

An eight-item form of the Empathy Quotient (EQ) and an application to charitable giving

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This paper presents the psychometric properties of an eight-item version (EQ-8) of the Empathy Quotient (EQ). Using a general population sample of 4682 respondents, the properties of this scale are compared to previously reported results of a 22-item scale; the distributional properties of the EQ-8 reflect those of the larger scale. In keeping with the Empathy-Altruism hypothesis, scores are also shown to be related to charitable giving, even in the face of other well-known socio-demographic correlates. This demonstrates the utility of the EQ-8 in explaining individual differences in charitable giving and the potential applicability of the EQ-8 in other social sciences.

Key words: empathy quotient; survey research; scales; charitable giving.

1. INTRODUCTION

Psychology - especially cognitive psychology - is continually making inroads into other social sciences (e.g. Druckman and Lupia, 2007; Lupia et al., 2000). As a consequence, researchers in these disciplines often look for effective instruments with which to apply psychological theories to other social science questions. However, there is often a mismatch between the instruments of psychologists and the constraints and research approaches of other social scientists. One way to address this problem, as Wakabayashi et al. (2006) have argued, is to search for ways to shorten important psychology scales. The purpose of the current study is to do so with one important measure of empathy.

In a series of books and articles, Baron-Cohen and co-authors (e.g. Baron-Cohen, 2002, 2003; Lawson et al., 2004) posit a theory of gender differences in which men are more adept than women at systemizing, defined as the ability to analyze the behavior of systems, to predict and control their outcomes, and to build new systems. Women, in turn, are better at empathizing, defined as the ability to identify and respond to others' emotions. These two personality differences have been operationalized in two sixty-item scales, the Empathy Quotient (EQ) and the Systemizing Quotient (SQ). These scales and their underlying theories have important implications and applications not only in psychology, but also in other social sciences. As an example, the EQ can be used by political scientists interested in how varying levels of empathy explain different policy preferences. Economists may be interested in how empathy and systemizing scores predict behavior in economic games or the marketplace. The current paper explores the question of how an empathic capacity predicts an individual's propensity to give money to charity.

In order to apply a psychological perspective to this social science question, this paper tests an eight-item version of the Empathizing Quotient (referred to as EQ-8), using a larger sample and more general population than has been used with previous versions. Baron-Cohen (2003)'s original contained 60 items, which Wakabayashi et al. (2006) shortened to 22 items, noting that shorter scales are more efficient for survey purposes. The psychometric properties of the eight-item scale are compared with the 22-item battery in Wakabayashi to demonstrate its

psychometric equivalence. The scale is then applied to a model of charitable giving.

The socio-demographic correlates of charitable giving are well-established. People who are wealthier, older, and better educated are more likely to give money to charity (e.g. Rooney et al., 2004; Eckel and Grossman, 2004; Gittel and Tebaldi, 2006). In addition to the socio-demographic correlates of giving, which have been most explored in the fields of economics and philanthropy, social psychologists have also explored the motivations behind charitable giving. Among the most compelling theories is the Empathy-Altruism hypothesis (e.g. Batson et al., 1978, 1979; Batson, 1992, 1994), which contends that “empathy evokes motivation directed towards the ultimate goal of reducing the needy person’s suffering; the more empathy felt for a person in need, the more altruistic motivation to have that need reduced” (Batson, 1992, 72). Following this hypothesis, empathy enables altruism. Those who exhibit more empathic capacity will also exhibit more altruistic behaviour, in this case through charitable giving. A secondary goal of the study is to establish the criterion validity of the EQ-8 by measuring its relationship to charitable giving. It is expected that higher empathy scores will predict more charitable giving.

2. METHODS

2.1. PROCEDURES

Participants were recruited through a monthly commercial online survey conducted by a national research firm in Canada. The survey was conducted with a panel comprised of respondents recruited by the surveying firm and respondents who self-selected into the panel by logging onto the surveying firm’s website. Each month, participants were invited by email to participate in one of four survey waves. This survey was conducted in May 2007 with a total of 4682 respondents. The sample was restricted to respondents for whom there were no missing data on any of the key socio-demographic variables. Results did not change substantively if those who provided no information on charitable giving were also excluded.

2.2. PARTICIPANTS

Compared to a typical university-based convenience sample, the principal benefits of the online survey method are a large number of respondents and a much more representative population, particularly in regards to age, education and income. The average age of the panel was 50 years old ($s.d. = 13.5, range = 18, 87$). Males were slightly overrepresented in the panel (52.8%) compared to the population. The sample was also diverse from a socio-economic perspective with 13% percent of respondents having a high school education or less. Twenty-seven percent reported having at least some college education. The final 59% reported at least some university education. The panel also displayed variance on household income. Twenty-three percent of respondents reported a household income of less than \$40,000, 20.6% an income between \$40,000 and \$60,000, 18.9% an income between \$60,000 and \$80,000, and 37.9% reported an income greater than \$80,000 (all figures are in Canadian dollars).

The survey was completed in English by 83.8% of respondents and 16.2% of respondents in French. Translated questionnaires were obtained from the Cambridge Autism Research Centre.

2.3. INSTRUMENTS

The eight-item version of the Empathy Quotient was derived from Wakabayashi et al. (2006)'s analysis of the full sixty-item EQ. They presented a principal components factor analysis of a 60-item scale (Wakabayashi et al., 2006, Table 2). Using Wakabayashi's data, the four affirmative EQ questions with the highest principal component factor loadings and the four reversal items with the highest factor loading were chosen for the eight-item version (the questions are found in Appendix A).

The eight-items were presented within an online survey which included otherwise unrelated current affairs questions and questions about charitable giving. Responses were forced so that the survey could not be completed without answering all eight questions. Question order was randomized for each respondent. The survey also included a large battery of questions about charitable giving and the individual's interaction with philanthropic organizations. The principal

variable of interest was the amount of money an individual gave to charitable organizations during the last two years. Respondents were asked to classify themselves in one of eight categories, ranging from no charitable donations to \$100,000 or more.

3. RESULTS

Table 1 reports results from the EQ-8 and reproduces Wakabayashi et al. (2006)'s reported results for the 22-item version (EQ-Short). Similar to the EQ-Short, scores on the EQ-8 were found to be normally distributed (EQ-8 Skewness = -0.13 vs EQ-Short Skewness = -0.11 ; EQ-8 Kurtosis = -0.60 vs EQ-Short Kurtosis = -0.45). Moreover, internal reliability was found to be reliable, $\alpha = .76$.

Higher EQ-8 scores indicate a greater empathic capacity. The EQ-8 resulted in slightly higher scores on average than the EQ-Short. As seen in Table 1, the overall average score was significantly higher in the EQ-8 than in the EQ-Short ($t = 9.95, df = 6441, p = .00$). It was also significantly higher between men ($t = 9.17, df = 3194, p = .00$) and between women ($t = 8.45, df = 3245, p = .00$). This difference is likely attributable to the greater saliency of the eight items in the scale. As the EQ-8 is comprised of the eight-items with the highest factor loadings from a 60-item scale, they are more likely to invoke stronger statements of agreement, thus resulting in a higher average score. Despite these differences, the eight-item version still displayed a significant difference in mean score between men and women, with women displaying higher empathizing scores, ($t = -16.35, df = 4680, p = .00$). The scale *does not* display a difference according to language, ($t = 0.82, df = 4680, p = .41$). This is considered an important confirmation of the survey's reliability across languages.

[Table 1 here]

Table 2 two reports results from a multivariate regression of EQ-8 on gender, age, education category, income category, and language of respondent. Those who were older scored lower on the EQ-8, while those in higher income and education categories scored higher. None of

these factors, however, matched the differences in EQ-8 scores due to gender. The difference between the most and least educated was approximately 0.78 points. The difference between the youngest (18) and oldest respondent (87) was approximately 0.49 points. The difference between the wealthiest and poorest category of respondents was 0.66 points. By contrast, the predicted difference in EQ-8 scores between men and women was 1.72 points, controlling for all other factors. As with the longer scales, the most appreciable differences appeared to be due to gender.

[Table 2 here]

Table 3 presents the predictors of charitable giving. As the dependent variable (the total amount given to charities in the last two years) was categorical and ordered, the decision to give was modeled in an ordered logit (Borooah, 2002). Independent variables included EQ-8 score, income category, education category, gender, and a control for respondent language. Although socio-demographic predictors remained strong and independently significant, EQ-8 scores still strongly predicted giving. Indeed, the results suggest that the odds of giving in the top category for an individual who scored at the top of the EQ-8 scale were 32 percent higher than an individual at the middle of the scale. Moreover, their inclusion represented an improvement in model fit over a model with only socio-demographic variables (Likelihood ratio $\chi^2 = 16.58, p = .00$). These results are in keeping with the Empathy-Altruism hypothesis, and are affirmative of the criterion validity of the EQ-8 as a tool for the measurement of empathy.

[Table 3 here]

4. DISCUSSION

As the impact of psychology on other fields of social science increases, social scientists will continue to search for ways to apply the tools of psychology to their questions of interest. The results of this paper support the use of the Empathy Quotient as one such tool and demonstrate

that the EQ can be reduced to eight items while retaining the psychometric properties of the EQ-Short. Using the EQ-8, significant differences in scores between men and women were found, while the distributional characteristics of the EQ-Short were retained. Criterion validity was also established by effectively applying the scale to a model of charitable giving demonstrating, not surprisingly, that people with higher empathy scores report giving more money to charity. The EQ-8 could be applied to any number of questions in other fields, such as individual-level differences in support for social welfare programs (political science), behaviour in the marketplace (economics), or cultivation of social networks (sociology).

The current study is not without limitations. First, it has relied on reported rather than observed gifts to charity. Accordingly, our key variables may be susceptible to a social desirability bias. Second, although the sample is very large and drawn from the general population, it is not random and likely overrepresents those interested in politics and current affairs and those who have an above average likelihood of responding to surveys and expressing their opinions (Cacioppo and Petty, 1982). Finally, it has not examined the accompanying systemizing quotient. This provides an important avenue of future research. Matching the EQ-8 with a short-version of the systemizing quotient holds out the possibility of comprehensively applying a compelling psychological theory of individual differences to an even larger number of social science questions. As it stands now, we have only applied the empathy side of the equation. Despite these limitations, the use of the large sample lends credence to the findings of reliability and validity for this shortened empathy scale, representing an important building block in the application of psychological tools to questions in other fields of social science.

Table 1: *Mean Scores (SDs) of the EQ-8, and EQ-Short*

	Current Study			Wakabayashi <i>et. al.</i> (2006)	
	N	EQ-8	EQ-8 rescaled	N	EQ-Short
All participants	4682	9.6 (3.45)	26.4 (9.56)	1761	23.8 (8.75)
Males	2473	8.8 (3.46)	24.3 (9.51)	723	20.7 (8.46)
Females	2209	10.5 (3.29)	28.8 (9.05)	1038	26.0 (8.27)

Table 2: *Multivariate Determinants of EQ-8 Scores (OLS Regression)*

EQ-8	β	t
Female	1.72	16.91
Age	-0.01	-2.05
Income	0.23	5.24
Education	0.40	5.59
French	0.24	1.80
Adjusted R^2	0.07	
N	4682	

Table 3: *Charitable giving and EQ-8 (Ordered Logistic Regression)*

	Odds Ratio	z
EQ-8	1.03	3.44
Female	0.75	-4.55
Age	1.04	16.90
Income	1.66	17.83
Education	1.46	8.26
French	0.28	-13.41
Cut 1	-3.93	
Cut 2	2.75	
Cut 3	3.88	
Cut 4	5.72	
Cut 5	6.73	
Cut 6	9.00	
Cut 7	10.51	
N	4185	
Pseudo R^2	.09	

5. APPENDIX A: EQ-8 QUESTIONS

1. I find it easy to put myself in somebody else's shoes.
2. I am good at predicting how someone will feel.
3. I am quick to spot when someone in a group is feeling awkward or uncomfortable.
4. Other people tell me I am good at understanding how they are feeling and what they are thinking.
5. I find it hard to know what to do in a social situation.
6. I often find it hard to judge if something is rude or polite.
7. It is hard for me to see why some things upset people so much.
8. Other people often say that I am insensitive, though I don't always see why.

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