AN EXPERIMENTAL TEST OF TWO ALTERNATIVE HYPOTHESES CONCERNING PEPTIC ULCER ETIOLOGY

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AN EXPERIMENTAL TEST OF TWO ALTERNATIVE HYPOTHESES CONCERNING PEPTIC ULCER ETIOLOGY

by

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ABSTRACT

On the basis of a review of the literature concerning the role and the nature of the psychogenic factor in the etiology of peptic ulcer, two alternative hypotheses were selected to be put to an experimental test. The hypotheses were: (1) the Alexander and French formulation that an unresolved conflict concerning passive-dependent needs was the anxiety producing conflict in persons with peptic ulcer, and (2) the formulation presented by Mahl that the anxiety which leads to the gastric hyperactivity necessary for peptic ulcer formation need not result from a conflict concerning passive-dependency needs alone. Rather, any stressful situation might serve to activate the autonomic nervous system and thus start the physiological chain of events which eventuates in peptic ulcer.

In order to test these hypotheses, three so-called "crucial" pictures and a fourth, a neutral picture, were employed. The crucial pictures were called "Hostile", "Passive", and "Sexual" depending upon the group from which they evoked the greatest number of increased autonomically mediated physiological responses. The neutral stimulus provided the "basal" level of autonomic activity from which changes were calculated. There were three groups of patients in the validation study, all of whom had been carefully interviewed and tested by an advanced pre-doctoral clinical psychology student or a staff

clinical psychologist in a large Veterans Administration hospital. One group of patients (N of 8) was considered by the supervising staff clinical psychologist to be primarily conflicted concerning the expression or control of hostile-aggressive impulses, another group (N of 7) exhibiting anxiety primarily as a result of conflicts over the expression of passive-dependent needs, and a third group (N of 5) who seemed to have as the basis of their anxiety, conflicts over the expression or inhibition of sexual impulses. It was found that when these three groups of subjects were presented with the stimulus pictures at least two of the three physiological systems measured by the Keeler Polygraph were characterized by increased activity. The increases in autonomically mediated physiological activity in each group tended to occur with greater than chance frequency following presentation of the stimulus picture which was selected for its relationship to the conflict hypothesized for each group.

These pictures were then presented to the peptic ulcer and control groups. There were 24 subjects in each group. When the proportion of increased physiological responses made by the peptic ulcer group following the presentation of the "Passive" stimulus was compared to the proportion of such responses made by an appropriate control group, there were no significant differences.

This was interpreted as supporting the position taken

by Mahl and refuting the Alexander and French hypothesis.

A re-statement of Mahl's "generality" theory concerning the psychogenic factor in peptic ulcer etiology was made on the basis of the results of the present study as well as several others recently published. A few general suggestions about continued research in the area of psychosomatic disorders were offered.

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CHAPTER I

INTRODUCTION

That there is widespread interest in peptic ulcer is well demonstrated by the amount of literature which has appeared on this subject. The bibliography of a recent review (24) included over 300 references. In spite of this apparently intense study of peptic ulcer, the body of verified fact and accepted theory is quite small.

DEFINITION

The difficulties one encounters begin immediately with the definition of "ulcer". While there are several good ones, of varying degrees of completeness, the definition which seems most adequate is that given by Ivy, Grossman, and Bachrach (21). According to them, peptic ulcer is defined as "a circumscribed defect of the mucosa of the stomach, duodenum, or jejunum only when the defect extends through the muscularis mucosae. Only then is the continuity of the mucosa lost completely and on healing does a scar result." Ulcer is differentiated from "erosion" which is the term applied to an area of the stomach, duodenum, or jejunum from which the mucus coat is removed, allowing the gastric juices to come in contact with the mucus membrane. This letter is necessarily preliminary to the ulcer; but for the sake of clarity, it is differentiated by many.

The term "peptic ulcer" was introduced for the first time in 1882 as both a generic term and also with definite implications concerning the causative agent. As a generic term it grouped those ulcers which are found in the regions exposed to gastric juices. Etiologically, it implies that these ulcers are caused by the peptic activity of the gastric juices.

The use of this term, "peptic ulcer," followed upon several discoveries; one in 1692 that the gastric contents were acid; another in 1822 that this demonstrated acidity was due to hydrochloric acid (HCl); and the determination of an enzyme, pepsin, in 1836 which was shown to be necessary in order for the digestive action of HCl to take place.

1852 was the earliest reported date (21), at which any writer attributed the ulcer to the corrosive action of the gastric juices and turned the attention to excessive secretion of HCl.

INCIDENCE

There has been within the last 50 or 60 years, a radical change in the relative frequency of peptic ulcer in men as compared with women. In the period before 1890 or 1900, the ratio of men to women who had peptic ulcer was 1 male to 3 to 5 females, depending

upon the investigator reporting (21). By 1940, the rates of incidence had been completely reversed. There were by that time about 5 or 6 men to 1 woman with peptic ulcer. There are no completely adequate explanations of this phenomenon.

Rowntree (36) found on inspection of 13 million Selective Service registrants that nearly 8% either had peptic ulcer at the time of their medical examination or presented a history of it. This compares favorably with the reported incidence of 10% in the general population. Nine and four-tenths per cent of the white registrants were in this group, while only 2.3% of the Negro registrants were. An explanation and discussion of this racial difference will be presented in the next section. The same investigators (21,36) agreed in their findings that the age of onset of duodenal ulcer was in the decade from 31 to 40 years, and gastric ulcer occurred most frequently in the decade from 41 to 50 years. These were the ranges of highest incidence as well as the "average age of onset" range and are not meant to obscure the large variability in age of onset.

ETIOLOGY

Sandweiss (37) has edited a volume in which various past and present theories on the etiology of peptic ulcer are discussed. Most of them have been presented

as "the cause" of ulcer formation at one time or another. Dunbar (14) also deals with some of the following material at length.

(1) Traumatic factors--It was felt that physical damage to the mucus lining of the stomach or duodenum which exposed it to the digestive action of the gastric juices would necessarily result in ulcer formation. It has since been shown that it is a commonplace thing for there to be occasional erosions of the gastric mucosa which heal immediately (within hours).

(2) Vascular factors--Spasmodic contraction of the blood vessels of the stomach lining were held to be the cause of the breakdown of the resistance to the gastric juices. These have been shown to be fundamental to the physical trauma mentioned above and therefore inadequate as "the cause."

(3) Mucus failure--The mere failure of mucus to cover the mucus membrane is not in itself sufficient to result in ulcer but is now considered to be an important process in the course of ulcer development.

(4) CNS damage or disease--There have been repeated studies quoted in Sandweiss (37) which attempt to find in specific CNS damage the etiologic factor for ulcer. The fact that the results of such investigations have not been consistent and have not found any particular loci in which damage will result in ulcer formation has led present investigators to relegate it to a less than essential position in their explanations.

(5) Allergic reactions--Toxic factors and upper respiratory diseases have all been shown at some time to be related to incidence or recurrence of peptic ulcer. Their influence is so variable and the success in isolating this influence has been so meagre that these factors, too, are now considered not to be central to the problem.

(6) Hereditary factors--There have been striking examples of multiple incidence of ulcer in several generations of some families. It has been suggested (36) that there is a greater probability of finding etiologic factors in the environmental and emotional stress patterns characteristic of certain families than there is in finding hereditarily transmitted characteristics.

(7) Seasonal incidence--Several writers (21,37) have reported a differential incidence of peptic ulcer for various seasons of the year. Ivy, et al., (21) compare figures for the Northern and Southern hemispheres and find there a clear rise in rate of ulcer detection as well as fatalities during the cold months. In this latter study (21) the incidence in the Northern hemisphere is, in agreement with others, seen to fall sharply during the months of May, June, July, and August while in the Southern hemisphere the incidence during those months is at its peak. This has been variously interpreted as due to some factor intrincis in the weather, or due to physiological change in the individual related possibly to upper respiratory system infections in the winter, but the most realistic verifiable view is that during the cold season there are more and greater stresses put on the individual to achieve, accomplish, and to survive. Conversely, during the warmer months less effort is required to maintain oneself with a resultant relative relaxation.

(8) Constitutional factors--Even though this area is related to hereditary influences, its consideration as an etiologic factor in and of itself is necessary as a result of the importance given it by some writers (11,43). These investigators seem to agree that it is the aesthetic, longitudinal type of person who most likely succumbs to peptic ulcer. Ivy, et al., (21) discuss the only study which to their knowledge was designed expressly to test the constitutional hypothesis. They conclude that body build is not related to ulcer incidence.

(9) Racial factors--The highly significant differential incidence of peptic ulcer in Negroes and whites mentioned earlier (36) has been the subject of considerable theorizing and some investigation. Ivy (21) described the results of several studies, original sources not available, which deal with this question. For some time, it was generally held that peptic ulcer was a characteristic disease of western competitive society as it affected the white man. It seems that the Negro sample on which preliminary conclusions were drawn was southern and rural, with the result that ulcers were infrequently observed. Chinese were found to have a very low incidence in several groups observed in China. In the light of later reports, it has been shown that when Negroes or Chinese are found in situations which approximate the competitive conditions under which whites so often function, the incidence of ulcer is essentially the same for all groups. It is even stated that Westerners who have lived in China and who are relatively well assimilated into that culture show a significantly lower incidence of ulcer, resembling more closely the rate of Chinese in China than whites in Western countries.

(10) Tobacco--Although smoking is known to be positively related to difficulty in medical management of ulcers, there have been studies (21) which found no difference between the effects of smoking regular cigarettes and de-nicotinized cigarettes. Two possible explanations for this finding present themselves; one, there are other materials in the tobacco besides nicotine which have incremental effects upon gastric acid secretion; or, it may be a verification of the orality of ulcer patients which is postulated by Alexander and French, to be discussed at length later.

(11) Alcohol and coffee--The effects of these two toxic substances on ulcer control are consistently negative, but are not now considered to be important enough to bring about ulcer formation unless they are in combination with other factors.

PHYSIOLOGY OF ULCER FORMATION

Sullivan and McKell (40) explain the formation of peptic ulcer as occurring "by spasmodic contraction of the musculature, possibly supplemented by accompanying local spasms of the terminal blood vessels, small areas of ischemia or hemorrhagic infarction are produced, leaving the overlying stomach mucosa exposed to the digestive effects of its own hyperacid juices." The usual mucosal coating of the stomach is resistant to the digestive forces of the gastric juice. Since the duodenal cap is less protected in this manner the greater incidence of duodenal ulcer may thus be accounted for.

Ivy, Grossman, and Bachrach (21) present a description which divides the ulcer development into three stages.

(1) Engorgement of the gastric mucosa, hyperacidity of gastric juices, hypermotility of the stomach and duodenum.

(2) Minute erosions and mucosal hemorrhages resulting from even the most trifling trauma.

(3) Gastric juices digest the exposed mucus membrane, and this contact in turn stimulates greater acid secretion.

As can be seen from these essentially identical explanations, the present trend is to incorporate as minor steps, many of the erstwhile "causative" factors

listed above. Conclusions based upon various experiments with sham feeding in dogs, histamine injection, or the direct introduction of pepsin acid into the stomach have led to the belief that hyper-acidity alone cannot destroy the vitality and digestion-resistance of the mucosa. There had to be some factor to account for the sloughing of the mucus coat. When it was found that with the introduction of acid solutions, equal to the maximum strength possible for natural gastric juices, the resulting ulcers, when they occurred, were typical, circumscribed areas rather than diffuse general weakening of the mucosal wall, it was postulated that the "minute erosions" mentioned above were frequently the result of the normal and intensified muscular spasms of the walls and the blood vessels--this was the additional "locus minaris resistentiae" needed (21).

While the above view of the formation of ulcer is restricted to physiological terms, it does not share the shortcomings of former "theories" in that it does not claim there to be "a cause" even on this physiological level. It is a description of the steps in peptic ulcer development rather than an attempt to attribute causative importance to any one factor. Even though it does not specifically take each of the factors listed earlier into account, it is not too difficult to see how most of them fit into the scheme of things.

Although the physiological mechanisms are now fairly reliably estimated, the antecedent conditions are a source of confusion. Some of the factors mentioned earlier are of the nature of a "first cause" in a restricted sense, but those which presume to fulfill this function have been pretty uniformly negated.

CHAPTER II

THE PSYCHOSOMATIC APPROACH

The psychosomatic approach to peptic ulcer, that is, concerted interest in a psychogenic basis for the physiological mechanisms leading to peptic ulcer development, is very recent. The importance of "anxiety", however, was mentioned comparatively early in the history of the study of peptic ulcer. Brinton, in a treatise written in 1857 (43) entitled "On the Pathology, Symptoms, and Treatment of Ulcers of the Stomach," stated that "Mental anxiety so frequently coincides with ulcer that we are fully entitled to regard it as a more or less immediate cause." There were no attempts to evaluate this statement, nor was the emotional causative aspect even mentioned again for a full 60 years. At the end of this period, in 1918, Kaufman (43) "recognized that psychic influences such as emotional display, nervous shock, and unduly prolonged or intense mental strain," play an important role in ulcer development.

Even as late as 1929, most authors relegated the psychological aspects to an unimportant position in the grouping of etiological factors. In that year, Stewart wrote a 500-page treatise on the peptic ulcer problem and devoted only three sentences in passing to psychological factors. Since the 1930's, however, and increasingly at the present time, writers on peptic

ulcer are turning their attention to the emotions in search of a complete explanation.

Weiss and English (43) state very simply the agreed-upon feeling of most workers in this field when they say, "The gastro-intestinal tract, is above all other systems, the pathway through which emotions are often expressed in behavior." It is felt that, "constant unconscious (emotional) stimulation results in the prolonged gastric stimulation" described earlier as the first stage in ulcer production.

Cantor (10), in his recent handbook, states that "we may thus summarize laboratory and clinical findings by stating that a gastro-duodenal ulcer is the result of emotional disturbances acting through the autonomic nervous system to produce altered motor and secretory functions in the gastro-duodenal region." Other factors are also important, however, as recognized by Cantor when he states that, "not all ulcers are emotionally conditioned." In this latter respect, one might state safely, however, that in the majority of the verified peptic ulcer cases, the presence of a pathological physiological condition sufficiently severe to account by itself for the development of the ulcer is rarely found. It is, on the other hand, quite obvious in most cases of peptic ulcer, that there are psychological

and emotional factors which appear to be sufficiently serious to initiate and sustain the autonomic responses necessary for peptic ulcer development.

Ivy, Grossman, and Bachrach (21) have reviewed most of the existing psychosomatic formulations of ulcer formation and have stated Alexander's (1) three basic assumptions as being characteristic of all such theories. These three basic premises are (1) There is a characteristic personality pattern or conflict situation; (2) This emotional status is accompanied by hypersecretion and hypermotility of the stomach or some other change in the stomach or duodenum; and (3) Hyperactivity or some other functional alteration of the stomach leads to peptic ulcer.

In general, it is possible to subdivide the present-day theories concerning the importance of psychological factors in peptic ulcer etiology into two groups. Both grant that anxiety is the necessary condition for gastric hyperfunction, but differ in regard to what they consider produces the anxiety. The first has been referred to by Mahl (29) as the "Specificity Hypothesis." It states that there is a specific conflict situation which eventuates in sufficient anxiety to innervate the autonomic nervous system enough to account for the necessary gastric hyperactivity.

The second theoretical approach to the psychosomatic factor in peptic ulcer has been called the "Generality or Anxiety Hypothesis" (29). This point of view denies that any circumscribed psychological conflict situation is the fundamental agent in producing the anxiety. In contrast, it holds that the anxiety may be present, to be sure, but that it results from general circumstances to which the individual is incapable of adequately adjusting himself, and which are sufficiently threatening to him to produce the anxiety necessary for the above-mentioned autonomic innervation.

Although Mahl seems to have been the first writer to present this point of view in relation to a specific syndrome, Gilbert (18) has discussed this general approach under the name of "The Psycho-Social approach" to personality dynamics. It is in this general frame of reference that he emphasizes the fact that there is no necessary relationship between the nature of an existing conflict within a personality and the type of symptom, psychological or psychosomatic, which may result. With these general introductory comments we will now proceed to a more detailed consideration of the problem at hand.

The following discussion will be divided into two parts; the first will be a consideration of the

specificity hypothesis and some of the studies published which bear on it; and the second, a section which deals with the generality hypothesis and studies which have been published and contribute to the evidence for this latter position.

THE SPECIFICITY HYPOTHESIS

The outstanding proponents of the specificity hypothesis are Alexander and French and their co-workers (1,2,3,4). These authors have discussed several types of persons, differentiated primarily on the basis of the symptom picture they present. One of the major types thus arrived at is called by them "the gastric type". These patients, in addition to presenting a reasonably common symptom, that is, gastric distress and/or peptic ulcer, were found to have similar conflict situations significantly observable in their personality structure. There was not, however, any determinable environmental source for these conflicts.

The conflict situation was one in which there were strong repressed wishes to be cared for and loved. In a word, oral receptive. The repressive forces originated in the ego which found the parasitic strivings incompatible with its own strivings for independence and activity.

The discussion presented by Alexander and French (3) will be loosely followed, and we will paraphrase freely. Those authors feel that the prototypical symbol of being loved is being fed, that is, receiving love is equivalent to receiving food. The repressed longings for love or food mobilize the innervations of the stomach, and these innervations serve as a chronic stimulus for the stomach hyper-function which lead to its disfunction. They become the conditioned stimulus for gastric secretion. As they state, "the stomach behaves as if it were about to receive food whenever the strong oral dependent drives are stimulated" by a frustrating situation. "Food, then, becomes a symbol of help." The behavior of the stomach in preparing itself for the entrance of food is characterized by hypermotility and hypersecretion of gastric juices. Thus, in an often frustrated person, the stomach is exposed continually to physiological stimuli, with which it must usually cope only periodically. At this point, we have reached the first stage described earlier in the discussion of the physiology of ulcer development.

The authors of this formulation make no attempt to address themselves to the question of constitutional or acquired weakness of the stomach as a responsible or important condition for peptic ulcer development. They also restrict the application of their principles quite

conservatively to a group whom they have studied who had duodenal ulcers. This theoretical formulation is documented by the authors with several case histories and a discussion of the psychoanalytic therapeutic attempts at manipulation of the relevant personality variables.

An article by Kapp, Rosenbaum, and Romano (23) seems to agree in general with the Alexander formulation. This study was concerned with 20 men with peptic ulcers, who were admitted to a general hospital. On the basis of the examinations and studies of these 20 men, it was possible to divide them into three groups. Group 1 was made up of 6 patients, who appeared to fit the usually accepted ulcer personality type, in that they were outwardly independent, hard-driving, and successful. However, in each instance, it became obvious, so report these authors, that such overt behavior was an over-compensation for deeply repressed, intense, receptive desires.

Group 2 was made up of 5 patients. Each of these had been fairly successful, but were outwardly meek, shy, and often quite effeminate. In this group the dependent longings seem to be at least partially conscious. Such desires were satisfied in these men by overtly depending upon a mother or mother substitute.

Group 3 was made up of 9 patients. Each patient in this group represented a severe character disorder. Eight of them were chronic alcoholics. Many traits of the psychopathic personality were present in this group, such as repetitive, sterotyped, self-destructive behavior in the form of drinking, gambling, delinquency, and inability to make a living. They expressed their strong oral cravings and demands by intense acting out, as well as by their pathophysiological symptoms. In general, the authors conclude that this study confirms Alexander's hypothesis that the fundamental psychological factor in this disease is a conflict over intense dependent desires. Such a conflict, they feel, may arise from opposition within the personality or from opposition between the psychological needs of the individual and the environment. Although the conflict situation is similar in all men with peptic ulcer, the resulting personality facade may vary from exaggerated independence to parasitic dependence.

Osborne and Sanders (34) report a study in which the Rorschach was administered to 50 white male veterans of World War II, who were diagnosed as having duodenal ulcer, functional G.I. condition, or gastric neurosis. The age range was 22 to 41, with a mean age of 29.4 years. These authors summarized their findings by

stating that this group of patients, on the whole, presented a neurotic pattern, with hysteroid features, showing considerable sterotypy and little creative ability or originality. They feel that these patients are emotionally immature and affectively impulsive, making it necessary for them to have their demands satisfied immediately. These authors feel that peptic ulcer patients behave on the emotional level of a child, but show intellectual self-assertiveness and ambitions which are beyond their capacities.

A second Rorschach study of peptic ulcer patients, the results of which seem to support the specificity point of view, is one reported both by Brown, et al., (8) and Poser (35). In this study, the Rorschach was administered to two groups of 25 male veterans of World War II, between the ages of 21 and 60. There was one group consisting of patients receiving treatment for duodenal ulcer. Another group, the controls, was made up of subjects hospitalized for various complaints, none of which were referrable to the gastro-intestinal tract. There were no appreciable differences found between the two groups in terms of social economic status, intellectual level, and marital status. In general, the results suggest the following: (1) A greater similarity exists between ulcer patients than

between the cases used in this control group; (2) It is generally reflected in the Rorschach scores that the assumption that ulcer patients express exaggerated shame and guilt, in view of intense dependent desires, is correct; (3) On the basis of this study, it is felt that many ulcer patients basically correspond to Rorschach's M-type, but have secondarily acquired an extraversive orientation, by which they seem to compensate for what they consider to be unacceptable tendencies; (4) The ulcer group appears to be made up of individuals who are essentially at the mercy of their instinctive promptings, without the capacity for adequate, rational control. The author states that as far as this study goes, it offers some confirmation for Alexander's formulation regarding psychogenesis of peptic ulcer.

Ivy, Grossman, and Bachrach (21) devote some space and discussion to Draper, Dupertuis, and Caughey, whose work was not available in the original. The conclusions drawn by these latter writers were that chronic fear is at the root of the ulcer problem, and that this fear was primarily motivated by a fancied or actual impending loss of mother or mother surrogate approval. In addition to this characteristic, the following factors were found to be operative in the order of their frequency; intense feelings of inferiority, jealousy,

aggression and compensatory strivings. These reported characteristics of ulcer patients are highly similar to those found by Alexander and co-workers and can be conceived of as identical, if the dissimilar frames of reference of the investigators are considered.

Another report which tends to support the specific conflict hypothesis is one by Wilson (44) in which he states on the basis of his experience with peptic ulcer patients that the precipitating stress is "always" related to life situations involving insecurity, independence and responsibility.

These above-mentioned studies and articles are the most important and most often quoted which appear to support the specificity hypothesis. It will be noted that none of the above mentioned reports makes use of measures or observations on the patient which allow for objective evaluation and interpretation. Quite to the contrary, all of the data which are interpreted as supporting the specificity point of view, are highly susceptible to preconceived opinion and attitude.

ANXIETY OR GENERALITY HYPOTHESIS

We now come to consideration of the opposing point of view, which as was stated above, holds that there is

no specific conflict situation within the individual or between the individual and his environment. This point of view states that there may be a conflict situation in each ulcer patient, but this conflict situation need have no similarity from patient to patient. One of the chief proponents of this hypothesis has been Mahl (28,29,30). The point of view is best demonstrated by one of his recent studies (30). The study is based on but two cases, but it is clearly an experimental approach and allows for more objective interpretation of objective data. This is an experimental approach toward resolving the conflict between an oral dependency and an anxiety hypothesis of peptic ulcer etiology. It is designed to determine the nature of hydrochloric acid secretion during anxiety reactions related to dependency, as well as to other emotional responses such as hostility and sexual wishes.

The author assumes that if one has an index of hydrochloric acid secretion during psychoanalytic hours in which anxiety, oral dependent needs, and other emotions vary in intensity and in their interrelationships and that reliable indices of such variables are available, it would be possible to test the following predictions: (a) Hydrochloric acid secretion increases

with the increase in the intensity of oral dependency needs; (b) Hydrochloric acid secretion increases with the increase in intensity of anxiety; (c) This anxiety hydrochloric acid relationship is independent of the source of the anxiety. The oral dependency hypothesis would predict confirmation of (a) and also (b), if the anxiety is elicited by oral dependency needs, or their non-gratification. It would not predict (c). The anxiety hypothesis is noncommital about (a), but predicts confirmation of both (b) and (c). The problem was to test these predictions.

As stated earlier, this was a study involving the analysis of the patient's gastric secretion during and following psychoanalytic treatment. In this case, the patient's treatment included four hours of psychoanalytic therapy each week, with gastric sampling occurring in the middle two sessions of each week. The regularly appointed time was late in the afternoon, and the patient was requested to eat what he regarded as a light lunch, but not to take food or liquid after 12 noon. Just before the therapeutic hour, the patient was intubated nasally, and the stomach was washed with 1,000 cc of isotonic solution of sodium chloride at body temperature to remove residual contents and standardize the stomach at the outset of all hours. The tube was then

withdrawn, and the psychoanalytic sessions ensued. Immediately afterwards, the fasting gastric sample was obtained. Its free hydrochloric acid and total acidity were taken as an index of the hydrochloric acid secretion during the preceding 50 minutes. The therapist had been in the practice of taking notes during each session; and on the days of gastric sampling, he took as extensive notes as possible. After determining the acidity of the gastric samples, he immediately dictated a record of the hour from the detailed verbatim notes. Since the therapist knew the results of the gastric analysis at the time he dictated the records which were later used for judgments, there was the possibility that an unconscious bias influenced the nature of the dictated records. While this is an undesirable source of possible contamination, it was not felt by the authors to be serious.

The results of this study are in agreement with predictions based upon an anxiety hypothesis. There is disagreement with predictions based upon an oral dependency hypothesis. All of the high acid hours are high anxiety hours, and 3 of these high acid hours are low dependency hours. All of the low acid hours are low anxiety hours, yet in 3 of these low acid hours, there were expressions of intense, dependency cravings

and marked hostility over their frustration. Since only extreme hours were used, the uniformity of the anxiety-hydrochloric acid relationships may be spuriously high.

The authors conclude that the small amount of data obtained demonstrates that hydrochloric acid secretion increases with anxiety, be it evoked by sexual, hostile, or passive dependent wishes, ideation, or motives. Hydrochloric acid secretion does not increase with these needs themselves. The evidence of anxiety mediation of increased hydrochloric acid secretion under these clinical conditions of observation is in agreement with the laboratory studies of humans and other species. To the extent that hydrochloric acid secretion plays an essential role in peptic ulcer, these findings do not support an oral dependency or specificity hypothesis of peptic ulcer. They support, on the other hand, an anxiety hypothesis of peptic ulcer or a generality hypothesis.

One of the better known and most frequently quoted studies is that by Mittelman, Wolfe, and Scharf (32). These authors studied a group of ulcer patients and a group of control patients in an effort to determine the motility, amount, and quality of gastric secretion under various emotions. This was accomplished

by inserting two nasal catheters into the patient's stomach; one of which was attached to a kymograph recording the frequency and intensity of peristaltic movements and the other was an open tube through which periodic samples of the gastric contents could be withdrawn.

They found that when emotionally charged topics were discussed, both acid secretion and peristalsis increased. These investigators inferred what emotional responses their patients were making, as well as obtaining the patient's description of the emotion, such as guilt, anxiety, resentment, and hostility.

They found that anxiety, insecurity, guilt, and frustration were characteristic reaction patterns in their ulcer group, but unfortunately they did not present a description of the characteristic reaction patterns of their control group. Thoroughgoing comparisons of the ulcer group with its controls are required before it is possible to discuss a reaction pattern characteristic of ulcer patients as a group.

Mittelman and his co-workers emphasized the fact that superficial personality differences within the ulcer group did exist, but they pointed out that "behind the facade of independence and self-sufficiency, there was a background of long-standing and severe anxiety, feelings of helplessness, feelings of being

caught, frustration, and desperation." Resentment and manifestations of aggression stood out.

These authors addressed themselves to the problem of explaining the dramatic reversal in ulcer incidence from a predominately female disorder previous to 1900 to the present overwhelmingly greater incidence among men. They state that since 1900, women have been able to feel equal with man. They can compete, and in doing so, experience an open catharsis of their feelings. At the same time, they are not bound by the strict social demands as are men in expressing their emotions directly and freely. Men can no longer arbitrarily rule the home as formerly, and they have no great frontiers against which to pitch themselves. Conflicts are now lessened for the women and greatly increased for men. These conflicts result in the reaction pattern of guilt, anxiety, hostility, and resentment, which in turn, activates physiological mechanisms eventuating in peptic ulcer.

In general, this study is in agreement with the generality formulation (30). It was found that frequent emotions were feelings of inadequacy, guilt, hostility, resentment, and shame. It must be remembered, however, that the results of this study were reported anecdotally, rather than statistically, and there was no comparison

with a control group reaction.

An interesting monograph which fits very well into the frame of reference held by those who espouse the generality hypothesis of peptic ulcer etiology is one by Sullivan and McKell (40). Although this is not one of the most widely known or accepted formulations, it deserves consideration as a rather sophisticated approach. These authors state that peptic ulcer is produced not by one etiological factor, but rather by a combination of many factors, varying in their importance in each case. They have found that peptic ulcer occurs in three fundamental types of persons. These are: (1) Those with a typical ulcer personality; (2) Neurotic persons; (3) Those who have experienced an intense precipitating situation, which may be either emotional or physical trauma.

Before going on to describe the situations which are typical in the three types of people with ulcers, the typical peptic ulcer personality found by Sullivan and McKell should be defined. They state that Alexander's description of ulcer patients fits only 11% of their cases, while 72%, the "typical ulcer personality," could be described as follows: (1) High drive - these patients have a strong need to be active, to be coping with the situation at hand, and they are continually

striving to excell in whatever they undertake; (2) Highly versatile - they had many and diverse outlets in their activity; i.e., they are characterized as joiners and organizers; (3) Emotionally responsive - they were open, likable, and cooperative; (4) Self-reliant - they had characteristically become independent of family rule quite early; (5) Responsible - they were quick to assume responsibility in varied situations and to discharge it conscientiously; (6) Well-adjusted sexually - this group made a good heterosexual adjustment, having the highest marriage rate of any group of gastrointestinal patients studied, and the lowest divorce rate; (7) Determined - persistent defiance of their illness characterized this group, and they presented the antithesis of a group of hypochondriacs.

The precipitating situation was of considerable interest to these authors. They found that for this typical group of ulcer patients minor catastrophes related to their present or future material security was sufficient to precipitate an ulcer, or at least to precipitate gastric distress. For the neurotic patient, peptic ulcer was brought out by "a complex pattern of difficulties involving their own personal neurotic conflict." No common characteristic, other than this, can really be expected in such a homogeneous group.

In the normals, ulcer was produced following

physical injury to the stomach, or duodenum itself, or to certain vaguely defined central nervous system areas, or as a result of an objectively intense emotional situation.

Sullivan and McKell make no specific statements regarding treatment or prognosis, but it seems reasonable to assume that medical treatment should be most effective for this last group. In regard to the first group, the typical ulcer personality, they feel "that the intense drive and the tension it creates, as well as the in-born cravings for superiority, together with the worries generated by small failures, particularly anxiety resulting from anticipated failure or future insecurity, are the emotional patterns, which are fundamental in the production of ulcer." They feel that "the ulcer patient craves a true matter-of-fact superiority which they are determined to achieve." They point out that since the psychiatrist sees a biased sample, he is prone to produce a theory which reflects, to a high degree, his patients' neurotic conflicts and failures. As was mentioned earlier, they found Alexander's formulation to fit only 11% of their patients, and 11% of their patients were also diagnosed as neurotic. Whether the two groups were identical was not stated.

Mahl (28) has shown that there is an increase in

the secretion of free HCl under fear stimulation in dogs, without any resultant tissue damage observable "on gross or histologic examination of the stomach and duodenum." The demonstration that hyperacidity does result from emotional stimulation; primarily what he calls chronic anxiety as opposed to acute fear or acute anxiety seems to have been his major purpose. This was demonstrated, and this fact, combined with his basic assumption that HCl is essential to ulcer formation, allows him to state that the anxiety theory of ulcer etiology seems to be the most substantiated of those so far presented.

In another study, Mahl (29) found that with college undergraduates interviewed preceding an important examination, increased HCl secretion occurs in response to external stress situations.

A study by Bennett and Venables (6) conducted in 1920, using two or three veterans of World War I, found that subjects under hypnotic suggestion of various emotional responses, reacted with increased hydrochloric acid secretion. They felt that the rise in gastric acidity was related to anxiety, rather than to any particular type of conflict.

Hoelzel (19) has published the results of a long period of observation of his own fasting HCl level.

On the average, it had been from 0 to 13% of the gastric contents. In one situation, however, during which he himself was under severe, realistic, externally caused fear conditions, and during which time he continued to sample his own gastric contents, he found that acidity level rose to 26% and stayed above 17% for as long as the situation remained unchanged. Immediately following a change which resulted in a decrease in the fear response on his part, the gastric acidity level again was lowered to the previously normal range, namely, 0 to 13%. One might safely say that the chronic emotion was anxiety, rather than fear.

Cathcart (11) has published an article in which he discussed the possible emotional bases for the anxiety which is recognized as essential in the hypersecretion of gastric hydrochloric acid. He felt that one of the most important emotional responses in this respect is resentment. This opinion he based upon his own clinical experiences and furnished no statistical data to substantiate this statement.

One of the most famous studies concerning gastric function and its emotional correlates is one by Wolf and Wolff (45) concerning "Tom", a 56 year old male with a gastric fistula. The investigators were able to observe directly the appearance of the gastric

mucosa and the nature of the gastric juice simultaneously with their observation of "Tom's" emotional state. The general results of their prolonged study of these phenomena are in agreement with the generality or anxiety hypothesis here under discussion. Acceleration of gastric function was found to occur when "Tom" was anxious (irrespective of the situation which aroused the anxiety) and when he evidenced hostility or resentment.

In summary, the generality hypothesis may be stated as follows, as taken from an article by Mahl which was quoted earlier (30). The generality hypothesis states: (1) The gastric hyperfunction essential for peptic ulcer etiology is positively associated with anxiety; (2) If these two associated processes; namely, gastric hyperfunction and anxiety persist, peptic ulcer will develop; (3) It is not important what the source of the anxiety is; whether it is produced and maintained by environmental stimuli or by internal ideational or affective stimuli, whether these internal stimuli are conscious or unconscious, nor whether the anxiety is conscious or unconscious; (4) While the preceding factors might vary, it is essential that the anxiety be unrelieved by the development of adequate defense mechanisms or by changes in the stimulus conditions.

The "generality" hypothesis as stated by Mahl with reference to the etiology of peptic ulcer is a special case of the more general concept which has been introduced by Gilbert (18) as the Psycho-Social determination of pathology. Briefly, Gilbert's position is that the etiology of any psychiatric disorder may involve stress factors ranging from the classical Oedipal complex to the loss of one's job. He would hold that there is no necessary relationship between the symptoms observed and the precipitating or even central conflict.

CHAPTER III

THE PRESENT STUDY

The fact that there is this controversy concerning the etiology of such an important disease--10% incidence in the general population (21)--is sufficient reason to attempt by objective experimental means to evaluate the alternative hypotheses. It was the purpose of this study to furnish additional information which would be valid evidence in support of one or the other of the two seemingly contradictory theoretical formulations regarding the nature of the psychological factors in the etiology of peptic ulcer.

Much more information is necessary before the role of psychological factors in this disease can be specified accurately. When such information is available, however, we will have a much firmer basis on which to plan not only the psychotherapeutic programs for such patients but more effective medical and surgical management as well.

The present study is designed to determine whether or not peptic ulcer patients respond with greater autonomic nervous system activity to situations or stimuli which are related to passive-dependent needs, or whether they show equally intense autonomic activity in response to other types of stimuli as well. One of the hypotheses discussed above, the specificity formulation, predicts

that the former is the case while the generality hypothesis leads to the prediction that stimuli which are related to passive-dependent needs are not necessarily the most important or disturbing for persons with peptic ulcer.

GENERAL CONSIDERATIONS

Before the primary study could be carried out, there was one major preliminary obstacle to be overcome. This involved the selection of laboratory stimuli or situations which actually were disturbing to persons who were known to have emotional conflicts of particular types. The problem was dealt with in two studies (41), (39), which demonstrated the validity of four pictures in discriminating between persons with conflicts concerning the expression or control of hostility, passive-dependent needs and heterosexual impulses.

Only the second of these studies (39) will be discussed in detail because the first was primarily exploratory and there were numerous changes in both the design and the stimuli employed in the second. The decision to employ pictures was based partially on convention, that is, stimuli of this kind are assumed to have considerable validity when used in projective techniques; and partly on the fact that stimuli of this

type can be manipulated quite easily. Four pictures were finally chosen, and are called for the purposes of this study, "Neutral", "Hostile", "Passive", and "Sexual" stimuli. The neutral picture is a glossy print photograph of card 12BG from the TAT series (33). In order to control as much as possible the interpretation the subjects made of the picture, the presentation of it was accompanied by the statement, "Imagine yourself in a situation like this--it's a nice summer day when you can relax and really take it easy."

The hostile stimulus was a glossy print of a photograph of a pencil sketch drawn especially for this study. There are two figures, one quite indistinct seated in the lower left corner, the other is a muscular man with manacles on his wrists and his arms raised over his head. He is about to bring them down on the seated figure. The aggressing figure has an enraged expression on his face and his arm and chest muscles are taut with tension. The statement which accompanied the presentation of this card was, "Put yourself in this fellow's position--your feelings are breaking loose and you're going to do something that you've wanted to do for a long time!"

The passive stimulus was a similar photograph of card 6BM from the TAT series (33). This too is a picture

of two figures, one male, one female. The statement which was made with the presentation of this card was, "Think of yourself as this kind of a fellow--always depending on your mother for help."

The fourth stimulus, the sexual card, was likewise a glossy photographic print of a picture taken from Esquire Magazine (16). It is a picture of a young woman lying on a bed. Her body is covered from the waist up by a dressing gown which is open from the waist down. She is wearing a pair of white briefs but her bare legs are clearly visible and the hips are clearly outlined. She is reaching up to embrace a man who leans over her. As this picture was presented to each subject he was instructed to, "Put yourself in this man's position--you have yourself all set up and whatever you do now is entirely up to you."

Copies of the pictures used are to be found in the Appendix.

Before, during and after the presentation of these four pictures each subject's autonomic nervous system activity as reflected by breathing, pulse rate and galvanic skin response were continuously recorded by means of a Keeler Polygraph (5). The measures which were employed were respiration frequency, pulse rate per minute and a function of the intensity and duration

of the galvanic skin response for the first minute immediately following the presentation of each card. The measurements made during the periods following the presentation of the "Hostile", "Passive" and "Sexual" cards were then compared with the measurements made during the minute following the presentation of the "Neutral" card. These comparisons were made only for the measurements obtained from each individual subject, that is, all comparisons were intra-individual comparisons.

The records obtained were then inspected and each of the three measures was scored either "H", "P", "S" or "NS". A score of "H" for respiration rate or pulse rate meant that the activity in the system in question was significantly greater following the presentation of the "Hostile" card than it was following the "Neutral" card. Likewise it was greater than that particular systemic increase following both the "Passive" and "Sexual" cards. A score of "P" or "S" for either respiration frequency or pulse rate was interpreted similarly. The minimum increase on which a "score" was based had a maximum probability of 1 in 100 of occurring by chance alone. These parameters were determined on the basis of the data from 20 cases. If there was no change of acceptable magnitude in a particular system that system was given a score of "NS" or "not significant". The

means and standard deviations of these data were essentially identical with those found by Jost, et al, (22), based on data obtained from 47 normal subjects.

Scoring the GSR was done on a different basis. Various writers including Darrow (12), Lacey (26), Lauer (27), Hunt and Hunt (20), and Freeman (17) have presented several different scoring systems for this phenomenon. The scoring methods advocated by these writers and others vary from the simple number of ohms decrease in resistance (20) to very involved formulae which take into consideration the background resistance, number of ohms decrease in resistance, rapidity of the return of resistance to the pre-stimulation level and other factors (12). In general, the most frequently mentioned factors which were considered to be indicative of the intensity of the galvanic skin response were, actual number of ohms decrease in resistance, the rapidity of recovery of the resistance level, and the original pre-stimulation level of resistance. Hunt and Hunt (20) have clearly shown that the latter variable, basal resistance, can be ignored if the successive measurements of the GSR are made from the same level. This condition was fully met by the present design in that the GSR measures which were compared with one another were made upon the same individual (that is, all comparisons were

intra-individual comparisons) and between readings the palmar resistance was allowed to return to its original pre-stimulation level.

Rather than employ both of the other two measures in the present research (decrease in ohms resistance and speed of return to basal resistance), one measure which varied directly with both of them was used. This measure is the area under the GSR curve for the minute immediately following the presentation of a stimulus picture. When in use, the galvanometer can be set so that one inch of upward deflection in the GSR tracing is equal to a reduction in resistance of 750 ohms. As Darrow (12) has demonstrated, the period immediately following the peak of any galvanic response is characterized by the most rapid increase in resistance. Thus it is that the area under the GSR curve for the first minute following the presentation of a stimulus is considered to be an adequate measure of the general magnitude of the GSR.

For the purposes of this study each person's GSR's following the three affective stimuli were compared with that same person's GSR following the Neutral card. A scoreable GSR was defined as one which not only was greatest in absolute magnitude but was, in addition, one which showed at least twice the increase over the Neutral

card GSR that was shown by the average of the GSR's following the other affective stimuli. This is an empirically determined criterion which was found to discriminate between the groups in the validation study about to be discussed.

The subjects tested in this validation study were selected from the patients who were referred to the Clinical Psychology Service at the Veterans Administration Hospital in Dearborn, Michigan. The basis on which the patients were selected was the specific statement made by a staff clinical psychologist that the primary source of a man's anxiety was conflict concerning the expression or control of either his hostile-aggressive impulses, his passive dependent needs or his heterosexual impulses. A verbal statement to this effect was not accepted. Rather, the integration of such an impression into the written report which became a permanent part of that patient's file was the criterion. The basis for making such a statement was most often the routine battery of psychological tests which was administered to the referred patient's but not infrequently it was rather extended psycho-therapeutic contact with a patient. Abstracts of the written reports are provided in the Appendix.

Because of the rarity of cases about which the clinician will take such a definite stand or in which

the case is quite so clear cut, the sample of cases on which the pictures were validated is made up of only 20 patients. Of these 8 are "Hostile", 7 are "Passive", and 5 are "Sexual", if classified according to the type of conflict they were considered to present. None of them were considered to be examples of "pure" cases of one conflict or another but they were employed as the best and most available group of such persons to be found in six months of routine work in an 1100 bed GM&S hospital.

The prediction was that if the stimuli presented to these subjects were valid, those subjects whose major conflict was stated to involve hostility would show the greatest proportion of "scoreable" responses in the functions measured following the presentation of the "Hostile" stimulus. Likewise, the patients whose conflict involved primarily passive-dependency or sexuality would show their greatest increases following the presentation of the "Passive" and the "Sexual" cards respectively.

The statistical evaluation of the validity of the stimulus pictures was made in the following manner. The frequency with which scoreable responses in each system followed the presentation of a picture to a particular group was compared with the frequency of scoreable responses following that same picture to the other two

"conflicted" groups. Table I presents the Chi Square data concerning the frequencies of scoreable responses in the three systems following presentation of the "Hostile" card and both of the other two crucial cards to the "Hostile" and the other two non-hostile groups.

TABLE I

Chi Square Analysis of Scoreable Responses in Each System Following Presentation of The "Hostile" Card to The "Hostile" and Non-Hostile Groups.

A: Respiration Rate

		Group: Hostile	Group: Non-Hostile	N	
Scoreable Responses	Hostile	3	1	4	$X^2 = .17$
	Non-Hostile	4	5	9	$P = .34$
	N	7	6	13	

B: Heart Rate

		Group: Hostile	Group: Non-Hostile	N	
Scoreable Responses	Hostile	4	2	6	$X^2 = 3.97$
	Non-Hostile	0	7	7	$P = .02$
	N	4	9	13	

C: Galvanic Skin Response (Area)

		Group: Hostile	Group: Non-Hostile	N	
Scoreable Responses	Hostile	6	2	8	$X^2 = 4.03$
	Non-Hostile	2	9	11	$P = .02$
	N	8	11	19	

On the basis of the data summarized in Table I, it can be seen that although respiration rate did not discriminate between the "Hostile" and non-hostile groups with respect to their response to the "Hostile" card, there are significant differences in the frequencies with which scoreable increases in the other two systems were evoked by the "Hostile" picture.

Table II is similarly made up of the Chi Square tables comparing the frequencies of scoreable responses in each system which followed the presentation of the "Passive" picture to the "Passive" and non-passive groups of subjects.

TABLE II

Chi Square Analysis of the Scoreable Responses in Each System Made by the "Passive" and Non-Passive Groups following Presentation of the Passive Stimulus.

A: Respiration Rate

		Group: Hostile	Group: Non-Hostile	N
Scoreable Responses	Hostile	2	2	4
	Non-Hostile	1	8	9
	N	3	10	13

$X^2 = .68$

$P = .21$

B: Heart Rate

		Group: Passive	Group: Non-Passive	N
Scoreable Responses	Passive	4	0	4
	Non-Passive	2	7	9
	N	6	7	13

$X^2 = 3.97$

$P = .02$

C: Galvanic Skin Response (Area)

		Group: Passive	Group: Non-Passive	N
Scoreable Responses	Passive	5	2	7
	Non-Passive	2	10	12
	N	7	12	19

$X^2 = 3.59$

$P = .03$

In respect to the Passive group, results similar to those obtained with the Hostile group were found. Again Respiration rate failed to show significant discrimination between the "Passive" and non-passive subjects following presentation of the Passive picture while in the remaining two systems there were significant differences in frequency of response which tend to support the assumption of validity of the "Passive" stimulus.

Table III is likewise an analysis of response in each system comparing the "Sexual" and non-sexual conflict subjects' responses following the "Sexual" card.

TABLE III

Chi Square Analyses of the Scoreable Responses in Each System Occurring in the "Sexual" and non-sexual Conflict Subjects Following Presentation of the "Sexual" Picture.

A: Respiration Rate

		Group: Sexual	Non-Sexual	N	
Scoreable Responses	Sexual	2	3	5	X^2 = .22
	Non-Sexual	1	7	8	P = .35
	N	3	10	13	

B: Heart Rate

		Group: Sexual	Non-Sexual	N	
Scoreable Responses	Sexual	3	0	3	X^2 = 7.87
	Non-Sexual	0	10	10	P = .01
	N	3	10	13	

C: Galvanic Skin Response (Area)

		Group: Sexual	Non-Sexual	N	
Scoreable Responses	Sexual	4	1	5	X^2 = 9.78
	Non-Sexual	0	14	14	P = .01
	N	4	15	19	

Again, support for the validity of the stimulus picture in question is found only in the responses occurring in the latter two systems, heart rate and area of galvanic skin response.

In general the results support the assumption that the stimuli employed are valid in that the pictures are followed by increases in autonomically mediated activity and further, each picture is most effective in arousing such physiological activity in persons who are considered to be emotionally conflicted in the area depicted by the picture.

The reliability of the obtained scores was determined by retesting five of the subjects at a later time. The reason that so few subjects were retested was that before this procedure was decided upon, all but five had been discharged from the hospital.

Among these five subjects there were 15 scores which can be either Hostile, Passive, Sexual or Not Scoreable. The reliability was calculated by determining the statistical significance of the difference between the obtained and expected number of scores which changed (15;p.58).

The probability that a score would not change from test #1 to test #2 is .25. Thus the number of scores which were expected to remain the same was 15/4

or 3.75. The standard error of this expectancy is 0.14. Actually, 6 scores remained unchanged. The obtained N of 6 is thus 16.43 standard errors greater than the number expected on the basis of chance alone. The probability of a difference this large is far less than one in a thousand.

Another way in which reliability was checked was to calculate the Chi square obtained from a comparison of the frequencies of "Predicted" and "Other" scores for the five subjects on both the first and second test sessions. Table VIII presents these data. The fact that the X^2 is not significant further attests to the reliability of the scores obtained.

TABLE IV

Frequency of "Predicted" and "Other" Scores at First and Second Test Sessions.

		Test Session #1	Test Session #2	N	
Scoreable Responses	Predicted	9	9	18	$X^2 = 0$
	Other	6	6	12	$P = 1.00$
	N	15	15	30	

It is on the basis of these findings that the pictures are considered to be valid and reliable as stimuli for the arousal of autonomically mediated physiological activity in persons with emotional conflicts of

these three types: hostility, passive dependency, or sexuality.

THE MAIN STUDY

With the validity and reliability of a set of laboratory stimuli demonstrated, the main question concerning the nature of the psychological factor in the etiology of peptic ulcer can now be considered.

Subjects

The subjects in this study were obtained at the Veterans Administration Hospital in Dearborn, Michigan. A group of 24 patients whose medically verified diagnoses were peptic ulcer served as the experimental group. The diagnoses had been established by either X-ray or gastroscopy. The control group was made up of 24 patients from the general medical and surgical wards. Only those patients were selected whose conditions were not neuropsychiatric, who had never been referred to Psychiatry or Clinical Psychology and whose illnesses were not among those generally referred to as "psychosomatic." The actual diagnostic catagories and the number of subjects in each are given in Table.

TABLE V

Control Group; Diagnostic Catagories and Number of Subjects in Each.

Diagnosis	Number	Diagnosis	Number
Hernia	9	Pilonidal Cyst	1
Gall Bladder Disorder	2	Sacroiliac strain	1
Lymphosarcoma	2	Abscess: Neck	1
Anal Fistula	2	Abdomen	1
Appendicitis	1	Lumbar strain	1
Lipoma	1	Bronchiectosis	1
Kidney stone	1	Total	24

All of the subjects were male veterans of World War II and both groups were equated for age, education and vocabulary level, the latter by administering the Wechsler-Bellevue Form I vocabulary subtest. Table X contains the means and standard deviation obtained for the variables which were controlled. It can be seen that there were no significant differences between the two groups in these respects.

TABLE VI

Means and Standard Deviations of Age, Education and Vocabulary Level for the Experimental and Control Groups.

Variable	Peptic Ulcer		Control				
	Mean	SD	Mean	SD	Diff.	"t"	P
Age	33.71	5.85	33.04	6.68	.67	.36	.70
Education (in years)	9.58	2.87	9.46	2.06	.12	.16	.80
Vocabulary	21.56	5.87	22.21	5.03	.35	.32	.70

Procedure

Each subject was seen individually and, after the necessary background information was obtained, the procedures involved in the test were explained in a relatively superficial fashion and any questions the subject might raise were answered. The vocabulary subtest was administered at the end of the session because it was noted that being asked to define a series of words was often a rather stressful experience for hospital patients in general. If this were the case it might have artificially raised the background level of autonomic activity before the experimental procedures and thereby mast some of the reaction to the visual stimuli which were employed.

The subject was seated in a straight chair facing a blank wall and the necessary attachments were made.

He was instructed to find a comfortable position in the chair and to relax as much as possible in that position without moving. He was explicitly instructed not to speak from that time until the machine was turned off. With the pneumograph, sphygmograph and galvanometer all in operation, the kymograph motor was turned on and the tracings were obtained for a variable length of time, the shortest time being five minutes. When the recordings indicated that the subject's measured physiological activity had stabilized, as suggested by Seward (38), the first card, the neutral stimulus, was placed before him about 28 inches from his face and just below the level of his chin. The so-called structuring statement was made at that time. The picture was allowed to remain in front of the subject for forty seconds after which it was removed. Approximately 115 seconds after the presentation of the picture, the air in the blood pressure cuff was released. Although it would have been desirable to observe all three recordings at all times this was impractical due to the fact that the blood pressure cuff tends to cut off circulation in the arm around which it is wrapped causing considerable discomfort after a minute or so.

The tracings were then closely observed and when the GSR curve and the respiration rate had returned to

their pre-stimulation level the blood pressure cuff was again inflated. The period which elapsed between the time the blood pressure cuff was deflated and the tracings returned to their basal level generally varied from 5 or 6 to 10 or 11 minutes and was never more than thirteen minutes. When the blood pressure cuff was inflated again there was usually some slight irregularity in the GSR and/or respiration curves but these changes were always temporary and the tracings invariably stabilized within a minute or so.

When the tracings were stable another card was presented to the subject in the same manner as the first. Each card was accompanied with the appropriate statement as described earlier.

The order in which the crucial cards were presented following the neutral card was systematically varied. With three stimuli which can vary in order, there are six possible arrangements. In both the peptic ulcer group and the control group, four subjects were presented with the cards in each of the six possible orders.

Following the presentation of each picture the tracings were obtained for about 1½ minutes. The blood pressure cuff was then deflated and the GSR tracing was allowed to return to its pre-stimulation level. Another card was never presented before five minutes had elapsed

and the longest time required to bring about the reduction in the GSR curve was about 12 or 13 minutes.

Hypotheses which follow from the two already discussed opposed theoretical positions will now be presented phrased in terms of the present study. The first hypothesis is based upon the so-called "Specificity "Theory" of Alexander (3). The second hypothesis is derived from the "Anxiety" or "Generality" position of Mahl (30).

(1) Specificity: There will be a significantly greater proportion of scoreable responses in a group of peptic ulcer patients following the "Passive" stimulus than there will be in an appropriate control group.

(2) Generality: There will be no significant difference between the proportions of scoreable responses in the peptic ulcer and control groups which follow presentation of the "Passive" stimulus.

(3) Generality: There will be no significant difference between the proportions of scoreable responses following the presentation of the "Hostile" card to the peptic ulcer and control groups.

(4) Generality: There will be no significant difference between the proportions of scoreable responses following the presentation of the "Sexual" card to the peptic ulcer and control groups.

Statistical Analysis and Results

Each subject's responses following the presentation of each card were determined in the manner already discussed. The responses in each system made by each subject following each of the three effectively toned cards were compared with that subject's responses following

the neutral card. If there was a response in a system which was statistically significantly greater than the subject's response to any other card, that system received a "score" for that stimulus.

It had already been determined that a 1 per minute increase in respiration rate was statistically greater than chance well beyond the .01 level of confidence. Thus, if subject's respiration rate following a crucial card was 1 or more per minute greater than his rate following the neutral card, that subject was given a score for the appropriate card for respiration rate.

A change of 2 pulse beats per minute was found to be statistically greater than chance also beyond the .01 level of confidence. Thus, a subject obtained an appropriate score for pulse rate if a particular card was followed by a pulse rate which was 2 or more beats faster than his pulse rate following the neutral card.

The basis for determining a scoreable response for GSR has already been presented.

The statistical analysis of these data was made by means of Chi Square. The proportion of scoreable responses in each of the three physiological systems among the peptic ulcer and control groups were compared. Table VII is made up of the Chi Square tables which compare the frequency of scoreable responses in each physiological system which follow presentation of "Passive"

stimulus to the peptic ulcer and control groups.

TABLE VII

Frequencies of Scoreable Responses in Each System Which Followed Presentation of the "Passive" Stimulus to the Ulcer and Control Groups.

A: Respiration Rate

		Group: Control	Ulcer	N	
Scoreable Responses	Passive	5	4	9	$X^2 = 0$
	Non-Passive	6	7	13	$P = .50$
	N	11	11	22	

B: Heart Rate

		Group: Control	Ulcer	N	
Scoreable Responses	Passive	7	2	9	$X^2 = 2.20$
	Non-Passive	8	12	20	$P = .08$
	N	15	14	29	

C: Galvanic Skin Response (Area)

		Group: Ulcer	Control	N	
Scoreable Responses	Passive	3	2	5	$X^2 = .11$
	Non-Passive	13	12	25	$P = .38$
	N	16	14	30	

One can see from these data that there are no significant differences in any of the three systems between the proportion of scoreable responses in the peptic ulcer and control groups. This is non-confirming for hypothesis #1 which was based upon Alexander's, "Passive-

Dependency" formulation and in agreement with hypothesis #2 derived from the "Generality" theory as formulated by Mahl.

The next table combines the Chi Square tables comparing the frequency of the two groups Scoreable responses in each system which followed the presentation of the "Hostile" stimulus.

TABLE VIII

Frequency of Scoreable Responses Which Followed Presentation of the "Hostile" Card to The Ulcer and Control Groups.

A: Respiration Rate

		Group: Ulcer	Control	N	
Scoreable Response	Hostile	4	2	6	X^2 = .23
	Non-Hostile	7	2	16	P = .30
	N	11	11	22	

B: Heart Rate

		Group: Ulcer	Control	N	
Scoreable Response	Hostile	8	7	15	X^2 = .02
	Non-Hostile	6	8	14	P = .45
	N	14	15	29	

C: Galvanic Skin Response (Area)

		Group: Ulcer	Control	N	
Scoreable Response	Hostile	3	2	5	X^2 = .03
	Non-Hostile	13	12	25	P = .43
	N	16	14	30	

These findings lend support to hypothesis #3 which was derived from the "Generality" point of view.

Hypothesis #4, also derived from the "Generality" theory is supported by the findings which are summarized in Table IX.

TABLE IX

Chi Square analysis, by separate physiological system, of the frequency with which scoreable responses in the peptic ulcer and control groups followed presentation of the "Sexual" Stimulus.

A: Respiration Rate

		Group			
		Control	Ulcer	N	
Scoreable Response	Sexual	4	3	7	X^2 = .04
	Non-Sexual	7	8	15	P = .14
	N	11	11	22	

B: Heart Rate

		Group			
		Ulcer	Control	N	
Scoreable Response	Sexual	4	1	5	X^2 = 1.14
	Non-Sexual	10	14	14	P = .14
	N	14	15	19	

C: Galvanic Skin Response (Area)

		Group			
		Control	Ulcer	N	
Scoreable Response	Sexual	10	10	20	X^2 = .02
	Non-Sexual	4	6	10	P = .45
	N	14	16	30	

On the basis of the above findings the present study may thus be interpreted as supporting the position taken by Mahl (30), and lending no support to Alexander's position (3).

CHAPTER IV

DISCUSSION

The prediction based upon the Alexander and French (3) hypothesis that a group of patients with peptic ulcers would show a larger number of increased autonomically mediated physiological responses to a stimulus which is related to passive-dependent needs than would an appropriate control group has not been supported by the data obtained in this study. On the contrary, the results conform to the predictions derived from the generality theory as presented by Mahl (30).

In view of the fact that the stimuli used have been found to differentiate between male veterans whose major emotional conflict constellation involves one of the three problems, hostility, passive-dependency or sexuality, we may say that passive dependency is not the central conflict among this group of ulcer patients.

In the light of these data it is not readily apparent how the Alexander and French position can be maintained.

On the other hand, the findings fit quite well into another frame of reference, that frame of reference of which Mahl's so-called generality formulation is a special case. This has been mentioned earlier as being essentially the position taken by Gilbert (18) when he discusses the Psycho-Social aspect of psychopathology.

The results of this study are in essential agreement with the findings of the study by Mahl (30) which was quoted earlier. The major conclusion of both Mahl's study and the present one is that a stimulus which is adequate to arouse autonomically mediated physiological activity in persons with conflicts concerning passive-dependency needs does not result in this type of response in ulcer patients with greater than chance expectancy.

The writer will now present the results of several other studies which, although they do not bear directly on the problem of the present research, do combine with the present findings to provide the basis for an experimentally derived formulation concerning the etiology of peptic ulcers.

The first of these studies is one of a series conducted under the direction of Lacey (25) at the Fells Research Institute. Using 85 male college students who were subjected to four essentially different stress situations, there were found characteristic autonomic response patterns which were consistent within each individual. The characteristic autonomic response patterns were observed irrespective of the type of stress situation the subject experienced.

As stated by that author, the findings are interpreted as follows: "Some individuals are so constituted

that they will respond with a given hierarchy of autonomic activation, whatever the stress. Others will show greater fluctuation from stress to stress, although they will exhibit one pattern more frequently than others. Still other individuals randomly exhibit now one pattern, now another."

The next is an article by Browning and Houseworth (9) which is the report of a follow-up study of two groups of duodenal ulcer patients who had been selected at random from the regular admissions to a large general hospital. There were 30 patients in each group, one group which had been treated by gastrectomy and the other group which had been treated with the general medical regime consisting of bed rest, antacids, antispasmodics, and the Sippy dietary regime. The follow-up study consisted of (1) An interview by a psychiatric social worker who obtained a complete social history, (2) A detailed interview by one of the authors, and (3) medical, laboratory, and X-ray follow-up examinations. None of the patients in either group received psychotherapy. Approximately 40% of the gastrectomy group had undergone a vagotomy either before or at the time of the gastrectomy. In the five patients who had undergone vagotomy prior to the gastrectomy, the vagotomy had failed to relieve completely the ulcer symptoms.

Symptoms before and after treatment were classified according to the following types: (1) Ulcer symptoms, (2) Symptoms of presumably psychosomatic disorders, other than peptic ulcer; i.e., hypertension, arthritis, asthma, migraine and psychocutaneous disorders, (3) psychoneurotic symptoms which included hysterical, phobic, obsessive, compulsive, hypochondriacal, depressive and anxiety symptoms, except those involved with the gastro-intestinal tract, and (4) characterological symptoms, which included acting out in various forms, such as poor relationship with wife and other people, alcoholism, drug addition, antisocial behavior, poor work adjustment, and in some cases flight into work. For statistical purposes the severity of each symptom category was calculated in the following manner: mild symptoms were given a value of 1, moderate symptoms a value of 2, severe symptoms a value of 3.

The results of this investigation indicated that the incidence and severity of <u>all</u> symptoms, that is, a combination of ulcer, psychosomatic other than ulcer, psychoneurotic and characterological symptoms in both the gastrectomy and medically treated groups did not change significantly following treatment for duodenal ulcer. The gastrectomy group showed a significant decrease in ulcer symptoms following the gastrectomy but

this was compensated for by a significant parallel increase in other psychosomatic and psychoneurotic symptoms.

"Surgical removal of ulcer symptoms appears, therefore, to be followed by their replacement by new symptoms in a significant number of instances. These new symptoms which presumably replace the ulcer symptoms were consistently autoplastic reactions. The medically treated group in which the ulcer symptoms were not significantly reduced in incidence or severity, showed no such redistribution of symptoms following treatment. These findings indicate that successful removal of the ulcer symptoms by surgical means alone, without the resolution of the associated psychological conflict offers little assurance that other pathological symptoms will not soon develop."

The most probable interpretation which can be made of these findings is based in large part on the work of Lacey which was discussed above. In the groups studied by Browning and Houseworth we may assume that those patients who had ulcers were those who responded to life stresses with an autonomic pattern which involved overactivity of the gastric functions primarily. This would be the case, of course, with the patients in both of the groups studied. The surgically treated group had undergone the removal of the organ which was most

susceptible to autonomic innervation for them. Those people then, could not develop ulcers again, not because the environmental stress was reduced and not because the autonomic activity was less, but rather because their former primary channel for the physiological expression of the autonomic activity was gone.

It was among that group that the development of other psychosomatic disorders was noted most frequently. We may further assume that those persons, among the surgically treated patients, who developed other psychosomatic disorders had originally been so constituted that the second most susceptible organ system was the one in which the new disorder was found.

This general position is supported by a recent study by Malmo and Shagass (31). These authors obtained electromyographic recordings from several patients during a psychiatric interview which was considered to deal with stressful material obtained from the history of each individual. The results indicated that particular physiological reactions which result in somatic complaints were specifically susceptible to activation by stressful experiences of any sort. The results which were most clearly seen concerned the activation of the neck muscles in patients whose major complaints were headaches. The activation and resultant disturbances were interpreted by these authors as a lowered threshold for

stimulation in particular areas. These areas refer to particular physiological responses which are dependent upon autonomic innervation. Activation of these areas is not dependent upon the type or content of the conflict or stress to which the person is exposed.

On the basis of these researches it would seem that those persons who develop a "psychosomatic" disorder are those whose autonomic patterns of reaction are consistent from time to time. Lacey has not been willing to make this assumption but he is engaged in longitudinal research which will provide an answer on this point. At any rate, if this is the case, those who develop a peptic ulcer will be those whose gastric activity is increased consistently under stress.

Secondly, there is no necessary relationship between the type of conflict situation and the physiological system which is activated. Any stress situation results in autonomic overactivity. Whether or not a peptic ulcer is present is not related to the autonomically controlled physiological activity which is aroused by a particular type of stress stimulus, as this study has shown, but the increase in gastric acidity necessary for ulcer formation is related to the intensity of the stress, as Mahl (30) has shown.

At this point it seems proper to discuss additional

methods of further testing the hypothesized role of psychological factors in the psychosomatic illnesses in general as well as peptic ulcer in particular. It might well be valuable if one were able to employ apparatus which could record changes in various physiological systems in addition to the three involved in this study. Direct assessment of the gastric responses to the stimuli employed here is another desirable possibility. Both of these suggestions would necessitate rather complex equipment but if the technical problems could be overcome and subjects could be obtained who were as cooperative and patient as those in the present study, quite valuable information should be forthcoming in regard to the general field of psychosomatic medicine.

In this respect the apparatus used here, the Keeler Polygraph, seems to be admirably suited for the study of the psycho-physiological reaction patterns in the psychosomatic disorders which are related to the three systems for which recordings are made. Bronchial asthma, essential hypertension, and psychogenic dermatitis are all serious and relatively frequently encountered conditions which are generally agreed to be subsumed under the general heading of "psychosomatic". In such disorders there is also considerable controversy concerning the nature of the psychogenic factor. Research is important in regard to these as well as other psychosomatic disorders.

SUMMARY

On the basis of a review of the literature concerning the role and the nature of the psychogenic factor in the etiology of peptic ulcer, two alternative hypotheses were selected to be put to an experimental test. The hypotheses were: (1) the Alexander and French formulation that an unresolved conflict concerning passive-dependent needs was the anxiety producing conflict in persons with peptic ulcer, and (2) the formulation presented by Mahl that the anxiety which leads to the gastric hyperactivity necessary for peptic ulcer formation need not result from a conflict concerning passive-dependency needs alone. Rather, any stressful situation might serve to activate the autonomic nervous system and thus start the physiological chain of events which eventuates in peptic ulcer.

In order to test these hypotheses, three so-called "crucial" pictures and a fourth, a neutral picture, were employed. The crucial pictures were called "Hostile", "Passive", and "Sexual" depending upon the group from which they evoked the greatest number of increased autonomically mediated physiological responses. The neutral stimulus provided the "basal" level of autonomic activity from which changes were calculated. There were three groups of patients in the validation study, all of whom had been carefully interviewed and tested by an

advanced pre-doctoral clinical psychology student or a staff clinical psychologist in a large Veterans Administration hospital. One group of patients (N of 8) was considered by the supervising staff clinical psychologist to be primarily conflicted concerning the expression or control of hostile-aggressive impulses, another group (N of 7) exhibiting anxiety primarily as a result of conflicts over the expression of passive-dependent needs, and a third group (N of 5) who seemed to have as the basis of their anxiety, conflicts over the expression or inhibition of sexual impulses. It was found that when these three groups of subjects were presented with the stimulus pictures at least two of the three physiological systems measured by the Keeler Polygraph were characterized by increased activity. The increases in autonomically mediated physiological activity in each group tended to occur with greater than chance frequency following presentation of the stimulus picture which was selected for its relationship to the conflict hypothesized for each group.

These pictures were then presented to the peptic ulcer and control groups. There were twenty four subjects in each group. When the proportion of increased physiological responses made by the peptic ulcer group following the presentation of the "Passive" stimulus was compared to the proportion of such responses made by an appropriate control group, there were no

significant differences.

This was interpreted as supporting the position taken by Mahl and refuting the Alexander and French hypothesis.

A re-statement of Mahl's "generality" theory concerning the psychogenic factor in peptic ulcer etiology was made on the basis of the results of the present study as well as several others recently published. A few general suggestions about continued research in the area of psychosomatic disorders were offered.

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APPENDIX I

ABSTRACTS OF PSYCHOLOGICAL REPORTS ON SUBJECTS USED IN VALIDATION STUDY

No. 1. Dx: Anxiety Reaction tests, W-B, DAP, BG, Rorschach; Age, 57; Educ., 11; I.Q., 133. In the effective sphere (the pt is making) -- strong efforts to control emotions which are clamoring for expression. These impulses are hostile in nature (and) are too threatening for the patient to recognize. The effect of this repression is such tension that the patient is unable to relax and often awakens in a rigid posture. When control is complete, there is an excessive restriction of his behavior leading to feelings of listlessness, apathy and inability to work.

No. 2. Dx: Diabetes; Age, 27; Educ., 12; I.Q. 100; tests, W. B., Rorschach, Blacky. He appears to have considerable difficulty with regard to sexuality, the exact extent of which was not determined. His main defense is denial. Sexuality, which appears to be the primary source of conflict is denied in situations in which it is an obvious component.

No. 3. Dx: Anemia; Age, 36; Educ., 10; I.Q., 97; tests, W. B., Blacky, DAP, Mich. Inv. Sent. Apparently the patient's major difficulty is in never having been able to form a relationship with anyone with whom he could feel secure and trusting. He feels strongly that he has never received the proper amount of attention and care from others. The main way the patient handles this conflict is to withdraw. Opposed to this strong need to be cared for is his detached rather independent attitude.

No. 4. Dx: Anxiety reaction; Age, 27; Educ., 10; I.Q. 112; One could say that this is a well organized person with a conflict which leads him to respond with behavior which has strong passive-receptive qualities when he is under stress. He is an extremely dependent individual who is not consciously aware of these needs. This need for nurturance

seems, on the contrary, to be quite unacceptable to him, but nonetheless, present.

No. 5. Dx: Dermatitis; Age, 31; Educ., 12; I.Q. 124. This man's unconscious fears of his own masculine inadequacy seem to be derived from an over-protective mother. He tends to withdraw from sexually problematic situations and tends to select the most expedient solution with little consideration of its future consequences. This has contributed to his marital turmoil and his divided loyalties to both his mother and wife.

No. 6. Dx: Anxiety Reaction; Age, 29; Educ. 12; I.Q. Hi Av. tests, Rorschach. The relationships this patient has maintained with both his mother and wife as well as the test results point toward a strong ambivalence concerning the satisfaction of his sexual needs. The anxiety this patient shows seems to be related to specific environmental situations which have affected his relationships with his mother and wife. At the present time he appears to have adequately repressed his own sexual impulses which were initially so anxiety arousing.

No. 7. Dx: Diabetes; Age, 39; Educ. 12; tests, Rorschach, Blacky. The patient has a strong expectancy of being taken care of by others and of getting things from them. For some reasons he has come to believe that showing these personal feelings represents a weakness and he avoids both displaying and allowing himself to become aware of these feelings. Denial, therefore, is an important defense he uses. Occasional recognition of his uncertain position in life and of his wanting to be taken care of, produce considerable tension in him, and he is not able to withstand such tension very long.

No. 8. Dx: Atopic Exzema; Age, 37; Educ. 12; I.Q. 124; tests, W-B and Rorschach. The most blatant symptom evident in his performance suggests a severe sexual conflict. This conflict is probably on the unconscious level judging from the other information obtained in his background. One almost feels that this man belongs to the classical position of paranoia because of his concern

and ambivalance over his sexual impulses and his turmoil of attempting to adjust to them.

No. 9. Dx: Alcoholic Gastritis; Age, 33; Educ. 1 year college; I.Q. 114; tests, Rorschach, W-B. Due to the frustration of his early dependency needs he now has an insatiable need to be taken care of and thus others seem to reject him since they cannot possibly satisfy that need. The patient appears to be a passive-dependent individual who reacts regressively when frustrated.

No. 10. Dx: Chrone's Disease; Age, 24; Educ. 12; I.Q. High Aver., tests, Rorschach, Blacky. Apparently the patient is taking the line of least resistance in handling his hostility, the hostility stemming from his frustration by both his mother, father, and older brother. He withdraws from and evades situations involving his hostility and thus fails to find means of reducing the associated tension.

No. 11. Dx: Anxiety Reaction; Age 28; Educ. 10; I.Q. Average; tests, Rorschach, Blacky. His own very highly emotionally-toned and aggressive impulses tend to remain at the fantasy level. The Blacky and the Rorschach indicate strong hostile-aggressive impulses which are beginning to be expressed in near delusional terms. (In Therapy) His phobias were considered to reflect his fear of retribution for having such hostile feelings as well as the distortions of this hostility and were dealt with on this basis.

No. 12. Dx: Epidemophytoris; Age, 40; Educ. 16; I.Q. 125; tests, W.B., B.G., D.A.P., Rorschach. The picture here is that of a highly intelligent individual who tends to deal with his problems intellectually. He is troubled by feelings of aimless drifting but is too repressed to direct himself into a more active channel of endeavor. He harbors strong feelings of hostility, is somewhat detached from his fellow beings and uses intellectualization to explain his isolation. His hostility appears to have developed out of his early family environment in which he resented the dominance of his parents.

No. 13. Dx: Hypoglycemia; Age, 35; Educ. 1 year college; I.Q. superior; tests, M.M.P.I. and Rorschach. Both tests indicate the existence of severe anxiety which has become intense enough to interfere with his general efficiency. The most probable source of the present anxiety seems to involve the ambivalence this man has developed as well as the environmental frustration of his generalized passive-dependent orientation toward life. He has never actively sought to completely care for himself but at present seems to be seriously grappling with the need and possibility of doing so.

No. 14. Dx: Anxiety Reaction; Age 35; Educ. 3rd; Occup., Factory; Married. Emotionally there is an extreme sensitivity to affective stimulation. The patient's reactivity to such stimulation is poorly controlled and can be characterized as immature and egocentric. Hostile impulses, thus far controlled, seem to be gaining expression more directly. Explosive outbursts may be expected. The patient seems aware of this tendency but apparently lacks any control other than withdrawal to cope with it. It appears from the tests and clinical behavior that this is a chronic condition in which periodic episodes of disorganized behavior will occur. The patient is extremely preoccupied with his condition and is desperately seeking for some reasonable answer.

No. 15. Dx: Nervousness; Age, 32; Educ. 8th; Occup. Truck driver; married; white. The disturbance of the cognitive processes is paralleled by a disruption in the patient's emotional controls. At present he is virtually at the mercy of violent aggressive impulses. He attempts to maintain control by withdrawal from interpersonal associations and by attempts at compulsive ordering of his environment. Direct repression is attempted but seems very inadequate. The patient is so driven by his impulses and his controls are so ineffective that he must feel perpetually as if he had the proverbial lion by the tail.

No. 16. Dx: Anxiety Reaction, Acute; Age, 30; Educ. 11th; Occup. Factory Semi-skilled; Single; Tests, Blacky, Rorschach. This patient's responses to psychometric tests point to a definite disturbance in the sexual sphere. There are indications also of inadequate identification with a male figure. This information in conjunction with the nature of the situation immediately preceding onset of the present episode provide the basis for considering his present state to be essentially a homosexual panic.

No. 17. Dx: Psychoneurosis, Anxiety; Age 28; Educ. 10th; Occup, Cab driver; married; I.Q., 102; Tests, W-B, Rorschach, MMPI; The present hospitalization is the patient's third. The precipitating situation seems to have been an attempt on the part of the patient to assume the major responsibility for supporting his family and himself. Each occasion was preceeded by either his wife's pregnancy or his being given greater responsibility in his previous jobs (construction labor and a small factory). It would appear, from both the testing and the history, that the patient is unable to function adequately unless some other person (his wife or his employer) assumes the dominant role in directing his life. The patient appears to have no insight into his reactions and psychotherapy is deemed to be of questionable value.

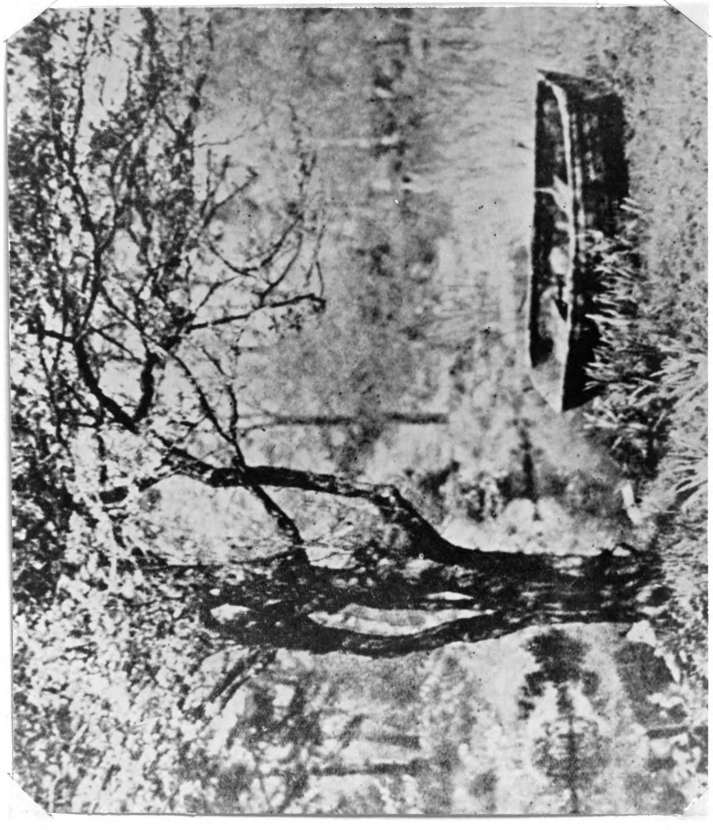
No. 18. Dx: Situational Maladjustment in a passive dependent personality. Age, 38; Educ. 6th, Occup, Heavy Machine Operator; Tests, W-B, Rorschach, MMPI; I.Q., 96; The most outstanding characteristic to be noted is the free-floating anxiety which is closely related temporally to the patient's seasonal layoff and most recently to his wife's surgery. He gives a history of adequate adjustment when employed under close supervision but has repeatedly failed to adjust when self-employed. The man may be described essentially as a follower who is unable to assume anything other than a subordinate role. At present he is entirely willing to continue in this status.

No. 19. Dx: Schizophrenic Reaction, Simple Type; Age 39; Educ. 8th; Occup. handyman; Single; Tests, W-B, Rorschach, MMPI; I.Q., 111; The history of panhandling, occasional alcoholism, extremely unstable employment and mildly seclusive behavior in combination with the Rorschach results, notably such responses as explosions, atomic bombs, flying bullets and radar waves seem to indicate a Schizophrenic reaction. The veteran carries the diagnosis of Psychoneurosis, conversion hysteria which appears inappropriate at this time. Reason for this hospitalization is the fact that this man was arrested for assault following an unprovoked attack on a bystander in a local bar.

No. 20. Dx: Alcoholism; Age, 40; Educ. 9th; Occup. painter; Married; Tests, W-B, MMPI; I.Q. 108; Under the influence of alcohol this patient has repeatedly become argumentative and assaultive, both with his family and others. Following such episodes he is remorseful and his wife has agreed to accept him back only if he seeks hospital treatment first. The history indicates a long standing tendency on his part to get into difficulty with authority figures, especially when drinking, but on other occasions as well. It is only while drinking, however, that the patient openly expresses the hostility which is usually at least partially controlled.

APPENDIX II

Neutral Stimulus



Hostile Stimulus

Passive Stimulus

Sexual Stimulus