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Cross-Cultural Homogeneity in Social Perspective Taking: China and the United States

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Research has suggested that, given the proper methods of measurement, there is little or no difference in Kohlbergian stages of moral development and social perspective taking between different cultures. Participants in the United States and China were administered the Perspective Taking Instrument developed by Core Complexity Assessments in coordination with the Dare Association, Inc., to measure stage development of social perspective taking. Using Rasch analysis, we computed stage scores on the model of hierarchical complexity (MHC) to compare participants. This study represents the first cross-cultural application of MHC analysis. We found that the progress of individuals' moral development in American and Chinese cultures were both nearly identical to the developmental course predicted by the MHC, despite obvious surface-level differences in the social organization and behavior of the 2 cultures.

Keywords: cross-cultural, social perspective taking, stage development, model of hierarchical complexity, Rasch analysis

Scholarship in both social perspective taking and moral development has suggested that the acquisition of successive stages of moral understanding occurs in a consistent and invariant sequence within and between different cultures. This would also suggest that development in social perspective taking ought to occur along the same invariant sequence. Past literature in social cognition suggests that stages of social perspective taking develop in concert with stages of logical reasoning (Byrne, 1974; Muuss, 1982). Both social perspective taking and logical reasoning have been measured by an instrument based on the model of hierarchical complexity (MHC). Poor performance on tasks intended to measure social perspective taking abilities and on measures of "social adjustment" tend to also be correlated with poor subject performance on measures of Kohlbergian stages of moral reasoning (Selman, 1976). Like in Kohlbergian stages, the answers to the question will reflect how many variable perspectives and systems the subject takes into account when making decisions.

The ultimate emphasis of different cultures' dominant conceptions of morality may be different. For example, the Western trend of individualistic moral beliefs centered on the notion of free will for each individual stands in contrast to the notions of social conformity and filial piety prevalent in many traditional Eastern cultures. These differences may be driven by any number of potential factors. Additionally, although it is becoming less true in light of rapidly expanding trends of modern globalization, some remaining primitive cultures with little or no contact outside of a small group appear to demonstrate a simplistic notion of moral stage development because they have never even had need of a concept of morality that concerns large, society-sized groups (Boyes & Walker, 1988; Gibbs, Basinger, Grime, & Snarey, 2007).

Preconceived notions of social organization that influence perspective taking are often grounded in historical or culturally popular beliefs that may not be shared by all members of a society. Take for example an American atheist who believes strongly in free will. Indeed, his

Michael Lamport Commons discussed with the author and provided notes on which this article is partially based.

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belief in the certainty of his own free will may form a principal motivation for his atheism. Now consider the contention that American culture, and Western culture more generally, draws many of its morally normative beliefs from the historical Judeo-Christian belief system, which holds centrally that God created man in God's own image. The atheist certainly does not justify his belief in free will by asserting that he has as much free will as his God does. Rather, he accepts a social norm in favor of free will that was established in the context of religion long ago, but has subsequently progressed to a stage where it can be accepted freely from its original context. In short, false, speculative, or religious beliefs may at times underlie apparent differences in cultural morality and perspective taking, but do not necessarily play an active role in the modern topography of such norms.

The focus of the present study is moral development and social perspective taking. Whether they differ, needs to be examined even taking into account that they may be phenotypically different in different societies for reasons including but not limited to, those discussed in the previous paragraphs—this hypothesis that, when properly measured, cross-cultural moral development should show very little difference between otherwise distinct cultures (Boyes & Walker, 1988).

The MHC successfully measures development of perspective taking without succumbing to cultural biases. This is because MHC focuses on the mathematical process of combining and refining the relationships between increasingly complex orders of perspective taking. Boyes and Walker (1988) and Commons, Galaz-Fontes, and Morse (2006) do still find that cross-culturally, people who are identified as moral leaders tend to score more highly on measures of moral development and social perspective taking than their peers. A carefully designed, hierarchical, Kohlbergian model similar to the one used in this article can provide a framework within which we may evaluate the development of multiple apparently disparate cultures (Tapp & Kolhberg, 1971).

Model of Hierarchical Complexity

To determine the required stage of performance needed to successfully complete an aspect of the Perspective Taking Instrument, here, the MHC is used. It is a measure of the inherent hierarchical complexity of thought required to complete the task (Commons, 2008; Commons, Gane-McCalla, Barker, & Li, 2014; Commons & Miller, 1998). Individuals vary greatly in their capability to reach the maximum level of task difficulty. In this study, it was expected that participants would score between the primary Stage 8 and metasystematic Stage 13.

Less hierarchically complex tasks are necessarily acquired before more hierarchically complex tasks. In this way, the model argues that this accounts for the developmental changes seen in individuals' performance on tasks. For example, one must learn to count before performing arithmetic operations such as addition and then multiplication, which in turn precedes learning to do long multiplication and division. A given "Task A" is considered to be at a higher MHC stage than Task B if Task A is (a) made up of two or more simpler actions (such as Task B and a third task, C), (b) these simpler task actions are organized, and (c) in a nonarbitrary way. If Task A consists of such a combination of Task B and Task C, and Tasks B and C satisfy the requirement of being from the next order below A, Task A would then be considered one order of complexity higher than Tasks B and C. The model specifies that there are 17 orders of hierarchical complexity (OHC; Commons, Trudeau, Stein, Richards, & Krause, 1998), starting with tasks that are completed by the simplest animals, infants, and even computers, and progressing to tasks that only a small percentage of the adult population can complete. These orders are shown in Table 1.

Individuals' stage of development, or their observed or measured performance, is equal to the OHC of the most complex task that they correctly complete. Because of that, stage is given the same name and number as the OHC of the task. The MHC has been shown to account for performances in a variety of different domains (Commons, 1999; Giri, Commons, & Harrigan, 2014). The OHC of the task is determined through analyzing the demands of each task, that is, by breaking a task down into its constituent parts.

The discussion that follows is a description of tasks people typically complete at the OHC from 8 to 13. At each order, key features are described and examples of reasoning at that order are given. They should be understood as

Table 1
The 17 Known Orders of the Model of Hierarchical Complexity

Order number	Name
0	Computational
1	Automatic
2	Sensory or motor
3	Circular sensory motor
4	Sensory-motor
5	Nominal
6	Sentential
7	Preoperational
8	Primary
9	Concrete
10	Abstract
11	Formal
12	Systematic
13	Metasytematic
14	Paradigmatic
15	Crossparadigmatic
16	Metacrossparadigmatic

Note. The model of hierarchical complexity shows that an individual operating at a certain stage must combine at least two operations at the prior stage, so each stage consists of 2^n organized operations, where n is the order number.

only examples, not as an exhaustive list. Tasks in any number of domains can theoretically be mapped to this scale. Taking that into consideration, we interpret both moral development and social perspective taking on the same scale.

This allows us to hold that individuals across cultures may share the same stages of moral development, regardless of the phenotype of their ultimate behavior. The sameness of two developmental courses is established (Boyes & Walker, 1988) if those courses share (a) structure, (b) sequence, and (c) hierarchy, an organization similar to and compatible with the logic of the MHC. Structural sameness contends that stages across cultures or developmental courses represent consistent and holistic different forms of reasoning. Sequential sameness implies that these structural stages must progress in the same order. Hierarchical sameness means that each successive stage necessitates the combination, restructuring, and synthesis of multiple actions or ideas from the prior stage. If a structure of moral development follows these three criteria, which are essentially the same as the criteria used to define successive OHC, it necessarily follows that every person should also be able to be categorized at a single social perspective taking stage, or slightly above or below that stage.

At the primary Stage 8, an individual can understand a single clear perspective coordinated with reality, but will not be able to coordinate multiple perspectives or put himself into the perspective of another person. People at this stage may say things like, "Brooks Brothers makes good shirts because I have long arms and their shirts fit me." At the concrete Stage 9, two or more primary Stage 8 actions may be coordinated. Considering two different perspectives becomes possible and deals can be made. At this stage, the primary Stage 8 statement would be modified to read, "Brooks Brothers makes good shirts because I have long arms and my friend has short arms, but both of us can find shirts that fit." At the abstract Order 10, two or more concrete Order 9 actions may be coordinated. It becomes possible to coordinate many concrete instances to form abstractions, variables, and norms. To further extend the above example, the speaker would now say, "Brooks Brothers makes good shirts because everyone who has a hard-to-fit size can find something there."

At the formal Order 11, simple relationships between two variables can now be formed, leading to simple deductive logic and simple univariate tests of empirical truths. One can make categorical assertions that do not include definite facts or logic, but that make quantitatively and qualitatively valid conclusions. At this stage, a person would say, "While no shirt from any store will fit perfectly, people agree that Brooks Brothers offers the widest array of sizes."

Systematic Order 12, multiple formal Order 11 relationships are coordinated, to create a complete and more complex system. One would now say, "Brooks Brothers shirts are the best because they come in a wide variety of sizes and their quality makes them last longer than other brands."

At the metasystematic Order 13, multiple systems of relationships between variables may be compared, in this case, quality and something else: cost. The example would now read, "Brooks Brothers shirts may be more expensive than other brands, but the investment is worth it because they fit well and are very high quality."

Method

Participants

Social perspective taking data were collected from American ($N = 47$) and Chinese participants ($N = 90$) using the Perspective Taking Instrument developed by Core Complexity Assessments.

Instrument

The Perspective Taking Instrument was administered as an online test to the American subjects, and as a paper-and-pencil test to the Chinese subjects, the results of which were entered into the online form. The Perspective Taking Instrument asks participants to provide five ratings on a 1–6 Likert scale of the quality of six "helper" figures' arguments in support of their specific methods of providing assistance. Each helper's argument corresponds to one of six stages in the MHC, ranging from primary Order 8 to metasystematic Order 13. An example of the argument, this one from the abstract Stage 10, would be as follows:

> Smith recently completed training on providing guidance and assistance for the Person's problem. Smith says that the best counselors regularly recommend this guidance and assistance. Smith explains the method and tells the Person that it will probably work for the Person as well. Smith also tells the Person about other methods that may work. Smith asks if the Person has any questions. The Person does not have questions, and Smith asks if the Person wants to accept the recommended guidance and assistance. Feeling that Smith knows best, the Person accepts the guidance and assistance.

Procedure

Participants gave ratings from 1 (*extremely poor*) to 6 (*extremely good*) on the following questions: "Rate Smith's method of offering guidance and assistance," "Rate how clearly Smith expressed their idea," and "Rate the degree to which Smith informed their person." They also gave ratings from 1 (*not at all likely*) to 6 (*extremely likely*) on the following questions: "Rate how likely you would be to accept the guidance and assistance offered by Smith," and "Rate how strongly you would recommend Smith's guidance and assistance." This format

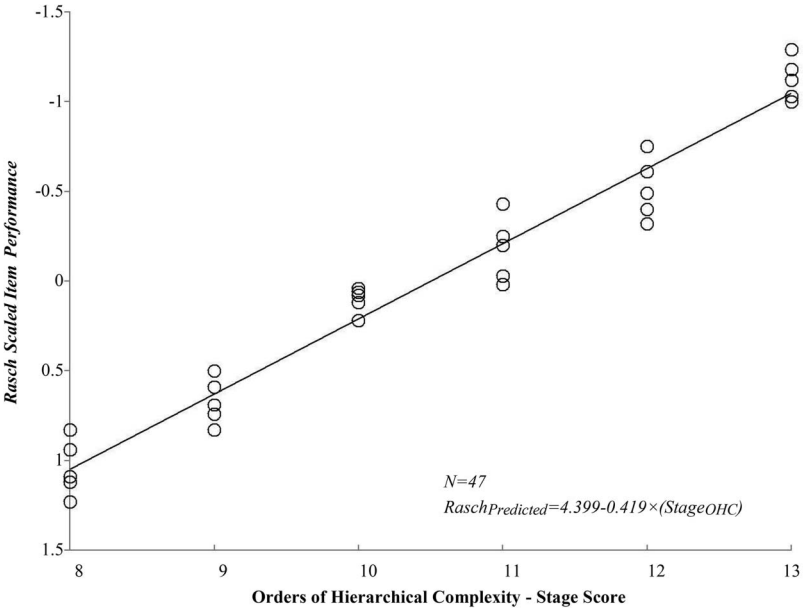

Figure 1. U.S. Rasch item scores regressed with model of hierarchical complexity stages. The U.S. Perspective Taking Instrument data conforms nearly perfectly to a linear trend line ($r = .979$). Higher stage scores predict lower Rasch scores, so the vertical axis has been inverted for clarity. OHC = orders of hierarchical complexity.

was the same for each of the five other vignettes.

Data were downloaded from the Core Complexity Assessments online instrument and converted to a plain text string of 30 digits between 1 and 6 using Microsoft Excel and SPSS. Data for each sample were analyzed independently using a Rasch analysis run in the Winsteps (Linacre, 2015) software.

Results

Stage scores were computed for each of the participants by assigning participants whose individual Rasch scores fell closest to the mean Rasch score for the set of questions corresponding to a given OHC that stage number. A linear interpolation between these "anchor" points was performed to assign stage scores to the rest of the participants. In the Chinese data set, the "anchors" for Stages 9 and 10 and Stages 11 and 12 were out of order, but separated by only two and three subjects respectively, so we assigned an individual between the two scores an OHC stage score approximating a weighted average of each stage score pair to allow a more realistic number of individuals to have scores in concrete Stage 9 and formal Stage 11, and to ensure that the stage scores increased along with the Rasch person scores.

Individuals whose Rasch person scores fell outside of the range predicted by the Rasch item scores were given a stage score of preoperational Stage 7 if over the maximum item score, and a stage score of metasystematic Stage 13 if under the minimum item score. The Rasch analysis output assigns higher Rasch scores to individuals with weaker overall performances on the Perspective Taking Instrument. Some of the figures have the Rasch score axis reversed to provide a more readily interpretable graph. This was done to avoid vague references to "higher" and "lower" scores, instead referring specifically to performance on the Rasch scale or the MHC.

As a result of this method of analysis, both the American and Chinese samples had MHC stage score ranges between 7 and 13, which is not unrealistic, as the American and Chinese Rasch person score ranges were relatively sim-

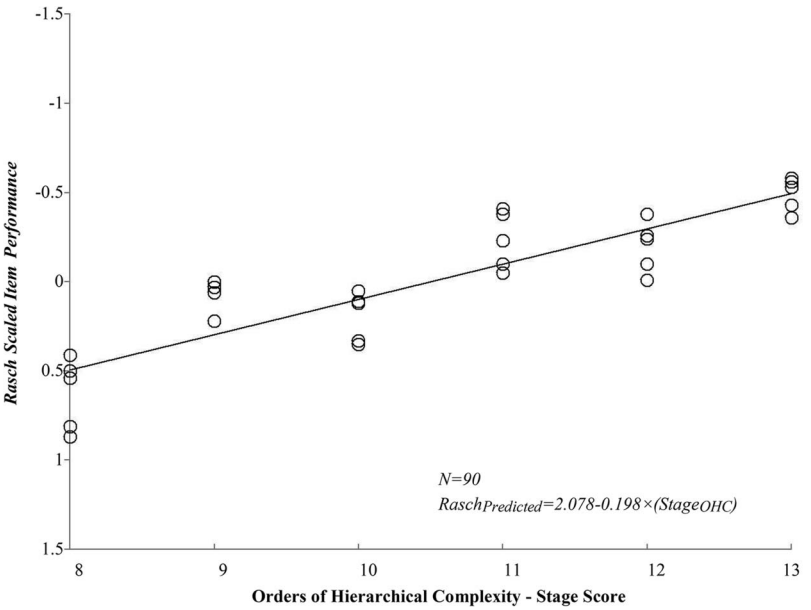

Figure 2. Chinese Rasch item scores regressed with model of hierarchical complexity stages. Despite the fact that there is not a perfect upward trend between each pair of adjacent orders of hierarchical complexity (OHC) stage score means, the Chinese data still conform strongly ($r = .884$) to the predicted linear trend line of the model of hierarchical complexity. As with the U.S. data, the vertical axis is inverted for clarity.

ilar (American: [1.63, −1.01]; Chinese: [1.63, −1.24]). Median stage scores were also both within concrete Stage 9 *for* both samples (American: *Mdn* = 9.64; Chinese: *Mdn* = 9.19).

An independent samples *t* test ($\alpha = .05$) run between the American ($M = 9.84$, $SD = 1.33$) and the Chinese ($M = 9.54$, $SD = 1.69$) sample sets found no significant difference between the two sets of final stage scores, $t(135) = -1.075$, $p = .284$. Although Boyes and Walker (1988) reminded us that definitively proving identical patterns of moral stage development and perspective taking between different cultures is an essentially impossible task, they recognize that perhaps the most effective way to achieve this goal is proof by selective refutation. The present study hopes to serve as further evidence to dispute the counterclaim that different cultures *do* in fact progress along distinct trajectories of moral stage development, in this case with respect to social perspective taking. This is an especially valuable result as it confirms the notion that OHC stage scores should be invariant for similar individuals across cultures, as the test's value and validity derive from its culture- and context-free organization.

Rasch scores for each of the 30 items in the Perspective Taking Instrument were also linearly regressed against the stage associated with each question; for example, a question associated with formal Stage 11 and a Rasch score of *R* would be given the ordered pair (*R*, 11) in the regression. Regression of Rasch item score on related stage produced a remarkably linear result for both samples. In the U.S. data (see Figure 1), the correlation was extremely strong ($r = .979$, $p < .001$, $\beta = -.979$), and was still remarkably strong in the Chinese (see Figure 2) data ($r = .884$, $p < .001$, $\beta = -.884$). The slightly larger amount of noise in the Chinese data is likely due to differences in collection practices; these Perspective Taking Instrument data were collected as one section of a much longer paper-and-pencil test, but the many of the American data were collected through one-time Internet submissions. Issues of motivation, and test endurance likely played a role in the shape of the data.

The majority of the analysis was conducted using data from the rank measure and participant measure output tables in Winsteps, but the rank map output tables also provide a helpful graphical interpretation of the results. The Chinese data produced a somewhat disorganized result with nonsequential means for consecutive OHC stages, as discussed previously. This can be best visualized through the rank map outputs. Figures 3 and 4 represent the American and Chinese data sets, respectively.

Discussion

Of greater interest in relating stage *development* between cultures is not the stage performance of individuals within each of the two samples as discussed in the prior two sections, but rather the Rasch analysis performed on the samples themselves. This allows us to better examine the data as they

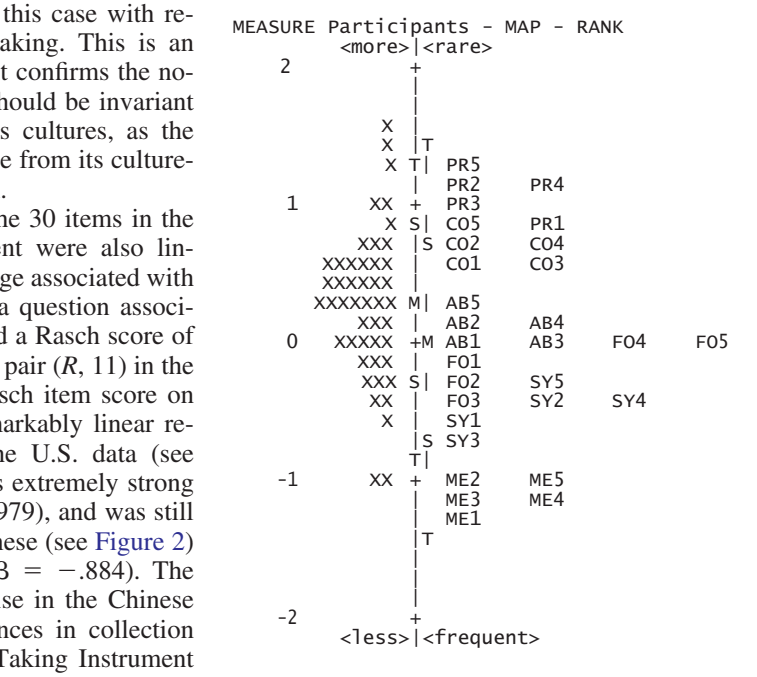

Figure 3. Winsteps rank map output for American Perspective Taking Instrument data. The American data do not produce the perfect spacing predicted by Commons, Li, et al. (2014, refer to Figure 2), as only the abstract Order 10 (AB#) and metasystematic Order 13 (ME#) are set apart with no other order mixed in on the rank map output. Nonetheless, Figure 1 and its value of $r = .979$ assure us that the data are extremely linear, as predicted by the model of hierarchical complexity. T = 2 Standard Deviation; S = 1 Standard Deviation; M = Mean; PR = Primary Stage; CO = Concrete Stage; FO = Formal Stage; SYS = Systematic stage.

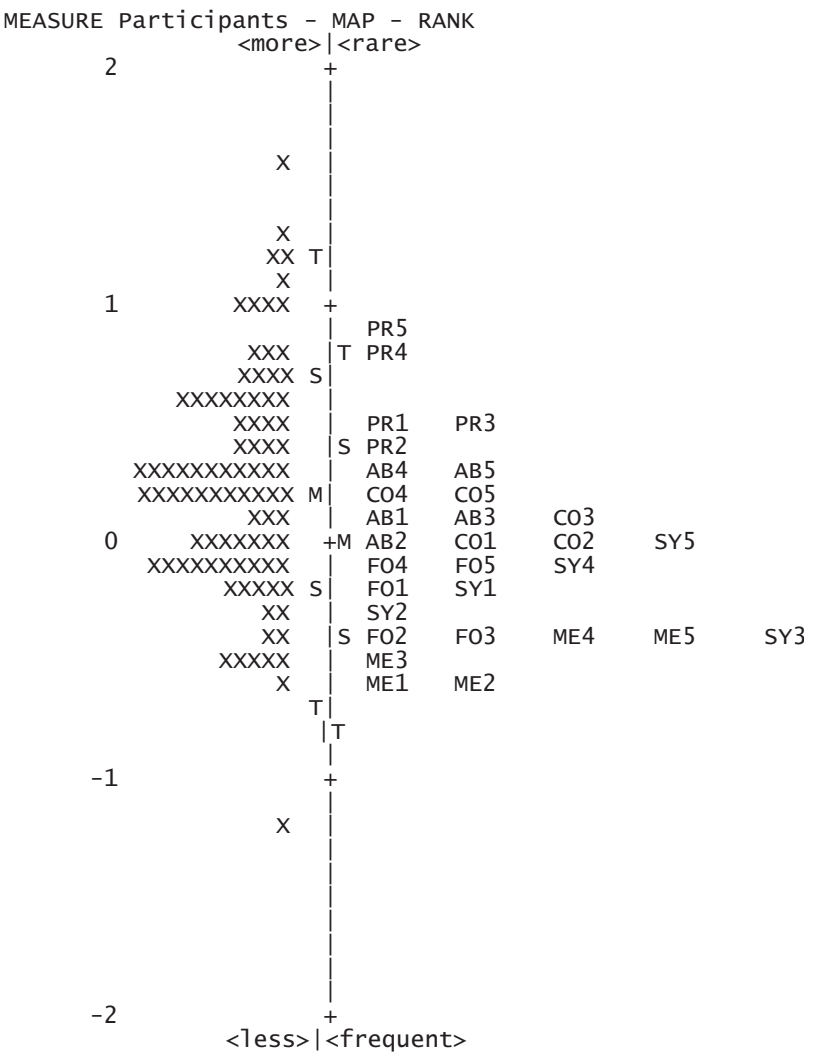

Figure 4. Winsteps rank map output for Chinese Perspective Taking Instrument data. The Chinese data appear initially to deviate significantly from the pattern predicted in Commons, Gane-McCalla, et al. (2014), but still produce a strong $r = .884$. T = 2 Standard Deviation; S = 1 Standard Deviation; M = Mean; AB = Abstract; ME = Metasystematic; PR = Primary Stage; CO = Concrete Stage; FO = Formal Stage; SYS = Systematic stage.

relate to the structural underpinnings of the MHC itself, rather than to examine the individual participants' performances as they happen to be measured on that scale. Commons, Li, et al. (2014) conclude both logically and experimentally that stage performance on MHC tests ideally will be evenly spaced. Each stage ought to be the same sized step up and down the Rasch scale from those above and below it. Also, each gap between stages should be equally spaced with clear intervals, and the value of that step size up or down should be significantly different from zero.

The Chinese OHC stage scores were not perfectly spaced in comparison to the mathematically ideal model (refer to Commons, Li, et al., 2014, Figure 3), but statistically, they correlated to that consistent and evenly spaced upward trend (Figures 1 and 2). De-

spite these slight discrepancies, we can say with little doubt that American and Chinese perspective taking data both fit nearly perfectly onto evenly spaced interval scales with very high rates of correlation. Implicit in this observation is the understanding of people in both countries progress in the domain of social perspective taking much as the MHC does, providing a very clear description of the two developmental courses' similarities through their mutual adherence to the MHC. Specifically, if the Perspective Taking Instrument data are congruent or near-congruent with the mathematical ideal that the MHC predicts, American and Chinese development in social perspective taking must share those three characteristics of (a) combination and (b) organization in a (c) nonarbitrary way.

The results show that social perspective taking data sampled in both cultures offers one additional data point in the vein of Boyes and Walker's (1988) suggested proof by refutation of cultural differences in stages of moral development. Future research in the direction of the present study might be to collect more comprehensive biographical data about subjects to further test and establish the validity of Perspective Taking Instrument-style instruments as measures of other factors related to an individual's stage performance, such as income, leadership status within one's community, and level of education. By measuring both American and Chinese performance on this measure using the MHC, and by showing that both cultures' performance conform nearly perfectly to the same measurement scale, we further the argument in favor of homogeneity of moral and perspective taking trajectories of development among otherwise disparate societies.

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