A SIGNAL-DETECTABILITY ANALYSIS
OF RATING EXTREMITY

by

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ABSTRACT

A study designed to test the general applicability of a psychophysical signal-detectability analysis of rating behavior was conducted. In an effort to specify the contribution of response style variables to an item/task meaningfulness interpretation of rating extremity, two groups of seventeen subjects were required to rate one of two geometric figures in terms of personality adjectives on both a forced-choice and a yes-no rating device. The results suggest that in this experimental situation, extremeness of rating was a reflection of item/task meaningfulness. This conclusion was further substantiated by a conventional analysis of the data. A significant difference between the two groups was attributed to a collective response style difference rather than to differential stimulus-object meaningfulness.

INTRODUCTION

Conventional studies of the tendency to use the extremes of rating scales have typically employed the average deviation from the neutral point of the ratings of each S (or group of Ss) as an operational definition of some tendency which was also given a conceptual definition. Although these conceptual definitions have been classified in several ways (O'Donovan, 1965), for the purpose of the present study two major categories may be shown to exist. The first group of definitions relates the use of extreme ratings to meaningfulness as a function of the stimulus: intensity of meaning (Mitsos, 1961), saturation of meaning (Kanungo & Lambert, 1964), and meaningfulness (O'Donovan, 1965). The second group of definitions relates the use of extreme ratings to a liberal versus conservative response style or to the willingness of S to commit himself behaviorally: desire for certainty (Brim & Hoff, 1957), intolerance of ambiguity (Frenkel-Brunswik, 1949), inflexibility (Schutz & Foster, 1963), committing oneself versus evasiveness (Broen & Wirt, 1958), decisiveness (Cromwell & Caldwell, 1962), and emotional investment (Morris, Eiduson & O'Donovan, 1960).

Most of the above studies report to have measured only the meaningfulness of the stimuli or the characteristic response style of different groups of Ss and the obtained results tend to support whichever hypothesis E has decided to test, depending upon his particular theoretical orientation. Thus, where meaningfulness is not evaluated, neurotics are shown to polarize or use the extremes of a rating scale (Neuringer, 1961) and schizophrenics to depolarize (Morris et al., 1960). Where meaningfulness is evaluated, meaningful stimuli and rating scales lead to polarization (Cromwell et al., 1962; Mitsos, 1961).

Although investigators in the area of rating extremity recognize that S's response style (liberal or conservative) may have an effect upon a measure of meaningfulness based upon rating polarization and depolarization, the traditional measure of this tendency does not provide an estimate of stimulus meaningfulness that is independent of S's response style. Further, a difference between two estimates of rating extremity, as determined by traditional reliability tests, can be attributed to a change in item or task meaningfulness only if it is assumed that S's response style has remained constant, or to a change in response style only if it is assumed that item meaningfulness has remained constant.

Studies using personal meaningfulness as an independent variable have attempted to demonstrate that statements or items checked as meaningful on a yes-no measure are also those items which *S* tends to rate more extremely on a forced-choice measure (O'Donovan, 1965). The difficulty with such studies, as with those dealing with the reliability of rating extremity, is that no attempt is made to evaluate the contribution of *S*'s response style (conservative or liberal) to the measure. To exemplify this neglect, consider a hypothetical situation in which two *S*s are asked first to check which of 100 items they consider "meaningful" on a yes-no measure, and then, using the same 100 items, these *S*s are asked to rate a stimulus object on a forced-choice scale. Assume that while *S*1 checks 50 of the 100 items as meaningful on the yes-no measure and rates the stimulus object extremely on 40 of those same items of the forced-choice scale, the number of false positives (defined as those items which *S* rated extremely on the forced-choice scale but failed to check as meaningful on the yes-no measure) is quite high, say 20. On the other hand, *S*2 checks 50 of the 100 items as meaningful on the yes-no measure and rates 40 of those items extremely on the forced-choice scale but gives up only one false positive. Although both *S*s would conventionally receive the same "meaningfulness" score, their performance differs considerably in terms of response style. While *S*1 was willing to give up many false positives (a liberal), *S*2 was more conservative. Thus, any analysis of the data which does not specify the contribution of response style variables prohibits the conclusion that extremeness of rating is a reflection of item meaningfulness.

The present theory represents an attempt to isolate the effects of S's response style, through the application of a psychophysical signal-detection model (Swets, 1961), in an effort to obtain a relatively pure measure of item/task meaningfulness.

Theoretical Schema

The present theory was formulated to apply to those rating situations in which both forced-choice and yes-no procedures are successively utilized and therefore has applicability to studies designed to demonstrate that items checked as meaningful on a yes-no indicant are also those items which are rated more extremely on a forced-choice measure (O'Donovan, 1965). In such a situation, the S is required, after first rating a specified stimulus object using a series of stimulus items arranged on a forced-choice scale, to then rate the same stimulus object using the same stimulus items arranged on a yes-no measure.

The main concepts employed by the theory are presented in Figure 1. It is assumed that a psychological continuum exists according to which, following an observation of a stimulus item (i) under the yes-no procedure, a decision is made to indicate that the item is a descriptive characteristic or is not a descriptive characteristic of

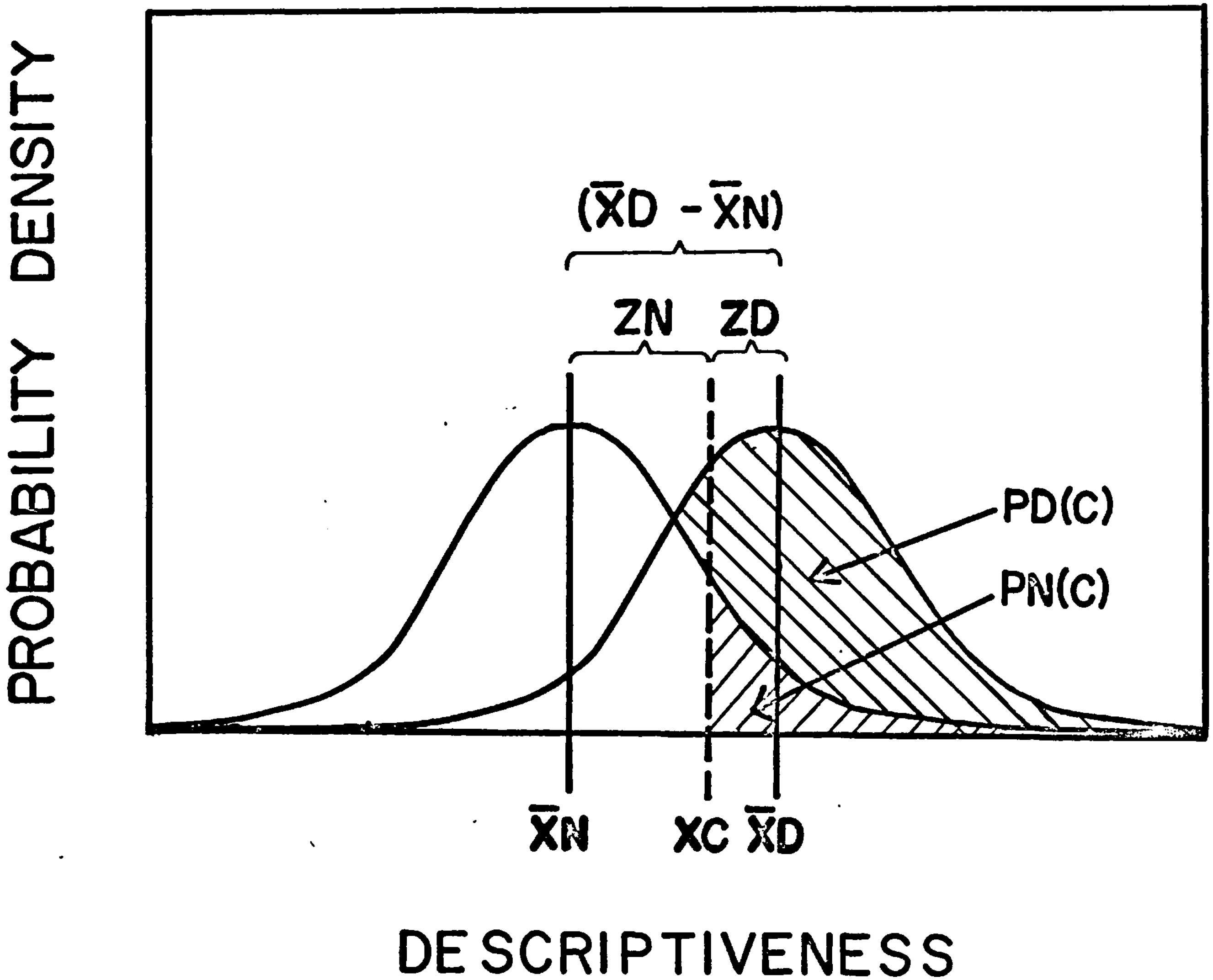

Fig. 1. Basic concepts of the theoretical schema relevant to data for rating situations.

the rated stimulus object. This continuum is thus labeled the descriptiveness dimension (X) in that it represents the degree of perceived descriptiveness of item (i) as a characteristic of the rated stimulus object.

The normal distribution fD(X), to the right in Figure 1, may be considered representative of the distribution of events which occurs during those observation intervals or trials on which S observes items he has previously rated on the forced-choice measure as descriptive of the rated stimulus object. The distribution fN(X), to the left in Figure 1, is assumed to have a variance equal to that of fD(X) and represents the distribution of events which occurs during those trials on which S observes items he has previously rated as not having stimulus object descriptiveness.

Theoretically, S's report after each trial concerning the applicability of an item (i) as descriptive of the rated stimulus object is based upon the decision that the subjective event (Xi), the particular value of a specific (i) on the descriptiveness dimension, is a member of (fD(X)) or (fN(X)). In other words, S does not indicate whether or not the item (i) is descriptive or not descriptive of the rated stimulus object; rather, S indicates whether he prefers the decision that the item (i) is descriptive or the decision that the item (i) is not descriptive. This decision is arrived at through the establishment of a criterion (Xc) on the descriptiveness continuum (X) so that S indicates that (i) is a descriptive characteristic of the rated stimulus object only if (Xi) exceeds (Xc).

If S follows the procedure described above, that is, if he establishes a criterion (Xc) and checks an item (i) on the yes-no measure as being a descriptive characteristic of the rated stimulus object if and only if (Xi) exceeds (Xc), then PD(C) represents the probability of S checking an item (i) which in fact he has previously rated on the forced-choice measure as descriptive. PN(C) represents the probability of S checking an item (i) which in fact he did not rate as descriptive on the forced-choice measure.

There are, then, two probability distributions. Assuming that under the yes-no procedure the distribution to the right in Figure 1 is associated with meaningful stimulus items (in the sense that they are more descriptive of the rated stimulus object), and the distribution to the left in Figure 1 is associated with unmeaningful stimulus items (in the sense that they are less descriptive of the rated stimulus object), then the distribution to the right will have a greater mean. In fact, its mean is assumed to increase monotonically with increases in item meaningfulness. The distance ($\overline{X}D-\overline{X}N$) on the descriptiveness continuum between the means of the two distributions is influenced by variables conceptualized as saturation of meaning, intensity of meaning, and meaningfulness. Also, $(\bar{X}D-\bar{X}N)$ may be influenced by such variables as learning, retention, and generalization; however, it is assumed that these variables are effective determinants of the distance $(\bar{X}D-\bar{X}N)$ mainly as a consequence of item and task meaningfulness.

It follows that if rating extremity is solely a reflection of personal item or task meaningfulness, then the distance $(\bar{X}D-\bar{X}N)$ will, for a given S, increase monotonically with the extremity of his forced-choice rating. However, if rating extremity is a reflection only of variables conceptualized as committing oneself versus evasiveness, decisiveness, and intolerance for ambiguity, then the distance $(\bar{X}D-\bar{X}N)$ will remain independent of the extremeness of rating on the forced-choice measure, while the position of a given S's criterion (Xc) will reflect his liberal or conservative response style.

The following study was designed to test the general applicability of the theory to a rating situation and represents an effort to obtain evidence concerning the assumption that extremeness of rating is a reflection of item and task meaningfulness.

METHOD

Subjects

Ss were thirty-four college students, twelve males and twenty-two females, enrolled in an introductory Psychology class at the University of Arizona. Each S volunteered to participate in the experiment.

Apparatus

Two geometric figures, a circle and a triangle, served as stimulus objects. Each figure was drawn by E on a standard classroom blackboard. The circle was approximately five inches in diameter and relatively concentric. The triangle was roughly symmetrical with legs and base of approximately five inches in length.

Materials

Two types of rating devices were employed in the experiment. The first, a forced-choice instrument, consisted of 122 six-point bipolar rating scales. Each scale was bounded by a personality adjective and its antonym. For example,

Gloomy ___ ___ ___|___ ___ ___ Cheerful

Realistic ___ ___ ___|___ ___ ___ Unrealistic

The six lines in the example represent the six points of each rating scale. This device was designed to provide an estimate of the degree to which each S used the extremes of a rating scale.

The second rating device used in the experiment, a yes-no measure, consisted of a simple random listing of the same 244 adjectives employed in the construction of the forced-choice instrument. For example,

Forceful
Unrealistic
Gloomy
Tired
Unfair
Rigid

This device was designed to provide an estimate of item meaningfulness and response style.

Procedure

Ss were randomly divided into two groups of seventeen Ss each. The experimental treatment of the two groups differed only in the type of geometric design used as a stimulus object. Group I, consisting of five male and twelve female Ss, was required to rate a circular figure using first the forced-choice instrument and then the yes-no device. Group II, consisting of seven male and ten female Ss, used the same rating instruments in the same order as group I, but was required to rate a triangular figure.

When each S had received his individual forced-choice scale sheet, E drew a geometric figure (either a circle or a triangle, depending upon the group treated) on a blackboard located at the front of the classroom. Ss were then instructed to rate the geometric figure in terms of the personality adjectives on the scale. In order to clarify the use of the forced-choice instrument, hypothetical ratings were performed and explained. Each of the scales on the forced-choice instrument was described as an individual continuum; for example, Gloomy-Cheerful constituted a single dimension. Ss were instructed to examine each pole of the continuum and then to rate the stimulus object on this dimension by placing a check in the appropriate box. It was explained that if S perceived one end of a particular scale as being highly descriptive of the stimulus object, then his check should be placed in the box closest to that end of the continuum. If neither end of the dimension was considered descriptive of the stimulus object, S was instructed to indicate this by checking an intermediate box along the dimension. As there was no neutral box on the scale, S was forced to check either one side of the scale midpoint or the other, since he was instructed not to leave a scale dimension unchecked.

When all Ss had completed their rating of the stimulus object on the forced-choice instrument, E collected these measures and then gave each S his second rating device, a yes-no instrument which consisted of a random listing of the same personality adjectives utilized on the forced-choice measure. S was instructed to view the yes-no rating instrument as a "descriptive checklist" and to simply check those stimulus items (adjectives) which subjectively described the same stimulus object he had rated previously using the forced-choice instrument. In the case of this second rating, S was permitted to check as many or as few descriptive adjectives as he wished but was instructed to make his decision on an item before moving on to the next item. As in the case of the forced-choice rating, S was allowed to proceed at his own pace and no time limit was imposed.

RESULTS

Each stimulus item (personality adjective) was categorized, for a single S, as a member either of a distribution of meaningful items or of a distribution of unmeaningful items, depending upon the side of the forced-choice scale midpoint S had placed a check. An item on the same side of the scale midpoint as S's check was designated as a member of a meaningful distribution and its antonym was taken to be a member of an unmeaningful distribution of items.

A stimulus item categorized as a member of a distribution of meaningful items was further analyzed according to the extremity of S's rating of the given item. The bipolar six-point scale used in the experiment permitted an analysis of meaningful items into one of three categories of rating extremity, and each of the categories was conceptualized as constituting a separate distribution of meaningful stimulus items. In other words, an item which evoked a polarized rating was categorized as belonging to a distribution of highly meaningful items; an item evoking a depolarized rating was considered a member of a distribution of items with low meaningfulness; and finally, an item which evoked an intermediate rating was categorized as a member of a distribution of moderately meaningful stimulus items.

Having grouped all stimulus items on the forced-choice scale, for each S, into one of three distributions of meaningfulness based upon rating extremity, an analysis was made of S's subsequent performance on the yes-no measure. These responses were defined either as true positives (those checked items which S had, in fact, rated as descriptive of the stimulus object using the forced-choice scale) or as false positives (those checked items which S had, in fact, not rated as descriptive of the stimulus object using the forced-choice scale). The proportion of true positives for a particular category was derived by dividing the number of true positives obtained for that category by the total number of items in the category which were rated as descriptive of the stimulus object on the forced-choice measure. Similarly, the proportion of false positives for a particular category was calculated by dividing the number of false positives obtained for that category by the total number of items in the category which were rated as descriptive of the stimulus object on the forced-choice measure.

The proportions of true positives and that of false positives obtained for each of the three categories of rating extremity were taken as estimates of the probability of true positives, PD(C), and false positives, PN(C), respectively, for a given category. Figure 2 shows a plot of the proportion of true positives and false positives obtained for a single S. Each point on the curve represents a separate category of rating extremity, that is, points L, M, and H refer to the three distributions of low, moderate, and high meaningfulness, respectively. A plot of the average proportion of true positives against the average proportion of false positives obtained for each group of Ss (triangle and circle), at each level of rating extremity, is presented in Figure 3. The two sets of data points are similar in that each can be described well by a straight line extending from low, through moderate, to high meaningfulness. However, the line generated from the data obtained for the group which rated the circular figure (circle group) is shown to be displaced to the right of the line representing the performance of the triangle group. With the exception of the lowest category of item meaningfulness, the true positive rate for the circle group is higher than that of the triangle group.

Each of the three pairs of values of PD(C) and PN(C), for a single S, was then used to estimate the distance ($\overline{X}D-\overline{X}N$), in Z units, between the meaningful and unmeaningful distributions for each level of rating extremity. Table 1 presents a complete analysis of the data obtained for the same S whose true positive and false positive rates were plotted in Figure 2. Normal curve

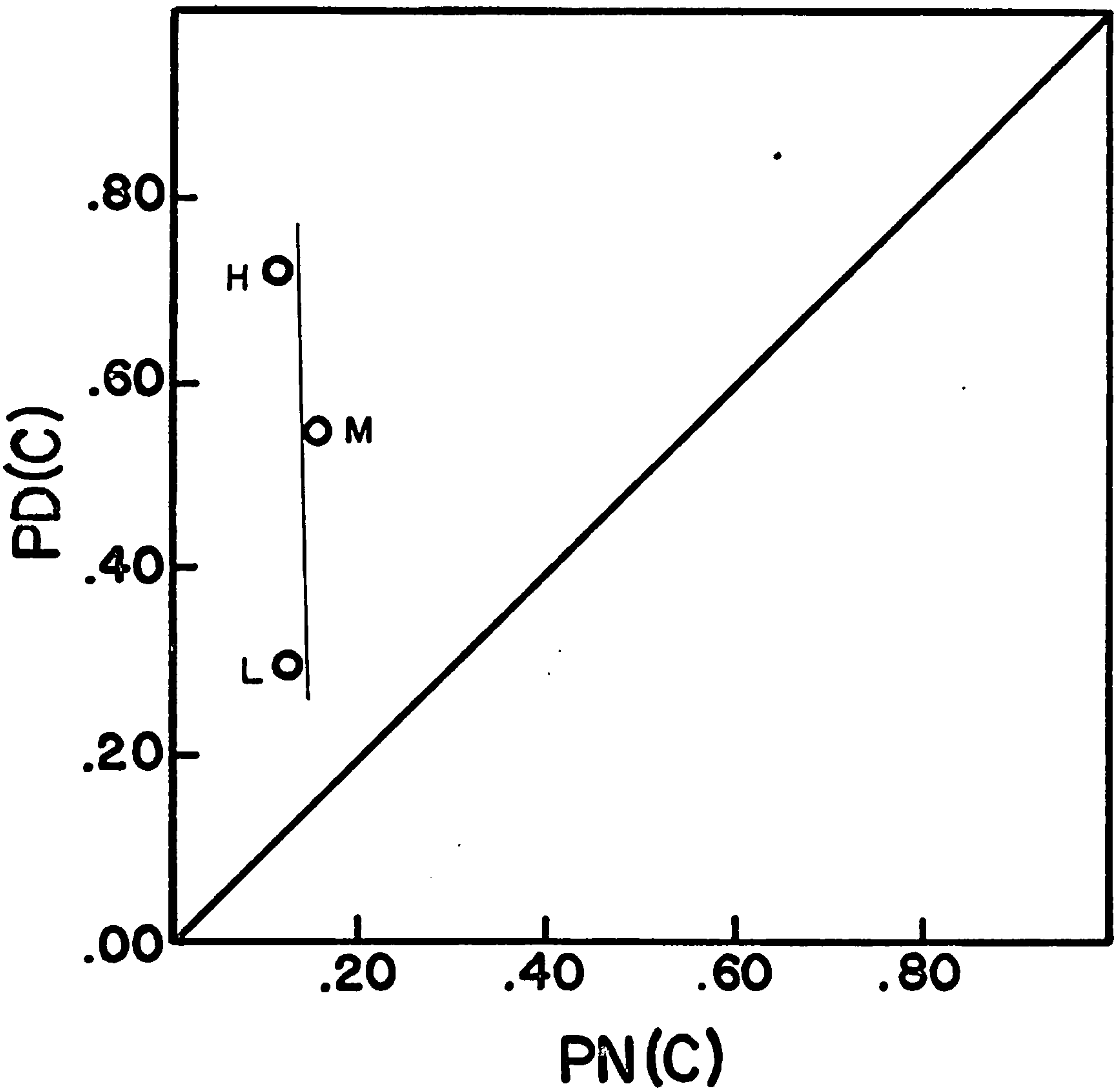

Fig. 2. The proportion of true positives PD(C) and false positives PN(C) for a single subject at each of three levels of rating extremity.

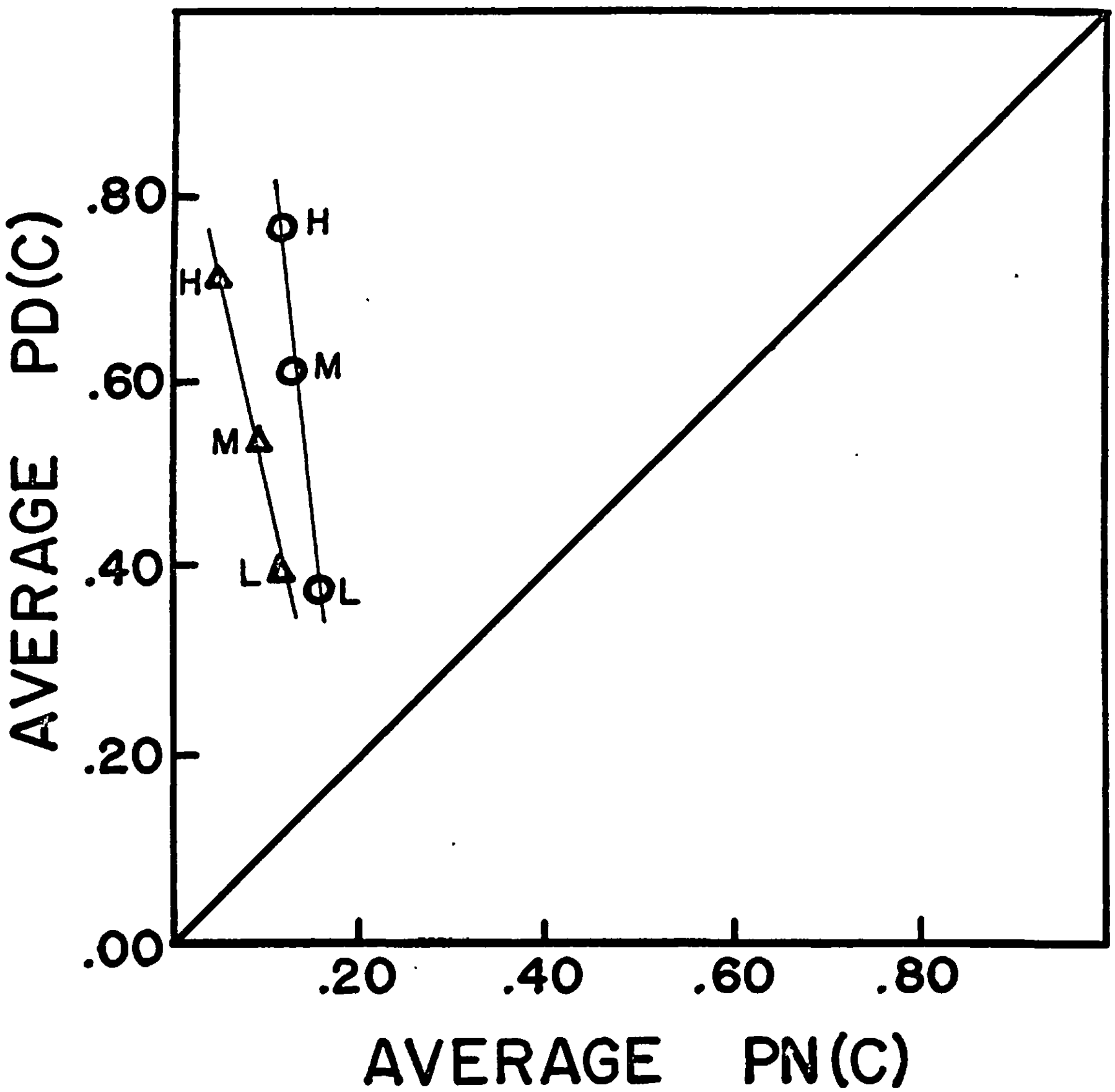

Fig. 3. The average proportion of true positives PD(C) and false positives PN(C) obtained for each group of subjects at each of three levels of rating extremity.

Table 1

A Complete Analysis of the Data Obtained for a Single Subject at Each of Three Levels of Rating Extremity

Level	PD(C)	ZD	fD(Xc)	PN(C)	ZN	fN(Xc)	$(\bar{X}D-\bar{X}N)$	(Xc)
High	.727	.59	.3337	.113	1.20	.1941	1.79	1.71
Mod.	.553	.13	.3951	.149	1.03	.2332	1.16	1.69
Low	.290	.55	.3423	.129	1.12	.2115	.57	1.61

tables were used to establish where the location of *S*'s criterion must have been at each level in order that the area of the distribution to the right of the criterion location would be equal to the theoretical PD(C). In a similar manner, PN(C) was used to determine the distance between the criterion and the mean of the unmeaningful distribution for each level of rating extremity. The addition of these two Z values, calculated at a single level, provided an estimate of $(\bar{X}D-\bar{X}N)$ at that given level.

Following the analysis of the data obtained for each *S* (presented in Table 5 and Table 6 of the Appendix), consisting of an estimate, in Z units, of the distance $(\bar{X}D-\bar{X}N)$ for each of three levels of item meaningfulness (low, moderate, and high) and an estimate, in Z units, of the location of the criterion employed at each of the three levels of item meaningfulness, the data were then subjected to two analyses of variance. The mean Z values of $(\bar{X}D-\bar{X}N)$ and (Xc) calculated for each group at each of the three levels is presented in Table 2.

The summary of an analysis of variance presented in Table 3 indicates that while the F value for the variance among mean Z values of $(\bar{X}D-\bar{X}N)$ calculated for low, moderate, and high categories of item meaningfulness is highly significant ($F = 26.20$; $df = 2/96$; $P < .01$), the F value for the variance among the mean values of $(\bar{X}D-\bar{X}N)$ calculated for each group fails to reach significance

Table 2

The Mean Z Values of ($\overline{X}D-\overline{X}N$) and (Xc) Calculated for Each Group at Each of Three Levels of Rating Extremity

	($\overline{X}D-\overline{X}N$)		(Xc)	
Level	Circle Group	Triangle Group	Circle Group	Triangle Group
Low	.89	.95	2.38	1.92
Mod.	1.60	2.02	2.37	1.83
High	2.28	2.57	2.72	2.22

Table 3

Estimated Variances and F Ratios for Z Values of ($\overline{X}D-\overline{X}N$)

Source	Sum of squares	df	V	F	P
Levels of meaningfulness	41.1978	2	20.598	26.206	$<.01$
Groups	1.5963	1	1.596	2.030	$>.05$
L X G	.0119	2	.006	.007	$>.05$
Within sets	75.5180	96	.786		
Total	116.7039	101			

(F = 2.030; df = 1/96). Interaction variance is shown to be almost nonexistent (F = .007; df = 2/96).

Table 4, a summary of a second analysis of variance, indicates that for mean criterion (Xc) values determined for each group (circle and triangle) at each level of rating extremity, F for the variance among mean group criteria is significant (F = 4.06; df = 1/96; $P < .05$). The F value for the variance among mean values of (Xc) for the three levels of rating extremity is not significant (F = .869; df = 2/96). Interaction variance, again, is quite small (F = .011; df = 2/96).

A conventional estimate of item and task meaningfulness using the average deviation of the ratings of each group from the scale midpoint was also obtained. The mean deviation score for the circle and triangle groups on the forced-choice scale was 2.15 and 1.87, respectively. A t-test revealed no significant difference between the two groups.

Table 4

Estimated Variances and F Ratios for Z Values of (Xc)

Source	Sum of squares	df	V	F	P
Levels of meaningfulness	2.839	2	1.419	.869	>.05
Groups	6.635	1	6.635	4.06	<.05
L X G	.039	2	.019	.011	>.05
Within sets	156.781	96	1.633		
Total	166.294	101			

DISCUSSION

The results of the experiment lend support to the hypothesis that rating extremity in this situation is a reflection of item and task meaningfulness. In the case of both groups, the mean of the distribution of meaningful items was shown to increase monotonically as a function of extremeness of rating, while the collective group criterion remained relatively constant for the three levels of rating extremity (see Table 2). The failure to obtain a significant t value between the two group means when the forced-choice rating was analyzed in the conventional manner further substantiates this conclusion.

The only significant difference between groups was that of a criterion difference. The comparison of the two groups in Figure 3 indicates that the circle group, with the exception of the lowest degree of rating extremity, gave more true positives than the triangle group; the circle group also gave up more false positives than the triangle group at all levels of rating extremity. This indicates that the stimulus items and task were not more meaningful for the circle group; rather, circle group Ss were simply more liberal and willing to give up more false positives than triangle group Ss.

APPENDIX

A COMPLETE ANALYSIS OF THE DATA OBTAINED FOR INDIVIDUAL MALE AND FEMALE SUBJECTS

Table 5

Triangle Group Data

S	Level	PD(c)	ZD	fD(Xc)	PN(c)	ZN	fN(Xc)	($\overline{X}$D-$\overline{X}$N)	(Xc)
F1	High	.916	1.37	.1556	.083	1.37	.1556	2.74	1.00
	Mod.	.733	.62	.3275	.177	.93	.2578	1.55	1.27
	Low	.658	.41	.3664	.195	.85	.2757	1.26	1.32
F2	High	.517	.03	.3987	.105	1.25	.1818	1.28	2.19
	Mod.	.000	2.32	.0267	.000	2.32	.0267	4.64	1.00
	Low	.270	.61	.3306	.054	1.59	.1112	.98	2.97
F3	High	.923	1.43	.1416	.038	1.75	.0862	3.18	1.64
	Mod.	.863	1.10	.2171	.113	1.20	.1941	2.30	1.11
	Low	.750	.67	.3178	.057	1.59	.1112	2.26	2.85
F4	High	1.000	2.32	.0267	.000	2.32	.0267	4.64	1.00
	Mod.	.574	.18	.3919	.074	1.43	.1416	1.61	2.76
	Low	.307	.51	.3503	.061	1.55	.1191	1.04	2.94
F5	High	1.000	2.32	.0267	.000	2.32	.0267	4.64	1.00
	Mod.	.909	1.34	.1624	.030	1.88	.0680	3.22	2.38
	Low	.482	.05	.3984	.092	1.34	.1624	1.29	2.45
F6	High	.683	.48	.3550	.033	1.81	.0773	2.29	4.59
	Mod.	.166	.97	.2420	.222	.77	.3011	.20	.80
	Low	.090	1.34	.1620	.113	1.20	.1942	.14	.83
F7	High	.666	.42	.3630	.000	2.35	.0252	2.77	4.40
	Mod.	.782	.80	.2897	.087	1.35	.1604	2.15	1.80
	Low	.700	.55	.3429	.150	1.03	.2350	1.58	1.45

Table 5.--Continued

F8	High	.200	.85	.2780	.000	2.35	.0252	1.50	1.03
	Mod.	.000	2.35	.0252	.000	2.35	.0252	4.70	1.00
	Low	.020	2.05	.0488	.000	2.35	.0252	.30	1.93
F9	High	.878	1.15	.2059	.121	1.17	.2000	2.32	1.02
	Mod.	.782	.77	.2961	.152	1.03	.2332	1.80	1.26
	Low	.511	.02	.3988	.372	.33	.3776	.35	1.05
F10	High	.333	.42	.3643	.166	.97	.2482	.55	1.46
	Mod.	.473	.06	.3982	.052	1.64	.1031	1.58	3.86
	Low	.291	.55	.3423	.208	.80	.2882	.25	1.18
M1	High	.945	1.59	.1112	.018	2.05	.0484	3.64	2.30
	Mod.	.666	.42	.3643	.047	1.69	.0948	2.11	3.84
	Low	.217	.78	.2922	.152	1.03	.2332	.25	1.25
M2	High	.388	.27	.3837	.048	1.64	.1031	1.37	3.72
	Mod.	.176	.93	.2578	.117	1.20	.1941	.27	1.32
	Low	.115	1.20	.1941	.040	1.75	.0862	.55	2.25
M3	High	.974	1.96	.0584	.025	1.96	.0584	3.92	1.00
	Mod.	.950	1.64	.1031	.114	1.20	.1941	2.84	.53
	Low	.818	.91	.2624	.091	1.34	.1624	2.25	1.61
M4	High	.575	.18	.3919	.181	.91	.2624	1.09	1.49
	Mod.	.426	.18	.3919	.130	1.12	.2115	.94	1.85
	Low	.400	.25	.3863	.200	.84	.2800	.59	1.38
M5	High	.904	1.31	.1690	.047	1.69	.0948	3.00	1.78
	Mod.	.659	.41	.3664	.159	.99	.2433	1.40	1.50
	Low	.535	.08	.3974	.200	.84	.2800	.92	1.42

Table 5.--Continued

	High	.787	.78	.2922	.032	1.88	.0680	2.66	4.29
M6	Mod.	.708	.55	.3423	.083	1.37	.1556	1.92	2.20
	Low	.432	.17	.3928	.081	1.40	.1487	1.23	2.64
	High	.666	.42	.3643	.047	1.69	.0948	2.11	3.84
M7	Mod.	.421	.20	.3909	.079	1.40	.1487	1.20	2.62
	Low	.274	.59	.3337	.048	1.64	.1031	1.05	3.23

Table 6

Circle Group Data

S	Level	PD(c)	ZD	fD(Xc)	PN(c)	ZN	fN(Xc)	$(\bar{X}D-\bar{X}N)$	(Xc)
	High	.727	.59	.3337	.113	1.20	.1941	1.79	1.71
F1	Mod.	.553	.13	.3951	.149	1.03	.2332	1.16	1.69
	Low	.290	.55	.3423	.129	1.12	.2115	.57	1.61
	High	.911	1.34	.1624	.323	.45	.3599	1.79	.45
F2	Mod.	.684	.48	.3552	.158	.99	.2433	1.47	1.46
	Low	.613	.29	.3822	.355	.37	.3723	.66	1.02
	High	.900	1.28	.1755	.000	2.32	.0267	3.60	6.57
F3	Mod.	.788	.80	.2882	.019	2.05	.0484	2.85	5.95
	Low	.250	.67	.3178	.025	1.96	.0584	1.29	5.28
	High	.454	.11	.3964	.090	1.34	.1624	1.23	2.44
F4	Mod.	.250	.67	.3178	.100	1.28	.1755	.61	1.81
	Low	.320	.46	.3576	.120	1.17	.2000	.71	1.78
	High	.841	.99	.2433	.022	2.05	.0484	3.04	5.03
F5	Mod.	.846	1.01	.2383	.038	1.75	.0862	2.76	2.76
	Low	.307	.51	.3503	.230	.73	.3036	.22	1.15
	High	.846	1.01	.2383	.230	.73	.3036	1.74	.78
F6	Mod.	.694	.51	.3503	.122	1.17	.2000	1.68	1.75
	Low	.550	.12	.3958	.200	.84	.2800	.96	1.41
	High	.950	1.64	.1031	.050	1.64	.1031	3.28	1.00
F7	Mod.	.750	.67	.3178	.038	1.75	.0862	2.42	3.68
	Low	.500	.00	.3989	.233	.72	.3073	.72	1.29

Table 6.--Continued

	High	.800	.84	.2800	.085	1.37	.1556	2.21	1.80
F8	Mod.	.694	.51	.3503	.061	1.55	.1191	2.06	2.94
	Low	.333	.42	.3643	.000	2.32	.0267	1.90	3.64
	High	.656	.39	.3584	.312	.49	.3528	.88	1.04
F9	Mod.	.600	.25	.3863	.400	.25	.3863	.50	1.00
	Low	.524	.06	.3982	.381	.30	.3808	.36	1.04
	High	.730	.61	.3306	.019	2.05	.0484	2.66	6.83
F10	Mod.	.714	.56	.3395	.143	1.05	.2279	1.61	1.48
	Low	.333	.42	.3643	.047	1.69	.0948	1.27	3.84
	High	.736	.62	.3275	.000	2.32	.0267	2.94	2.26
F11	Mod.	.260	.64	.3244	.130	1.12	.2115	.48	1.53
	Low	.256	.65	.3211	.037	1.81	.0773	1.16	4.15
	High	.750	.67	.3158	.053	1.62	.1112	2.29	2.84
F12	Mod.	.683	.47	.3560	.062	1.55	.1200	2.02	2.92
	Low	.105	1.25	.1826	.040	1.75	.0862	.50	2.11
	High	.727	.59	.3337	.113	1.20	.1941	1.79	1.79
M1	Mod.	.560	.15	.3945	.150	1.05	.2299	1.20	1.71
	Low	.582	.20	.3910	.171	.95	.2541	1.15	1.53
	High	.724	.60	.3332	.073	1.45	.1394	2.05	2.38
M2	Mod.	.694	.51	.3503	.088	1.35	.1604	1.86	2.18
	Low	.310	.50	.3521	073	1.45	.1394	.95	2.51
	High	.852	1.05	.2299	.041	1.75	.0863	2.80	2.66
M3	Mod.	.564	.16	.3920	.074	1.43	.1416	1.59	2.76
	Low	.452	.12	.3955	.073	1.45	.1394	1.33	2.82

Table 6.--Continued

	High	.919	1.40	.1497	.020	2.05	.0488	3.45	3.06
M4	Mod.	.714	.57	.3380	.063	1.53	.1245	2.10	2.71
	Low	.574	.18	.3919	.074	1.43	.1416	1.60	2.78
	High	.691	.50	.3521	.066	1.50	.1295	2.00	2.78
M5	Mod.	.465	.10	.3970	.086	1.35	.1604	1.25	2.47
	Low	.120	1.17	.2000	.035	1.80	.0790	.63	2.53

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