Judgments of City-Occupation combinations[1]

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Ss judged attractiveness of working at a certain Occupation in a certain City. Experiment I supported the hypothesis that attractiveness was a sum of the separate values of City and of Occupation for Doctor, Lawyer, and Accountant, but not for Teacher. Experiment II confirmed Experiment I and indicated that the Teacher interaction was not a methodological artifact.

Recent experiments on information integration have suggested that in simple judgment tasks Ss process information in simple additive ways (e.g., Anderson, 1962a, 1965). However, most of this work has been restricted to one task: judgments of persons described by personality-trait adjectives.

The present experiments extend this analysis to a different task that employs different stimulus materials. Ss were asked to judge how well they would like to work at a certain Occupation in a certain City. The experiments tested the hypothesis that each City-Occupation judgment was the sum of the separate values of the City and of the Occupation.

In the formal mathematical model, it is assumed that for each S, living in a given City has a certain desirability value, and similarly for working at a given Occupation. The judgment of each City-Occupation combination is then assumed to be a sum of the values of the two components, these being weighted for their relative importance in the judgment. For present purposes, it is also assumed that the values and weights for each City and each Occupation are constant for each S and do not change from one combination to another.

Method

In both experiments, S expressed his preference for working as a Doctor, Lawyer, Teacher, or Accountant in each of four Cities. The Cities themselves were prechosen by each S as being high, moderately high, neutral, and moderately low in attractiveness as places to live.

Judgments were made on a 1-to-9 numerical scale anchored by verbal labels of Dislike Very Much and Like Very Much with a Neutral point at 5. All City-Occupation combinations were printed on 3 x 5 cards and presented in random order at a self-paced rate. Each S first judged four practice combinations chosen from pilot work to include two very high and two very low in normative preference.

In Experiment I, the 16 City-Occupation combinations generated by the above 4 by 4 design were judged following the practice. In Experiment II, eight combinations were added to the 16. Of these, four were the practice combinations presented again; the other four were prechosen by each S to include three that ranged from moderately to considerably dislikable, and the one he liked best.

There were 40 male volunteers in each experiment. They were students in introductory psychology who received extra class credit.

Results

Figure 1 shows the mean judgments for each City-Occupation combination for the two experiments. The curves for Lawyer and Doctor have been combined for clarity since they lay close together and were not significantly different.

These graphs give an immediate visual test of the hypothesis that the response is a weighted sum of the separate values of City and of Occupation. If this is true, then the curves of Fig. 1 should be parallel. By inspection, it is apparent that the Lawyer-Doctor and the Accountant curves are essentially parallel, but the Teacher curve is not. Teacher is rated about as high as Lawyer or Doctor in the favorable Cities

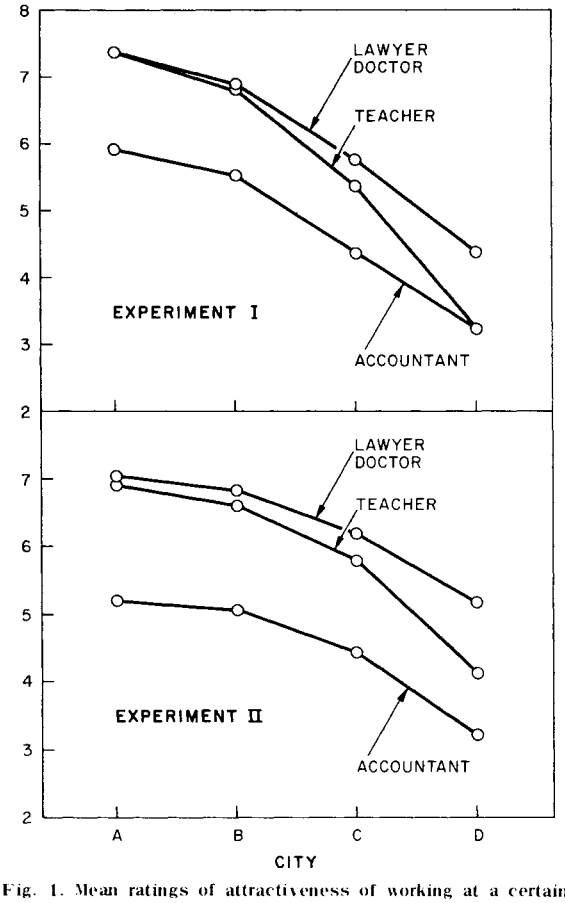

Fig. 1. Mean ratings of attractiveness of working at a certain Occupation (listed by each curve) in each of four Cities. Data for Lawyer and Doctor combined for clarity.

A and B, but nearly as low as Accountant in the unfavorable City D.

In the analysis of variance, the City-Occupation interaction tests the parallelism of the curves. That is, if the theoretical hypothesis is correct, then the statistical interaction should be zero in principle and nonsignificant in practice. The interaction was highly significant both in Experiment I and in Experiment II. For the pooled data, the interaction F was 5.52, df = 9/702, $p < .001$.

Since the locus of the interaction appears to lie in the Teacher curve, follow-up analyses were run including only the data from Lawyer, Doctor, and Accountant. For these three Occupations, the interaction did not approach significance in either experiment. For the pooled data, the analysis yielded F = 0.90, df = 6/468. Although this analysis is in part post hoc, it has very high power. The cities were selected separately for each of the 80 Ss, and each S served as his own control by judging all the stimulus combinations.

Discussion

On a tentative basis, the results thus allow two conclusions: that the Teacher data exhibit an interaction; and that the Lawyer, Doctor, and Accountant data do not. These two results will be discussed in turn.

The statistical interaction in the Teacher data could result simply from defects in the scale of measurement and so be without psychological significance. Thus, valid numerical responses from a rating scale may require end-anchor combinations (Anderson, in press) which were not used in Experiment I. However Experiment II, which included such combinations, yielded the same pattern of results as Experiment I. It would still be possible that the subjective impression itself obeyed the model but became distorted upon being fit into the rating scale. In this case, however, it would ordinarily be possible to rescale the response to produce a theoretically adequate measure (Anderson, 1962b). For the present data, rescaling to produce parallel curves would require, in effect, that the mean for Teacher in City D end up higher than the mean for Accountant in City A which is an ordinal impossibility. It would seem, therefore, that the Teacher interaction is psychologically real.

College students are presumably more familiar with teachers than with lawyers, doctors, or accountants. In addition, Teacher may in fact be dependent on City since a teacher would tend to be in more direct contact with the socio-economic milieu of a city. This interpretation is consistent with the nature of the Teacher interaction which is largely concentrated at the unfavorable City D.

That the remaining three Occupations exhibit no reliable interaction gives some restricted and provisional support to the weighted sum model. Summation-type formulations have been considered by various workers (e.g., Hammond, 1955; Johnson, 1955), though few previous reports have provided a serious test of a model.

From a practical standpoint, Yntema and Torgerson (1961) have noted that, by neglecting interactions and considering only main effects, analysis of variance can be used as a summation model to provide a high degree of predictability in tasks similar to that used here. Such use of the correlation between predicted and observed as an index of predictability is not infrequent and can be important in practical applications. But as tests of a theoretical formulation, even very high correlations can be misleading. Despite the marked interaction in the present Teacher data, the overall correlations between the observed means and those predicted by the model were .986 and .987 for Experiments I and II, respectively. To obtain such correlations when the Teacher interaction clearly disobeys the model emphasizes the importance of a test of goodness of fit.

Finally, it should be added that the present data do not distinguish between summation and averaging models. The latter may actually be the more appropriate on the ground that in this task, City and Occupation are attributes of a single concept (Anderson, 1965).

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Note

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