Title

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Journal

Psychological Science, 6(3)

ISSN

0956-7976

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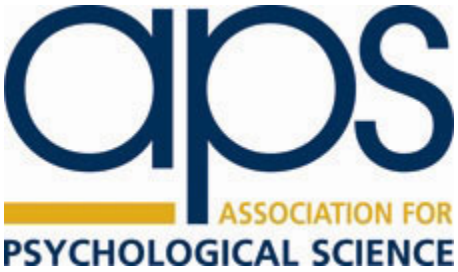
Publication Date

1995

DOI

10.1111/j.1467-9280.1995.tb00327.x



Research Article

RESPONSE STYLE AND CROSS-CULTURAL COMPARISONS OF RATING SCALES AMONG EAST ASIAN AND NORTH AMERICAN STUDENTS

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Abstract—*This report examines cross-cultural differences in response style regarding the use of rating scales. Subjects were high school students: 944 from Sendai (Japan), 1,357 from Taipei (Taiwan), 687 from Edmonton and Calgary (Canada), and 2,174 from the Minneapolis metropolitan area and Fairfax County, Virginia. Responses to fifty-seven 7-point Likert-type scales were analyzed. The Japanese and Chinese students were more likely than the two North American groups to use the midpoint on the scales; the U.S. subjects were more likely than the other three groups to use the extreme values. Within each cultural group, endorsement of individualism was positively related to the use of extreme values and negatively related to the use of the midpoint. These small, albeit statistically significant, differences in response styles generally did not alter cross-cultural comparisons of item means.*

Rating scales are among the most widely used tools in psychology. Nevertheless, systematic biases in responding to rating scales have been reported (Berg, 1967; Couch & Keniston, 1960; Cronbach, 1946, 1950; Hamilton, 1968; Rorer, 1965; Schuman & Presser, 1981). Recent research has pointed to possible cultural differences in the extent of response biases (e.g., Bachman & O'Malley, 1984a, 1984b; Hui & Triandis, 1989; Marin, Gamba, & Marin, 1992). For example, Bachman and O'Malley (1984a, 1984b) found that African-American adolescents were more likely than white adolescents to select extreme values such as "agree" or "disagree" as opposed to "mostly agree" or "mostly disagree." They suggested that this extreme response style might account for the differences in self-esteem often reported between African Americans and whites.

Similarly, concerns have been expressed about possible contaminating influences of response biases in cross-national comparisons (e.g., Leung, 1989; Leung & Bond, 1989). One sign of these influences is the consistent finding that compared with their Western peers, Asian children rate themselves and are rated by their mothers as having lower levels of ability and less positive personality characteristics (e.g., Stevenson et al., 1990; Stigler, Smith, & Mao, 1985). It appears that Asians may be influenced by the virtues of moderation promoted by Confucian philosophy and believe they should not stand out from the group.

It is important to consider, therefore, the degree to which these cross-cultural differences in ratings are the result of differences in response style and the degree to which they reflect true cultural differences in the level of self-evaluations. An understanding of the extent and the nature of differences in the use of rating scales has theoretical as well as methodological implications for cross-cultural research. Bias in ratings may be related to other characteristics, such as the social orientation of individuals within a society. Markus and Kitayama (1991), for example, have suggested that the apparent modesty of Asians reflected in their ratings may be related to the emphasis in Asian cultures on an interdependency among individuals that promotes other-enhancing biases.

This article thus has three purposes. The first is to examine the extent and nature of cross-cultural differences in the use of rating scales. We examine Chinese, Japanese, Canadian, and U.S. high school students' responses to Likert-like items related to achievement attitudes and beliefs. By including representatives of two East Asian and two North American cultures, we are able to gain some insight into the consistency with which the potential response biases may operate within the two cultural groups. We ask, therefore, whether the effects are greater between the two cultural groups than between the two representative cultures within each cultural group. In other words, we attempt to determine whether response bias might have a consistent influence on East Asian and North American comparisons.

The second purpose is to test the relation within each group between the orientation toward individualism or collectivism and response style. We hypothesize that members within each group who endorse higher degrees of individualism are more likely to use the extreme values on a scale and less likely to use the midpoint. Those who are more collectivist oriented are hypothesized to do the opposite.

The final purpose is to examine the effects of cultural differences in response styles on item means in cross-cultural comparisons. We assess the magnitude of potential distorting effects through two transformations of scales following the approach used by Bachman and O'Malley (1984b).

METHOD

Subjects

The subjects constituted representative samples of 11th-grade students in six metropolitan areas: Sendai (Japan), Taipei (Taiwan), Edmonton and Calgary (Canada), and Minneapolis and Fairfax County, Virginia. Of the 6,451 students who participated in the study, 80% responded to the items examined in the present analyses. The final sample included 944 Japanese, 1,357 Chinese, 687 Canadian, and 2,174 U.S. students. The percentages of males were 56% (Japan), 42% (Taiwan), 51% (Canada), and 49% (United States).

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Questionnaire

A questionnaire for 11th-grade students was designed simultaneously in English, Chinese, and Japanese by a group of bilingual researchers and graduate students. The questionnaire covered a broad range of topics concerning ideas, values, attitudes, beliefs, and self-evaluations related to school and daily life. We focus here on the fifty-seven 7-point Likert-like items included in the questionnaire. Among them were 39 items that formed seven multiple-item scales; the rest were single items. The seven scales all had satisfactory internal consistency (see Table 1 for the Cronbach alphas and sample items). Furthermore, there were few cross-cultural differences in the reliability statistics.

A subgroup of the U.S., Chinese, and Japanese students was also given four items dealing with their orientation toward individualism or collectivism (see Table 2 for the items). We used these items to examine the relation within each cultural group between the orientation toward individualism or collectivism and response style. Although these items were intercorrelated in the expected direction, the internal consistency among them was not as high as would be desired (Cronbach alphas were .55, .36, and .52 for Japan, Taiwan, and the United States, respectively), perhaps because of the diverse aspects of individualism and collectivism that were measured. Thus, we considered these items both as individual items and as a composite scale.

RESULTS

Use of Midpoint and Extreme Scale Values

As shown in Table 3, on the one hand, Japanese students were more likely than Chinese students to use the midpoint (4), and Chinese students in turn were more likely to use the midpoint than either the Canadian or the U.S. students (Scheffé contrasts, $ps < .001$). On the other hand, the U.S. students were more likely than all the other three groups to use the

Table 1. *Reliability statistics (Cronbach alphas) and sample items for the seven multiple-item scales and the single items*

Scale	Number of items	Alpha				Sample items
		Japan	Taiwan	United States	Canada	
Value of education	4	.72	.76	.74	.79	How important is it to you that you go to college?[a] How important is it to your parents that you get good grades?[a]
Value of social and physical development	8	.73	.64	.67	.72	How important is it to your parents that you be good at sports?[a] How important is it to you that you have many friends?[a]
Academic self-concept	9	.76	.76	.84	.78	How good at math [science] are you?[b]
Social and physical self-concept	6	.66	.72	.75	.60	How would you rate yourself in comparison to other persons your age in athletic ability [in getting along with other young people]?[b]
Attitudes toward math	4	.79	.82	.82	.84	How much do you like math?[a] Learning mathematics provides an opportunity to experience the pleasure of thinking.[c]
Satisfaction with school performance	5	.87	.84	.89	.81	I am doing as well in school as I want to do.[c] I am doing as well in math classes as my parents want me to.[c]
School anxiety	3	.77	.73	.54	.77	How worried do you get about keeping up with your schoolwork?[a] How nervous do you get while you are taking a test?[a]
Single items	18	—	—	—	—	Natural ability is more important than effort for doing well in math.[c] Generally, I am satisfied with myself.[c]

[a]The anchor words for these items were 1 = *not at all* [*important*], 4 = *somewhat* [*important*], and 7 = *very* [*much* or *important*].
[b]The anchor words for these items were 1 = *much below average*, 4 = *average*, and 7 = *much above average*.
[c]The anchor words for these items were 1 = *strongly disagree*, 4 = *neither agree or disagree*, and 7 = *strongly agree*.

Response Style

Table 2. *Mean ratings on the items of orientation toward individualism and collectivism, with accompanying F-test results*

Item	Cultural group: Japan (n = 385–386)	Taiwan (n = 657)	United States (n = 469)	F	p
Generally, people my age should be themselves rather than trying to act like the other kids.	5.4 (1.2)	5.9 (1.1)	6.3 (0.9)	72.51	.000
I stick to what I believe in, even if people around me have different opinions.	4.8 (1.2)	4.0 (1.4)	5.7 (1.2)	214.98	.000
People my age should try to live up to the standards they set for themselves rather than the standards set by their parents.	5.2 (1.3)	5.4 (1.3)	5.5 (1.2)	5.22	.005
The most important criterion for deciding if something is right is whether the group goes along with it, rather than whether I believe in it.[a]	4.6 (1.4)	4.2 (1.6)	5.7 (1.7)	115.81	.000
Combined score for the four items	5.0 (0.8)	4.9 (0.8)	5.8 (0.8)	174.37	.000

Note. Numbers in parentheses are standard deviations. The anchor words were 1 = *strongly disagree*, 4 = *neither agree or disagree*, and 7 = *strongly agree*.
[a]Shown are the means after the scale was reversed.

extreme values; Scheffé contrasts between the U.S. group and each of the other three groups were significant ($ps < .001$). Japanese, Chinese, and Canadian students did not differ significantly in their use of extreme values.

It seems clear that there were cultural differences in the overall response styles. Were the differences consistent across all scales and items? Figure 1 shows the mean percentages of students choosing the midpoint for the various scales and items. Japanese students were more likely to use the midpoint than the U.S. and Canadian students across all eight categories. Chinese students used midpoints more frequently than the two North American groups on all but one scale.

There was not a consistent difference in the use of the extreme scale values between the Japanese, Chinese, and Canadian students. The major differences were between those three groups and the U.S. students. For four of the eight categories, the U.S. students were more likely to use the extreme scale values than the other three groups (see Fig. 2). On no scale were the U.S. students less likely to use the extreme values than the three other groups.

The data clearly indicate small but significant cross-cultural differences in response style. The interpretation of these differences may be related to the distinction often made between collectivist societies, such as the Chinese and Japanese, and individualist cultures, such as the North American. According to such a distinction, the results indicate that students from the two types of cultures display distinct preferences in their use of scale values. Students from the two collectivist cultures demonstrate a greater preference for the midpoint and less preference for the extreme values than those from the two individualist cultures—especially the U.S. students. To test such a relation within each cultural group, we examined the correlations between students' response styles and the degree of their endorsement of individualism or collectivism.

Table 3. *Mean number of uses of the midpoint and extreme scale values across 57 items, with accompanying F-test results*

Response	Cultural group: Japan (n = 944)	Taiwan (n = 1,357)	United States (n = 2,174)	Canada (n = 687)	F	p
Midpoint (4)	17.0 (7.5)	15.0 (6.2)	11.7 (5.5)	12.7 (4.9)	200.64	.000
Extremes (1 and 7)	13.0 (9.7)	12.4 (8.2)	15.0 (8.0)	12.9 (7.4)	33.35	.000

Note. Numbers in parentheses are standard deviations.

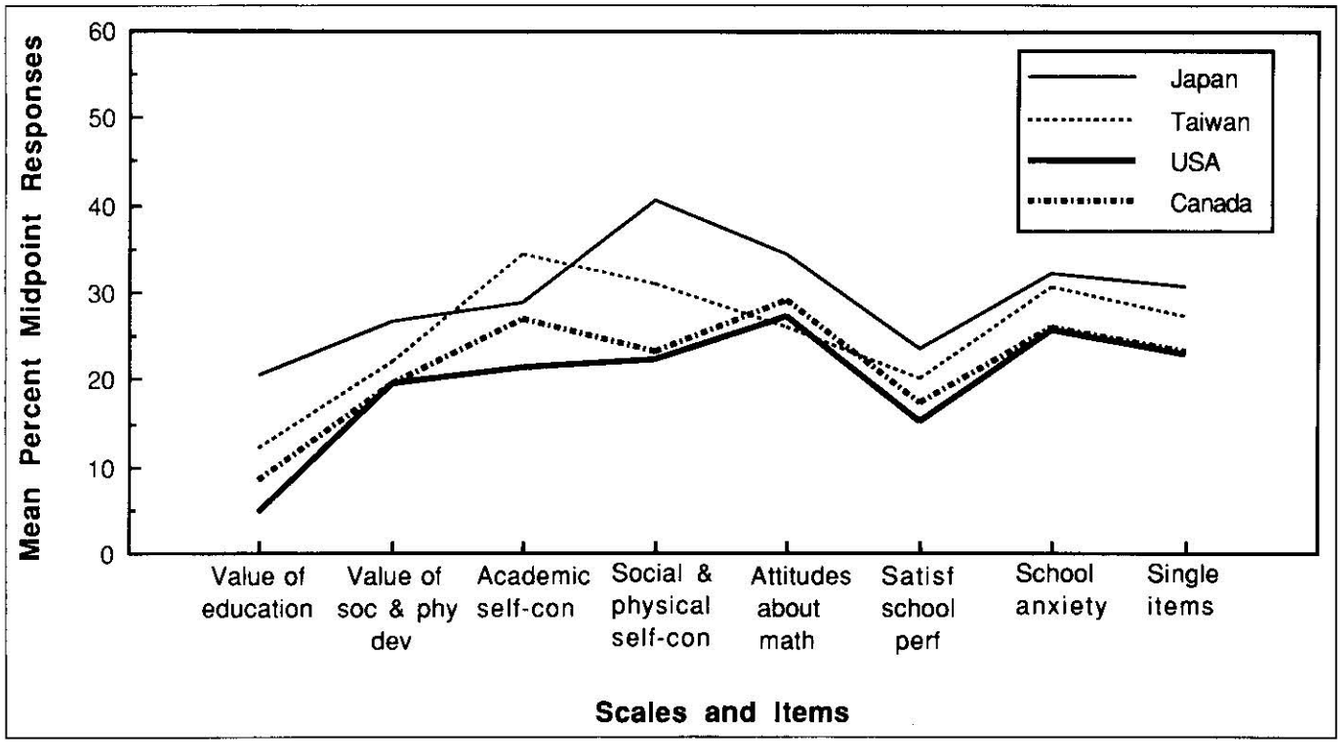

Fig. 1. Mean percentage of midpoint responses for the various scales and items. See Table 1 for the complete names of the scales.

Orientation Toward Individualism or Collectivism and Response Style

The four items tapping an orientation toward individualism or collectivism revealed significant cross-cultural differences. The U.S. students' ratings were significantly higher on individualism than the ratings of the two East Asian groups on each of the items (see Table 2). A combined score was computed by summing all item means after the collectivism item was reversed. A higher mean indicated a stronger endorsement of individualism.

Table 4 shows correlations between students' orientation toward individualism and their use of scale values. As is evident, the correlations show a clear pattern: An individualism orientation was negatively related to the use of the midpoint and positively related to the use of extreme scale values. This was true for all three groups for the combined score and for most of the individual items. As was the case with the cross-cultural differences, the magnitudes of the relations between orientation toward individualism and response style were small but statistically significant.

Effects of Response Style on Cross-Cultural Differences in Mean Ratings

The prevalence of cross-cultural differences in response style raises a critical question about the degree to which cultural response styles alter conclusions based on cross-cultural comparisons of Likert-like scales. This question can be answered by comparing the magnitude of cross-cultural differences in mean ratings before and after the response biases are controlled through the reduction of 7-point scales to 3-point or 2-point scales.

To control for avoidance of extreme values, the original 7-point scales were transformed into 3-point scales by combining the extreme value with the two intermediate values at each end of the scales (see Bachman & O'Malley, 1984b). In a second analysis, we controlled for the effect of choosing the midpoint by further transforming the scales into 2-point scales by omitting responses to the midpoint. Previous research has found that such a transformation provides data equivalent to what would be obtained if the midpoint were actually omitted during the data collection (Schuman & Presser, 1981). Reduction or disappearance of cross-cultural differences in average ratings after instituting these controls would point to the importance of considering response biases in interpreting ratings made by persons from different cultures.

Table 5 shows a summary of cross-cultural differences before and after the transformation of the scales. There was little change in the cross-cultural differences among the four cultures. Only 1 of the 57 items shifted from representing nonsignificant to significant differences after the transformation into 3-point scales. That is, when the four cultures were compared, the magnitude of cross-cultural differences was not attenuated by the control for response biases. In fact, the average eta-squared (an index of overall cross-cultural differences) changed little: .20 for the original 7-point scales, .22 for the 3-point scales, and .20 for the 2-point scales.

We interpret this result as indicating that although the cultural groups differed in their response styles, these differences

Response Style

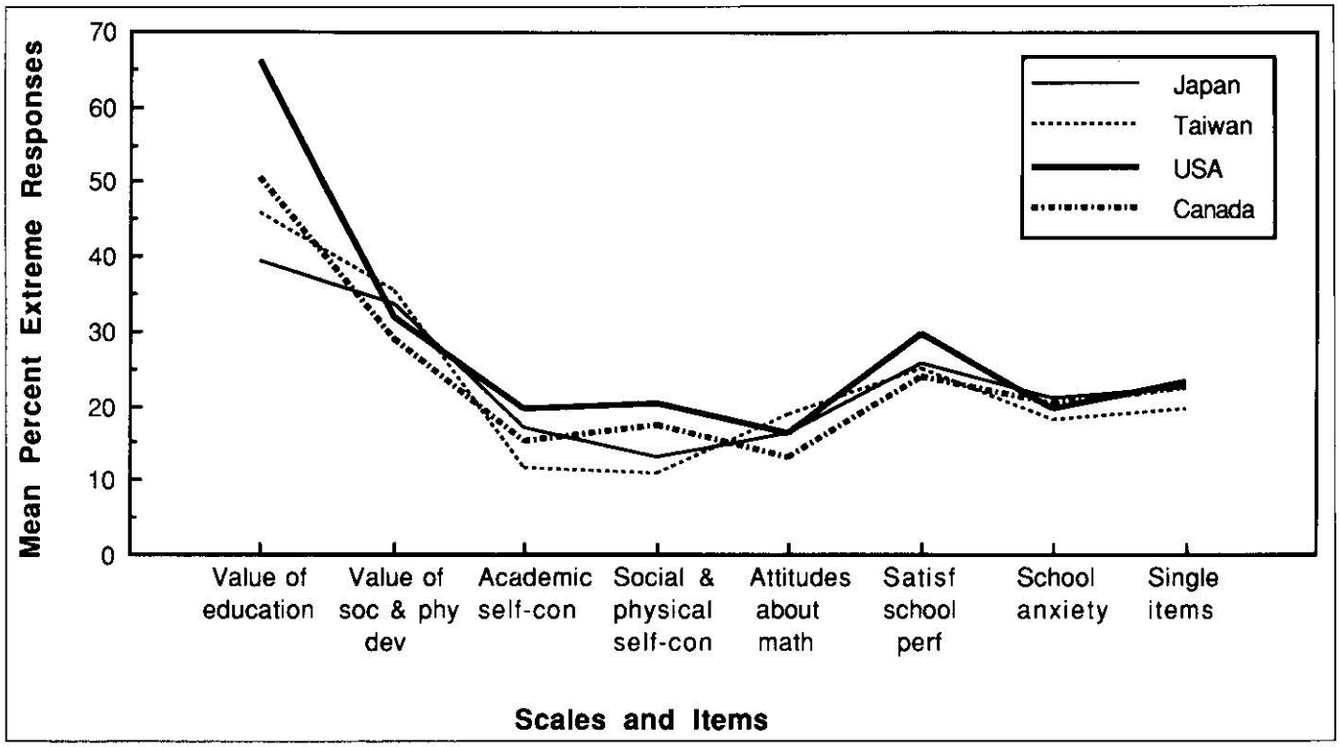

Fig. 2. Mean percentage of extreme responses for the various scales and items. See Table 1 for the complete names of the scales.

exerted a very modest influence on the degrees of difference found in comparisons of the groups' mean ratings. Such a small magnitude of influence is due, in part, to the large differences between group means. For a majority of the comparisons, the differences between the means of East Asian and North American students were between 0.5 and 1.0 on 7-point scales, which represented differences between about a third and a half of a standard deviation. When the differences were smaller, such as those between Canadian and U.S. students, control of response styles did reduce the number of significant differences. Table 5 shows that the largest decline in number of significant differences (9 items) involved comparisons between Canadian and U.S. students. A decline in the number of significant differences between the U.S. and the East Asian groups occurred on no more than 3 of the 57 items. Therefore, the results for the two types of transformation (to 3-point and 2-point scales) revealed little evidence that differences in response style affected the cross-cultural differences in the ratings made by East Asian and U.S. respondents. If anything, the response biases most strongly affected the comparisons between the two North American groups.

Table 4. *Correlations between orientation toward individualism and response style*

Response	Japan (n = 385–386)	Taiwan (n = 657)	United States (n = 469)
	Item 1		
Midpoint	−.19***	−.14***	−.10
Extremes	.10*	.22***	.15**
	Item 2		
Midpoint	−.12**	.01	−.14**
Extremes	.18***	.07	.28***
	Item 3		
Midpoint	−.13**	−.13**	.04
Extremes	.12**	.19***	.17***
	Item 4		
Midpoint	−.20***	−.02	−.12*
Extremes	.14**	.09*	.05
	Combined score for the four items		
Midpoint	−.24***	−.10**	−.13**
Extremes	.21***	.23***	.24***

Note. See Table 2 for the wording of the items.
*p < .05. **p < .01. ***p < .001.

CONCLUSION

The primary purpose of this study was to examine possible cross-cultural differences in response styles and their effects on cross-cultural comparisons. Respondents from four cultures were found to make differential use of certain points on the scales. Japanese and Chinese students were more likely than the U.S. and Canadian students to select midpoints; U.S. students, more frequently than Japanese, Chinese, or Canadians, selected the extreme values. The difference in response style between North Americans and East Asians was in line with the distinction often made between individualist and collectivist cultures. The latter would be assumed to be more likely to

Table 5. *Number of items with significant cross-cultural differences before and after controlling for response styles*

Comparison	Before	After	
	7-point scales	3-point scales	2-point scales
All four groups (*F*s)	56	57	56
Pairs of groups (Scheffé contrasts)			
Japan–United States	47	46	47
Taiwan–United States	47	46	44
Japan–Canada	44	42	42
Taiwan–Canada	42	39	36
Taiwan–Japan	40	38	38
Canada–United States	27	16	16

Note. Because of the large sample size, significant differences were defined as $p < .01$.

respond on the basis of group norms and the former, on the basis of individual preference. These tendencies would generate differences in the use of the midpoint and the extreme values. Furthermore, within each group, a small but significant relation was found between the endorsement of individualism and response style. Stronger endorsement of individualism was accompanied by more frequent use of extreme values and less frequent use of the midpoint.

These small but consistent cultural differences in response styles could not account for the large differences found in the comparisons of group means. After we controlled for response styles, few cross-cultural differences in average ratings were changed. When changes did occur, they were more frequent in the U.S.–Canadian comparisons than in the East Asian–North American comparisons.

To conclude, the present study confirmed a relation between culture and response style, but offered no evidence for the suggestion that a response style in which extreme values are avoided and the midpoint is preferred provides a meaningful explanation for the cross-cultural differences obtained between the responses of East Asian and North American students.

Acknowledgments—Data reported in this article were collected as part of a larger study funded by the National Science Foundation (Grant No. MDR 89564683 to Harold Stevenson). Collection of Taiwan data was supported by grants from the National Science Council of R.O.C. to Chen-Chin Hsu and Huei-Chen Ko (Grant No. NSC 79-0301). We appreciate the help of our colleagues: Andrew Fuligni of the University of Michigan; S. Kitamura and S. Kimura of Tohoku Fukushi University in Sendai, Japan; and C.-C. Hsu and H.-J. Ko of National Cheng Kung University, Taiwan.

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(RECEIVED 3/25/94; REVISION ACCEPTED 11/16/94)