PROBLEM SOLVING IN SUICIDAL INDIVIDUALS

by

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The present study investigated two aspects of suicide which, to date, had received little attention. These are problem-solving behavior and perception. In terms of problem-solving behavior, this study established (1) that suicidal patients show a lesser sense of concern about self-improvement and religion than non-suicidal patients; (2) that suicidal patients are significantly more passive and less competitive in their mode of response to problems than non-suicidal patients; and (3) that suicidal individuals tend to become rigid more quickly in stressful problem-solving situations than non-suicidal individuals. In the area of perception, it was established that suicidal patients are significantly more field-dependent than non-suicidal patients. In addition, the results of investigating these two aspects of suicidal behavior contributed to a better understanding of the personality make-up of suicidal individuals.
TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. REVIEW OF LITERATURE</td>
<td>1</td>
</tr>
<tr>
<td>Suicide</td>
<td>1</td>
</tr>
<tr>
<td>The Definition of Suicide</td>
<td>1</td>
</tr>
<tr>
<td>Theories of Suicide</td>
<td>3</td>
</tr>
<tr>
<td>1. The Sociology of Suicide</td>
<td>3</td>
</tr>
<tr>
<td>(a) Marital status</td>
<td>8</td>
</tr>
<tr>
<td>(b) Age, sex and race</td>
<td>8</td>
</tr>
<tr>
<td>(c) Method</td>
<td>9</td>
</tr>
<tr>
<td>(d) Climate (and time)</td>
<td>10</td>
</tr>
<tr>
<td>(e) Urban and rural differences</td>
<td>10</td>
</tr>
<tr>
<td>(f) Socio-economic status</td>
<td>12</td>
</tr>
<tr>
<td>(g) War</td>
<td>12</td>
</tr>
<tr>
<td>2. The Psychology of Suicide</td>
<td>13</td>
</tr>
<tr>
<td>(a) Sigmund Freud</td>
<td>13</td>
</tr>
<tr>
<td>(b) Other Psychoanalytic Theories</td>
<td>15</td>
</tr>
<tr>
<td>(c) Non-psychoanalytic Theories</td>
<td>17</td>
</tr>
<tr>
<td>Rigidity</td>
<td>21</td>
</tr>
<tr>
<td>Theories of Rigidity</td>
<td>21</td>
</tr>
<tr>
<td>1. Psychoanalytic</td>
<td>21</td>
</tr>
<tr>
<td>(a) Franz Alexander</td>
<td>22</td>
</tr>
<tr>
<td>(b) Alfred Adler</td>
<td>22</td>
</tr>
<tr>
<td>(c) Karen Horney</td>
<td>23</td>
</tr>
<tr>
<td>(d) Erich Fromm</td>
<td>23</td>
</tr>
<tr>
<td>CHAPTER</td>
<td>PAGE</td>
</tr>
<tr>
<td>---------</td>
<td>------</td>
</tr>
<tr>
<td>2. Other Psychological Theories</td>
<td>24</td>
</tr>
<tr>
<td>(a) Goldstein</td>
<td>24</td>
</tr>
<tr>
<td>(b) Werner</td>
<td>25</td>
</tr>
<tr>
<td>(c) Lewin</td>
<td>25</td>
</tr>
<tr>
<td>3. Factor-analytic Studies</td>
<td>27</td>
</tr>
<tr>
<td>(a) Spearman</td>
<td>27</td>
</tr>
<tr>
<td>(b) Cattell</td>
<td>28</td>
</tr>
<tr>
<td>(c) Fisher</td>
<td>29</td>
</tr>
<tr>
<td>Luchins' Theory: The Einstellung Effect</td>
<td>29</td>
</tr>
<tr>
<td>Tests of Rigidity</td>
<td>37</td>
</tr>
<tr>
<td>1. Einstellung tests</td>
<td>38</td>
</tr>
<tr>
<td>2. Concept formation tests</td>
<td>38</td>
</tr>
<tr>
<td>3. Personality tests</td>
<td>38</td>
</tr>
<tr>
<td>4. Other rigidity tests</td>
<td>39</td>
</tr>
<tr>
<td>Perception</td>
<td>41</td>
</tr>
<tr>
<td>II. PROCEDURE</td>
<td>48</td>
</tr>
<tr>
<td>Subject Population</td>
<td>48</td>
</tr>
<tr>
<td>1. Experimental Group</td>
<td>48</td>
</tr>
<tr>
<td>2. Control Group</td>
<td>49</td>
</tr>
<tr>
<td>3. Obtained Groups</td>
<td>49</td>
</tr>
<tr>
<td>Clinical Impressions: The Typical Suicidal Subject</td>
<td>53</td>
</tr>
<tr>
<td>Test Administration</td>
<td>55</td>
</tr>
<tr>
<td>1. The Mooney Problem Check List</td>
<td>56</td>
</tr>
<tr>
<td>2. The Test of Social Insight</td>
<td>57</td>
</tr>
<tr>
<td>3. The Water Jar Problems</td>
<td>58</td>
</tr>
</tbody>
</table>
LIST OF TABLES

TABLE

I  The Einstellung Effect for 'Plain and 'Don't be blind' Groups ........................... 33

II Obtained Scores of Suicidal and Non-suicidal Patients
    on 9 Variables of the Mooney Problem Check List ........ 64

III Obtained Scores of Suicidal and Non-suicidal Patients
    on 5 Variables of the Test of Social Insight .......... 65

IV Scores (in Seconds) of Suicidal and Non-suicidal Patients
    on Luchins' Water Jar Problem Test .................... 66

V  The Einstellung Effect for Suicidal and Non-suicidal Patients ......................... 67

VI Scores (in Seconds) of Suicidal and Non-suicidal Patients
    on the Embedded Figures Test ............................ 68

LIST OF FIGURES

FIGURE

1. Main Variables and Categories of Prediction Model ........ 20

2. An Example of Simple and Complex Figures from the
    Embedded Figures Test ................................. 61
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PROBLEM SOLVING IN SUICIDAL INDIVIDUALS
I. REVIEW OF LITERATURE

Suicide

Psychology claims as one of its principal goals the understanding and prediction of human behavior. In pursuit of this goal, the profession has investigated and probed virtually every aspect of the human condition. One aspect that has thus experienced the occasional psychological probing is self-destructive or suicidal behavior.

In spite of the challenge of the prediction and treatment of this type of behavior, little systematic experimentally oriented research has been done in the area. This seems strange when one considers the facts.

Suicide is one of the ten leading causes of death in North America. (Rate in 1960 per 100,000 population is 10.6 for the U.S., 7.5 for Canada.) It pervades all levels of society. It is behavior more or less unique to man. To date, however, psychology has shown but meagre interest in the topic. The random forays into the field made by pioneer workers have been largely unsystematic and sporadic in nature. Most of these have been descriptive works, often redundant and commonly prefaced by a long review of the vital statistics. Occasionally a good piece of experimental research has appeared. But these are rare because of the many practical considerations the would-be experimenter must overcome.

Of course suicidal phenomena are extremely complex, as most investigators in the area have rapidly discovered. Consider, for instance, the confusion that exists about definitions.

The Definition of Suicide

Because suicide is such an involved, multi-dimensional topic, successfully defining it has proved to be an almost insurmountable task. Literally
dozens of tentative definitions exist. In fact, Neuringer (1962) found that there were twelve different categories of definitions. Devries (1968) reduced this to three; definitions in terms of consequent conditions, ante­cedent conditions and intervening variables.

(a) Consequent conditions: Most commonly the term 'suicide' is applied indiscriminately to a number of different categories of consequent behavior. Thus a person is labeled as 'suicidal' when he commits, attempts or threatens suicide, makes suicidal gestures, displays suicidal ideation or behaves in generally self-destructive ways. Whether these categories are distinct or overlapping has not been established.

(b) Antecedent conditions: The majority of theorists in the field think of suicide in terms of antecedent conditions. The self-destructive act occurs 'because of', 'as the result of' or 'as the effect of' some causal agent. Identifying this causal agent therefore becomes of primary importance. "A low degree of integration in social groups" was labeled by Durkheim (1897) and Gibbs and Martin (1958) as the most significant antecedent condition; while for Henry and Short (1954) it is "lack of external restraint over behavior". Crichton-Miller (1931) considered pain and suffering to be the principal motives for suicide; for Lewis (1951) and Sainsbury (1955) it is a sense of isolation. Some of the many other causal agents that have been proposed are: alcoholism (Stenback et al, 1965); loss of a loved object (Hendrin, 1951); interpersonal conflict (Fellner, 1961); endocrine imbalance (Bonciu et al, 1964) and poor weather conditions (Mills, 1934).

(c) Intervening variables: Between the cause and effect of any action (the antecedent and consequent conditions) there are a number of intervening variables. In the case of suicide, the most important intervening variable is the suicidal individual himself. Therefore, theories that deal
with the individual and his intentions are classified in this category. Included among them are most psychoanalytic theories (Freud, 1924; Menninger, 1938) as they deal exclusively with intra-psychic phenomena. Also included are those that consider suicide attempts to be (1) cries for help (Farberow and Shneidman, 1961; Toolan, 1962); (2) attempts to manipulate the environment (Finn, 1955; Farberow and Shneidman, 1961; Toolan, 1962); or (3) a desire to reunite with a lost love-object (Toolan, 1962).

Theories of Suicide

The complexity of suicide behavior is a phenomena that researchers are just beginning to face.

The first scientific investigations of suicide were undertaken by a number of physicians and psychiatrists of the early 19th century. Understandably restricting their investigations to the purely medical aspects of self-destruction, they attributed the act to pathological conditions of the brain or of other organs. Winslow (1840, cited by Wallis, 1960, p. 63), for example, having performed autopsies on several suicides, told of finding "diseases and lesions" of the brain, such as "chronic meningitis" and "varicose veins" and "diseases and lesions of other organs", such as "degeneracy of the liver and kidneys", "abnormal position of stomach" and abnormal tumors. On the basis of these findings he concluded that suicide was directly related to certain 'morbid' conditions of the organism.

Winslow's theory is representative of the view held by the great majority of professionals right up until the time of Emile Durkheim and Sigmund Freud, the two men who most influenced the subsequent course of suicide research.

1. The Sociology of Suicide
We have in fact shown that for each social group there is a specific tendency to suicide explained neither by the organic-psychic constitution of individuals nor the nature of the physical environment. Consequently, by elimination, it must necessarily depend upon social causes and be itself a collective phenomenon. (Durkheim, 1897, p. 140)

This, in essence, is Durkheim's theory: There exists no "definite predisposition" to suicide, except in the insane. Thus it is a phenomenon separate and distinct from individual motivation, depending instead upon the "progressive action of social life" and the society's "collective inclination" towards self-destruction, circumstances which permit but do not specifically cause suicide.

(Thus) in Catholicism, where common sentiments rigorously guide the individual and condemn the taking of one's own life, the suicide rate is low. Where common sentiments tend to lay great stress on individualism, innovation and free thought, the hold over the individual slakens, he is tenuously bound to society, and can more easily be led to suicide. This he felt to be true of Protestantism in general. (Wallis, 1960, p. 9)

Durkheim further believed that, as suicide is socially determined, the different types of suicide can be identified and classified by the causes which produced them. He thus defined three suicide categories: egoistic, altruistic and anomic.

Egoistic suicide results from: (1) "the lack of integration of the individual into the society"; (2) excessive individualism; or (3) a sense of social isolation when an inadequate person finds himself cut off from the group and forced to rely upon his own resources.

Durkheim states that the rate of egoistic suicide varies inversely with: (1) the degree of integration of religious society; (2) the degree of integration of domestic society; (3) the degree of integration of political society. He writes
This grouping shows that whereas these different societies have a moderating influence upon suicide, this is due not to special characteristics of each but to a characteristic common to all. Religion does not owe its efficacy to the special nature of religious sentiments, since domestic and political societies both produce the same effects when strongly integrated. . . . Inversely, it is not the specific nature of domestic or political tie which can explain the immunity they confer, since religious society has the same advantage. The cause can only be found in a single quality possessed by all these social groups, though perhaps to varying degrees. The only quality satisfying this condition is that they are all strongly integrated social groups. So we reach the general conclusion: suicide varies inversely with the degree of integration of the social groups of which the individual forms a part. (Durkheim, 1897, pp. 208-209)

Altruistic suicide results from "an over-integration of the individual with society". Because of the extremely cohesive nature of some societies, the individual loses any sense of personal identity and value. Hence, should the customs of the society demand the sacrifice of self through suicide, the individual's sense of duty compels him to obey. The Indian practice of suttee, the Japanese hari-kari deaths, and their kamikaze pilots are examples of this kind of society practice. As Durkheim puts it:

His person has so little value that attacks upon it by individuals receive only relatively weak restraint. It is thus natural for him to be yet less protected against collective necessities and that society should not hesitate, for the very slightest reason, to bid him end a life it values so little. (Ibid, p. 221)

Anomic suicide is an expression of the absence for the individual of the discipline and regulations customarily prescribed by society. This results from a violent disruption of the society's equilibrium. Such disruption may occur because of an economic crisis, such as the U.S. stock-market crash of '29, or even in a fortunate crisis, "the effect of which is abruptly to enhance a country's prosperity". Wallis writes (1960, p. 35)
Economic disasters, or abrupt changes in the distribution of wealth and power . . . produce a disequilibrium, facilitate excessive social mobility, promote a whetting of unsatiatable economic appetites and a weakening of the influence of traditional rules, and found conditions to which the individual cannot adapt without extreme difficulty. As these disruptive forces then reinforce each other, a state of deregulation or anomie exists.

Durkheim's theory of suicide, considered a classic in the field of sociology, constituted a frame-of-reference for much of the sociological research which followed. One important example of such research was done by Durkheim's student, Maurice Halbwachs.

Halbwachs recognized the necessity of relating Durkheim's sociological approach to suicide to that of psychiatry. As Parsons (1949, p. 366) has noted, "Halbwachs saw no antithesis between the social and psychological explanation of suicide; rather he considered them complementary". Thus he attempted to devise a theory of causation which would avoid "the traditional dual approaches" of the two disciplines.

He began by examining suicide in relation to comparative urban and rural trends in rates in different countries. He then turned to a re-examination of Durkheim's theory, studying its similarities to, and differences from, the many psychiatric theories extant at the time. He reached the conclusion that "there is but one cause for suicide: the detachment of the individual from society and his resulting sense of social isolation . . . it matters little whether isolation has its roots in psychic disfunctioning or in external conditions" (Wallis, 1960, p. 42).

(Halbwachs' theory is considered by many to be "an indispensable corrective" or "necessary complement" to Durkheim's.)

Another major sociological study inspired by Durkheim was done by Gibbs and Martin (1958). Gibbs and Martin set out to empirically test Durkheim's
conclusion that "suicide varies inversely with the degree of integration of the social groups" (Durkheim, 1897, p. 209). For research purposes they chose, as a measure of social integration, the "degree of status integration" in the population. This, in turn, was measured by marital status (i.e. the proportion of individuals married, widowed, single and divorced). They then turned to the U.S. vital statistics tables for the years 1949-1951. For these years the highest average annual suicide rate was recorded for males in the 60-64 year age group. In terms of marital status, the group was ranked proportionately as (.793) married, (.096) widowed, (.086) single, and (.025) divorced. The suicide rates corresponding to each group were: 36.2, 64.7, 76.4 and 111.1. "Thus, without exception, the rank order of the status integration measure . . . . predicts the rank order of the suicide rate: there is a consistent inverse relationship" (Gibbs and Martin, 1958, p. 157).

A third sociological study of some importance is Henry and Short's work on suicide and homicide (1954).

It was hypothesized that both acts were aggressive responses to frustration, differing only in their choice of a victim. Why should one frustrated individual direct his aggression inward against himself, while the other directs it outward against another?

Henry and Short found that their answer lay in "strength of external restraint", by which is meant "the degree to which behavior is required to conform to the demands and expectations of other persons".

the degree of legitimization of other-oriented aggression consequent to aggression varies positively with the strength of external restraint over behavior. When behavior is required to conform rigidly to the demands and expectations of others (when external restraints are strong), the expression of aggression against others is legitimized. When external
restraints are weak, other-oriented aggression consequent to frustration fails to be legitimized and the aggression is directed against the self. (Henry and Short, 1954, p. 18)

There have been a number of other empirical investigations of Durkheim’s formulations, particularly with regard to statistical exploration and the correlation of sociological variables. These investigations have added many significant and interesting dimensions to our understanding of the suicide phenomenon, including its relationship to marital status; age, sex and race; method; climate; urban and rural differences; socio-economic status; and war.

(a) Marital status: Marriage has the effect of reducing the suicide rate. Divorce tends to increase it. These and other research findings were summed up by Henry and Short (in Clues to Suicide, 1957, pp. 61-62) as follows:

The degree of involvement in meaningful relationships with other persons is greater, on the average, for the married than for the single, widowed, or divorced. The married are by definition involved in at least one more meaningful relationship than the nonmarried. When the effects of age and sex are held constant, the suicide rate of the married is lower than the rate of the single, the widowed, or the divorced. Suicide is highest for the divorced. When the factor of age is held constant, suicide is higher for the widowed than it is for the single, up to the age of thirty-five. From age thirty-five on, however, the suicide rate of the single is higher than that of the widowed. Strength of the relational system is related to the widowed and single categories in an extremely complex manner. It is probably weaker for the widowed than for the single at the younger ages, when widowhood comes as a greater shock and young family responsibilities are most likely to be disrupted. On the other hand, it is probably stronger for the widowed during the older age periods, when they are more likely to have the benefit of relations with their children grown to adulthood and when the single find the relationships curtailed by increasing morality of their age group.

(b) Age, sex and race: Each year in the U.S. and Canada approximately 20,000 people take their own lives. More than two-thirds of the 20,000 are white males. For this group, the suicide rate increases precipitously with age.
In the 20-24 age range there are approximately 10 suicides per 100,000 population. This increases to 40 in the 40-54 age range, and then becomes 66 per 100,000 for males over 74 years.

The suicide rate for white females does not show as much increase with age. In adolescence the rate for girls is nearly as high as that for boys, possibly because of the complications of pregnancy out of wedlock (Dublin and Bunzel, 1933, p. 45). In the age range 20 to 24, the figure is 6 per 100,000 population. This increases to about 10 in the range 40-54 years of age, and then remains fairly constant.

Thus, as Dublin points out (1963, p. 23), "Suicide may be called a masculine type of behavior. . . . at the younger ages the rates for males are from three to four times those of females, (and) after age 85 the ratio is approximately ten to one."

Negroes generally have a much lower suicide rate than do whites. Thus, in the U.S., the suicide rate for Negro males is less than one-half that for white males, regardless of the age group involved. The rate for Negro women is also correspondingly lower. This relatively low rate for Negroes has been pretty well substantiated by most investigators in many parts of the world. Even where the population is predominantly Negro, as in the Union of South Africa, Negro suicides were less than 1.0 in 100,000 versus a white suicide rate of between 9.0 and 12.0 for the years 1952-1954. (Based on U.N. Demographic Index, 1957)

(c) Method: As we have just shown, the great majority of suicides are committed by men. However, women attempting suicide outnumber the men by three times. Why women should make so many attempts and succeed so seldom is a matter of debate. One possible explanation for the sex-ratio in suicide is the method chosen. As Dublin (1963, p. 41) has noted, "Men are likely to choose violence and leave little or no margin for chance or error, (eg. fire-
arms and explosives, hanging and strangulation, etc.). Women, on the other hand, traditionally have chosen less violent methods which also involve an important factor—time for rescue and resuscitation (e.g. poisoning, barbiturates, asphyxiation).  

(d) Climate (and time): Early investigators of suicide phenomena (Morselli, 1881; Durkheim, 1897; Miner, 1922) agreed unanimously that the greatest number of suicides occur in the spring and early summer, and the fewest in the winter season. They did not agree so well about the cause of this. The best explanation, put forth by Durkheim, suggested that it was not so much the weather, as the change in social life because of it, that influenced the suicide rate.

Coleman (1950) substantiated these earlier findings and added the fact that the largest number of suicides occur during the morning, on Monday and Tuesday. Early morning hours were also considered critical by Hirsh (1960).

Contrary findings have been reported in two other studies (Pokorny, 1960; Shneidman and Farberow, 1961). In neither instance were significant differences found for the time of day, week or month. However, they did find a "slightly lower" incidence on Monday, and a "slightly higher" one during December and January!

A different approach to the question of suicide and weather was adopted by Mills (1934). He found that

A strong suggestion of storm effect is seen in the distribution of suicides (and homicides) in North American cities. The rates are . . . highest . . . where barometric pressure and temperature changes are most frequent and severe. Suicides show a definite time relationship to weather changes as high- and low-pressure centres approach and pass by. With falling pressure and rising temperatures, suicides rapidly rise. Most peaks in frequency occur at the time of a low-pressure crisis. With rising pressure and falling temperature few suicides occur.

(e) Urban and rural differences: Studies by Cavan (1928), Halbwachs (1930), and Dublin and Bunzel (1933) have established that (1) rural areas tend to
have very low rates of suicide, and (2) conversely, the larger a city's population, the higher its suicide rate. Most authorities have offered a similar explanation for this disparity between rural and urban suicide rates. The following quotation (Henry and Short, in *Clues to Suicide*, 1957, p. 61) is a fair statement of this explanation.

One of the critical differences between rural and urban living is in the stability and continuity of family and neighborhood life. The strong control exercised by the neighbors on the farm or in the small town contrasts sharply with the anonymity and impersonality of life in the city. These characteristics of the city are magnified in the central, disorganized sectors. The steady rise in suicide from the tightly knit rural community to the anonymity of the city may reflect the strong relational systems of the rural small-town dweller and the relative isolation from meaningful relationships of many of the inhabitants of large cities.

This dehumanizing aspect of city life has been emphasized in three separate studies of ecological distribution.

Cavan (1928) found, for example, that the four sections of Chicago with the highest suicide rates (during the years 1919 and 1921) were characterized by shifting populations and a preponderance of cheap hotels, rooming houses and restaurants. In short, they were "areas of extreme social and personal disorganization."

A study done in London by Sainsbury (1955) found that certain boroughs in the city had a consistently high suicide rate. An intensive investigation of these boroughs revealed

a significant correlation of suicide rates with rates for the following characteristics: social isolation (e.g. persons living alone, and in boarding houses); social mobility (e.g. daily turnover of population, and number of immigrants); and two of the indices of social disorganization (divorce and illegitimacy). (Sainsbury, 1955, p. 90)

Four years earlier a similar study of London boroughs had been done by Lewis (1951). His finding that "the highest rate of correlation was between the suicide rate and the isolation rate" substantiates Sainsbury's results.
Socio-economic status: The highest rate of suicide is found at the upper end of the socio-economic scale, among business men and professionals. Why this should be so is not absolutely clear. It may be that members of the upper classes carry heavier burdens of responsibility. Or, as Weiss (1954, p. 248) suggests, "these persons may be more affected by fluctuating economic conditions."

The medical profession has the highest single rate of suicides. One reason for this, suggested in an A.M.A. editorial (1903), is that "the physician is familiar with death in all its forms, and always has the means of suicide at hand."

At the opposite end of the socio-economic continuum the suicide rate rises again. However, it is not low economic status per se that affects the suicide rate so adversely. (In fact, as Miner (1922, p. 111) points out, "Low economic status, when stable, is associated with low suicide rates.") The crucial factor, therefore, is lack of stability. Thus coalminers, railway workers and others with steady manual labor have low suicide rates, while migratory workers, domestic personnel and other labor groups characterized by 'occupational discontinuity' have high rates.

War: It is an interesting fact that national rates of suicide invariably go down during periods of war. Dublin and Bunzel (1933) report, for instance, that "ten militant nations" showed a decrease in the incidence of suicide during World War I. Stengel et al (1958, p. 27) cite the Metropolitan Police reports for Greater London as showing a similar decrease during the war years 1939 to 1945.

There are at least three possible explanations for this phenomenon. Dublin (1948, pamphlet) contends that this lowered suicide rate results from "the high degree of employment and the minimizing of personal problems during
wartime." Psychoanalysts favor the theory that, when a country is at war its populace is able to direct feelings of hostility and aggression outward, toward the common enemy, with a minimum of guilt resulting. Durkheim's theory (1897, p. 206) is that "great popular wars" have the effect of forcing men "to close ranks and confront the common cause." This results in a stronger sense of social integration, thereby lessening the individual's feeling of isolation and, in consequence, the rate of suicide.

2. The Psychology of Suicide

(a) Sigmund Freud:

Freud's psychoanalytic theory of suicide grew out of the fusion of two earlier theoretical formulations: (1) the death instinct; and (2) the theory of depression.

(i) The death instinct. Freud's formulation of a 'death instinct' seems to have originally grown out of his observations of soldiers during World War I. One aspect of their behavior stood out as being of particular interest to him. This was the fact that 'shell-shocked' victims tended to relive their more traumatic experiences in dreams. This prompted Freud to ask (1933, p. 44), "What conative impulse could possibly be satisfied by this reinstatement of a most painful traumatic experience?" The pleasure principle, which until then had been fundamental to Freud's theory, did not seem to provide an adequate answer. Instead he concluded that the soldiers' recurring dreams were the manifestation of an unconscious wish to relive earlier experiences, the painful as well as the pleasurable.

Freud found a further manifestation of this wish in the tendency of "normal adults and children to relive and recount previous experiences and to indulge in repetitive behavior" (Luchins, 1959, p. 6). He noted too
that this tendency becomes especially marked in the various compulsive actions of neurotics. This led Freud to conclude that

There really exists in psychic life a repetitive-compulsion which goes beyond the pleasure principle . . . and this seems to us to be more primitive, more elementary, more instinctive than the pleasure principle which is displaced by it. (1922, pp. 24-25)

The relationship between this 'repetitive-compulsion' and an individual's instincts was explained by Freud as follows:

At this point the idea is forced upon us that we have stumbled on the trace of a general and hitherto not clearly recognized— or at least not expressly emphasized—characteristic of instinct, perhaps of all organic life. According to this, an instinct would be a tendency innate in living organic matter impelling it toward the reinstatement of an earlier condition, one which it had to abandon under the influence of external disturbing forces— a kind of organic elasticity, or put it another way, the manifestation of inertia in organic life. (1922, pp. 44-45)

This line of reasoning led to Freud's hypothesis of the death instinct as being basic to all living things. The death instinct, or Thanatos, is "the tendency of living matter to return to its original inorganic state", (Luchins, 1959, p. 6).

Freud found evidence for this self-destructive or death instinct provided by another observation that he made during World War I. This was of the varied forms and sheer intensity of aggression shown by men for other men. He concluded from this that the destructive or death instinct is

the urge toward effortlessness, inertia and disintegration, the mental correlate of the tendency of non-living energy to dissipate itself to the lowest possible level, and of the energy of organic life to fall back to 'the peace of the inorganic world and restore conditions to what they were before life by its emergence upset them'. Every backward trend, every destructive or aggressive impulse, whether directed toward oneself or outward, is an expression of the Death instinct. (Kallen, 1934, p. 582)
(ii) **The theory of depression.** Zilboorg (1936, p. 215), summarizing Freud's theory of depression, writes

In the case of a pathological depression the patient, through identification with a person toward whom his feelings have always been highly ambivalent, loves and hates himself. Since his own ego has become his love object, he feels detached from reality and therefore experiences a sense of poverty of the ego. The unconscious sadism originally directed against the object, reinforced by a sense of guilt, produces the singular phenomenon of the person's becoming sadistic toward himself.

It is this sadism or aggression of the ego, directed back against itself, that is crucial for the suicidal response because "the ego can kill itself only when . . . . it can treat itself as an object and . . . . launch against itself the animosity relating to an object—[that primordial reaction on the part of the ego to all objects in the outer world]" (Freud, 1924, p. 163).

(b) **Other Psycho-analytic Theories:**

(i) Fenichel (1945) viewed suicide as "the outcome of strong ambivalent dependence on a sadistic super-ego", together with "the necessity of getting rid of unbearable guilt tension at any cost." Since the super-ego develops through the introjection or incorporation of love objects, the act of suicide symbolizes the murder of these love objects.

(ii) In his book *Man Against Himself* (1938), Menninger describes suicide as the destructive tendencies (death instinct) winning out over the constructive tendencies (life instinct).

Menninger feels that there are three components in all suicides: (1) 'the wish to kill'; (2) 'the wish to be killed'; and (3) 'the wish to die'.
(1) The 'wish to kill' (conscious hate, aggression, blame, elimination, annihilation and revenge) is the primary aggressive impulse "invested with neutralisation in one or several objects whose sudden removal or faithlessness dialogues the attachment and allows the murderous impulse to expend itself upon the person of its origin as a substitute object" (Ibid, p. 50).

(2) The 'wish to be killed' (conscious guilt feelings, submission, masochism, self-blame, and self-accusation) arises from guilt over one's murderous impulses and, consequently, the unconscious need to be punished for it.

(3) The 'wish to die' (hopelessness, fear, despair and pain) results from a failure of adaptation of life instincts, i.e. "a deficiency in the capacity for developing love" (Ibid, p. 79).

(iii) Zilboorg (1936) sees suicide as the individual's way of thwarting outside influences which are making life impossible for him. He also points out the paradox in the individual's attempt to achieve "fantasied immortality and fame and an unobstructed realization of hedonistic ideals" while, with the same action, he is destroying himself.

(iv) Other theorists within the psycho-analytic framework include Read, O'Connor and Pollack.

Read (1936, p. 634) found that "there is not infrequently an idea that death will involve eternal union with a lost loved one, or some vaguer conception of a union with God, or becoming thereby in time with the infinite." This relates to O'Connor's (1948) finding that suicidal patients experience feelings of omnipotence. Pollack (1938) added that instability of mood and
arrested psychosexual development were characteristics common to suicidal individuals. Jamieson (1936) and Palmer (1941) concurred with this finding.

(c) Non-Psychoanalytic Theories:

(i) Davidson believes that suicide is due to a state of 'organic depression'. This type of depression develops when the individual has been exhausted to the limit of his resources and sees further living as purposeless. The immediate situation thus comes to dominate consciousness, restricting the field of awareness to such an extent that there is inattention to life itself.

In this state of 'organic depression', "the higher centres of the brain are unable to cope with and direct the incoming impulse to make decisions. The individual then ceases to will, surrenders to imagination and is unable to protect himself against further harmful impulses" (Davidson, 1934, p. 25). The final stage in the sequence is self-destruction.

(ii) Crichton-Miller developed a theory of suicide based on pain and suffering as motivating forces. These he divided into three groups (Crichton-Miller, 1931, pp. 240-241): (1) physical pain (including anticipated pain) and frustration of instinctual needs (of which the sexual is the most frequently thwarted); (2) social sufferings and fears including remorse for wrong-doings and impulse towards expiation, and an exaggerated self-love which prohibits the acceptance of any form of social humiliation; and (3) doubts and dreads pertaining to the hereafter and manifest in the suicides of Messianic character—in which there occurs a supreme sacrifice of the total personality for some redemptive purpose.

(iii) In his article Mind of Murder, Goitein (1942) expresses the
opinion that suicidal impulses occur "as a compensation for the homicidal impulse directed against members of the immediate family". An example of this is the childish "You'll be sorry when I'm dead" act of self-destruction.

(iv) One version of the attempted suicide phenomenon was described by Teicher (1947). As he saw it, the individual learned to respond aggressively in all 'insecurity provoking' situations. These reactions are then turned inward "as an infantile exhibitionistic protest and set of hostility against a harsh restraining figure." Teicher sees the attempt at suicide failing because the individual is so unsure of himself that he cannot even complete an aggressive act directed inwardly, against himself.

(v) In William's view (1936) the two dominant causes of suicide are disappointment and frustration. "But since such feelings are experienced by all, he postulates the presence in the rigid personality of a strong narcissistic component which cannot accept defeats or combat reverses and is unable to adapt easily to reality. The result is suicide" (Wallis, 1960, pp. 67-68).

This discussion of theories, sociological factors and definitions makes one thing clear: the suicidal phenomenon is one of extreme complexity. Indeed, so true is this that the would-be researcher hardly knows where to begin. A myriad of factors have been hypothesized as possibly relevant to the phenomenon, factors of environment, intelligence, race and religion, or personality or social status. As has been seen, some of these have been investigated again and again, being experimentally 'in vogue' at one time or another, while others have been ignored entirely.

Figure 1 shows a prediction model of suicidal behavior (Devries, 1968a) which is an attempt to categorize all of those contributory factors which have at some time been advocated in the research literature. This
model serves two purposes: (1) it summarizes the three main areas of existing research endeavor, and (2) it indicates both where the initial research attempts have been concentrated to date and new aspects which might be considered.

The two aspects of suicidal behavior this writer chose to investigate are listed in the model. They are (1) problem-solving (specifically, the effect of rigidity in problem-solving) and (2) perception.
amnesia following suicide attempt
anger and aggression
anxiety
depression
emotion
fear
frustration
guilt
hypochondria
hysteria
maturity
motivation
neurosis
perception
personality
problem solving and thinking
psychosis
stress (psychological)
attitudes*
dependency*
intelligence and other abilities*
learning*

biochemical and neurological drugs
illness (physical)
comparative psychology*
constitution*
physiology*

Although no studies were found in these categories, they were included for completeness.

FIGURE I
Main Variables and Categories of Prediction Model
Rigidity

If two or more people are to communicate on any given topic it is necessary that they share a common language. Thus, if two individuals are to discuss cats, the word 'cat' must evoke a similar image for both. Similarly, if the phenomenon of rigidity is to be discussed meaningfully an operational definition of the term 'rigidity' is necessary. Unhappily for the would-be researcher, a perusal of the literature on this topic indicates that there exists little agreement among psychologists how rigidity should be defined. As Luchins (1959, p. 475) points out,

it ('rigidity') has been used to refer to a characteristic of behavior; to a characteristic of a person or personality; to a factor in the person, either a specific or a general factor. It has been used in an all-or-none sense, as an attribute of behavior which a person either possesses or lacks, as well as in a quantitative sense, as if it were measurable along a gradient.

With so much confusion existing about the definition of rigidity, it should not be surprising that research efforts in the field have tended to be spasmodic, uncoordinated and inconclusive. A survey of the more important theories will conclude with a look at the work of Abraham S. Luchins who presently seems to be recognized as the foremost authority on behavioral rigidity.

Theories of Rigidity

1. Psychoanalytic

Freud was much concerned with the kind of maladaptive, repetitive behavior that we have come to label as 'rigid behavior'. In fact, "Sigmund Freud's observations of the frequency with which rigid, repetitive behavior occurs led him to alter radically his formulation of psychoanalytic theory"
Luchins, 1959, p. 471). The specific alteration in the theory which Luchins is here alluding to is Freud's introduction of the death instinct which has been discussed in chapter 1. Rigidity then was for Freud the manifestation of an unconscious wish in "normal adults and children to relive and recount previous experiences and to indulge in repetitive behavior" (Luchins, 1959, p. 6).

Freud's observations on the occurrence and frequency of rigid, maladaptive behavior were not questioned by other psychoanalysts. His explanations were questioned instead. Specifically, questions were raised about "whether rigid, repetitive behavior is (1) due to a repetitive compulsion, (2) related to destructiveness, and (3) attributable to a death instinct" (Luchins, 1959, p. 472).

Some of these divergent opinions as to the mechanisms of rigidity were offered by the following:

(a) **Franz Alexander**

Franz Alexander related rigidity to an economy (inertia) principle. "Individual development proceeds on the principle of economy by which energy is as far as possible conserved and the necessities of life secured with the minimum expenditure of energy" (Alexander, 1951, p. 175). Alexander saw this principle as being basic to (1) the trend towards habit formation, (2) resistance to change, and (3) regressive tendencies, all three being elements of rigidity in behavior.

(b) **Alfred Adler**

Alfred Adler saw a rigid life style as being distinctive of the 'nervous character'. Such a character is different from the healthier individual in the following ways:
the character of the relatively healthy is as rich in variation as life itself, elastic, adjustable, friendly to society. The nervous character, on the contrary, is always narrow, limited, rigid, self-conscious and anxious, schematic . . . . inelastic, unbending, enmeshed by his fictions which blind him to reality. (Murphy & Jensen, 1932, pp. 218-219)

(c) Karen Horney

To Karen Horney, all tendencies to neurotism are characterized by at least two factors: "a discrepancy between potentialities and accomplishments" and a certain "rigidity in reaction", by which she means "a lack of that flexibility which enables individuals to react differently to different situations" (Horney, 1937, p. 22). Thus rigidity is a neurotic trend, a defensive mode of reacting to the world which the individual has adopted in order to avoid 'basic anxiety'. Basic anxiety, which originates in childhood, is "a feeling of weakness and helplessness in a world perceived as potentially hostile and dangerous" (Luchins, 1959, p. 24). To escape this potential danger, the child searches for successful ways of coping with life and those ways which he selects tend to become rigidified because "only by rigidly adopting the modes of defense can he assert himself; . . . other methods of adjustment seem to him to be replete with anxiety" (Ibid, p. 24).

(d) Erich Fromm

Like Horney, Erich Fromm considers rigidity to be an escape mechanism. However, to Fromm, rigidity is the individual's reaction to his loss of 'autonomous strength'. Autonomy is lost when the individual is overwhelmed by a sense of his own insignificance in comparison with the vastness and power of the world beyond. To combat this feeling of insignificance, the individual seeks to become the kind of personality his culture expects him to be. Thus he is continually defined as a person by others' expectations.
In order to overcome the panic resulting from loss of identity he is compelled to conform, to seek his identity by continuous approval and recognition by others. Since he does not know who he is, at least the others will know—if he acts according to their expectations; if they know he will know too, if he only takes their word for it. (Fromm, 1941, p. 254)

2. Other Psychological Theories

Psychoanalysts do not have a monopoly on theorizing. Three other theories of rigidity, those of Goldstein, Werner and Lewin explain rigidity in non-psychoanalytic terms.

(a) Goldstein

Goldstein's (1943) theory of rigidity grew out of his studies of organic brain damage.

He first noted that individuals suffering from some forms of brain pathology seemed unable to negotiate the transition from one kind of action to another, as required by the circumstances at hand. This inability to shift from one train of thought or action to another Goldstein labelled as 'primary rigidity'. He considered its origin to be some abnormal neurological condition (e.g. a subcortical lesion) which had the effect of isolating one part of the central nervous system from the rest, with rigidity a consequence of this isolation.

Goldstein thought of primary rigidity as being independent of the 'higher' mental processes. But this was not so with 'secondary rigidity'. Secondary rigidity, which Goldstein attributed to 'acquired' cortical damage, is characterized by an impairment of the capacity for abstraction. Thus the patient would no longer understand what is required of him when he is asked to deal with abstract concepts. Preferring an incorrect response to no response at all, the individual is compelled to behave 'concretely'.
Goldstein found such secondary rigidity to be especially characteristic of both schizophrenics and the feeble-minded.

(b) Werner

Heinz Werner's views on rigidity reflect his background in comparative-developmental psychology.

For Werner, rigidity is a functional concept, defined as a "lack of variability in response or a lack of adaptability in behavior" (Luchins, 1959, p. 473). As such, rigidity is characteristic of the less well-developed individual, be he a child (ontogenetic development) or a primitive man (phylogenetic development). This reasoning follows from the premise that the more advanced the individual's development, the more differentiation there will be between his ego and his environment. As Werner (1940, p. 55) puts it

In general, the more differentiated and hierarchically organized the mental structure of an organism, the more flexible (or plastic) its behavior. . . . if an activity is highly hierarchized, the organism, within a considerable range, can vary the activity to comply with the demands of the varying situation.

Werner also contends that "rigidity is particularly characteristic of subnormal and abnormal individuals and is associated with brain injury and with underdevelopment and disease of the brain" (Luchins, 1959, p. 473).

(c) Lewin

One of the more complex theories of rigidity has been advanced by Kurt Lewin. In this theory, rigidity is not used as a description of behavior but rather as an explanation of it.

Initially, Lewin's 'topological psychology' envisioned the individual as structured into numerous 'psychical' regions or systems. 'Rigidity' is
used to describe a 'dynamic material' or property of these systems.

The person, dynamically, is a totality of systems. First, one can distinguish the structure of the totality, that is, the degree of differentiation of the systems and the kind of differentiation of systems in this totality ... Second, with the same structure the dynamic material of the systems may be different. The systems can be more or less rigid, more or less fluid, and so forth. ... The elasticity or the rigidity of the systems seems to be a very basic and important characteristic of the whole person. (1935, p. 187)

'Rigidity' is also used in reference to boundaries between the systems. "Boundaries are the more rigid the greater the forces necessary to overcome them" (Levin, 1936, glossary). Whether this presence of rigidity in the boundaries between mental functions infers a lack of communication between these functions is not made clear.

Topological rigidity and behavioral rigidity are not synonymous in Lewin's scheme, although some correspondence between the two is assumed. However, the nature of this correspondence is more than a little confusing, as can be gathered from Luchins summary of it (Luchins, 1959, p. 474).

Topological rigidity is considered to underlie various kinds of behavior, some of which may be classified as behavioral rigidity, some of which have no apparent relation to behavioral rigidity, and some of which appear to be the antithesis of behavioral rigidity.

Semantics contribute to the confusion of Lewin's readers. Terms such as 'structural rigidity', 'functional rigidity', 'psychic rigidity' and 'dynamic rigidity' are used more or less interchangeably. Whether they are all equivalent to 'topological rigidity' is not clarified.

Because of these two sources of difficulty most experimenters have steered clear of Lewin's approach to the study of rigidity. Many have turned instead to the factor-analysts.
3. Factor-analytic Studies

Proponents of the factor-analytic approach to psychological inquiry have always maintained that its use tends to clarify the experimental situation. Factor-analysis is seen as an objective, parsimonious means of identifying and defining the basic dimensions of the subject in question. It is therefore rather ironic that "one of the outcomes of the factorial approach to rigidity has been to propose a greater multiplicity or rigidity factors (over thirty) than has been proposed by any nonfactorial approach" (Luchins, 1959, p. 476).

Even more disturbing than this multiplicity of factors is the fact that the relationship between them is not at all clear. "One does not know whether factors with similar names are actually similar or whether different names are semantic facades hiding essential similarities" (Ibid, p. 476).

Although, in consequence, the situation is not simplified by these difficulties, there are a number of factor-analytic studies that appear to be of special interest. Included among these are studies by Spearman, Cattell, and Fisher.

(a) Spearman

Credit for the first significant work on rigidity must go to Charles Spearman who, in 1927, formulated the law of mental-inertia: "Cognitive processes always both begin and cease more gradually than their apparent causes."

The development of this law grew out of Spearman's attempts to account for correlations between the results of certain motor-skills tests. Factor g, intelligence, provided a partial answer, but there was a second factor involved. This factor Spearman came to label 'p' for perseveration.
He felt that, to varying degrees, every individual possessed this factor of perseveration or mental-inertia.

In any one individual, the p factor operates as a functional unity, pervading all behavioral processes. . . . The g factor represents the amount of mental energy and the p factor the degree of inertia of this energy. The g and p factors are regarded as varying independently of each other. (Luchins, 1959, p. 75)

(b) Cattell

It was Raymond Cattell (1949) who observed that two distinctly different types of behavior were being labelled as indicative of 'perseveration'. Cattell felt it necessary to distinguish between the two. He therefore labelled as 'process rigidity' or 'mental-inertia' the tendency for 'a former response to continue although a new stimulus has been substituted for the old one' (Chown, 1959, p. 196). This tendency is seen most clearly in alternation tasks. The second, and more important type of rigidity Cattell labelled as 'structural'. This is "the resistance of a habit or personality trait to forces which might be expected to change it. The habit remains unchanged despite the fact that a more 'rewarding' response to the new stimulus could be made" (Ibid, p. 196).

Cattell listed three possible sources of structural rigidity: (1) "low fluency of random associations" which, when coupled with low intelligence ('low g'), might result in the individual's not being aware that a new response is needed, or if he is, not realizing just what the new response should be; (2) "Defective strength of motivation or conflicting motives might also cause structural rigidity" (Ibid, p. 196); or (3) 'dispositional rigidity', by which Cattell means "a resistance to change of neural discharge paths" which is seen as being a "basic attribute of all dispositions".
An interesting factor-analytic study was done by Seymour Fisher (1950). Fisher set up a battery of problem situations characterized by "variable numbers of roughly equivalent modes of response." He did this in order to determine "whether individuals show any measurable difference in the degree to which they utilize few or many alternatives from situation to situation."

Under these circumstances Fisher found evidence for two types of rigidity. 'Ego rigidity' was shown by the individual in dealing with threatening (ego involving) tasks. 'Peripheral rigidity' operated in tasks that were non-threatening and thus less vital to the ego. Fisher continued:

if one postulates that the character of peripheral (outer) rigidity represents how much need the individual has to guard himself even in non-threatening situations and further assumes that ego (inner) rigidity represents the degree of defensive guarding an individual mobilizes when faced with emotional demands or threats, it may then be hypothesized that the pattern of relationships between these two levels gives us at least a vague picture of the manner in which a given individual's personality defenses are organized. (Fisher, 1950, p. 36)

Luchins' Theory: The Einstellung Effect

Among the many theories of rigidity that of Abraham S. Luchins is of particular interest. Luchins did not subscribe to a particular theory of rigidity. He chose instead a 'phenomenon-centred' approach to the problem. That is, he selected a specific example of rigid behavior and subjected it to intensive experimental investigation, hoping, in this way, to come to an understanding of the factors involved. The example of rigidity which he chose was the 'Einstellung effect'.

The pioneering studies of this effect were done by Zener in 1927 at the Berlin Institute of Psychology.
(He) habituated his subjects to solve certain types of problems in the same way. A test problem was then given. He found that an obvious and simple solution of the test problem was usually overlooked because the characteristic method of solution, set up in the preceding problems, was used in the test problem. Control groups tended to solve the problem in the obvious and simple manner. (Maier, 1956, p. 127)

Luchins was intrigued by the fact that "the successive, repetitive use of the same method mechanized many of the subjects." He determined to experiment further with this phenomenon. To do so he developed a unique series of eleven arithmetic 'Water Jar' problems. These problems are shown in tabular form below.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Given the following empty jars as measures</th>
<th>Obtain the required amount of water</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>29 3</td>
<td>20</td>
</tr>
<tr>
<td>2. E1</td>
<td>21 127 3</td>
<td>100</td>
</tr>
<tr>
<td>3. E2</td>
<td>14 163 25</td>
<td>99</td>
</tr>
<tr>
<td>4. E3</td>
<td>18 43 10</td>
<td>5</td>
</tr>
<tr>
<td>5. E4</td>
<td>9 42 6</td>
<td>21</td>
</tr>
<tr>
<td>6. E5</td>
<td>20 59 4</td>
<td>31</td>
</tr>
<tr>
<td>7. C1</td>
<td>23 49 3</td>
<td>20</td>
</tr>
<tr>
<td>8. C2</td>
<td>15 39 3</td>
<td>18</td>
</tr>
<tr>
<td>9.</td>
<td>28 76 3</td>
<td>25</td>
</tr>
<tr>
<td>10. C3</td>
<td>18 48 4</td>
<td>22</td>
</tr>
<tr>
<td>11. C4</td>
<td>14 36 8</td>
<td>6</td>
</tr>
</tbody>
</table>

Luchins administered these water jar problems to a graduate seminar of 15 people. Standardized directions were given as follows:

Now you are to solve a number of problems in which a certain amount of water is to be obtained by manipulating different jars of a certain size.
Imagine yourself near a source of water such as a kitchen sink. You are given one empty jar which can hold 29 quarts and another which can hold 3 quarts. You are asked to get 20 quarts of water. Bear in mind that there are no graduated markings on the containers. All you know about them is that when filled to the top one holds 20 quarts and the other 3 quarts of water. Start by filling the 29 quart jar; then use the empty 3 quart jar three times to remove the excess 9 quarts. Each time empty the contents of the smaller jar into the sink.

Now try this problem: Given an empty jar which holds 21 quarts, another of 127 quarts, and a third of 3 quarts, you are asked to get 100 quarts of water.

One way of solving the problem is as follows: First, fill the 127 quart jar. This will give you 27 quarts too many. From this jar, next fill the 21 quart jar once. Now there will be only 6 quarts too many in the 127 quart jar. To remove this excess, fill the 3 quart jar twice. The largest container now contains the desired 100 quarts. The solution can be shown as follows:

\[
127 - 21 - 3 - 3 = 100
\]

or

\[
127 - 3 - 3 - 21 = 100
\]

or

\[
127 - 3 - 21 - 3 = 100
\]

Now try the eleven problems listed below. To obtain the desired quantity in each instance, use any or all of the jars mentioned in the problem. You will see that the first two problems are those just shown. You may write down your solution in words or in mathematical symbols, or draw arrows to show the filling and pouring of water. If you cannot solve a problem within two and one-half minutes, go on to the next one.

Let us designate the three jars used in each problem as A, B and C respectively. We can then describe the method illustrated in the above directions as B - A - 2C (127 - 21 - 3 - 3). As this is the only method which will yield the required amounts for problems 1 through 6 it is called the 'set-inducing' or 'E' (for Einstellung) method.

This B - A - 2C method may also be used for problems 7 and 8, 10 and 11. However, in the case of these four problems, simpler solutions exist. Problems 7 and 11 can be quickly solved by subtracting amount C from amount A (the A - C method), while 8 and 10 can be solved by simply adding the two amounts (A + C).

Discussion of problem 9 has thus far been omitted because it is
completely unique. In this case the direct A - C method will produce the desired results (i.e. 25 quarts of water), but the E method will not \((B - A - 2C = 42)\). Problem 9 is therefore the only problem in the series wherein an insistence on method E will result in frustration.

The rationale behind the series is as follows. If the presentation of problems 1 through 6 creates habituation to the repeatedly used E method, then this 'Einstellung effect' will become operative in the critical (C) problems 7 and 8. In other words, the individual who has successfully used the E procedure for the first six problems will continue to employ this 'circuitous method' in problems 7 and 8. The more direct (D) method will be ignored.

Then the subject is confronted with the difficulty of problem 9. This confrontation should cause one of two things to happen. He will either (1) question the validity of the E method and look for an alternative solution, or (2) he will adhere rigidly to the E method and, as a consequence, fail to solve the problem. Whichever course of action the subject chooses will be reflected in his handling of critical problems 10 and 11. If, as a result of problem 9, the subject is now aware of the existence of alternative solutions, he will probably use the more direct A + or - C method. If, on the other hand, he has not profited from his experience with problem 9, problems 10 and 11 will be solved by the longer Einstellung method.

This was (and still is) the set-up of the basic experiment. However, Luchins added one innovation in his original study with the fifteen seminar students. In a private session beforehand, he told four of them to write the words "Don't be blind" on their papers just after finishing problem #6. These students were labelled as the 'DBB' group; the other eleven made up the 'plain' group.

This procedure gave the following results (Luchins, 1942, p. 4):
TABLE I

The Einstellung Effect for 'Plain' and 'Don't be blind' groups:

<table>
<thead>
<tr>
<th>Group:</th>
<th>% E solutions</th>
<th>% direct solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plain</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>(N=11)</td>
<td>85</td>
<td>15</td>
</tr>
<tr>
<td>DBB</td>
<td>37</td>
<td>63</td>
</tr>
<tr>
<td>(N=4)</td>
<td>25</td>
<td>75</td>
</tr>
</tbody>
</table>

1) The pure E-Effect was 100 percent E- and 0 percent D-solutions. That is, every one of the 11 subjects of the Plain group solved C1C2 (#7 and 8) in the E-manner (B - A - 2C); none of these C1C2 problems were solved by the more direct method.

2) The E-Effect in the DBB group was 37 percent E- and 63 percent D-solutions.

3) The Effect of Problem Nine on the following C3C4 (10 and 11) was 15 percent in the Plain group. In other words, the Plain group had 15 percent less E- and 15 percent more D- solutions in C3C4 than in C1C2.

4) In the DBB group the Effect of Problem Nine on the following C3C4 was 12 percent.

5) Instruction Effect in C1C2 was 63 percent. That is, the DBB group had 63 percent less E- (more D- solutions), in C1C2 than the Plain group.

6) In C3C4 the Instruction Effect was 60 percent.

7) The pure E-Effect (C1C2 of Plain group) was 100 percent E- and 0 percent D- solutions, whereas when both the "Don't be blind" warning and Problem Nine had been introduced (C3C4 of DBB group), there were only 25 percent E- solutions and 75 percent D- solutions.

In short, in this little experiment the E-Effect was very large. The increase in D- solutions after Problem Nine was presented was 15 percent for the Plain group and 12 percent for the DBB group. The Instruction Effect was 63 percent in C1C2, 60 percent in C3C4. Thus, the preliminary experiment showed a large E-Effect and considerable decreases of E- solutions and increases in D- solutions, after both the "Don't be blind" instructions and Problem Nine were presented.

It will be noted that Luchins referred to this first experiment as a 'preliminary' one. In the years since then he has repeated the experiment literally dozens of times. Repeated but not duplicated it, for each time he
has either used a different subject population (eg. elementary school children, college students, etc.) or varied some procedural dimension of the original study. In this way vast amounts of material about the Einstellung effect have been accumulated.

Luchins was especially interested in those factors which tended to increase or decrease the Einstellung effect. In this regard he has made some very interesting discoveries. He found, for instance, that the effect increased under the following conditions:

(i) When attempts were made to create a stressful 'speed test' atmosphere. "Four of the seven elementary-school groups in the speed-test study showed maximum E effects, whereas only two of the ten college groups did so" (Luchins, 1959, p. 517).

(ii) When the number of set-inducing problems (i.e. those which can only be solved by the B - A - 2C method) was increased from five to ten, two of three elementary-school groups showed maximum E effects.

(iii) When, prior to the experiment, the subjects were asked to try to "discover a method of solution or a rule to solve the problems" those who were able to do so showed maximum E effects. Those subjects who were not able to generalize such a rule showed significantly lower E effects.

Luchins found that the Einstellung effect was minimized under the following conditions:

(i) When, as in the preliminary experiment, the subjects were told to write the words "Don't be blind" on their papers following the completion of problem six, college groups showed minimal E effects. E effects were not similarly eliminated for elementary-school groups, however.
(ii) When, after the series of problems had been given once, the experimenter explained the Einstellung phenomenon and then re-administered the problems, subjects showed minimal E effects.

Nevertheless, Luchins was generally unsuccessful in eliminating E effects, although he made many attempts to do so. That E effects were only slightly reduced by the following means seems somewhat surprising.

(i) "Attempts to decrease emotional tension and haste through nonspeed (no-timing) conditions did not minimize E effects in even one group" (Luchins, 1959, p. 520)

(ii) No lessening in E effects was found even when the number of set-inducing problems was reduced from five to one.

(iii) When the series was divided into two parts (problems 1 through 6; 7 through 11) and each part was administered as a separate experiment, E effects continued to be demonstrated.

(iv) When the series was divided into two parts as in (c) and the parts were administered separately, with as long as a month intervening, only a slight decline in E effects was found.

The degree of rigidity demonstrated by his subjects puzzled Luchins. How were these durable E effects to be accounted for? None of the existing theories of rigidity seemed able to provide a satisfactory, workable explanation. Nor, in his opinion, could the learning theorists cope adequately with this Einstellung effect.

As so often happens, the solution to the dilemma came from a very non-obvious source. In this case, Gestalt psychology.

Gestalt psychologists emphasize the fact that, in trying to understand responses, one must take into account the "characteristic structural features of the whole situation." The structural features of the Water Jar
series are eleven problems which appear to be highly similar. It is this apparent similarity that causes the subject to view each problem as an equal member of a unitary group. He responds accordingly, uncritically applying the method that has worked in other parts of the unitary series (i.e. the 'E' method) to the final test problems.

As Luchins sees it, what is at stake here is the subject's capacity for 'genuine problem solving'. "For genuine problem solving to take place throughout a series of tasks, each task of the series must be faced as a new problem-solving situation, as another occasion for decision-making" (Luchins, 1959, p. 524). The gestalt principle of the unitary whole operates against such genuine problem solving for it creates a condition which is conducive to "perseverative, repetitive behavior."

Luchins found the operation of this principle illustrated in the previously mentioned failure of his attempts to eliminate E effects. Thus, allowing unlimited time per problem did not reduce the subject's impression of a unitary series. Nor did a mere reduction in the number of E tasks presented. Dividing the series into two parts and administering each as a separate experiment did not reduce E effects because "the majority (of subjects) . . . . nevertheless reported that they viewed the problems as being of one type" (Ibid, p. 512). A time interval between halves had little effect because of "the attitude that the problems given after a time interval constituted a continuation of the initial experiment" (Ibid, p. 504).

Similarly, genuine problem solving was adversely influenced by those procedural variations intended to maximize E effects.

Under speed conditions, the tense social atmosphere was not conducive to careful examination of each problem and to decision making with reference to a mode of solution. The use of ten E tasks hindered genuine problem solving by enhancing the likelihood of uncritical
application of a method, perhaps through fostering the impression of a homogeneous series; so many times did the E method work that the subject was taken out of a decision-making area and the problems became simply occasions in which to repeat a response. . . . . When the subjects were told just before the experiment to try to generalize or discover a method or rule of solution, the main or sole problem for them seemed to be the discovery of the E method or rule; those who succeeded in discovering it had, as far as they were concerned, solved the primary problem and were no longer in a decision-making area; now they had merely to apply the method they had discovered. (Ibid, p. 524)

It is significant that when the need to regard each problem as a new opportunity for decision making was clarified to the subject, E effects were more or less eliminated. Thus the warning, "Don't be blind", helped the subjects to avoid the dangers of unthinking repetition, as did the description of the Einstellung effect just prior to a re-administration of the test.

Capitalizing on these findings, Luchins successfully designed a number of further experimental variations which had the desired result of greatly reducing E effects. In these variations: (1) superfluous jars were added to the statement of each problem; (2) E tasks were not presented in succession, but were alternated with extinction-type tasks; (3) prior to administration of the basic experiment, subjects were given the opportunity to create water-jar problems in which they were free to decide the volumes to be found and/or the methods to be used; and (4) in the E tasks only, the end jars were written in red ink and the center jars in blue ink. All of these variations focus the subject's attention on the unique character of each problem, thereby promoting 'genuine problem solving' behavior.

Tests of Rigidity

In an extensive survey by Sheila M. Chown ("Rigidity—A Flexible Concept", 1959) forty-seven different tests of rigidity are described. These can be roughly divided into four groups: (1) Einstellung tests; (2) concept
formation tests; (3) personality tests; and (4) a miscellaneous group.

1. **Einstellung tests**

Einstellung tests involve "building up a 'set' in the subject and then giving him a problem which is best solved in some way other than the one he is expecting" (Chown, 1959, p. 197).

The best known of these—and the most frequently used of all rigidity tests—is Luchins' Water Jar Problems test. This test was described in some detail in the foregoing section.

Two other Einstellung tests which have proved to be popular are the Alphabet Maze Test, developed by Cowen, Wiener and Hess (1953), and the Anagrams Test of Rees and Israel (1935).

2. **Concept formation tests**

This type of test is used in the assessment of 'intellectual' rigidity. Examples are the Wisconsin Card Test, the Weigl Card-sorting Test, and Buss's Wooden Blocks Test (formerly called the Vigotsky test).

All three tests follow approximately the same procedure. That is,

for the investigator to decide arbitrarily which variable is to be the basis for grouping and then to ask the Ss to discover it. Once the S has responded correctly a certain number of times, the critical variable is changed without informing him. In this way, he is forced to form a new concept or else to continue to fail by sticking to the one which was previously successful. (Ibid, p. 199)

3. **Personality tests**

Paper-and-pencil inventory tests of rigidity are understandably rare. Wesley (1953) developed one, choosing fifty items which five psychologists had rated as showing a high degree of rigidity, (eg. "I never miss going to church."). Zelen and Levitt (1954) introduced a shortened version of the same test, choosing fifteen of the fifty original items as being
representative of the whole test.

Neither form of Wesley's test has received very much attention from researchers, possibly because it is open to all the criticisms usually levelled at paper-and-pencil inventories (eg. test responses not being representative of actual behavior).

4. Other rigidity tests

By and large psychologists appear to be an inventive group, good at improvising. Whether from choice or circumstance, researchers in the field of rigidity have been known to use many and diverse means to gauge the phenomenon. Included in these "many and diverse means" are the following.

(a) Aniseikonic Lenses: Aniseikonic lenses "make a table appear to tip up like a drawing board or make a wall lean towards the observer." The degree of visual distortion experienced varies from individual to individual. Becker (1954) reasoned that rigid individuals, "who manipulated the world to conform to their own preconceptions", would experience significantly less of this distortion than normals. Whether, in fact, this is true has yet to be convincingly demonstrated.

(b) Rorschach Test: The Rorschach test has frequently been used as a measure of 'creative' rigidity. However, researchers' opinions vary as to what one should look for in the protocols. The two measures most commonly utilized are (1) total production and (2) the ratio of 'part pictures' to 'wholes'.

(c) Hidden Objects Test: This is a perceptual task reminiscent of Witkin's Embedded Figures. The subject is first asked to study a picture in which numerous objects have been 'hidden'. His task is to find and name as many of them as possible. The rationale behind the test is that rigid individuals will experience greater difficulty in locating the hidden objects
than will non-rigid persons.

(d) Other tests thought to be indicative of rigidity include (1) the California Ethnocentrism Scale and (2) the California F. Scale. The assumption underlying the use of these tests is that rigidity is related either to ethnocentrism or to authoritarianism. However, as Chown (1959, p. 201) points out, "though rigidity may well be related (to these things) there is no evidence that they are synonymous and assumptions of the nature must be viewed with suspicion."

All of these tests claim to measure rigidity. But is it possible for so many tests, differing as they do in form and content, to be focused upon the same dimension of behavior? The answer has been provided by a number of investigators who have made up batteries of tests to measure 'rigidity!.'

One such study was carried out by Applezweig (1954). She used six 'recognized' measures of rigidity, including Luchins' Einstellung problems, the Rorschach, a Hidden Objects Test, and the California Ethnocentrism Scale.

Among forty-five correlations between behaviors on six measures of rigidity . . . twenty-two were negative, twenty-one were positive, and two were zero; only three of the forty-five correlations were significant and two of these were negative. (Mischel, 1968, p. 29)

Pervin (1960) found similar low correlations between the results of five "non-inventory performance measures of rigidity", one being the Water Jar problems. "Out of the 20 correlation coefficients only 1 reached significance, about what would be expected by chance" (p. 392).

Such findings as these suggest at least two things:
1. "For the moment, each test must be taken to stand alone. Failure on any one test could be used as an operational definition of rigidity" (Chown, 1959, p. 216).

2. "There is no general factor of rigidity among a number of so-called measures of rigidity: The interrelationships of these measures appear to vary with the nature of the tests employed and the conditions of test administration as well as behavioral determinants within S's" (Mischel, 1968, p. 30).

These research findings, therefore, indicate that 'rigidity' is not only a complex phenomenon but that the assumption of it being a generalized factor of personality is an oversimplification. Future studies may even show that Fisher was correct when he said (1959, p. 18), "I assume that there are general tendencies toward rigidity or looseness in most personality structures, but that these are only tendencies and that possibly there are different levels of rigidity and perhaps even contradictory currents of rigidity in the same person."

**Perception**

"No perception without a perceiver; no Gestalt without a Gestalter; every act of perception expresses the personality structure and dynamics of the perceiver." These, according to Luchins (1959, p. 273), are the basic tenets of one of psychology's more vigorous schools of thought, the perceptual-psychologists.

Many important contributions have been made by this group. The work of one man stands out as being of interest and relevance to this study. This man is H.A. Witkin, and his special contribution to psychology is the
concept of field dependence or independence.

This concept has its origins in an early study (Witkin & Asch, 1948) of individual differences in perceiving an upright. In this experiment the subjects were asked to perceptually separate an object from its surrounding field, specifically, a rod from its surrounding frame. The results were interesting in that "some subjects perceived the rod as upright only when it was in alignment with the axes of the field, whereas others at the opposite extreme were quite unaffected by the position of the field in judging the direction of the rod" (Witkin, 1950, p. 1).

His curiosity aroused by these findings, Witkin set about studying how individuals differentiate between field cues and sensory cues. To do this he used the 'Tilting-room-tilting-chair' task which determines how the individual perceives the position of his body within different fields. Again significant perceptual differences occurred. "Some subjects perceived their bodies as upright only when they were tilted toward the axes of a tilted field, whereas others were able to place themselves in the true upright position regardless of the position of the field" (Ibid, p. 1).

In summarizing the findings of these two studies Witkins states

Both situations involved manner of perceiving an object in relation to its surroundings, or a part within a larger whole; and the results indicated that, whereas for some people perception of the part was strongly affected by the surrounding field, others were able to escape this influence and to deal with the part as a more or less independent unit. (Ibid, p. 1)

Thus far the perception of an upright had been used exclusively by Witkin. The next step was to broaden the scope of his studies. What he needed was a general case 'though one still involving the perception of a part within a larger whole. The Embedded Figures Test proved to just such a general case, and it became Witkin's favorite experimental instrument.
The Embedded Figures Test was originally developed by Gottschaldt for his work on the influence of past experience in perception. The test involves asking the subject to locate a simple figure, which he had previously been shown, within a larger complex figure, a procedure which is repeated a total of twenty-four times. The subject's score is the total length of time he takes to complete the task.

In his first large study using this technique, Witkin gave the Embedded Figures to 51 men and 51 women. The average time for the men was 15'54". Their range of times ran from 1'59" to 59'59". For the women the average time was 23'18", and the range, 3'59" to 55'59". There were high correlations of time scores between the 12 figures presented on even trials and the 12 presented on odd trials, +.87 and +.74 respectively for men and women. Witkin interpreted these results to mean that "degree of facility in perceiving a part within a larger visual structure is a persistent characteristic of each individual, and that people differ markedly in this regard", (Ibid, p. 9). Those individuals who scored significantly below the average for their sex group Witkin labelled as being 'field dependent'; those who scored significantly above average he called 'field independent'.

In subsequent work Witkin (1962) found the following personality factors to be associated with field dependence. "Thus field-dependent individuals typically evidenced such attributes as: an inability to function independently of environmental supports, an absence of initiating activity, low self-esteem, difficulty in controlling anxiety, and a relatively primitive, undifferentiated body image." Field-independent perceivers, on the other hand, tended to be "characterized by activity and independence in relation to the environment, relatively higher self-esteem, more effective techniques for
controlling anxiety, and a more differentiated body image."

Obviously a continuum exists here, with the markedly field dependent individual at one extreme and the individual displaying a high degree of field independence at the other. The rationale behind this spread in perceptual ability is a matter of some debate. Problems in attention, of anxiety and so forth have been introduced as possible explanations. Silverman (1964, p. 364-365) has suggested that developmental factors may be involved.

Studies by Witkin and his colleagues (and others) have demonstrated that perceptual differentiation of complex stimulus fields evolves in the course of development. The experiences of one's body, self, and the external environment which early in life are essentially global, vague and diffuse, become progressively more articulated.

Silverman's remarks seem to mean that the field independent individual is somehow more developmentally advanced than is the field dependent, a theory which finds some support in the above cited personality factors that Witkin found to be associated with the two extremes.

Gestalt psychologists have advanced another theory, specifically that the field-independent individual is less rigid perceptually than is the field-dependent person.

This idea grew out of Wertheimer's early work on the laws of perceptual organization. Wertheimer included among these the factor of Einstellung or 'objective set'. This refers to "a set developed by the sequence of events, by what is objectively given, as distinguished from a set which is more 'subjective' in nature" (Luchins, 1959, p. 276). Wertheimer considered this factor to be one of great strength in perception. To illustrate its operation he noted that
when a sequence of rows of dots is presented, the perception of any particular row may depend on the nature of the sequence; in particular, the initial arrangement of dots may tend to maintain itself in subsequent rows. Similarly, if a sequence of figures is presented, the perception of any particular figure may be influenced by the sequence of which it is a part, (Ibid, p. 276).

Koffka (1935) did an experiment on speed of closure which illustrates the operation of this principle. The apparatus in this experiment consisted of two cards, on each of which a half circle had been drawn. When the cards were placed together, a perfect circle resulted. The study began with the cards separated by some distance. They were gradually moved closer together until the subject, seated three feet away, reported that he saw a perfect circle, (ascending series). The distance between the two cards was carefully noted. The descending series began with the cards placed side by side. They were then gradually separated until the subject reported that the circle had been broken. Each series was repeated five times. The mean of the ten distances was recorded as the subject's 'threshold for closure'.

The significance of this study lies in the fact that it was carried out in conjunction with the 'arithmetic Einstellung Test' or Water Jar Problems, as they are now called. Koffka found that the group who had been less rigid on the Water Jar Problems had a mean threshold for closure of 13.22 mm., while the more rigid group had a mean threshold of 20.82 mm. This difference was significant at the .01 level, meaning that the more rigid group tended to see a circle when the cards were further apart. "If the distance between the cards is considered as a gauge of the speed of closure, then it may be said that the more rigid subjects tended to have greater speed of closure" (Ibid, p. 276), i.e. they tended to be more field dependent.

Another study which found a relationship between rigidity and
field-dependence was done by Oliver (1950). Oliver was interested in the factor of 'flexibility of closure', that is, flexibility in the manipulation of several configurations.

In describing this factor Luchins (1959, p. 274) states that "here the subject is presented with perceptual material which is immediately perceived as a unified configuration and in which he is asked to perceive a different configuration, the perception of which requires that he first destroys the immediately perceived unity." Thurstone (1944, p. 20) found that flexibility of closure operated against "what the Gestalt psychologists have called Gestaltbindung which seems to refer to the rigidity of the perceived unity in a presentation."

The Gottschaldt Embedded Figures Test and the Water Jar Test were both administered to the subjects in Oliver's study. Comparisons were then made of the 30 least rigid subjects on the Water Jar Test and of the 18 most rigid subjects. The Embedded Figures score was 16.0 for the former group and 12.4 for the latter, the difference being significant at the .01 level. Therefore, the least rigid group saw significantly more embedded figures than did the most rigid group. To Luchins (1959, p. 274) this meant that "The most rigid in the Einstellung test tended to show the most Gestaltbindung (or rigidity of perceived unity) in the Gottschaldt-figures test; or, to put it in other words, the most flexible in the Einstellung test showed the most flexibility of closure in the Gottschaldt-figures test."

To summarize: Witkin has established that some individuals are more field dependent than others, a tendency best measured by Gottschaldt's Embedded Figures Test. Also, assuming that Witkin is correct, certain personality factors can be associated with this perceptual field-dependency.
The two studies cited above indicate there is a definite correspondence between such field dependency and cognitive rigidity, as measured by the Water Jar Test. It was decided, therefore, to include both the Water Jar problems and the Embedded Figures in the present test battery with the aim of determining whether suicidal patients are more rigid than nonsuicidal patients and, correspondingly, whether they are also more field-dependent. It was hypothesized that they would prove to be both.
PROCEDURE

Subject Population

For purposes of this study it had been decided to use as experimental subjects persons who had made one or more serious attempts to commit suicide. A survey of mental health facilities in the Vancouver area quickly established that the best source for obtaining appropriate subjects was the Riverview Mental Hospital at Essondale. The writer therefore petitioned the superintendent of this hospital for permission to carry on the research there. In due course this permission was granted.

1. Experimental Group

Principles of experimental design recommend the use of two groups of subjects, an experimental group and a control group. It is also necessary that these groups be large enough to afford an opportunity to achieve significant statistical results. Small sampling theory (Deming, 1961, p. 189, ff) shows that samples as small as six can be used in experimentation, since tests of significance take the size of the sample into account. Although this may be true, it was thought that the use of more than six subjects might better approximate the population distribution. Just how many more would be delimited by such factors as the amount of time needed to test each subject, and the availability of suitable subjects and controls.

Two types of 'suicidal individuals' are admitted for treatment to the Riverview Mental Hospital. Those who have threatened to commit suicide constitute one group. The second involves persons who have made a suicide attempt, most commonly by slashing their wrists or by taking an overdose of drugs. Few of these actual attempts are considered serious however since most are efforts to manipulate the social environment or to call attention to
the individual's unhappiness. Hospital records reveal that truly lethal attempts occur less frequently, with no more than one in ten of the 'suicidal individuals' being of this type.

For this reason it was feared that obtaining enough suitable subjects for research might prove to be difficult. Obviously, possible candidates first had to be admitted to the hospital because of a serious suicide attempt. Secondly, as a safeguard measure, it was decided that they should be considered highly lethal by the psychiatrist in charge of their case. With these facts in mind, together with the prior decision to use an \( N \) greater than 6, it was originally proposed that 12 - 15 suitable subjects be used in the experimental (suicidal) group.

2. Control Group

In view of the fact that the units of measurement are test scores and test responses, it was considered necessary that a control group of nonsuicidal individuals be used to determine whether they respond differently than the experimental suicidal group. The crucial variable, therefore, is suicidality versus nonsuicidality. At the same time, a number of other variables may influence test responses. Since these variables are extraneous to the main experimental variable, they should be controlled in both groups. A careful perusal of the various test manuals and literature, however, failed to show that such controls are necessary. Therefore, it would have been possible to select a control group of nonsuicidal individuals at random from the total nonsuicidal hospital population.

3. Obtained Groups

The first step of the research period was devoted to locating and
testing experimental subjects, i.e. those individuals considered to be lethally dangerous to themselves. Clerks in the two admitting offices of the hospital were asked to list the names of all 'suicidal individuals' admitted into their respective sections, as well as the individual's ward and the name of the physician on the case. Having thus secured the name of a likely candidate, the second step was to contact the charge nurse on the ward in question. The charge nurse was usually able to supply information as to whether the individual had actually made a suicide attempt and, if so, the severity of it. When it was established that a serious attempt had been made, there remained only the matter of confirming the diagnosis with the physician in charge and obtaining his permission to see the patient for research purposes. Nearly all the Riverview hospital staff involved proved to be most cooperative. In some cases they even supplied the names of likely subjects, usually individuals who had become suicidal after being admitted to the hospital and who had thus been omitted from the admitting office lists. In this way 34 appropriate subjects were obtained. Each of these subjects then underwent 4 hours of testing and interviews, a process which will be described fully in later sections.

In ten cases it was impossible to complete this testing procedure. The reason for failure varied: 3 or 4 of the subjects refused to cooperate sufficiently; 2 escaped from the hospital; 2 became ill; 2 had to be discharged prematurely. As a result, therefore, it was possible to obtain a sample of 24 subjects, thus nearly doubling the original number of proposed subjects.

The second half of the research period was devoted to finding controls for these experimental subjects. In the end it was possible to match 20 pairs of subjects. However, no adequate controls could be found
for 4 of the original 24 suicidal patients and the data from these subjects were consequently omitted from the final statistical analysis.

The following is a brief description of the subjects used in this research. It will be noted that pairs of female subjects outnumber the male pairs by 14 to 6, which roughly reflects the usual 3 to 1 ratio of female attempted suicides to male attempted suicides.

<table>
<thead>
<tr>
<th>SUICIDAL GROUP</th>
<th>NON-SUICIDAL GROUP</th>
</tr>
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<tbody>
<tr>
<td><strong>Female</strong></td>
<td></td>
</tr>
<tr>
<td>1) 17 yrs.; psychoneurotic depressive reaction</td>
<td>1) 17 yrs.; psychoneurotic depressive reaction - anti-social reaction</td>
</tr>
<tr>
<td>2) 18 yrs.; adolescent adjustment problem - schizoid personality</td>
<td>2) 19 yrs.; adolescent adjustment problem</td>
</tr>
<tr>
<td>3) 19 yrs.; psychoneurotic depressive reaction - inadequate personality</td>
<td>3) 18 yrs.; psychoneurotic depressive reaction</td>
</tr>
<tr>
<td>4) 21 yrs.; acute anxiety reaction</td>
<td>4) 23 yrs.; psychoneurotic depressive reaction - anxiety state</td>
</tr>
<tr>
<td>5) 21 yrs.; sociopathic personality disturbance - anti-social reaction</td>
<td>5) 24 yrs.; sociopathic personality</td>
</tr>
<tr>
<td>6) 25 yrs.; neurotic dependent</td>
<td>6) 29 yrs.; reactive-neurotic dependent</td>
</tr>
<tr>
<td>7) 28 yrs.; sociopathic personality disturbance - sexual deviation</td>
<td>7) 27 yrs.; sociopathic personality disorder</td>
</tr>
<tr>
<td>8) 28 yrs.; paranoid schizophrenic</td>
<td>8) 25 yrs.; schizophrenic reaction, catatonic type - paranoid elements</td>
</tr>
<tr>
<td>9) 29 yrs.; psychoneurotic depressive reaction</td>
<td>9) 28 yrs.; psychoneurotic depressive reaction - inadequate personality</td>
</tr>
</tbody>
</table>
10) 34 yrs.; psychoneurotic depressive reaction - hysterical elements
11) 39 yrs.; psychoneurotic depressive reaction
12) 44 yrs.; psychoneurotic depressive reaction
13) 47 yrs.; psychoneurotic depressive reaction
14) 47 yrs.; psychoneurotic dissociative reaction

Males
1) 21 yrs.; psychoneurotic depressive reaction
2) 25 yrs.; sociopathic personality reaction - dysocial personality
3) 26 yrs.; personality trait disturbance - emotionally unstable personality
4) 35 yrs.; schizophrenic reaction - acute undifferentiated
5) 37 yrs.; personality trait disorder - passive-aggressive personality - alcoholism
6) 39 yrs.; psychoneurotic depressive reaction

10) 36 yrs.; psychoneurotic personality disturbance - hysterical type
11) 36 yrs.; psychoneurotic depressive reaction - anxiety reaction
12) 42 yrs. psychoneurotic depressive reaction
13) 48 yrs.; psychoneurotic depressive reaction
14) 45 yrs.; psychoneurotic dissociative reaction

NB: The above diagnoses were taken from the official admitting forms of the Riverview Hospital.
Clinical Impressions: The Typical Suicidal Subject

The writer endeavored to get as complete a case history as possible for each subject seen. The information for these histories came from two sources: the hospital medical files and the two interviews that formed part of the current testing procedure. Fifty-four more or less complete case histories were gathered in this way, 34 of which dealt with the suicidal subjects.

In perusing these latter histories it was apparent that many of them shared common features. So true was this, in fact, that it is possible to describe what can be called a 'typical suicidal history'.

This typical history begins with a rough and stormy childhood, (80% of the subjects). Sometimes the parents had separated. More often they had stayed together but alcoholism and/or physical abuse had largely undermined any stability in their relationship.

School was usually remembered as having been another unhappy experience (55%). Many of the subjects played truant as often as possible. A number had 'dropped out' to get married or go to work. Suicidal ideation and threats (45%), usually manipulative in nature, were common features during this period. Sometimes a serious attempt was made. This too was usually manipulative.

The marriages of these patients were universally bad. They entered into them at too early an age (55%) and had too many children too soon. Periods of unemployment plagued the men. Impossible debts accrued. Eventually, but inevitably, the marriage started to get 'rocky' (70%). This brought on a serious suicide attempt and a period of hospitalization, followed, in turn, by efforts to readjust the situation. That these efforts often appeared to
succeed can usually be attributed to the feeling of guilt that the subject's partner had experienced following the suicide attempt. However, in time, a new catastrophe would come along to threaten the marriage. This would precipitate another suicide attempt, more hospitalization, and so forth. Ultimately the cycle would be broken by the spouse's desertion, a separation or divorce, circumstances which would illicit the patient's now characteristic response of attempting suicide. Perhaps significantly, it was the men who seemed to find the final break-up of their marriages hardest to take. One male subject cut his throat from ear to ear. A second jumped from a bridge. The desperate nature of such acts can hardly be questioned.

To summarize: a history typical of the 34 suicidal individuals seen in this study includes: (1) a childhood marred by family difficulties, (2) early suicidal ideation and threats, (3) an unhappy, often interrupted period of schooling, (4) an early marriage for which the subject was poorly prepared, and (5) periods of difficulties in the marriage to which the subject responded with more or less lethal attempts to take his own life. (eg. One female subject had slashed her wrists more than 40 times.)

The case histories of the control patients showed greater content variation than did those of the suicidal subjects. Like the suicidal subjects, they had experienced difficult and unhappy periods during childhood and at school. However, significantly fewer of the controls had gone on to marry. Moreover, those who were married had apparently not suffered as much violence or as many reversals as had the suicidal patients. Also significant is the fact that the control subjects had learned to deal with problems in different ways leading, of course, to varying degrees of success.

This latter point seems to be the great difference between the two groups. When circumstances became threatening or a problem situation got
out of hand, the control group tried to cope in numerous ways; the experimental group tended to respond in one way, suicidally, instead.

Test Administration

Acquiring the name of an appropriate subject was only the first step in what proved to be a somewhat involved procedure. As previously mentioned, it was first necessary that the physician in charge of the case gave his permission for the patient to be seen before arrangements could be made regarding the testing schedule. Four hours of the patient's time were needed altogether. However, in order to assure continued cooperation, it was deemed necessary to spread these four hours over two or more days. This meant the possibility of conflict with the hospital's routine.

This routine involved that certain hours be set aside by the hospital for occupational therapy, recreational therapy, meals and ward meetings. Although patients could miss these activities if absolutely necessary, they couldn't miss appointments with physicians, social workers, or group therapy sessions. Patients themselves were afraid to miss visiting hours whether they expected someone to visit them or not. In addition, many had specific duties within the hospital (eg. as a kitchen helper) and couldn't be seen at these times. Others received special treatment and thus could not always be seen. Each individual testing schedule, therefore, had to be adjusted around these restrictions. As a result the total testing procedure itself was not only time consuming but also difficult to arrange.

Upon first meeting with a new subject, the writer introduced herself as a student from the Psychology Department of U.B.C. She explained that she was doing research on the topic of problem-solving behavior. She
also explained that, although this research work was approved by the hospital, it was not done FOR the hospital and, therefore, would have no effect on the treatment that the patient received while there. This latter point had to be repeatedly emphasized as many patients feared that speaking honestly to the writer might somehow delay their discharge from Riverview.

The topic of suicide was not introduced during this preliminary discussion. In fact, it was intended that suicide not be discussed at all, unless the subject brought it up. Significantly, ALL of the experimental subjects did volunteer information about their suicide attempts. Indeed, talking about it seemed to be extremely important to them.

Following this brief discussion, the Mooney Problem Check List was given to the subject.

1. The Mooney Problem Check List (Adult and Adolescent Forms)

The Mooney Problem Check List was chosen in order to determine as quickly as possible the general areas of difficulty for a specific individual. The list deals with nine common problem areas: (1) health, (2) economic security, (3) self-improvement, (4) personality, (5) home and family, (6) courtship, (7) sex, (8) religion, and (9) occupation.

By nature of its design, the Check List gives the subject an opportunity to both review and summarize his problems, while it affords the researcher an overall view of the individual's unique problem situation. For these reasons it was used as a means to 'break the ice', being the subject's initial experience with the research procedure. Moreover, in order to maximize this ice-breaking effect, the first of two interviews took place upon the subject's completion of the list. Then, using the Check List as a guide, the researcher attempted to establish more precisely the
nature of the problems confronting each subject.

This interview brought the first testing session to an end. The second began with the Test of Social Insight.

2. **The Test of Social Insight** (Adult Edition)

The aim of this test is "to appraise the characteristic mode of reaction the individual uses in resolving interpersonal (social) problems" (Manual, p. 2).

The scope of the problem areas covered in the test include:

1. home and family relations;
2. authority figures and social agencies;
3. play and avocational interests,
4. work and vocational interests.

Altogether in the test sixty problem situations are described and, following the statement of each problem, five alternative modes of resolution are offered to the individual. The five alternatives are:

(a) Withdrawal: "The individual avoids or escapes the problem by leaving the social problem area."

(b) Passivity: "The individual remains in the social problem area, but is passive, choosing not to participate in the solution of the problem."

(c) Co-operation: "The individual initiates an active and positive endeavor directed at the solution of the problem."

(d) Competition: "The individual engages in activity that elicits the attention of others: he attempts to excel or outdo others as a means of dealing with the social problem."

(e) Aggression: "The individual makes little effort toward solving the problem, and is primarily concerned with expressing hostility or strong emotional feelings in direct response to the problem."

The characteristic pattern and the degree of rigidity in that
pattern, is determined from the respective frequency of the modes of resolution chosen.

3. The Water Jar Problems

Luchins' Water Jar Test, the most frequently used measure of rigidity, is designed to ascertain how individuals behave in a problem solving situation when alternative modes of response are available to them. It is not a difficult test to administer, is of a convenient length, and is interesting to the subject. Scoring is relatively straightforward.

A detailed description of the Water Jar Problems appears in an earlier chapter, together with standardized instructions for their administration.

The actual testing procedure as used in this research was as follows:

Only one subject was tested at any given time. To begin the session a copy of the printed instructions was given to the subject. He was asked to read it slowly and to re-read if necessary. (Questions were discouraged as much as possible.) The subject was told to verbalize the steps he would take to solve the problem, rather than write them down as the instructions directed. (Written answers were necessitated by the group approach Luchins used. However, they were not needed in the present one-to-one testing situation.) The subject was also told that, although this was not a test of speed, the amount of time he took to solve each problem would be noted. This statement was reinforced by the experimenter by taking a stop-watch out of the desk drawer and placing it in open view. Pencils and scrap paper were provided for rough work. The test then began.

As the subject worked, the writer noted both the method chosen to solve each problem and the amount of time taken. And, taking a note from
Luchins' preliminary study, she instructed each subject to write the words "Don't be blind" on their scrap paper upon the completion of problem six, hoping thus to minimize the Einstellung effect. Any difference in rigidity between the groups, therefore, would be even more significant for it would represent not only the workings of the Einstellung effect but, in addition, a disregard for the given warning.

4. The Embedded Figures Test

Field dependency, or the lack of it, is most conveniently assessed by the Embedded Figures Test. As mentioned earlier, this test was originally developed by Gottschaldt in 1926. Since then it has been most extensively used by H.A. Witkin and his colleagues (1950, 1962).

The test consists of 8 'simple' figures and 24 'complex' figures. Each simple figure is contained or 'embedded' in several different complex figures. For example, there are 5 complex figures containing the simple figure A, as shown in Figure 2.

To begin testing, each subject is given the same instructions. These are as follows:

I am going to show you a series of colored designs. Each time I show you one of these designs, I want you to describe the over-all pattern that you see in it. After you examine each design, I will show you a simpler figure, which is contained in that larger design. You will then be given the larger design again, and your job will be to locate the smaller figure in it. Let us go through one to show you how it is done. (Witkin, 1950, p. 7)

The practice complex-figure, P-1, was then shown to the subject for 15 seconds, followed by the practice simple-figure, P. When this, in turn, had been removed, the complex figure, P-1, was presented for the second time, with instructions to locate the simple figure embedded in it. When the
subject reported that he had found this simple figure, he was asked to
trace it for the experimenter. This tracing was done to assure the experi-
menter that the correct figure had been found.

After the practice session, the subject was given the following
additional instructions:

This is how we will proceed on all trials. I would like to
add that in every case the smaller figure will be present in
the larger design. It will always be in the upright position.
There may be several of the smaller figures in the same large
design, but you are to look only for the one in the upright
position. Work as quickly as you possibly can, since I will
be timing you; but be sure that the figure you find is
exactly the same as the original figure both in size and in
proportions. As soon as you have found the figure, tell me
at once. If you ever forget what the small figure looks
like, you may ask to see it again. Are there any questions?

This same procedure was used on all 24 test trials. The subject
was, of course, carefully timed on each of these trials as his score was
equal to the total amount of time taken. On each trial a maximum of 5
minutes was allowed.
Fig. 2: An Example of Simple and Complex Figures in the Embedded Figures Test
Reliability and Validity of Tests

1. The Mooney Problem Check List

Although reliability is difficult to establish because of the nature of the test responses, considerable stability of pooled results for groups is reported. Similarly results of studies indicate considerable concurrent validity. Burgess who reviewed the Mooney Problem Check Lists (in Buros, 1965, 145) states that "the information available from all sources suggests that the popularity of the Mooney Problem Check Lists is well deserved . . . ."

2. Test of Social Insight

Total score reliability is reported as $r = .84$ while validity coefficients "appear to be accumulating" (Pierce-Jones, in Buros, 1965, 190). He concludes that the "TSI is a promising effort to measure variables of obvious interest and importance to research psychologists . . . ."

3. Embedded Figures Test

The reliability of this test appears to be excellent ($r = .905$). The validity also seems to be both significant and generally high. Gough (in Buros, 1965, 89) "has no doubt that within 15 to 20 years the embedded figure kind of content will be as basic in cognitive test batteries as analogies, progressions, spatial manipulations, and quantitative analyses are today."

4. Water Jar Test

This test has much data indicating both a high-reliability and validity for the type of rigidity measured by Luchins.
In summary, there seems to be little doubt that all four tests are at least promising research tools which could be applied in various settings with proper background data.
RESULTS

1. The Mooney Problem Check List

As Table 2 indicates, of the nine areas dealt with by the Mooney Problem Check List only two showed statistically significant differences between the suicidal and control groups. (Significance meaning beyond the .05 level.) These were the areas of self-improvement and religion.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Suicidal Group</th>
<th>Non-suicidal Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>108</td>
<td>147</td>
</tr>
<tr>
<td>Economic Security</td>
<td>151</td>
<td>153</td>
</tr>
<tr>
<td>Self-improvement</td>
<td>196*</td>
<td>246</td>
</tr>
<tr>
<td>Personality</td>
<td>402</td>
<td>445</td>
</tr>
<tr>
<td>Home and Family</td>
<td>159</td>
<td>160</td>
</tr>
<tr>
<td>Courtship</td>
<td>41</td>
<td>61</td>
</tr>
<tr>
<td>Sex</td>
<td>39</td>
<td>35</td>
</tr>
<tr>
<td>Religion</td>
<td>34*</td>
<td>61</td>
</tr>
<tr>
<td>Occupation</td>
<td>47</td>
<td>65</td>
</tr>
</tbody>
</table>

*difference significant at p < .05

(a) Self-Improvement: Control subjects gave far more responses in this category than did the suicidal subjects, (246 as compared to 196).

(b) Religion: A similar picture is seen here, with control subjects making nearly twice as many responses as the suicidal group, (61 versus 34).
These findings indicate that the non-suicidal patients tend to be significantly more concerned with improving themselves and with matters pertaining to religion.

2. The Test of Social Insight

The Test of Social Insight offers the subject five alternative modes of resolving a problem situation: withdrawal, passivity, co-operation, competition and aggression.

TABLE 3

<table>
<thead>
<tr>
<th></th>
<th>Withdrawal</th>
<th>Passivity</th>
<th>Co-operation</th>
<th>Competition</th>
<th>Aggression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suicidal</td>
<td>120</td>
<td>213*</td>
<td>629</td>
<td>122*</td>
<td>116</td>
</tr>
<tr>
<td>Non-suicidal</td>
<td>102</td>
<td>177</td>
<td>663</td>
<td>148</td>
<td>112</td>
</tr>
</tbody>
</table>

*difference significant at p < .05

The results of the test indicate that, with regard to characteristic manner of resolution, suicidal individuals differ from the non-suicidal in two ways. They are (1) significantly more passive (beyond the .05 level), and (2) significantly less competitive (also beyond the .05 level).

Although between-group differences in the other three modes did not reach the level of statistical significance, they were in the directions that one would expect: i.e. suicidal patients tended to be more withdrawn, more aggressive, and less co-operative than the controls.

3. The Water Jar Test

Two things were noted about the performance of subjects on the Water Jar Test: (1) the amount of time taken to solve each problem; and (2) whether the direct or the Einstellung method was used in the 'critical' problems 7,
8, 10 and 11. As a matter of interest, the subject's reaction to problem 9 was also recorded. (It will be remembered that this is an extinction-type problem, being solvable by the direct method only.)

(1) A straightforward comparison was made of the total amount of time needed by each group to solve the critical problems. (See Table 4). A t-test of the data yielded a value of 1.76. As the .05 significance level for a one-tail test with forty degrees of freedom is 1.68, the value obtained is significant beyond the .05 level. In translation this means that the suicidal patients took a significantly longer period of time to solve the critical Water Jar problems than did the non-suicidal controls.

**TABLE 4**

Scores (in Seconds) of Suicidal and Non-suicidal Patients on the Critical Problems of Luchins' Water Jar Problems Test

<table>
<thead>
<tr>
<th>Total number of seconds</th>
<th>Suicidal Group</th>
<th>Non-suicidal Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>375-399</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>350-376</td>
<td></td>
<td></td>
</tr>
<tr>
<td>325-349</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>300-324</td>
<td></td>
<td></td>
</tr>
<tr>
<td>275-299</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>250-274</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>225-249</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>200-224</td>
<td></td>
<td></td>
</tr>
<tr>
<td>175-199</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>150-174</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>125-149</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>100-124</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>75-99</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>50-74</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>25-49</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>0-24</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

(2) Reference to Table 5 below will show the relative percentage of Einstellung and direct methods utilized by each group.
TABLE 5
The Einstellung Effect for Suicidal and Non-suicidal Patients

<table>
<thead>
<tr>
<th>Group:</th>
<th>% E solutions</th>
<th>% direct solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(C1, C2)</td>
<td>(C1, C2)</td>
</tr>
<tr>
<td></td>
<td>(C3, C4)</td>
<td>(C3, C4)</td>
</tr>
<tr>
<td>Suicidal</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>(N-20)</td>
<td>65</td>
<td>35</td>
</tr>
<tr>
<td>Non-suicidal</td>
<td>90</td>
<td>10</td>
</tr>
<tr>
<td>(N-20)</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

These results show that:

a. A strong Einstellung effect was evident in both groups. At no time was this effect reduced to less than 50%, which is a relatively high level compared to Luchins' groups.

b. The warning "Don't be blind" had little effect. The suicidal patients appeared to ignore it entirely, while only two control subjects 'got the message'. (Strangely enough, both of these patients had been diagnosed as 'sociopathic personality'. Whether this is significant is a subject for speculation.)

c. Seventeen of the twenty suicidal patients (i.e. 85%) failed to solve problem nine. As table 5 indicates, only four of these profited sufficiently from the experience to question the method they were using. Thirteen control subjects (65%) similarly failed at problem nine. Three of these took the time to re-evaluate their approach. Eventually ten of the controls (50%) discovered the direct method.

4. The Embedded Figures Test

Administrating the Embedded Figures proved to be an awesome task. Analyzing the results of the test therefore seemed, if not perfectly simple, at least relatively straightforward.
The sum of time scores for each group was converted into seconds, (see table 6). This total for the suicidal group was 44,593 seconds and for the control group, 29,993 seconds, yielding 37'6" and 24'33" as the respective means. An analysis of variance run on the data yielded an F value of 4.41. As the tables give a lesser value (4.10) at the .05 level of significance, we are able to accept with some confidence the hypothesis the suicidal patients are perceptually more field-dependent than are non-suicidal patients.

**TABLE 6**

Scores (in seconds) of Suicidal and Non-suicidal Patients on the Embedded Figures Test

<table>
<thead>
<tr>
<th>Subject No.</th>
<th>Suicidal Group</th>
<th>Non-suicidal Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4778</td>
<td>2858</td>
</tr>
<tr>
<td>2</td>
<td>4462</td>
<td>2727</td>
</tr>
<tr>
<td>3</td>
<td>4161</td>
<td>2283</td>
</tr>
<tr>
<td>4</td>
<td>4033</td>
<td>2209</td>
</tr>
<tr>
<td>5</td>
<td>3348</td>
<td>1789</td>
</tr>
<tr>
<td>6</td>
<td>2994</td>
<td>1776</td>
</tr>
<tr>
<td>7</td>
<td>2684</td>
<td>1774</td>
</tr>
<tr>
<td>8</td>
<td>2491</td>
<td>1735</td>
</tr>
<tr>
<td>9</td>
<td>2409</td>
<td>1735</td>
</tr>
<tr>
<td>10</td>
<td>2240</td>
<td>1471</td>
</tr>
<tr>
<td>11</td>
<td>2209</td>
<td>1381</td>
</tr>
<tr>
<td>12</td>
<td>1992</td>
<td>1374</td>
</tr>
<tr>
<td>13</td>
<td>1677</td>
<td>1373</td>
</tr>
<tr>
<td>14</td>
<td>1313</td>
<td>1188</td>
</tr>
<tr>
<td>15</td>
<td>904</td>
<td>1112</td>
</tr>
<tr>
<td>16</td>
<td>789</td>
<td>946</td>
</tr>
<tr>
<td>17</td>
<td>690</td>
<td>857</td>
</tr>
<tr>
<td>18</td>
<td>680</td>
<td>726</td>
</tr>
<tr>
<td>19</td>
<td>577</td>
<td>502</td>
</tr>
<tr>
<td>20</td>
<td>162</td>
<td>433</td>
</tr>
</tbody>
</table>
DISCUSSION

There were two areas of significant differences on the Mooney Problem Check List: (1) self-improvement and (2) religion.

An item by item analysis of the 'self-improvement' section shows that this one rubric deals with at least three interrelated topics: self-concept, socialization, and the utilization of time.

The small number of responses, plus the type of response made, indicate that the suicidal patients have a markedly poorer concept of themselves. Moreover, there is a certain resigned acceptance of this poor self-image. It is as though they feel that they lack the capacity for self-improvement. There is an air of hopelessness about this whole area.

There is a similar sense of futility about socialization. Socialization involves a certain forgetting of self in order to become involved with others. Suicidal patients seem unable to forget themselves to this extent. Instead, they tend to brood over their problems in isolation. They are chronic worriers.

These findings are further reflected in the suicidal patients' inability to appreciate or utilize leisure time. Few had hobbies, indulged in outside diversionary activities, or had other means to reduce the tension built up in the course of daily living.

The responses of the suicidal patients to 'religious' items were also rather revealing. Specifically, as a group, they seemed strangely indifferent to religion. Some were even openly contemptuous, having long since rejected any offer of help from this source. This attitude seemed to underscore the basic aloneness of the suicidal patients.

If asked, few suicidal patients were able to describe their
'philosophy of life'. Most denied having any. Thus they were singularly devoid of guide-lines for living.

As in the Mooney, the Test of Social Insight emphasized the suicidal patients' relative lack of skill at socializing. When faced with a problem of an interpersonal nature, they invariably chose to respond passively, withdrawing from the situation altogether if possible. If unable to retreat entirely, they would simply refuse to co-operate with the others involved in the problem.

The significantly fewer competitive responses made by the suicidal patients gives evidence of their basic dislike for competition. When questioned about this, they made remarks which can best be interpreted as reflecting their fear of always being second best. (Another reflection of the suicidal patient's poor self-concept.)

The number of aggressive responses of suicidal patients did not differ significantly from those of non-suicidal patients. This, therefore, would tend to throw some doubt on the credence of those theories of suicide which emphasize directing aggression against the self, (eg. the psychoanalytic theories, and Henry and Short (1954) etc.).

In addition to suicidal patients being more passive and less competitive than the control patients, they also displayed significantly more rigidity. This latter was indicated by their responses on the Water Jar Test. If we accept Luchins' interpretation of rigidity as correct, this means that the suicidal patients displayed less genuine problem-solving behavior on the test, tending instead to respond to the series as a unitary whole. Conversely, it means that the non-suicidal control subjects were better able to view each problem as a separate unique opportunity for decision-making.
What does this indicate about suicidal patients? It could indicate that, in stressful situations, suicidal individuals tend to become more rigid more quickly than controls. (That the Water Jar problems were stress-inducing cannot be doubted. Arithmetic problems seem to be inherently stressful, while in this case, the stop watch was an additional factor of stress.)

This tendency to become rigid in a stressful problem-solving situation means that suicidal individuals are unable to recognize the existence of alternative courses of action. Or, if they realize that alternatives exist, they nevertheless tend to adhere to those patterns of behavior which have been effective in the past.

Suicidal behavior can be very effective and, thus, it is not difficult to understand why it should become the preferred mode of response under certain circumstances. In the first place, although the original problem remains unsolved, the individual no longer has to cope with it. He has been entirely removed from the problem situation and, thus, for the time being, is no longer threatened by its stress. Moreover, there have been other drastic changes in the environment. The significant others in his world have been effectively mobilized to assist him. The resources of the community have been mobilized too, and he finds himself the subject of attention for doctors, nurses, psychologists and so forth. Therefore, the suicide attempt appears to be the single most effective action the individual could have undertaken. The attempt caused a maximum reduction in tension, escape from the problem situation, and had other reinforcing consequences such as mobilization of 'significant others' and community resources. It is very likely, therefore, that when next faced with a problem-solving situation that is ostensibly similar in its stressful character, instead of looking
for alternative responses, the individual will tend to respond in a suicidal manner.

The perception that the suicidal patient has of a problem situation can be labeled as being field dependent. This is shown in their responses to the Embedded Figures Test. According to Witkin (1962) the following personality factors are associated with field dependence: an inability to function independently of environmental supports, an absence of initiating activity, low self-esteem, difficulty in controlling anxiety, and a relatively primitive, undifferentiated body image. If Witkin is correct, it is then possible to attribute these personality factors to suicidal patients.

In addition, the Embedded Figures also indicate that suicidal individuals tend to define themselves in terms of the environment. They rely, not upon themselves in matters of judgment, but upon environmental cues. The danger is that they seem unable to select the relevant factors. They are over-inclusive and, hence, tend to over-react to, or be adversely influenced by, setbacks and disturbances in the environmental equilibrium.

In summary, this study has established that in a problem solving situation the suicidal patient is perceptually unable to separate the relevant from the irrelevant aspects, making them all appear to be of equal importance. The resultant ambiguity in the situation creates a state of indecision about how best to tackle the problem. The easiest way out of this predicament is not to act at all. However, when circumstances force the suicidal patient to find a solution, his poor self concept, his passive tendencies, and his reluctance to seek assistance from others in his environment induce the person to behave in a stereotyped rigid manner.

These results seem to corroborate findings made by other researchers as well as suggest that the area of problem solving behavior may play an important role in the dynamics of suicide.
SUMMARY

This study investigated two aspects of suicidal behavior which, to date, have received little attention from researchers. These are (1) problem-solving behavior and (2) perception.

A matched-pairs experimental design was used in the study. The subjects were forty neuropsychiatric patients from the Riverview Hospital at Essondale. Twenty of these (14 women and 6 men) were patients who had been admitted because of serious suicide attempts. They comprised the experimental group. The other twenty were non-suicidal control patients, matched to the first group in terms of sex, age and psychiatric diagnosis.

In the first part of the study, attention was focused on three dimensions of problem-solving as measured by the Mooney Problem Check List, the Test of Social Insight and Luchins' Water Jar Problems Test respectively:

(1) Nine problem areas are dealt with by the Mooney Problem Check List. The use of this test established that suicidal patients differ from the non-suicidal in two areas, self-improvement and religion. In both instances, the non-suicidal control patients evidenced a greater sense of concern than did the suicidal patients.

(2) The Test of Social Insight investigates the subject's characteristic mode of response to problems of an interpersonal nature. This test showed that, in responding to problems of this nature, the suicidal patients are significantly more passive and less competitive than the control patients.

(3) Luchins' Water Jar Problems Test demonstrates the effect of rigidity in problem-solving. Using this test established that, in a stressful problem-solving situation, suicidal individuals tend to become rigid more quickly than non-suicidal individuals.
The second part of the study was devoted to the investigation of perception in suicidal individuals.

Finding that an individual is 'field-dependent' means that he tends to place an over-emphasis on the importance of environmental factors in perception. This concept of field-dependence or independence was investigated by means of Witkin's Embedded Figures test.

Administration of the Embedded Figures determined that the suicidal group took significantly longer than the control group on the test, indicating their relatively greater perceptual field-dependence.
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