Cross-cultural research in perception

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Cross-cultural research in perception: The missing theoretical perspective

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The tradition that *BBS* comments are fairly critical will be followed here. The criticisms expressed, however, should be seen in a proper perspective (2D or 3D?). Deregowski has conducted an impressive number of cross-cultural studies in perception. In our opinion his expertise is reflected in the overview provided.

Our major criticism of the target article concerns the lack of theoretical integration of the abundant empirical findings. In the empirical work there appear to be three (related) shortcomings that hamper the development of a coherent theory. First, stimulus characteristics such as 2/3i or embeddedness are not sufficiently distinguished from subject characteristics such as representational skills and 3D spatial skills. Second, much evidence has been cited in the target article to the effect that the medium of the response can have a modulating if not a limiting effect on the accuracy of the response; in Deregowski's own work good examples of this can be found (e.g., Deregowski 1971; Deregowski & Jahoda 1975). Systematic investigations should be undertaken to estimate the impact of both the stimulus and the response medium independently. Any theoretical framework that accounts for intergroup differences on perceptual tasks should encompass a distinction between the stimulus medium and the response medium as well as a delineation of their relationship.

Third, most of the work reviewed is rooted in what Cronbach (1957) has called SR-psychology, although the field could benefit from the implementation of elements typically associated with an RR-orientation. Thus, the "difficulty" of the tasks is an often neglected factor. Hudson's drawings (Figure 18) are far more complex than Deregowski's callipers (Figure 19). It is quite uncommon to find a measurement instrument in which the difficulty level has been varied substantially across the stimuli. An extensive and systematic analysis of the difficulty of perceptual tasks is badly needed. In addition, there is a lack of studies in which more than a single task has been administered. Deregowski's remark that "it is unwise to rely on a single measure for such a broad concept as perception of picture space" should be seen as a statement of intent rather than as a description of the actual state of affairs.

The development of a coherent theory will be facilitated by a study of the size of intergroup differences on various tasks, because not all kinds of perceptual tasks seem to be equally prone to show cross-cultural differences. The empirical evidence reviewed in the target article suggests an increase in such differences from perceptual constancies (notably size constancy) to visual illusions and in pictorial representations from photographic or technical drawings as used by mechanical engineers. Minor cross-cultural differences are reported for perceptual constancies, not infrequently pointing to superior performance by non-Western subjects (e.g., Reuning & Wortley 1973). The intergroup differences on visual illusions, which are commonly found, do not favour any cultural group systematically (e.g., Segall et al. 1966). With pictorial representations the pattern changes. The intergroup differences are often larger and usually point to better performance by Western subjects. More specifically, picture recognition tasks in which real objects are represented may well lead to cross-cultural performance differences. These will be more likely with schematic pictures such as Hudson's figures, whereas the recognition of schematic drawings such as those used by mechanical engineers gives rise to the most pronounced and systematic intergroup differences.

It might be tempting to speculate that cognitive load (as a subject characteristic) or task complexity (as its counterpart in the stimulus) accounts for the cross-cultural differences. The more complex the task, the larger the resulting intergroup differences. However, this cannot be attributed unambiguously to an increase in the cognitive load. Pictorial tasks also differ in what can be called "decontextualization." Going from object representations to the schematic diagrams of mechanical engineers, the ecological validity of the stimuli gradually decreases. Highly overlearned 3D skills have to be applied in a new context, 2D pictures. By definition, 2D recognition tasks

imply the application of cues, originally learned in 3D perception, out of their natural context. Not all 3D cues can be represented in a 2D picture. The 2D pictures have only a limited validity with respect to the reality depicted. In recognition tasks using 2D pictures of 3D objects the subject has to recover the information lost in the transition from object to picture. Because not all cues can be adequately reproduced in 2D, conventions are introduced to compensate for the information loss. To some extent, these conventions are arbitrary and are not always shared by various cultures. Deregowski's Figure 26 nicely illustrates the arbitrariness of perspective convergence; in Western eyes the Oriental style is "wrong." It is fairly obvious that a differential knowledge of these conventions will give rise to substantial performance differences across cultures.

In sum, it appears that an increase in the complexity of a pictorial task is often accompanied by an increase in the number of conventions in the stimulus material. Future research should try to disentangle the effects of complexity and conventions on performance. Whether intergroup differences will remain after a correction for the effect of conventions is an open question. If this reasoning is correct it implies that intergroup differences on perceptual tasks, other than illusions or constancy tasks, should not be accounted for by group differences in perceptual mechanisms.

In the cognitive research of the last decade there has been an increasing awareness of the importance of "metacognitive components" (e.g., Sternberg 1980) such as the repetition of the stimuli in a free-recall task. Analogously, "metaperceptual skills" may be vital to the performance of perceptual tasks (cf. Serpell & Deregowski 1980). For example, the "metaperceptual skill" of knowing that 3D skills have to be applied to 2D pictures is a crucial one. The need to postulate a set of representational skills that have a distinct non-overlap with 3D spatial skills (Figure 25) can be questioned. Occam's razor dictates that rather than postulating the existence of separate 2D skills, the perception of 2D pictures should be viewed as 3D perception complemented by a set of metaskills and knowledge of conventions.

A further step is needed beyond the identification of intergroup differences, namely, the explanation of these differences. At present there is no coherent theoretical framework for the interpretation of such differences in perceptual tasks. Still, it seems quite unlikely that the differences are psychologically deeply rooted. Instead of postulating different skills for various groups, considerations of parsimony suggest that we consider cross-cultural differences as variations on a universal theme.