

## Why do Cultural Differences So Often Trump Cross-Cultural Invariance?

**Ype H. Poortinga**  
Tilburg University  
(y.h.poortinga@uvt.nl)

### Prefatory Comments

In this roundtable discussion I will advocate balancing psychological invariance and cultural variation. There are large and evident differences between the behavior repertoires of human groups. Cross-cultural researchers have endeavored to explain such differences in terms of broad and inclusive sociocultural dimensions, styles and traits. Among other contributions to this roundtable, I will argue that psychological patterning of cross-cultural differences is much less coherent than our literature tends to suggest. Admittedly, this is a serious challenge; if correct, it implies that cross-cultural psychology tends to engage in cultural stereotyping.

One early experience had a major influence on my orientation in cross-cultural psychology. While working on my PhD I had the opportunity to participate in a project meant to survey the psychological competences of the Bushmen or San in the Kalahari Desert. Their hunting and gathering way of life was threatened at the time (1960s) and the question was whether there could be some other feasible mode of economic subsistence. From an array of tests, with craftily constructed item formats and instructions that made sense for the Bushmen, it emerged that principles of perception (e.g., symmetry, Gestalt similarities) and cognition (e.g., abstract reasoning) functioned in much the same way among people essentially living in the Stone Age as among western urbanized university students (Reuning & Wortley, 1973). In addition, the Bushmen were extremely skillful (by western standards) in dealing with the demands of their environment and had sophisticated technology (e.g., in hunting). I went to the Kalahari with fuzzy but strong beliefs about big differences in the psychological make-up of illiterates and educated westerners; when I came back these implicit convictions had been shaken badly.

The background question for my own PhD research was to find an explanation for the large differences in cognitive ability tests between Black and White groups in South Africa. It was clear that differences in test score distributions could not be compared at face value, but behavior differences were seen as pervasive and as reflecting differences in psychological functioning. A then popular idea was the McLuhan hypothesis, also called Biesheuvel's hypothesis, to the effect westerners were more oriented towards the visual modality (think of reading) and Africans more towards the auditory modality or auditory-kinesthetic modality (think of music and rhythm). At the time, Information Theory was a frontier development and I set out to compare samples of black and white students on elementary scales of visual (brightness) and auditory (loudness) information transmission capacity, and to compare their information transmission speed for

visual and auditory stimuli in Simple Reaction Time and Choice Reaction Time tasks. Bias analysis showed that even the easily distinguishable sounds and colored lights in the CRT tasks were not fully equivalent (a result that was supported in later studies), but the lead hypothesis could be tested by looking at interactions between sample and sensory (auditory/visual) modality. There was no support for the McLuhan hypothesis (Poortinga, 1971).

Also in other studies on risk-taking, measured with experimental tasks, and on curiosity (associated with exploratory behavior and arousal) Black-White differences turned out to be minor. All in all, there were two lessons that I had learned by the early 1970s: first, human psychological functioning is very similar in Africa and the West (and presumably the rest of the world); and second, issues of bias and lack of equivalence (incomparability) can distort cross-cultural differences, even for very simple tasks. As a consequence, I started to focus on psychometric and methodological conditions for valid cross-cultural comparison.



Video clip from Ype Poortinga's talk

### Emphasis on Cross-Cultural Differences

Through much of the history of cross-cultural psychology one can observe a recurrent theme: some sweeping cross-cultural difference in psychological functioning is being postulated that subsequently needs to be redressed in the light of more precise empirical analysis. This has happened with perception and cognition; an early compensatory theory to the effect that, relative to Westerners, "primitive" peoples had a heightened sharpness of the senses but poorer cognitive development has disappeared without leaving a trace. It has happened in cognition where Vygotsky believed in the cultural mediation of all human functioning beyond reflexes, and Cole and colleagues (e.g., Scribner & Cole, 1981), while endorsing the principle of mediation, showed that the alleged major divide in thinking between literates and illiterates was a matter of algorithms taught in western style school education. It has happened in psycholinguistics where the well-known Sapir-Whorf hypothesis to the effect that a language is an important determinant of the formation of thoughts and ideas has dwindled to a factor with limited reach in color perception and spatial orientation (e.g., Dasen & Mishra, 2010). It has happened in emotion research where the claim of emotions being "cultural rather

natural” has been countered by evidence of large scale invariance (e.g., in the structure of emotion components, Fontaine, Scherer, & Soriano, 2013; and in the cross-culturally shared characteristics of an emotion even in a language that has no separate word for it; Breugelmans & Poortinga, 2006). Currently the widest remaining claims are for the East-West distinction of individualism-collectivism or interdependent-independent construal of the self, but even this towering giant may be standing on clay feet. Of numerous findings going against expectations derived from the distinction I mention two. Yamagishi, Hashimoto and Schug (2008) in a replication of the famous pen choosing experiment showed that the East-West difference in preferences may not be rooted in different values but in different situational default strategies. In their extensive meta-analysis Oyserman, Coon and Kemmelmeier (2002, Abstract) reported: "European Americans were not more individualistic than African Americans, or Latinos, and not less collectivistic than Japanese or Koreans."

A bias towards differences over cross-cultural invariance (similarities) has been demonstrated explicitly by Brouwers et al. (2004) who found that in the *Journal of Cross-Cultural Psychology* far more often postulated differences were not supported by data than postulated similarities. This finding can be seen as a precursor of the more recent challenge to Null Hypothesis Statistical Testing (e.g., Simmons, Nelson, & Simonsohn, 2011) that also applies to our field. The null hypothesis remains an elegant device in experiments where researchers have control over treatments and subjects are allocated randomly to the various treatments. However, it is hardly a serious proposition when both control on treatments and random allocation of respondents are violated systematically, as is the case in virtually all cross-cultural research.

A fascinating recent development, cultural neuroscience, unfortunately is vulnerable to the same methodological weaknesses as earlier research traditions. In the most frequent design fMRI (functional Magnetic Resonance Imaging) is registered in small samples of East Asians and European Americans under a few treatment conditions. However, with a very large number of voxels (small brain loci) and few participants significant findings are bound to occur for statistical reasons, (Vul, Harris, Winkielman & Pashler, 2009). Typically there are no predictions of differences between the samples in some a priori specified brain region or well-defined neurophysiological pathway; as a consequence, a wide range of outcomes can be interpreted to support an East-West distinction.

A second strand of cultural neuroscience is searching for associations of variations between Asians and European Americans in the frequency distributions of some genetic polymorphism in neurotransmitter receptor genes (serotonin, dopamine) or hormones (oxytocin). Initially such studies addressed differences in frequency distributions. For example, in the promoter region of serotonin transporter protein 5-HTT a person can have a longer sequence or a shorter sequence of repeats. The former is more present in East Asian groups (up to .90) than in European groups (up to .67; see the Allele Fre-

quency Database ALFRED; <http://alfred.med.yale.edu/alfred>) and this has been interpreted as an antecedent to higher collectivism (Chiao & Ambady, 2007). In recent years there has been a shift from population differences in frequencies of some polymorphism to the study of interactions of such frequencies with psychological variables. For one allele (of three alleles) of an oxytocin receptor gene locus a significant culture by religiosity interaction was found suggesting that high religiosity predicts more psychological distress in European Americans and less distress in Koreans; with the same polymorphism interactions were found for emotional support seeking under distress and for emotional suppression (see Kim & Sasaki, 2014). Although the size of samples tends to be much higher than in fMRI research, such gene-behavior association studies are still seriously underpowered.

There is an urgent need for stipulating more precise pathways linking genes and behavior and for discriminant validation of findings. At the same time, even minor differences in genetic make-up across populations possibly may account for long-term and cross-situationally consistent differences in behavior tendencies. This is the reason why cultural neuroscience has exciting potential for the critical examination of major psychocultural dimensions that are central to much of cross-cultural psychology.

## Conclusion

To avoid a misunderstanding, my argument is not with extensive differences in behavior manifestations between groups of people; the behavior repertoire of the Bushmen can hardly be called “similar” to that of urbanized westerners. Nevertheless, since the field trip to the Kalahari Desert mentioned above, I have been skeptical of the emphasis on differences in major hypothetical constructs that is a hallmark of our literature and easily leads to stereotyped views of “others”. I have no good answer to the lead question of this contribution, except that there appears to exist a fascination with differences which cross-cultural psychology may have inherited from (or at least is sharing with) cultural anthropology. A balance needs to be sought between cross-cultural invariance and variation of behavior. In my view this requires satisfying two conditions. First, we have to shore up the methodological quality of our designs and make the testing of our hypotheses much stricter. The second condition is that we should recognize biology, including ethology and human ethology, as a foundational science of our field next to cultural anthropology. As I have argued elsewhere (Poortinga, 2011, p.563): “Our field is uniquely placed both to contribute to and to counterbalance the biological revolution in psychology, since cross-cultural research brings a much needed range of behavior variation, which can help to put into question too easy invocations of genetic determinants.” I realize that this entails a major extension of our traditional domain, but looking back over half a century of research it appears to me that cross-cultural psychology is like the universe, it keeps on expanding.

- Breugelmans, S. M., & Poortinga, Y. H. (2006). Emotion without a word: Shame and guilt with Rarámuri Indians and rural Javanese. *Journal of Personality and Social Psychology, 91*, 1111-1122.
- Brouwers, S. A., Van Hemert, D. A., Breugelmans, S. M., & Van de Vijver, F. J. R. (2004). A historical analysis of empirical studies published in the Journal of Cross-Cultural Psychology. *Journal of Cross-Cultural Psychology, 35*, 251-262.
- Chiao, J. Y., & Ambady, N. (2007). Cultural neuroscience: Parsing universality and diversity. In S. Kitayama & D. Cohen (Eds.), *Handbook of cultural psychology* (pp. 237-254). New York: Guildford Press.
- Dasen, P. R., & Mishra, R. C. (2010). *Development of geocentric spatial language and cognition*. Cambridge, UK: Cambridge University Press.
- Fontaine, J. J. R., Scherer, K. R., & Soriano, C. (Eds.) (2013). *Components of emotional meaning: A sourcebook*. Oxford, UK: Oxford University Press.
- Kim, H. S., & Sasaki, J. Y. (2014). Cultural neuroscience: Biology of the Mind in cultural contexts. *Annual Review of Psychology, 65*, 487-514.
- Oyserman, D., Coon, H. M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analyses. *Psychological Bulletin, 128*, 3-72.
- Poortinga, Y. H. (1971). Cross-cultural comparison of maximum performance tests: Some methodological aspects and some experiments. *Psychologia Africana, Monograph Supplement*, No. 6.
- Poortinga, Y. H. (2011). Research on behavior-and-culture: Current ideas and future projections. In F. J. R. Van de Vijver, A. Chasiotis, & S. M. Breugelmans (Eds). *Fundamental questions in cross-cultural psychology* (pp. 545-578). Cambridge, UK: Cambridge University Press.
- Reuning, H., & Wortley, W. (1973). Psychological studies of the Bushmen. *Psychologia Africana, Monograph Supplement, No. 7*.
- Scribner, S., & Cole, M. (1981). *The psychology of literacy*. Cambridge, MA: Harvard University Press.
- Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2011). False-positive psychology: Undisclosed flexibility in data collection and analysis allows presenting anything as significant. *Psychological Science, 22*, 1359-1366.
- Yamagishi, T., Hashimoto, H., & Schug, J. (2008). Preferences versus strategies as explanations for culture-specific behavior. *Psychological Science, 19*, 579-584.
- Vul, E., Harris, C., Winkielman, P., & Pashler, H. (2009). Puzzlingly high correlations in fMRI studies of emotion, personality and social cognition. *Perspectives on Psychological Science, 4*, 274-290.