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GRADUATE COLLEGE

VERBAL CONCEPT IDENTIFICATION AND THE BODY PERCEPT

A DISSERTATION

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APPROVED BY

DISSERTATION COMMITTEE

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VERBAL CONCEPT IDENTIFICATION AND THE BODY PERCEPT

CHAPTER I

INTRODUCTION AND PROBLEM

A large amount of definitive research regarding the body percept and its characteristics has been accomplished. Persons with a high body boundary concept (percept, image) are considered to manifest high achievement motivation, be more atuned to external stimuli and be more communicative than those with a low percept (Fisher & Cleveland, 1958; Fisher & Cleveland, 1965). Females are also generally felt to be more concerned with their bodies than are men, a fact that has been borne out by research (Fisher, 1964a; Jourard & Secord, 1955; Katcher & Levin, 1955; Pishkin & Blanchard, 1964; Pishkin & Shurley, 1965; Secord, 1953; Weinberg, 1960).

Although conflicting evidence is presented, some experimenters (Es) have found that opposite sex Es cause subjects (Ss) to perform the given tasks at higher levels of proficiency than do Es of the same sex as S (Kuhn, 1960; Stevenson & Allen, 1964).

While much work has been done in the area of visual concept identification (CI) (Bourne, 1957; Bourne & Haygood, 1959; Pishkin, 1960; Pishkin & Wolfgang, 1964; Wolfgang, Pishkin, & Lundy, 1962; Wolfgang, 1965), and some has been accomplished in the auditory realm

(Pishkin & Blanchard, 1964; Pishkin & Shurley, 1965; Pishkin & Rosenbluh, 1966), little has been done with verbal CI (Pishkin, Smith, & Lundy, 1962). Attempts have been made to relate visual CI performance with such measures as intelligence and abstract ability (Lydecker, Pishkin, & Martin, 1961; Wolfgang, in press; Wolfgang, Pishkin, & Lundy, 1962; Wolfgang, Pishkin, & Rosenbluh, in press), but verbal CI has remained uncorrelated.

Common to both CI and body percept research is a reliance on mental or internal events such as set, motives, emotions, desires, and attitude. These two areas of study are directly concerned with the perception of stimuli impinging upon the sense organs of S. While CI has, for the most part, concentrated on the results of these internal events, body percept research has been concerned with the development of the perceptual systems which interpret the incoming stimuli.

In the present study an attempt will be made to relate the verbal CI of visually presented body part words with the body percept and other variables such as sex of E and sex of S.

An experimental approach to the importance of such internal events as those noted above was offered by Sherif (1936) when he demonstrated that the individual tended to set his own norms in judging autokinetic movement. In another study Sherif (1935) found that Ss judging the supposed writings of previously rated authors tended to give ratings to the pieces similar to those they had given the authors, although the names had been paired with different works by one author. In each of these instances, the internal frames of reference were shown to have determined how the Ss would perceive the stimulus.

In much the same light, Pilisuk (1962) found that Ss refused to think badly of friends who had supposedly been derogatory about them while tending to react negatively toward strangers who had supposedly so responded toward the Ss. The apparent importance of internal factors was also demonstrated by Rosenbluh (1966) who found that Ss demonstrating a strong commitment to a political stand tended not to change their attitudes toward the candidate opposing this stand after he had won the election. A change had been found in previous elections when internal involvement was not as apparent.

What is inferred above is that the individual utilizes a frame of reference based on his desires, motives, attitudes, sets, and emotions in the conceptualization of perceptual events.

Body Percept

A form of experiential and perceptual reservoir has been defined by Fisher and Cleveland (1958) and modified by Fisher (1964a; 1964b) and Fisher and Cleveland (1965). Utilizing Head's (1926) "postural model," which developed out of observations of brain damaged and schizophrenic patients, Schilder (1950) postulated a schema of body unity--a picture in our minds of how our bodies appear. Where Schilder tended to stop with body image-modified perceptions of body and its extensions (tools, clothes), Fisher and Cleveland extended their concept into all modes of behavior. They assert that one develops an idea as to just how he looks through an interaction with his environment. Whether sick or healthy, one has a body image, but one's physical and mental states will tend to influence this conception. For example, the brain damaged person

has a distorted body image and may even insist he has no body at all. An amputee may develop a phantom limb to compensate for his loss. The schizophrenic may feel that his body continues on into infinity or may consider it as belonging to someone else. Small children, if asked to draw a self portrait, will often make the hands an extension of the head or mouth. Even a mentally normal adult, if in pain, will tend to exclude the afflicted area from his body. The authors have also reported that the sex of the individual can even influence his interest in architectural or geometric forms. Children, for example, when constructing toy cities tended to build according to their sexual body image: boys built more erect or mobile structures; while girls constructed more open, easily accessible ones. In a similar vein, several studies have reported a more delineated and steady body image in females than in males (Jourard & Secord, 1955; Katcher & Levin, 1955; Secord, 1953; Weinberg, 1960). Fisher states, "The body schema differentiation between males and females may not be entirely (or perhaps even primarily) a function of the phallic-nonphallic dimension . . . it is probable that it does involve more generalized variables like feelings about body size and overall awareness of one's body" (1964a, p. 2).

As part of their schema, Fisher and Cleveland employ a further concept of body boundary. The stronger the boundary, the more pronounced the body image and the greater the relative importance of external body parts. In psychomatic illness the strong boundaried patient tends to develop more external (skin, muscles) symptoms as opposed to internal (visceral). They also note that "an extended series of studies has proven that the barrier score is related to various

behavioral and physiological variables . . . the more definite an individual's boundaries, the more likely he is to behave autonomously, to manifest high achievement motivation, to be invested in task completion, to be interested in communicating with others, and to serve an active integrative role in small group situations. . . ." (Fisher & Cleveland, 1965, p. 53). These authors infer that the higher the body boundary the more sensitive the external senses (Fisher & Cleveland, 1965, p. 59).

Other researchers who have considered body image to be a function of the interaction of the external environment and the body are Piaget (1952), Wapner and Werner (1965) and Witkin (1965). Also common among all the above students of the body percept (image) is an emphasis on the developmental aspect of the concept. As the child matures, so his body image matures.

Concept Identification (CI)

Beginning with the work of Hull (1920), an interest in the formation of concepts was started. Hull asked Ss to match certain nonsense syllables with Chinese characters, thereby forming concepts. The cues to be learned were, for example, a radical (✓) found in the characters associated with a given syllable ("oo"). For Hull an individual learns to discriminate the common element in the characters and then, through reinforcement, generalization and discrimination, recognizes and utilizes similar elements under new conditions. Somewhat later, Edna Heidbreder (1946a; 1946b; 1947; 1948), using drawings presented on a memory drum, had her Ss match spoken nonsense labels with specific

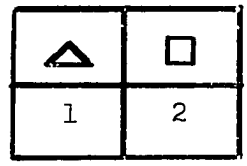
illustrations. After having heard the names for one trial Ss would then attempt the naming on their own, with prompting when necessary. For example, faces might be "RELK" and buildings "LETH." Heidbreder dealt with three general types of concepts: concrete objects, spatial forms, abstract numbers. For ease of attainment Heidbreder found that concrete objects came first and were followed by spatial forms and abstract numbers, respectively. It is also this order of dominance which Heidbreder felt was learned by the child during its development.

In effect, it was the work of Hull and Heidbreder which began the inductive approach to concept learning. Instead of beginning with a principle for which examples were to be sought, these researchers supplied many examples from which the S could derive the concepts.

Carrying on from Heidbreder's findings, Baum (1954) introduced a new principle: stimulus complexity. Based on Eleanor Gibson's (1940) determination that Ss tend to generalize associations from similar words, Baum found that concepts most difficult to learn, in Heidbreder's task, contained stimuli which were frequently interchanged. In line with such findings Attneave (1954) suggested a matrix-type perceptual theory based on information processing theory. Attneave's matrix is composed of all the simple stimuli of a given complex stimulus. The amount of independence determines which stimuli may be tested separately. In effect, the Ss should first seek out those points which will yield the most information; after having done so enough times to have sampled the matrix they may then predict what the other points are and, thereby, name the concept. Transposing Attneave's matrix and information theory to account for Heidbreder's results, one may say that the more complex

the matrix, the greater the number of bits of uncertainty (where bits equals the logarithm of the alternatives to the base two).

Putting this into experimental terms, Archer, Bourne, and Brown (1955) developed a method based on bits of uncertainty from information theory whereby a concept could be presented. An example of the designs which have evolved from this method is: if the correct concept is "form" (A = triangle and B = square) and complexity is introduced through the added irrelevant dimension of number (one or two), a matrix might be generated as follows:



In such a situation the most economic approach would be to ask, for example, "Is A on top?" (Question 1). Since the answer is "yes," the next one might be, "Is it on the right?" (Question 2). Regardless of the question or answer, S knows which of the last two alternatives is correct. He has asked two questions and resolved two bits of uncertainty ($2 = \log_2 4$).

In the same experimental vein, Bourne (1957), Bourne and Haygood (1959), Pishkin (1960), Pishkin and Wolfgang (1964), Wolfgang, Pishkin, and Lundy (1962), and Wolfgang (in press), among others, demonstrated what Baum (1954) had found regarding complexity and its relation to errors. However, keeping to the information theory format, these researchers varied complexity by the introduction of irrelevant

information in binary fashion (if number was irrelevant and form relevant, one or two triangles would still be "A").

An attempt at enhancing the negative effects of complexity was introduced by Pishkin (1960). Besides varying the amount of irrelevant information, Pishkin (1960), Pishkin (1961), and Wolfgang, Pishkin, and Lundy (1962) found that higher percentages of misinformation feedback (telling S he is correct when he is not) increased the errors over and above the increase due to greater complexity.

An added finding, in auditory CI, was that adult females performed better than males when the relevant dimension was one in which S was required to differentiate between the left and right ear as the recipient of stimulation (Pishkin & Blanchard, 1964; Pishkin & Shurley, 1965). When signal duration and tonal frequency were the relevant dimensions, no sex differences were manifested. In discussing their results, Pishkin and Shurley stated, "Laterality (i.e., which ear) was the only dimension tested which is 'personal' and relative to S's own body. Clinical observation and psychoanalytic theory both indicate that women generally have more self-love (narcissism) and more emotional investment in their bodies, and sensitivity to body stimuli than men. . . ." (1965, pp. 679-680). They added, "it may be postulated that the sensory input, which initiates the perceptual and analytical chains of events resulting in successful solution of the problem, falls on ears of an organism which is more 'sensitized' or 'set' to perceive in that mode in females than in males" (1965, pp. 679-680). That such an increased sensitivity develops with age and apparent experience was shown

by Pishkin and Rosenbluh (1966), when no significant differences in laterality were found between males and females under age 16.

Verbal CI

A precursor to studies in verbal CI were those in which the experimenter offered some type of reinforcement whenever S made a desired verbal response. The methods employed were in a Skinnerian-type paradigm where S determined what would be said and when it would be stated. E merely attempted to increase the likelihood of certain words or types of words. Among others, Greenspoon (1955) reinforced plural nouns with "good," "mm-mmm;" Taffel (1955) reinforced "I" and "we" with "good;" and Binder, McConnell, and Sjoholm (1957) reinforced "hostile" verbs with "good."

In the verbal reinforcement studies, represented by those above, S was not made aware by E that he would be reinforced for making certain responses. In fact, he was not even informed that anything would be reinforced. Concerned with his findings (Pishkin, 1963) that the presence of E engendered influence on S, and building on a method used earlier (Pishkin, Smith, & Lundy, 1962), Pishkin and Foster (1965) devised a design whereby Ss could be seated alone or in groups, about a table, with reinforcement given by red or green lights mounted on a box before each S. Reinforcement was presented by E, from a different room, each time an S, under the specific experimental conditions, would utter the pronoun "I." Unlike the aforementioned Skinnerian-type conditioning paradigm, Pishkin et al., (1962) introduced CI to verbal and social conditions by informing the Ss that their task was to ascertain what concept was being reinforced.

Present Study

Considering the findings and assumptions of Fisher and Cleveland (1965) that the person with a strong body boundary (percept, barrier) is more apt to manifest high achievement motivation and be more attuned to external stimulation it is hypothesized that:

1. Persons demonstrating a strong body percept on the Holtzman Inkblot Test (Fisher & Cleveland, 1965; Holtzman, Thorpe, Swartz, & Herron, 1961) will show greater facility on a verbal CI task, to be presented on a modified Pishkin and Foster (1965) apparatus, than will those with low body percept scores.

Due to the findings of Fisher and Cleveland (1965) that high boundaried people are more prone toward communicating with each other it is expected that:

2. Ss with high body percept scores will make significantly more responses, i.e., will use significantly more stimulus words, thereby receiving more feedback, than will those with low body percept scores.

The findings of Pishkin and Blanchard (1964) and Pishkin and Shurley (1965) that females scored higher than did males on an auditory CI task when laterality (i.e., which ear) was the relevant dimension, were interpreted as the narcissistic tendency which seems to develop to a greater extent in adult females than in adult males. This tendency was considered the basis for the females' greater awareness of parts of their bodies and, therefore, of which part was stimulated. What, in psychoanalytic terms, is defined as female narcissism may well be what Fisher

(1964a), Jourard and Secord (1955), Katcher and Levin (1955), Secord (1953) and Weinberg (1960) classified as the females' demonstration of a more delineated and steady body image. Assuming such to be the case, it is hypothesized that:

3. Since the concepts to be identified are body parts, females will demonstrate greater facility in solving the problem than will males.

Recently, the sex of E has been shown sometimes to affect the S's response (Rosenthal, 1963). In an experiment on marble sorting, Stevenson and Allen (1964) noted that the general level of performance was higher for Ss tested by Es of the opposite sex, although females performed at a higher rate than did males regardless of E's sex. Studying the effect of manifest anxiety and sex of E on verbal conditioning, Ogawa and Oakes (1965) found that high anxiety males did better with female Es and that low anxiety males did better with male Es. Female Ss manifested no differences with different sex Es. With an interest in the effects of E's sex on the verbal conditioning of "mildly hostile" words in sentences, Binder, McConnell, and Sjoholm (1957) found that a soft-spoken young lady elicited more correct responses than did a robust ex-Marine-type male. However, the relative perceived hostility of the Es casts doubt on the effect of E's sex. With projective techniques the importance of the sex of E was even more in doubt. Kuhn (1960) found that the number of responses to the Rorschach test was lower when the examiner was of the same sex as the S. However, Alden and Benton (1951), studying the overt and covert sexual responses of male Ss to male and female Es, found no significant differences with the Rorschach blots.

Curtis and Wolf (1951), making a similar survey, found statistically significant differences. Rabin, Nelson, and Clark (1954) found no differences in anatomical responses to male or female Es when male Ss waited for the examination in a room decorated with anatomical charts, but when the waiting room was hung with pictures of nude women more sexual responses were made with male than with female Es. Clark (1952), using the TAT, found that male Ss gave more sexual responses with a male E than with a female E. Holtzman (1952) determined that 12 judges could not guess the sex of the Es by judging the Draw-A-Person pictures of 40 male and 40 female Ss. Using two female and two male Es, Garfield, Blek, and Melker (1952) found that neither the sex of E nor the interaction of sex of E and sex of S demonstrated any significant differences in TAT stories. Considering the findings of Kuhn (1960) and Stevenson and Allen (1964), it is hypothesized that:

4. Ss will identify the concepts more quickly when tested by Es of the opposite sex than when tested by Es of the same sex as S.

CHAPTER II

METHOD

Subjects

Ss were 64 male and 64 female volunteers from introductory sections of psychology at the University of Oklahoma. One-half of the male and one-half of the female Ss were randomly assigned to a male E and one-half of each sex Ss were assigned to a female E.

For the purpose of analysis Ss were first divided into high and low body percept scorers with high scorers being above the median and low scorers being below the median of the range of Holtzman Inkblot scores.

To balance out the number of Ss with each E for high and low body percept scorers, and to test the hypotheses by extremes of body percept, the top and bottom 25% of body percept scorers for each E x S cell were separated out from the entire sample and the same analyses were performed as on the whole sample.

Apparatus

The S apparatus consisted of an intercom box, on each side of the top of which, was situated one red light. The left light was labelled "A" and the right one "B." Between the two red lights was a white light. On a panel attached behind the intercom was a card

containing with some of the pertinent instructions from those read to S and some hints to aid in sentence construction (see Appendix I). Ten feet behind the table on which the S's apparatus was situated was a partially screened E's table on which another intercom box (connected by shielded cable to the first) was placed. The partial screen allowed E to veil somewhat the spread of equipment on the table and to post pertinent information for the operation of the apparatus and the reinforcement of S's responses. The E box had one manual counter on each side, corresponding to lights "A" and "B" of S. Depressing either counter plunger would activate the respective red lights by way of micro-switches mounted on the counters. A white light was also present in a separate box on E's table. Connected to the speaker of E's box was a clock, activated by a voice operated relay, to measure talk time. Attached to the two white lights was an industrial timer which automatically activated the lights for one minute of each of six three-minute cycles.

Also used was deck A of the Holtzman Inkblot Test to measure body percept and, considering the findings of Wolfgang, Pishkin, and Rosenbluh (in press) that abstract ability and vocabulary may bear some relation to CI ability, the Shipley Institute of Living Scale was administered.

The room was lighted but had black walls, floor, and ceiling and was semi-soundproofed, including the windows and doors.

Design and Procedure

The experiment was designed as a 2 x 2 x 2 factorial, with two levels of E sex, two levels of S sex, and two levels of body percept

(high and low). As noted above, hypotheses tests were made on the entire sample divided by the median for high and low body percept and on top and bottom 25% of percept scorers.

Ss were first administered the Shipley test by their respective instructors in the classroom situation. No connection was made between these tests and the request for volunteers made several days later.

Upon their arrival at the experiment Ss were administered the Holtzman Test until the first 25 responses had been made. These responses were scored as set forth by Cleveland and Fisher (1960; Holtzman et al., 1961). The inkblot test was presented by the E to whom the S had been assigned in a small antiroom adjoining the main one. They were then ushered into the CI room and seated with their backs to the E table. After reading the instructions (see Appendix I) and answering any questions, E returned to his table and began the CI portion.

The CI test was composed of six two-minute periods during which S picked up pre-ordered cards containing one body part each (14 above the waist and 14 below--see Appendix I) and made one complete sentence for each word. The order of presentation was set after random shuffling; two duplications of the words and order were added to the deck. If all three series were completed before time was called, S was instructed, by a sign at the bottom of the pile, to begin again. Immediately upon S's statement of the word, E administered feedback for one-half second by lighting "A" for above or "B" for below the waist. The white light signaled the end of the two-minute sentence-making period and the start of a one-minute solution period in which S stated what he though "A"

and "B" referred to, e.g., "I think 'A' lights up whenever I mention a part of the body above the waist." E gave no information as to S's correctness until completion of all six periods. At the end of the session S was admonished not to discuss the experiment with anyone.

After the reading of instructions, verbal communication was held to a minimum, being employed only to correct an apparent misunderstanding of the instructions.

Measures included body percept defined as the total number of body barrier responses given to the Holtzman Inkblots; number of responses made by use of the stimulus cards, i.e., how many cards (words) were used; time to criterion (minutes needed to achieve solution or until end of last time period if solution not reached); talk time in minutes measured by a voice-actuated relay-operated clock; Shipley Institute of Living Scale measures of intellectual level (vocabulary) and abstract ability (these latter assessments were made to determine whether any relationship might exist between intellectual level and/or abstract ability and ability to solve this verbal CI task).

CHAPTER III

RESULTS

Tests of Hypotheses

Determination of High and Low Body Percept. Before any tests could be made, the relative positions of each S on the body percept continuum had to be determined. Those Ss scoring above the median of body percept scores were classified as high barrier Ss (Hi's) while those falling below were labeled Lo's. The range of scores was from 0 to 15, the mean was 4.66, the mode was 3 and the median was 4.18. As a means of balancing out Ss with Es for each of the two body percept poles the Top and Bottom 25% of body percept scorers in each E x S cell were selected for the same hypotheses tests. With a total N of 128, Top and Bottom numbered 8 each per cell.

Total Time to Criterion. An analysis of variance was accomplished on the total time to criterion (see Appendix II), defined as the number of minutes to solution or until the end of the last block of time. The range of scores was from one to twelve minutes. Time to solution was considered the sum of all the two-minute blocks of time until that block in which S stated the correct solution, plus one-half of that block. The analysis (see Table 1) showed only the triple interaction of E sex x S sex x body percept (P) to be significant.

Table 1

Analysis of Variance of Time to Criterion
for Entire Sample

(Experimenter sex [E], Subject sex [S], Body percept [P])

Source	df	MS	F	p
E	1	10.12	.56	NS
S	1	32.00	1.76	NS
P	1	.37	.02	NS
ES	1	3.13	.17	NS
EP	1	4.32	.24	NS
SP	1	26.67	1.47	NS
ESP	1	79.95	4.39	<.05
Error	120	2184.31		

An analysis of variance (see Table 2) was run separately for the male E and the interaction of S sex and body percept was found

Table 2

Analyses of Variance of Time to Criterion
for Male and Female Experimenters
for Entire Sample

(Subject sex [S], Body percept [P])

Source	df	MS	F	p
Male				
S	1	7.56	.44	NS
P	1	2.72	.15	NS
SP	1	99.08	5.81	<.025
Error	60	17.04		
Female				
S	1	27.56	1.42	NS
P	1	2.97	.15	NS
SP	1	6.54	.34	NS
Error	60	19.37		

significant. A similar analysis with the female E showed no significances (see Table 2).

Simple effects analyses (Winer, 1962) were run on all appropriate variables within the significant interaction (see Table 3). On Figure 1 will be found the representation of E x S x P. Here it can be seen that for the male E, Lo female Ss took less time ($\bar{X}$ = 5.69) to criterion than did Hi female Ss ($\bar{X}$ = 8.63), while male Ss manifested no significant differences. However, significant sex differences, within the male E dimension were shown. Hi male S with the male E needed significantly less time ($\bar{X}$ = 5.63) than did Hi female Ss with the male E ($\bar{X}$ = 8.63). With the female E, no significant differences were found. When male E scores were contrasted with female E scores, significant differences were manifested between Lo female Ss with the male E ($\bar{X}$ = 5.69) and Lo female S with the female E ($\bar{X}$ = 8.45), with the former consuming less time.

An analysis of variance was run on the time to criterion in minutes for Top and Bottom 25%. As can be seen in Table 4, neither the main effects nor the interation effects achieved significance (see Figure 2).

When correlations were run with time to criterion (see Table 5), no variables were found to be related.

Talk Time. An analysis of variance of minutes of talk time (see Appendix II) was run (see Table 6). None of the main effects were significant, but the E x S x P interaction was. Analyses of variance were also conducted on the male and female Es separately (see Table 7).

Table 3

Simple Effects Analyses of Variance
of Time to Criterion
for Entire Sample

Source	F[a]	p[b]	$\bar{X}_1$	$\bar{X}_2$
mEmSHi vs mEmSLo	1.80	NS	5.63	7.69
mEfSHi vs mEfSLo	3.79	<.05	8.63	5.69
mEmSHi vs mEfSHi	4.28	<.025	5.63	8.63
mEmSLo vs mEfSLo	1.58	NS	7.69	5.69
fEmSHi vs fEmSLo	.01	NS	6.82	6.67
fEfSHi vs fEfSLo	.51	NS	7.33	8.45
fEmSHi vs fEfSHi	.08	NS	6.82	7.33
fEmSLo vs fEfSLo	1.79	NS	6.67	8.45
mEmSHi vs fEmSHi	.54	NS	5.63	6.82
mEfSHi vs fEfSHi	.63	NS	8.63	7.33
mEmSHi vs fEfSHi	1.17	NS	5.63	7.33
mEmSLo vs fEmSLo	.46	NS	7.69	6.67
mEmSLo vs fEfSLo	.25	NS	7.69	8.45
mEfSLo vs fEfSLo	3.73	<.05	5.69	8.45

Note.--mE = Male E
fE = Female E
mS = Male S
fS = Female S
Hi = High body percept scorer
Lo = Low body percept scorer

[a]MSE = 18.20.

[b]df = 1/120.

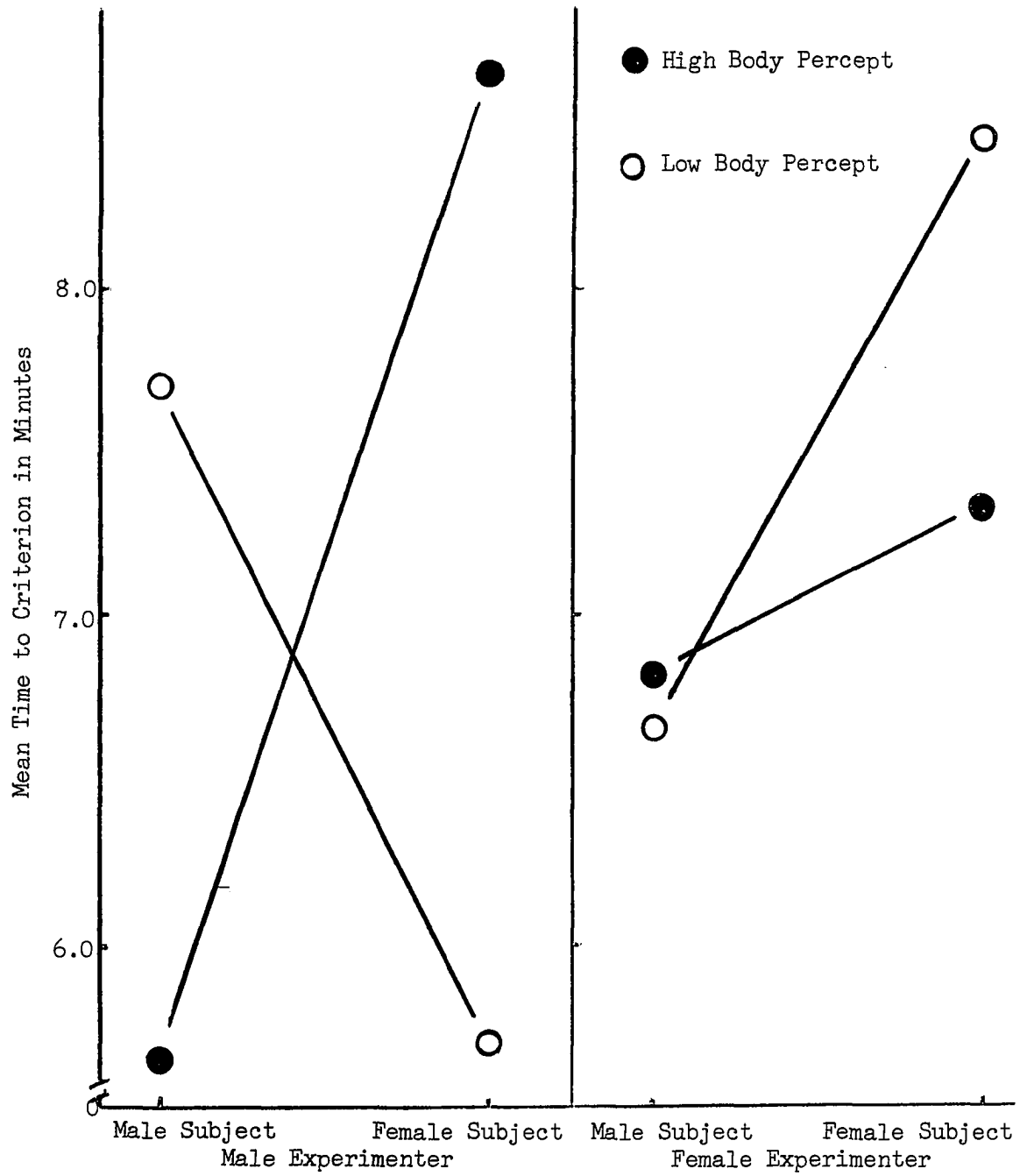


Figure 1. Mean time to criterion in minutes for high and low body percept scorers (male and female Ss by male and female Es). Ns corresponding to the various points are: with Male E, Male S Hi = 19, Lo = 13; Female S Hi = 16, Lo = 16; with Female E, Male S Hi = 11, Lo = 21; Female S Hi = 12, Lo = 20.

Table 4

Analysis of Variance of Time to Criterion
for Top and Bottom 25% of
Body Percept Scorers

(Experimenter sex [E], Subject sex [S], Body percept [P])

Source	df	MS	F	p
E	1	1.89	.10	NS
S	1	5.64	.30	NS
P	1	31.64	1.70	NS
ES	1	1.27	.07	NS
EP	1	6.89	.37	NS
SP	1	3.52	.19	NS
ESP	1	19.14	1.02	NS
Error	56	18.73		

Table 5

Correlations with Time to Criterion for Top and Bottom 25%
of Body Percept Scorers

Variable	r	df	p
Talk Time			
Male S	-.21	30	NS
Female S	-.26	30	NS
Total S	-.22	62	NS
Shipley Abstract			
Male S	.10	30	NS
Female S	.27	30	NS
Total S	.16	62	NS
Shipley Vocabulary			
Male S	-.03	30	NS
Female S	.29	30	NS
Total S	.12	62	NS

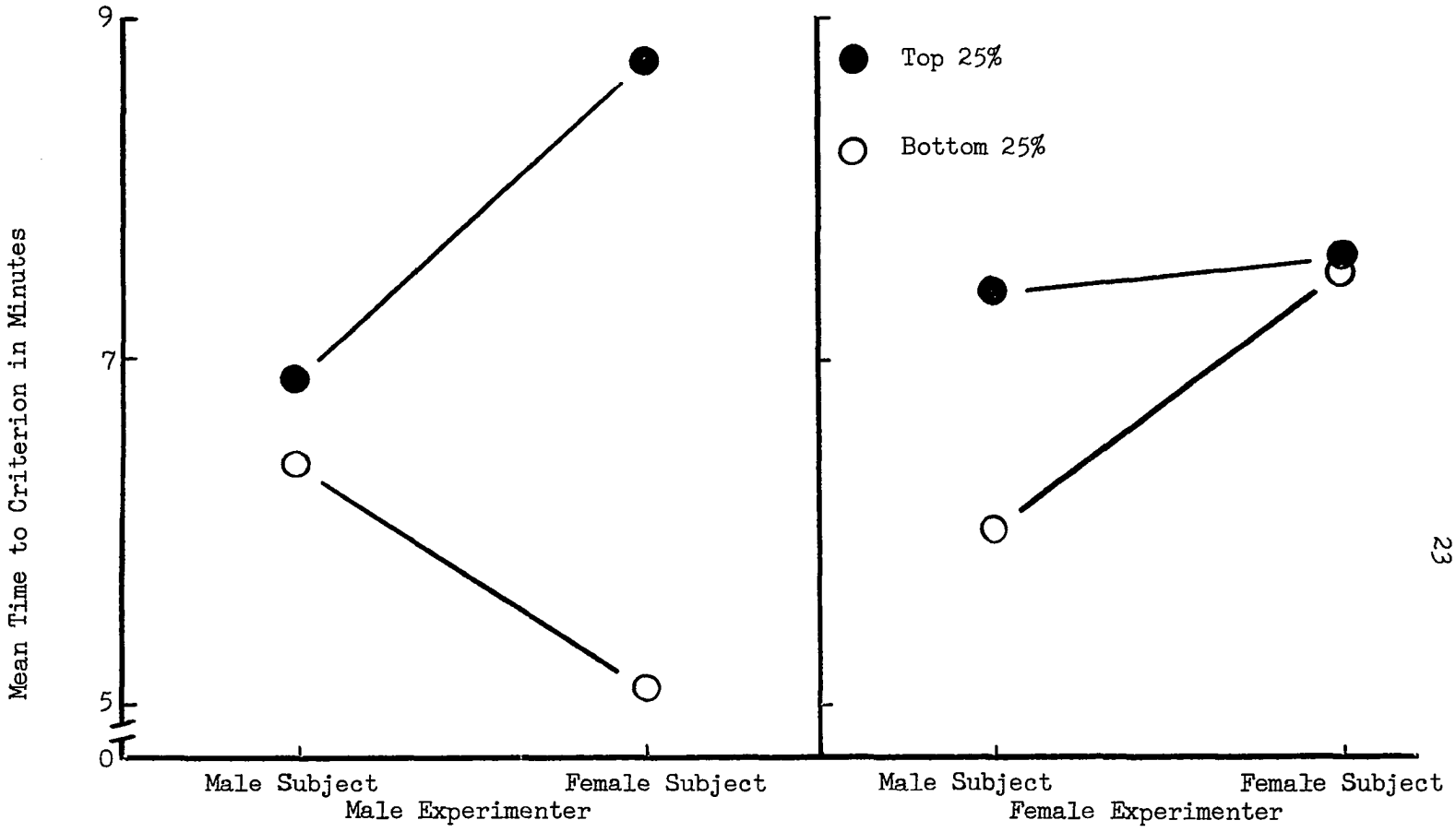


Figure 2. Mean time to criterion in minutes for Top and Bottom 25% of body percept scorers (male and female Ss by male and female Es). Each point represents an N of 8.

Table 6

Analysis of Variance of Talk Time
for Entire Sample

(Experimenter sex [E], Subject sex [S], Body percept [P])

Source	df	MS	F	p
E	1	6.84	2.38	NS
S	1	4.24	1.48	NS
P	1	0	0	NS
ES	1	1.48	.52	NS
EP	1	.21	.07	NS
SP	1	.13	.05	NS
ESP	1	36.04	12.56	$<.001$
Error	114	2.87		

Table 7

Analyses of Variance of Talk Time for
Male and Female Experimenters
for Entire Sample

(Subject sex [S], Body percept [P])

Source	df	MS	F	p
Male E				
S	1	.39	.19	NS
P	1	.18	.09	NS
SP	1	22.78	10.90	$<.01$
Error	54	2.09		
Female E				
S	1	5.33	1.49	NS
P	1	.03	.008	NS
SP	1	13.39	3.75	$<.10$
Error	60	3.57		

On the male E test the interaction between S sex and body image was signficant; for the female E the interaction approached significance. Since the triple interaction on the overall analysis achieved significance, simple effects analyses (see Table 8) were run on the appropriate variables (see Figure 3). With the male E, male S Hi ($\bar{X}$ = 5.36) talked

Table 8

Simple Effects Analyses of Variance of Talk Time for Entire Sample

Source	F[a]	p[b]	$\bar{X}_1$	$\bar{X}_2$
mEmSHi vs mEmSLo	4.43	$\leq$.025	5.36	4.04
mEfSHi vs mEfSLo	3.50	$\leq$.05	3.92	5.15
mEmSHi vs mEfSHi	5.03	$\leq$.025	5.36	3.92
mEmSLo vs mEfSLo	3.04	$<$.05	4.04	5.15
fEmSHi vs fEmSLo	2.09	NS	4.87	5.78
fEfSHi vs fEfSLo	2.59	NS	5.52	4.52
fEmSHi vs fEfSHi	.83	NS	4.87	5.52
fEmSLo vs fEfSLo	5.70	$<$.01	5.78	4.52
mEmSHi vs fEmSHi	.55	NS	5.36	4.87
mEfSHi vs fEfSHi	5.30	$<$.025	3.92	5.52
mEmSHi vs fEfSHi	.06	NS	5.36	5.52
mEmSLo vs fEmSLo	8.47	$<$.005	4.04	5.78
mEmSLo vs fEfSLo	.62	NS	4.04	4.52
mEfSLo vs fEfSLo	1.21	NS	5.15	4.52

Note.—mE = Male E
fE = Female E
mS = Male S
fS = Female S
Hi = High body percept scorers
Lo = Low body percept scorers

[a]MSE = 2.87.

[b]df = 1/114.

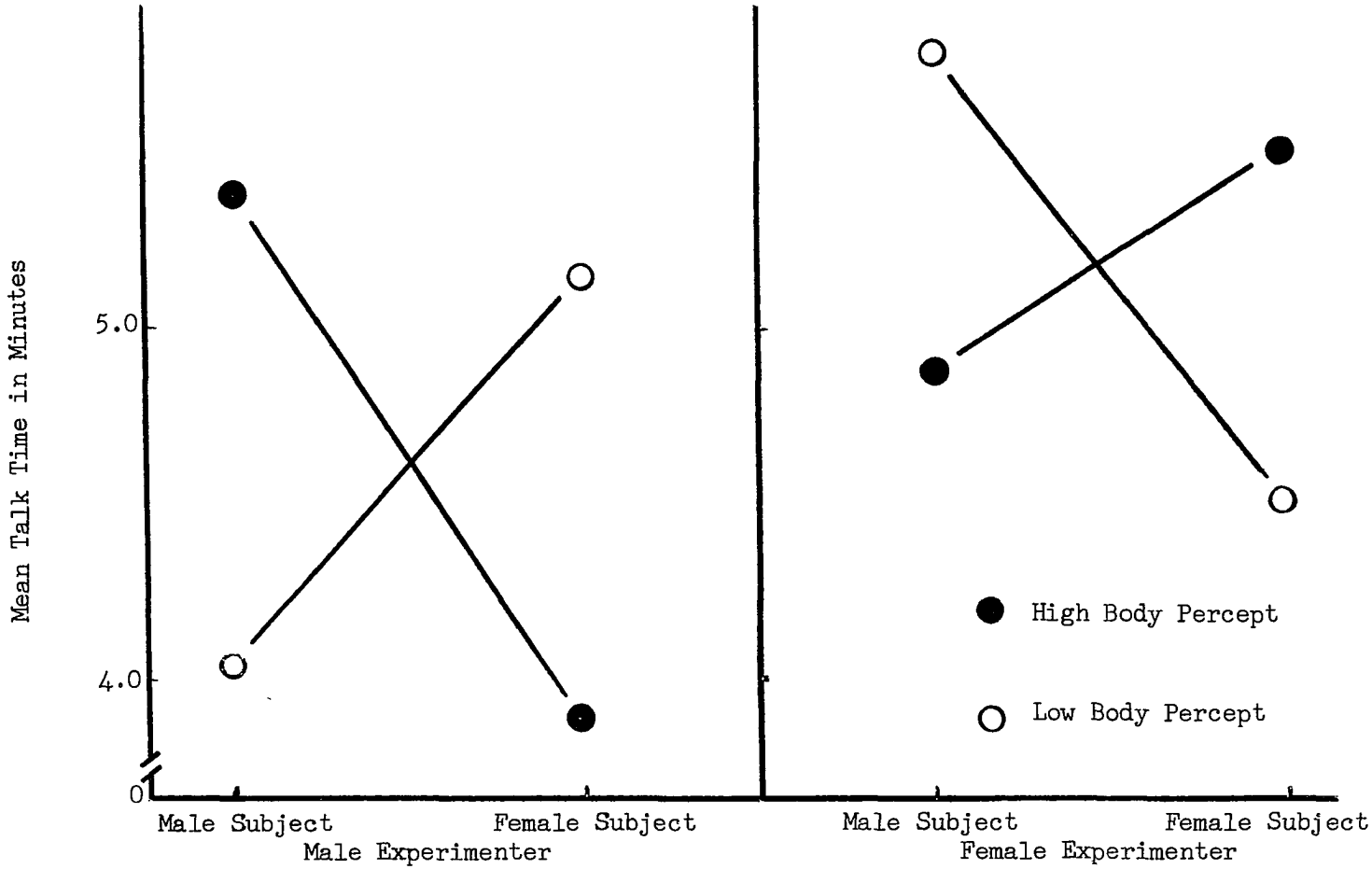


Figure 3. Mean talk time in minutes for high and low body percept scorers (male and female Ss by male and female Es). Ns corresponding to the various points are: with Male E, Male S Hi = 17, Lo = 13; Female S Hi = 12, Lo = 16; with Female E, Male S Hi = 11, Lo = 21; Female S Hi = 12, Lo = 20.

more than did male S Lo ($\bar{X}$ = 4.04), female S Hi ($\bar{X}$ = 3.92) spoke less than did female S Lo ($\bar{X}$ = 5.15), and male S Hi ($\bar{X}$ = 5.36) also talked more than did female S Hi ($\bar{X}$ = 3.92). With the female E, some reversal was noted. Lo male Ss with the female E ($\bar{X}$ = 5.78) talked longer than did Lo female Ss with the female E ($\bar{X}$ = 4.52). In comparing male E with female E, Hi female Ss with the male E ($\bar{X}$ = 3.92) spoke significantly less than did Hi female Ss with the female E ($\bar{X}$ = 5.52), and Lo male Ss with the male E ($\bar{X}$ = 4.04) talked less than did Lo male Ss with the female E ($\bar{X}$ = 5.78).

When talk time was compared with time to criterion (see Table 9), a significant negative correlation was found for female S and for combined sexes.

Table 9

Correlations with Time to Criterion for Entire Sample

Variable	r	df	p
Talk Time			
Male S	-.19	60	NS
Female S	-.31	58	$<.05$
Total	-.66	120	$<.01$
Shipley Abstract			
Male S	-.16	62	NS
Female S	-.19	62	NS
Total	-.17	126	$<.05$
Shipley Vocabulary			
Male S	-.17	62	NS
Female S	.15	62	NS
Total	-.04	126	NS

When an analysis of variance was run on talk time for Top and Bottom 25% of body percept scorers, the triple interaction proved to be the only significant one (see Table 10). Simple effects analyses of variance (see Table 11) were then run on the cells involved, and the results were found only slightly different from those of the entire sample (see Figure 4). A new difference was manifested between Top male ($\bar{X}$ = 4.15) and female ($\bar{X}$ = 6.16) Ss with the female E and those losing significance were Top and Bottom female Ss with the male E, Top male and female Ss with the male E and Bottom male and female Ss with the female E.

Table 10

Analysis of Variance of Talk Time for Top and Bottom 25% of Body Percept Scorers

(Experimenter sex [E], Subject sex [S], Body percept [P])

Source	df	MS	F	p
E	1	3.16	1.07	NS
S	1	3.72	1.26	NS
P	1	1.81	.61	NS
ES	1	2.11	.71	NS
EP	1	1.45	.49	NS
SP	1	.03	.01	NS
ESP	1	20.37	6.88	<.025
Error	56	2.96		

Body Percept. Aside from the above mentioned findings connected with the body percept, only two other significant relationships were found (see Table 12). A significant difference was found

Table 11

Simple Effects Analyses of Variance of Talk Time in Minutes for Top and Bottom (Bot) 25% of Body Percept Scorers

Source	MSE	F[a]	p	$\bar{X}_1$	$\bar{X}_2$
mEmS Top vs mEmS Bot	2.69	4.42	<.05	5.49	3.77
mEfS Top vs mEfS Bot	1.60	.53	NS	4.52	4.98
mEmS Top vs mEfS Top	3.21	1.18	NS	5.49	4.52
mEmS Bot vs mEfS Bot	1.08	5.41	<.025	3.77	4.98
fEmS Top vs fEmS Bot	2.12	2.42	NS	4.15	5.28
fEfS Top vs fEfS Bot	5.42	1.07	NS	6.16	4.96
fEmS Top vs fEfS Top	4.57	3.54	<.05	4.15	6.16
fEmS Bot vs fEfS Bot	2.97	.14	NS	5.28	4.96
mEmS Top vs fEmS Top	3.55	2.02	NS	5.49	4.15
mEfS Top vs fEfS Top	4.23	2.54	NS	4.52	6.16
mEmS Top vs fEfS Top	5.87	.31	NS	5.49	6.16
mEmS Bot vs fEmS Bot	1.26	7.35	<.01	3.77	5.28
mEmS Bot vs fEfS Bot	2.24	2.54	NS	3.77	4.96
mEfS Bot vs fEfS Bot	2.79	.06	NS	4.98	4.96

Note.--mE = Male E
fE = Female E
mS = Male S
fS = Female S

[a] df = 1/14.

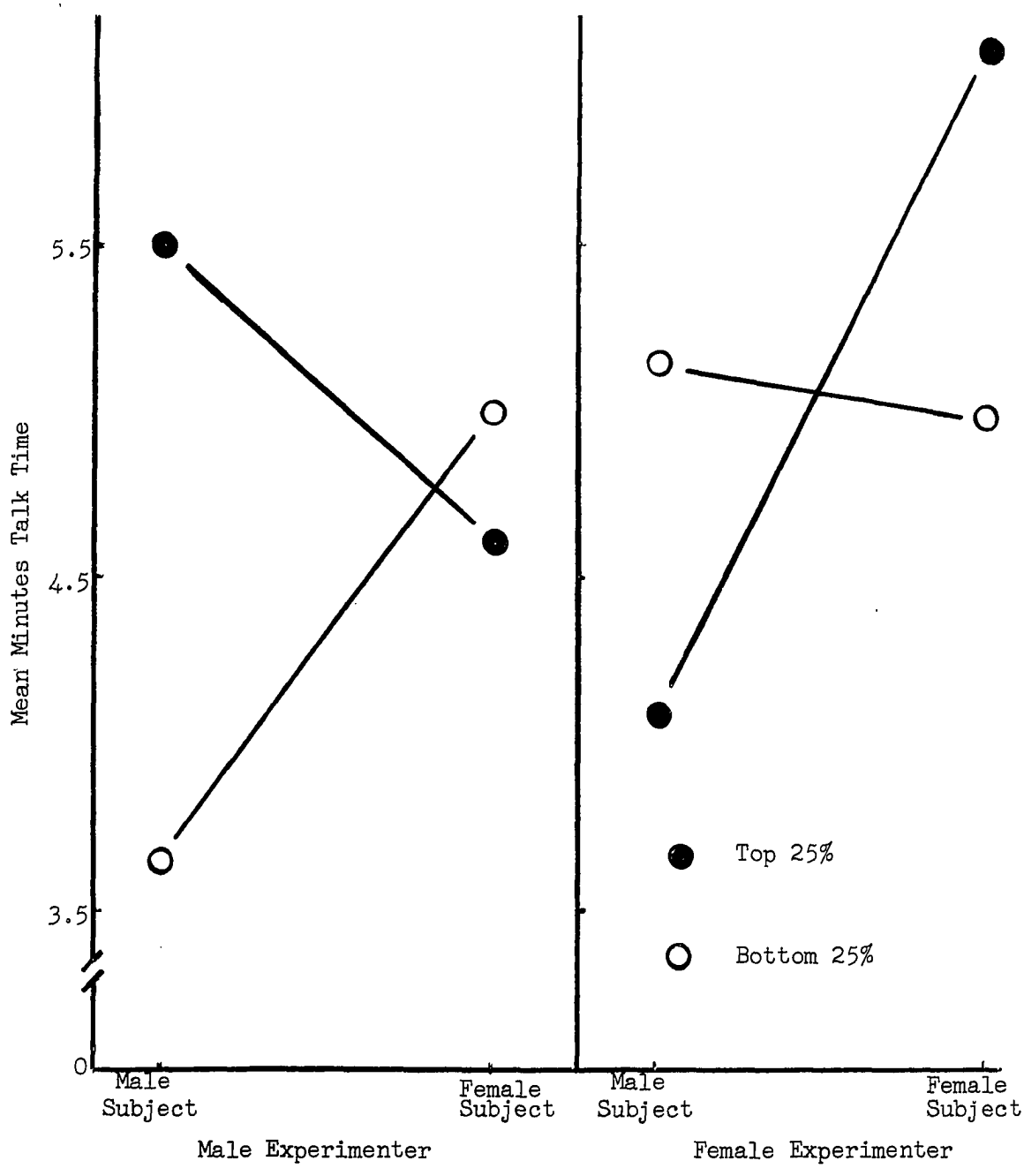


Figure 4. Mean talk time in minutes for Top and Bottom 25% of body percept scorers (male and female Ss by male and female Es). Each point represents an N of 8.

between percept scores for male E ($\bar{X}$ = 5.66) and female E ($\bar{X}$ = 3.72), with the male S, and for total male E ($\bar{X}$ = 5.45) and female E ($\bar{X}$ = 3.89).

Table 12

F Tests of Body Percept Scores for Entire Sample

Source	df	F	p	$\bar{X}_1$	$\bar{X}_2$
Male E vs Female E					
Male S	1/63	8.05	<.01	5.66	3.72
Female S	1/63	2.91	NS	5.25	4.03
Total S	1/127	10.28	<.005	5.45	3.89
Male S vs Female S					
Male E	1/63	.26	NS	5.66	5.25
Female E	1/63	.29	NS	3.72	4.03
Total E	1/127	.009	NS	4.69	4.64

F tests were run between Top and Bottom 25% scorers on the Shipley Institute of Living vocabulary and abstract sections (see Table 13). A significant difference was found only for vocabulary between Top ($\bar{X}$ = 31.66) and Bottom ($\bar{X}$ = 30.00) scorers for total S (male and female Ss combined).

Number of Responses. No significant differences were found when number of responses to criterion (number of responses made until solution, or until end of last time period) was contrasted by E sex, S sex, or body percept (see Table 14, Figure 5, and Appendix II). No significant differences were found when total number of responses made

Table 13

F Tests of Top and Bottom (Bot) 25% of Body Percept Scorers

Source	df	F	p	$\bar{X}_{Top}$	$\bar{X}_{Bot}$
Shipley Abstract					
Male S	1/31	.001	NS	33.50	33.56
Female S	1/31	2.35	NS	35.00	32.38
Total S	1/63	1.21	NS	34.25	32.97
Shipley Vocabulary					
Male S	1/31	3.90	NS	32.63	30.44
Female S	1/31	.90	NS	30.69	29.56
Total S	1/63	4.23	<.05	31.66	30.00

Table 14

Analysis of Variance of Responses to Criterion for Entire Sample

(Experimenter sex [E], Subject sex [S], Body percept [P])

Source	df	MS	F	p
E	1	60.45	.62	NS
S	1	241.01	2.46	NS
P	1	20.07	.20	NS
ES	1	.03	.0003	NS
EP	1	6.21	.06	NS
SP	1	2.68	.03	NS
ESP	1	4.94	.05	NS
Error	120	98.06		

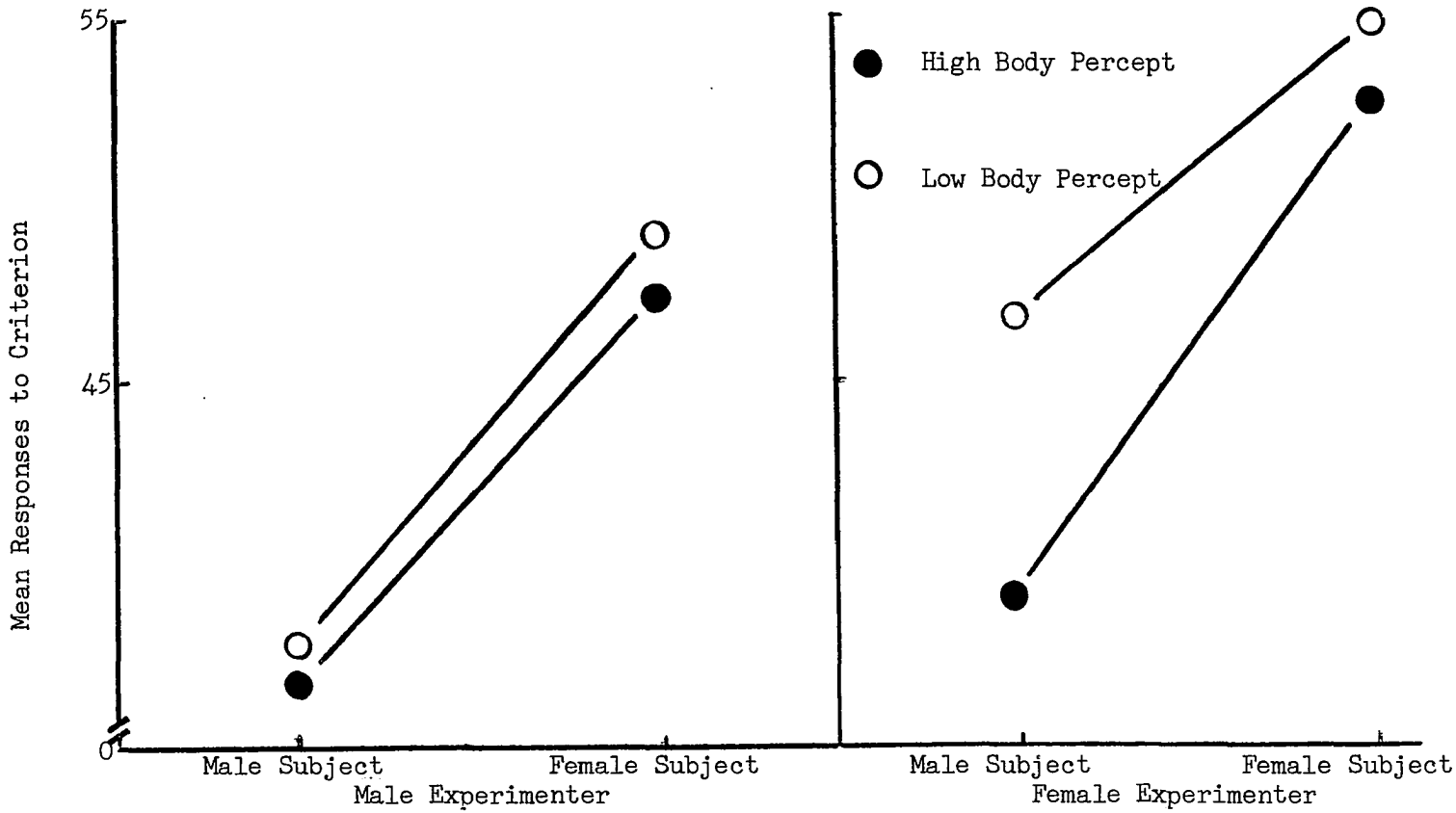


Figure 5. Mean number of responses to criterion for high and low body percept scorers (male and female Ss by male and female Es). Ns corresponding to the various points are: with Male E, Male S Hi = 19, Lo = 13; Female S Hi = 16, Lo = 16; with Female E, Male S Hi = 11, Lo = 21; Female S Hi = 12, Lo = 20.

during entire session was contrasted by high and low body percept and S sex (see Table 15).

Table 15

F Tests of Total Number of Responses for Entire Sample

Source	df	F	p	$\bar{X}_1$	$\bar{X}_2$
High vs Low Percept					
Male S	1/63	.24	NS	89.27	85.41
Female S	1/63	.19	NS	96.68	102.19
Total S	1/127	.03	NS	92.84	94.04
Male S vs Female S	1/127	2.92	NS	87.22	99.78

When number of responses to criterion was analyzed for the Top and Bottom 25% of body percept scorers (see Figures 6 and 7) no significant main or interaction effects were found (see Table 16). F tests of total number of responses did show a significant difference between male ($\bar{X}$ = 78.50) and female ($\bar{X}$ = 103.84) Ss, however (see Table 17).

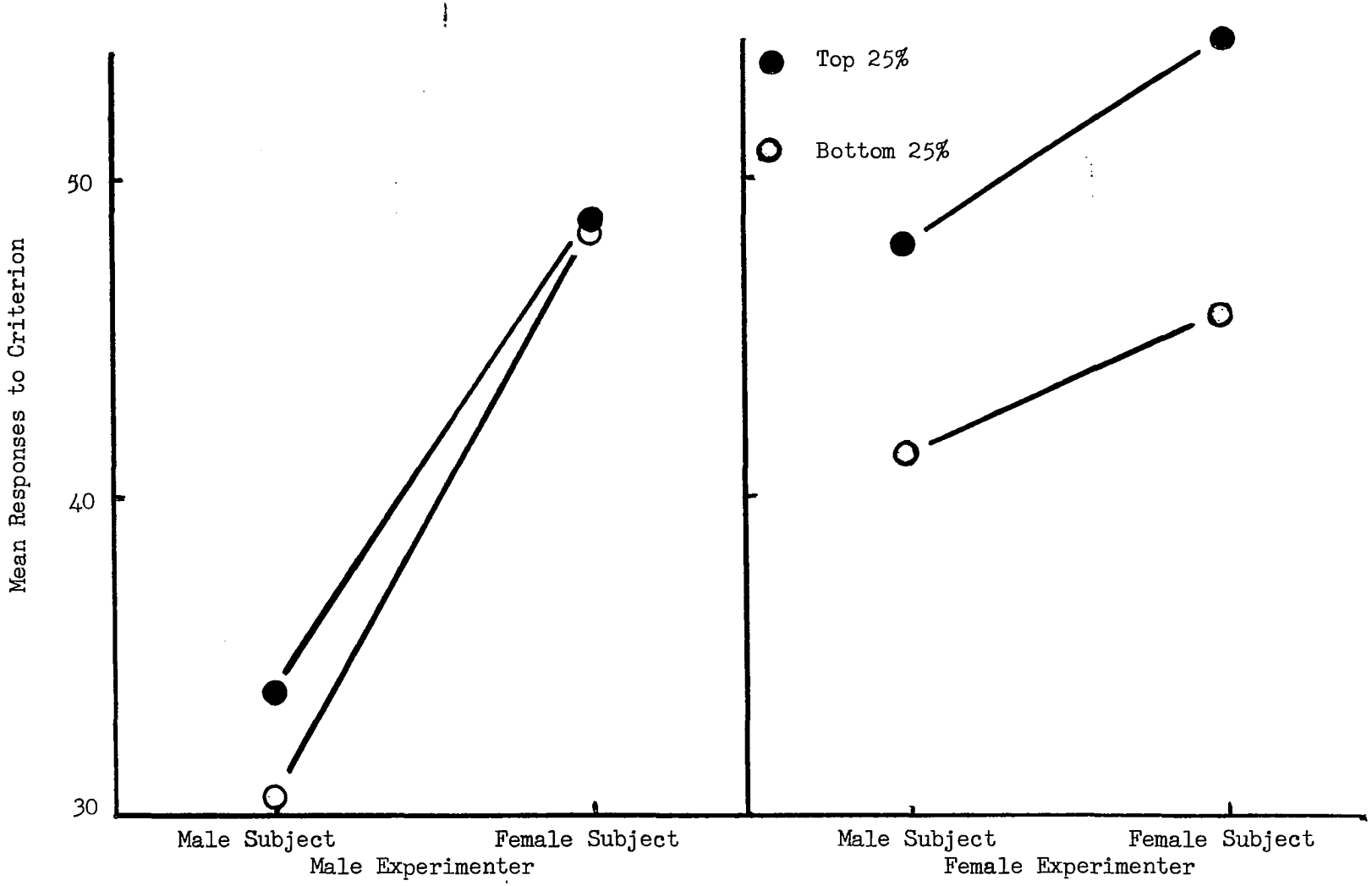


Figure 6. Mean number of responses to criterion for Top and Bottom 25% of body percept scorers (male and female Ss by male and female Es). Each point represents an N of 8.

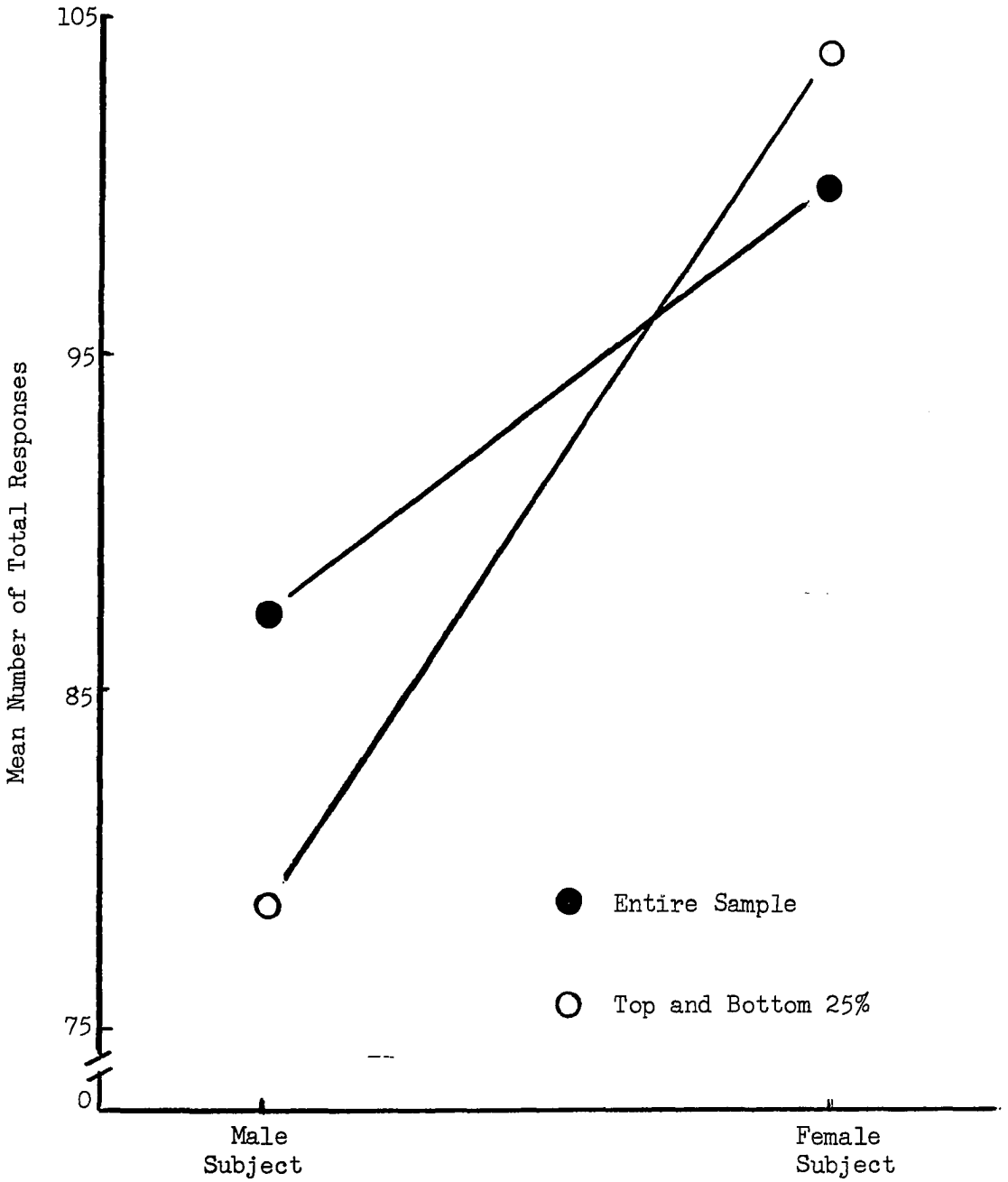


Figure 7. Total number of responses made during entire session for entire sample and for Top and Bottom 25% of body percept scorers (male S versus female S). Each point for entire sample represents an N of 64; each point for Top and Bottom 25% represents an N of 32.

Table 16

Analysis of Variance of Responses to Criterion for Top and Bottom 25% of Body Percept Scorers

(Experimenter sex [E], Subject sex [S], Body percept [P])

Source	df	MS	F	p
E	1	361.00	.37	NS
S	1	2835.57	2.92	NS
P	1	105.07	.11	NS
ES	1	169.00	.17	NS
EP	1	6.25	.01	NS
SP	1	68.05	.07	NS
ESP	1	196.00	.20	NS
Error	56	970.49		

Table 17

F Tests of Total Number of Responses for Top and Bottom (Bot) 25% of Body Percept Scorers

Source	df	F	p	$\bar{X}_1$	$\bar{X}_2$
Top vs Bot Percept					
Male S	1/31	.41	NS	75.75	81.25
Female S	1/31	.01	NS	104.75	102.94
Total	1/63	.04	NS	90.25	92.09
Male S vs Female S	1/63	7.07	$<.025$	78.50	103.84

Ancillary Tests

Shipley Measures. When intellectual and abstract ability scores were tested against all other variables only total S abstract was found to be correlated with time to criterion (see Tables 9 and 18).

Table 18

F Tests of Shipley Scores for High (Hi) and Low (Lo) Body Percept Scorers for Entire Sample

Source	df	F	p	$\bar{X}_1$	$\bar{X}_2$
Shipley Abstract					
Male S	1/63	.03	NS	34.07	33.85
Female S	1/63	1.18	NS	34.21	32.98
Total	1/127	.87	NS	34.14	30.33
Shipley Vocabulary					
Male S	1/63	1.77	NS	32.10	30.94
Female S	1/63	.46	NS	31.39	29.75
Total	1/127	2.30	NS	34.14	33.36

Volunteering Behavior. F tests were performed between the Shipley vocabulary and abstract scores of volunteers who showed up for the experiment and of those students given an opportunity to volunteer but who chose not to. Due to prior opportunities to volunteer for other experiments in two of the classes approached, only non-volunteers from the third were used because of the possibility of experimental saturation having precluded the volunteering of many of the potential Ss (see Appendix III). Since only 15 males and 9 females could be identified as non-volunteers, a small random sample was drawn

from among volunteers to be contrasted with these non-volunteers (see Table 19). Tests were also made between the scores of volunteers who showed up for the experiment (shows) and those who did not (no-shows) (see Table 19 and Appendix III).

Table 19

F Tests of Shipley Scores for Volunteering Behavior

Source	df	F	p	$\bar{X}_1$	$\bar{X}_2$
Abstract					
Male Vol vs Non	1/29	.005	NS	32.67	32.53
Female Vol vs Non	1/23	7.84	$<.005$	34.67	29.33
Total Vol vs Non	1/53	3.13	$<.05$	33.67	31.33
Vocabulary					
Male Vol vs Non	1/29	.20	NS	31.27	30.67
Female Vol vs Non	1/23	.56	NS	30.33	31.44
Total Vol vs Non	1/53	.03	NS	30.80	30.96
Abstract					
Show vs No-Show	1/17	2.65	$<.10$	34.00	30.22
Vocabulary					
Show vs No-Show	1/17	1.17	NS	31.11	29.33

Note.-- Vol = Volunteer who showed up for experiment
Non = Non-volunteer given same chance to volunteer as Vol
Show = Volunteer who showed up for experiment
No-Show = Volunteer who did not show up for experiment

When male volunteers were compared with male non-volunteers no significant differences were found in vocabulary or abstract ability scores. When females were so contrasted, volunteers were not significantly different from non-volunteers for vocabulary, but volunteer females ($\bar{X}$ = 34.67) did score significantly better than did female

non-volunteers ($\bar{X}$ = 29.33) in abstract ability. When sexes were pooled, volunteers ($\bar{X}$ = 33.67) again outscored non-volunteers ($\bar{X}$ = 31.33) on abstract ability but not on vocabulary.

Due to the small sample size of no-shows (nine), sexes were combined. Neither vocabulary nor abstract scores proved to be significant differentiators, although the abstract dimension did demonstrate a trend with the shows ($\bar{X}$ = 34.00) scoring higher than the no-shows ($\bar{X}$ = 30.22).

Solvers Versus Non-Solvers. In the sample of 128 Ss, 20 males and 22 females did not solve the CI problem. In order to ascertain whether differences in the available measures could be found between solvers and non-solvers, F tests were performed. Neither body percept scores, Shipley vocabulary scores, nor Shipley abstract scores showed any differences related to solving behavior with either sex (see Table 20).

Table 20

F Tests of Solvers Versus Non-Solvers

Source	df	F	p	$\bar{X}_1$	$\bar{X}_2$
Body Percept					
Male S	1/63	.12	NS	4.55	4.85
Female S	1/63	.83	NS	4.40	5.09
Total S	1/127	3.11	NS	4.48	4.98
Shipley Abstract					
Male S	1/63	1.14	NS	34.36	33.05
Female S	1/63	.30	NS	33.17	33.00
Total S	1/127	1.31	NS	34.05	33.02
Shipley Vocabulary					
Male S	1/63	1.86	NS	23.77	30.45
Female S	1/63	2.61	NS	29.52	30.91
Total S	1/127	2.81	NS	26.58	30.69

CHAPTER IV

DISCUSSION

Several predictions were made as to how Ss would perform this verbal CI task. These forecasts were predicated on research findings which were felt to be the most analogous of available CI, body image, and related studies.

Due, apparently, to the interaction effects of S sex, E sex and body percept, none of the hypotheses was confirmed in full. When hypotheses 1, 2, and 4 were tested, indications were that the body percepts of male and female Ss show a definite interaction effect with the sex of E. Tests of hypothesis 3 yielded no support for the contention that female Ss would outperform males in identifying body part concepts.

According to Rosenthal (1966), evidence strongly suggests that male and female Ss must be considered to be in different experiments, even though they are tested by the same E under equivalent experimental conditions. He bases this on the findings that Es of both sexes respond differently with facial expressions, bodily positions, intonations, etc. to Ss of different sex. Even the presentations of standard instructions were found to differ, and follow-up questions asked of Ss and ratings of films by impartial observers confirm that the same E made different impressions on Ss of different sex. Bayley (1966) adds to this with her assumptions that contrasting socialization processes condition

females to react one way while males learn a different reaction to the same stimulus. The results of this study seem to offer credence to these assertions. As noted above in the text and in Figures 1 and 3, there were significant interaction effects for Hi and Lo male and female Ss with the same E, when the entire sample was tested. Figure 4 demonstrates the same for the Top and Bottom 25%. Theoretically, Hi's are more communicative and more aware of the outside world. It was predicted in hypothesis one that Hi's would grasp the CI solution more quickly than would Lo's. Figure 1 and Table 2 demonstrate that, with the entire sample, when a male S was paired with a male E this occurred, but when a female S was matched with a male E the reverse was manifested. The supposedly faster learning Hi's did not do significantly better than did Lo's, and a definite trend in the opposite direction was evident. It seems apparent that something was operating to make the greater external awareness of the Hi female S act to her disadvantage, in that her performance was depressed, while the Lo female S showed signs of not being cognizant of this outside variable. In effect, the Hi's seemed much more sensitive to the situation. In consideration of the experimental variables which were controlled for, it must be assumed that this disturbing variable was E sex. Also to be noted on Figure 1 and Table 3 is that with female E, Hi's and Lo's performances were not statistically different, regardless of S sex. Figure 2 and Table 4 offer the same conclusion for Top and Bottom 25% scorers. This finding at first glance might lead to the supposition that the female E may somehow neutralize the effect of body percept: that is, that the finding was due to the sex difference of the Es. However, as with Binder, McConnell, and Sjoholm (1957), E

sex may not be the only relevant factor. It is highly possible that more than one E influence may have been operating. Rosenthal states that filmed interactions between Es and Ss seemed to indicate that "male experimenters behave more warmly than do female experimenters. . . ." (1966, p. 55). However, general statements in this regard cannot yet be made since a majority of the Ss were female in the study from which these films were made. He adds, however, that "it seems reasonable to conclude that . . . the behavior and manner of experimenters are associated with their sex" (1966, p. 54). Coupled with the possible effect of sex of E, the apparent difficulty of the task to many of the Ss (42 Ss did not solve the problem) appears to make another Rosenthal finding a plausible consideration: "When the performance required is difficult, prior contact, especially when of a 'warm' quality, seems to improve performance" (1966, p. 90). In the present study all Ss were first contacted by the male E. For approximately 20 minutes all potential Ss were in the company of the male E as he was first introduced by their instructors and then as he attempted a friendly interchange in order to secure their cooperation in volunteering for the project. Although all Ss were informed that some would be meeting other Es, none were to meet the female E until their arrival at the experimental room. This combination of factors may also have been one of the major reasons that female E subjects scored significantly lower on the Holtzman Test of body percept than did male E subjects. Since there is no completely analogous research with which these results can be contrasted, it is felt that such a study, with certain modifications, should be attempted to answer some of the questions

raised by the significant interactions of S sex, E sex, and body percept. A possible design might be to utilize three Es of each sex, all of whom would contact their own Ss, after careful coaching to be certain that the tell-tale differences discussed by Rosenthal (1966) would be at a minimum. The several Es of each sex could then be checked for E as well as sex differences.

Considering the above, hypothesis three, that females would demonstrate greater facility in identifying body-part concepts than would males, was not supported. Furthermore, as is shown in Table 3, with the male E, Hi male Ss took significantly less time than did Hi female Ss, while Lo's manifested no significant differences. This obvious difference between male S and female S Hi's may very possibly be due to the heightened awareness of the environment (Fisher & Cleveland, 1965), which would include the problem at hand. For, rather than causing them to perform better, the situation may have been more disturbing to the female S. As Witkin states, "In . . . perceptual tests, women are more affected than men by the surrounding framework . . . ." (1965, p. 40). If one considers the assumptions of Hoffman and Maier (1966), that problem solving is often felt by females to be a masculine task, the heightened awareness could cause a conflict in the female S that might tend to depress her performance. However, Hoffman and Maier caution "that problem-solving performance in women is influenced by a number of variables, but only some of these operate for a given problem situation" (1966, p. 389). To determine if social factors of sex-relevant jobs are influencing female E Hi's, a developmental replication is suggested to ascertain the possibility that this sex difference

decreases as females regress to the age before which the female role has become firm. This would be in consonance with the findings of Pishkin and Rosenbluh (1966) that sensitivity to auditory laterality seems to develop with age and experience.

Hypothesis four, that Ss would identify concepts more easily when tested by Es of the opposite sex than when tested by same-sex Es, was also not supported in full (see below). As can be seen in Tables 1 and 4 when differences were compared for male and female Ss, regardless of body percept, no significant differences occurred for either of the two Es. Unfortunately, the state of past research can throw little light on the subject. As inferred by Rosenthal (1963), no specific conclusion can be reached since different Es using different tasks have produced conflicting results.

Probably the most striking finding in the present study is in regard to hypothesis two, that Ss with high body percept scores would make significantly more responses than would those with low scores. Number of responses did not prove to be useful as a measure since it showed no relationship with any of the variables identified. This was apparently due to the fact that responses, per se, were contigent upon the reading of response words from the cards placed in a deck before S. If the Ss had been permitted to free associate, as in the Pishkin et al (1962) study, number of responses might have proven salient. What did show up dramatically was the amount of time spent in talk. Whether Ss made more responses with fewer words per sentence or fewer responses with longer sentences, the variable which emerged as salient was the length of time spent talking. As noted in Figures 3 and 4 and Table 7,

the interaction of S sex and body percept for male E was significant, and for female E it approached significance. When Hi's were contrasted with Lo's in talk time, same sex Es tended to increase the talk time of Hi's and decrease that of Lo's. The opposite was apparent with Es of the opposite sex to that of S's. Hi's, possibly due to their supposedly higher awareness of their surround, were somewhat subdued in their talking with the opposite sex E present, whereas Lo's, with less of an apparent interest in the external (Fisher & Cleveland, 1965), did not allow the presence of the opposite sex E to lessen their talk time, but in fact, heightened it significantly, when compared with that of Lo's with the same sex E. With regard to talk activity, Lo's seem to have been drawn out of their "shells" by the opposite sex E. Fisher and Cleveland state that "data suggest that in the absence of a body image boundary capable of supplying a minimum constancy in new situations, the individual finds it necessary to create exterior conditions which will artificially provide a substitute boundary" (1958, p. 355). Whereas the normally talkative Hi's, apparently through their greater awareness of a female authority figure who was obviously measuring their abilities to solve problems, seemed to be more guarded and therefore less talkative, Lo's apparently sought to compensate for inadequate boundaries by stabilizing their environments, possibly by heightened speech activity, to build a barrier which did not exist naturally.

Considering the findings of Wolfgang, Pishkin, and Rosenbluh (in press) that male and female schizophrenics showed some relationship between Shipley abstract ability and visual CI and that females showed a correlation between visual CI and vocabulary, as measured by the

Shipley Institute of Living Scale, a similar relationship was sought with the present Ss on these Shipley measures and verbal CI. No such relationships were found for vocabulary in the present study. However, abstract ability of all Ss was found to be related to ability to solve this CI task. This does not infer that abstract ability would be found related to other CI tasks, since as Jensen has stated, "It is impossible to draw any overall conclusion about the correlation between an ID [individual difference--such as intelligence] and performance in concept learning tasks in general" (1966, p. 152).

Of growing interest is the type of person who volunteers for a psychological experiment. One difficulty which has often manifested itself in measuring such differences is that "many studies of volunteering behavior are designed only to identify volunteers, and there is no intention to obtain subjects for an actual experiment" (Levitt, Lubin, & Brady, 1962, p. 72). In the present study it was possible to measure the difference between actual volunteers who participated in the experiment and other Ss who had not volunteered, although requested to do so by the author on several occasions. In a compendium of volunteer versus non-volunteer studies, written by Rosenthal (1965), one of the major differences found was that volunteers tended to show greater intellectual ability than did non-volunteers. Utilizing the Shipley test, Wolfgang (1967) found significant differences between volunteers and non-volunteers on the abstract ability section, but only for male Ss. In the present study abstract ability was again the only differentiator between volunteers and non-volunteers. However, in this case it was the female Ss whose differences were significant. In contrasting the

dissimilarities in presentation of the Shipley tests in the Wolfgang study and the present study, three variations were noted, of which only one is perceived to be possibly relevant, until further study of the other two variables can be accomplished. Wolfgang's examiners were female graduate student instructors of introductory sociology sections. Examiners in the present study were male graduate student instructors in introductory psychology courses. A further difference was the inclusion of Ss' names to identify the forms for future use in the present study. There is no evidence to relate the inclusion of names to differences in sex of S and success on intellectual tests. Also, at this time, there is no evidence to make such a connection between sex and type of introductory course. However, the evidence listed in support of hypothesis four, that Ss would perform better with opposite sex Es, offers some possible insight into the differences between the Wolfgang study and the present one. This is bolstered if one considers Rosenthal's (1965) findings, that volunteers demonstrate more intellectual interest and intellectual motivation than do non-volunteers, in concert with the findings of some investigators that on certain tasks opposite sex Es seem to spur Ss to perform at a higher level than do Es of the same sex. When one also considers that "volunteers tend to manifest greater need for social approval" (Rosenthal, 1965, p. 401) than do non-volunteers, the intriguing possibility presents itself that the volunteers may have been motivated to demonstrate their higher intellectual ability and to achieve the greater social approval of members of the opposite sex. If such a combination of events has credence in this situation, then the administration of Shipley tests by

females in the Wolfgang study would offer an explanation of why male volunteers showed significant differences in their comparisons with non-volunteers, while in the present study the presence of male examiners might explain the manifested differences between female volunteers and non-volunteers. It is assumed that same sex Ss were not motivated to exceed themselves. However, the relatively small sample of Ss in the present study does not allow a definite conclusion to be drawn. When sexes were combined, a significant difference between volunteers and non-volunteers was still evident, but before definite statements can be made it is suggested that a more extensive study be designed incorporating the major variables which differed in the two approaches so that the actual effects of E sex, in combination with S sex, can be tested on a larger sample.

Although every attempt was made to be certain that all Ss who volunteered would show up, it was readily apparent that some withstood all manners of coaxing. The majority of such Ss did eventually participate, but a small number (nine) either again did not arrive or offered many and varied excuses for not being able to participate at all. A similar problem was noted by Leipold and James (1962). These experimenters, in checking differences between shows and no-shows, determined, among other things, that female no-shows had earned a significantly lower grade point average than had shows. Males demonstrated no such difference. In an attempt to determine if differences existed between shows and no-shows in the present study, at least on measures available, their performances on the Shipley test were contrasted. As can be seen in Table 12, neither abstract ability nor vocabulary

registered significant differences, but the extremely small N leads one to conclude that the trend apparent in the abstract ability area indicates that further research is called for. The findings of Leipold and James underscore the necessity to use an N large enough to allow for an analysis of the sex variable in concert with "showing" behavior.

Implications

In general, body percept has been used as a descriptive label to show how people with different personality disorders score (Fisher & Cleveland, 1958; Fisher & Cleveland, 1965), or as a source from which interesting differences flowed, depending on one's sex, age, personality type, etc., (Fisher, 1964; Fisher, 1965; Fisher & Cleveland, 1958; Fisher & Cleveland, 1965; Piaget, 1952; Wapner & Werner, 1965; Witkin, 1965; Witkin, Lewis, Hertzman, Machover, Meissner, & Wapner, 1954).

With this attempt to collate some of the descriptives offered by the above named researchers and others and to predict that certain characteristics found common among Hi's and Lo's would lead to the demonstration of specific abilities and capacities, an effort was made to recognize body percept as an important variable to be dealt with in perceptual research.

Most studies in concept learning have not made sex an important variable, but recently evidence has been offered that clearly establishes S gender as a major factor (Pishkin & Blanchard, 1964; Pishkin & Rosenbluh, 1966; Pishkin & Shurley, 1965; Wolfgang, Pishkin, & Rosenbluh, in press). While sex has established its place in conceptual research, body percept has, at least, begun to make itself felt.

Figures 1, 3, and 4, with their respective significances, leave no doubt that body image, as here defined and measured, must be reckoned with, particularly in this type of verbal CI task. Performance, while differing by sex of E and S, was definitely affected by whether S was a Hi or Lo. Had Ss been permitted to free associate their responses, i.e., generate body part words from their own resources by means of story-telling or sentence construction, specific differences in results might have been evident. In such a free response situation it would be expected that female Ss might well have reached solution sooner than did males; high body percept scorers would have been expected to make more internal responses (Fisher & Cleveland, 1958) than would low percept scorers, with the Lo's offering more external responses; number of responses might also have proven a more salient variable, with Hi's responding more than Lo's (Fisher & Cleveland, 1965).

Regardless of the specific findings evidenced herewith, the major result of this project was to point the way for further definitive research. A study must be undertaken to test development aspects; free association effects; S sex, E sex, and their interaction effects; E effects other than sex. Such a study would do well to incorporate much larger Ns in each condition so that a better test of those variables showing only trends could be made. Further, a useful purpose would be served and a natural followup would be to investigate the effects of body percept on other modes of CI presentation, i.e., visual, auditory, and on problem solving in general. Of course, to be correlated with these measures are intelligence and abstract abilities. Since evidence is abundant on the effects of emotional disfunction on CI and the effects

of such disorders on body image, a study of degree of CI ability of such patients with their concomitant degree of body boundary is also in order.

In conclusion it must be stated that Jensen's (1966) comments, that a majority of the variance in concept attainment tasks is due to the factorial structure of the Ss and the independent variables, as opposed to individual differences such as sex, intelligence, and personality, seem to have been borne out.

CHAPTER V

SUMMARY AND CONCLUSIONS

A large amount of definitive research regarding the body percept and its characteristics has been accomplished. Persons with a high body boundary concept (percept, image) are considered to manifest high achievement motivation, be more atuned to external stimuli and be more communicative than those with a low percept (Fisher & Cleveland, 1958; Fisher & Cleveland, 1965). Females are also generally felt to be more concerned with their bodies than are men, a fact that has been borne out by research (Fisher, 1964a; Jourard & Secord, 1955; Katcher & Levin, 1955; Pishkin & Blanchard, 1964; Pishkin & Shurley, 1965; Secord, 1953; Weinberg, 1960).

Although conflicting evidence is presented, some experimenters have found that opposite sex Es cause Ss to perform the given tasks at higher levels of proficiency than do Es of the same sex as S (Kuhn, 1960; Stevenson & Allen, 1964).

While much work has been done in the area of visual concept identification (CI) (Bourne, 1957; Bourne & Haygood, 1959; Pishkin, 1960; Pishkin & Wolfgang, 1964; Wolfgang, Pishkin, & Lundy, 1962; Wolfgang, 1965) and some has been accomplished in the auditory realm (Pishkin & Blanchard, 1964; Pishkin & Shurley, 1965; Pishkin &

Rosenbluh, 1966), little has been done with verbal CI (Pishkin, Smith, & Lundy, 1962). Attempts have been made to relate visual CI performance with such measures as intelligence and abstract ability (Lydecker, Pishkin, & Martin, 1961; Wolfgang, in press; Wolfgang, Pishkin, & Lundy, 1962; Wolfgang, Pishkin, & Rosenbluh, in press), but verbal CI has remained uncorrelated.

In the present study an attempt was made to relate the verbal CI of body parts with the body percept and other variables.

The design of the study was a 2 x 2 x 2 factorial, with two S sexes, two E sexes, and two levels of body percept (high and low). Sixty-four male and sixty-four female undergraduates were tested for body percept, verbal CI, talk time, number of responses, intelligence, and abstract ability. Es were one male and one female, each of whom tested one-half of the Ss of each sex.

Four hypotheses were formulated:

1. Persons demonstrating a strong body percept would show greater facility on a verbal CI task.

Solution came more quickly for high percept Ss than for low percept scorers only when matched with Es of their own sex. A reversal was evident for Ss tested by opposite sex Es, particularly with the male E.

2. Ss with high body percept scores would make significantly more responses than would those with low image scores.

Number of responses did not prove to be a salient variable, but amount of time used in speaking did. As with time to solution (the verbal CI measure) talk time was influenced by the S - E

interaction. High percept scorers spoke longer with same sex Es and low percept scorers talked more with opposite sex Es.

3. Females would demonstrate greater facility than would males since the concepts to be identified were body parts.

Males and females manifested no significant differences in solution of the problem.

4. Ss would identify concepts more quickly when tested by Es of the opposite sex than when tested by same sex Es.

As noted above, high body percept scorers solved the problem more quickly than did low percept scorers when paired with Es of their own sex, whereas low percept scorers reached solution sooner than did high percept scorers with opposite sex Es.

Due, apparently, to the above mentioned interaction effects of S sex, E sex, and body percept, none of the hypotheses were confirmed in full. High percept scorers achieved solution sooner and talked longer than did low percept scorers when tested by Es of their own sex, but reversed their positions when Es were of the opposite sex.

When intelligence and abstract ability were correlated with CI performance, only abstract ability was found to bear a relationship.

In conclusion, it must be stated that the results of the present study offer much support for the E and E - S sex effects findings of Rosenthal (1966), the socio-cultural theories of sex differences of Hoffman and Maier (1966) and Bayley (1966), and of the expectations evinced by Jensen (1966), who states that in concept attaintment research the factorial effects of the variables are more important than

individual factors such as sex, intelligence, or personality. The exploratory nature of the study, considering the lack of analogous research, has suggested several new approaches. Differences between E effects and E-sex effects must be perused; developmental aspects of body percept and CI need exploring; the relationship of intelligence and abstract ability to different modes of CI presentation must be tested; free association of S responses needs checking; and the interactions of body percept and other forms of CI require study.

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APPENDIX I

SUBJECT INSTRUCTIONS AND STIMULUS MATERIAL

Instructions

Before you, on the table, is a panel with two red lights labeled "A" and "B." Also present is a card with pertinent information from these instructions, a microphone, and white signal light.

In a moment the while light will go on; when it again goes off you will begin picking up cards from the pile, one at a time, and making simple, but complete sentences--one for each word (there is one word per card).

Hints are provided on your panel. The hints are not part of the problem, just aids in sentence construction.

When you have made each sentence, lay the card face-up on the table (example given). Give each sentence only once.

While you are stating each sentence red light "A" will light up whenever you say a specific word, words, or thought. Red light "B" will light for a different word, words, or thought.

Whenever the white light again goes on it will be your task to tell me what word, words, or thought made each of the two red lights go on--in other words, what do "A" and "B" refer to?

When the white light again goes off, resume making sentences--this will occur several times, regardless of whether you were correct earlier. If you believe you were right before, repeat that solution. Lights will refer to the same things throughout.

Are there any questions?

Post CI Instructions

Please do not discuss what you have done with anyone else. We will be working with many others and we do not want them coming here with any preconceived ideas.

— Thank you.

Instruction Card on Subject Panel

TASK: Utilizing the word on each card make up a simple sentence.

INSTRUCTIONS:

1. Do above when white light off.
2. Use complete sentences.
3. Determine what makes lights "A" and "B" go on.
4. Whenever White Light goes on - state only what you think made "A" and "B" light up.
5. If you have stated your conclusion during a previous white light and believe you were correct, state that decision again.
6. Do not talk to experimenter until after entire session.

HINTS

operations	disease
medicines	healing
breaks	doctors
treatments	quacks
discoveries	sprain
allergies	tears

HINTS--(Continued)

asthma cancer

arthritis injuries

Etc.

Stimulus Words in Order of Presentation

1.	Heart	8.	Chin	15.	Head	22.	Finger
2.	Arch (of foot)	9.	Cheek	16.	Ears	23.	Thigh
3.	Lungs	10.	Skull	17.	Toe Nail	24.	Sole (of foot)
4.	Hips	11.	Heel	18.	Arm	25.	Pelvis
5.	Hand	12.	Ankle	19.	Shins	26.	Calf (of leg)
6.	Nose	13.	Shoulder	20.	Foot	27.	Neck
7.	Knee	14.	Leg	21.	Toes	28.	Eyes

APPENDIX II

TABLES OF MEAN SCORES FOR ALL DEPENDENT VARIABLES

Table 21

Means of Time to Criterion in Minutes
for High (Hi) and Low (Lo)
Body Percept Scorers

		Male E		Female E		Total	
		$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N
Male S	Hi	5.63	19	6.82	11	6.07	30
	Lo	7.69	13	6.67	21	7.06	34
	Sum	6.47	32	6.72	32	6.59	64
Female S	Hi	8.63	16	7.33	12	8.07	28
	Lo	5.69	16	8.45	20	7.22	36
	Sum	7.16	32	8.03	32	7.59	64
Total	Hi	7.00	35	7.09	23	7.03	58
	Lo	6.59	29	7.54	41	7.14	70
	Sum	6.81	64	7.38	64		

Table 22

Means of Time to Criterion in Minutes
for Top and Bottom (Bot) 25%
of Body Percept Scorers

		Male E		Female E		Total	
		$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N
Male S	Top	6.88	8	7.38	8	7.13	16
	Bot	6.38	8	6.00	8	6.19	16
	Sum	6.63	16	6.69	16	6.66	32
Female S	Top	8.75	8	7.63	8	8.19	16
	Bot	5.13	8	7.50	8	6.31	16
	Sum	6.94	16	7.56	16	7.25	32
Total	Top	7.81	16	7.50	16	7.66	32
	Bot	5.75	16	6.75	16	6.25	32
	Sum	6.78	32	7.13	32		

Table 23

Means of Talk Time in Minutes for
High (Hi) and Low (Lo)
Body Percept

		Male E		Female E		Total	
		$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N
Male S	Hi	5.36	17	4.87	11	5.17	28
	Lo	4.04	13	5.78	21	5.12	34
	Sum	4.79	30	5.47	32	5.14	62
Female S	Hi	3.92	12	5.52	12	4.72	24
	Lo	5.15	16	4.52	20	4.80	36
	Sum	4.62	28	4.89	32	4.77	60
Total	Hi	4.76	29	5.21	23	4.96	52
	Lo	4.65	29	5.17	41	4.95	70
	Sum	4.71	58	5.18	64		

Table 24

Means of Talk Time in Minutes for
Top and Bottom (Bot) 25% of
Body Percept Scorers

		Male E		Female E		Total	
		$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N
Male S	Top	5.49	8	4.15	8	4.82	16
	Bot	3.77	8	5.28	8	4.52	16
	Sum	4.63	16	4.71	16	4.67	32
Female S	Top	4.52	8	6.16	8	5.34	16
	Bot	4.98	8	4.96	8	4.97	16
	Sum	4.75	16	5.56	16	5.15	32
Total	Top	5.01	16	5.15	16	5.08	32
	Bot	4.37	16	5.12	16	4.72	32
	Sum	4.69	32	5.13	32		

Table 25

Means of Number of Responses to Criterion
for High (Hi) and Low (Lo)
Body Percept

		Male E		Female E		Total	
		$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N
Male S	Hi	36.63	19	38.91	11	37.47	30
	Lo	37.62	13	46.57	21	43.15	34
	Sum	37.03	32	43.94	32	40.48	64
Female S	Hi	47.31	16	52.50	12	49.54	28
	Lo	49.13	16	54.70	20	52.22	36
	Sum	48.22	32	53.88	32	51.05	64
Total	Hi	41.51	35	46.00	23	43.29	58
	Lo	43.97	29	50.54	41	47.81	70
	Sum	42.63	64	48.91	64		

Table 26

Means of Number of Responses to Criterion
for Top and Bottom (Bot) 25%
of Body Percept Scorers

		Male E		Female E		Total	
		$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N
Male S	Top	33.88	8	48.00	8	36.44	16
	Bot	30.50	8	41.38	8	35.94	16
	Sum	32.19	16	40.19	16	36.19	32
Female S	Top	49.00	8	54.63	8	51.81	16
	Bot	48.50	8	45.88	8	47.19	16
	Sum	48.75	16	50.26	16	49.50	32
Total	Top	41.44	16	46.81	16	44.13	32
	Bot	39.50	16	43.63	16	41.56	32
	Sum	40.47	32	45.22	32		

APPENDIX III

SUPPLEMENTAL TESTS OF VOLUNTEERING BEHAVIOR

For the test of volunteering behavior (see text) a small sample, based on one section of introductory psychology, was differentiated from all potential Ss and designated non-volunteers, while Ss of other sections were disregarded. This designation of true non-volunteers (true) and false non-volunteers (false) was made because students in the false sections had been approached by several Es and it was felt that the non-volunteering behavior in these sections was confounded with experimental saturation. In the true section, students were contacted only for this study.

As an a posteriori check of this decision, F tests were run on samples of non-volunteers from all sections, equivalent in number and sex to all volunteers. With the combined sections neither males nor females exhibited any significant differences for either abstract or vocabulary (see Table 27). As a further check, the true non-volunteers were tested against a randomly selected sample of false non-volunteers on the abstract dimension, which had demonstrated significance for males when true non-volunteers were matched with volunteers. Male true non-volunteers performed significantly worse than did false non-volunteers, while females again showed no significant differences (see Table 27).

A similar test of volunteers versus false non-volunteers showed no significant differences on abstract ability (see Table 27). These results tend to support the experimental saturation hypothesis on which true non-volunteers were chosen.

Table 27

Supplemental F Tests of Volunteering Behavior

Source	df	F	p	$\bar{X}_1$	$\bar{X}_2$
Vol vs Combined Non					
Abstract					
Male	1/79	.01	NS	34.05	34.15
Female	1/79	1.09	NS	33.60	32.45
Vocabulary					
Male	1/79	.09	NS	31.33	31.10
Female	1/79	.41	NS	29.75	29.28
Abstract					
True Non vs					
False Non					
Male	1/29	3.78	$<.05$	32.53	35.47
Female	1/23	2.53	NS	29.33	32.40
Vol vs False Non					
Male	1/29	2.80	NS	35.47	32.67
Female	1/29	3.60	NS	32.40	34.67

Note.--Vol = volunteer
Non = non-volunteer
True Non = Ss considered to be true non-volunteers
False Non = Ss considered to have refrained from volunteering due to experimental saturation in their sections
Combined Non = combination of True and False Non's

APPENDIX IV

ORIGINAL DATA

Table 28

Body Percept

Score	Frequencies							
	mEmS		mEfS		fEmS		fEfS	
	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo
0	0	0	0	0	0	3	0	1
1	0	0	0	3	0	3	0	1
2	0	4	0	4	0	4	0	6
3	0	5	0	4	0	6	0	7
4	0	4	0	5	0	5	0	5
5	3		5		4		6	
6	9		2		3		3	
7	0		2		1		1	
8	2		0		2		0	
9	1		3		1		1	
10	1		1				0	
11	0		2				1	
12	2		0					
13	0		0					
14	1		0					
15	0		1					
Total	19	13	16	16	11	21	12	20

Note.--mE = Male E
fE = Female E
mS = Male S
fS = Female S
Hi = High body percept scorers
Lo = Low body percept scorers

Table 29

Time to Criterion in Minutes[a]

Score	Frequencies							
	mEmS		mEfS		fEmS		fEfS	
	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo
1	5	1	0	2	2	4	2	1
2	0	0	0	0	0	0	0	0
3	6	3	3	5	2	5	3	3
4	0	0	0	0	0	0	0	0
5	1	0	3	3	2	0	0	3
6	0	0	0	0	0	0	0	0
7	0	3	1	1	0	4	0	1
8	0	0	0	0	0	0	0	0
9	1	1	0	2	1	1	2	2
10	0	0	0	0	0	0	0	0
11	2	0	1	2	0	0	1	1
12	4	5	8	1	4	7	4	9
Total	19	13	16	16	11	21	12	20

Note.--mE = Male E
fE = Female E
mS = Male S
fS = Female S
Hi = High body percept scorers
Lo = Low body percept scorers

[a]Score of 12 means problem not solved.

Table 30

Talk Time in Minutes[a]

Score	Frequencies							
	mEmS		mEfS		fEmS		fEfS	
	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo
1.5	0	0	0	0	0	1	0	0
2.0	1	0	0	0	1	0	1	1
2.5	0	2	2	0	1	1	2	0
3.0	1	0	3	0	0	0	0	3
3.5	1	2	1	2	0	1	1	3
4.0	3	3	2	2	1	1	2	2
4.5	1	4	0	3	4	2	0	4
5.0	3	2	2	3	0	2	0	2
5.5	0		0	2	0	4	1	1
6.0	2		1	0	1	2	1	0
6.5	1		1	2	0	2	0	2
7.0	1			1	2	2	0	1
7.5	0			0	0	1	0	1
8.0	1			1	1	1	1	
8.5	1					0	2	
9.0	1					0	0	
9.5						0	0	
10.0						1	0	
10.5							1	
Total	17[b]	13	12[c]	16	11	21	12	20

Note.--mE = Male E
fE = Female E
mS = Male S
fS = Female S
Hi = High body percept scorers
Lo = Low body percept scorers

[a]To nearest .0 or .5 decimal places.

[b]Talk time measuring apparatus inoperable for two Ss.

[c]Talk time measuring apparatus inoperable for four Ss.

Table 31

Responses to Criterion

Score	Frequencies							
	mEmS		mEfS		fEmS		fEfS	
	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo
1-7	4	0	0	2	1	2	0	0
8-14	2	3	1	0	2	2	2	1
15-21	3	1	3	1	2	3	1	0
22-28	2	1	0	3	1	0	1	3
29-35	0	1	2	3	1	3	0	2
36-42	0	2	1	1	0	1	0	5
43-49	1	2	2	0	0	1	2	1
50-56	3	1	3	1	0	0	0	1
57-63	2	0	0	0	0	2	0	1
64-70	0	0	0	1	2	2	2	1
71-77	0	1	2	0	0	0	1	0
78-84	0	1	0	2	1	1	1	0
85-91	0		0	0	0	2	1	1
92-98	0		1	0	1	1	1	1
99-105	0		1	1		1		2
106-112	1			0				0
113-119	1			0				0
120-126				0				0
127-133				0				0
134-140				0				1
141-147				0				
148-154				0				
155-161				0				
162-168				0				
169-175				1				
Total	19	13	16	16	11	21	12	20

Note.--mE = Male E
fE = Female E
mS = Male S
fS = Female S
Hi = High body percept scorers
Lo = Low body percept scorers

Table 32

Total Responses

Score	Frequencies							
	mEmS		mEfS		fEmS		fEfS	
	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo
30-39	0	1	1	0	1	1	0	0
40-49	1	2	2	0	0	0	1	2
50-59	2	3	4	1	0	0	1	2
60-69	4	0	0	2	5	3	1	2
70-79	0	1	1	0	1	2	1	2
80-89	0	3	4	3	2	3	1	0
90-99	2	1	1	3	1	5	3	3
100-109	2	1	1	0	1	3	0	4
110-119	2	0	1	1		1	1	1
120-129	2	1	0	1		1	0	1
130-139	2		0	1		0	0	2
140-149	0		0	0		1	0	0
150-159	1		0	1		1	0	0
160-169	1		1	1			0	0
170-179				1			0	0
180-189				0			0	0
190-199				1			0	1
200-209							0	
210-219							0	
220-229							0	
230-239							1	
240-249							0	
250-259							1	
260-269							0	
270-279							1	
Total	19	13	16	16	11	21	12	20

Note.--mE = Male E
fE = Female E
mS = Male S
fS = Female S
Hi = High body percept scorers
Lo = Low body percept scorers

Table 33

Shipley Abstract

Score	Frequencies							
	mEmS		mEfS		fEmS		fEfS	
	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo
18	1	0	0	0	0	0	0	0
20	0	0	0	0	1	0	0	2
22	0	0	0	0	0	0	0	0
24	0	1	1	2	0	0	0	0
26	1	1	1	0	0	0	0	0
28	1	0	0	1	1	2	0	3
30	0	1	2	3	1	1	2	2
32	0	3	1	1	2	4	1	3
34	4	1	3	3	1	6	5	1
36	6	3	1	0	1	4	3	4
38	5	3	5	4	2	1	1	3
40	1	0	2	2	2	3	0	2
Total	19	13	16	16	11	21	12	20

Note.--mE = Male E
fE = Female E
mS = Male S
fS = Female S
Hi = High body percept scorers
Lo = Low body percept scorers