Judgments of the Self Made in the Absence of Self-Recognition

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JUDGMENTS OF THE SELF MADE IN THE ABSENCE
OF SELF-RECOGNITION

by

Richard George Doyle

A Thesis Submitted to the Faculty of the Graduate School
of Loyola University in Partial Fulfillment of
the Requirements for the Degree of
Master of Arts

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Richard George Doyle was born in Waldorf, Minnesota, September 8, 1925.

He was graduated from Owatonna High School, Owatonna, Minnesota, June, 1943. He entered active Naval service in October, 1943 and was released to inactive duty in June, 1947. During his time in service he attended Millsaps College, Jackson, Mississippi, from March, 1944 through June, 1945 in the Navy V-12 program. He attended the University of Oklahoma, Norman, Oklahoma as a member of the Naval Reserve Officers Training Corps from July, 1945 until he was commissioned in May, 1946. From September, 1947 to June, 1950 he attended The College of St. Thomas, St. Paul, Minnesota, and graduated in June, 1950 with the degree of Bachelor of Arts.

He began his graduate studies at Loyola University in September, 1950. He was recalled to active Naval service in June, 1951 and served for two years, after which time he resumed his graduate studies.
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CHAPTER I

INTRODUCTION

"One of the basic facts about human behavior is that so much of it is excluded from awareness, is unconscious."¹

Reports of increasing numbers of studies of unconscious phenomena appear in recent psychological literature which point clearly to unconscious perceptual and judgmental factors.

Wolff² and Huntley³ demonstrated that subjects made significantly differential responses when judging between their own forms of expression which were not consciously recognized, and the forms of expression of others. Huntley's results confirmed Wolff's observation that unconscious self-judgments are preponderantly favorable, seldom neutral, and in a few instances extremely unfavorable. Huntley added the finding that when a subject is not sure whether he is judging himself or not, the self-judgments become distinctly


favorable and almost never unfavorable.

Increasing reference to these pioneer studies on unconscious self-judgments call for a closer inspection of the techniques of their administration and evaluation. This study was originated for that purpose. While remaining within the general orientation of the two previous investigations, it was considered desirable to discover the result of using simpler and speedier methods of collecting forms of expression and obtaining the unconscious self-judgments from them.

The hypothesis of the study is that results similar to those of Wolff and Huntley can be obtained despite the following modifications in administration: 1) reduction from six months to three months of the latent period between collection of form of expression and obtaining judgments from them, 2) performance of the experiment under group rather than individual conditions, 3) use of a single rather than a number of forms of expression, and 4) use of unmirrored rather than mirrored samples of handwriting as forms of expression.

The question of recognition is of basic concern in this study as it is to the study of communications and the identification of signals, a process dependent upon previous learning. What factors are involved when we fail to identify ourselves consciously and yet apparently succeed in making a kind of unconscious identification or recognition? Why should an unconscious self-judgment be more favorable to the self than a judgment of the self made under conditions of full awareness? Is it more favorable?
CHAPTER II

REVIEW OF THE LITERATURE

Handwriting is used as the form of expression of personality which is judged by the subjects of this experiment.

Wolff contends that "size, form and position of graphic patterns originate neither in chance nor in conscious intention, but that they reflect unconscious principles of organization. Thus, graphic movements are "diagrams of the unconscious."¹ He tells of a study in which a significant degree of correlation was obtained between his graphic analyses and analyses made by Klopfer using the Rorschach. He found that "the Rorschach analysis discovered the structural and enduring qualities, while the graphic analysis detected the short-term problems and disturbances of the individual." The expressive degree of graphic movements, he says, varies with different persons and with the same person at different times, and "this is the reason why some graphic specimens are not 'expressive' and why a diagnosis derived from them may easily be wrong. Emphasis is placed on the diagnostic value of configurations rather than of fixed relationships between graphic patterns and personality traits."²

¹ Werner Wolff, Diagrams of the Unconscious, New York, 1948, 177.
² Ibid., xiii

3
Mendel says, "Though we write with the hand, writing is certainly not only a physiologic muscular activity. It is an expression of the whole personality (By personality we mean here the total pattern of a person's distinctive ways of facing life.) both in form as well as in content." He adds that "very few people submit completely to school drilling. Almost none can help introducing some individual variations, and a few do this to a remarkable degree. It is these additions and simplifications of the models, both deliberate and unconscious, which form the second and richer source of clues for the graphologist."3

Harvey summarizes one of his studies by stating that "it may be said that a study of the handwriting of a highly homogeneous group of fifty young women, involving the use of objective procedures, demonstrates that certain aspects of handwriting can be measured fairly precisely." He proposes that "handwriting constitutes a physical correlate of personality."4

A study by Hull and Montgomery in 1919 purported to demonstrate that the relationship between character and handwriting was suspect, but their study appears to have been aimed at certain graphologists who were alleged to have been interpreting character traits from single and isolated signs.

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tions such as "perseverance is held by certain graphologists to be indicated by prolonged bars on the t's," and "Some graphologists have held that ascending lines indicate pride," were erected. From two to four references would be given to demonstrate what "some graphologists" held. Needless to say, they destroyed their graphologists' positions mercilessly. 5

Allport and Vernon objected to the conclusions and method of the Hull and Montgomery study in saying that no modern graphologist would claim that a single graphic sign has a fixed meaning, but that the sign would be considered only as an indicator for certain tendencies which vary with regard to the relationship with other elements. 6

Meloun agrees that "no particular feature in handwriting, taken by itself, is a reliable and definite indication of some personality trait. Such a single feature can serve as a definite psychodiagnostic symptom only when it has been established whether it occurs together with a group of either "parallel" or "contradictory" features." 7

Secord concludes from a recent study that "the matching method has too many inherent difficulties to give fruitful results in the study of handwriting, and that the analytical method has not demonstrated any relationship between discrete handwriting variables and personality traits." He was report-


ing the results of a matching technique in which no success was obtained in matching handwriting with Thematic Apperception Test stories or with personality variables defined by a graphologist. 8

Goddemough describes an experiment in which "specimens of the handwriting of one hundred fifteen high school students were correctly classified as to the sex of the writer in about two-thirds of the cases. " 9

Numerous experiments of this kind, attempting to determine whether individual traits of character can be judged from handwriting samples, have been performed.

In a research conducted by Eagleson concerning the recognition of handwriting specimens, he found that even though his subjects were consciously attempting to select their own writing from among several samples, it was only by the end of the third trial that ninety per cent had recognized their own writing and forty three per cent their own written numbers. For each of the different types of written material (prose, poetry, etc.) about eighty per cent of the subjects failed to identify their own specimens in any of the three presentations. 10

So it seems that there is not universal recognition of writing even


when it is presented as one usually sees it and when the judge is instructed to select her own.

Tresselt found that "in Experiment I (identification of one's own handwriting) the percentage of correct recognition was 32.46." This was an experiment evaluating the ability to identify one's own or other people's handwriting. He concluded that "it is too often faulty to be regarded as direct testimony, and if admitted, should be given a low weighting."¹¹

Subjects in the present study were requested to write a description of personality after observing a specimen of handwriting for only twenty seconds. Perhaps their ability to do so was more a factor of the request than of their actual talent to perform the task.

Hilgard speaks of one of the goals of perception as being the achievement of definiteness.¹²

Miller posits, "The greater the ambiguity existing and the greater the ignorance, then the more it is necessary for the organism to create a strong hypothesis in order to maintain its equilibrium, its homeostasis, and to relieve it from anxiety concerning the potential threat which develops from its ignorance."¹³


Frenkel-Brunswick finds that the tendency to hold and express rigid and moralistic attitudes is related to the need to feel certain about those to whom they direct their attitudes. The achieving of rapid closure in their cognitive and perceptual reactions as well as in the social and emotional realms is a means of relieving anxiety.14

Bruner and Postman describe some of the ways individuals misperceived stimuli presented very rapidly on a tachistoscope when they are stimulated in a threatening or anxiety-arousing manner. They may block entirely and perceive nothing at all. They may see jumbled, nonsensical or incomplete stimuli and may even see something which derogates or contradicts the nature of the stimulus itself.15

Another problem of concern in this study is that of unconsciousness, or more specifically, subliminal awareness. In a comprehensive book on unconscious phenomena, Miller discusses various uses of the word unconscious and describes it at one point as it is used in this thesis.

"Unconscious (unavailable to awareness and incommunicable) behavior is different from conscious... The operation of consciousness, on account of the imposition by the social group of its code upon its members, is considered


by each member to be integrally bound up with his own pride and reputation, his ego. Our social group holds us responsible for those of our actions which are conscious, for, whether or not one believes that there is voluntary action, it is a fact that our conscious actions are thought generally to be under our voluntary control....Our social conditioning is thus one factor in making conscious behavior unlike unconscious, for, as soon as behavior becomes conscious, it is modified in order to avoid disapproval by society."16 "The necessity for an eternally vigilant doubt about the truth of all communication, especially subjective reports, is the main shortcoming of this social criterion of consciousness. The danger that the subject might be suppressing something of which he is conscious is present in every experiment and every clinical case where this is used."17 But he adds that communicability has been the means for proving that behavior in the states of consciousness and unconsciousness is different and is a useful index for so distinguishing.

Williams found in an experiment with subliminal visual stimuli that they were "frequently effective in eliciting an appropriate response." He discovered that "there is a considerable stimulus intensity range below the limen where the same frequency of correct responses may be obtained."18 When no subliminal stimuli were present he found results which would be expected by chance.

16 James Grier Miller, Unconsciousness, New York, 1942, 329.

17 Ibid., 290.

Baker has shown that discrimination between subliminal auditory stimuli is possible. 19

Miller, in one of the earliest of his numerous published studies on the topic, showed by means of Rhine's Extra Sensory Perception cards whose images he projected on a mirror "(1) that the subject can 'discriminate' intensities too low for him to be 'aware' of them, (2) that there are at least three perceptual conditions: (1) When S cannot discriminate the stimulus; (2) When he can discriminate it but is not aware of it; (3) When he can both discriminate and be aware of it. For this reason we cannot equate awareness and discrimination." He suggests that "behavior of surprise brought about by explanations that the S is receiving stimulation is caused by the consequent awareness of discrimination and may be regarded as an operation indicating awareness of discrimination." 20

In a later experiment Miller shows that "learning to discriminate geometric figures at subliminal intensities can occur without S's awareness that he is taking part in an experiment on visual perception." 21

McCleary and Lazarus used rapidly presented tachistoscopic nonsense syllable stimuli at unrecognizable speeds and found reliably greater galvanic

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skin reaction in response to nonsense syllables associated with an electric shock than they found for those not so related. It suggests that unconscious perception was occurring. 22

Before examining the studies in which judgments of self were made without awareness of self, it is useful to see what kind of self-judgments are made when awareness of self is evident.

In an early research, Hurlock found that she could not obtain accurate results from self-ratings of children because of the consistent tendency for those ratings to be favorable. 23

This "upward tendency of the ego" was demonstrated by Hoppe in his experiments on the level of aspiration. He found that in the performance of various tasks, the subject is careful to set a realizable goal. He seldom jeopardizes his self-esteem by choosing a goal higher than he can realize, although he tries to maintain a level of aspiration as high as possible. 24

Knight and Franzen, in an early study observed that "there is a higher relation between what they believe they are and what they would like to be, than between what they believe they are and what others think they are." 25


Frenkel-Brunswik describes some of the results of an experiment in which forth graduate students at Vienna judged themselves and others. She observed distortion into opposites, omissions, justification of defects and shifts in emphasis and order.

The true progenitor of the present study is Werner Wolff, who conceived a unique method of obtaining unconscious self-judgments in his Berlin laboratory in 1925. He used an elaborate technique to mask the true purpose of his collecting of pictures of hands, pictures of profiles, moving pictures of gait, recordings of voices, methods of retelling stories, and samples of handwriting. His subjects, presented with their forms of expression after a long period of time, were asked to make judgments of them. They were also requested to make judgments of the forms of others. Wolff found a low incidence of self-recognition and had thus obtained the novel "unconscious self-judgment." When he compared these unconscious self-judgments with judgments made by others of the same subject, he found that the former were preponderantly favorable, seldom neutral and, in a few instances, extremely unfavorable. He reported that subjects were greatly preoccupied with their own unrecognized forms.

Huntley, making a study of Wolff's experiments, believed the phenomenon merited further investigation. He believed Wolff's findings were sufficiently important to justify an independent validation but thought that the mat-


erial needed a more strict quantitative treatment. He sought information re-
garding partial or dubious self-recognition and wanted to know how the subject
judged himself in comparison to the judgments he made of others.

In 1940 Huntley published a synopsis of his 1938 Harvard doctoral
dissertation, his report of his confirmatory experiments on Wolff's work with
unconscious self-judgments. In his first experiment Huntley followed Wolff's
method closely in order to achieve comparable results. Thus he compared the
self-judgments with judgments by others in his statistical analysis. In a
second part of his own construction, Huntley had his subjects rank their sam-
ples and samples of others. He then compared the position in which the subject
placed himself to the positions the subject had been placed in by others to
arrive at the extent of favorableness with which the subject judged himself.
He found that both Wolff's original method involving the labor-consuming pro-
cedure of first evaluating the free characterizations in order to arrive at
the knowledge of the subject's self-rating in comparison to the ratings by
others, and his own new method produced rankings in essential agreement.

Though Huntley did not find that his subjects spent any more time
with their own forms of expression, he did find that his results for his male
subjects agreed with Wolff's findings. The findings for women in his first ex-
periment failed to reveal a tendency to be distinctly favorable or unfavorable
in their unconscious self-rankings.

28 C. William Huntley, "Judgments of Self Based Upon Records of Ex-
pressive Behavior," Journal of Abnormal and Social Psychology, XXXV, 1940,
Stagner had raised an objection to Wolff's comparing self-judgments with judgments by others, contending that a common frame of reference was absent. He objected, "Although Wolff recognizes the tendency towards projection in self-judgments, especially those which were unconscious, he pays little heed to the important probability of projection in judgments of others...In ambiguous situations the personality of the judge becomes a deciding factor in the results." 29

The second of Huntley's corroborative experiments gives an answer to Stagner's objection. In it Huntley launched a more statistically amenable third method of attack in which he was able to compare a subject's self-judgments with the judgments made by others, on the one hand, and the judgments the subject makes of others, on the other hand. A comparison of results of both methods showed them to be practically identical. Both compared well with Wolff's results, too.

The third method consisted of having each subject give scalar ratings to four samples of each form of expression on eight different characteristics. Advantages, he said, were that it would give quantitative results and that he would have eight different judgments on each specimen whereas there was only one available per specimen when using the free-characterization method. Thus he had self-judgments on several characteristics which would not be difficult to classify.

Huntley divided the degree of recognition into five phases, the first being that of no recognition at all, the fifth being that of complete self-recognition. He found that the means, when comparing the self-judgments with the judgments of others, were positive for all five stages. It shows that self-judgments, on the average, are more favorable than judgments of others. But those means were significantly above zero in Stages I, II and III, and were not significant for Stages IV and V, which indicates that unconscious self-judgments were more favorable than self-judgments made when the self was recognized. The self-judgments were most highly favorable in Stages II and III, with the mean of Stage III exceeding that of Stage II. This confirmed the evidence of his first experiment that self-judgments made with slight suspicion of recognition were the most clearly favorable.

From the magnitude of the sigmas for the same results, he concludes that "there is a reliable tendency for the self-judgments to be more extreme in the instances of non-recognition than they are when recognition has taken place." 30

To account for the affective nature of the self-judgments as indicated by favorableness and unfavorableness in the self-judgments, he considers that his theory of self-esteem or "ego-level" explains the strategies of self-justification, rationalization, projection and compensation which he saw when he took his subjects by surprise and made them judge themselves unaware that they were

doing so. This process of self-esteem, he adds, may operate below as well as above the limen of report.

The factor of modesty entering the picture when the subject is almost certain of recognition accounts for the fact that at that point the self-judgments become less favorable.

Stagner supports Huntley's concept of subliminal recognition and says, "it seems the best description of the process affecting judgment of unrecognizable self-records." 31

Allport, discussing the work, says, "The experiments also prove that the limen of ego-involvement is lower than the limen of self-recognition, an interesting finding which warns us once more that conscious report and introspection will never be a sufficient method of exploring the operations of the ego-system." 32

In positing his theory of self-esteem or "ego-level" to account for his results, Huntley rejected Wolff's theory of repression and the "unconscious projection of a wish image." Huntley argues that repression implies a strong emotional accompaniment, something which was absent in his experiments and, as he says, in all of Wolff's, too. He points out that the repression mechanism is stronger when the judge knows his own specimen is among the samples judged, and, of course, their subjects did not know. In addition, Huntley states that


it was by the peculiarities and abnormalities in the forms of expression that recognition of them was brought about, thus contending that if repression were the mechanism operating, just these abnormalities should have been repressed.

Wolff later appears to accept Huntley's view to some degree, yet is highly reluctant to discard his own theory of unconscious resistance. 33

Miller translates Huntley's concept into the language of the nervous system: "A sensory stimulus may reach low levels of the nervous system and so affect behavior, but nevertheless be insufficiently intense to attain the conscious neural organization. Also, processes may be suppressed to subliminal strength or made part of independent neural systems after they have been conscious." 34

Maslow demonstrated, in an experiment whose purpose was hidden from his subjects, that familiarity to objects and methods through a training experience played an important role in determining the direction of the supposedly objective choices made later between the familiar and the unfamiliar. "It is possible," he says, "to assume that such 'objective ratings' are nevertheless measures of affective preference." (toward the familiar) 35

Huntley rejects a theory of familiarity to explain his results by

33 Wolff, The Expression of Personality, New York, 1943, 184.
34 Miller, Unconsciousness, New York, 1942, 296.
saying that familiarity would be at a minimum at the point of non-recognition and therefore the judgments should be least favorable. But the converse actually happened in both Wolff's and Huntley's work. Also, Wolff contended, and Huntley found evidence to support him, that a distortion of form gives a judgment of higher favorability.

Among the results Huntley obtained from his second experiment was one which indicated the traits which the subjects judged with the greatest degree of certainty. His results showed the following: Attractive was rated with the highest degree of certainty. After it, in order, came quick, careful, original, intelligent, objective, jolly and generous. He found that the form of expression of handwriting elicited the most certain judgments of carefulness and quickness. Handwriting rated second to pictures of hands for certainty of judgments on generosity and jollity, and last of all the forms of expression for judgments on originality, objectivity and intelligence.

A brief review of the chapter reveals that numerous studies have shown that one's own handwriting is not always recognized, and that, in fact, there is often a high degree of non-recognition even when it is known that one's own handwriting is among the samples being observed.

Other sources point out that handwriting is a valid expression of an area of the personality which can be interpreted successfully when the limitations of its usefulness are understood. Identification of individual traits from single unrelated signs is considered invalid. Some graphic specimens are not particularly expressive. They would be poor material for interpretation.
There is an ability to discriminate perceptually and judgmentally at levels of stimulation below the limen of awareness.

Social responsibility is apparently the factor which makes conscious behavior different from unconscious behavior. Conscious actions, thought to be under voluntary control, carry the burden of responsibility to society.

Studies of self-ratings show that there is a definite tendency to err on the side of favorableness to the self.

Huntley's own succinct words best summarize the work of Wolff and himself: "When the individual judges himself unawares, the strivings for self-esteem are usually expressed, but so too may be some of the feelings of insufficiency. In the instances of partial recognition the Ego is threatened and all the force of self-justification brought into play, with the result that the self-judgments are almost entirely favorable. Finally, when the limen of recognition is reached, the demands of modesty operate and the self-judgments become more moderate, although the strivings for self-esteem still require that the individual judge himself slightly above average in favorableness, as occurs repeatedly in self-rating studies."36

CHAPTER III

DESIGN OF THE EXPERIMENT

Collection of Samples of Handwriting

Subjects for this experiment were the twenty men and twenty-four women who composed an undergraduate class in psychology in the University College, Loyola University, Chicago.

Handwriting specimens were obtained from an essay test in which the class was instructed to use the white paper supplied by the instructor. Control of the color of ink, or even of the use of pen or pencil, was not considered significantly important since the samples were to be photostatted, a process which would neutralize such differences. It was desired to give no cues to the effect that there was anything "different" about the test.

Preparation for Administration

A portion of each specimen was selected for reproduction by photostatting and an attempt was made to select a portion which contained no terms to cue the subjects that the sample was taken from their test. Likewise, when a subject demonstrated a tendency to use what was felt would be an obviously recognizable individual peculiarity in his handwriting, an attempt was made to find a portion which did not contain such a cue.

After photostatting the selected samples and obtaining four copies
of each, the individual samples were glued to a 5" X 8" file card. Each sample now appeared similar to Figure I below.

Figure 1. Photostatted Handwriting Sample

Huntley had found as a possible source of error in his first experiment the fact that he had had each individual characterize forms of both sexes. Consequently, in this study the subjects characterize the handwriting of their own sex only. Random selection was made of the three samples to go with the subject's own sample in the packet he would judge.

Along with the four numbered samples, the third of which in each case belonged to the person judging the four, was the following material:

1) A number code for degree of certainty of judgment, Figure 2.
2) Four numbered sheets of paper, each with the subject's name, containing the eight personality characteristics to be judged by marking a place on a scale between the opposite poles of the trait, Figure 3.
3) A template to cover the other characteristics while judging one of them.
NUMBER CODE FOR DEGREE OF CERTAINTY

0 -- Absolutely no certainty
1 -- Very slight degree of certainty
2 -- Slight degree of certainty
3 -- Somewhat certain
4 -- Fairly certain
5 -- Almost certain
6 -- Completely certain

Figure 2. Number code for degree of certainty

Administration

Twelve weeks after the samples had been collected, with the semester drawing to a close, the subjects were introduced to the problem as follows:

"In this experiment I would like to find out how you tend to characterize or judge people by looking at their handwriting. The ultimate purpose of it all is to compare the judgments made by undergraduate classes, such as this, with the judgments made by graduate students in psychology who have had more advanced training in personality analysis.

You will each receive a packet in which are four samples of handwriting. Now what I would like you to do is to tell me what you can about the personality of the person who wrote each sample. You may use a series of adjectives, phrases, or sentences, just as you prefer. If you can, state also whether you like or dislike the handwriting.

May I ask you now to please refrain from asking any questions from
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Degree of Certainty</th>
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<tbody>
<tr>
<td>original</td>
<td>unoriginal</td>
</tr>
<tr>
<td>imaginative</td>
<td>unimaginative</td>
</tr>
<tr>
<td>mentally active</td>
<td>not mentally active</td>
</tr>
<tr>
<td>slow</td>
<td>quick</td>
</tr>
<tr>
<td>phlegmatic</td>
<td>nervous</td>
</tr>
<tr>
<td>plodding</td>
<td>excitable</td>
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<tr>
<td>attractive</td>
<td>unattractive</td>
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<tr>
<td>prejudiced</td>
<td>objective</td>
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<tr>
<td>illogical</td>
<td>logical</td>
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<tr>
<td>muddled thinker</td>
<td>clear-thinking</td>
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<tr>
<td>careful</td>
<td>careless</td>
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<tr>
<td>thorough</td>
<td>haphazard</td>
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<tr>
<td>exacting</td>
<td>slipshod</td>
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<tr>
<td>melancholic</td>
<td>jolly</td>
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<tr>
<td>pessimistic</td>
<td>optimistic</td>
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<tr>
<td>low intelligence</td>
<td>high intelligence</td>
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<tr>
<td>generous</td>
<td>selfish</td>
</tr>
<tr>
<td>thoughtful</td>
<td>thoughtless</td>
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<td>of others</td>
<td>of others</td>
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Figure 3. List of characteristics and scales used in the judgments in Part C
now on? That is necessary in order that all of the classes going through this procedure have an equal amount of information with which to work. So that means that if you have any questions from now on, just keep them to yourselves and work out your problem as well as you can entirely by yourself without disturbing the rest of the class. It is very important for the success of this experiment that each person remains very quiet during the period of administration. Any talking between members of the class will injure the results.

To save time, I have already numbered the samples and the sheets you will use for this experiment, and have placed your name on each sheet. That will allow us to start the procedure immediately.

As I call your name would you please raise your hand in order that I can give you your materials? Please don't look at the material inside the packet yet. You may look at the scale on the front and familiarize yourselves with it when you get your packet. Then wait for further instruction when the packets are all distributed."

**Part 4. Free Description**

"When I say 'begin' please take out sample 1 from the packet and examine it. You will have twenty seconds to look at each sample and this shortness of time is to help you make the characterizations from looking at samples as a whole and not from the details. When you have finished with the sample, place it face down and wait for further instructions."

Subjects were told to begin, and after observing the sample for the twenty seconds, were told that the time was up.

"Now write what you can about what you think the personality of the
person whose handwriting you have observed would be like."

The procedure was repeated for samples 2, 3 and 4. After writing each description, each subject was asked to determine how certain he was of his judgment of each sample. A number code for degree of certainty, Figure 2, devised for this purpose had been placed on the cover sheet of each packet.

**Part B. Ranking**

"Now I'd like you to take the four samples and rank them in the order from the one you liked most to the one you liked least. When you have them ranked, mark the numbers of the cards down in order on the cover sheet of your packet. Remember to remain quiet and do not look around."

**Part C. Eight Characteristics**

"Now put these cards in order from 1 to 4 once again so that they will be in the same order as the numbers on the sheets showing the scales between the personality characteristics.

Now I'd like you to judge these samples according to the eight personality characteristics listed on the sheets you find in your packet. Judge each characteristic by itself and do not let yourself be influenced by a 'halo' effect; that is, don't give a favorable judgment in all cases just because these are characteristics describing the same person. Remember that a person high in one trait might be low in another. You may mark anywhere along the scale between the two characteristics named. After you have made the judgment, tell how certain you are of it according to the same scale you used in the first part of this experiment.

Place the template over each trait as you judge it so that you won't
be distracted by previous judgments."

A demonstration of method was given.

"Do not spend too long over any one judgment. When you have finished with the judgments of this first sample wait until I instruct you to begin with the second. Use the same template and scale on the second sample. Remember to remain quiet and to keep your attention on your own work."

The same instruction was given prior to the observation of samples 2, 3 and 4.

**Part D. Determining Recognition**

This part was originally planned to determine more accurately the degree of recognition each subject had of his own sample during the three parts of the experiment, but the end of the class period had come. In order to obtain a general impression of whether much of the class had realized that sample 3 was their own, the experimenter asked, "Did you recognize any of the samples?"

Scattered opinions were tendered.

"Which ones?" "Write your answers on the front of the packet."

Foreseeing no advantage in concealing the point further, the experimenter informed the class that the sample numbered three was their own. The surprise reaction expected in accordance with the findings of Wolff and Huntley was not lacking. Its strength was indicative of the previous unawareness of a large number of subjects.

The instructor kindly volunteered his class for part of the following class period two days later in order to permit gathering of information from
each of the students regarding the amount of recognition they remembered having experienced during the experiment two days before. The information desired was elicited by a "Recognition questionnaire," Figure 4.

Degree of Recognition Questionnaire

Name________________________

Number Code for DEGREE OF RECOGNITION

1 -- No recognition at all.
2 -- Slight suspicion of recognition, but no certainty.
3 -- About half certain recognition
4 -- Almost certain identification, but not positive.
5 -- Complete positive self-recognition.

I. Degree of recognition during the three parts of the experiment:

Part A (Free description) : 1 2 3 4 5 (circle one)
Part B (Ranking) : 1 2 3 4 5 " "
Part C (Judgment of the 8 characteristics) : 1 2 3 4 5 " "

II. Did you mistakenly suspect that a sample other than #3 was your own?__

III. Did you recognize the handwriting of a friend? _ Whom?__________________

IV. How did you recognize your own handwriting? ____________________________

V. Other observations or comments you care to make:

Figure 4. Degree of recognition questionnaire
CHAPTER IV

ANALYSIS OF RESULTS AND INTERPRETATION

Determination of Degree of Recognition

Two sources provided the material which made it possible to determine the degree of recognition each subject had of his own handwriting sample.

The answers to the questions "Did you recognize any of the samples?" and "Which ones?" supplied the most trustworthy evidence for separating the recognition and non-recognition groups. The answers were given before the subjects were told that their own sample had been number three of the four judged. Forty-five per cent of the men and forty-three per cent of the women failed to recognize their own handwriting according to this criterion. Theoretically this would mean that this forty-four per cent of the subjects had not recognized their own samples during any of the three parts of the experiment.

But answers to the "Recognition Questionnaire" indicated that many who had simply answered "yes" or "no" to the first of the above questions asked on the day of the experiment, reconsidered when given the opportunity to express varying degrees of recognition two days later. The questionnaire, the administration of which was unfortunately, yet unavoidably, delayed until two days after the experiment, was especially necessary to determine in which
part of the experiment those who had claimed recognition on the first day had actually recognized their samples. A disappointing consequence of the questionnaire was the discovery that many who had previously attested to their non-recognition throughout the entire experiment two days before, now claimed the various degrees of recognition, too. Whether such a phenomenon was a result of true reflection, retrospective falsification, or the suggestive power of the questionnaire itself is beyond the scope of this thesis to determine.

The vacillation of some subjects' judgments regarding their degrees of recognition, made it necessary to employ outside judges to help interpret and decide, for the purpose of tabulating the results, into which group such subjects should be placed. The free descriptions elicited in Part A were valuable in this regard. For example, a subject claiming partial recognition in Part A who misjudged the sex of his or her own handwriting was presumed to have experienced no recognition in Part A. In doubtful cases the subject was given the benefit of the doubt and allowed the higher degree of recognition he had claimed. Huntley mentioned that he, too, had found difficulty in classifying some of the cases of doubtful recognition.

The limitations imposed on this study by the lack of reliable information on the degree of recognition is a natural hazard of an experiment of this type which depends so heavily on subjective report.

Huntley reported that in his second experiment sixty-four per cent of his subjects reported no recognition at all of mirrored samples of their own handwriting. Seventeen per cent claimed the next higher stage of recognition. Four claimed stage three; ten claimed stage four, and six claimed stage
five, i.e., complete positive self-recognition. The extent of non-recognition of their own samples by subjects of Wolff and Huntley was considerably greater than that obtained in this experiment. Yet, there is a non-recognition group large enough to carry out the purpose of the study.

**TABLE I**

**DEGREES OF RECOGNITION REPORTED BY SUBJECTS IN THE THREE PARTS OF THE EXPERIMENT**

<table>
<thead>
<tr>
<th>Degree of recognition</th>
<th>Part A (Free Description)</th>
<th>Part B (Ranking)</th>
<th>Part C (8 Characteristics)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
<td>II</td>
<td>III</td>
</tr>
<tr>
<td>Men, N=19</td>
<td>6</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Women, N=19</td>
<td>8</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Total N</td>
<td>14</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Per cent total</td>
<td>37</td>
<td>16</td>
<td>13</td>
</tr>
</tbody>
</table>

Thirty-seven per cent failed to recognize their samples in Part A. Thirty-four per cent failed to do so in Parts B and C. But only eighteen per cent in Part A attained complete positive self-recognition. Though there is a slight tendency for recognition to increase as the subjects go through succeeding parts of the experiment, there is no significant permanent shift indicated. The upward tendency in recognition is most noticeable in the middle recognition stages. The lack of vacillation throughout the experiment by
those who claimed recognition in the first and fifth stages suggests that those subjects were more certain of their own degree of recognition than the subjects claiming degrees of recognition between complete lack of recognition and complete recognition.

Some results of the changes from the procedures of Wolff and Huntley are already apparent. Individual experience with each of the subjects, such as Wolff and Huntley had, would have made it easier to determine when a subject began experiencing suspicion of recognition, and an immediate report of the experience would seem to be a more accurate one. Their disguising of the handwriting sample by mirroring was apparently valuable in obtaining a higher number of non-recognizers, though it is interesting to note the high incidence of non-recognition of the undisguised samples. Photostatted copies of mirrored writing would have been just as simple to obtain, but they would not have permitted discovery of the extent of recognition of unmirrored samples.

**Determination of Rank Order**

In Part A the rank order of preference among the four samples judged by each subject was determined by comparing the free descriptions they had written about each specimen. These descriptions averaged four eight-inch-long lines of written material and in most cases gave the four outside judges who determined the rank order from the descriptions adequate material for distinguishing between more- and less-favored samples.

The four free descriptions made by each subject were typed on a separate large file card. The cards were then given to the four outside judges with the following instructions:
"On each of these forty-one cards are four personality characterizations which a different person has made after viewing photostats of four individuals' handwriting. These characterizations vary in their degree of favorableness. You are to assign a number from minus five (-5) through zero (0) to plus five (+5) to each characterization, naively and without any philosophical consideration, according to the following plan:

The position (-5) indicates extreme unfavorableness, and the position (+5) indicates extreme favorableness, while the (0) position indicates a neutral condition. The numbers between minus five and plus five thus represent gradations between the extremes. For example, two of the characterizations might be distinctly unfavorable, and these would be put at the lower end of the scale. Another might be favorable and thus would be put at the upper end of the scale. Another might be more neutral in tone and would be marked zero, or minus one, or plus one. DO NOT USE ANY POSITION NUMBER MORE THAN ONCE ON EACH CARD. These numbers are to be entered in the proper spaces on the back of this card. A position number will be entered for each of the four characterizations on each card."

The numbers assigned by the judges to the description of each sample were averaged and final ranking was accomplished by averaging the numbers assigned by the judges to each description. In the few cases in which the averages tied, an additional outside judge was asked to make judgments of the four samples.

Comparison of ranking done by the individual judges indicates that in thirty-seven per cent of the cases complete agreement was reached among the
TABLE II

AGREEMENT AMONG FOUR OUTSIDE JUDGES IN RANKING DESCRIPTIONS ELICITED FROM SAMPLES OF HANDWRITING IN PART A

<table>
<thead>
<tr>
<th>Number of degrees variation between judgments of rank order placement</th>
<th>Number of cases</th>
<th>Per cent of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>60</td>
<td>37</td>
</tr>
<tr>
<td>1</td>
<td>57</td>
<td>41</td>
</tr>
<tr>
<td>2</td>
<td>33</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>164</td>
<td>100</td>
</tr>
</tbody>
</table>

judges regarding the position of a sample with respect to the other three samples. In seventy-seven per cent of the cases there occurred only one degree of variation among the judges regarding the relative position of a sample.

Each individual judge agreed with each other judge about ninety times. Correlation between individual judges' rankings were no higher for one combination of judges than another.

In Part B, the subjects themselves had ranked the four samples, thus eliminating the need for outside judges. Wolff's and Huntley's subjects were unable to rank their handwriting samples in this way because the samples were not photostatted, but were viewed through a cumbersome mirror arrangement.

In Part C the rank order was obtained by comparing the algebraic sums of the individual scale judgments about the eight personality characteristics.
of each sample.

Determination of Relationship Between Degree of Recognition and Rank Order Position of Self-judgment

It is understood that only in Part B was the placement of his sample made directly by the subject himself, but for the sake of simplicity of language, the subjects of Parts A and C are also spoken of as having placed themselves in either position one, two, three or four.

The subjects who placed themselves either first or last in order of favorableness are of especial interest in this study. The sum of the number of subjects placing themselves in these two positions will be compared to the sum of the number of subjects placing themselves in the middle positions, i.e. positions two and three. Thus a distinction in this study is made between the group which placed its sample in an extreme position and the group which placed its own sample in a middle position. The behavior of these two groups under condition of varying degrees of recognition will be compared.

Subjects were divided into two more groups using another criterion. One is called the "recognition" (R) group. The other is called the "non-recognition" (N-R) group. The recognition and non-recognition referred to will be understood to be of the subject's own sample of handwriting. The composition of these two groups is determined by the degree of recognition claimed. In one instance, the N-R group will consist only of those subjects who claimed no recognition at all of their sample; the R group will consist of all the others. In the next instance, the N-R group will consist only of those subjects who claimed recognition of degrees one and two, while the R group will contain all
the others, i.e., those whose recognition was of the higher degrees, three, four and five. The R and N-R groups are formed by combining in different patterns the numbers of subjects claiming various degrees of recognition. Thus, of the several comparisons, each new comparison will find the so-called "non-recognition" group containing an additional number of subjects who had been considered in the previous comparison to be members of the "recognition" group.

The chi-square test is used to determine how often the various groupings considered will arise as a matter of chance. A probability of 0.05 or less is considered a significant divergence in this study. A probability of two chances in one hundred is considered to be very significant.

In the four cells of the chi-square are the numbers of subjects falling into the following categories: 1) the N-R group in extreme positions, 2) the N-R group in middle positions, 3) the R group in extreme positions, 4) the R group in middle positions.

Of all the combinations in Parts A and B considered by the test, the N-R group making larger extreme self-judgments is larger than the N-R group making self-judgments in the middle range. The larger R group made self-judgments of middle intensity.

The N-R group is considered to be making unconscious self-judgments and it is by examining shifts of recognition in this group that conclusions are drawn.

In Part A, very significant deviations from chance expectancy occur in two cases. In one, the N-R group consists only of the subjects with no
TABLE III

PROBABILITY OF DIVERGENCE FROM CHANCE EXPECTANCY
FOR NON-RECOGNITION (N-R) VS. RECOGNITION (R), AND
EXTREME VS. MIDDLE JUDGMENT GROUP COMPARISONS

<table>
<thead>
<tr>
<th>Recognition stages designating the N-R and R groups</th>
<th>Part A (Free Description)</th>
<th>Part B (Ranking)</th>
<th>Part C (8 Characteristics)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>P</td>
<td>F</td>
<td>P</td>
</tr>
<tr>
<td>N-R (1) R (2,3,4,5)</td>
<td>0.02*</td>
<td>0.06</td>
<td>0.60</td>
</tr>
<tr>
<td>N-R (1,2) R (3,4,5)</td>
<td>0.02*</td>
<td>0.07</td>
<td>0.98</td>
</tr>
<tr>
<td>N-R (1,2,3) R (4,5)</td>
<td>0.13</td>
<td>0.036*</td>
<td>0.80</td>
</tr>
<tr>
<td>N-R (1,2,3,4) R (5)</td>
<td>0.27</td>
<td>0.30</td>
<td>0.20</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N-R (1) R (5)</td>
<td>0.07</td>
<td>0.09</td>
<td>0.50</td>
</tr>
<tr>
<td>N-R (1,2) R (4,5)</td>
<td>0.05*</td>
<td>0.04*</td>
<td>0.60</td>
</tr>
<tr>
<td>N-R (1,2) R (5)</td>
<td>0.10</td>
<td>0.15</td>
<td>0.30</td>
</tr>
</tbody>
</table>

* Denotes significant probability of divergence from chance expectancy.

It is suspected that they were judging their own handwriting. In the other, the N-R group has incorporated the next stage of recognition and is still very significant. When any higher stages of recognition are added to the N-R group, the significance is lost and the probability of chance occurrence increases.
In Part B, significant deviation from chance expectancy is achieved only when the N-R group contains recognition stages one, two and three. Results when the N-R group contains only subjects with lesser stages of recognition do suggest significance. But the result when the R group contains only subjects with certain self-identification is not significant.

The erratic pattern of Part C results indicate that all of the combinations would occur readily by pure chance. In this part of the experiment the pattern which held for Parts A and B does not hold. At times the R group with extreme self-judgments is larger than that group with judgments of middle intensity. The pattern in the N-R group is sometimes transposed also.

Comparing the results of Part C with those found by Huntley, it is seen that they do not conform entirely to his concept that the unconscious self-judgments increase in favorableness as suspicion of recognition increases. The decrease in extreme favorableness of the judgment of self appears to be simply a consequence of a higher degree of recognition. Huntley's position that the bald egoism of the unconscious self is tempered with modesty when awareness of society's watchful eye creeps in is supported by the result of Part A. The agreement between Part A results and Wolff's results is good, since Wolff did not attempt to distinguish between degrees of recognition.

Part B results, though not as significant as those of Part A, conform to the pattern Huntley first found and interpreted. The most favorable unconscious self-judgments were made when a combination of the three lowest degrees of self-recognition were called the N-R group. It was for this midpoint between non-recognition and recognition that Huntley reported the same
result. Prior to reaching the middle stage of recognition, the favorableness of the subjects' unconscious self-judgments was not so pronounced. After passing that middle stage, the result shows no significant tendency for the extremely favorable judgments of the self to be made. The tendency then is for the N-R group to moderate its judgments, yet permitting more of the extreme than moderate judgments. The R group tends to make an increasing number of extreme self-judgments, but they never exceed the number of moderate judgments.

Huntley's interpretation points out that, during complete non-recognition and the first stage of suspicion of self-recognition, the unconscious self-judgments are more favorable to the self than the normal favorability of conscious self-judgments. But the favorability becomes greatest when suspicion of recognition increases and the threatened ego musters its forces for defense. But, Huntley proposes, with increasing recognition the subject begins to temper his defensive egoism according to the demands of modesty and the results become those which would be more likely to appear by pure chance.

Part C results conform in no way to the pattern of Parts A and B.

Numerous statistical devices employed failed to demonstrate significant results. Such a state is somewhat puzzling when it is remembered that Huntley's most heralded results were obtained by his use of the "objective" judgments of the character traits. Perhaps his method of presenting the traits individually to a single subject was more effective and conducive to careful thought. The very same eight characteristics were presented in this study. A template to cover adjacent judgments to the one on which a subject was working was devised
to overcome such a difference in procedure. One might suspect that unreported recognition of self was causing the difficulty. But analysis of the Part C rankings with the recognition data of Parts A and B revealed nothing useful. Huntley has said, with plausibility, that the trait judgment most nearly conforming with what the subjects judged in Parts A and B was attractiveness. Yet rankings according to the judgments of that single trait were fruitless, as were rankings according to a combination of attractiveness and carefulness, the trait judged with certainty second only to the former.

Rank order derived by dividing the product of the scalar rating and degree of certainty of the judgment by the sum of the degrees of certainty on each of the eight characteristics demonstrated nothing significant.

It is likely that some subjects simply misunderstood the directions. The group technique employed allowed no questions from the subjects. It was feared that a questioner would jeopardize the success of the entire experiment by prematurely calling attention to the fact that his own sample was among the four he was asked to judge.

Part C had the disadvantage of being highly time-consuming for some subjects. Faster subjects were forced to wait between judgments in order that the entire class could approach sample three simultaneously. It was necessary to urge speed upon many of the subjects several times to elicit all the judgments necessary by the time the class period ended. It is likely that many judgments made on Part C, especially on the later samples, were made hastily and at random. Such a case would readily explain the difficulty with the ranking results.
The order of certainty with which the eight trait judgments were made in Part C of this study was nearly identical to that found by Huntley for judgments of handwriting. A mere transposition of the adjacent traits careful and quick would bring complete agreement between the lists for men and women combined.

### TABLE IV

**ORDER OF CERTAINTY WITH WHICH EIGHT TRAIT JUDGMENTS OF HANDWRITING SAMPLE WERE MADE IN PART C**

<table>
<thead>
<tr>
<th>Order of certainty with which judged</th>
<th>Women</th>
<th>Men</th>
<th>Men and Women Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Attractive</td>
<td>Attractive</td>
<td>Attractive</td>
</tr>
<tr>
<td>2</td>
<td>Careful</td>
<td>Careful</td>
<td>Careful</td>
</tr>
<tr>
<td>3</td>
<td>Quick</td>
<td>Original</td>
<td>Quick</td>
</tr>
<tr>
<td>4</td>
<td>Objective</td>
<td>Quick</td>
<td>Original</td>
</tr>
<tr>
<td>5</td>
<td>Intelligent</td>
<td>Intelligent</td>
<td>Intelligent</td>
</tr>
<tr>
<td>6</td>
<td>Generous</td>
<td>Objective</td>
<td>Objective</td>
</tr>
<tr>
<td>7</td>
<td>Original</td>
<td>Optimistic</td>
<td>Optimistic</td>
</tr>
<tr>
<td>8</td>
<td>Optimistic</td>
<td>Generous</td>
<td>Generous</td>
</tr>
</tbody>
</table>

Subjects appear to be more certain of judgments of the more superficial traits found at the top of the list, than of the deeper personality traits. Such an observation agrees with Wolff's report of the difference between the personality report he made using handwriting as the projective mater-
Wolff's report "detected short-term problems and disturbances." Klopfer's "discovered the structural and enduring qualities."

In future experiments using the method of Part C, elimination of the information on degree of certainty of judgments is recommended. It is apparently not helpful in determining rank order, and its omission would save a considerable amount of time.

Wolff objected to Huntley's utilization of trait judgments on the grounds that judgments of individual traits were seldom valid, especially when made by the graphologically untrained. His argument would be good if it is assumed that the judgments should conform to the truth, but the experiments themselves indicate the high degree of subjectivity and projection inherent in the procedure. The experimenter is interested only in how the subject judges himself in relation to others. The truth of the personality description is irrelevant. Much of the projective material elicited in the written personality analyses in Part A could serve as a basis for a further study of selected subjects. For example, a personality test given to the surprising number of subjects who judged their own sample to be a sample of a member of the opposite sex might conceivably reveal a common factor in the group.

For any future experiments on unconscious self-judgments, the procedure of Part B is highly recommended. The first-hand self-ranking by the subjects themselves eliminates the tedious work of reading and interpreting paragraphs of written material in order to arrive at a rank which is still second-hand. Samples of handwriting can be obtained quickly from large groups.
of students through tests. The ranking procedure of Part B consumes only a few minutes for an entire group, and the results of such ranking can demonstrate the nature of unconscious self-judgments as well as any of the methods devised. A great advantage of Part B procedure lies in its adaptability to further experimentation of greater significance. It would not take much longer for the subjects to rank their own sample among six or eight others, and such a procedure could succeed in making a better distinction between an extremely well-favored sample and a sample placed in a middle position.

The advantage of the Part A procedure lies in its supplying a wealth of interesting written material which could be utilized in conjunction with other experiments. Perhaps such material would be useful to a therapist also.
CHAPTER V
SUMMARY AND CONCLUSIONS

Handwriting is considered to be a useful projection of personality, and its skillful interpretation can detect short-term problems and disturbances. Judgments of traits from individual signs in handwriting have not met with profound success.

Much experience indicates that many subjects do not recognize their own handwriting specimens when they are told to choose their own from among a number of samples. Advantage was taken of this phenomenon by Wolff in 1925 to obtain judgments from subjects of their own unrecognized projections of personality. He discovered that the unconscious self-judgments were significantly more favorable than conscious self-judgments or judgments of others.

Huntley elaborated on Wolff's idea by determining the nature of the self-judgments at various stages of recognition. His work corroborated most of Wolff's and led to his postulation of a plausible dynamic explanation of his findings. The unconscious self-judgments were significantly more favorable than conscious judgments, but the highest favorability was most pronounced at a half-way stage between non-recognition and recognition. This is interpreted as a defensive reaction...an attempt to present the best possible picture of the self. But as more recognition appears, the egoistic defensive picture is tempered to conform with society's demand for modesty in self-
Huntley postulated a limen of effectiveness below the level of report to explain the emotional reaction to the unrecognized self-projection. His theory is supported by a considerable amount of work demonstrating significant reactions to subliminal stimuli.

The present study consisted of three main parts, the first of which was conducted much like Wolff's original and Huntley's first corroborative experiment. Free descriptions of personality elicited from various expressions of personality were studied later to determine how the subject rated himself. A result very similar to Wolff's was obtained, though handwriting alone was substituted for numerous expressions used by Wolff and Huntley. And the handwriting sample was unmirrored and reproduced photostatically for group presentation and individual handling of the samples at close range. A higher degree of self-recognition took place in the present experiment, probably as a result of the changes made in procedure, but this did not preclude significant correlation with the previous work.

A second part of this experiment had each subject ranking his own sample of handwriting with three others. Results indicated agreement with Huntley's second experiment which found the greatest self-favorability in the range of doubtful recognition.

The third part, designed after Huntley's second experiment with judgments of eight traits, gave no significant result. It is thought that the necessity for speed in administration near the end of the class period, and the probability that the work was becoming boring to some subjects, influenced appraisal.
the accuracy of the thirty-two judgments requested.

Use of the ranking method offers the most efficient path to the attainment of the nature of unconscious self-judgments. The other methods are cumbersome and time-consuming, both for the experimenter and for the subjects. Efficient group administration of the method advocated can be accomplished in a few minutes of class time.
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B. ARTICLES


The thesis submitted by Richard George Doyle has been read and approved by three members of the Department of Psychology.

The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated, and that the thesis is now given final approval with reference to content, form, and mechanical accuracy.

The thesis is therefore accepted in partial fulfillment of the requirements for the Degree of Master of Arts.

June 4, 1954

Date

Vincent V. Herr, Jr.

Signature of Adviser