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# THE EPIDEMIOLOGICAL STUDY OF SUICIDAL BEHAVIOR[1]

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## Introduction[2]

Epidemiology is concerned with the study of the occurrence of diseases in human populations, that is, in groups rather than separate individuals. Epidemiologists look for disease patterns in populations -- communities, regions or nations.

Epidemiologists distinguish between the host (the person who has the disease), the agent (the cause of the disease) and the environment (such as social and climatic conditions). For suicidal behavior, the host is the suicidal person, and the environment constitutes the social milieu in which the suicidal people find themselves. The agent, however, is not quite so simple as in some medical diseases where there are bacteria or viruses known to cause the disease. For suicidal behavior, the "causes" are not well understood.

However, Friedman (1987) noted that all persons, for example, infected with the beta-hemolytic streptococcus do not develop the disease it causes, rheumatic fever. Some hosts are more susceptible to the disease than others. This finds an analogy in suicidal behavior where it is known that factors such as a major depressive disorder or experience of suicidal behavior in family members and peers may increase the probability of suicidal behavior in some individuals. It may be possible to view such factors as agents to which not all hosts are susceptible.

Diseases are not easy to define. Some disease names merely describe the appearance of a person (externally or internally, such as colitis) or a subjective sensation (such as headache). However, some disease names do imply a causal element (such as pneumococcal pneumonia). Typically, with increasing knowledge, disease names move from description to causation. As regards suicidal behavior, suicidologists are still working at the descriptive phase, with a great deal of effort currently being put into devising a set of descriptive terms which all suicidologists can accept and work with (e.g., Canetto and Lester, 1995; O'Carroll, et al., 1995).

## Measurement in Epidemiology

Epidemiology is a quantitative science, and there are several standard terms employed.

### Prevalence

Prevalence refers to how many people in the group have the disease at a particular point in time:

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[1] This was written in 1997

[2] This discussion of the general principles of epidemiology draws heavily from the textbook on epidemiology by Friedman (1987).

$$\text{prevalence rate} = \frac{\text{number of persons with the disease}}{\text{total number in group}}$$

The point in time can refer, for example, to a particular day or to an event which happens to different people at different times, such as during a physical or psychiatric examination or during the first bleeding day of the menstrual cycle.

Prevalence rates for fatal suicide are rarely used, though occasionally an author tells how many people killed themselves in one day in the nation or in the world. A screening of people in a community for current suicidal ideation would give a point-of-time prevalence for suicidal ideation. Asking consecutive psychiatric patients admitted to an inpatient clinic about their current suicidal ideation would also provide a prevalence rate, as would a count of the number of women who engage in nonfatal suicidal behavior on the first bleeding day of the menstrual cycle.

*Period prevalence rates* measure the number of people who develop the disease during a period of time, such a month or a year. A yearly prevalence rate would include all of those persons in the group who had the disease at the beginning of the year plus all of those who developed the disease during the year.

**Incidence**

Incidence rates describe the rate of development of a disease in a group over a time period.

$$\text{incidence rate} = \frac{\text{number of persons developing the disease per unit of time}}{\text{total number at risk}}$$

This is the most common measure used for fatal suicide behavior, for example, the suicide rate of the United States in 1990 was 12.4 per 100,000 per year.

*Mortality rates* are simply incidence rates of death from particular causes. *Age-specific rates* are incidence rates for those in a particular age range, such as the mortality rate from suicide for those aged 15-25 years of age. *Case fatality rates* are the proportion of people with a disease who die in a given period:

$$\text{case fatality rate} = \frac{\text{number of people dying from a disease per unit of time}}{\text{total number with the disease}}$$

Strictly speaking, case fatality rates cannot be calculated for suicidal behavior. Suicidal behavior is not a continuous disease which ends for some in death. We do calculate ratios such as the proportion of those who have engaged in nonfatal suicidal behavior who eventually die from suicide or the proportion of those diagnosed as schizophrenics who eventually die from suicide, but these are really incidence rates per unit of time for specific groups of individuals defined by their behavior or their psychiatric diagnosis.

**Attributable Risk**

If we calculate the incidence of a disease in one group and the incidence in a second group, then the *attributable risk* is the difference between the two incidences. For example, the fatal suicide rate for Native Americans in 1980 was 13.3 per 100,000 per year and the fatal suicide rate for white Americans was 13.2 per 100,000 per year (Lester, 1994); the attributable risk of suicide attributable to being Native American was 0.1 per 100,000 per year (that is, 13.3 minus 13.2).

We might want to adjust for the age differences in the two populations in calculating these incidences and for any other variables which appear to be important.

The *attributable fraction* or *etiological fraction* is defined as follows:

attributable fraction =

$$\frac{\text{incidence in group A - incidence in group B}}{\text{incidence in group A}}$$

For example, in the example above, the attributable risk for suicide in Native Americans would be (13.3-13.2)/13.3 = = 0.0075 or 0.75%.

**Relative Risk**

Two rates may be compared by simply examining the ratio of the two rates -- in the example above 13.3/13.2 = 1.0075. Native Americans had 1.0075 times the risk of dying from suicide as white Americans. This ratio is called the *relative risk*. If the two incidence rates are instantaneous incidence rates, then the ratio is called the *rate ratio*; if they are cumulative incidence rates over a specific period of time, the ratio is called the *risk ratio*. For fatal suicide, the risk ratio would be termed a *mortality risk ratio*.

## The Observations Made in Epidemiology

Observations or measurements should be *reliable*, that is, whatever is being measured, the measurements should be consistent. Reliability has several operational measures. Test-retest reliability means that measuring the variable on a subsequent occasion will provide the same score as the previous measurement. Parallel forms reliability means that measuring the variable with two different measuring instruments on one occasion will provide the same score.[3] For example, research on the assignment of psychiatric diagnoses to patients shows that a great deal of disagreement exists between mental health professionals who examine the same patients, and so psychiatric diagnosis may be quite unreliable. In a study of the reliability of diagnoses using DSM-III, Strober, et al. (1981) found that clinicians interviewing the same 95 adolescent psychiatric inpatients could agree on the major diagnosis (that is, using thirteen major categories) only 77 percent of the time. There are several sources for this unreliability. For example, different interviewers will ask different questions of the patient, and the patient may feel differently about the interviewers and respond differently to the same question. However, even

[3] There are other measures of reliability which can applied to specific situations, such as when using a multi-item inventory.

when professionals observe a video-tape of an interview (which eliminates these two sources of possible disagreement), they still come to different diagnoses.

*Validity* means that the measuring instrument measures what the researchers think it is measuring. Intelligence tests are highly reliable tests by psychological standards. However, scholars debate with great emotion the validity of the tests, that is, they disagree over what intelligence tests measure. In suicide research, the distinction between self-mutilation and nonfatal suicidal behavior may be hard to draw (Lester, 1972). For example, it may be difficult to decide whether a chronic wrist-slasher is a self-mutilator or making "suicidal gestures."

Not all variations and fluctuations in measurements are due to unreliable or invalid instruments. Variations in the current level of suicidal ideation of populations may appear because of both differences among subgroups (such as men and women, the young and the elderly, or whites and blacks) and differences within each individual (suicidal ideation in a person may vary from day to day, and even from hour to hour). In biochemical assays of the bodily fluids of suicidal individuals (such as the cerebrospinal fluid) there be measurement error, such as inaccuracies in the biochemical measuring devices.

Another set of errors comes from sampling. The use of inferential statistics requires that we use random samples. However, the difficulty of obtaining truly random samples (that is, everyone in the population of interest must have an equal probability of being selected for the study) means that researchers typically use "available" samples, such as the patients in a particular clinic or the students in a particular class. These samples may not be representative of the population as a whole. Even random samples may not be representative of the population of interest, for *sampling variation* may result in deviant samples purely by chance. Increasing the sample size reduces the risk of sampling variation.

Under-reporting of the disease or behavior in question may occur for several reasons. In estimating the incidence of nonfatal suicidal behavior, people may decline to report self-involvement for fear of ridicule or stigma. In the reporting of fatal suicidal behavior, professionals may decline to certify the death accurately for a variety of reasons such as sparing the family stigma or a fear of legal problems if the family disagrees with the assigned cause. In some nations, such as Great Britain, many suicidal deaths are classified as undetermined whereas in other nations they would be classified as suicides. The recent increase in suicide rates in Roman Catholic countries such as Ireland is probably due in part to more valid classification of deaths. In a study in the United States, Farberow, et al. (1977) found that counties where lawyers, acting as coroners, certified deaths had lower suicide rates than counties where pathologists, acting as medical examiners, certified death.

Much research in suicidology uses the responses of patients to self-report questionnaires such as depression inventories. Several sources of error and bias can occur using such tests. Typically, a number of people refuse to participate in the study, while others fail to respond to particular questions (sometimes to complete sections of questions), and the omission of these patients from the sample introduces bias since these non-responders may differ in critical ways from those who respond (Lester, 1969), as well as reducing the sample size. Research reports should always indicate the percentage of non-responders in the study.

Other responders sometimes answer inconsistently, have response sets (for example, they tend to agree with every item), and lie (responders can fake "bad" or "good"), and a few psychological tests have special scales built in to detect this. However, most psychological inventories do not have such scales.

The problems introduced by these issues of reliability and validity of the data can sometimes be overcome by the use of large samples, when the unreliability of the data appears as "noise" in the data, increasing the standard deviations of the measures or reducing the level of statistical significance of the results, but not destroying completely the relationships sought.

## Basic Methods of Study

The two major approaches in epidemiological research are observational studies and experimental studies. In *observational studies*, the researcher merely observes the phenomena as they occur. In *experimental studies*, the researcher actively intervenes to change one of the variables in the research. For example, a description of the rates of suicide in a nation, the methods used and the variation over time is an observational study. A comparison of suicide notes written by fatal and nonfatal suicidal people is an observational study. However, a study in which half of a group of suicidal clients is assigned at random to cognitive therapy, while the other half is assigned to simple crisis intervention would be an experimental study since the researcher is determining which client gets each of the two forms of treatment. Experimental studies have the advantage of providing evidence for *cause-and-effect*, that is, whether in our example, the different therapeutic interventions *caused* the difference in the response of the two groups of suicidal clients. Observational studies are correlational in nature, and correlational studies do not provide strong evidence for cause-and-effect relationships.

Because experimental studies are difficult to carry out, especially in suicidology, researchers use two tactics to improve observational studies. First, *natural experiments* sometimes occur. For example, a nation may detoxify natural gas slowly over a period of years (as it switches from very toxic coal gas to less toxic natural gas), and the effects of this change on the suicide rate can be monitored. Second, *statistical controls* for other possible causal factors can be incorporated into the research design and data analysis, permitting a multivariate analysis of the data (that is, using many variables), and this can strengthen our certainty that a particular variable causes suicidal behavior.

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## A Study Using Statistical Controls

Zimmerman (1990) examined the association between the state spending levels of hospitals and the suicide rates in the states of America in several years. Looking at the Pearson correlations for 1960 and 1970 between suicide rates and several social variables, she found the following:

| | 1960 | 1970 |
|---|---|---|
| suicide rates and | | |
| hospital spending | -0.23 | -0.45* |
| divorce rates | 0.74* | 0.69* |
| population change | 0.50* | 0.56* |
| population density | -0.55* | -0.61* |
| income | 0.30* | -0.02 |
| % blacks | -0.26* | -0.32* |

An "*" indicates a statistically significant correlation coefficient. Zimmerman then placed all of these variables in a multiple regression, so that their combined effects could be examined. The standardized regression coefficients were as follows:

| | 1960 | 1970 |
|---|---|---|
| suicide rates and | | |
| hospital spending | 0.07 | -0.15 |
| divorce rates | 0.56* | 0.21 |
| population change | 0.07 | 0.36* |
| population density | -0.36* | -0.38* |
| income | 0.17 | 0.02 |
| % of blacks | -0.07 | -0.17 |

In the regression analyses, only divorce rates and population density contributed significantly to the prediction of suicide rates in 1960, and only population change and population density contributed significantly to the prediction of suicide rates in 1970. Thus, for these two years, the regression analysis, which controls for the other social variables, failed to find any impact from hospital spending, whereas the simple correlation coefficients (which do not control for the other social variables) suggested a negative association.

Zimmerman's study also illustrates the importance of replicating results on other samples or in other years to see whether the results are generalizable. In fact, Zimmerman replicated her study using 1980 and 1984 also, obtaining slightly different results for those years.

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## Observational Studies

Observational studies can be *descriptive* or *analytic*. Descriptive studies simply describe the phenomenon whereas analytic studies seek to explain the phenomenon.

### Descriptive Studies

Descriptive studies describe the patterns of disease in the population. They study the association of the disease by such variables as age, gender, marital status, race, occupation, social class, geographic location and time. This information identifies groups at high risk for a disease, assists the planning of services to respond to those with the disease, and provides clues to the etiology of the disease which may stimulate future analytical studies.

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## A Descriptive Study

Lester and Wilson (1988) obtained raw data on the individual cases of fatal suicides in Zimbabwe for the period 1983-1986. They calculated suicide rates of 6.9 per 100,000 per year for Africans, 17.6 for Europeans and 9.7 for Asians/Coloreds. For the Africans, the suicide rate for African men was 10.5 and for women 3.4. By age, the suicide rate for both men and women peaked for those aged 60-69, at 33.4 and 10.2 respectively. The most common method for Africans committing suicide was hanging (76% of the men and 55% of the women chose this method), followed by poison (chosen by 16% of the men and 35% of the women).

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Age variations in the prevalence or incidence of a disease can be presented in two ways. A current or cross-sectional presentation shows the suicide rate in each age group in one year -- different people are involved in each age group. A cohort presentation shows the suicide rate of a cohort over time as it ages. These two presentations can give quite different results. For example, the suicide rate of the Canadian male cohort born in 1911-1915 was

0.7 per 100,000 per year when they were aged 10-14,
3.2 when they were aged 15-19,
7.6 when they were aged 20-24,
12.0 when they were aged 25-29,
8.9 when they were aged 30-34,
14.9 when they were aged 35-39,
19.2 when they were aged 40-44,
22.6 when they were aged 45-49,
27.9 when they were aged 50-54,
32.5 when they were aged 55-59,
29.8 when they were aged 60-64 and
26.0 when they were aged 65-69 in 1976-1980.

Thus the suicide rate for this cohort peaked when they were 55-59 years old (Lester, 1988a). In contrast, the suicide rate by age in Canada in 1980 was:

| | |
|---|---|
| 10-14 | 1.5 |
| 15-19 | 18.9 |
| 20-24 | 29.1 |
| 25-29 | 30.8 |
| 30-34 | 25.0 |
| 35-39 | 24.2 |
| 40-44 | 23.5 |
| 45-49 | 30.7 |
| 50-54 | 29.2 |
| 55-59 | 28.1 |
| 60-64 | 27.9 |
| 65-69 | 28.2 |

with a peak for those aged 25-29.

Variation by place is of interest because it may provide clues to etiology. In the case of suicide, rates have typically been very high in Hungary. Hungarians have been quite concerned with their high national suicide rates, and they see themselves as a highly depressed people in general. Several explanations are possible, including physiological differences between Hungarians and other national groups, differences in child rearing practices, or differences in social expectations (that is, Hungarians are aware of their high suicide rate and, therefore, suicide becomes more of an option to Hungarians when they are in crisis).

Robinson (1950) warned of the dangers of assuming that associations between variables over geographic regions can be generalized to individuals. For example, if suicide rates and church attendance are found to be correlated over the states of America, we cannot assume without further research that these two variables are associated over individuals. Robinson called this inappropriate generalization the *ecological fallacy*.

Variations over time can be *short-term* or *long-term*. Among the short-term effects, *epidemics* (or *outbreaks*) are of special interest. An epidemic is an occurrence of the behavior in a population in excess of the number of cases expected. The disease in an epidemic may affect only those who are susceptible. Others may be immune or resistant as a result of inherent factors. After a person is exposed to the disease, there is an incubation period, and, once the person has the disease, he or she may be enter a communicable period during which they can pass on the disease to others. An epidemic typically shows an increasing incidence over time to a maximum, followed by a steady diminution until it disappears almost completely as the supply of susceptible individuals is exhausted. For suicide, the notion of resistance and incubation period may have some relevance.

For example, Taiminen, et al. (1992) reported on eight inpatient suicides in a three month period in their clinic in Finland. Six of the patients had close relationships with one another, and Taiminen was able to document the influence of suggestion and identification on the occurrence of and the methods chosen by these suicides.

There may also be *recurrent* or *periodic* time trends -- suicide shows variations by time of day, day of week and month of the year. For example, Phillips and Wills (1987) examined fatal suicides in the United States from 1973 to 1979, and found that suicide rates were above average on New Year's Day, July 4th and Labor Day and for the five following days, but below average on the five days prior to the national holidays. In contrast, suicide rates were below average before, during and after Memorial Day, Thanksgiving and Christmas.

Long-term trends are also called *secular* trends and extend over years or decades. For example, the Hungarian suicide rate rose steadily for twenty years, from 1965 to 1984, after which it has steadily declined. Araki and Murata (1987) reported on secular trends for suicide in Japan for the 33 years following World War Two (1950 to 1982). The suicide rate peaked for both men and women in the mid-1950s, dropped to lows in late 1960s, and diverged in the 1970s, increasing steadily for men and increasing and then decreasing for women. Looking at these changes, Araki and Murata suggested that suicide rates decreased during times of economic

prosperity and increased in the years prior to economic depressions. However, they did not test this hypothesis, leaving later investigators to do so.[4]

## Analytic Studies

Analytic studies, on the other hand, start with an hypothesis about the causes of suicide, and the data test this hypothesis. For example, Clarke and Lester (1989) hypothesized that the availability of methods for suicide would affect the suicide rate. They found that, as domestic gas was detoxified in England, the use of domestic gas for suicide declined dramatically, and the overall English suicide rate dropped by almost a third. Although this study was observational (the researchers themselves did not manipulate any of the variables), the results supported a particular hypothesis about the causes of suicidal behavior.

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## An Analytic Study

Lester (1993) examined the changes in the suicide rates of the 48 contiguous continental states of America between 1970 and 1980 and correlated these changes (both absolute and percentage) with the absolute number of suicide prevention centers in the states, the number per capita and the number per unit area in 1970. The correlations were:

| | centers: | | |
|---|---|---|---|
| | absolute number | per unit area | per capita |
| absolute change | -0.40* | -0.11 | -0.22 |
| percentage change | -0.30* | -0.12 | -0.25* |

The correlations marked with an "*" were statistically significant. All were negative, indicating a preventive effect on suicide from suicide prevention centers, but those for the absolute number of centers were larger than the others and statistically significant. Thus, Lester's study provided some support for the preventive effect of suicide prevention centers on fatal suicide.

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## Cross-Sectional Studies

Cross-sectional or prevalence studies examine the relationship between suicide and other variables of interest in a defined population at one point in time. For example, Lester (1994) compared the rates and methods of suicide in Chinese Americans, Japanese Americans and Filipino Americans in the United States in 1980. A cross-sectional study can examine the focal behavior (in this case suicide) in the different subgroups of the population or examine the presence or absence of a variable in those who engage in the behavior (in this case suicide) and those who do not.

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[4] Lester, et al. (1992) found that unemployment rates were associated with the Japanese suicide rate from 1953 to 1982 even with controls for growth in the gross national product per capita, the divorce rate and female labor force participation.

## A Cross-Sectional Study

Goldney, et al. (1955) studied 3130 school students from twelve randomly chosen metropolitan schools in Adelaide, Australia, in 1980. The students had a mean age of 15.6 years. These students were followed up by mail each year, and by 1988 472 remained in the study, with data available for 432 subjects.

Each subject was asked about their employment status and whether they had had thoughts of suicide at some point in the life. The results were as follows:

| | | |
|---|---|---|
| employed/dissatisfied | n=31 | 48% lifetime suicidal ideation |
| unemployed | n=21 | 38% lifetime suicidal ideation |
| students | n=35 | 37% lifetime suicidal ideation |
| employed/satisfied | n=345 | 20% lifetime suicidal ideation |

Previous research had suggested an association between suicidal behavior and unemployment; Goldney's study suggests an association also between suicidal behavior and unhappy employment.

(Goldney labeled his study as a prospective longitudinal study -- it was not. Although this study was collected on a cohort of subjects, the data presented in Goldney's paper is a cross-sectional study on this cohort using data collected in 1988 -- it is not a cohort study.)

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In cross-sectional studies there are several important methodological issues in choosing the sample. Statistical tests require that the samples be *random*, that is, everyone in the population should have an equal probability of being chosen. This is rarely done. A *stratified random sample* is one in which the population is classified on the basis of some social variables, such as age and gender, and the numbers of each age-by-gender group desired determined by the researcher. Then, within each age-by-gender group, the subjects chosen are chosen randomly. Sometimes the population forms natural clusters, such as classes in a school or cities in a region. Again, within each cluster, the subjects are chosen randomly. A *systematic sample* lists the population and chooses every tenth or one hundredth person on the list. However, in actuality, random samples are rarely taken -- rather the researcher uses the subjects available, either in a college class or a psychiatric clinic. Despite this, it must be borne in mind that the statistical analyses used by researchers require truly random samples.

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## A Prevalence Study

It was difficult to find a good prevalence study of suicidal ideation because most studies investigate "lifetime" experience of suicidal ideation. However, Vega, et al. (1993) reported a retrospective six-month prevalence study on a sample of 6,760 7th and 8th grade male school children in Miami. Among the questions, the students were asked about the presence of suicidal ideation in the past six months. Of the 5303 respondents, 18.2% reported such suicidal ideation. By ethnic group, the percentages were as follows:

| | |
|---|---|
| *Cuban Americans* | *17.3%* |
| Other Hispanics | 17.8% |
| Nicaraguans | 16.5% |
| African Americans | 20.5% |
| white non-Hispanics | 19.3% |
| Haitians | 19.9% |
| Caribbean blacks | 16.0% |

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## Case-Control Studies

*Case-control studies* are cross-sectional studies in which the variables of interest are examined in a sample of people with the focal behavior and those who do not have the behavior, such as suicidal patients versus nonsuicidal patients. The nonsuicidal patients comprise the *control* group or *comparison* group. The better studies match the members of the control group with the members of the focal group on important variables -- for example, they may all be psychiatric patients hospitalized with schizophrenia. The matching can be done on a group basis (that is, the two groups resemble each other as a whole) or case by case (that is, each member of the focal group is matched for certain variables with a member of the control group).

The first step in a case-control study is to identify the cases to be studied. The criteria for diagnosis and for inclusion in the study must be clearly spelled out and reported in the published report. Cases are sometimes identified by a community-wide search, but more often limited to clients seen at one or more clinics or hospitals in a limited period of time.

The control group sometimes involves important choices. The control group can be matched with the group of interest on some characteristics, and, as mentioned above, this matching can be done so that the groups are matched overall or paired so that one or more controls are chosen for each case. It is often helpful to have a very large control group, up to five or six times as many subjects, for this reduces the variability in the data and increases the chances of identifying statistically significant results.

Examples of poor choices for control groups are easy to find. For example, Neuringer (1964) studied the rigidity in the thinking of nonfatal suicides and compared them with psychosomatic patients. However, he did not demonstrate that the psychosomatic patients were as psychiatrically disturbed as the nonfatal suicides. It is common to use patients receiving minor medical treatment or who are normal as controls in such studies (e.g., Wilson, et al., 1995), and this comparison group is of even less value. For example, a great deal of research on suicidal adolescents compares high school students who have engaged in nonfatal suicidal behavior with other students in the school (e.g., Bjarnason and Thorlindsson, 1994). Since the suicidal students are in all probability more psychologically disturbed or distressed than the average students, any differences identified could be a result of the distress rather than the suicidality of the students.

To take another example, Lester (1988b) criticized the use of simulated suicide notes, written by nonsuicidal individuals, as a comparison group for genuine suicide notes. He argued

that such studies do not inform us about suicide; rather they inform us about how well people can fake a suicide note and provide clues as to popular conceptions about suicide.

Because of bias (conscious and unconscious) on the part of the researchers, it is best if those collecting and recording the data do not know whether the subjects are cases or controls.

In case-control studies, an *odds ratio* (or relative odds) can be calculated. This is defined as follows:

$$\text{odds ratio} = \frac{\text{(number of cases with behavior) x (number of controls without behavior)}}{\text{(number of cases without behavior) x (number of controls with behavior)}}$$

If the cases and controls are not matched, the odds ratio is calculated as follows:

| | Cases | Controls |
|---|---|---|
| behavior present | a | c |
| behavior absent | b | d |

(a, b, c, and d are numbers of subjects)

odds ratio = ad/bc

An example here comes from Norman, et al. (1990) who studied the relationship between response to the dexamethasone suppression test by depressed psychiatric patients and subsequent fatal suicide:

| | Suppressors | Nonsuppressors |
|---|---|---|
| fatal suicides | 6 | 7 |
| not fatal suicides | 43 | 10 |

The odds ratio for these data is (6x10)/(43x7) = 60/301 = 0.20, indicating that suppressors are less likely to subsequently kill themselves than are nonsuppressors.

If the cases are matched with the controls on an individual basis, the odds ratio is calculated as follows:

| | | behavior in the controls | |
|---|---|---|---|
| | | present | absent |
| behavior in the cases | present | a | c |
| | absent | b | d |

(a, b, c, and d are numbers of pairs)
odds ratio = c/b

If case-control studies focus on new cases that develop during the data collection phase rather than cases with the existing disease, then the research gives better clues to the *development* of the disease, and the odds ratio comes closer to estimating the rate ratio.

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**A Case-Control Study**

Séguin, et al. (1995) identified all deaths of men aged 18 to 35 years in Montreal and Quebec City from suicide or car accidents. Families were contacted and asked to participate in a study. Eventually, 30 families of suicides and 30 families of car accident victims were recruited for the study. The groups were not matched, but simple demographic characteristics were reported for the two groups, and they were quite similar.

The parents of the suicides were significantly more depressed six months after their son's death than were the parents of the accident victims (mean scores 17.3 and 8.9) but not nine months after their son's death (mean scores 5.6 and 4.8). The impact on the family was much more often negative for the families of the suicides than for the families of the accident victims (47% versus 7%).

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**Cohort Studies**

*Cohort (incidence) studies* explore the development of a focal behavior. A population free of the disease is identified, the so-called cohort, and followed for a period of time. Those with some attribute are compared to those without the attribute for the later development of the disease. Cohort studies are the best approach for answering the question of whether some attribute *predisposes* people to a disease. The distinction between case-control studies and cohort studies is lessened if the cross-sectional study includes questions about the history of the responders.[5]

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**A Cohort Study**

Lester (1991a) examined the childhood experiences of 1528 gifted children identified in 1921 by Lewis Terman in California and their subsequent suicidal behavior. These children had intelligence test scores of 130 or higher and were about ten years old when the study was initiated. As of 1960, the researchers had lost contact with only 1.7% of the sample, an amazing achievement.

Lester matched each of the 15 suicides identified by 1987 with a control subject on the basis of a mental health rating assigned in 1950. Thus, any subject committing suicide prior to 1950 could not be included in the study.

At the time of entry into the study, each child was rated by the parents on 25 personality traits. Only one predicted subsequent suicide -- the suicides were rated as less conscientious by their parents in 1921. The finding of only one significant difference in 25 possibilities is to be

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[5] Cost-saving approaches include the *nested case control study* in which only a subset of the disease-free patients are used as controls, and the *case-cohort study* in which, rather than using disease-free patients for controls, a sample of the entire cohort is chosen (which may, therefore, include a few patients with the disease).

expected on the basis of chance given the statistical criteria used in the study. Lester concluded, therefore, that, parent ratings of their children did not predict subsequent suicide, once mental health was taken into account.

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Studies over time can be *prospective* or *retrospective*, that is, following-up participants to see what will happens versus asking people about their past to see what happened. Prospective studies (as in Lester's [1991a] study reviewed above) are typically cohort studies, whereas retrospective studies are typically cross-sectional studies. In prospective studies, the researcher has better control over the data collected; retrospective studies often are forced to use data collected by others, sometimes for different purposes, and the data are sometimes incomplete and from out-dated inventories.[6] However, though these terms are commonly used, Friedman (1987) urged that they be discarded.

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**A Retrospective Study**

Lester (1991b) conducted a retrospective study of nonfatal suicide and childhood experiences of punishment. Using a data set for 441 male and 13 female prisoners in Vermont, the prisoners' lifetime occurrence of nonfatal suicide was examined for any association with their self-reports of how their parents punished them.

Significantly more of the prisoners who had engaged in nonfatal suicidal behavior at some point in their life (92 of the 454 prisoners -- 20.3%) were punished physically by their father than those who had not (49% versus 30%). There were no significant differences in maternal punishment. Lester examined the effect of experience of psychiatric hospitalization as a way of controlling for the degree of psychiatric disturbance in the two groups of prisoners, but this variable did not affect the association he had found between physical punishment by the father and suicidal behavior.

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Cohort studies provide the best evidence about the risk of disease development but, carried out prospectively, they are expensive and time-consuming. For example, the Terman study of gifted adolescents started in the 1920s and has employed staff to follow-up the 1500 cases ever since.

Cohort studies must first define a population -- a general population group or a specialized population which is more easily followed such as a group of insured workers or members of a profession. The cases can be followed up for the same period of time or for varying periods of time. For example, if the cohort is made up of consecutive patients seen at a clinic over a period of years, then the follow-up period is obviously longer for the patients seen early in the sequence than for those seen toward the end. The use of *person-years* controls for this problem -- a case followed-up for ten years contributes ten person-years, a case followed up

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[6] One of the few prospective studies in progress is by Caroline Thomas (e.g., Graves and Thomas, 1991) in which 1046 entering medical students at Johns Hopkins University Medical School were tested on a variety of measures and followed up for the development of diseases and behaviors, including suicide.

for one year contributes only one person-year. However, this technique assumes that the risk of the disease remains roughly constant over the follow-up period.[7]

An extra source of bias in cohort studies, in addition to those mentioned in the section on Observations Made in Epidemiology, is that study subjects are typically lost as the study progresses -- typically the longer the follow-up the harder it is to track down all of the subjects in the cohort.

## Experimental Studies

Experimental studies involve some manipulation or intervention by the researcher. The subjects who undergo this intervention are called the *experimental group* while those who do not undergo this intervention are called the *control group*. If the researcher determines which subjects undergo the intervention and if these subjects are chosen at random, then the researcher can conclude that there is a cause-and-effect relationship between the intervention and the outcome.

Experimental research involves ethical problems. The information about subjects must be kept confidential, and there must be no serious harm to subjects in either the experimental group or the control group as a result of participation in the research. Most institutions which conduct research on humans have an ethics committee to review proposed research for how it deals with these ethical issues. For example, in research to test whether lithium is a useful medication for bipolar affective disorder, experimental research necessitated that the control subjects be given medication that resembled the lithium in appearance but which was actually inert. Many psychiatrists refused to participate in this research in Europe because they felt that it was unethical to withhold a potentially useful medication from the control subjects.

Experimental epidemiology is primarily concerned with testing procedures to prevent the disease. As noted above, the experimental and control subjects should be chosen randomly from the same pool, but this is often not feasible. For example, in studies to explore whether school suicide prevention programs are effective, sometimes the program is given to some of the classes and not given to other classes. The classes can be chosen at random, but not the subjects.[8]

Ideally, experiments should be double-blind, that is, both the assistants involved in the study do not know to which group the subjects belong (experimental or control) and those involved in assessing, coding and analyzing the data do not know to which groups the subjects belong.

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[7] *Clinical epidemiology* has come to mean the study of groups of patients with a disease. Studies of *the natural history of disease* are analogous to descriptive studies in epidemiology (especially cohort studies). Such studies enable us to predict the patient's future, that is, their *prognosis*. Therapeutic trials of medication can be viewed as experimental research in clinical epidemiology.

[8] Sometimes it is possible to use the subjects as their own control by making before-and-after comparisons.

## An Experimental Study

Kalafat and Elias (1994) conducted a school-based suicide awareness program in a school for the 10th graders. Half of the students were assigned (by the school, not by the researchers) to health classes (in which the suicide awareness program was presented) and half to physical education by the school for one marking period and switched for the second marking period. Half the experimental and control students were given both a pre-test and a post-test questionnaire about suicide and, because taking a pre-test can affect responses on the post-test, half of the experimental and control students were given only the post-test.

The inferential statistics on the post-test scores indicated that the pre-test had no significant effect on subsequent knowledge about suicide, whereas the group (experimental versus control) had a significant impact on knowledge, with the experimental group having more accurate knowledge. Unfortunately, Kalafat and Elias did not report the mean "accurate knowledge" scores for the two groups.[9]

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## Some Final Issues

Comparing behaviors in different populations is made difficult by the fact that these populations may differ in some crucial variable. For example, in comparing national suicide rates, we know that different national populations may have different age compositions. Thus, for suicide rates, it is common to *standardize* the suicide rates for age based on a standard population. However, suicide rates could also be standardized for other variables, though this is rarely done.

In the section on Observations Made in Epidemiology, we discussed issues of reliability, but this referred to the *internal reliability* of the study. If the results of a study on one population generalize to other populations, then the results have external reliability. Results should never be assumed to have external reliability until they have been replicated by researchers independent of the original researchers.

Let us assume that we have identified a variable that is associated with, and perhaps increases the risk of, a behavior. It is important to ascertain whether this variable is *specific* to the disease or behavior we are studying, or whether it has a more general effect. For example, in the research which indicates an association between sexual abuse in childhood and later suicidality, none of the research reviewed by Lester (1992) indicated specificity. Indeed, those who have been sexually abused in childhood show an increased incidence of all kinds of psychiatric and psychological problems in adulthood, only one of which is suicidal behavior.

Clearly, this brief discussion of epidemiology and its applications to suicidal behavior has not exhausted all of the concepts and information that could be presented. The aim has been merely

[9] Kalafat and Elias also studied the impact of the program on attitudes toward suicide and responses to suicidal peers.

to introduce the reader to some of the issues involved in epidemiology and to present some examples. It is hoped that interested readers will pursue the topic in more depth on their own.

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# INTERVIEW WITH A SURVIVOR: TIM

**David Lester**

This case was the focus of:

Lester, D. (1989). Suicide in a middle-born child. *Adolescence*, 24, 909-914.
Esposito-Smythers, C., Jobes, D. A., Lester, D., & Spirito, A. (2004). A case study on adolescent suicide. *Archives of Suicide Research*, 8, 187-197.

David: What happened to Tim at the time he killed himself?

Jane: He had been away for two days on a camping trip with some friends of his. He was due to come back in the afternoon or early evening of the night that he died. I received a call from my mother-in-law late that afternoon. Tim's father has a country place outside Jonesboro, Pennsylvania. Tim and his friends had gone up there and vandalized the place. They had ripped it to pieces; torn up things that would have no real value to anyone but his father. My mother-in-law happened to be going there, and she walked in on them. The boys ran away. She notified the police. Then she became apprehensive and remorseful, and she thought that maybe she shouldn't have notified the police, so she called me. I told her that she was right to do it. Then Tim called me on the way home, and I said to him, "I talked to Nanny and I know what happened." I worked nights at the time, and I said, "If I'm asleep when you get home this evening, you wake me because we are going to talk." He said, "Yes, all right." When I woke up that evening, my other children told me that he had come in, had something to eat, borrowed my foster daughter's car, saying he would be home early and not to bother me. He would talk to me later. I went to work, and I knew something was wrong. That is the only way I can put it. The idea of suicide never entered my head. Never. But I knew something was radically wrong. I called the police, and they told me that they could not look for him until 24 hours had passed. But they said if Tina, my foster daughter, would declare her car stolen, then they could look for him. I called her up and told her to do it. She said she wouldn't. They have a very close and loving relationship. She said there was a reason. He'd had a flat or something. She wouldn't do it. I said, "You've got to." She did. She had an apartment adjoining mine at that time, in a rural area with lots of trees, and there was a parking area. She had a souped-up car. It had decals and flags and everything. So the police came to the apartment to interview her. This was about one o'clock in the morning. She described her car, and they said "Well, that car is in the parking lot." She said, "It can't be because, whenever he parks my car, he brings me the keys." "Well it's there." And she said, "Something is wrong." She went out with them, and they found him. He had taken a piece of garden hose and threaded it from the exhaust through the window.

David: How old was Tim?

Jane: He was 17.

David: And the thought that he was going to kill himself never entered your mind?

Jane: Never.
David: He never talked about suicide?
Jane: Never to me. I found out later that, to several of his friends and his older brother, he had said that he had considered it, (these are not his exact words, of course), that it was the ultimate answer, that if things got to where he absolutely couldn't handle them he'd get out of it. It was the ultimate running away because nobody could bring you back.
David: But he never mentioned that he had thought of killing himself to you?
Jane: No, never.
David: And he had never made any suicidal attempts before?
Jane: Never.
David: Did he leave any note?
Jane: Nothing.
David: Where did he get the garden hose from?
Jane: Well, we had a garden hose.
David: He got that from the house, and then he came over to borrow the car?
Jane: Yes. Apparently, he had gone out for a while. I understand he did go over to see his girl friend for a little bit. But he had come back.
David: Did you find out whether he had mentioned his intention to his girl friend?
Jane: No. She was totally stunned.
David: At the cabin in Jonesboro he was with some friends. Did you talk to them at all?
Jane: No. They weren't coming near me. All of his friends rallied round. I had an extra fifteen children. But those two never came near me. I can understand that.
David: So it really came as a surprise to most people?
Jane: Yes.
David: Maybe you could tell us something about what Tim was like as a child?
Jane: Well up to the age of about eleven, he was a super sweet child, very sweet, very loving. Totally dominated by his older brother. His older brother led him around by the nose.
David: How much older was he?
Jane: Two and a half years. He really led him around by the nose. They were like the Chief and the Indian. Everybody adored him, and he was just sweet and lovable, a little chubby cute kid. Then when he was about eleven, he shifted into high. He started getting into all kinds of trouble at school. But it was nothing but silly trouble, cutting up, silly trouble. Then we moved up to North Jersey. I think he was about eleven. And then he started really getting into trouble. He set a couple of fires, he vandalized quite a bit, and he began to steal. When we would ask "Why? Now just tell my why," he would say, "I don't know." And I honestly believe he was telling the truth.
David: This all started just before you moved, and then it got worse?
Jane: Yes.
David: Is there anything that happened around that time?
Jane: No. We loved it up in North Jersey.
David: Did Tim have any younger brothers or sisters?
Jane: Yes. He is the middle of seven.
David: So there would have been a succession of children being born.
Jane: Yes. And they were right close together, all of them. There were seven in nine years. They're all exceptionally close, including him. The times those kids lied for him!
David: So that all his brother and sisters were born by the time he was twelve?

Jane: Yes.

David: You mentioned a foster daughter. You had foster children?

Jane: No. That is just a term we used. She was grown when she came to live with us. She was a co-worker of mine. She was in her early twenties. She had come from New York and had been staying with her sister, and it wasn't working out. She missed her parents, and yet she liked it down here. So I said, "Come and stay with us." She wound up staying for several years, and then she got her own apartment right next to us. She is in her late twenties now. I have a little cottage, and she lives right next to us. The children always introduce her as their sister.

David: It's a very close friendship?

Jane: They were close to each other. She had a lot of emotional problems, and I think that's one reason that they understood each other.

David: So at the age of eleven he started changing. What did he do before you moved?

Jane: Well it was just silliness. Like the teacher would go out of the room and come back and find him tap dancing on a desk. Sticking bubble gum where bubble gum didn't belong. Silly childish things. Like "Look at me. I'm going to make you laugh. I'm a clown."

David: But it was kidding around?

Jane: Yes. It wasn't any real harm. It was a nuisance more than anything else.

David: Then after you moved it began to get bad. What did he set fire to?

Jane: Once, there was some type of entertainment going on in school. He went to it with a bunch of others, and they went outside during an intermission. He lit a spill or something and tossed it under a parked school bus. Apparently, somebody managed to put it out just before it was going to take the gas tank up. He had no idea what would happen. He was just being stupid. Another time, he set a fire in a classroom. They were doing something with rubber cement, and the teacher had the imprudence to leave the room for a minute. He set fire to that. He swore on a stack of Bibles he didn't do it. But he did. Then another time, riding home from school on the school bus, he and another kid just carved up the whole back seat. Of course, we got the bill for that. Which was only right.

David: So most of his destruction was of objects outside the home? Did he destroy things at home?

Jane: Not unless he was putting his brothers through the wall. He made rather large holes in the wall.

David: But usually it was external problems outside of the home?

Jane: Yes.

David: So the night that he killed himself, when he had been up at that cabin and he had taken it apart, was that the first time he had destroyed something that belonged to a relative?

Jane: The only other thing he did to a relative. My brother had a coin collection. It was a big bottle, a liquor bottle, and it stood about this high. He kept coins in it. Tim appropriated that. He got found out and paid it all back. That was the time a relative was involved. He got caught all the time. Just before he died, the father of a girl was redoing her bedroom, and he had been putting aside money a little at a time so that he had about one thousand dollars on hand. Then he was taking the money and buying the things that he needed. She was telling Tim how pretty her room was. I don't remember whether she took him in and showed him or whether she told him. But at any rate her father kept the money in a desk. Tim went in there (this was just a day or so before he died), pried open the desk,

took nothing out of it, and went out the window. They know it was him because, if you please, he left his knife with his initials on it. He wasn't stupid. It had to be saying something. We tried so hard to find out and we failed.

David: Did he steal from shops?

Jane: He stole anything from anybody, everywhere. You couldn't sit your purse down. You couldn't sit your billfold down. You couldn't sit your cigarette case down.

David: Did he steal money?

Jane: Yes.

David: Did he steal things that he needed or just anything?

Jane: It was anything. For example, I was doing some work in the house with some wood. I was carving this piece of wood, and he said, "You are going to tear your hands up with that. I'm going to see if I can find you something that would be better." A day or two later he brought me this wood-working tool which was really nice. I just said, "Thanks." If I had thought about it, I would have thought he had bought it. He had jobs here and there. He earned money, and he was generous. I never even thought about it. It turned out he had lifted it from school. So when that was brought home to him, I shook down his bedroom and pulled the other things out, and we took it back to school. I said to him, "Why?" He said, "Well, I thought you could use it." I said, "If I wanted one bad enough, I would go out and buy it. It was nice to have, but not to the extent that I wanted you to steal it. If I wanted it bad enough, I could have scared up five dollars and got it."

David: So he stole generously, to give to other people too?

Jane: Yes, and he stole for himself.

David: Did he have enough money that he didn't have to steal if he needed those things?

Jane: Oh yes. He always had jobs. He did beautiful woodwork, he did gardening. Anything he turned his hand to he did well.

David: Were there any other behavior problems he showed beside this stealing and destruction?

Jane: A great deal of violence. He had immense mood swings. They were like that (snap). They swung one way, and they swung the other and, when he was in a rage, you had just better get out of the way. He would lay you out. He didn't care who you were or what the situation was. He thought the world of his younger brothers, but they got put through the wall and he really let them have it.

David: Can you identify the kinds of situations that would make him angry?

Jane: Anything. Here is one example. His older brother was using my car for some errands and he parked where he isn't supposed to park. The policeman asked him for the registration and license. So he pulled out the registration I had in the glove compartment and went into his billfold for his license. It wasn't there. Luckily the policeman was nice enough to accept his word. "I have got a license; this is my mother's car." He didn't make any fuss. But my son was really upset. He said, "I really don't know where that license went. I know it was in my billfold, and I'm really upset. I could have been taken off to jail." Which was true because he was a long-haired kid. We had a shake down all over the place. We asked Tim, and he didn't have any idea where it was. One of my younger sons said to me, "I bet I can tell you where it is." I said, "Where?" "Go under Tim's mattress." We went under it, and there it was. He had been using it. He was a big good-looking kid and had been using it for proof to go into bars and get drinks. I talked to him. I didn't always talk to him quietly. I talked at the top of my lungs half the time. But this time I talked to him quietly. I said, "You know this is really something else. It's

not only an illegal thing you are doing, but it is a pretty darn rotten thing you're doing. Your brother could have been carted off to jail." He said, "I know," and he double talked his brains out. Finally, I turned him loose. Before I had my back turned on him, his brother went right through the wall. There was a hole in the sheet rock.

David: He attacked the younger brother who had told on him? You said his moods would swing. What other moods did he show?

Jane: I have a hair trigger temper myself. We would be yelling at each other, and in the middle of things (he would be cussing me up, down and sideways), in mid-yell, he would say, "Mom. I love you. I love you." In mid yell. I honestly don't think he knew why any more than the rest of us. There were times when I was so desperate that I said to him, "You tell me what you want, and I will get it for you. I don't care what it is. I don't care if I have to buy it. I don't care if I have to take another job to get it. I don't care if I have to bribe a politician. You tell me what you want, and I will get it for you." He couldn't tell me.

David: Did he show much depression in his teenage years?

Jane: No.

David: He was relatively happy?

Jane: No. I can't say he was happy. He was usually on the rampage somewhere.

David: What do you mean by that?

Jane: He was an excellent driver, but when he got in a mood, he drove like an idiot. He would get into fights for no reasons. Not just at home, anywhere.

David: So what would he do on a typical weekend or in the evenings? What were his interests?

Jane: Breaking in somewhere.

David: Did he have a social group that he hung out with?

Jane: Oh yes. They were odd. They were spooky. They disappeared in and out of the woodwork. They were odd. They were a couple of nice straight-forward kids, but they didn't last long as friends.

David: Do you think that his friends were similar to him? Did they break and enter?

Jane: Oh yes. A lot of them have been in a lot worse trouble since Tim went. We were all hoping that, maybe as ghastly as his situation was, it might bring somebody up short. But it didn't. Just for a little while. At his funeral all these kids turned up, except the two he was with at the cabin. They were all at his funeral, these hoods, all dressed up. They were starched and combed. It would break your heart. They all came up to me and I thought, "Come on. Think. Don't forget this. Think about this. Look at that coffin. Look at it." You wanted to shake them and say, "Look at it. There but for the grace of God." I think it straightened them out for about for or five days. Like a heavy smoker always says, "The other guy will get lung cancer." I don't think they could conceive of it happening to them.

David: Looking back, do you see his behavior a result of the crowd he was with?

Jane: I can't say that. I never have been one to believe that he led her astray, she led him astray, they led them astray. I figure if you're going to do something, you are going to do it. If you don't want to do it, you're not going to do it. You will find people to do this or that with you if you want company, whether it's breaking and entry or sitting and reading the Bible.

David: So you feel that he chose those friends as his friends because they were the ones like him? Was he ever violent toward you?

Jane: Oh yes. He chipped the bone in my wrist one time. I can't remember what the situation was about. It must have been fairly trivial, or I would remember. But it degenerated into a battle of wills. I said, "You will." He said, "I won't." He would up letting my wrist have it. He was totally devastated.

David: In a situation like that, as soon as he hurt your wrist, would that end the emotion?

Jane: Yes. He was horrified.

David: Was he violent toward his father too?

Jane: No. He was twelve when my husband and I separated.

David: So he hadn't been violent up to that point?

Jane: Well, yes. But he knew he couldn't lick his father. The time would have come when he would have been able to. If we had been living with his father at the time he died, he and his father would have had it out over the tables and over the chairs. I know it. But at the time there wasn't much he could do about it if his father chose to lay him out.

David: Did he and his father visit?

Jane: Once in a while. He had planned to stay with his father one time. His father was remarried by then. A much younger girl. Tim liked her very much. One of the reasons he and his father tangled was because he objected to his father's treatment of his wife. She is a very tiny little thing, and they were all out raking. He said his father was barking out orders at Susan like a sergeant. I asked, "Was he rude to her?" He said, "No. He wasn't rude. He was speaking very affectionately, but he was saying pick this up, lay that down, shift that here. You know what a peanut she is. Finally, I took the rake out of her hand, spun her around by the shoulders, shoved her in the house, close the door, picked up the rake and continued to work." I asked, "What did Daddy say." He said, "Daddy asked me what I thought I was doing. I said, in case it slipped your mind, that's your wife, not a pack mule." They had a verbal argument over that.

David: Was his father a violent person?

Jane: He could be.

David: When he punished the children, did he beat them or hit them?

Jane: It depended on which child. He had favorites, and Tim was an unfavorite. My husband is a fantastically brilliant person. Very brilliant and very creative. One thing where he was like Tim is the mood swings. Terrific mood swings. He was usually on top of the world or down in the dumps. First, there was this project and then there was that project. Everyone was expected to fall in with the enthusiasms and drop them when he did. It was difficult to follow him at times.

David: You said Tim wasn't one of his favorites. Was Tim a special target?

Jane: Yes he was.

David: Can you give me an example of how his father picked on him?

Jane: Tim was supposed to be stupid and clumsy. All kids are stupid and clumsy at times. When the older boy and Tim and his father were doing something together, Tim was the gopher. When he was younger, he loved it. "I am helping Daddy." But then he got to realize that he wasn't doing any of the fun part, and it bothered him.

David: It sounds as though his father might have put him down verbally?

Jane: Oh yes. A lot. But I can't point to that, because there are so many people who have bad relationships with a parent but come out fine. You just can't say, "His father picked on him, therefore."

David: His father didn't show the episodes of violence that Tim showed? Losing his temper? Getting into a rage?

Jane: Not to that extent. Not for small reasons. He had a violent temper. But usually you knew what triggered him off. With Tim you didn't know what triggered him off. Just a few days before he died (I didn't learn this till much later) Tim was working on Tina's car. (That was the car that he died in.) He was doing something to it and he needed a tool. He went over to my brother to borrow it. So my brother was helping him work on the car. Tim said, apropos of absolutely nothing (they weren't talking about anything personal other than what was the matter with the car), "I can't tell you how I despise myself." My brother said, "Why?" He said, "Because everybody forgives me. Everybody gives me chance after chance, and I spit on them. Mom, whenever I do something stupid, screams, yells, throws a tantrum, bounces things off the wall, and then she pulls herself together and gets me out of it. She helps me. She's only one. Dozens of people have done it. And I spit on them, and I don't know why." Then he started to talk about cars. My brother told me that quite some time after Tim died. So apparently the idea of suicide was germinating for some time.

David: Was there anybody that Tim wouldn't act violent toward?

Jane: My mother. That's about it.

David: What about Tina?

Jane: No. He never would. He nicknamed her the Puerto Rican cannon ball, because one night he got arrested. (One of the many times.) He called up her house instead of mine. (I wasn't home anyway. I was working.) She drove out to where he was to get him out of jail. He claimed it was for loitering, but I think there was a little more to it than that. I never did hear, because that was shortly before he died. But she came out and got him. He said they had him handcuffed to a bench. Now, like I say, I think there was more to it than loitering, because you don't handcuff a vagrant to a bench. Tina is a very quiet, very gentle girl. She never raises her voice. He said she blew into that police station like a Puerto Rican cannon ball. She flew up to him, grabbed him and said, "What have they done to you. You get a key, and you get him out of here." She ripped the whole station apart. He said that was the only time he had ever seen her lose control of herself. She's very quiet, repressed, too repressed. They got along great.

David: Was he violent toward his sisters as well as his brothers?

Jane: He had been on occasions. The girls spoiled him rotten. Not very often but, when they did come down on him, he would back down.

David: Before that last time when you saw him, before he took off for the cabin, or a couple of days before, can you remember what he was like?

Jane: He told me he wanted to go away for a couple of days with his friends. I said, "Sure," and I think I gave him a few dollars, what I had. Then I packed up a bunch of food I had. All the kids liked canned stew. I gave him several cans of that, and what else I could spare. He had a sleeping bag and a few things. I said, "Give me a call," and he said, "O.K.," and that was the last time I saw him.

David: Did he seem in his usual mood?

Jane: Yes. He said to me, "We might stop by and see Dad." So I don't think they had planned vandalism, because he wouldn't have told me where he was going. For all his father called him stupid, he was plenty smart. He took his senior year in high school in three months and graduated at age sixteen. He crammed with a learning center because he was

bored. He didn't like school. So I said, "You get your diploma and I will get off your back."

David: In the days before he went off for the trip, there was nothing to indicate to you that things were getting worse for him? They weren't getting worse or better as far as you could see?

Jane: No. There wasn't anything to put your finger on. Of course, everybody has a good case of hindsight. We are all very good at that. You think of all these little things. He did beautiful woodwork, anything around the house. If I wanted something done, I asked him and he would do a beautiful job, always. I bought some tile for the floor, and it had to be set a certain way to make the pattern come out right. He was going to put it down, and he had just hadn't gotten around to it. He would have, very definitely. He hadn't gotten around to it. He always used to say he was going to see the world. He wanted to go around the world and come home and stick with me and take care of me. I said, "Yes, if I let you grow up. I may head for Tanganyika myself." It was like a joke between us. So he was off somewhere, one afternoon, and my younger son (who was at that time about eleven) said to me, "I want to lay the tile." I hated to tell him no, but I spent some money on that stuff. I said to him, "I will let you start but, if you make one mistake, you're going to have to stop because I paid too much money for this." He said, "That's fair." He started laying. He was going great guns and doing an absolutely beautiful job. We heard Tim outside, and he said, "Oh boy. I'm going to have Tim look at this." So he ran out, and he grabbed Tim. He said, "Come and see what I did; come and see what I did." So Tim said, "Hey. You've been laying the tile." The younger one, Joe, he said, "You check it out Tim. You look it over carefully because Mom wants it done right. It's important to her. She paid a lot for it." He got down on one knee and looked along the seams, and he really hammed it up. Finally, Tim got up and he said, "That's beautiful. You couldn't have done better. It's a really good thing, because Mom will always have you to help her." That was the first time he had ever given any indication that anybody other than himself was going to be the one helping me later on.

David: And looking back on that...

Jane: I just thought it was very cute that he catered to the little one's desire to be praised and so forth. I thought that was cute. But looking back on it I got a big case of hindsight.

David: Were there any more episodes like that, because you mentioned a conversation you had with your brother?

Jane: Well the only one I can think of was actually that night that he died. I was still asleep, and he told the kids not to wake me up, that he would talk to me later. My younger son told me this. It had been my birthday that day before. He was away camping. All the kids gave me a little surprise party. They made a cake and gave me presents. Tim wasn't there. Tim was always the one that got something special for me. They all gave me nice presents, but he always made kind of a thing of it. He would make something or build something. He did such beautiful woodwork. My younger son told me "Tim came in and heated up the macaroni. I made a big pot of macaroni that was in the refrigerator. So he took some macaroni and he ate it. I sat down and I was talking to him. He was telling me about camping." I guess he deleted quite a bit. "I said to him, Tim you should have been here last night. You missed a lot of fun. Tim said, 'I did. Why? What happened?' We gave Mom a party for her birthday, and it was really nice. Tim looked at me, and he said 'Oh wow. Her birthday.' He finished eating and he went out and asked Tina for the car."

Now I don't think he killed himself because he forgot my birthday. But he had never forgotten my birthday. I mean, nothing was preventing him from going out and getting something later. But it is just all these things. As I said to the kids then, when I had to come back from the hospital and tell them that he was a dead on arrival there, they all said, "Why didn't I do this, and why didn't I do that?" And I said, "Company halt. Let's stop right here. No one is allowed to if, because it is the stupidest word in the whole English language. No one is allowed to if. If anyone was going to if, I should. I am his mother. No one is going to do it." I honestly think the reason he killed himself (I believed it then. I told the kids then. And I believe it now) was that he just said to himself in effect, "I can't stop whatever this is that is driving me. I'm hurting people. I'm going to hurt them worse. I am going to stop." I honestly think that's how it was. I really do.

David: And nobody was to blame?

Jane: Oh, definitely. If anything, I was his mother. Those kids were so good to him. They really were. Too good in lots of ways.

David: What was the effect of his suicide on the family? Did it have an effect?

Jane: I don't think it made any changes, other than -- this is going to sound absolutely horrible. Horrible as we all felt, much as we missed him and the terrific load of guilt that we were all under ( in spite of the fact that we realized intellectually that we weren't guilty; emotionally you will never feel that you are not guilty), it was almost a relief. For years, every time the phone rang, or I heard a siren, I would lose my stomach. Ask not for whom the bell tolls. I generally was right. It was the police coming to the house. Or the police were on the phone. It took me a good year to stop reacting like this to a police siren or a telephone call. I remember being out in a car just a few days after he died and hearing a police siren. After my initial reaction, I said to myself, "All right. You're safe now. You're safe." I must say that I have absolutely nothing but praise for the police. They gave that kid so many chances. I could never holler police brutality. Never. They were so good and so understanding. Too much in some ways. I said, "Listen. Take him out in the back lot and work him over if you feel like." Really fantastic. But I still had that feeling that he was safe. I think we all did.

David: We are talking as if Tim was the problem child out of the seven.

Jane: He was.

David: The other children never showed....

Jane: No. I got a couple of pains, but no.

David: When psychologists write about families, they often say sometimes there is one person who...

Jane: Is a scapegoat?

David: Right. When that person no longer is there, then somebody else becomes the scapegoat. That hasn't happened?

Jane: No. I do not like their life styles, but they have done nothing that hurts anybody. They're their own worst enemies. As far as my relationship with them, they have always been perfect. I really don't know.

David: Did you ever have any theory about why Tim developed this way? It is as if it was some compulsion that he couldn't control. It started around age eleven. Did you ever think that there was something physiologically wrong?

Jane: I hoped it really. That sounds like a stupid thing to say. But it would lift such a load of guilt. My husband, or their father, has radiation sickness. He told me a couple of years ago, when he knew he was developing symptoms, he said to me, "I have been reading up on this. There isn't a heck of a lot I haven't read about this. I read that the children of people with this (apparently, it's very cumulative, he has been working with this since he was eighteen, since he was in college) they are very prone to certain types of physical diseases. First of all, it's more men than women, more boys than girls. They have a lot of urogenital problems, prostrate and so forth. Much more than the average. They are much more prone to psychological and psychotic reactions." I said, "If I could believe that (I know this sounds absolutely horrible) but if I could say this was something that we couldn't help, oh that would be like....." But of course, you can't. You can't. That's just too easy. That's too big a cop out.

David: And yet it sounded as if there is not much that you could have done differently.

Jane: Precisely. I could have tried to hold my temper a little more. But looking back on it, I would just reach a point where I would be so devastated that I think, if somebody had held a gun to my head and said, "Shut up!" I couldn't have.

David: Did Tim ever show any other symptoms beside the behavioral problem? Did he show abnormal, strong fears?

Jane: No.

David: Was he a bed-wetter?

Jane: No.

David: Any other kinds of symptoms of emotional problems? You mentioned before that you had made some attempts to try and get some help for him. What kind of things had you tried?

Jane: We took him to a psychiatrist, and the psychiatrist gave him tests (you draw a person, a house and so forth). Tim told me he took to him right off. He was supposed to be the best for adolescents in mucho miles around. He said he showed low self-image but didn't show destructiveness or anything. Of course, this was about three years before he died. I'm very bad about time. Three years, I guess, because it's four years this week that he died. He said a very low self-image. He talked to him, and he worked with him a little. He said to me, "You are going to have a fantastic man here." I said, "Am I? If I live." He said if we could just kind of bear with him. "You are going to have a fine man there," he said. "I really don't think he needs counseling." Then I took him for months and months to the children's psychiatric center in Pomona, which is good. Then we had counseling through the school. You might as well as have saved your breath to cool your porridge.

David: How did he respond? Was it usually your idea to seek out a counselor?

Jane: I would suggest it, and he would go right along. "Yes. If you think so Mom. If you'd like to, OK." In fact, at the children's psychiatric center, he paid for it.

David: He paid for it?

Jane: Out of money that he earned. After a certain point he said, "Mom, this is stupid." I said, "You're right. This is stupid." We just weren't getting anywhere. This sounds like I'm pointing the finger, and it's not so. I don't blame anybody. I am his mother, and I couldn't do anything. Nothing helped.

David: And he felt he wasn't getting anything out of counseling?

Jane: Right. The one who he really responded to was the psychiatrist, and the psychiatrist said he didn't really think he needed day-to-day or week-to-week counseling. So that was it.

David: So Tim himself was never resistant? You said that sometimes, early on, he would deny that he had done particular things?

Jane: Always. Look you right in the eye and lie.

David: Were there times when he would sit down and admit that he had done these things?

Jane: Only when he was totally pinned to the wall, when his fingerprints and his shoe prints and his coat with his name on it were there. You were saying "Look now. You did it." Then. But not one split second before.

David: And then, would he admit it that he had a problem, that he needed help?

Jane: Not really. Just that he didn't know why. Or he would have some totally ignorant reason. Like the time he got that wood chisel for me. "You were messing up your hands with the one you were using."

David: The problem is that teenagers in general are not the kind of people who would sit down and talk about their problems. Most teenagers are not that reflective, at least on the outside, about their behavior.

Jane: Especially not to somebody of another generation.

David: Right. So one wouldn't really expect him to sit down and say, "Look I have this problem."

Jane: No. In most cases, no. Of course, it does happen sometimes.

David: I would think that teenagers are perhaps the most difficult kind of people to help.

Jane: I would imagine so.

David: Was there anybody that he had talked to more? Like Tina or one of his brother or sisters? Or had he been closed from all of them?

Jane: I don't think any of them really saw a complete person, including myself. I don't think they did. Some saw a better side of him than others.

David: After somebody kills himself, often the members of the family feel some stigma, as if the neighbors are looking at them...

Jane: Oh no!

David: You never felt that?

Jane: No never! We were never allowed to feel that way. There were just too many loving people.

David: So you got a lot of support from other people?

Jane: Everywhere.

David: And you yourself have been willing today to come and talk to me.

Jane: How is our time here? I want to tell a little something that will digress, that will give you an idea. I am a nurse and I believe very definitely in organ transplants. I wished a million times that something could have been salvaged from Tim. But of course, there wasn't. He was a DOA. I wished so many times there was something that would have made it less senseless. About a year and a half ago, my sister, who is much younger than I (she is the age of my oldest daughter) she and her husband lost a young child. A congenital heart problem, kidney, everything wrong. He died following open-heart surgery. When they knew there was no hope, just a day or so before he died, they said, "Where do we sign? If there is anything that you can take from him, if there is anything you can do (we know you can't save him) that will teach you, do it. Don't tell us about it. Just where do we sign?" So he died, and a matter of hours after he died my sister was on the phone to me. I was crying my eyes out. She was on what I can describe only as a high. She was euphoric. She said to me, "Guess what?" I said, "What?" She said, "Dr.

Smith said to me that they couldn't use any of John's organs because there was too much damage, too immature. But he told me that, because of what they learned from John, they will save the next one. Guaranteed! The next one will live and be well. Isn't that fantastic?" Well, I was crying my brains out. I said, "Does it sound stupid to say I envy you?" She said, "No never. Never, never, never does it sound stupid for you to say that." Now to me, this type of thing, this is my organ transplant. This is my autopsy. This is something to make it a little less senseless. If it touches one person who can help another person, one that's all. That's all right.

David: To help alert people to the problems and to sensitize them. That's a nice idea. Specifically, if you think back, is there anything you could advise or tell a parent who has a child that's a problem? What should they do or what shouldn't they do?

Jane: No.

David: You said that maybe if you could have held your temper back...

Jane: No. I really don't. I can't give one tiniest bit of advice. Not one. For all I say, "I should have held my temper," because we should all hold our temper, there were many times when I did hold my temper. When I said, "Now you tell me. Ask and it shall be given. I'll do it. I'll get it. I'll buy it. I'll obtain it. I'll arrange it. Whatever will take this compulsion away from you. If you want to go around the world on a tramp steamer, I'll find you a ticket. Anything." I did hold my temper, but I accomplished just as little as when I screamed, yelled, and bounced things off the wall.

David: After all, you were yourself with your other children.

Jane: Yes. They got things bounced off the wall on them a few times too.

David: Right. It really is a difficult problem to know how to deal with the adolescent, and certainly the unhappy or the disturbed adolescent.

Jane: It is that. Right now, I have two boys at home. They are fifteen and seventeen. One is in high school and one is in college. I don't ever have to think about them. What are they doing? If they are out late, I never even think to check. I never think to ever get nervous. Never. Because if they are late, they will be home a little later. They are never up to anything. They are little stinkers. But I don't have to worry that the cops are going to bring them home in a hammer-lock. I don't have to worry that they are hurting anybody. I am sure that beer and cigarettes enter into it. But I don't worry. I have thought so many times, "How odd it is. How different." I was a nervous wreck whenever I opened my eyes, and he wasn't right in the room.

**Suicide Studies, 2022, 3(2), 32-37.**

# METHODOLOGICAL UNSOUND RESEARCH ON SUICIDE IS NO LONGER ACCEPTABLE

**David Lester**

**Abstract:** Two methods of research into suicide are criticized. First, no study has ever been published diagnosing suicides for their psychiatric status by psychiatrists *ignorant of the death by suicide* and with an appropriate control group. Second, no psychological autopsy study has been published examining the accuracy of informant data, especially those studies using informants to report how the suicide would have answered a psychological inventory.

Many articles on suicide begin by noting how common suicide is, often noting that roughly 800,000 suicides occur each year world-wide (Wasserman, et al. 2020). Therefore, it is argued, suicide presents a major public health problem, and research is urgently needed in order to prevent suicide and reduce the loss of life from this cause.

Yet despite this urgency, very little research is conducted on suicides. It is not easy to conduct research on those who have died by suicide, which is why the vast majority of the research uses the method of substitute subjects, that is, studying those who have suicidal ideation or who have attempted suicide. Although, Lester, et al. (1975;1979) suggested how this research might be improved so as to generalize from ideators and attempters to suicides, their suggestion has rarely been used in research.

Research on suicides has focused on suicide notes and, more recently, the diaries left by suicides. However, only about 25% of suicides leave notes, and so the generality of conclusions drawn from suicide notes to those who do not leave notes is open to question. Diaries from suicides are rare, and I have obtained less than a dozen (Lester, 2014).

It is, therefore, important to conduct research on suicides and that this research be methodologically sound. The following two sections review some of the pitfalls facing researchers and what might be done to overcome these problems.

## The Psychiatric Status of Suicides

The majority of psychiatrists view suicide as an indicator that a person was mentally ill. Robins (1981) diagnosed almost all the suicides whom he studied after their death, knowing their cause of death, as psychiatrically disturbed. In all the studies in which psychiatrists have diagnosed suicides after their death, they have known the cause of death. No post-mortem study of possible mental illness in suicides and a comparison group (say those who died in single car motor vehicle crashes) has been done in which the psychiatrists did not know the cause of death! Furthermore, some diagnoses, such as borderline personality disorder and the affective disorders have suicidal behavior as one of the cluster of symptoms defining the disorder, which means that diagnoses of suicides using these criteria is a circular argument and, therefore, meaningless.

Although some psychiatrists have found almost all suicides to be psychiatrically disturbed in retrospect, as noted above (e.g., Robins, 1981), not all psychiatrists agree, and estimates of the percentage of the psychiatrically disturbed in samples of suicides range from 5 to 94 percent (see, for example, Temoche, et al., 1964).

Part of the motivation for revising the DSM is that psychiatrists cannot agree on which disorder patients have. Using an older version of the DSM, Beck et al. (1962) found that four psychiatrists, individually interviewing the same psychiatric patients, agreed only 54% of the time for the specific diagnosis and only 70% for the major category (schizophrenia, affective disorder, anxiety disorder, personality disorder, etc.). In another study of the older version of the DSM, Sandifer, et al. (1968) had psychiatrists in three cities view tape-recorded interviews of psychiatric patients. In North Carolina, the patients were more often labeled as having neurotic disorders, In Glasgow, Scotland, the same patients were more often labeled as having personality disorders, and in London (England) the patients were more often labeled as having bipolar affective disorder!

Note that this research is ***old***, and yet the implications of it have been ignored by suicide researchers. This situation arises perhaps because the volume of research published today is so large that researchers, including suicide researchers, rarely go back more than a few years in their literature searches. This tendency is reinforced by editors of scholarly journals and reviewers who complain about references from the distant past and insist on reference from the last few years.

There have been several recent critiques of the current psychiatric system, for example, Robert Whitaker's (2010) *Anatomy of an epidemic: Magic bullets, psychiatric drugs, and the astonishing rise of mental illness in America* and Daniel Carlat's (2010) *Unhinged: The trouble with psychiatry.* These books were favorably reviewed by Marcia Angell, a former editor of *The New England Journal of Medicine*, in *The New York Review of Books* (June 23 and July 14, 2012). Poor research design adds to the poor reputation on the psychiatric diagnostic system.

Future research into the psychiatric status of suicides must be methodologically sound. This requires two conditions.

1. The psychiatrists making the diagnoses on the basis of the information given to them about the individuals must ***not*** know that some of those whom they are diagnosing died by suicide.

2. There must be a control or comparison group.

This second requirement does present a problem for researchers. What should this control group be? Possibilities include people dying from accidents perhaps car accidents or, perhaps, murderers (or their victims). For the accident victims or murder victims, this requires obtaining information about them in the same way as for the suicides. For the murderers who, obviously, are living, the murderers themselves ***cannot*** be interviewed for that would provide richer information than that obtained for the suicides. The information on murders should be obtained

second- or third-hand as is the information for the suicides, that is, from records and from interviews with informants.

It might be argued that psychological autopsy studies (which are discussed in the next section) might meet these criteria, but interviewers and judges of the data in psychological autopsy studies are not ignorant of the deaths by suicides of one of the groups group in the study.

## Research Using Psychological Autopsies

In psychological research into suicides, the psychological autopsy methodology requires researchers to interview informants about the suicide. In this research, it is impossible to ask for this information without the interviewers knowing, or finding out, that the target person is a suicide. Thus, the criterion that the interviewer be ignorant of the cause of death cannot be met, but those recruited to evaluate the data might be kept ignorant of the cause of death.

However, two other methodological problems arise in this research.

1. Testing the accuracy of informant responses

2. Choice of a control group

The informants provide information about the target person. They are asked for factual data (such as age, schooling, accidents, medical illnesses, etc.) and impressions (such as the target person's depression, anger or impulsivity). In some studies, the informants are administered a psychological inventory and asked how the target person would have responded.

I know of no psychological autopsy study that has tested the accuracy of this information. Scales are used in some psychological autopsy studies. Niu, et al. (2020) used a variety of scales, including a hopelessness scale, while Arensman, et al. (2019) used an impulsivity scale among other scales. A a researcher could take a sample of living people, obtain this information from informants and then obtain the same information from the target individuals. What is the degree of agreement between, say, how an informant thinks that the target person would answer a hopelessness scale and how the informant answered the scale?

The second issue concerns the choice of a control group. If the researcher is simply comparing, say, female and male suicides, then no control group is required. However, for a study of suicides, a control or comparison group is required, and the same issues arise as noted in the previous section. For example, would accident victims be a satisfactory control group. Since suicides constitute a sudden death, individuals dying suddenly from different causes (such as accidents or heart attacks) might constitute an appropriate control group.

In a study of LGBQ individuals who had died by suicides, Skerrett, et al. (2016) compared data from informants about the suicides with interview data from living controls. Those two groups are not comparable. Niu, et al. (2020) used living controls, but they did use informants for the living individuals. However, everyone in the study, interviewers and

informants, must have known that deceased individuals were being compared with living controls. Informants for suicides who knew the individuals might be experiencing grief, anger or guilt about their friend's or relative's suicide and this might influence their response, whereas informants for living controls would not be experiencing such emotions. Arensman, et al. (2019) proposed to compare suicides with individuals making serious suicide attempts, and they planned to use informants for both groups. However, they also planned to interview the attempted suicides, thereby obtaining direct reports which were not available, of course, for the suicides.

Studies of deceased individuals should be compared with deceased individuals dying from a different cause.

## Comment

It is important that research on samples of suicides be methodologically sound. Hitherto, methodologically sound research has been rare and perhaps none exists. This situation must change if we are to make progress in understanding suicide.

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# DO SUICIDAL INDIVIDUALS HAVE MORE COMPLEXITY IN THEIR REASONS FOR LIVING?[10]

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**Abstract**

In four non-clinical samples, responses to the Reasons for Living Scale were more complex (that is, a Principal Components analysis extracted more components) in those who had previously consider suicide than in those who had not done so. Suggestions were made for further research.

Much of the research into suicidal behavior has focused on the risk factors for suicide, factors such as substance abuse and psychiatric disorder (Dvorak, Lamis & Malone, 2013). More recently, research has looked at protective factors (Wang, Lightsey, & Tran, 2013), but some protective factors, such as scores on a measure of hope (Davidson, Wingate, Rasmussen, & Slish, 2009), seem to be simply the reverse of risk factors such as score of a measure of hopelessness (Neufeld & O'Rourke, 2009). One exception to this is the inventory devised by Linehan, Goodstein, Nielsen and Chiles (1983) which measures reasons for living. The Reasons for Living Scale has 48 items, answered on a 6-point Likert-scale, ranging from (1) extremely unimportant to (6) extremely important, which comprise six subscales: survival and coping beliefs, responsibility to family, child concerns, fear of suicide, fear of social disapproval, and moral objections.

It seems likely that those who have had considered suicide in the past (and perhaps attempted suicide) might have thought more comprehensively about the reasons for living (as well as the reasons for dying). Their thoughts about this issue might, therefore, be more complex. Since they have contemplated suicide, they may have thought through which reasons were more salient in their decision to engage in suicidal behavior or to refrain from suicidal behavior. Those who have never considered suicide might respond more globally to the questions in the inventory. Therefore, in a factor analysis of the patterns of responding on the Reasons for Living Inventory, individuals who have been suicidal in the past should be more complex. This would be manifest in having more factors (with eigenvalues greater than one) and a smaller percentage of variance of the inter-item correlation matrix accounted for by the first factor.

Data from a pilot unpublished study by Lester and Akande were available to test this hypothesis. A brief 16-item version of the Reasons for Living Inventory was administered to 142 students in South Africa, 28 men and 112 women (and 2 with missing data for sex) with a mean age of 22.8 years (SD = 3.5). Forty five students reported prior lifetime suicidal ideation and for

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these students, using a Principal Components extraction, 5 factors with eigenvalues greater than one were identified and the first factor accounted for 26.2% of the variance of the correlation matrix. For the 88 students with no prior suicidal ideation, only 4 factors were extracted. and the first factor accounted for only 35.4% of the variance. These differences were as predicted.

For prior attempts at suicide, analysis of the 14 students who had attempted suicide revealed 5 factors and the percentage of variance accounted for by the first factor was 28.5%. For the 117 students who had never attempted suicide, the factor analysis identified 4 factors, and the percentage of variance for the first factor was 32.8%. Again, these differences were in line with the prediction.[11]

The present study reports analyses of four large scale studies using the Reasons for Living Inventory comparing the respondents who had previously considered suicide with those who had not previously considered suicide. (Too few respondents had attempted suicide for this behavior to be studied.) The prediction was that the data from those who had previously considered would have more factors with eigenvalues greater than one and that the first factor extracted would account for a smaller percentage of the variance.

## Method

The data for the present study came from four studies of undergraduate students.[12]

(1) Lamis and Lester (2013) gave a 32-item version of the Reasons for Living Inventory to 1023 American undergraduate students; 310 males and 713 females; mean age 19.5, (SD = 2.3).

(2) Innamorati, Pompili, Lester, Tatarelli and Girardi (2008) administered the 48-item Reasons for Living Inventory to 340 students at the University of Rome; 142 men and 198 women, mean age 22.6 years (SD = 3.4).

(3) Pompili, Innamorati, Lester, Brunetti, Tatarelli and Girardi (2007) administered the 48-item Reasons for Living Inventory to 300 students at the University of Rome; 141 men and 159 women, mean age 24.2 years (SD = 3.1).

(4) The 48 item Reasons for Living Inventory was also administered to 150 adults; 61 men and 89 women; mean age 33.1 years (SD = 9.9).

The data sets were analyzed using Principal Components extractions, and the number of factors with eigenvalues greater than one was counted. In addition, the percentage of the variance accounted for by the first factor was noted.

## Results and Discussion

For sample 1, the 129 respondents reporting current suicidal ideation on the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) had 6 factors with eigenvalues greater than one, and the percentage of variance accounted for by the first factor was 43.2%. For the 890 students reporting no current suicidal ideation, 5 factors were identified with

[11] Those who reported prior suicidal attempts obtained lower scores on the Reasons for Living Inventory, but matching the 16 suicide attempters with 16 non-attempters for their total Reasons for Living Inventory score, revealed the same differences.

[12] There were missing data for some of the responses.

eigenvalues greater than one, and the percentage of variance accounted for by the first factor was 48.1%. Both of these differences were in the direction predicted. The results are summarized in Table 1.

For sample 2, 62 respondents reported prior lifetime suicidal ideation on a suicide screening inventory (Innamorati, Pompili, Serafini, et al., 2011), and the Principal Components analysis of their responses identified 13 factors with eigenvalues greater than one, and the first factor accounted for 23.7% of the variance. For the 270 respondents who had never considered suicide, only 10 factors were identified, and the first factor accounted for 24.3% of the variance. These differences were in the predicted direction.

For sample 3, 49 respondents reported prior lifetime suicidal ideation on a suicide screening inventory (Innamorati, Pompili, Serafini, et al., 2011), and the Principal Components analysis of their responses identified 13 factors with eigenvalues greater than one, and the first factor accounted for 24.8% of the variance. For the 190 respondents who had never considered suicide, only 11 factors were identified, and the first factor accounted for 21.7% of the variance. Only the number of factors identified was in the predicted direction, not the percentage of variance accounted for by the first factor.

For sample 4, 28 reported having prior lifetime suicidal ideation on a suicide screening inventory (Innamorati, Pompili, Serafini, et al., 2011), and the Principal Components analysis of their responses identified 13 factors with eigenvalues greater than one, and the first factor accounted for 22.0% of the variance. For the 122 respondents who had never considered suicide, 13 factors were identified, and the first factor accounted for 21.6% of the variance.
Data from this sample, therefore, failed to confirm the hypotheses.

The results from these four samples indicated that the data for two of the samples supported the prediction, that is, those who had considered suicide in the past gave more complex response to the Reasons for Living Scale (using the two criteria) than those who had never considered suicide. The results from the third sample were mixed and the results from the fourth sample failed to support the prediction.

These results suggest directions for future research. Would the predicted differences be found in clinical populations? Would the differences be stronger when comparing those who had attempted suicide with those who have never considered suicide? Finally, the sample with no significant differences (sample 4) was of adults whereas the other samples were of college students. Does the difference appear in all groups or only in young adults?

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Table 1: Results of the Principal components analysis for four samples

| Data set | Number of factors | | Variance accounted for by first factor | |
|---|---|---|---|---|
| | With suicidal ideation | No suicidal ideation | With suicidal ideation | No suicidal ideation |
| sample 1 | 6 | 5 | 43.2% | 48.1% |
| sample 2 | 13 | 10 | 23.7% | 24.3% |
| sample 3 | 13 | 11 | 24.8% | 21.7% |
| sample 4 | 13 | 13 | 22.0% | 21.6% |

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# USING SINGLE-ITEM MEASURES TO PREDICT SUICIDALITY

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**Abstract:** The aims of the present study were to explore whether the responses to single-item scales could predict suicidality. A sample of 309 Egyptian college students responded to the following self-rating items: physical health, mental health, happiness, satisfaction with life and religiosity, as well as a suicidal behavior scale. Whereas mental health and satisfaction with life predicted suicidal behavior in women, only physical health predicted suicidal in men.

Methodologically sound research into suicidal behavior requires the use of measures and scales that have proven reliability and validity. Often, these questionnaires have many items, and completing them requires a good deal of time. For clinical evaluation, say, of a client, administration of such scales hinders the establishment of good rapport with the client. The present study explores to what extent the use of questions using a simple rating scale can predict suicidal inclinations.

## Method

### Participants

A convenience volunteer sample ($n$ = 309; 141 men; 168 women) took part in the present study. Mean age = 20.41, SD = 2.55 for men, and 20.97, SD = 2.63 for women. All were Egyptian undergraduates enrolled in different departments and colleges at the University of Alexandria, Egypt.

### Measures

The Suicidal Behavior Scale (SBS: Abdel-Khalek, unpublished) assesses the thoughts, cognitions, and intention to die by suicide using a yes/no format.

1- I have thought about ending my life.
2- I have threatened someone that I will kill myself.
3- I have tried to commit suicide.
4- I have thought about killing myself.
5- I have wished that I were dead.

Five separate self-rating questions were used to assess physical health, mental health, happiness, satisfaction with life, and religiosity.

1. What is your estimation of your physical health in general?
2. What is your estimation of your mental health in general?
3. To what degree do you feel happy in general?
4. To what degree do you feel satisfied with your life in general?
5. What is your level of religiosity in general?

Each question was followed by a scale of numbers from 0 to 10. The research participant was requested to respond according to his or her global estimation and general feeling (not their present states. Previous research indicates that the one-week test-retest reliabilities of the five self-rating scales ranged between 0.76 and 0.88. indicating high temporal stability and corroborating the trait-like nature of the scores. The criterion-related validity of these scales has been adequately demonstrated in previous research.

The use of single items in assessment has, in most instances, proved to have concurrent validity (e.g., Abdel-Khalek, 1998), and scales devised to assess suicidal behavior typically use single items to assess suicidal ideation and suicide attempts (e.g., Osman, et al., 2001). Although there have been criticisms of the use of single item questions concerning, for example, suicidal ideation (e.g., Millner, et al., 2015) on the basis that respondents who have related thoughts, but not suicidal thoughts (such as that life is not worth living), some scales to assess suicidal ideation do include thoughts such as the wish to live and ambivalence (e.g., Beck, et al., 1979)

Means and standard deviations for the scores of men and women are shown in Table 1.

**Procedure**

The self-rating scales were administered anonymously to undergraduates in their classrooms during university hours. The students were volunteers and gave their consent. Testing was conducted in the second semester of the academic year 2020-2021 during the Covid-19 pandemic.

## Results and Discussion

Table 2 presents multiple regressions to predict the total SBS score for males and females separately. The multiple R was higher for females than for males. It is interesting that self-ratings of physical health contributed to the prediction of the SBS score for men whereas the self-rating of mental health contributed to the prediction of the SBS score for women. It may be that Arab males are more reluctant to admit to poor mental health than are Arab women, and that physical health is a proxy measure for the men.

It appears, therefore, that the responses to single-item questions can be useful for predicting suicidality.

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Table 1. Means (*M*), standard deviations (*SD*), *t* values, and effect sizes (*d*) for males versus females

| Scales | Men *N* = 141 | | Women *N* = 168 | | *t* | *p* | *d* |
|---|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | | | |
| Suicidality (SBS) | 6.18 | 1.61 | 6.99 | 2.62 | 3.20 | .002 | .37† |
| Physical health | 6.30 | 2.38 | 5.57 | 2.38 | 2.70 | .007 | .31† |
| Mental health | 5.43 | 2.71 | 4.73 | 2.62 | 2.31 | .02 | .26† |
| Happiness | 5.60 | 238 | 5.30 | 2.38 | 1.12 | — | — |
| Satisfaction | 6.58 | 2.56 | 6.22 | 2.63 | 1.22 | — | — |
| Religiosity | 6.52 | 1.90 | 5.72 | 1.92 | 3.69 | .0001 | .42† |

Table 2. Predicting SBS scores

| Scales | Males | | Females | |
|---|---|---|---|---|
| | *beta* | *p* | *beta* | *p* |
| Physical health | -0.208 | <.05 | +0.154 | # |
| Mental health | -0.102 | | -0.484 | <.001 |
| Happiness | -0.042 | | +0.076 | |
| Satisfaction | -0.131 | # | -0.232 | ,.01 |
| Religiosity | +0.097 | | -0.059 | |
| R | 0.347 | | 0.501 | |

# significant in backward multiple regression