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Middle responding: An unobtrusive measure of national cognitive ability and personality

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ABSTRACT

Response style - the tendency to provide uniform answers to questionnaire items regardless of item content - is seen as a challenge in psychology and sociology studies. It is an especially serious issue in cross-cultural research as different cultures exhibit different response styles, compromising construct comparability. Response styles have been associated with a variety of personality and cultural characteristics, including intelligence. This study analyzed new data from 44,096 respondents chosen probabilistically from 52 countries. At the national level, a specific type of middle responding - avoidance of categorical opposites and preference for an "in-between" option - is exceptionally strongly related to national IQ ($r = 0.80$ to 0.91, depending on sample and item type). In conclusion, (1) middle responding can be a valid proxy measure of national cognitive achievement, and (2) a low national IQ reflects the prevalence of a simplistic and rigid personality, whereas a high IQ reflects a fluid, dynamic, and adaptable personality that seems able to morph in accordance with situational factors. This finding creates new dilemmas in cross-cultural psychology and provides a new perspective on the way that nations cope with the challenges of the modern world.

1. Introduction

Response style or response bias - the tendency to provide more or less uniform answers to questionnaire items regardless of item content - is a serious challenge in research that relies on self-descriptions scored on a Likert-type scale. It is an especially serious concern in cross-cultural studies as it has been shown that different nations tend to exhibit different response styles (Harzing, 2006; Kemmelmeier, 2016; Smith, 2004, 2011; Smith et al., 2016). This compromises cross-cultural comparability of self-reports.

Individual and national differences in response style have been explained as a function of a variety of factors related to non-cognitive aspects of personality and culture (He, Bartram, Inceoglu, & van de Vijver, 2014; He, van de Vliert, & van de Vijver, in press; Kemmelmeier, 2016; Smith et al., 2016). A different perspective was provided by Meisenberg (2008) who demonstrated that nation-level measures of two of the most common response styles - extreme responding (the tendency to choose the positive extreme of a Likert scale) and acquiescence (the tendency to agree with all statements) are negatively associated with average national cognitive ability.

Meisenberg's brief study deserves more attention than it has received. Although it does not go into much detail about the relationship between response style and cognition, its main assertion is plausible in the light of evidence from other studies. For example, extreme responding has been associated with simplistic thinking: the tendency to see the world simplistically, as good or bad, black or white, etc., without nuances (Naemi, Beal, & Payne, 2009). This impoverished thinking pattern can be expected to prevail in individuals with lower cognitive abilities as it is less demanding cognitively than considering multiple options. It might be easier for such individuals to choose systematically an unambiguous particular position on a Likert scale, such as "very important" or "strongly agree", than consider nuanced responses, such as "somewhat important", "agree to some extent".

If cognitive ability is related to accuracy in self-assessments of one's personality traits, values, or beliefs on a Likert scale, the use of such scales becomes problematic when the study involves respondents with relatively low abilities or respondents with diverse abilities, as one would be comparing blurred images with other blurred images, or blurred images with sharp ones. This may be a serious problem in cross-cultural studies comparing samples from nations whose average cognitive levels are different, adding another argument in support of Heine, Lehman, Peng, and Greenholtz (2002) who have famously criticized the use of Likert scales in cross-cultural research, albeit for reasons unrelated to differences in cognitive ability. A potential remedy when

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researchers need to compare cognitively diverse individuals or national samples on self-reports would be to dispense with Likert scales. This may not be a practical solution at the individual level as researchers would be unable to measure intensity. In ecological studies, however, intensity can always be measured by comparing aggregated means or percentages of respondents who have selected a particular forced-choice response. This method might be a good alternative to Likert scales in cross-cultural research across nations that diverge widely on cognitive measures such as IQ, or mathematics achievement in PISA OECD or Trends in International Mathematics and Science Study (TIMSS).

What would be the effect of a forced-choice categorical response format, asking the respondents to choose between two opposites, such as "usually bold" and "usually shy", with an intermediate option ("in-between") for those who do not identify with either of the two categorical responses? Would we still detect national differences in response patterns: a tendency to provide categorical answers versus a tendency to choose the "in-between option"?

If there are such differences, their implications may or may not be important. It is possible that they merely reflect response styles that do not provide any substantial information about worldwide cultural contrasts and are simply a nuisance to cross-cultural researchers. But another scenario is also possible. We can hypothesize that nations that exhibit a preference for middle responding are those with higher cognitive skills. They can be expected to have higher percentages of individuals who are capable of adapting their behaviors, values, ideologies, and attitudes to situational demands rather than being similar across situations. Therefore, their preference for middle responding may mean "What I do and who I am depends on the situation".

Scant as the literature may be in this field, it provides some support for this hypothesis. More intelligent individuals adapt better to changing tasks (Lepine, Colquitt, & Erez, 2000). According to Pulakos, Dorsey, and White (2006), "The ability to modify one's behavior or focus and deal effectively with a variety of different and dynamic situations may simply be a function of having higher levels of intelligence" (p.48). Those authors cite a long list of studies demonstrating that cognitive ability can contribute to one's ability to adapt to novel tasks. These studies do not prove directly that more intelligent individuals have more fluid personalities but certainly point in that direction. Task adaptation is simply a form of situational adaptation.

Another line of research provides a similar perspective. Ego-resiliency (ER) is a term used to describe a person's "dynamic capacity to contextually modify one's level of ego-control in response to situational affordances" (Letzring, Block, & Funder, 2005, p. 395). ER is positively associated with IQ (Funder & Block, 1989).

Thus, it is plausible that a national proclivity toward categorical (either-or) responding reflects the existence of many individuals in that nation who are unable to adjust to diverse environments or act in accordance with novel situations because of their relatively low cognitive abilities. Vice-versa, a tendency to prefer middle-responding (the "in-between" option) may reflect a high percentage of people who are neither usually bold, nor usually shy, but sometimes bold and sometimes shy as demanded by the situation. Of course, to confirm this hypothesis, it is necessary to refute an alternative hypothesis: that preference for the middle option does not reflect situational adaptability but a perception that one is somewhat bold and somewhat shy across all situations.

2. Materials and methods

This study is part of a larger study of personality and culture, organized and sponsored by MediaCom, a leading multinational media agency, and the Hofstede Center at Itim International, a cross-cultural management consultancy. The MediaCom-Itim project provided data from nearly 53,000 respondents from 56 countries. For this study, there are reliable data from 44,096 respondents from 52 countries.

Most samples consist of consumer panels, regularly used for marketing research by Lightspeed GMI, a research agency. The panelists are probabilistically chosen among adults in each country and their structure approximates the national census in economically developed countries. University-educated individuals are overrepresented in developing countries as less educated ones were hard to reach. The data were collected online between October 2015 and May 2016. Detailed data about the samples used in this study, as well as the questionnaire, are available from Itim International (www.itim.org).

The samples are more or less nationally representative of the populations of developed countries, especially large ones, represented by at least 1000 respondents. As the samples from developing countries are skewed

Table 1
Middle responding factor scores for 52 countries.

Country	Middle responding factor scores, 52 personality items		Middle responding factor scores, 20 parental advice items	
	National samples without higher education	National samples with higher education	National samples without higher education	National samples with higher education
Argentina	−0.30	−0.02	0.24	0.20
Australia	0.93	0.90	1.03	1.00
Austria	−0.36	0.04	−0.07	−0.14
Belgium	0.49	0.58	0.66	0.80
Brazil	−0.67	−0.76	−0.61	−0.64
Canada	1.07	1.19	1.22	1.01
Chile	−0.93	−0.99	0.39	0.12
China	0.97	0.69	−0.59	−0.63
Colombia	−1.03	−0.81	−1.41	−1.09
Czech Republic	−0.21	0.34	−0.24	0.48
Denmark	0.96	1.04	0.60	0.88
Egypt	−1.04	−0.95	−1.02	−0.87
Finland	0.76	1.14	0.28	0.86
France	0.33	0.08	0.16	0.10
Germany	0.66	0.65	0.72	0.91
Greece	0.14	0.47	−0.03	0.40
Hong Kong	1.69	0.96	1.39	0.61
Hungary	−0.12	0.47	−0.12	0.87
India	−0.81	−1.02	−1.24	−1.62
Indonesia	−0.86	−1.94	−0.83	−2.09
Ireland	0.08	0.29	−0.28	0.29
Israel	−0.45	−0.13	−0.01	0.33
Italy	0.25	0.41	0.41	0.29
Japan	2.07	1.79	2.24	1.49
Kenya	−2.68	−2.34	−2.42	−2.15
Malaysia	0.33	−0.81	0.86	0.00
Mexico	−0.08	−0.16	−0.23	−0.38
Netherlands	0.88	0.95	1.08	1.10
New Zealand	0.31	0.63	0.67	0.80
Nigeria	−2.33	−2.32	−2.17	−2.16
Norway	0.40	1.13	0.70	1.34
Peru	−0.68	−0.87	−0.27	−0.26
Philippines	−0.08	−0.69	−0.55	−1.09
Poland	0.38	0.09	−0.04	0.45
Portugal	0.08	0.23	0.57	0.33
Romania	−0.16	−0.10	−1.04	−0.81
Russia	0.18	0.19	−0.17	0.12
Serbia	−1.08	−0.25	−1.34	−0.25
Singapore	1.45	1.08	1.57	0.96
South Africa	−1.73	−2.15	−1.70	−2.09
Korea	0.44	−0.10	0.74	−0.10
Spain	0.48	0.88	0.30	0.65
Sweden	0.50	1.14	0.90	1.05
Switzerland	−0.04	0.22	−0.32	0.26
Taiwan	2.12	1.32	1.22	1.25
Thailand	0.83	0.21	1.54	0.60
Turkey	−0.40	−0.38	−0.25	−0.22
Ukraine	−1.29	−1.27	−1.06	−1.20
UK	0.72	0.93	0.72	0.84
US	0.57	0.64	0.52	0.62
Venezuela	−1.18	−0.83	−1.51	−1.29
Vietnam	−1.59	−1.82	−1.21	−1.93