

AN INDIOSYNCRATIC COGNITIVE MEASURE

Although rating techniques have several advantages in questionnaire research, sensitivity to the individual's unique perspective is not one of them. The respondent is normally asked to consider dimensions of a particular topic which the researcher — not the respondent — thinks are important. If the researcher's conceptual framework is insightful (as it may well be, especially if based on strong empirical foundations, the questionnaire items **probably** will be meaningful to the respondent. However, there is no guarantee of that. Nor can it be assumed that the questionnaire items will address all (or even most) of the dimensions which the respondent thinks are important. To improve sensitivity to the subject's perspective by using open-ended questions has typically meant losing the standardized items' advantages of ease in administration, scoring, and statistical analysis.

While studying cognitive images of a specific neighborhood, I found it useful to develop a questionnaire technique and an index which expressed in standard terms (0 to 1) the congruence between each individual's image of a specific neighborhood and his or her conception of the general category of good neighborhoods [1]. If the score were low, the specific neighborhood was perceived as not measuring up to the general category (or was "not much a neighborhood"); and if the score were high, the neighborhood was perceived positively. The important point for the present discussion is that the dimensions used to rate the specific neighborhood were derived totally from the individual's own perspective. The index scores expressed highly idiosyncratic data, yet were easily collected and computed — permitting the use of multiple regression analysis which treated respondents' spatial behavior and personal characteristics as independent variables.

This note presents a modified version of this measure, called the Congruence Index, and in the process, suggests its use to express (in standard terms) the perceived congruence between any general category (named initially by the researcher, but defined operationally by each subject) and any specific case (e.g., the perceived congruence between ideal residential areas and one's own residential area; successful downtown parks and this park; liveable cities and Portland, Philadelphia, or Atlanta.) Concentration will focus first on generating the data necessary to compute the index and then will shift to the index itself — its derivation, advantages and disadvantages. The discussion employs a central example throughout its course in order to illustrate in some depth a representative application of the index.

DATA COLLECTION

Assume the researcher begins with a topical interest in residential satisfaction and would like to establish correlations between it and various spatial behaviors and personal characteristics for the residents of a particular area. The researcher could simply ask respondents to rate on a given scale how satisfied they are with their residential area. However, this would be excruciatingly vague, since the researcher would not have the slightest idea which criteria the respondents were using to evaluate the area. One could supply the respondents with various dimensions on which to rate the specific residential area (e.g., at least two acres of open space, shopping facilities within walking distance, daily neighbor interaction, neighbors of similar socio-economic status), but then the problem would arise as to imposing on the respondent's **a priori** notions of the necessary ingredients of a satisfying residential area. If one was interested in the relationship between, say, daily neighborhood interaction and residential satisfaction, then such may be appropriate. The **investigation of the hypothesis** that neighbor interaction relates in some important way to residential satisfaction, is an entirely different enterprise from **presuming** that the relationship exists and asking the respondent to use it as a dimension for rating his or her satisfaction with a specific residential area.

In exploratory research a better strategy seems to be to ask respondents to define their own category of satisfying residential areas and then to have them use the attributes of that definition to rate their own residential area. In this case, the referent — the residential area — remains constant, but the criteria for evaluation (now fully exposed) are unique to each respondent.

The questionnaire item regarding the respondent's general category of satisfying residential areas could be phrased as follows:

Take a few moments and think about areas in which you would find it satisfying to live. What general qualities would those areas share? How would you describe them as a group?

Now list (or if administered orally: "Now give me . . .") ten words or phrases you would use to characterize your general idea of a personally satisfying residential area. If you would like to list more or less than ten, that's okay too.

My own experience indicates that asking respondents to list a specific number of attributes not only provides them with the incentive of a specific goal but also gives them an idea of the degree of description that is desired. The option of **not** listing the stated number of attributes must be made clear to respondents in order to discourage silly responses.

Respondents will probably not consider all of the attributes they list to be equally essential to the satisfaction received from residential areas. For example, being within walking distance of a forest may be more integral than a similar proximity to a concern hall, or vice versa. Because each attribute of the general category constitutes a dimension which will later be used by respondents to rate their satisfaction with a specific residential area, the researcher needs to acquire data which will allow a

weighting of these dimensions. Clearly, peripheral attributes of the general category should receive less weight than integral attributes. A questionnaire item which would collect this data could be worded as follows:

Consider each of the characteristics you just listed and rate them, on a scale of 1 to 5, according to how essential you feel they are to your general idea of satisfying residential areas. If it is **very** essential, give the characteristic a 5; if **not** essential, give it a 1; anything in between, give a 2, 3, or 4, as appropriate.

These weightings can also be used in a content analysis of all the respondents' attributes, should the researcher choose. Attribute categories can be established, with an accompanying numerical weighting which would result from averaging the ratings of all the specific attributes which fit within the category.

Once the respondents establish the criteria and the relative importance of each, it is time to ask for an evaluation of the specific area in which the respondents presently live. An appropriate questionnaire item would read as follows:

Think of the area in which you now live, and consider how well it matches your general idea of a satisfying residential area. Go through the characteristics you listed above, and on a scale of 0 to 5, rate how well each one describes your present residential area. If the characteristic describes your area very well, record a 5; if not at all, record a 0; anything in between, write a 1, 2, 3, or 4, accordingly.

To synthesize the responses and to express the perceived congruence between any general category and any specific case, a simple index is proposed.

CONGRUENCE INDEX

Mathematically, the Congruence Index merely represents a ratio of actual and potential ratings. The rating of the specific case for each attribute of the general category may be expressed as follows:

$$\frac{D_i}{P}$$

(1)

where:

D_i = Descriptiveness of attribute i
(the rating of the degree to which attribute i of the general category is perceived to characterize the specific case)

P = Potential rating
(the highest value in the scaling system being used; e.g., 5 in a system of 1 to 5)

Each attribute's weighting may also be expressed in ratio form:

$$\frac{E_i}{P} \quad (2)$$

where:

E_i = Essentiality of attribute i
(the rating of the degree to which attribute i is perceived to be an integral feature of the general category)

P = Potential rating for D_i or E_i
(the highest value for both variables is the same)

The degree to which the specific case corresponds to the general category *with respect to one specific characteristic of the general category*, and degree to which that particular correspondence is significant *with regard to the overall congruence of the general and the specific*, then becomes:

$$C_i = \left(\frac{D_i}{P} \right) \left(\frac{E_i}{P} \right) \quad (3)$$

or

$$C_i = \frac{D_i E_i}{P^2} \quad (4)$$

Computing (4) for each of the attributes and averaging them then produces each individual's overall congruence score:

$$CON = \frac{1}{n} \left(\frac{D_1 E_1}{p^2} + \frac{D_2 E_2}{p^2} + \frac{D_3 E_3}{p^2} + \dots + \frac{D_n E_n}{p^2} \right) \quad (5)$$

or

$$CON = \frac{1}{np^2} \sum_{i=1}^n D_i E_i \quad (6)$$

Table 1 shows 1) the range of values for the index and how the index relates, and 2) the degree to which the respondent feels the attribute is either descriptive of the neighborhood or is important to gaining satisfaction.

TABLE 1:
Possible congruence scores
for a single attribute i^*

		E_i (Essentiality)				
CON		1	2	3	4	5
D_i (Descriptiveness)	1	.04	.08	.12	.16	.20
	2	.08	.16	.24	.32	.40
	3	.12	.24	.36	.48	.60
	4	.16	.32	.48	.64	.80
	5	.20	.40	.60	.80	1.0

Where, for example, $P = 5$

This index and its accompanying questionnaire techniques offer most of the benefits typically associated with standardized questionnaire research, (e.g., ease of data collection and quantitative analysis.). Additionally, it has several significant advantages:

1. The index's foremost advantage is the way it allows respondents to evaluate the object of interest from their own frame of reference. It provides researchers who prefer standardized questionnaire methodology the opportunity to become somewhat more sensitive to differences in individual realities, without forsaking their quantitative vigor.
2. The questionnaire techniques which accompany the index have the advantage of developing unstructured data *in addition to* the standardized ratings. The open-ended questionnaire items which request the characteristics of the general category provide ample data for qualitative analysis, should the researcher wish to complement the study's quantitative results.
3. Characterizing the general category in terms of a list of attributes, and rating a specific case primes the respondent for further discussion on these topics. It creates an opportunity to ask the respondent about dimensions which are important *to the researcher*. The respondent-based and the a priori approach are not mutually exclusive but instead can complement each other.
4. Using the ratio of actual ratings to potential ratings has an obvious advantage for comparing responses. Since each respondent may perform ratings on a different number of dimensions, the researcher cannot simply total each respondent's ratings and compare one total with another. And since other studies may use a different scaling range (e.g., 1 to 3, 1 to 7, 1 to 10), averaging the ratings for each respondent only guarantees comparability within the present research but not within the category of all scaling studies which might accumulate on the same topic. By dividing actual ratings by potential ratings, individuals' responses may be expressed in comparable terms regardless of the scaling system.
5. The basic interpretive frame of reference never changes for congruence scores: they always lie between 0 and 1 (0 represents no congruence and 1 represents total congruence.) The disadvantages of the Congruence Index are 1) those which characterize standardized questionnaires in general (e.g., extreme simplification of complex thoughts and feelings, use of unusual social situations in which to collect data, purposeful and undetected distortions in self-reporting, reliance on linguistic forms of expression), and therefore disadvantages which have already been adequately treated in methodological textbooks; and 2) those which distinguish the index techniques from other standardized questionnaire techniques (e.g., absence of a consistent operational definition for the central topic, inability to explore systematically in each respondent the significance of a hypothesized feature of the central topic.) The latter can be remedied easily by using the index in conjunction with other standardized approaches.

CONCLUSION

Although the Congruence Index awaits formal validation, my own work using an earlier version of it in combination with informal interviewing has suggested that it does indeed accurately represent the individual's evaluation of a specific case and, therefore, accurately indicates some features of the respondents' cognitive schema. The index is versatile, it can be used with any general category and any specific case and so has potential application in any study in which individual cognition is an issue. Standardized, yet responsive to individual realities, The Congruence Index provides standardized questionnaire research with a useful touch of individuality and seems to merit further consideration.

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LITERATURE CITED

1. Robertson, Douglas L. *Individuals, Interaction, and Images: Neighborhood Cognition in Syracuse, New York*. Discussion Paper No. 13. Syracuse: Department of Geography, Syracuse University, 1976.