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Research Report

EVALUATION OF TWO FORCED-CHOICE FORMATS

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Subtask 2 Report No. 10

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SUMMARY PAGE

THE PROBLEM

The reactions of a sample of flight candidates in the U.S. Naval School, Pre-Flight were used to investigate the effect of response format on subject resistance to a forced-choice self-rating scale.

FINDINGS

The results indicated that the subjects were more favorable toward a response format allowing them to indicate the degree of applicability of each statement in the pairs, even though still forced to choose one statement as relatively more applicable.

INTRODUCTION

The typical forced-choice scale consists of a series of cells or blocks, each containing two to five descriptive statements. The number of statements in each cell is usually constant for any one scale. The statements in each cell are matched on some index of "attractiveness" and vary in respect to an index of validity. The rater is required to indicate which statement(s) in each cell are relatively more (or less) descriptive of the ratee. The rater's responses may be made by indicating the one or two statements most (or least) applicable, by indicating the statement most applicable and the one least applicable, by ranking the statements in each cell in terms of their applicability, or some variant of these. The basic characteristic of these methods is the partial or full ordering of the statements within each cell along a dimension of ratee applicability. The rater cannot, by these methods, indicate that he considers none (or all) of the statements applicable to the ratee. This last feature may arouse rater resistance towards the scale. Rundquist (3), for example, has reported subject resistance as an objection raised against self-rating forced-choice pairs and has proposed an alternative method of cell construction to reduce this resistance.

The authors' interest in the problem of subject resistance stemmed from the reactions of flight candidates in the U.S. Naval School, Pre-Flight to forced-choice self-rating scales used for research and predictive purposes. Remarks such as, "None of the statements really apply to me," and, "You are forcing me to say things about myself which are not true," were numerous, and the apparent magnitude of resistance was such that some changes in procedure appeared desirable. The content of the remarks seemed to indicate that the primary objection arose from the candidate's desire to be able to state that none or all of the statements were applicable to them.

In order to reduce resistance it appeared that a format was needed in which S would be given an opportunity to indicate the degree of applicability of all statements to himself, without compromising the underlying logic of the forced-choice technique. One approach is to allow S to indicate the degree of applicability of all the statements in a cell, with the restriction that no two statements may have tied applicability. For example, in a forced-choice pair S may be allowed to state that both statements have little applicability to him, but still be forced to check one as being relatively more applicable than the other. The basic notion is not new (4), but has not been widely used. The specific response format used in this study was first reported by Wherry, Jr. (5).

It was hypothesized that allowing S to indicate the degree of applicability of both statements in a forced-choice pair, even though still forced to choose between them, would reduce substantially the apparent resistance to the forced-choice self-rating form.

PROCEDURE

SUBJECTS

Two classes of naval aviation cadets and two classes of aviation officer candidates (AOC's) (Total N = 188) undergoing training in the U.S. Naval School, Pre-Flight, served as Ss. Each experimental group consisted of 30 to 35 cadets and 13 to 18 AOC's.

SCALES

Two twenty-cell, forced-choice, self-rating scales were used. Each cell consisted of two statements, matched on an index of "perceived predictiveness of job success" (1,5), but with different discrimination indices.

RESPONSE FORMATS

Two response formats were used. One (R-1) was typical of the formats accompanying many forced-choice scales in that S simply indicated which of the two statements in each cell was relatively more applicable to him.

The other format (R-2) required S to indicate, on a five-point scale of applicability, the degree to which each statement in a cell applied to him. In case of tied applicability, S checked one of the statements as being relatively more applicable than the other. The response formats are given in Appendix A.

EXPERIMENTAL METHOD

Each of the two scales was administered to two classes (one cadet and one AOC class). For any given class, one of the two scales was administered twice to all members of the class. One half of the class answered the scale under Order A (R-1 first, R-2 second). and, for the other half of the class, the order of the response formats was reversed (Order B). The response format (with corresponding instructions) for the second administration was handed out after the first administration had been completed. Each experimental group was defined by the scale administered (Scale I or Scale II) and the order of the response formats under which the scale was administered (Order A or Order B). Each group was composed of one half of one cadet class and one half of one AOC class.

The classes were told that the scale (for that class) was designed to predict those men most likely to drop or be dropped from the flight training program for reasons other than flight ability. After the completion of the first administration, the men were told that the test was going to be administered a second time to insure that they would be able to give a fair description of themselves.

After both administrations had been completed the men were instructed to keep the answer sheet they felt gave the fairer description of them and to discard the other one. Then the class rated each response format on a 10-point scale. Descriptive phrases were supplied for the end points on the scale. The high end, 10, was described by such phrases as extremely reasonable, in no way objectionable, extremely well liked, and extremely easy to give a good description of myself with this format. The reverse of these phrases was used for the low, 1, end of the scale.

RESULTS AND DISCUSSION

The frequencies with which the men turned in the different answer sheets (corresponding to the different response formats) was tested against a 50-50 hypothesis by means of chi square. The resulting chi-square value (corrected for continuity) of 144.81 (df = 1) was significant at $P < .01$. Answer sheets corresponding to response format R-2 were retained by 177 (94.1 per cent) of the men.

Table I shows the means and standard deviations of the ratings assigned to the response formats by each experimental group. A summary of the analysis of variance (2, p. 284) performed on log transformations of the ratings is shown in Table II. Transformations of the raw data were done to achieve homogeneity of variance ($\chi^2_{\text{raw}} = 40.2$; $df = 7$; $\chi^2_{\text{log}} = 14.0$; $df = 7$).

Table I
Means and Standard Deviations of Format Ratings

Order		Scale I		Scale II	
		R-1	R-2	R-1	R-2
A	\bar{X}	2.170	5.489	2.255	5.319
	σ	1.373	1.889	1.577	2.174
B	\bar{X}	2.042	5.042	1.893	5.446
	σ	1.129	1.472	1.033	1.808

Table II
Summary of Analysis of Variance of Format Ratings

Source	df	ms	F
Between \bar{S}_s			
Scales (S)	1	.043	.17
Order (O)	1	.314	1.27
S x O	1	.012	.05
SS_b (res)	184	.247	
Within \bar{S}_s			
Response Format (R)	1	75.407	570.60*
S x R	1	.191	1.46
O x R	1	.180	1.38
S x O x R	1	.349	2.68
SS_w (res)	184	.131	

* $P < .01$

Both analyses of the data indicate that the men were much more favorable toward the response format that allowed them to indicate the degree of applicability of each statement. This format is simply a combination of a five-point rating scale and one of the traditional forced-choice formats. Certainly other methods of combining various types of rating scales into the forced-choice format can be devised. The important point is that subject resistance to a forced-choice scale can be at least partially eliminated by incorporating some method whereby the respondent is given the opportunity to indicate the degree of applicability of each statement to him. It is not suggested that the applicability scales be scored. Scoring can, and should, be done on the basis of the statement or statements chosen as being more, or less, descriptive than the other statements in the cell.

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3. Rundquist, E.A., Personality Tests and Prediction. In Fryer, O.H., and Henry, E.R. (Eds), Handbook of Applied Psychology. New York: Rinehart and Company, 1950, pp 182-191.
4. Travers, M.W., A critical review of the validity and rationale of the forced-choice technique. Psychol. Bull., 48: 62-70, 1951.
5. Wherry, R.J., Jr., A test of new rationale and methodology for the forced-choice technique. Project MR005.13-5001 Subtask 1, Report No. 21. Pensacola, Fla.: U.S. Naval School of Aviation Medicine, 1960.

APPENDIX A

1. Response Format R-1

On the following pages you will find 20 pairs of statements. Check the statement that is most applicable to you. You may feel that both statements describe you well, but choose only the one that you feel is the better description. You must always choose one of the statements. Mark the letter corresponding to the statement chosen on the answer sheet (Ex. 1. a, 2. b, 3. a., etc.)

II. Response Format R-2

On the following pages you will find 20 pairs of statements. Using the five point scale below, indicate the degree of applicability of each of the statements to you:

"5" An excellent description of me or the way I feel.

"4" Describes me better than it does the average person.

"3" Describes me about as well as it does the average person.

"2" Does not describe me as well as it does the average person.

"1" A very poor description of me or the way I feel; does not apply.

If both statements in a pair apply to you equally well, you are to check the item which is the most applicable to you as shown in the example below:

Answer Sheet

Test Booklet

23. a. 5

23. a. I think I will be a better than average pilot.

b. 1

b. Not quite as smart as the average person.

24. a. 4 ✓

24. a. I enjoy going to a movie.

b. 4

b. I like to watch a football game.

In statement 23, the examinee felt that "a" was an excellent description of him, so he marked statement "a" 5 on the answer sheet. He felt that "b" was a very poor description of him, so he marked it as 1. In statement 24, the examinee felt that both "a" and "b" were better descriptions of him than they were of the average person, so he marked both items as 4. He then checked "a" to indicate that, of the two, "a" was a better description of him than "b".

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