Published in final edited form as:

Med Care. 2006 November ; 44(11 Suppl 3): S3–S4.

Measurement in a Multi-Ethnic Society:

Overview to the Special Issue

Jeanne A. Teresi, EdD, PhD^{*}, Anita L. Stewart, PhD[†], Leo S. Morales, MD, PhD[‡], and Sidney M. Stahl, PhD[§]

^{*} *From the Columbia University Stroud Center, Columbia University Resource Center for Minority Aging Research, New York Psychiatric Institute and Research Division, Hebrew Home for the Aged, Riverdale, New York; the*

[†] *University of California, San Francisco Institute for Health and Aging, Center for Aging in Diverse Communities;*

[‡] *University of California Los Angeles, Department of Health Services, School of Public Health and Division of General Internal Medicine and Health Services Research, School of Medicine, RAND, Santa Monica, California; and the*

[§] *Behavioral and Social Research Program, National Institute on Aging, National Institutes of Health, Bethesda, Maryland.*

Disparities among “priority” populations (defined here to include members of racial, ethnic, and other sociodemographic groups) have been well documented in terms of access to health and mental health services as well as delivery of care and medical procedures.^{1–4} Healthcare decisions are often made based on assessments of the health status of individuals; however, as illustrated in a recent volume of reviews,⁵ evidence of the cultural equivalence of health-related measures is sparse. The major goal of this special issue is to provide state-of-the-art overviews of both qualitative and quantitative methods that can be used to examine measurement equivalence. Several authors in the qualitative section of this special issue point out that most measures have been developed in a “monocultural context” so that concepts and constructs may not be the same when applied to other cultures.

There are several (hierarchical) steps in the examination of measurement equivalence across individuals, particularly those who differ in terms of background characteristics. These include conceptual equivalence (the meaning of constructs and items) and measurement invariance (the properties of items). The methods of factor analyses and differential item functioning (DIF) are 2 quantitative ways that items can be evaluated for cultural equivalence. Some DIF methods are related to factor analytic methods for examination of measurement invariance. The procedures for examining equivalence involve the use of both qualitative and quantitative methods often in an iterative fashion.

Contained within this special issue are 2 major sections: qualitative and quantitative. The qualitative section begins with an overview⁶ followed by an article related to measuring and deconstructing race.⁷ An article on qualitative methods describes frameworks for crosscultural measurement and issues of cultural sensitivity and conceptual adequacy⁸ followed by an article describing applications of qualitative methods, including illustrations of interaction analyses,

Reprints: Jeanne A. Teresi, EdD, PhD, Columbia University Stroud Center and Research Division, Hebrew Home for the Aged at Riverdale, 5901 Palisade Avenue, Riverdale, NY 10471. E-mail: Teresimeas@aol.com..

Support for this special issue was provided in part by the Resource Centers for Minority Aging Research (RCMAR), sponsored by the National Institute on Aging, the National Institute of Nursing Research, and the National Center for Minority Health and Health Disparities (Grant numbers: P30-AG: 15272, 15281, 15292, 15294, 21677, 21684).

cognitive interviewing, and the use of random probes.⁹ The section concludes with a discussion of the limits of quantitative methods¹⁰ followed by a commentary on the use of qualitative methods to improve quantitative measures.¹¹

Similarly, the quantitative section begins with an overview¹² followed by 2 articles relating to classical and item response theory (IRT) methods for developing measures.^{13,14} Two articles relating to measurement and factorial invariance^{15,16} are followed by an overview¹⁷ and 5 articles illustrating different methods for examination of DIF.^{18–22} These articles are followed by 3 commentaries^{23–25} and a summary article describing advantages and disadvantages of different approaches to examining measurement invariance.²⁶ The special issue ends with a discussion of item banking and computerized adaptive testing.^{27,28}

Contributors to this volume are internationally noted experts in health disparities research and/or measurement methods and statistics. Some developed the methods described in this special issue. Many different disciplines, and therefore multiple viewpoints and perspectives, are represented in the work presented in this special issue.

References

1. Bloche MG. Health care disparities—science, politics, and race. *N Engl J Med* 2004;350:1568–1570. [PubMed: 15071133]
2. National Research Council. Panel on Methods for Assessing Discrimination, Committee on National Statistics, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press; 2004. *Measuring Racial Discrimination*.
3. Smedley, BD.; Stith, AY.; Neslon, AR., editors. *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*. Washington, DC: National Academies Press; 2003.
4. Steinbrook R. Disparities in health care—from politics to policy. *N Engl J Med* 2004;350:1486–1488. [PubMed: 15071122]
5. Skinner JH, Teresi JA, Holmes D, et al. Measurement in older ethnically diverse populations. *Journal of Mental Health and Aging* 2001;7.
6. Nápoles-Springer AM, Stewart AL. Overview of qualitative methods in research with diverse populations: making research reflect the population. *Med Care* 2006;44(Suppl 3):S5–S9. [PubMed: 17060835]
7. Manly JJ. Deconstructing race and ethnicity: implications for measurement of health outcomes. *Med Care* 2006;44(Suppl 3):S10–S16. [PubMed: 17060816]
8. Johnson TP. Methods and frameworks for crosscultural measurement. *Med Care* 2006;44(Suppl 3):S17–S20. [PubMed: 17060823]
9. Nápoles-Springer AM, Santoyo-Olsson J, O'Brien H, et al. Using cognitive interviews to develop surveys in diverse populations. *Med Care* 2006;44(Suppl 3):S21–S30. [PubMed: 17060830]
10. Angel RJ. Narrative and the fundamental limitations of quantification in crosscultural research. *Med Care* 2006;44(Suppl 3):S31–S33. [PubMed: 17060832]
11. Krause N. The use of qualitative methods to improve quantitative measures of health-related constructs. *Med Care* 2006;44(Suppl 3):S34–S38. [PubMed: 17060833]
12. Teresi JA. Overview of quantitative measurement methods: equivalence, invariance and differential item functioning in health applications. *Med Care* 2006;44(Suppl 3):S39–S49. [PubMed: 17060834]
13. DeVellis RF. Classical test theory. *Med Care* 2006;44(Suppl 3):S50–S59. [PubMed: 17060836]
14. Hays RD, Brown J, Brown LU, et al. Classical test theory and item response theory analyses of multi-item scales assessing parents' perceptions of their children's dental care. *Med Care* 2006;44(Suppl 3):S60–S68. [PubMed: 17060837]
15. Meredith W, Teresi JA. An essay on measurement and factorial invariance. *Med Care* 2006;44(Suppl 3):S69–S77. [PubMed: 17060838]

16. Gregorich SE. Do self report instruments allow meaningful comparisons across diverse population groups? Testing measurement invariance using the confirmatory factor analysis framework. *Med Care* 2006;44(Suppl 3):S78–S94. [PubMed: 17060839]
17. Ramírez M, Teresi JA, Holmes D, et al. Differential item functioning (DIF) and the Mini-Mental State Examination (MMSE): overview, sample, and issues of translation. *Med Care* 2006;44(Suppl 3):S95–S106. [PubMed: 17060840]
18. Dorans NJ, Kulick E. Differential item functioning on the Mini-Mental State Examination: an application of the Mantel-Haenszel and standardization procedures. *Med Care* 2006;44(Suppl 3):S107–S114. [PubMed: 17060817]
19. Crane PK, Gibbons LE, Jolley L, et al. Differential item functioning analysis with ordinal logistic regression techniques: DIFdetect and difwithpar. *Med Care* 2006;44(Suppl 3):S115–S123. [PubMed: 17060818]
20. Jones RN. Identification of measurement differences between English and Spanish language versions of the Mini-Mental State Examination: detecting differential item functioning using MIMIC modeling. *Med Care* 2006;44(Suppl 3):S124–S133. [PubMed: 17060819]
21. Edelen Orlando M, Thissen D, Teresi JA, et al. Identification of differential item functioning using item response theory and the likelihood-based model comparison approach: application to the Mini-Mental State Examination. *Med Care* 2006;44(Suppl 3):S134–S142. [PubMed: 17060820]
22. Morales LS, Flowers C, Gutiérrez P, et al. Item and scale differential functioning of the Mini-Mental State Examination assessed using the differential item and test functioning (DFIT) framework. *Med Care* 2006;44(Suppl 3):S143–S151. [PubMed: 17060821]
23. Millsap RE. Comments on methods for the investigation of measurement bias in the Mini-Mental State Examination. *Med Care* 2006;44(Suppl 3):S171–S175. [PubMed: 17060824]
24. Borsboom D. When does measurement invariance matter? *Med Care* 2006;44(Suppl 3):S176–S181. [PubMed: 17060825]
25. Hambleton RK. Good practices for identifying differential item functioning. *Med Care* 2006;44(Suppl 3):S182–S188. [PubMed: 17060826]
26. Teresi JA. Different approaches to differential item functioning in health applications: advantages, disadvantages and some neglected topics. *Med Care* 2006;44(Suppl 3):S152–S170. [PubMed: 17060822]
27. Hahn EA, Cella D, Bode RK, et al. Item banks and their potential applications to health status assessment in diverse populations. *Med Care* 2006;44(Suppl 3):S189–S197. [PubMed: 17060827]
28. Reeve BB. Special issues for building computerized-adaptive tests for measuring patient-reported outcomes: the National Institute of Health's investment in new technology. *Med Care* 2006;44(Suppl 3):S198–S204. [PubMed: 17060828]