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A STUDY OF THE RELATIONS WHICH THE GALVANIC SKIN RESPONSE AND SENSORY REFERENCE BEAR TO JUDGMENTS OF THE MEANINGFULNESS, SIGNIFICANCE, AND IMPORTANCE OF 72 WORDS*¹

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A. INTRODUCTION

In quest of a better understanding and control of meanings and of the words which man gives meanings, this brief study in semantics was carried out from ideas received from the teachings and researches of Edwin D. Starbuck. The opening remarks lay the foundation for the tests which follow.

Rooted in Starbuck's theory of the sensory-intimate-affective and sensory-defining-cognitive functions in the organism is the fact that man is equipped with 10 or more senses: organic, kinesthetic, equilibrium, pain, temperature, touch, taste, smell, hearing, and vision. These sense organs let in reports of events from the world, internal and external. By way of afferent nerves these messages are relayed to higher centers of the nervous system where they become integrated and, in some way, take on meaning for the person.

Second, when confronted by a new situation—a word or a danger—the human organism becomes spontaneously integrative and dynamic. It grasps and values the situation first emotionally as a whole with the personal “self” or ego needs showing themselves at once in mood and manner. This total response later breaks down into more refined and specific ideas and movements as the initial burst of emotional energy subsides and as the social or mechanical demands of the situation reveal intelligible aspects and elements for consideration or handling.

Third, when a sense organ is stimulated two things happen, according to this theory: (a) the sensory messages set off feelings of

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¹The data was derived from a Master's thesis directed by Dr. E. D. Starbuck, University of Southern California, 1941.

immediacy, a general personal reaction, bodily sensitivity or intimate awareness of the situation as a whole; and (*b*) as the haze of feeling and emotion lifts, the organism is able more clearly to detect, dissect, define, and describe whatever stimulated the sense organs.

The intimate-affective function seems to give a qualitative and general, rather than a quantitative and specific, evaluation to experience. The sensory messages pass through the thalamus and hypothalamus where, as Cannon's theory (2) explains it, "the peculiar quality of the emotion is added to simple sensation when the thalamic processes are aroused." "The hypothalamus is a neuroglandular instrument in command of vital rhythm" (4). Nerve discharges from it put into action segments of the autonomic nervous system which controls in part the rhythmic behaviors of the heart, veins and arteries, lungs, stomach, intestines, sex glands, sweat glands, and other duct glands. It is in or next to these smooth muscles that the organic receptors lie (5).

Generally, the organic sense probably possesses capacity for producing intimate-affective response more than any sense because its receptors are embedded in and about the vital organs. Hearing in sounds and music is a frequent source of intimate meanings. The kinesthetic or muscle sense is close to the needs of the organism but it is too often concerned just with tool or work activities to excite much affective reaction. Vision is also often poor in this capacity because its job is a rather objective one: to gather information at a distance with discrimination. The higher expressions of the intimate-affective functions are found in appreciations of the beautiful, love, worship, "feelings of value," as Starbuck puts it, sympathy, play, inspirational awakenings, sentiments, intuitions.

In any life-situation the intimate-affective and defining-cognitive functions operate together. In the defining-cognitive function the structure and function of the cerebral cortex as well as that of the sense organ help to "analyze," as Pavlov terms it, also define, and describe more or less objectively events from the world. Vision is the most capable sense at defining because the receptor and the occipital lobe in the visual area of the cerebral cortex are the most highly specialized and localized of all the senses. For similar reasons, but in less degree, hearing, smell, taste, touch, kinesthetic, and the other senses may be placed down a rough scale of general abilities

at defining and discrimination. The organic sense here is at the bottom; it gives only vague reports of diffuse feelings, bodily urges, and internal stirrings for which the person is usually at loss for words to describe. The defining-cognitive function helps a person to obtain relatively accurate and specific information of the world which makes possible intelligent and articulate responses in terms of thought and movement. However, in man and animals the indefinable cues—the intimate subtleties of affective response—probably do more work for the preservation of the species than does the over-rated cortical thinking in the cerebrum.

B. THE PROBLEM

The general problem here is to investigate only the sensory-intimate-affective functions in word-meanings as designated by a combined judgment of the word's meaningfulness, significance, and importance to a person. To one person a word like "democracy" may be very meaningful, significant, and important (abbreviated *MSI*), while another word like "butter" might be average in *MSI*, and "brick" might be but slightly *MSI* to him for a given list of words in a test situation.

Therefore, we may ask, Are there any rough relationships between the relative *MSI* judgments of words and a psychophysical indication of intimate-affective sensitivity like the galvanic skin response? Second, what is the relationship between the *MSI* judgments and their sensory references (sense-imagery plus somatic sensitivities) as recorded from introspections?

C. REVIEW OF THE LITERATURE

Today the mention of imagery requires explanation, and Bills (1) gives a concise appraisal of its present status. "The study of images in psychology has undergone a decline in recent years, partly because of the practical difficulties inherent in a type of experiment which is exclusively subjective, partly because of the failure to formulate significant problems, but chiefly because of the doubt that has been cast on the reality and importance of the phenomena by certain recent psychologists."

This study provides some answers to these criticisms by attempting to investigate an important semantic relationship in quantitative

and psychophysical terms. In addition, rather than rate images for clearness and vividness, which is a sensory-defining evaluation with an historic bias in favor of vision and hearing, this study, as suggested by Starbuck (7), rated them for their meaningfulness, significance, and importance—for how much work they do in contributing to the meaning of the word. This scale gives the intimate-affective basis a chance to show its worth. Furthermore, the study draws from all the 10 or more senses, and does not as is usually done limit itself to vision, auditory, and kinesthetic. The expression "sensory reference of a word," although a poor one, helps to broaden the more restricted meaning of "imagery," as usually connoting visual and auditory, to include the often neglected somatic sensitivities. And finally, the study places the burden of validity not on the reality of images, but on the operations statistically shown in the results.

No study could be found correlating sense-imagery with anything like the above *MSI* scale. Likewise no previous study related the galvanic skin response to such a scale. But a cousin to this latter problem is a study reviewed by Woodworth (10, p. 290) in which Dysinger discovered that very pleasant or unpleasant words produced a greater galvanometer deflection than the indifferent words. Wells and Forbes, Wechsler, and Syz as reviewed by Woodworth (10, p. 289-290) each found that the average galvanic response followed this same pattern when the words were rated for their emotional intensity.

D. SELECTION OF STIMULUS WORDS

The 72 stimulus words were selected from the educational and philosophical writings of John Dewey and Rabindranath Tagore as the most frequently occurring words in samples of 8,800 words from each writer. Most of these words are key-words in their thinking. In addition, every word is found within the first 7,000 words in Thorndike's (8) list of frequency words; 45 of them are inside the first 3,000 words. The social value of the words is further attested by the fact that 34 or nearly one-half appear in Ogden's (6) *Basic English* words.

E. PSYCHOPHYSICAL TESTING

1. *Introduction*

The chief purpose for employing the psychogalvanometer was to secure a solid and objective measure of intimate-affective sensitivity.

The electrical changes recorded by the galvanometer measure sweat gland activity which is innervated by the autonomic nervous system (10, p. 281). The galvanic skin response is not specific to emotion but occurs during a variety of states of the organism. Woodworth (10, p. 291-295), after surveying the literature, found that it indicates more nearly a condition of tension or predicament within the organism for overcoming difficulties. The galvanic skin response appears in apprehensive expectancy, rising sex tensions, startle, surprise, amusement, fear, anger, pleasant and unpleasant feelings, physical and mental effort, and "meaningful" experiences like listening to music.

Easily, then, the above named physiological and psychological correlates of the galvanic skin response may almost directly be interpreted as labels for the intimate-affective responses. May not the galvanic response therefore be used, to a degree, as a check on the validity of the assumption made that *MSI* estimates are largely intimate-affective responses?

2. *Apparatus and Procedure*

The subject was seated in a chair with a side-arm. Brass electrodes were placed and held on the palm of the hand by two rubber bands. The wires led to a Wechsler Psychogalvanograph (9) behind a screen. The writer gave the subject 10 to 15 practice words to which the subject replied with free-association responses. Then the experimenter jerked the string starting a record in a Brunswick phonograph which announced at 10 second intervals the 72 words. The galvanometer deflections were preserved on a moving photographic film pulled by a motor in the galvanometer box.

After the film was developed, the vertical distance between valley and peak following the stimulus line was measured in millimeters. Both sensitivity and resistance levels were kept constant for each subject, but they varied from subject to subject. Inasmuch as the percentage increase in galvanic skin response, a ratio, was the unit of measure, no error was introduced.

On finishing, the subject was given a list of the 72 words and asked to rate each for how meaningful, significant, and important (*MSI*) its meaning was to him; that is, how much does the meaning grip him: 3 for very meaningful, 2 for somewhat significant, and 1 for slightly important and meaningful.

F. RESULTS

The relationships between the galvanometer deflections and the *MSI* estimates are presented in Table I. In making the calculations,

TABLE I
THE RELATIONS BETWEEN THE GALVANIC SKIN RESPONSE AND THE *MSI*
MEANINGFULNESS OF THE WORDS

Comparison	Mean % <i>GSR</i> increase	<i>SD</i>	Critical Ratio Mean minus 0
Very over slightly meaningful words	34%	45%	5.3
Very over somewhat meaningful words	13	32	3.0
Somewhat over slightly meaningful words	19	37	3.6

each subject's records were considered individually. First, the average deflection for all the 1-rated words was computed, then the average of the 2-rated words, and finally the average of the 3-rated or very *MSI* words. Second, from these three averages for one subject the percentage increase of the 3-rated over the 1-rated words was calculated, and so forth. Third, the mean of all 50 subjects (university students, 27 men and 23 women) was determined for each of the three kinds of percentage increase. About 1,000 pairs of deflections are included in each mean.

The mean percentage increase of 34 per cent means that, on the average, the very meaningful, significant, and important words produced a greater galvanic skin response than the slightly *MSI* words. This value is completely reliable because the critical ratio of 5.3 is far in excess of 3.0 which is the standard minimum required for a completely reliable increase (3). The other two percentages tell the same story and they, too, are comparably reliable. Of course, some words 3-rated showed a smaller deflection than some words 1-rated.

G. TESTING FOR SENSORY REFERENCE

Sensory references for the word "Butter" may be illustrated by the subject who reported he imagined "something seen, a special taste, and hunger contractions (perhaps real)." Another subject would report somewhat different references. For the more abstract word "courage," one person recorded "something seen, abdominal tensions and kinesthetic (muscular) strains in the legs and mouth."

Only three or four examples of word introspections and about three minutes of practice were permitted. But the work and anatomy of the 10 or more senses were made clear. Care was then taken to indicate opportunities for the operation of all the senses in word-meanings and to minimize any more indoctrination by the experimenter than is implied in the following procedure:

"Referring to the list of the senses below, record the imagery (sensory references) by symbols *I*, *H*, *Sm*, *Ta*, *To*, *Tp*, *Pa*, *E*, *K*, and *O* when they come to you for each word as you get the meaning of it. *Vision*—with or without color: shape or form, lines, tones, tints, spoken phrase seen, etc. *Hearing*—sounds, noise, music, spoken phrase heard, etc. *Smell*—odors, etc. *Taste*—sweet, sour, bitter, salty, (food), etc. *Touch*—pressure, rubbing, touching the external skin, etc. *Temperature*—warmth, cold, etc. *Pain*—external or internal physical pain, etc. *Equilibrium*—equipoise, balance, posture, dizziness, turning or twisting of body or head, etc. *Kinesthetic*—muscular tensions and strains the whole body, legs, arms, hands, fingers, etc., during (or in resisting or in preparation for) movement; muscular tensions in the throat and tongue while talking or thinking and in the eyes when seeing motion, etc. (Sense organs in skeletal muscles, tendons, and joints.) *Organic*—feeling of uplift, exhilaration, depression, urge to movement; chest and breathing reactions; abdominal reactions; heart beat; nausea; drowsiness; fatigue; startle; hunger; thirst; sex; expansiveness; etc. (Sense organs in lungs, viscera, veins and arteries, duct glands, etc.) One word may suggest several sense-images."

"Finally, judge the relative meaningfulness, significance, and importance of each image; that is, estimate the amount of work it does in contributing to the meaning of the word: 3 for very meaningful, 2 for somewhat significant, and 1 for present but not very important. Please note that you are not to judge how clear and vivid the image is, but how meaningful and significant it is to you."

The words "sensory reference" were not in the original directions.

For any subject the testing procedure (all were individual tests) was, first, the recording of the galvanic skin response, second, rating the words for *MSI* from a list on paper presented in the same order, and, third, with the ratings covered up the giving of sensory references.

II. RESULTS

1. *Relations with Words*

The relationships between the sensory references and the *MSI* for the 72 words are revealed in Table 2 along with critical ratios

TABLE 2
GROUP PERCENTAGES OF SENSORY REFERENCE AND THE *MSI* MEANINGFULNESS OF 72 WORDS WITH CRITICAL RATIOS

<i>MSI</i> Meaningfulness	Organic	Hearing	Kinesthetic	Vision
Very or 3	39%	15%	17%	33%
Somewhat or 2	21	15	16	40
Slightly or 1	20	14	20	37
<i>CR</i> : 3 minus 1	6.2	4	1.0	4.3
<i>CR</i> : 3 minus 2	3.9	1.5	1	2.4
<i>CR</i> : 2 minus 1	3.5	1.1	1.5	2.5

on the differences. These values originated from individual subject records. The total amounts of each type of significant reference were added up for the 1-rated words and the percentages of vision, hearing, kinesthetic, and organic computed. Another set of totals and percentages were obtained for the 2-rated *MSI* words, and finally, a set of percentages for the 3-rated words. Lastly, the mean percentage of, say, visual reference was calculated for the 3-rated words for all 50 subjects, and so on.

For the top three horizontal rows, as the subjects rated the words more and more meaningful, significant, and important, they reported, on the average, greater percentages of organic and lesser percentages of visual reference. The critical ratios of the differences tabulated below mean that these results are very comfortably reliable. However, auditory and kinesthetic references do not here show any reliable progressions. But in individual cases, 11 subjects had a definite increase and 26 subjects a definite decrease in kinesthetic as *MSI* increased. Similarly, 12 subjects exhibited an increase in hearing while 14 subjects showed a decrease.

If increasing percentages of organic and decreasing percentages of visual reference accompany increasing *MSI* in these words, an emphatic correlation could be expected between each of these types and the *MSI* rating. Accordingly, the sensory reference profile and the mean *MSI* ratings were determined for each of the 72 words for the 50 subjects. In Table 3 "frequency" means the number of subjects

TABLE 3
CORRELATIONS BETWEEN THE TYPES OF SENSORY REFERENCE AND THE *MSI* MEANINGFULNESS OF THE 72 WORDS (PEARSON PRODUCT MOMENT WITH *PE*)

Sensory reference calculating base	Organic	Hearing	Kinesthetic	Vision
Significance	$+.65 \pm .05$	$+.24 \pm .08$	$-.09 \pm .08$	$-.02 \pm .08$
Frequency	$+.62 \pm .05$	$+.19 \pm .08$	$-.10 \pm .08$	$-.16 \pm .08$
Percentage				
Table 2 basis	$+.46 \pm .06$	$+.26 \pm .07$	$-.25 \pm .07$	$-.24 \pm .08$

reporting any one type of reference. By "significant sensory reference" is meant frequency times the average rating of that reference.

The most striking result in Table 3 is the substantial, positive correlation between *MSI* and organic sense reference, which verifies the same relation in Table 2. But Table 3 reveals almost no relationship between visual reference and *MSI*. Therefore, organic reference is a real, and rather general, positive factor in *MSI*. While vision and the other types, for this group of subjects and words, are not at all general factors, they might as noted above be real, positive or negative, factors for individual persons. The negative or inverse relation between *MSI* and vision appear in Table 2 because vision occurs in large amount and a group percentage evaluation requires a decrease in per cent of vision for a real increase in a comparably large amount of organic reference.

2. Results with Sentences

Fifty sentences also received introspection by 19 other subjects using the same procedure. Within the sentence subjects chose significant words and groups of words for introspections and above each placed the sensory reference symbols.

3. Sensory Reference Profiles of Individual Words

This study would have little value without presenting the sen-

TABLE 4
GROUP PERCENTAGES OF SENSORY REFERENCE AND THE *MSI* MEANINGFULNESS FOR 50 SENTENCES*

<i>MSI</i> meaningfulness	Organic	Hearing	Kinesthetic	Vision
Very or 3	38%	5%	22%	35%
Somewhat or 2	34	5	24	39
Slightly or 1	30	5	21	43

*These results agree with those in Table 2.

sory reference profiles of each word, because our interest centers on the words and their meanings and on the relationship of sensory factors to them. Each percentage in Table 5 is calculated from the

TABLE 5
INDEPENDENT PERCENTAGES OF RATED SENSORY REFERENCES AND AVERAGE *MSI* RATINGS FOR INDIVIDUAL WORDS

Word	<i>MSI</i>	Organic	Hearing	Kinesthetic	Vision	Miscellaneous
Intellectual	2.8	43%	19%	9%	40%	
Freedom	2.7	67	6	38	29	<i>To</i> 6%
God	2.7	62	35	7	38	
Truth	2.7	56	32	8	19	
Love	2.6	81	10	36	36	<i>To</i> 16
Peace	2.5	67	16	11	28	
Perfection	2.5	51	16	9	47	
Education	2.5	56	28	17	47	
Living	2.5	47	22	33	40	<i>To</i> 15
Experience	2.4	47	17	26	39	<i>To</i> 13
Joy	2.4	64	21	31	29	
Ideal	2.4	53	6	13	26	
Beautiful	2.4	49	32	4	81	<i>To</i> 17
Knowledge	2.4	44	29	6	40	
Unity	2.4	44	10	6	40	
Social	2.4	43	28	22	42	
Activity	2.4	33	15	73	41	<i>Eq</i> 22
Environment	2.4	37	28	12	66	<i>To</i> 15
Sympathy	2.3	75	21	14	27	<i>To</i> 7
Aim	2.3	33	9	26	52	<i>To</i> 6
Individual	2.3	24	26	7	68	<i>To</i> 14
Feeling	2.2	64	1	38	13	<i>To</i> 40
Heart	2.2	47	26	27	37	<i>To</i> 6
Habits	2.2	41	6	38	25	<i>To</i> 8
Harmony	2.2	46	53	14	22	
Highest	2.2	46	11	17	75	<i>Eq</i> 17

TABLE 5 (Cont.)

Word	MSI	Organic	Hearing	Kinesth.	Vision	Miscellaneous
Soul	2.1	58	3	5	20	
Power	2.1	42	5	39	39	<i>To</i> 7
Development	2.1	32	7	29	44	<i>To</i> 10
School	2.1	24	35	10	77	
Action	2.1	21	15	59	47	<i>To</i> 7
Experimental	2.1	14	9	16	51	<i>To</i> 15
World	2.1	12	23	3	68	<i>To</i> 17
Spirit	2.0	62	12	8	29	
Spiritual	2.0	55	9	9	29	
Ultimate	2.0	45	4	17	38	
Meaning	2.0	44	15	19	32	
Consequences	2.0	41	13	15	41	
Results	2.0	30	18	16	47	
Value	2.0	34	7	7	35	
Study	2.0	31	21	33	61	<i>To</i> 6
Children	2.0	24	52	13	71	<i>To</i> 16
Fact	2.0	16	31	4	40	<i>To</i> 10
Infinite	1.9	51	6	10	29	
Thinking	1.9	45	12	30	21	
Control	1.9	35	4	43	21	<i>To</i> 13
Childhood	1.9	35	26	14	63	
Theories	1.9	30	36	3	41	
Act	1.9	20	8	52	47	<i>To</i> 7
Man	1.9	15	26	13	76	<i>To</i> 10
Giving	1.8	55	8	19	40	
Realize	1.8	42	10	10	29	
Age	1.8	30	4	9	60	
Tested	1.8	21	18	21	52	<i>To</i> 20
Method	1.8	15	9	23	37	<i>To</i> 6
Boys	1.8	14	46	16	70	<i>To</i> 8
Born	1.7	29	12	24	39	<i>Pa</i> 21
Situation	1.6	29	10	12	44	<i>Eq</i> 9
Sky	1.6	22	3	4	77	<i>Tp</i> 9
Changes	1.6	15	14	21	44	<i>To</i> 6
Direct	1.6	13	16	29	38	<i>To</i> 12
Earth	1.7	12	11	4	68	<i>To</i> 25
Trees	1.6	11	21	6	82	<i>Sm</i> 26
Inner	1.5	37	3	9	31	<i>Tp</i> 6
Come	1.1	27	23	49	27	<i>Eq</i> 12
Full	1.4	22	3	12	38	<i>To</i> 17
Use	1.5	13	4	37	28	<i>To</i> 27
Continue	1.2	14	8	39	20	<i>Eq</i> 17
Process	1.5	11	13	52	40	<i>To</i> 10
Bring	1.1	8	14	50	28	<i>To</i> 9
Connection	1.4	6	10	12	39	<i>To</i> 28
Materials	1.4	2	4	12	63	<i>To</i> 44

number of subjects reporting that sensory type divided by the total number of subjects, usually 50, multiplied by the rating of that sensory type divided by 3. Thus, each value represents that percentage of the total possible amount of significant and meaningful sensory reference which was actually reported; the value for each type is on a "thermometer" scale of its own with 100 at the top. The figure for vision is therefore independent of the percentage of organic, say, or of the total of all types. The correlation of $+0.65$ for organic was obtained on this basis.

To is touch, *Temp* is temperature, *Eq* is equilibrium, *Pa* is pain, and *Sm* is smell.

Conspicuous in Table 5 is the large amount of organic reference, a close second only to vision. Noticeable also are the many exceptions to the $+0.65$ correlation between *MSI* and organic. Note the difference in character between the words in the highest *MSI* bracket with those in the lowest. Note, too, the similar sensory reference patterns for those words of similar meaning:² "Spirit" *MSI* 2.0 and "Spiritual" *MSI* 2.0; "Spirit" and "God" 2.7, "Soul" 2.4 and "Spirit," "Fetted" 1.8 and "Experimental" 2.1; "Act" 1.9 and "Action" 2.1; "Intellectual" 2.8 and "Knowledge" 2.4; "Experience" 2.4 and "Living" 2.5; "Consequences" 2.0 and "Meaning" 2.0; "Results" 2.0 and "Consequences," "Boys" 1.8 and "Children" 2.0. A difference between "Joy" 2.4 and "Peace" 2.5 is the added kinesthetic in "Joy"; between "Fact" 2.0 and "Knowledge" 2.4 in organic; between "Method" 1.8 and "Process" 1.5 in kinesthetic; between "World" 2.0 and "Earth" 1.7 in hearing. Note how ambiguity appears in "Feeling" 2.2. Touch is highest in "Materials" 1.4, "Feelings," "Connection" with "Materials" lowest in organic. "Born" 1.7 is highest in pain. Hearing ranks highest in "Harmony" 2.2; "Children" 1.8; "Boys" 1.8. Organic is highest in "Love" 2.6, "Freedom" 2.7, "Sympathy" 2.3, "Peace" 2.5. Kinesthetic is highest in "Activity" 2.4, "Act," "Action," "Bring" 1.1. Vision is highest in "Tree" 1.6, "Beautiful" 2.4, "Sky" 1.6. If a context had been provided for each word instead of permitting free associations, these and other correlations might have been greater.

²The *MSI* number will aid in locating the word in the list.

I. SUMMARY AND CONCLUSIONS

The problem was to search for a possible relationship between the types of sensory reference and the relative meaningfulness, significance, and importance (*MSI*) of 72 words. Second, an attempt was made to find any relationship which the galvanic skin response might bear to the *MSI* estimates of the words. A statement of Starbuck's theory of the sensory-intimate-affective and the sensory-defining-cognitive functions provides a basis for the tests.

The results of the psychophysical testing, ratings, and introspections from 50 subjects are:

1. On the average, the galvanic skin response was reliably greater for the very *MSI* words than for the slightly *MSI* words with those of average *MSI* reliably in between.
2. A substantial positive correlation was found between the amount of significant organic reference and the *MSI* ratings of the words. The other types of sensory reference showed no reliable correlations.
3. A higher percentage of organic and a lower percentage of visual reference were reliably found for the very *MSI* words than for the slightly *MSI* words. Fifty sentences gave similar results.
4. The implications of numerous word comparisons raise the question: Do sensory factors function in determining some specific characteristics of word-meanings?
5. Visual reference was most frequently reported with organic a close second. Kinesthetic was much smaller; hearing was still smaller with the other types on the average negligible in amount.

The astonishing fact is that a group of the most intelligent people in our population, university students and teachers, found so much of the sensory background of these words to be of the undefinable indescribable, untelligible type, for example, 39 per cent organic in the very *MSI* words, whereas they found only about an equal amount of the most definable and exact type, like 33 per cent vision in the same words.

The study points up to this: For these subjects and words, the only sensory factor which is closely associated with the very as opposed to the slightly *MSI* words is the vague, diffuse, subtle, but often powerful, organic feelings. The galvanic skin response offers objective support to the three-point *MSI* scale and possibly also to

organic reference as a valid concept but only in so far as they both may record common behaviors in the region of the autonomic nervous system.

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