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Cross-cultural robustness of MMPI-2: The Greek Standardization

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The Normative Sample for the Greek standardization of MMPI-2 consisted of 700 individuals living in Greece, 354 men and 346 women, distributed across a wide age range (18-70 years) and covering most educational levels (minimum requirement of at least 9 years of formal education), based on the results of the 2001 Greek census. A further 120 subjects (54 men and 66 women), of ages ranging between 18 and 72 years, composed the Clinical Sample. These were diagnosed but not institutionalised, Greek speaking individuals, tested on a voluntary basis and following the same age and education criteria as the normative sample. Approximately 83 % of the clinical sample came from three major public mental health institutions, covering different geographical areas. A percentage of about 17% of the clinical sample came from the private practice sector and involved individuals from various parts of the country, undergoing therapy. Diagnoses included depression, anxiety attacks, psychosomatic symptomatology, substance abuse, sociopathy, hypo manic episodes, and a very few borderline cases. It should be noted here that Greece is, at the moment, experiencing an influx of people coming from other countries to live permanently in Greece, who are expected to be acculturated eventually, but who, being first generation, haven't yet had time to culturally adapt to the Greek mainstream culture. Consequently, no effort was made at this time to include a balanced sample of the immigrants because of the various confounding factors involved (mainly language barrier problems, insecurity as to how the test re-

sults could be used "against" them, etc). It could also be argued that, while their inclusion might seem to improve the norms, since they were counted as Greek residents for census purposes, the fact that they did not constitute the majority of the normative sample would automatically render the test unusable in their case, as it couldn't be assumed to be valid for them (Nichols et al, 2000).

The population distribution in Greece is typically provided by the National Statistics Institute, based on age, gender, education, and geographical origin. A perfect fit between the theoretical and actual subject content of the two samples is practically impossible, so an effort was made to closely follow age distribution (Fig. 1 and Fig. 3), maintaining the gender ratio and basing geographical distribution on a broad split between northern and southern Greece. The differences between the two samples in the educational level area are related to the combination of the distribution of low literacy & illiteracy (higher in older ages and remote areas) with the relatively high academic requirements of the test, as well as the exclusion of linguistic minorities (CEC 1990).

In Fig. 1 one can see that the actual sample closely follows the theoretical one, as far as age is concerned. The lower age extreme of the distribution is absent due to the fact that the test cannot be given to younger people. However, the
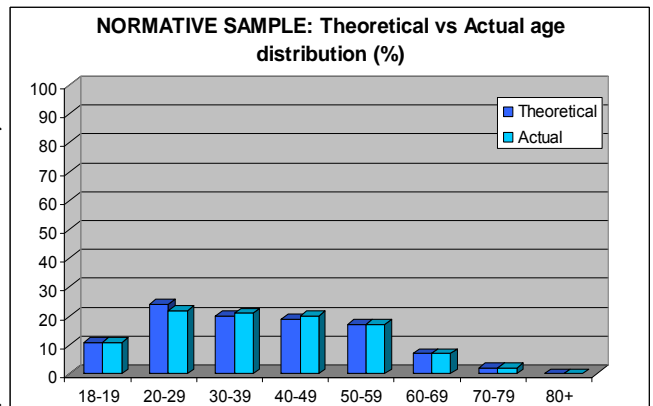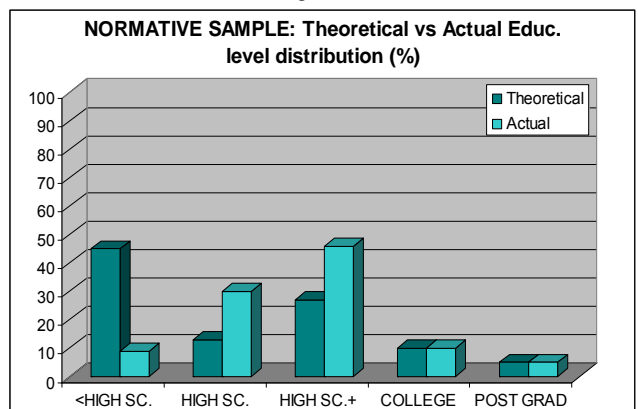

Figure 1

Figure 2

curve approaches the normal distribution, as it should.

In Fig. 2 we can see discrepancies concerning the educational level. This is mostly due to the fact that the test can not be administered to subjects below a certain amount of schooling, but barring that, presently in Greece it is very difficult to find people of a low educational level in the lower age brackets, unless one includes minorities and/or fairly geographically secluded sections of the general population. In any case, the sum of percentages by which the actual sample exceeds the theoretical one in the second and third categories, more than makes up for the percentage missing from the first category. On the other hand, there was no problem in matching ages with educational level in the last two categories, as could very well be expected.

Similar results were found where the clinical sample is concerned. Analysis of Fig. 3 and Fig. 4 shows that, as in the previous case, there is a close match between the theoretical and actual samples. Unfortunately, discrepancies appear again in the educational level area. In this case however, the major difference concerns the first two levels. In the "less than high school" category there exists the same situation as with the normative sample, and for the same reasons. The "high school" category, on the other hand, is over-represented due to the fact that the clinical population seems to have difficul-
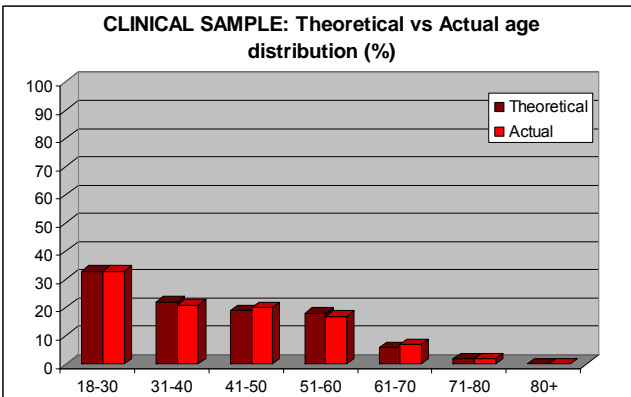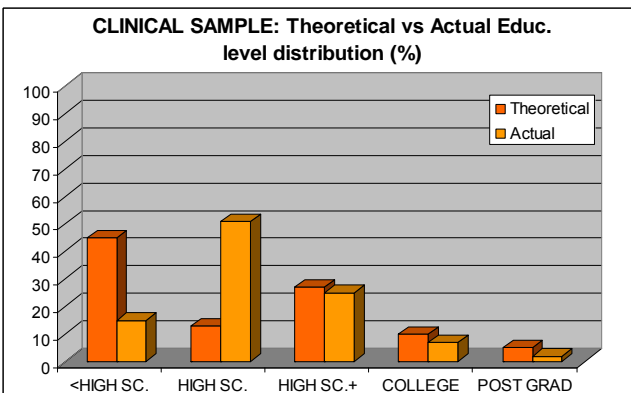
ties in moving beyond the obligatory education level, losing their motivation at that point, most probably because of emotional, social or family problems, substance abuse and psychopathology in general. This could also be the reason, and most probably is, for the slight to moderate under-representation of the clinical population in the higher education categories.

Exclusion criteria for the Normative Sample were: Cannot Say: >30, F: Raw score>30, F_B: Raw score>30 and for the clinical Sample: Cannot Say: >40, F: Raw score>30 and F_B: Raw score>30. Response consistency was measured by testing bilinguals in both languages and resulted in 88% agreement between the two language versions. A test-retest reliability index of .79 was measured after α 2 week interval and .71 after 6 weeks. Norm calculation followed the method used for the standardization of the USA version (Butcher, N.J. et al, 2001). In other words, linear T scores were calculated using the standard T-distribution formula **T=50+(10(x-M))/sd**, where **M** is the mean of the raw scores, **sd** their standard deviation and **x** the raw score in question. Following that, Uniform T-scores were derived for some of the scales (all Clinical scales except for Mf and Si, all Content and Component scales, and the PSY-5scales). This was done by first averaging T-score values, for each Percentile value, across the eight clinical scales for Males and Females. The resulting Composite Target Distribution was then used in conjunction with each one of the 16 original Linear T-score distributions in order to derive corresponding linear regression equations. The results were used to calculate Uniform T-scores using the formula **UT=a+b(50+10(x-M)/sd)**, where **a** is the y-axis intercept, and **b** is the slope of the corresponding linear regression equation.

An analysis of the F, F_p and F_b scale items showed that, responses to some of them were not as loaded in one direction as they might have been expected, suggesting a possible need for revision of the scales' content itself. It was, however, decided to maintain the original structure for compatibility reasons across different international versions of the test.

The comparison of the Fp scale between the Greeks and the individuals from U.S. leads to the hypothesis that the former tend to exaggerate their problems, appearing at the same time more defensive during test-taking by faking good (L) and not revealing sensitive personal data (K). In addition, Greeks tend to be more assertive (Mf) and more extroverted (Si) than the U.S. sample, while the U.S. sample tends to be more suspicious of their environment (Pa). These results, most probably, mirror differences in lifestyle and the resulting expected behavior adaptations, rather then clinical differences between the two populations (Reed et al., 1996).

In view of the above, the high degree of similarity between the Greek and US versions of the test was to be expected and, consequently, acts as an indicator of the validity of the standardization work and of the cross-cultural

Figure 3

Figure 4

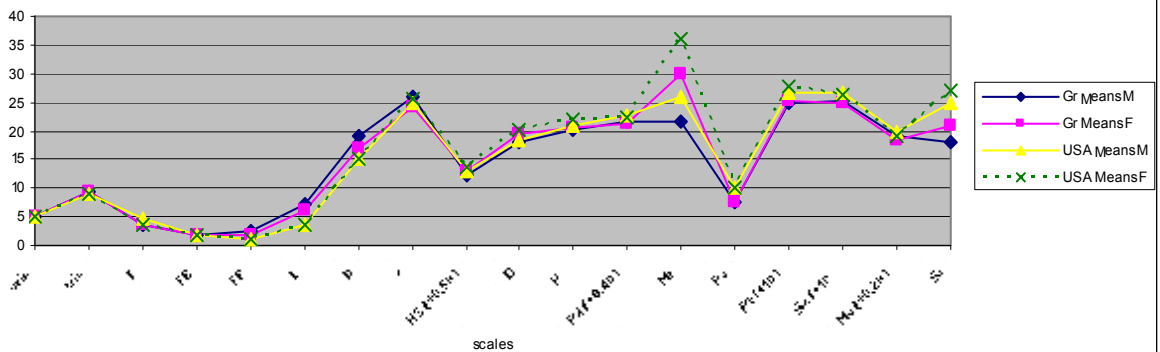**Fig. 5: Comparison of GR & US Means for the clinical & validity scales across gender**
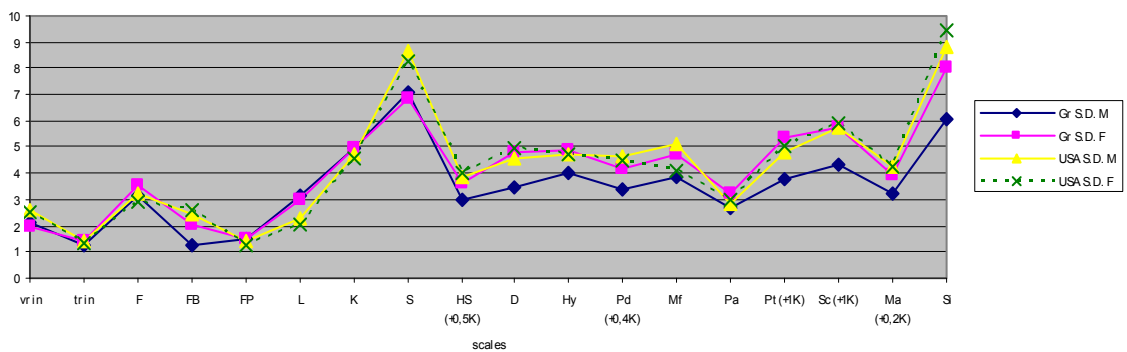

Fig. 6: Comparison of GR & US Sd for the clinical & validity scales across gender

robustness of the test in general. Such similarity is shown in Fig.1 and Fig.2, where Means and Standard deviations of the Greek and US samples (Normative + Clinical) are compared separately for male and female subjects.

References

Arbisi, P.A., Ben-Porath, Y.S. & McNulty, J.L. (2003). A Comparison of MMPI-2 Validity in African American and Caucasian Psychiatric Inpatients. *Psychological Assessment, 14 (1)*, 3-15.

Butcher, J.N. (2000). *Basic Sources on the MMPI-2.* Minneapolis: University of Minnesota Press.

Butcher, .J N., Graham, J.R., Ben-Porath, Y.S., Tellegen, A., Dahlstrom, W.G., Kaemmer, B., (2001). *Manual for Administration, Scoring & Interpretation (Rev.Ed.).* Minneapolis: University of Minnesota Press

Butcher, J.N., Tellegen, A, Graham, J.R. Dahlstrom, W.G., & Fowler, R.D. (1988, August*). Revision and restandardization of the MMPI: Rationale, normative sample, new norms, and initial validation.* Symposium presented at the 96th Annual Convention of the American Psychological Association, Atlanta, GA.

CEC (Commission of the European Communities) (1990). *Linguistic Minorities in the European Economic Community: Spain, Portugal, Greece.* Summary of the Report (Luxembourg, CEC).

Cheung, F. M., & Cheung, S. F. (2003). *Measuring personality and values across cultures: Imported versus indigenous measures.* In W. J. Lonner, D. L. Dinnel, S. A. Hayes, & D. N. Sattler (Eds.), Online Readings in Psychology and Culture. Unit 6, Chapter 5.

Graham , J.R. (2000). *MMPI-2: Assessing Personality and Psychopathology (3rd ed.).* New York: Oxford University Press.

Nichols, D. S., Padilla, J., & Gomez-Maqueo, E. L. (2000*). Issues in the cross-cultural adaptation and use of the MMPI-2.* In R. H. Dana (Ed.), Handbook of cross-cultural and multi-cultural assessment. (pp. 247-292). Mahwah, NJ: Lawrence Erlbaum.

Sapountzis A. Figgou L., Pantazis P., Laskaridis G., Papastavrou D., Bozatzis N., Gardikiotis A. (2006). *Immigration and European Integration in Greece: Greek National Identity and the 'Other Within'* . Westminster Papers in Communication and Culture, (University of Westminster, London), Vol. 3(3), 27-47.

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