THE UNIVERSITY OF CALGARY

IMPRESSION COMMUNICATION:

THE EFFECT OF FIVE VARIABLES ON ACCURACY

BY

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "Impression Communication: The Effects of Five Variables on Accuracy" submitted by Raymond Perry in partial fulfillment of the requirements for the degree of Master of Science.

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Abstract

The purpose of the present experiment was to study the way in which people communicate their impressions of others. Three different methods of object-person presentation were compared. Messages generated about object-persons were used as an index of impression communication. The effects of motivation, sex, message length and object-person on impression formation and communication were examined.

A five-way factorial analysis of variance was used to test the accuracy of 60 encoders communicating their impressions of five object-persons to 60 decoders. Accuracy was not significantly influenced by motivation, sex of subject, or presentation method. Message length was positively related to accuracy of communication. Differences in accuracy of communicating different object-persons were significant.

A number of interactions were significant. In particular, the interaction of message length by motivation by method suggests that motivational differences become important when certain limitations are placed on information acquisistion and transmission. The implication of these results for a general theory of person perception was discussed.

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I. Introduction

The purpose of this research is to test a recently hypothesized interpersonal communication paradigm of person perception. Within this methodological framework, the specific aims are: (1) to analyze critically traditional experimental techniques of object-person presentation and to compare these methods to recent technological innovations potentially useful for person perception research; (2) to improve upon the methodological procedure of using language as a measure of impression formation, and (3) to determine the effect of motivational variables and environmental limitations on impression formation accuracy.

Person perception is an interpersonal behavioral pattern which, like perception, enables a meaningful organization of the social environment. Bruner (1958) suggests that perception fulfills two functions: (1) a recording of the diversity of data we encounter into a simpler form that brings it within the scope of our limited memory; (2) a going beyond the information given to predict future events and thereby minimize surprise. Ittleson and Slack (1958) acknowledge this conceptualization and further add that the perception of objects (object perception) and the perception of persons (person perception, Heider, 1958) is the same process. Such definitions as these may be an over-simplification of person perception. While person perception involves the physiological recognition of stimuli, the categorization of data, and the inferential processes characteristic of perception, there seems to be a qualitative difference between the perception of persons and the perception of objects. Individuals are self-determinant whereas objects generally are not; an individual's

behavior varies tremendously from one situation to another, an object usually does not vary. Thus inferences concerned with the perception of persons may be infinitely more complex than those dealing with the perception of objects.

The distinction becomes clearer when one considers person perception in terms of the amount of interaction between the individuals. If an interaction takes place, the various "intents" of the perceived person must be carefully considered in the formation of an accurate impression. This is especially important when one's goals or aspirations are highly interrelated with those of the perceived person. On the other hand, an absence of an interaction may result in the perceiver's making no qualitative distinction between the object-person and environmental objects. A situation may thus be characterized as having no interactive components or as having many complex interactions. Person perception research may do well to equate experimental paradigms in terms of the degree of interaction between perceiver and object-person. In the present experiment person perception is studied in a non-interaction paradigm, that is, the subject perceives the object-person without interacting.

Perceivers' judgments of other persons in the present study will be considered in terms of accuracy. Research has focused mainly on defining accuracy as social consensus or behavioral predictability. Social consensus is the degree of the judges' agreement on some characteristic related to the target person; behavioral prediction is the ability of the judges to predict the object-person's responses. Ambiguous and inconsistent research findings have caused some (Boyd, 1967a, 1967b; Rodin, 1969) to redefine person perception in terms of an interpersonal communication

paradigm within which accuracy is a function of social consensus.

The transmission of the judgment often follows impression formation. This communicative process can be conceptualized in terms of Information Theory constructs (Frick, 1959) such as the input, transmission and output mechanisms of a communication. Accuracy of person perception in this study will be the degree to which a judge (encoder) is able to communicate to a decoder his impressions of target persons.

Coding is the process of assigning an explicit symbol or label to a referent, concept, or experience (Boyd, 1967a). Theoretically, impression formation may be defined as a general process of reducing large amounts of information into smaller, more meaningful bits (see Bruner above, vis a vis perception). If every cue delineating each object-person were recorded, the problem of information storage and retention would become enormous. Thus, an encoder is that subject whose task is to form an impression of an object-person. The mass of information must be processed into more manageable bits. Decoders in this system are those subjects whose task is to match encoders' impressions to proper object-persons. In this type of experimental paradigm, accuracy is, in part, contingent on the decoders. The decoding matching skill per se is not being studied here. Through random assignment of decoders any differential effect in accuracy is thus attributable to the independent variable manipulation.

Experimental Methodology of Presentation

Early studies on impression formation employed rather simple, nonrealistic methods of object-person presentation. Traditionally, the preceivers are exposed to the object-persons by means of written person-

descriptions or photographs (Bevan, Secord and Richards, 1956; Secord and Bevan, 1956; Secord, Bevan and Dukes, 1953; Thornton, 1943), the assumption being that this experimentally induced process represents, in part, judgmental aspects similar to impression formation in "real" life. Asch (1946) studied the effect of trait lists on impression formation. He presented a list of words (intelligent, skillful, industrious, cold, determined, practical, cautious) to one group, and an identical list to a second group, the only variation being the substitution of the word "warm" for the word "cold". They were told the words were descriptive of a hypothetical person and their task was to form an impression of him. Asch found significant qualitative differences between the personality impressions formed in each group.

Kelley (1950) conducted a similar experiement in which a lecturer was introduced by means of a written message. One half of the class was given a message describing the lecturer as "warm", while the second half received the same message with the word "cold" in place of "warm". Kelley found that the two groups differed in their reaction to the same lecturer. The "warm" half saw the lecturer as more sociable, popular, informed, humorous and humane than the "cold" half. In addition there was a marked behavioral difference. Almost twice as many of the "warm" group interacted (class discussion) with the lecturer than did the "cold" group.

Primacy-recency effects have been observed in relation to impression formation. Luchins (1957a) found that the written information with which a person is first introduced contributes most to the impression formed. He later demonstrated that this primacy effect can be minimized

by warning the subjects to be wary of first impressions (1957b). Bruner and Perlmutter (1957) have shown that subjects tend to rely on stereotyped information when written person-decriptions are provided of foreign object-persons. In general, measurement techniques in this area seem questionable (Cronbach, 1958) and the research tends to be ambiguous and non-directive (Taft, 1955), in part due to the unrepresentative tasks used to test impression formation.

Recent technological advances are enabling researchers to become more adept at creating experimental conditions analogous to those outside the laboratory. Accordingly, the videotape recorder (VTR) may generate a more realistic representation than more structured methods of object-person presentation, such as the written and pictorial procedures discussed above. The less structured VTR technique should provide more information and produce greater accuracy of impression formation than the earlier methods.

Crow and Hammond (1957) and Cline and Richards (1960) employed a film technique of object-person presentation similar to the VTR method. However no attempt was made to determine if this technique was superior to other methods. A recent study (Boyd, 1968 unpublished data) suggests that there may be differences between VTR person presentations and written person-decriptions in the accuracy of communicating judgments. Impression formation based on written person-decriptions or photographs may be qualitatively different than those formed outside the experimental setting. Thus, the VTR may increase accuracy for two reasons: (1) representative impression formation conditions can be created experimentally; (2) increased

information is available on which to base the judgment.

Perry and Boyd (1969) showed that accuracy of impression formation in a communication paradigm is a function of method variation. Ten behavioral object-person decriptions (Boyd, 1967a) were presented to one group in a booklet and to a second group on a tape recorder. Accuracy of communication was greater in the written group than in the audio condition. Whereas encoders and decoders were permitted to review the object-person descriptions as often as they wished in the written group, encoders and decoders in the audio condition were exposed once only to the object-persons. It seems the principle advantage of a written presentation lies in the subject's capacity to go back and re-read the information as often as is necessary. Also, this enables the subject to form impressions in relation to all the object-persons, encoding in context (Boyd, 1967b). Thus, accuracy may be a function of consolidation of an impression by re-exposure, contextual encoding, or both.

The criteria of accuracy of person perception judgments have varied somewhat for different experiments. Early person perception studies asked judges to describe an emotion represented by a photograph. Accuracy was defined as social consensus, the degree to which judges could mutually agree on the emotion expressed (Munn, 1940; Secord, 1958; Woodworth, 1938). Later studies measured accuracy in terms of behavior prediction. Subjects, after being introduced to target persons, are asked to predict certain behaviors. How would the target person respond to the war in Viet Nam favourably or unfavourably? Which movies would he be interested in? The target person is given the same questions to answer as the judges are, thus the accuracy score depends on how well the judges predict the

target persons' responses. Response predicting is a fairly successful tool for measuring accuracy of person perception. Brown (1965) points out, however, that caution must be exercised when interpreting results. Projection, knowledge of a group, and response sets are three factors problematic to numerous areas of psychology, including this one. People tend to project their own responses on others, therefore accurate behavior predictions are maximized when the judges are similar to the target person. In addition, knowledge of the group of which the target person is a member may increase accuracy. And finally, the similarity of response sets of both judges and target persons may create greater accuracy of perception.

Accuracy defined in terms of response prediction was studied by Crow and Hammond (1957). They asked the question, "Is accuracy of interpersonal perceptiveness a general trait?" Sound motion pictures were made of a doctor interviewing patients. The patients were issued several tests and personality inventories: a reticence test, a self-rating scale, the Vocabulary section of the Wechsler-Bellevue Test, and an MMPI. The judges were 65 senior medical students who, after viewing the movies, were presented with the above measures and asked to answer them as they felt the patients would. Results failed to support the supposition that accuracy of person perception is a general trait. Bronfenbrenner, Harding and Gallwey (1958) suggested that the study of person perception as a general trait is confounded by the fact that accuracy may have two components, sensitivity to the generalized other, and interpersonal sensitivity. Failure to control these may account for discrepant results. Sensitivity to the generalized other involves an awareness of group norms, behaviors, and goals; interpersonal sensitivity is a knowledge of the behaviors and actions which differentiate the individual from the group. Bronfenbrenner et al.

tested this dichotomy and found that the general ability of accuracy in person perception does in fact exist. Accuracy of predicting target persons' responses tended to be a function of ability in person perception, the judge's attitude toward the group he was judging, and the similarity of the judge to the object-persons (e.g., sex).

Cline and Richards (1960), in an analysis of accuracy in person perception, used Bronfenbrenner's dichotomy to study accuracy as a general trait. These investigators sectioned off an area of a supermarket and installed movie recording equipment. Passing shoppers were randomly chosen to participate in a filmed interview of approximately eight minutes duration. The interviewer posed the same questions to each person concerning personal beliefs, politics, and religion in relatively the same order. The camera centered on the interviewee, the upper body being the prime focus of attention, while the interviewer was never shown. Twenty-eight such interviews were filmed, five of which were used in the present study. The researchers developed in depth profiles of each interviewee, including a life history, personal habits, MMPI scores, Strong Vocational Interest Blank scores, a California Psychological Inventory, a word association test, an Otis Intelligence test, a multiple choice sentence completion test, Gough's Adjective Check List, an 80-item cluster from the MMPI, and a 50-item Likert trait Rating Scale. From this information five scales were designed which were issued to the judges for completion after the films were presented. Cline and Richards found supportive evidence suggesting that accuracy of person perception is a general trait and that accuracy tends to be a function of group as well as interpersonal sensitivity.

The study of accuracy of person perception as a general trait has produced contradictory evidence. The conflict has not yet been resolved; however, Cline and Richards have suggested that existing discrepancies may be due to differential experimental techniques. Several sociometric measures, questionable as to their relevance to accuracy, are found in Crow and Hammond's study. In addition, their scoring techniques tend to be awkward and difficult to relate to Cline and Richards' research. Subject variability and the rating tasks also differentiated the two studies.

The experiments reviewed are typical examples of studies which measure accuracy using behavior prediction as a dependent variable. The question asked in this experiment concerns the importance of this approach. Behavior prediction is only one aspect of the accuracy of impression formation. Perhaps more emphasis should be placed on the accuracy of impression communication. The present study attempts to do this by measuring accuracy in an interpersonal communication paradigm as revealed in social consensus.

Accuracy and Language

Language may be considered a verbal index of impression formation. In this connection, what effect does the number of words making up an impression have on accuracy of transmission? When a judge is permitted to use an unlimited message length to encode his impression, accuracy of communication may be enhanced. However, if the encoder is permitted to use only one word to describe his impression, accuracy may deteriorate. Using an interpersonal communication paradigm, Boyd (1967a) attempted to determine the effect of message length on accuracy of communicating impressions based on written person-descriptions. He found that a general increase

in message length tended to increase accuracy of communication, but a follow-up study (Boyd, 1968 unpublished data) presenting object-persons on a VTR failed to replicate the earlier results. The problem may be a result of method. First, the messages varied from 1 to 46 words and, as the N was small, significant differences were not attained. The exact relationship of the message length to accuracy could not be ascertained. Secondly, many words used in the messages such as "a", "but", "then", "than" did not convey information essential for accurate differentiation of the object-persons and thus confounded the results. This problem has been minimized in the present study by asking subjects to restrict messages to specific lengths omitting unnecessary connectives and articles. Thus, a clear relationship should be observable between message length and accuracy of impression communication.

Other Variables Influencing Accuracy

One variable which may be extremely important to person perception and which has not yet been fully explored is motivation and its effect on accuracy of communication. Intuitively, it would seem that a perceiver highly motivated to form an accurate impression would make a more accurate judgment and communication than a low-motivated judge. The personnel interviewer who is offered a bonus for selecting the job applicant most suited for the position may make more accurate judgments.

Several authors have implied that motivation is an important variable in person perception research. Secord (1958) and later Maclay and Newman (1960) feel that motivation influences impression formation. Jones and Thibaut (1958) state that person perception is a function of

interactions, perceiver attributes, and goals toward which the perceiver is striving, the latter being central to their theoretical framework. Goals motivate the perceiver to interact and to form impressions. Thus impression formation is a function of the perceiver's goal striving behavior. This study will attempt to manipulate motivation to determine its effects on accuracy of impression communication.

The environment is composed of numerous cues impinging on an individual's sensory receptors. It seems that a minimal level of information must be present (see Munn, 1940) for a judgment to be accurately communicated. Additional information may increase the accuracy of the impression--to a certain point, after which more information becomes superfluous, and perhaps decreases accuracy (Gage, 1952). Within the social communication paradigm, it would be interesting to determine if increasing information necessarily facilitates accuracy of impression communication. The VTR should be an appropriate method of studying information limitation when compared to written or audio object-person presentation methods. The VTR should provide more information than the limited audio and written conditions. An adjective check list would clarify (by the number of adjectives checked off) which method is conveying the most information.

Two variables which have received little attention, but which may be important to person perception research are sex of judge and object-person differences. Bronfenbrenner et al found that sex differences do exist in the accurate prediction of behavior: women who were accurate in the judgment of their own sex tended to be inaccurate in judging the opposite sex, while men accurate in their judgment of males were also accurate when judging females. Overall judging ability was not significant.

Although behavior prediction was not significant in relation to sex, this variable would be interesting to study within the present communication paradigm to determine if there are any differences between the sexes in the accurate communication of impressions. Intuitively, it seems that differences also exist in the accuracy of communicating various impressions of object-persons. It may be easier to communicate accurately impressions of some object-persons, but not others. Research using the older techniques or the new communication paradigm has not explored these variables and it is hoped that the present study may provide answers.

Purpose and Hypotheses

The present study is concerned with accuracy of person perception. Specifically, the purpose is to test the effects of message length, motivation, presentation method, sex of encoder, and object-persons on the accuracy of impression communication in an interpersonal communication paradigm. The dependent measure is accuracy, defined as the judge's ability to transmit an impression to a decoder. Also being considered is the amount of information conveyed by object-person presentation methods, in this case audio, written and VTR. Gough's Adjective Check List is used as an indicant of information availability. The hypotheses are as follows:

1) Judges who are motivated to form accurate impressions generate greater accuracy of impression communication than judges who are not motivated.
2) Judges exposed to the VTR method of person presentation generate greater accuracy of communication of impressions than judges exposed to written or sound tape presentation.
3) More inofrmation about object-persons is available through VTR presentation than through written or sound tape presentations.
4) Longer messages will generate greater accuracy of impression communication.
5) Males are more accurate at communicating impressions of people than are females.

II. Method

Subjects

The subjects were 120 paid volunteers attending summer school at the University of Calgary. The mean age was 24 years. Sixty Ss were randomly assigned as encoders and the remaining 60 as decoders.

Materials and Procedure

Pre-recorded object-person interviews were presented using three methods of communication, audio-visual, audio, and written, via a video-recorder standard 21" television monitor system (VTR), a tape-recorder and a typed booklet respectively. The five interviews, randomly selected from the 28 colour films used in Cline and Richards's study (1960), were transferred to a black and white videotape. This process enabled the interviews to be separated by a 30 second interval and to be reduced in length simply by taping the first four minutes of each film. A time reduction was essential to the task, otherwise the length would have been prohibitive--40 minutes merely for object-person presentation. The interviews introduced in the audio and written conditions were modified versions of the VTR treatment videotape. The tape recorder reproduced the videotape sound track without a visual component and the typed booklet replicated the sound track in a transcribed form. Thus, three dissimilar methods were used to introduce the same five object-persons.

The dependent variable, accuracy of impression formation, is identical to that used in earlier experiments by Boyd (1967a, 1967b, 1969), and Perry and Boyd (1969). An S (encoder), having been exposed to the object-person, is asked to form an impression such that another person (decoder) can stipulate who is being described. The impression is com-

municated by written message to a group of ten decoders assigned the task of matching the correct object-person to each impression. Thus an accuracy score for any given message may vary from zero to ten. Of course, if the number of decoders is larger or smaller than ten, the accuracy score for an impression may vary from zero to the number of decoders.

Encoders

Six experimental groups of ten Ss each (encoders), five female and five male, were used to test the effect of the independent variables on accuracy of impression formation and on the number of adjectives ascribed. An instruction booklet explaining impression formation and generally outlining the format of the experiment (see appendix A) was issued to each S. The S was permitted to read the introduction, but was not allowed to proceed with the instructions. Consequently, the complete requirements of the tasks were not clarified until after the object-persons were presented. Following these presentations, the S was asked to return the booklet.

The instuctions concerning the first task required the S to form an impression of each object-person in message lengths of 1, 5, and 10 words employing only those parts of speech which convey information (i.e., omitting connectives, conjunctions and articles). Thus, the first task consisted of three parts: write an impression of each object-person using (1) one word, (2) five words, and (3) ten words. The instructions for the three parts were introduced on succeeding pages, that is, on page two the S was told to form an impression of each object-person using one word, on page three he was required to use five words, and on page four, ten words. The S was instructed not to turn the page until the exact

message lenth was generated for each object-person and not to return to a formerly completed page. After completing the first part of the task, the S was not aware of the two remaining parts. Only after he finished part I and turned the page did the S become aware that the task consisted of yet a second part. The three parts were randomized to control for order effects such that one of the following six orders was used for each S: 1, 5 and 10 word (s); 1, 10 and 5 word (s); 5, 10 and 1 word (s); 5, 1 and 10 word (s); 10, 1 and 5 word (s); 10, 5 and 1 word (s).

An adjective check list (ACL) was introduced following completion of the first task. This was done to prevent the ACL's adjective lists from influencing the impression formation task. Gough (1965) has generated a multi-purpose ACL which served in this case as an object-person measure (Warr and Knapper, 1967). It was incorporated here as an indicant of the amount of information the S utilized from a given medium (method presentation). The S was requested to check off only those adjectives which apply to his impressions of the object-persons. The S completed ACLs on only two object-persons, the map-maker and the police officer, as the time involved in doing an ACL for each object-person was prohibitive.

Message length in words. Efficiency of communicating a concept, in this case an impression, was studied by having the encoders use message lengths of 1, 5 and 10 words to determine their influence on decoding accuracy.

Motivation. Motivation was defined on two levels--high and low. High motivation was induced in Ss by offering a reward for forming accurate impressions.

The Ss were told before exposure to the interviews that if their impressions were able to be decoded with 100% accuracy by experienced judges, they would receive a $15.00 bonus. Reward for accuracy was not mentioned to those Ss in the low motivation conditions.

Presentation method (media). As explained earlier, three object-persons presentation methods were used: audio-visual, audio, and written.

Sex. Equal assignment of both sexes to each condition was performed to determine if sex differences exist in the perception of people and the communication of impressions.

Object-persons. It seems likely that impressions formed of some people are more accurately communicated than others. The accuracy with which object-persons can be encoded was tested by exposing the five object-persons to each of the six groups. The object-persons were introduced by the following occupations: a model-maker working in mapping, a newspaper writer, a psychology student, an English student, and a police officer.

These variables were arranged in a factorial design (see Figure 1) with a repeated measure on message length. A five-way analysis of variance was performed on the accuracy scores and a four-way analysis was carried out on ascribed adjectives, message length being discarded in the latter analysis. The six groups assembled to measure the effect of the five variables on impression formation were as follows:

(1) Low motivation-written (LM-W)--In addition to the instruction booklet, this group received a second booklet containing the typed video-

	LOW MOTIVATION																													
	WRITTEN										AUDIO										VTR									
	Female					Male					Female					Male					Female					Male				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1																														
5																														
10																														

	HIGH MOTIVATION					
	WRITTEN		AUDIO		VTR	
	Female	Male	Female	Male	Female	Male
1						
5						
10						

note: 1, 5, and 10 are the message lengths of the impressions (repeated measure) object-persons are:

(1) map and model-maker
(2) newspaper writer
(3) psychology student
(4) English student
(5) police officer

Figure 1. Schematic representation of factorial design.

tape interviews. The S read through the interview booklet once only after which he returned to the instruction booklet, page two, for the next set of instructions. No reward for accuracy was stated.

(2) Low motivation-Audio (LM-A)

(3) Low motivation-VTR (LM-VTR)

(4) High motivation-written (HM-W)--The same method was used as for the LM-W and, as outlined above, page one of the instruction booklet indicated a reward would be given for 100% accuracy.

(5) High motivation-Audio (HM-A)

(6) High motivation-VTR (HM-VTR).

Decoders

Ten decoders were assigned to each of the six experimental groups (encoders). In this study an encoder formed impressions of each object-person using 1, 5, and 10 word message lengths. Consequently, each encoder generated three messages on each of five object-people, for a total of 15 messages. Each group of ten encoders thus produced 150 messages. The 150 messages of varying word lengths were randomized and made into a booklet. A second booklet was composed of the 150 randomized messages in exactly the opposite order, number 1 being equivalent to number 150 in the first booklet. Five booklets of each of the two orders were given to the ten judges to decode. Each message was decoded ten times and thus, the accuracy scores ranged from zero to ten.

Each of the six groups of encoders had a group of ten decoders to match the messages. Before being exposed to the messages, the decoders were exposed to the five object-persons according to one of three presentation methods: VTR, audio, and written. The method used depended on

which group of encoders' messages they were to match. Thus, if the messages were generated by the LM-W group, the decoders were introduced to the object-persons via the typed booklets. The decoders were not exposed to any of the other treatments.

III. Results

The data reported here represent two dependent measures, an accuracy score denoting the number of errors incurred in transmission of the impression and an ACL total referring simply to the number of adjectives checked off on Gough's Adjective Check List. For the former measure, a five-way analysis of variance was used to test for significant effects, and for the latter, a four-way analysis of variance was employed. The results are presented in two parts, main effects and interaction effects.

Main Effects

The source table for the five-way analysis of variance of accuracy scores is presented in Table 1 showing both main and interaction effects.

Message length in words. Message length (A) produced a significant result on the accuracy of impression communication ($F = 29.585$, $p < .001$). The mean errors for the 1, 5, and 10 word message length conditions were 5.67, 5.02, and 4.48 respectively. Comparisons of the three means were performed using multiple t test to assess the nature of the differences. As indicated in Table 2, the three means were significantly different from each other ($p < .001$). Thus, increasing the number of words in a communication is related to decreasing the error rate (Figure 2).

Motivation. Motivation (C effect, Table 1) yielded no differential effect on accuracy of communicating impressions. Errors in communication for the low motivation group were not significantly different from those in the high motivation condition ($F = 2.244$, $p > .05$).

	SOURCE	SS	df	MS	F
1.	Between Subjects	4903.444	299		
2.	Motivation (C)	20.250	1	20.250	2.244
3.	Media (D)	11.087	2	5.544	.614
4.	Sex (E)	0.321	1	0.321	.036
5.	Object-Person (F)	2032.104	4	508.026	56.291*
6.	CD	47.180	2	23.590	2.614
7.	CE	1.210	1	1.210	.134
8.	CF	55.922	4	15.981	1.771
9.	DE	5.136	2	2.568	.285
10.	DF	222.369	8	27.796	3.080**
11.	EF	20.540	4	5.135	.569
12.	CDE	44.847	2	22.424	2.485
13.	CDF	66.298	8	8.287	.918
14.	CEF	17.851	4	4.463	.495
15.	DEF	67.653	8	8.457	.937
16.	CDEF	124.676	8	15.585	1.727
17.	Sub. w. groups	2166.000	240	9.025	
18.	Within Subjects	2368.671	600		
19.	1-5-10 word mess. length(A)	211.947	2	105.973	29.585*
20.	AC	11.120	2	5.560	1.552
21.	AD	6.347	4	1.587	.443
22.	AE	4.436	2	2.218	.619
23.	AF	24.909	8	3.114	.869
24.	ACD	38.080	4	9.520	2.568***
25.	ACE	4.827	2	2.414	.674
26.	ACF	15.158	8	1.895	.529
27.	ADE	25.058	4	6.265	1.749
28.	ADF	31.398	16	1.962	.548
29.	AEF	13.220	8	1.653	.462
30.	ACDE	23.307	4	5.827	1.627
31.	ACDF	76.442	16	4.778	1.334
32.	ACEF	23.096	8	2.887	.806
33.	ADEF	96.487	16	6.030	1.683***
34.	ACDEF	43.638	16	2.727	.761
35.	A X Sub. w. groups	1719.201	480	3.582	
36.	Total	7272.115			

*$p < .001$
**$p < .005$
***$p < .05$

TABLE 1 : Source table for the five-way analysis of variance of accuracy scores.

	$\bar{X}_1$	$\bar{X}_5$	$\bar{X}_{10}$
$\bar{X}_1 = 5.67$		4.224*	7.678*
$\bar{X}_5 = 5.02$			3.454*
$\bar{X}_{10} = 4.48$			

*$p < .001$

note: to be significant the tabled means must exceed $t_{.001/2, 480} = 3.35$.

Table 2 : Significant differences for multiple t comparisons of message length (A effect).

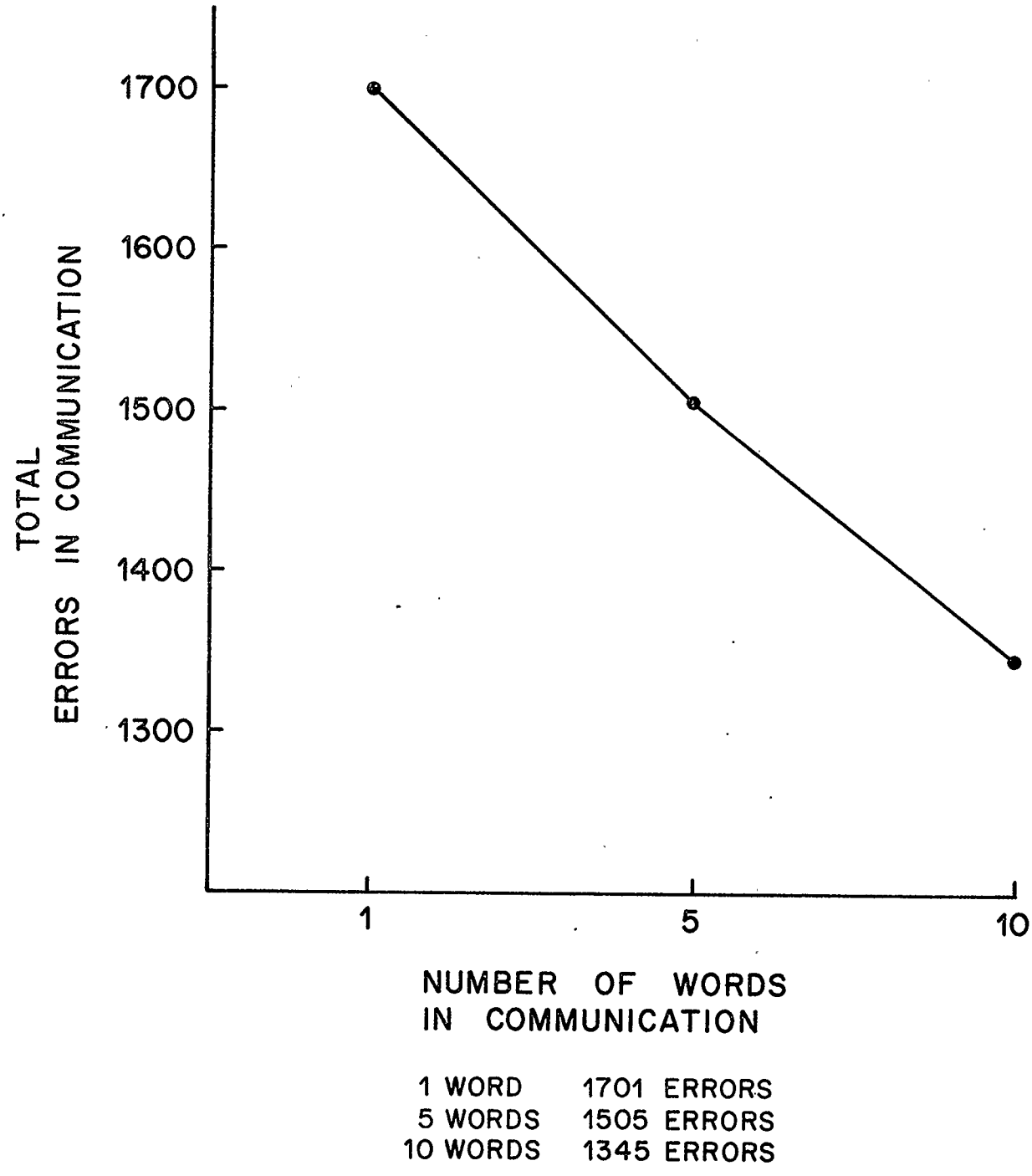


FIGURE 2 : ERROR IN COMMUNICATION AS A FUNCTION OF MESSAGE LENGTH.

Presentation method. Accuracy of communication was not influenced by the method of object-person presentation ($F = .614$, $p > .05$). The three methods (D effect, see Table 1), VTR, audio and written, revealed no significant differences in error scores. Thus, no particular advantage accrues to the use of the VTR for stimulus presentation.

It is important at this point to discuss the ACL. The source table of the four-way analysis of variance is presented in Table 3. As hypothesized, the presentation method produced a differential effect in the number of adjectives checked on the ACL ($F = 3.40$, $p < .05$). The mean number of adjectives checked off within each condition were: audio (48.93), written (62.53), and VTR (65.43) (see Figure 3). Multiple t tests were employed to determine which means were statistically significant (see Table 4). The number of adjectives checked differed significantly between the written and audio conditions ($t = 1.947$, $p < .05$) and the VTR and audio conditions ($t = 2.326$, $p < .05$), but not between the written and VTR groups ($t = .415$, $p > .05$). It seems that in forming an impression Ss in both the written and VTR conditions utilize practically the same amount of information, but significantly more information is utilized than in the audio condition.

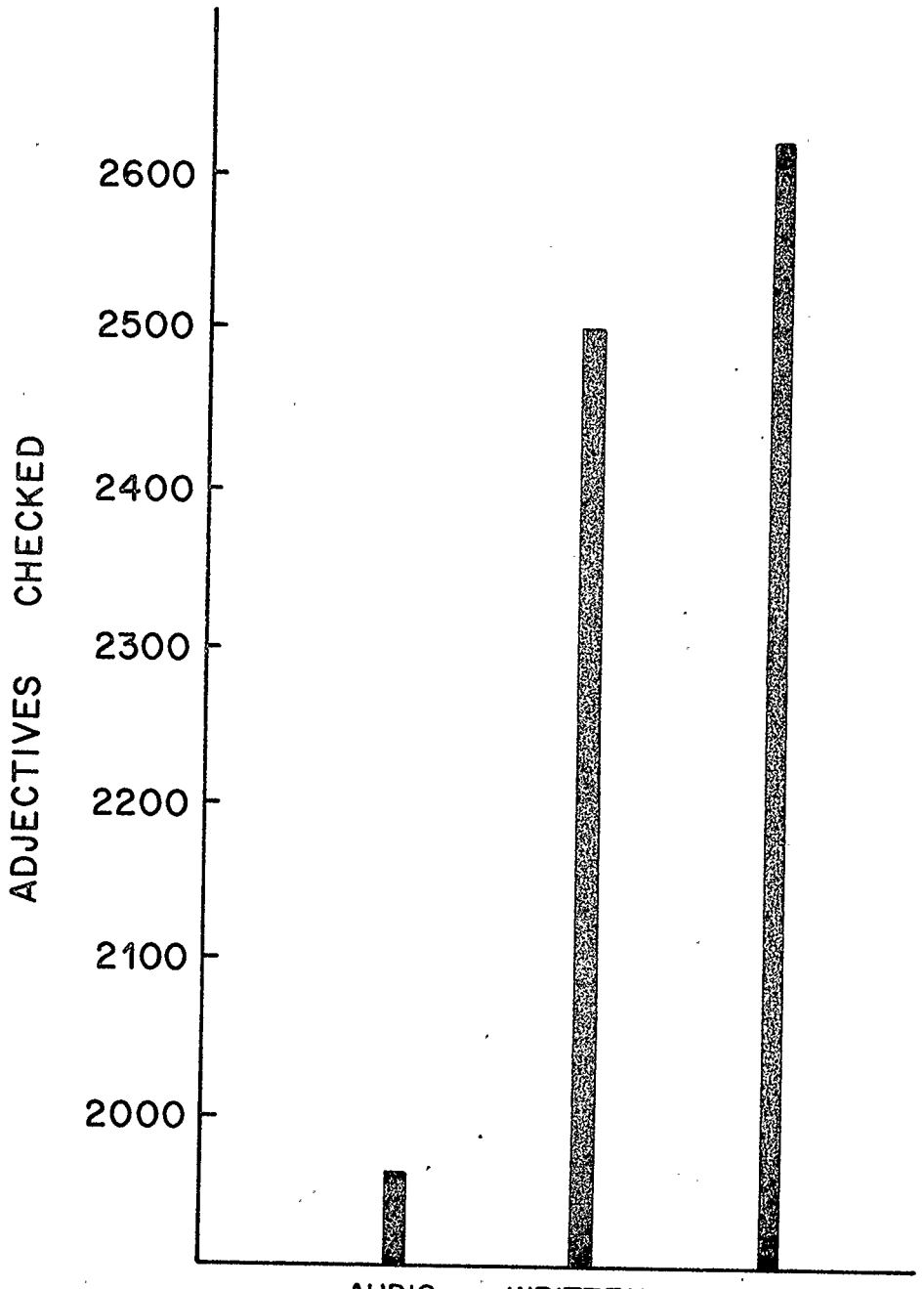
Sex. There were no differences between the sexes (E effect, see Table 1) in the accurate formation and communication of impressions ($F = .036$, $p > .05$).

Object-persons. Results of the analysis of variance represented in Table 1 show that the object-person variable (F effect) is statistically significatn ($F = 29.585$, $p < .001$). Object-persons produce a differential effect on the encoder's task of impression formation and

SOURCE	SS	df	MS	F
1. Motivation (A)	76.81	1	76.81	.08
2. Media (B)	6,637.03	2	3,318.52	3.40*
3. Object - Person (C)	472.04	1	472.04	.48
4. Sex (D)	1,484.04	1	1,484.04	1.52
5. AB	797.53	2	398.77	.41
6. AC	320.12	1	320.12	.33
7. AD	192.52	1	192.52	.20
8. BC	457.50	2	228.75	.24
9. BD	137.00	2	68.50	.07
10. CD	100.82	1	100.82	.10
11. ABC	102.34	2	51.17	.05
12. ABD	1,717.84	2	858.92	.88
13. ACD	30.02	1	30.02	.03
14. BCD	101.54	2	50.77	.05
15. ABCD	776.42	2	388.21	.40
16. W. Cell	93,663.60	96	975.66	
17. Total	107,067.17	119		

Table 3 : Source table for the four-way analysis of variance on adjectives ascribed.

*$p < .05$



		$\bar{X}$
WRITTEN	2501	62.53
AUDIO	1957	48.93
VTR	2617	65.43

Figure 3 : Graphic representation of the number of adjectives checked off in each object-person presentation condition.

	$\bar{X}_A$	$\bar{X}_W$	$\bar{X}_{VTR}$
AUDIO $\bar{X}_A$ = 48.93		1.947*	2.362*
WRITTEN $\bar{X}_W$ = 62.53			.415
VTR $\bar{X}_{VTR}$ = 65.43			

* $p < .05$

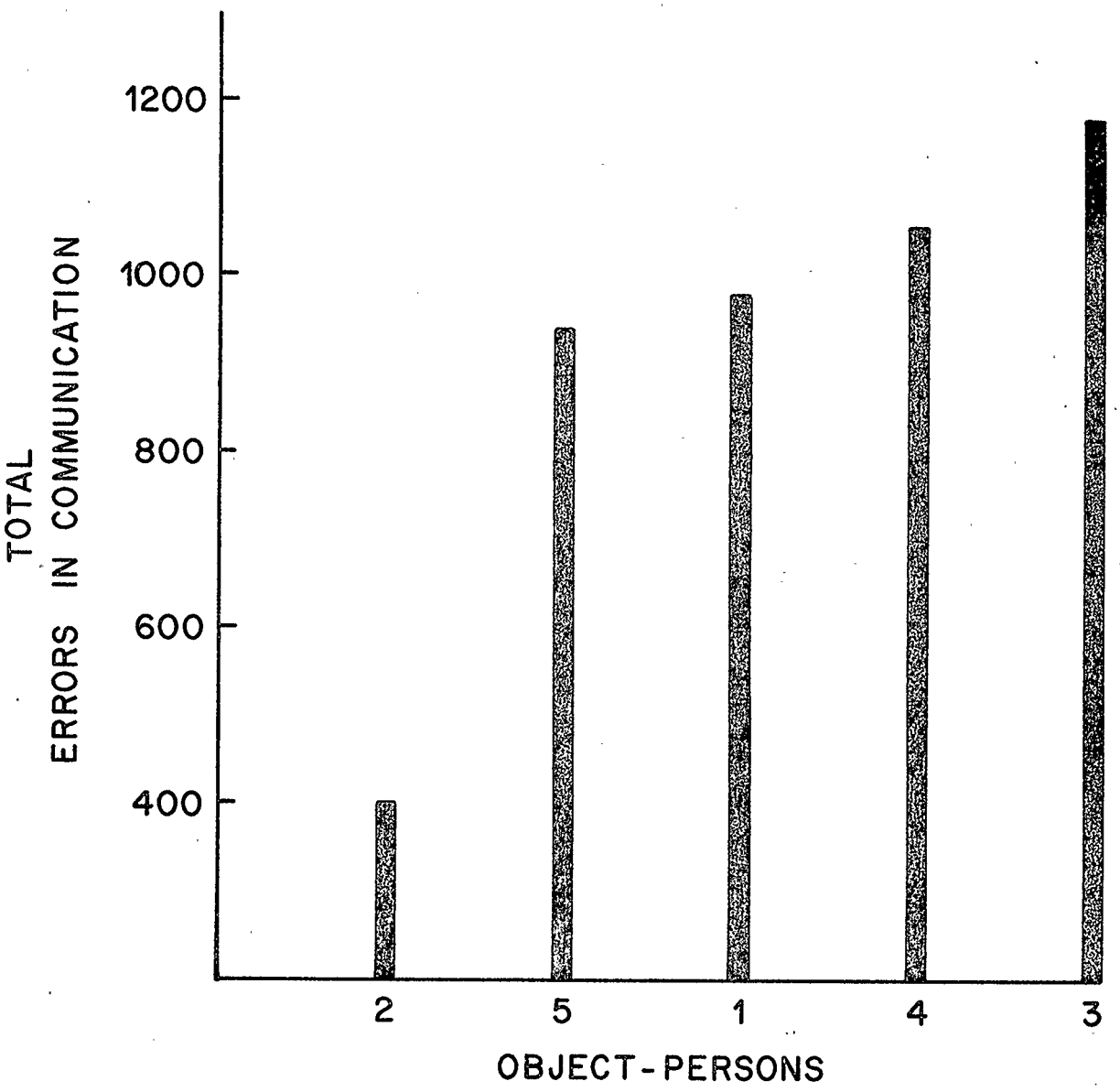
Table 4: Significant differences for multiple t tests of adjectives checked.

communication. Some object-persons can be encoded and communicated more accurately than others. The mean errors generated for each object-person were as follows: Newspaper writer (2.206), Police officer (5.189), Map and model-maker (5.467), English student (5.828), and Psychology student (6.600). The object-persons' total errors are presented in Figure 4. Multiple t tests were used to assess the significant differences between the error means which are presented in Table 5. Evidently, judges find encoding some object-persons accurately a significantly more difficult task than for others. There seem to be distinct qualitative differences between object-persons which enhance or retard accurate judgment and communication. No data were gathered with respect to personality differentiations as perceived by the encoders.

Interaction Effects

DF effect. Table 1 shows that the presentation method by object person interaction (DF effect) was significant ($F = 3.080$, $p < .005$). The total number of errors for each level are presented in Table 6. To determine the significant differences between these means, an analysis of variance for simple main effects was performed (see Table 7). Significance is apparent at the following levels: D at F_2, F at D_1, F at D_2 and F at D_3. Duncan's multiple range test was used to detect the significant differences between the means for the above levels of the DF interaction.

D at F_2 ($F = 3.576$, $p < .05$)--Table 8 reveals that the only significant difference occurring in Figure 5 is at F_2. The newspaper writer is the sole object-person in relation to whom accuracy scores differ significantly between the written and audio presentation methods.



1	MAP AND MODEL MAKER	984
2	NEWSPAPER WRITER	397
3	PSYCHOLOGY STUDENT	1188
4	ENGLISH STUDENT	1049
5	POLICE OFFICER	934

FIGURE 4 : THE NUMBER OF ERRORS GENERATED BY THE OBJECT-PERSONS (F EFFECT).

	$\bar{X}_2$	$\bar{X}_5$	$\bar{X}_1$	$\bar{X}_4$	$\bar{X}_3$
$\bar{X}_2$ = 2.206		9.419*	10.297*	11.437*	13.874*
$\bar{X}_5$ = 5.189			.878	2.018**	4.455*
$\bar{X}_1$ = 5.467				1.40	3.578*
$\bar{X}_4$ = 5.828					2.438**
$\bar{X}_3$ = 6.600					

$\bar{X}_2$	$\bar{X}_5$	$\bar{X}_1$	$\bar{X}_4$	$\bar{X}_3$
2.206				
	5.189			
		5.467		
			5.828	
				6.600

*p < .01 for $t_{.01/2,240} = 2.60$
**p .05 for $t_{.05/2,240} = 1.975$

note : The top half of the Table shows t scores for object-person mean comparisons. The bottem half depicts a mean for each object-person in the corresponding column. For each mean reported the black line joins those means not significantly different.

Table 5 : Comparisons of multiple t tests for the object-person variable (F effect).

OBJECT - PERSONS

MEDIA	1	2	3	4	5
WRITTEN	5.35	2.97	6.52	6.25	4.63
AUDIO	6.13	1.47	6.82	6.07	4.98
VTR	4.92	2.18	6.47	5.00	5.93

1 Map and Model-maker

2 Newspaper writer

3 Psychology student

4 English student

5 Police officer

Table 6 : Cell means for the DF interaction (media x object-persons).

Table 7 : ANALYSIS OF VARIANCE FOR SIMPLE MAIN EFFECTS (DF & ACD INTERACTIONS)

SOURCE	SS	df	MS	F
1. Between Ss (DF)(.01)				
2. Between D at F_1	46.75	2	23.375	2.59
3. Between D at F_2	64.55	2	32.275	3.576**
4. Between D at F_3	4.3	2	2.15	.238
5. Between D at F_4	54.68	2	27.34	3.029
6. Between D at F_5	54.30	2	27.15	3.008
7. Between F at D_1	489.09	4	122.273	13.548*
8. Between F at D_2	1093.35	4	273.338	30.249*
9. Between F at D_3	654.75	4	163.688	18.137*
10. Subj. w. groups	2166.00	240	9.025	
11. Within Ss (ACD)(.05)				
12. Between A at C_1D_1	24.09	2	12.045	3.363**
13. Between A at C_1D_2	30.77	2	15.385	4.295**
14. Between A at C_1D_3	81.33	2	40.665	11.353*
15. Between A at C_2D_1	48.81	2	24.405	6.813*
16. Between A at C_2D_2	75.16	2	37.58	10.491*
17. Between A at C_2D_3	7.85	2	3.925	1.096
18. A X Subj. w. groups	1719.201	480	3.582	
19. Between C at A_1D_1	.49	1	.49	.091
20. Between C at A_1D_2	23.04	1	23.04	4.270**
21. Between C at A_1D_3	.16	1	.16	.030
22. Between C at A_2D_1	12.96	1	12.96	2.402
23. Between C at A_2D_2	1.69	1	1.69	.313
24. Between C at A_2D_3	22.09	1	22.09	3.723
25. Between C at A_3D_1	3.61	1	3.61	.690
26. Between C at A_3D_2	8.41	1	8.41	1.559
27. Between C at A_3D_3	44.89	1	44.89	8.319*
28. Between D at A_1C_1	1.293	2	0.647	.120
29. Between D at A_1C_2	18.013	2	9.007	1.670
30. Between D at A_2C_1	32.57	2	16.285	3.018
31. Between D at A_2C_2	10.17	2	5.085	.942
32. Between D at A_3C_1	30.65	2	15.325	2.840
33. Between D at A_3C_2	11.08	2	5.54	1.027
34. Error Term	MS sub.w.groups + MS A x sub.w.groups(p-1) / p	720	5.396	
35. Between AC at D_1	9.380	2	4.69	1.309
36. Between AC at D_2	19.487	2	9.744	2.720
37. Between AC at D_3	20.73	2	10.365	2.894
38. Between AD at C_1	16.52	4	4.13	1.153
39. Between AD at C_2	44.74	4	11.185	3.123**
40. A X Sub. w. groups	1719.201	480	3.582	
41. Between CD at A_1	12.09	2	6.045	1.120
42. Between CD at A_2	36.73	2	18.365	3.403**
43. Between CD at A_3	37.15	2	18.575	3.442**
44. Error Term		720	5.396	

*$p < .01$

**$p < .05$

	$\bar{X}_2$	$\bar{X}_3$	$\bar{X}_1$
$\bar{X}_2$ = 1.467		.716	1.500**
$\bar{X}_3$ = 2.183			.748
$\bar{X}_1$ = 2.967			

W_2 = 1.086

W_3 = 1.299

** $p < .05$

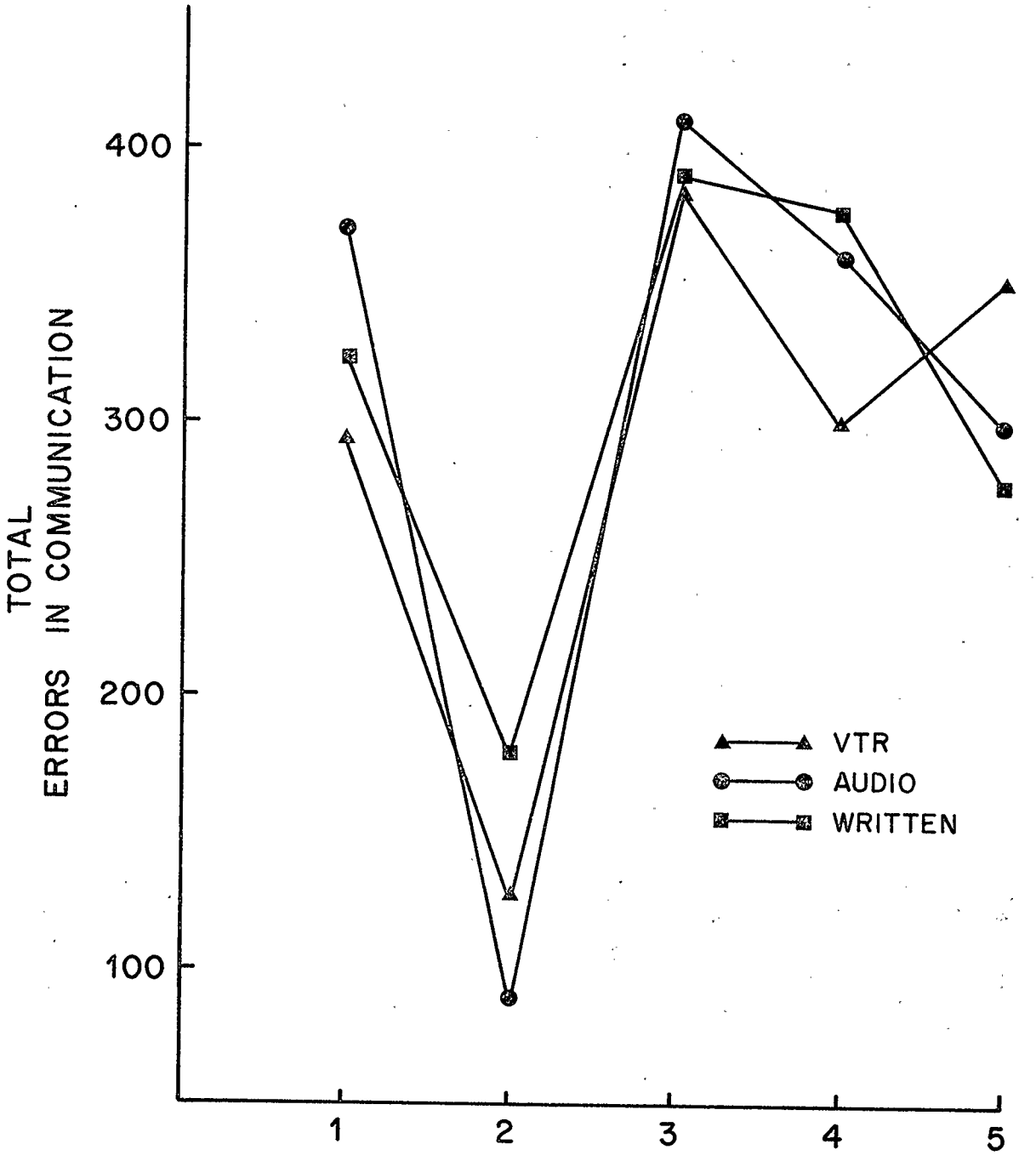
$\bar{X}_1$ = written presentation method

$\bar{X}_2$ = audio presentation method

$\bar{X}_3$ = VTR presentation method

note : The scores in the Table are means. To be significant, the mean in each column must exceed the value of the corresponding W, that is means in column 2 must be larger than W_2

Table 8 : Duncan's multiple range test of significant differences for the three modes of presentation for the newspaper writer (D at F_2).



1 Map and model maker
2 Newspaper writer
3 Psychology student
4 English student
5 Police officer

	1	2	3	4	5
WRITTEN	321	178	391	375	278
AUDIO	368	88	409	364	299
VTR	295	131	388	300	356

FIGURE 5 : The effect of the presentation method on the object-persons.

F at D_1 ($F = 13.548$, p .01)--Table 9 shows that in the written condition (D_1) the newspaper writer differs significantly from the police officer, the map and model-maker, the English student, and the psychology student; the police officer differed with the psychology student and the English student (see Figure 6).

F at D_2 ($F = 30.249$, p .01)--When the five object-persons are presented in the audio condition, the newswriter (F_2) accounts for most of the difference (see Table 10). The newspaper writer differs significantly from the police officer, the English student, the map and model-maker and the psychology student; also, a significant difference occurred between the police officer and the psychology student. It seems that in the audio condition the same results occur as in the written group, the newspaper writer (F_2) accounts for the greatest difference while the remaining object-persons tend to be undifferentiated.

F at D_3 ($F = 18.137$, p .01)--Again, most significant differences seem attributable to F_2 in the VTR condition (see Table 11). The newspaper writer idffered significantly from the map and model-maker, the English student, the police officer and the psychology student; the map and model-maker was significantly different from the psychology student.

In sum, there is an indication that method of presentation may influence accuracy of impression formation and communication. Accuracy of communicating impressions is significantly affected by the presentation conditions. See, for example, the newswriter (F_2). They tend to produce significant differential effects on encoding accuracy being increased in some methods (audio, VTR) more than in others. Those object-

	$\bar{X}_2$	$\bar{X}_5$	$\bar{X}_1$	$\bar{X}_4$	$\bar{X}_3$
$\bar{X}_2 = 2.967$		1.666*	2.383*	3.283*	3.550*
$\bar{X}_5 = 4.633$			.717	1.617**	1.884*
$\bar{X}_1 = 5.350$				.900	1.167
$\bar{X}_4 = 6.250$					.267
$\bar{X}_3 = 6.517$					

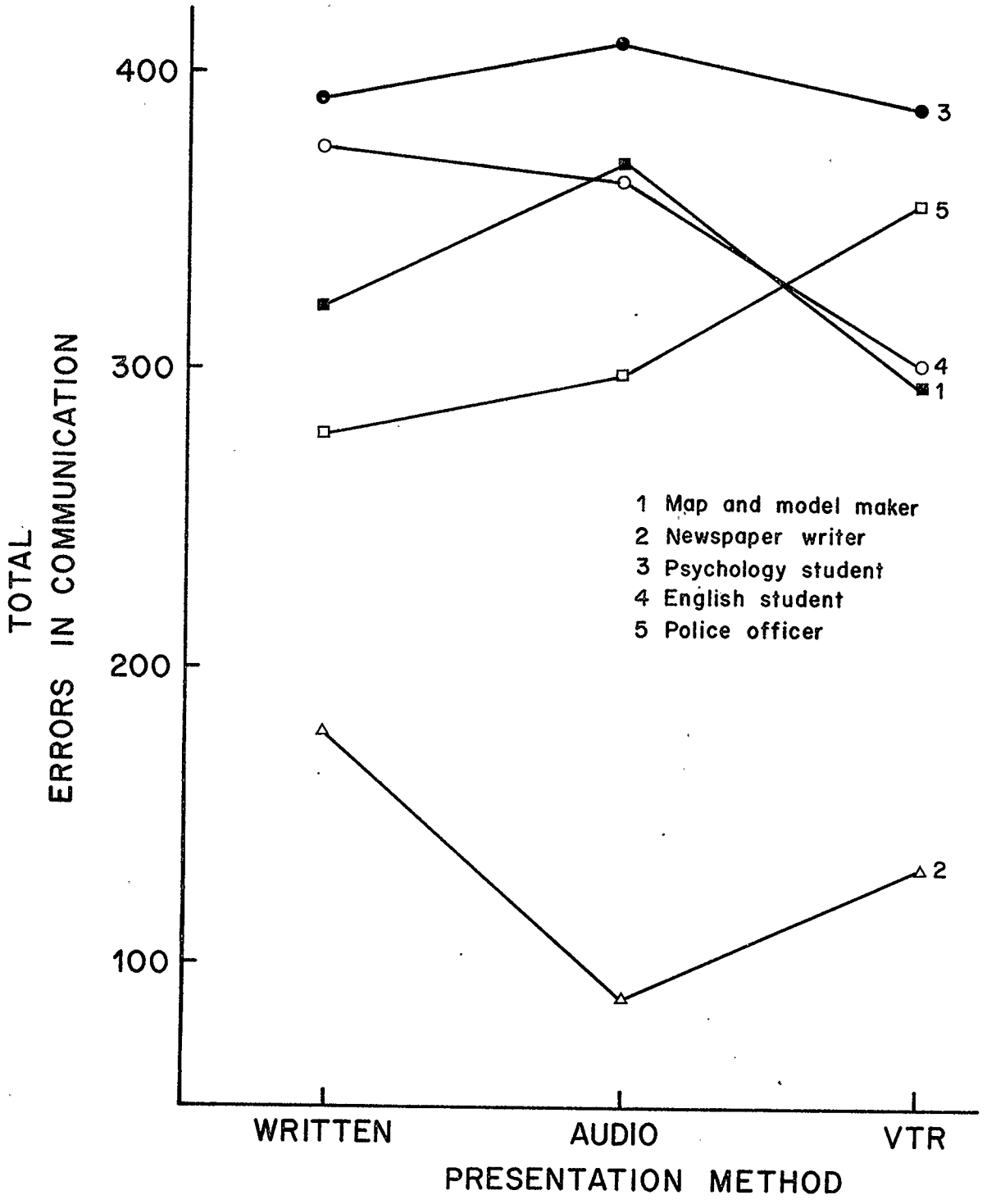
* $p < .01$
** $p < .05$

$\bar{X}_1$ = map and model-maker
$\bar{X}_2$ = newspaper writer
$\bar{X}_3$ = psychology student
$\bar{X}_4$ = english student
$\bar{X}_5$ = police officer

.05	.01
$W_2 = 1.086$	$W_2 = 1.435$
$W_3 = 1.299$	$W_3 = 1.629$
$W_4 = 1.419$	$W_4 = 1.745$
$W_5 = 1.512$	$W_5 = 1.827$

note: To be declared significant at either .05 or .01, the means in the above Table must exceed the Duncan's range test scores(W).

Table 9 : A comparison of object-person means in written condition (F at D_1) using Duncan's multiple range test.



note : For exact values at each level see the table in Figure 5.

FIGURE 6 : THE ACCURACY VARIATION OF EACH OBJECT-PERSON IN THE THREE METHODS OF PRESENTATION.

	$\bar{X}_2$	$\bar{X}_5$	$\bar{X}_4$	$\bar{X}_1$	$\bar{X}_3$
$\bar{X}_2$ = 1.467		3.516*	4.60*	4.666*	5.349*
$\bar{X}_5$ = 4.983			1.084	1.150	1.833*
$\bar{X}_4$ = 6.067				.066	.749
$\bar{X}_1$ = 6.133					.683
$\bar{X}_3$ = 6.816					

*p < .01
**p < .05

$\bar{X}_1$ = map and model-maker
$\bar{X}_2$ = newspaper writer
$\bar{X}_3$ = psychology student
$\bar{X}_4$ = english student
$\bar{X}_5$ = police officer

.05	.01
W_2 = 1.086	W_2 = 1.435
W_3 = 1.299	W_3 = 1.629
W_4 = 1.419	W_4 = 1.745
W_5 = 1.512	W_5 = 1.827

note: To be declared significant at either .05 or .01, the means in the above Table must exceed the Duncan's range test scores(W).

Table 10 : A comparison of object-person means in the audio condition (F at D_2) using Duncan's multiple range test.

	$\bar{X}_2$	$\bar{X}_1$	$\bar{X}_4$	$\bar{X}_5$	$\bar{X}_3$
$\bar{X}_2 = 2.183$		2.734*	2.817*	3.750*	4.284*
$\bar{X}_1 = 4.917$			.083	1.016	1.550**
$\bar{X}_4 = 5.00$				.933	1.467
$\bar{X}_5 = 5.933$					.534
$\bar{X}_3 = 6.467$					

*p < .01
**p < .05

$\bar{X}_1$ = map and model-maker
$\bar{X}_2$ = newspaper writer
$\bar{X}_3$ = psychology student
$\bar{X}_4$ = English student
$\bar{X}_5$ = police officer

.05	.01
$W_2 = 1.086$	$W_2 = 1.435$
$W_3 = 1.299$	$W_3 = 1.629$
$W_4 = 1.419$	$W_4 = 1.745$
$W_5 = 1.512$	$W_5 = 1.827$

note : To be declared significant at either .05 or .01, the means in the above Table must exceed the Duncan's range test scores(W).

Table 11 : A comparison of object-person means in the VTR condition (F at D_3) using Duncan's multiple range test.

persons who tend to be undifferentiated (Figure 6) do not seem to appreciably increase accuracy in one method more than another (Figure 5).

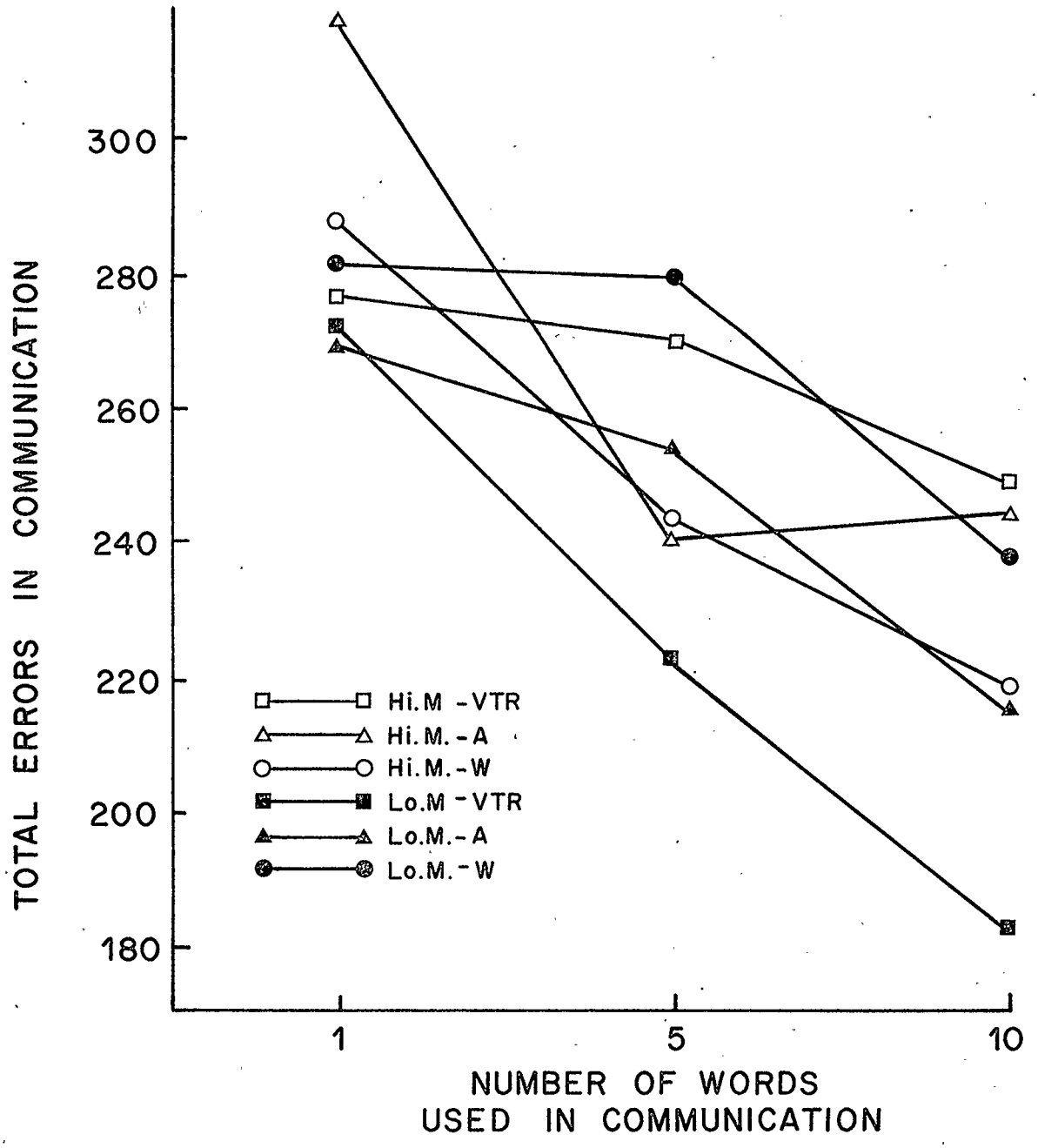
ACD effect. Table 1 indicates there was a significant ACD interaction ($F = 2.568$, $p < .05$). The mean number of errors for the specific levels of the message length by motivation by media interaction are presented in Table 12. An analysis of variance for simple main effects contained in Table 7 shows which levels of the ACD interaction are significant: A at C_1D_1, A at C_1D_2, A at C_1D_3, A at C_2D_1, A at C_2D_2, C at A_1D_2, C at A_3D_3, AD at C_2, CD at A_2 and CD at A_3. Duncan's multiple range test was used to determine the significant differences for the means of the above levels of the ACD interaction (see Table 13).

A at C_1D_1 ($F = 3.363$, $p < .05$)--This interaction shows the effect of increased message length (A) on accuracy in the low motivation-written group (C_1D_1). The means for this group found in Table 12 are plotted in Figure 7. The Duncan's range test demonstrates that the ten-word condition is significantly different from the one and five-word conditions. This suggests that increasing message length from one to five words does nothing appreciably to decrease communication error. However, when ten words are used, accuracy is significantly increased.

A at C_1D_2 ($F = 4.295$, $p < .05$)--The effect of increasing message length (A) in the low motivation-audio group (C_1D_2) tends to reflect the results found in the low motivation-written group. This relationship is presented in Figure 7. Again, no significant differences are found between the one and five-word conditions, but the ten-word condition differs significantly from both

	Low Motivation			High Motivation		
	Written	Audio	VTR	Written	Audio	VTR
1	5.60	5.38	5.44	5.74	6.34	5.52
5	5.58	5.06	4.44	4.86	4.80	5.38
10	4.74	4.30	3.64	4.36	4.88	4.98

Table 12 : Accuracy score cell means for the message length X motivation X method interaction (ACD).



ACCURACY SCORES

	Lo Motivation			Hi Motivation		
	W	A	VTR	W	A	VTR
1	280	269	272	287	317	276
5	279	253	222	243	240	269
10	237	215	182	218	244	249

FIGURE 7 : Message length X motivation X method interaction (ACD) : accuracy of the three methods in high and low motivation conditions as a function of message length.

the one and five-word groups.

A at C_1D_3 ($F = 11.353$, $p < .01$)--The low motivation-VTR group shows a substantial increase in accuracy at all levels of message length. Figure 7 illustrates that increasing message length from one to five to ten words is significant at all levels and a linear function of decreasing errors is generated.

A at C_2D_1 ($F = 6.813$, $p < .01$)--In the high motivation-written group (C_2D1) increasing message length from one to five words improves accuracy significantly (see Figure 7). However, increasing accuracy from five to ten words results in no significant decrease in errors. Thus, in this condition the important step in terms of accuracy is increasing message length from one to five words.

A at C_2D_2 ($F = 10.491$, $p < .01$)--The high motivation-audio group (C_2D_2) replicates the results found in the C_2D_1 condition. Accuracy improves significantly when message length is increased from one to five words, but no significant decrease in errors is noted by increasing message length from five to ten words (see Figure 7).

Generally, these results clarify several important points. First, low motivation tends to produce opposite effects from high motivation, in that the low motivation written and audio groups show no significant improvement in accuracy when the message is lengthened from one to five words. Improved accuracy is evident, however, when message length is increased from five to ten words. In the high motivation written and audio groups a significant increase in accuracy occurs when the message

is lengthened from one to five words, but no significant increase in accuracy takes place when messages are composed of ten words. Secondly, in the low motivation condition accuracy tends to change from a curvilinear to a linear function of message length as one progresses from the written to the audio to the VTR method of presentation.

C at A_1D_2 ($F = 4.270$, $p < .05$) and C at A_3D_3 ($F = 8.319$, $p < .01$)--These two levels of the ACD interaction suggest that accuracy decreases as one proceeds from low motivation to high motivation (C effect) for the one-word audio (A_1D_2) and ten-word VTR (A_3D_3) groups (see Table 12).

AD at C_2 ($F = 3.123$, $p < .05$)--This level of the ACD interaction involves the message length by media interaction (AD) in the high motivation group (C_2). The significant differences between the means are presented in Table 13. Of the numerous significant differences in this condition, the result which seems to provide additional insight into the ACD interaction is the one-word audio group which differs significantly from all other groups except the one-word written and one-word VTR cells. That is, no significant increase in accuracy occurs between the written, audio and VTR conditions when the encoder is limited to communicating his impression in one word. The remaining differences will not be discussed as they do not seem to further the interpretation of the ACD interaction.

CD at A_2 ($F = 3.403$, $p < .05$)--When message length is held at five words (A_2), the only significant difference in the motivation by media interaction (CD) is that the low motivation-VTR group has signi-

Table 13

ACD Interaction

A at C_1D_1

	$\bar{X}_{10}$	$\bar{X}_5$	$\bar{X}_1$
$\bar{X}_{10} = 4.74$		.84**	.86**
$\bar{X}_5 = 5.58$			.02
$\bar{X}_1 = 5.60$			

A at C_1D_2

	$\bar{X}_{10}$	$\bar{X}_5$	$\bar{X}_1$
$\bar{X}_{10} = 4.30$		.76**	1.08*
$\bar{X}_5 = 5.06$			.32
$\bar{X}_1 = 5.38$			

A at C_1D_3

	$\bar{X}_{10}$	$\bar{X}_5$	$\bar{X}_1$
$\bar{X}_{10} = 3.64$		.80**	1.80*
$\bar{X}_5 = 4.44$			1.00**
$\bar{X}_1 = 5.44$			

A at C_2D_1

	$\bar{X}_{10}$	$\bar{X}_5$	$\bar{X}_1$
$\bar{X}_{10} = 4.36$		.50	1.38*
$\bar{X}_5 = 4.86$			.88**
$\bar{X}_1 = 5.74$			

A at C_2D_2

	$\bar{X}_5$	$\bar{X}_{10}$	$\bar{X}_1$
$\bar{X}_5 = 4.80$		.08	1.54*
$\bar{X}_{10} = 4.88$			1.46*
$\bar{X}_1 = 6.34$			

*p < .01
**p < .05

	W at .05	W at .01
W_2	.749	.992
W_3	.789	1.032

Table 13 (Continued)

AD at C_2

	$\bar{X}_3$	$\bar{X}_5$	$\bar{X}_2$	$\bar{X}_6$	$\bar{X}_9$	$\bar{X}_8$	$\bar{X}_7$	$\bar{X}_1$	$\bar{X}_4$
$\bar{X}_3 = 4.36$		.44	.50	.52	.62	1.02**	1.16**	1.38*	1.98*
$\bar{X}_5 = 4.80$			.06	.08	.18	.58	.72	.94**	1.54*
$\bar{X}_2 = 4.86$				.02	.12	.52	.66	.88**	1.48*
$\bar{X}_6 = 4.88$					.10	.50	.64	.86	1.46*
$\bar{X}_9 = 4.98$						.40	.54	.76	1.36**
$\bar{X}_8 = 5.38$							.14	.36	.96**
$\bar{X}_7 = 5.52$								.22	.82
$\bar{X}_1 = 5.74$									.60
$X_4 = 6.34$									

W at .05	W at .01
$W_2 = .749$	$W_2 = .992$
$W_3 = .789$	$W_3 = 1.033$
$W_4 = .816$	$W_4 = 1.051$
$W_5 = .835$	$W_5 = 1.086$
$W_6 = .851$	$W_6 = 1.099$
$W_7 = .861$	$W_7 = 1.116$
$W_8 = .872$	$W_8 = 1.126$
$W_9 = .880$	$W_9 = 1.137$

CD at A_2

	$\bar{X}_3$	$\bar{X}_5$	$\bar{X}_4$	$\bar{X}_2$	$\bar{X}_6$	$\bar{X}_1$
$\bar{X}_3 = 4.44$		.36	.42	.62	.94	1.14**
$\bar{X}_5 = 4.80$			.06	.26	.58	.78
$\bar{X}_4 = 4.86$				.20	.52	.72
$\bar{X}_2 = 5.06$					.32	.52
$\bar{X}_6 = 5.38$						.20
$\bar{X}_1 = 5.58$						

W at .05	W at .01
$W_2 = .918$	$W_2 = 1.215$
$W_3 = .968$	$W_3 = 1.266$
$W_4 = 1.000$	$W_4 = 1.289$
$W_5 = 1.023$	$W_5 = 1.332$
$W_6 = 1.043$	$W_6 = 1.348$

CD at A_3

	$\bar{X}_3$	$\bar{X}_2$	$\bar{X}_4$	$\bar{X}_1$	$\bar{X}_5$	$\bar{X}_6$
$\bar{X}_3 = 3.64$		.66	.72	1.10**	1.24**	1.34**
$\bar{X}_2 = 4.30$			.06	.44	.58	.68
$\bar{X}_4 = 4.36$				.38	.52	.62
$\bar{X}_1 = 4.74$					.14	.24
$\bar{X}_5 = 4.88$						.10
$\bar{X}_6 = 4.98$						

* $p < .01$
** $p < .05$

ficantly higher accuracy than the low motivation-written group.

CD at A_3 ($F = 3.442$, $p < .05$)--At ten words (A_3) accuracy decreases significantly in the low motivation-written, high motivation-audio, and high motivation-VTR conditions.

ADEF effect. Because of the complexity and ambiguity of interpreting a four-way interaction, an explanation will not be attempted except to report that the message length by media by sex by object-persons (ADEF) interaction was significant ($F = 1.683$, $p < .05$).

IV. Discussion

The present study introduces a somewhat novel conceptualization of accuracy in person perception. Specifically, the effects of five variables on impression formation and transmission were observed within an interpersonal communication paradigm. This procedure yielded useful information pertaining to social communication accuracy.

The VTR presentation method was hypothesized as making more information available than the limited audio and written techniques. This should have resulted in greater accuracy of impression communication in the VTR conditions. Although judges in the VTR condition used more information, no differential effects were noted between the three media in terms of increased accuracy. One explanation is that equating the three methods for presentation may have prevented the superior qualities of the VTR from being maximized. The task required the subjects to discriminate between five object-persons. During the exposure, more information was used by encoders in the VTR condition. The implication is that if judges do utilize more information in certain media, this is because more information has been made available. It is possible that this increased amount of information made impression formation more difficult. Consequently, judges receiving a VTR presentation may require more time to synthesize the additional information than those in the limited audio and written conditions. Thus, the additional information presented in the VTR method may not increase accuracy because of limited exposure periods.

The advantages of using the VTR may be realized by repeated exposures or by lengthening the time exposure of the object-persons. This would give the subject time to consolidate the additional information. At any

rate, the VTR was shown to be equal in accuracy to the written and audio methods, and superior to the audio condition in providing more information.

Motivation produced no significant main effects. The failure to achieve significance may be partially due to the experimental manipulation of high motivation. Several subjects, having completed their tasks, stated that they did not really expect to receive a fifteen dollar bonus for 100% accuracy. These people indicated they were aware of previous social psychological experiments in which subjects were motivated by using money as an incentive. It is interesting to note that differences were in the predicted direction. It would seem that high motivation may increase accuracy, but lack of significance here may be due, in part, to an inconsistent manipulation. An alternative would be to define motivation in terms of the judges' personal involvement with the object-persons.

No evidence was found supporting the hypothesis that males are superior to females in the accurate formation and communication of impressions. Bronfenbrenner et al. (1958) point out that males tend to differ from females in making accurate behavior predictions for both sexes. Perhaps accuracy of impression communication is totally unrelated to accuracy of behavior prediction. Thus, the male superiority demonstrated with respect to the latter should not be assumed to exist in the former case.

The impressions of some object-people were communicated more accurately than others. Certain qualitative personality differences between object-persons enabled judges to encode and transmitt some better than others. Because no additional data were gathered on the object-persons, the exact parameters of this variable cannot be deter-

mined. Administration of a semantic differential would provide information on the way in which the judges perceive the personality of each object-person. Some evidence from previous research (Perry and Boyd, 1969) suggests that object-persons with negative characteristics are easier to encode and communicate accurately than those with positive attributes. Perhaps one criterion used in impression formation is an evaluation one, negative characteristics being easier to identify and communicate.

It is interesting to note that the newspaper writer and the police officer produced significantly lower error rates than the English and psychology students. Post-experimental questioning revealed the former two tended to be viewed in rather negativistic terms whereas the latter were perceived in neutral terms as being uninteresting, bland, and undifferentiable. Subjects reported the newswriter as intolerant, forceful, and narrow-minded, picking out such statements as "a life without God would be like a man without air". The police officer was soft-spoken and not uniformed, yet he was reported as being offensive. Perhaps positive attributes are difficult to perceive in others, and when memory is overloaded and exposure is minimal negative characteristics tend to be easier to isolate and more accurately communicated.

The significant method by object-person interaction (DF) may support the above interpretation of the object-person effect (F). Table 7 indicates that impressions formed of the newswriter are significantly affected by method. Judges communicate impressions of the newswriter more accurately when he is presented on the tape recorder than in the written condition. Perhaps it is not verbal content, but the tone of voice that makes him easier to identify. Coincidently, the VTR method,

having an audio component, does not significantly increase error rate. It seems that those qualitative characteristics which enable impressions of some object-persons to be more accurately encoded and communicated are influenced by certain media. Within the present interpretation, the audio condition emphasizes that negative aspect of the newswriter's personality, his tone of voice, which facilitates greater accuracy of impression communication.

The method by object-person interaction on a more general plane demonstrates that variation of presentation method affects the ability of judges to accurately encode and communicate object-person impressions (Figures 5 and 6). Cues essential to increased accuracy of impression communication may be emphasized by some methods as in the case of the newswriter. On the other hand, certain methods may present cues which conflict with the existing image of the object-person resulting in a decrease in accurate communication. An example of this is the impressions formed of the police officer which do not differ significantly between methods but do suggest a trend. In the written condition the judges have only a verbal account from which to generate an impression. Because this is limited information, judges may be forced to rely on personal experiences and expectations to complete the impression. Personal experience may have shown police officers to be the opposite of the soft-spoken officer presented in the audio condition, or the slightly-built, non-uniformed person presented on the VTR. Consequently, accuracy of impression communication decreases due to a conflict between expectations and visual cues.

The message length by motivation by method interaction (ACD,

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Table 1) provides additional supportive data for conceptualizing person perception within an interpersonal communication paradigm. The A at C_1D_1, A at C_1D_2, A at C_1D_3, A at C_2D_1, and A at C_2D_2 interactions will be discussed as a group (see Figure 7). In the low motivation written and audio groups accuracy is not significantly improved by varying communications from one to five words. Accuracy is enhanced, however, when message length is increased from five to ten words. High motivation written and audio groups show significant increases in accuracy when message length is increased from one to five words but not from five to ten. The low motivation VTR condition shows a significant increase in accuracy at the three levels of message length, while the high motivation VTR condition reveals no increase in accuracy. It seems apparent that high motivation is producing effects opposite to low motivation. The noticeable increase in accuracy from the low motivation written to audio to VTR methods is a pattern one might expect. Not only is this pattern reversed in the high motivation groups, but also accuracy is reduced. It would seem that motivating a subject produces sufficient anxiety to interfere with his ability to formulate and communicate his impressions accurately. Thus, accuracy may be enhanced or reduced depending on the perceiver's motivational state.

It is interesting to note the effect of motivation in this interaction. Although it is not significant as a main effect, motivation seems to be a predominant factor in the ACD interaction. The explanation may be the large variability between methods which possibly could minimize the main effect of motivation. Several factors hint that motivation is important in this respect: in addition to differ-

ences in motivation being in the predicted direction, motivation was predominant in the ACD interaction. The exact relationship of motivation to accuracy of impression communication could be ascertained by employing only one presentation method.

The AD at C_2 interaction (message length by method at high motivation) indicates that limitations placed on message length reduce the accuracy superiority of any one method. Results show that there are no differences in accuracy between written, audio, and VTR conditions when subjects are restricted to one word communications. If the VTR method is superior to the others in reducing error rate as indicated in the low motivation condition, subjects must not be limited to one word messages to derive full benefit from the method. Thus, certain methods that are advantageous to increased accuracy become ineffectual when severe constraints are placed on message length.

Language and Accuracy

One primary objective of this research was to determine whether language variables can provide adequate measures of impression formation and communication. As the results indicate, increased communicative accuracy is a function of the number of words composing the message. This relationship is important for three reasons. First, it supports the premise that impression formation can be successfully studied as a communication phenomenon. Information Theory (Frick, 1959) suggests that generally increased information tends to reduce ambiguity. Similarly, increased message length in words tended to decrease error rate. Information Theory concepts such as encoding, decoding, input, output, media, and communication are readily adaptable to impression formation in an

interpersonal communication paradigm. Thus, impression formation and communication may be observed in a social communication system somewhat similar to the phenomenon outside the laboratory.

Secondly, this finding re-affirms Boyd's (1967a, 1967b) original tenet that accuracy was related to message length. Subsequent studies (Boyd, 1968) suggest that the nature of this relationship depends partly upon experimental procedures. It is evident from this research and previous studies that merely asking subjects to write out their impressions leaves much to be desired experimentally. First, there are wide differences among subjects in their verbal abilities. Some subjects have acquired an extremely sophisticated verbal background, others have not; some are particularly adept at summing up impressions in a few words, others are not. Also, the task of analyzing the data becomes complicated by the fact that "information bits" are made up of one or more words. A sentence of ten words, including articles and connectives, may convey the same information as one word. Thus, a more objective procedure should be incorporated which reduces extraneous error variance between subjects. The ACL used here as an indicant of information would be adequately suited for the purpose of measuring impression formation.

Finally, this relationship provides information for the study of impression communication in person perception. Accurate communication of impressions is an integral part of impression formation. It would seem that, when speaking of accuracy of impression formation, behavioral prediction as well as communication must be considered. To define accuracy entirely in terms of behavior prediction would be to ignore an important part of accuracy of impression formation.

Several points should be considered with respect to these results. Is there an optimum point at which increasing message length no longer increases accuracy? Message lengths greater than ten words may increase accuracy to a point after which there is no further improvement. Do some instances exist in which one word communications are as accurate as or more accurate than 5, 10, or 15 word communications? This is especially relevant to "stereotype" in which one word may adequately communicate the impressions, for example, "alcoholic" (Boyd, 1967a).

Research Implications

Certain criticisms may be leveled at existing research concerning impression formation and accuracy of behavior prediction. The time factor is one variable omitted when discussing the ability to predict behavior. Sensitivity to the generalized other or knowledge of specific groups seems to be part of the socialization process. As the child grows older, he is exposed to information regarding specific identifiable groups. Thus, prediction of certain general group behaviors is made easier because of prolonged exposure. But studies concerned with interpersonal sensitivity have approached the time factor in a completely different manner. It would seem that prediction of behavior solely characteristic of one individual necessitates knowledge of that person over a period of time. Exposure times have not been equated for the two sensitivities.

Although Crow and Hammond (1957) found accuracy of person perception not to be a general trait, results show stereotype accuracy to be reliable and general. Cline and Richards (1960) demonstrated that the two sensitivities do exist, but that stereotype accuracy predominated. It is

interesting to note that both studies exposed the target persons for approximately eight minutes. There is some evidence (Gage, 1952) to suggest that short periods of exposure tend to reduce accuracy. Group sensitivity based predictions require no experimental exposure time, whereas interpersonal sensitivity predictions should require increased exposure. If the judge uses interpersonal sensitivity to make behavioral predictions when exposure time is limited, accuracy may deteriorate. The implication is that if the two sensitivities are being studied an attempt should be made to equalize object-person exposure time.

One implication of person perception and communication concerns public images. Many governments, firms, and societies may wish to have accurate impressions formed of them, accuracy delimited by the agency. Thus, specific media which facilitate the "accurate" communication of that impression may be employed. The "hippy" campaigning for office may wish an intellectual impression of him to be conveyed. Presentation on television may result in judges' focusing on his long hair and "weird" clothes and forming negative impressions. The radio, however, would allow perception to be focused entirely on the intellectual verbalizations, thus promoting a more "accurate" impression.

Marshall McLuhan (1965) has contributed to the area of communication. Basically his concern is "the medium is the message", or in person perception, the impression is dependent on the presentation method. Media in this experiment were defined as presentation methods. Results concerning the newswriter may be hypothesized as lending support to McLuhan's theory. At any rate, his theories may be tremendously important

to the study of impression formation as a function of the judges' involvement in various media. Although some form of communication medium exists in almost every home in North America, research in relation to the effect these media have on impression formation is extremely sparse.

Equally important is the necessity to construct a comprehensive theory of impression formation and person perception. Existing research is rather diverse and ambiguous. The interpersonal communication paradigm shows promise for additional research into the communicative aspect of impression formation. Accuracy of impression formation can be thought of with reference to social communication as well as behavioral prediction. A more general theory of person perception should guide new research in this area and provide a framework for incorporating the existing data in fields related to social perception.

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Appendix A

Instructions issued to the high motivation-VTR encoders

Page 1

This study is concerned with impression formation and the manner in which this information is sent from person to person. Consider the following example. You are home (or residence) and a friend phones and asks you to look up some passage in a book for him. Your friend tells you the color of the book, size, location on the shelf, etc... With this information you can go to the bookshelf, find the book, and retrieve it from all the others. Your friend has successfully transmitted the information which you in turn received and acted upon.

The information we will talk about here will be about people. When we know a person, we have certain impressions about his behavior and beliefs. We often summarize this information and form impressions, describing the person as he appears to us. In this way, we can communicate this information and other people who do not know our acquaintances get to know something from the descriptions we provide. For example, if we were to say that a friend of ours, James Johnson, was "enthusiastic and socially oriented", a listener who does not know James would likely pick him out as the most active conversationalist in a group of students. We would also expect James to belong to several campus organizations, and to have many friends.

Your task is this: You will be presented with five interviews to view on the television. The interviews involve a dialogue between an

interviewer and five interviewees. The dialogue involves a series of questions and answers in which one person is interviewed at a time. The interviewer asks each interviewee approximately the same questions and each interview lasts 4 minutes. Your task is to form an impression of each of these five interviewees and to answer several questions pertaining to your impressions of them. After each person is presented, you will have approximately 30 seconds to form an impression of that person before moving on to the next.

Impression formation in this experiment is a skill testing task: The ability to form impressions of other people such that another person would be able to ascertain which individual of a group is being described by a particular impression. The impressions you form will be presented to highly trained judges who will determine which interviewee is being described by each of your impressions. (If each of your impressions can be matched to the correct interviewee, you will receive a fifteen dollar ($15.00) bonus). That is, there are five (5) interviewees and you must form impressions of each. If it is possible to determine exactly which of the five interviewees each impression refers to, then you will receive $15.00.

Page 2

Write your impressions (type of person, kind of individual, etc.) of each of the characters in exactly 5 words such that another person reading your description would be able to pick that person out of the group of five people, (i.e., to know who is being described). Use only descriptive parts of speech such as adverbs, adjectives, and nouns (also slang)---do not use articles (the, a) or connectives (and, but, what

whom). Hyphenated words of up to four (4) components may be counted as one (1) word.

1) Map and model designer:

2) Newspaper man:

3) Psychology student:

4) English student:

5) Police officer:

Page 3

Write your impressions (type of person,kind of individual, etc.) of each of the characters in exactly 10 words such that another person reading your description would be able to pick that person out of the group of five people (i.e., to know who is being described). Use only descriptive parts of speech such as adverbs, adjectives and nouns (also slang)--do not use articles (the, a) or connectives (and, but, what, whom). Hyphenated words of up to four (4) components may be counted as one (1) word.

1) Map and model designer:

2) Newspaper man:

3) Psychology student:

4) English student:

5) Police officer:

Page 4

Write your impressions (type of person, kind of individual, etc.) of each of the characters in exactly 1 word such that another person reading your description would be able to pick that person out of the group of five people (i.e., to know who is being described). Use only

descriptive parts of speech such as adverbs, adjectives and nouns (also slang)--do not use articles (the, a) or connectives (and, but, what, whom). Hyphenated words of up to four (4) components may be counted as one (1) word.

1) Map and model designer:

2) Newspaper man:

3) Psychology student:

4) English student:

5) Police officer: