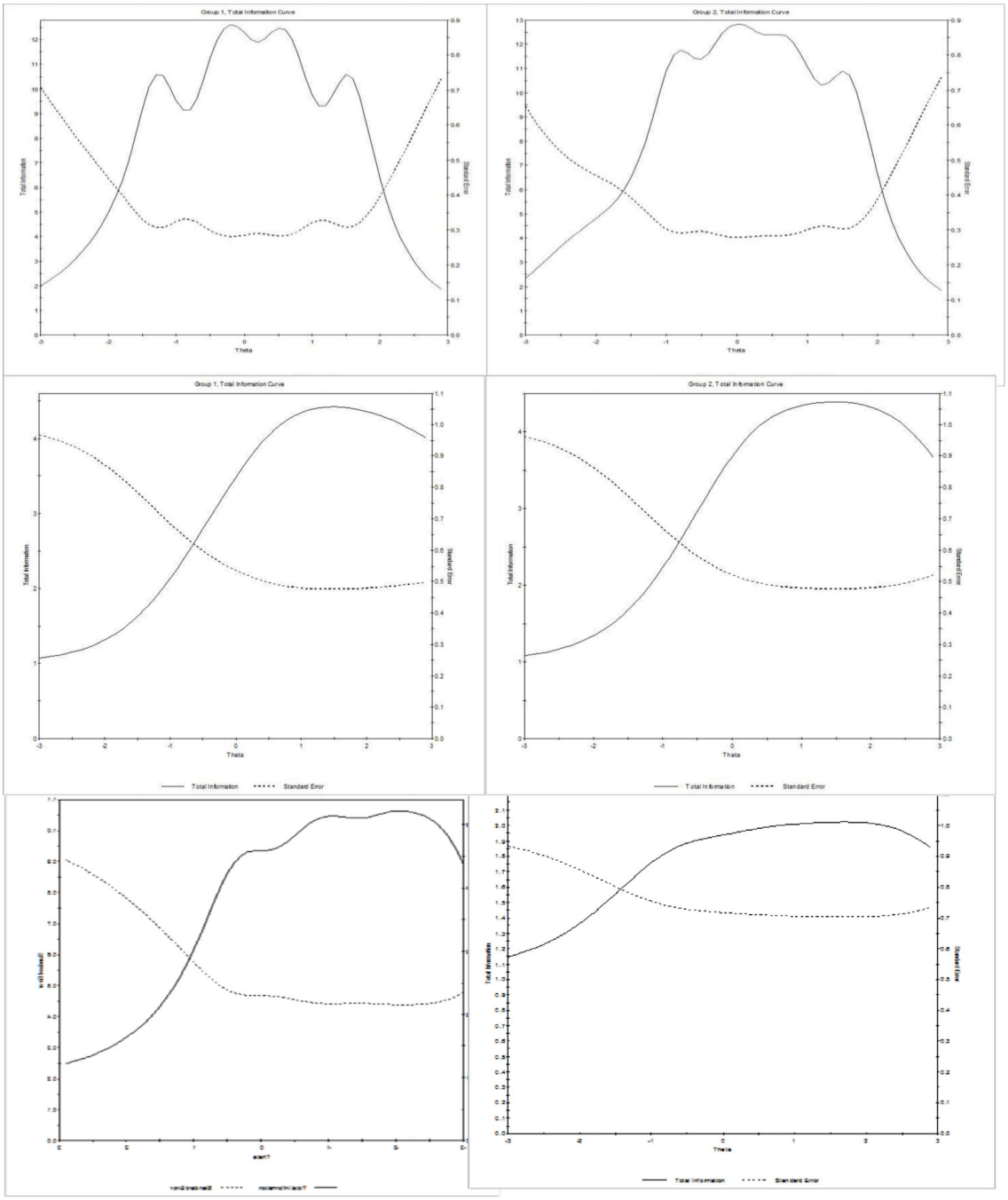

Figure 5.

Measurement invariance on the four-item subscales depicted by the total information curves, in (a) Jamaica W.I. teachers and (b) New York City teachers.

Notes: emotional exhaustion (top), depersonalization in the workplace (middle), personal accomplishment (bottom).

Table 1
Descriptive statistics among NYC and Jamaica W.I. teacher sample (N = 300)

	NYC	Jamaica W.I.	p-value
Gender (N, %)			
Male	36 (24%)	44 (29%)	p = .29
Female	111(74%)	103(69%)	
Demographic Characteristics	M (Sd)	M (Sd)	
Age (years)	38.9(12.8)	36.2(11.1)	p = .06
Grade (level)	4.6(2.9)	7.0(2.5)	p<.001
Years Teaching	9.5(9.6)	12.0(10.0)	p<.001

Table 1 notes differences across the two teacher samples on demographic characteristics. Overall, six teachers (3 in each teacher sample) did not identify as being male or female.

Table 2

Factor Loadings of Maslach Burnout Inventory-Educational Survey from Exploratory Factor Analysis among NYC and Jamaica W.I. teachers

Burnout Syndrome MBI-ES	Dimensional Structure in Present Study					
	Emotional Exhaustion		Depersonalization In Workplace		Personal Accomplishment	
	NYC	JA	NYC	JA	NYC	JA
EE 1-emotionally drained	**.79**	**.75**	.04	.17	.06	-.01
EE 2 – used up	**.80**	**.69**	.06	-.03	.05	.01
EE 3 – fatigue	**.75**	**.72**	.06	.14	-.04	-.02
EE 8 – burned out	**.92**	**.82**	-.05	.01	-.07	-.07
EE 13 – frustrated	**.65**	**.53**	.20	.30	-.07	-.05
*EE 20 – end of rope	**.53**	**.40**	.31	**.48**	-.03	-.11
*EE 14 – work hard	**.51**	.29	.19	**.41**	.08	.07
DW 5 – impersonal objects	-.09	-.02	**.53**	**.49**	-.13	-.18
*DW 10 – more callous	-.001	.06	**.77**	.39	.01	-.04
DW 11 – emotional harden	.25	.27	**.62**	**.55**	.05	-.04
*DW 15 – don't care	.01	-.19	.38	**.44**	-.02	-.004
EE 16 – people stress	.10	.07	**.42**	**.68**	-.09	-.03
*DW 22 – blame	.06	.11	**.49**	.18	.02	.09
*EE 6 – strain	.22	.23	.32	**.53**	.02	-.01
PA 4 – understand feelings	.05	.22	-.09	.03	**.57**	**.40**
PA 7 – effectively	.05	.21	.10	-.15	**.69**	**.65**
PA 9 – positive influence	-.03	.01	-.08	-.09	**.57**	**.52**
PA 17 – relaxed atmosphere	-.13	-.26	.01	-.01	**.49**	**.56**
PA 18 – exhilarated	-.14	-.03	-.003	.11	**.47**	**.48**
PA 19 - accomplished	-.04	-.11	-.13	.001	**.52**	**.46**
PA 21 – deal calm	.15	-.05	-.05	-.18	**.58**	**.46**
*PA 12 – energetic	**-.54**	-.37	.13	.03	**.43**	**.41**

*Flagged for deletion from EFA.

Table 2 shows a 3 factor structure of burnout in NYC and Jamaica W.I. teacher. Similar item patterns, across cultures, are noted on the EE and PA subscales. This table suggests EE items 6 and 16 cross-load on the DW subscale.

Table 3

Emotional Exhaustion scale item parameters (graded response model) and item function for New York City (above) and Jamaica W.I. (below) teachers

	A	b1	b2	b3	b4	b5	b6	Total Information
EE1	2.62	-2.37	-1.39	-.86	-.26	.19	1.28	2.14
	2.68	-1.76	-.58	-.15	.42	.63	1.83	2.24
EE2	2.66	-1.95	-1.19	-.65	-.28	.12	1.03	2.26
	1.91	-2.34	-.80	-.41	.08	.39	1.11	1.18
EE3	2.53	-1.26	-.45	-.25	.09	.50	1.57	2.05
	2.13	-1.34	-.46	-.05	.66	.75	1.77	1.43
EE8	5.08	-.96	-.35	-.05	.37	.59	1.26	7.68
	4.63	-1.29	-.38	-.08	.46	.70	1.54	6.45

A= discrimination, b_i =thresholds

Item 1: EE1, I feel emotionally drained from work; Item 2: EE2, I feel used up at the end of the work day; Item 3: EE3, I feel fatigued when I wake up in the morning and have to face another work day on the job; Item 4: EE8, I feel burned out from work

	A	b1	b2	b3	b4	b5	b6	Total Information
DW5	1.76	.45	1.28	1.62	1.97	2.47	2.92	1.01
	1.79	-7.64	.62	1.40	2.02	2.17	9.88	1.74
DW11	1.66	-.26	.47	.82	1.23	1.48	2.19	.90
	1.54	-.21	.67	1.16	1.40	1.73	2.05	.77
DW15	1.60	.67	1.41	1.92	2.43	2.64	3.11	.83
	1.64	1.14	2.48	2.59	3.05	3.73	6.52	.85
EE16	1.26	.07	1.21	1.91	2.90	3.03	3.38	.51
	1.55	-.24	.72	1.41	2.08	2.52	3.44	.78

A= discrimination, b_i =thresholds

Item 1: DW5, I feel I treat some students as if they were impersonal objects; Item 2: DW11, I worry that this job is hardening me emotionally; Item 3: DW15, I don't really care what happens to some students; Item 4: EE16, Working with people directly puts too much stress on me

	A	b1	b2	b3	b4	b5	b6	Total Information
PA4	1.08	-.65	1.19	1.77	2.83	3.22	5.16	.37
	.68	-1.08	1.08	1.49	2.87	3.43	4.99	.15
PA9	1.58	.09	1.06	1.48	2.29	2.83	3.91	.79
	4.19	.60	1.23	1.43	1.77	1.99	2.57	5.54
PA18	1.45	-.91	.68	1.25	1.94	2.41	3.12	.68
	.95	-.85	.82	1.14	2.24	3.00	3.61	.29
PA19	2.74	-.31	.70	1.12	1.83	2.14	2.69	2.36
	.99	.24	1.38	1.66	2.22	3.12	4.81	.32

A= discrimination, b_i =thresholds

Item 1: PA4, I can easily understand how my students feel about things; Item 2: PA9, I feel I'm positively influencing other people's lives through my work; Item 3: PA18, I feel exhilarated after working closely with my students; Item 4: PA19, I have accomplished many worthwhile things in this job.