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FORMAL MODELS OF THE ECONOMY AND SUICIDE[1]

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Abstract: This article presents three sociological theories of how the economy impacts the suicide rate.

The present article is a formal presentation of three theories of the impact of the economy on suicide, from Durkheim, Henry and Short, and Ginsberg.

Durkheim's U-Shaped Theory

The basic tenet in Durkheim's (1897) sociological explanation of suicide can be summarized by the following equations.

(1) $S = f(SI,SR)$
(2) $SI = g(y)$
(3) $SR = h(y)$
(4) $y = y - y^*$

where

S is the suicide rate
SI is the social integration index
SR is the social regulation index
y is the business cycle index
y is the actual economic growth rate
y* is the potential economic growth rate
f, g, and h are functions

Equation (1) states Durkheim's fundamental idea that suicide reflects the extent of the social integration and social regulation in a society. Equations (2) and (3) indicate respectively that both social integration and social regulation are related to the business cycle. The business cycle index y is defined as the departure of the actual economic growth rate from the

[1] From Lester and Yang (1997).

potential economic growth rate. When $y > 0$, the economy is expanding, whereas when $y < 0$ the economy is contracting.

Durkheim assumed that

(i) $\frac{\partial f}{\partial SI} < 0, \frac{\partial f}{\partial SR} < 0$

(ii) $\frac{dg}{d|y|} < 0, \frac{dh}{d|y|} < 0$

where lyl refers to the absolute value of y. This means, (i) the higher the social integration and social regulation, the lower the suicide rate, and (ii) the greater the economic expansion and recession, the less social integration and regulation there will be. In order to obtain the impact of the business cycle on suicide, we differentiate S with respect to as follows.

$$\frac{ds}{d|y|} = \frac{\partial f}{\partial SI} \cdot \frac{dg}{d|y|} + \frac{\partial f}{\partial SR} \cdot \frac{dh}{d|y|}$$

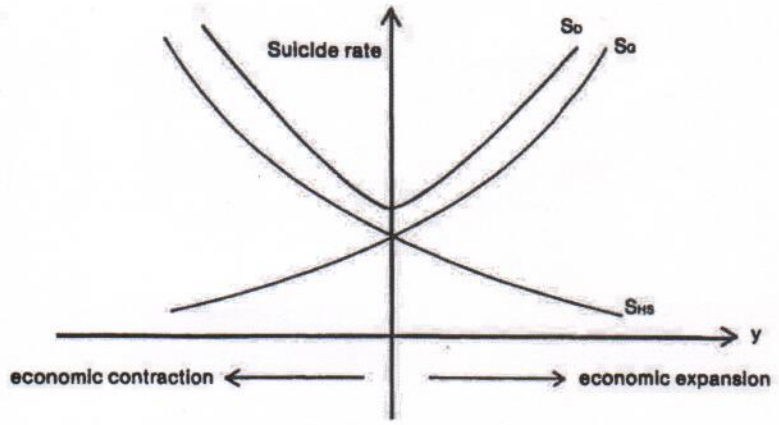
Based on assumptions (i) and (ii), we can conclude that

(5) $\frac{ds}{d|y|} > 0$

Thus, the more the economy expands or contracts, the higher the suicide rate.

If we draw a diagram using the vertical axis to indicate the suicide rate and the horizontal axis to indicate the business cycle index, then Durkheim's theory of suicide and the business cycle will be a pointed V-shaped curve intersecting the vertical axis at a level indicating a minimum possible suicide rate (see Figure 1).

Figure 1: The three models of suicide and the business cycle



SD the suicide rate as a function of the business cycle for Durkheim
SG the suicide rate as a function of the business cycle for Ginsburg
SHS the suicide rate as a function of the business cycle for Henry and Short
Y the business cycle index

Ginsberg's Procyclical Theory

Ginsberg (1966) noted that suicide arose from the dissatisfaction of individuals. Dissatisfaction itself was related directly to the discrepancy between the actual reward that the individual was receiving and his level of aspiration. Ginsberg assumed that the actual reward varies positively with the business cycle.

These formulations can be applied to the society as a whole by replacing the individual level of dissatisfaction, reward, and aspiration with the average level for the society as a whole. The formulations can then be summarized as follows:

(6) $S = f(D), \frac{ds}{dD} > 0$

(7) $D = g(A/R), \frac{\partial D}{\partial A} > 0, \frac{\partial D}{\partial R} < 0$

(8) $R = h(y), \frac{dR}{dy} > 0$

(9) $A = k(R), \frac{dA}{dR} > 0$

(10) If $\frac{d^2R}{dt^2} > 0$, *then* $\frac{d^2A}{dt^2} = \beta\frac{d^2R}{dt^2}, \beta > 0$

(11) If $\frac{d^2R}{dt^2} < 0$, *then* $\left|\frac{d^2A}{dt^2}\right| > \left|\frac{d^2R}{dt^2}\right|$

where

S is the suicide rate
D is the average level of dissatisfaction of the society
A is the average level of aspiration of the society
R is the average reward received by people in the society

$\frac{dx}{dt}$ is the rate of change of any variable x over time

$\frac{d^2x}{dt^2}$ is the rate of change of $\frac{dx}{dt}$ over time

β is a constant

Equation (6) states that the suicide rate is directly related to the society's level of dissatisfaction. Equation (7) formulates Ginsberg's idea that, if the average level of a society's aspiration changes at a faster rate than the average level of reward, then the result is an increase in the society's level of dissatisfaction. This also explains the signs of the partial derivatives of both variables. Equation (8) specifies how the level of reward is

determined. The greater the economic expansion, the higher the rewards, and vice versa. Equation (9) indicates that the aspiration level is a positive function of the rate of change in the level of rewards, that is, if the level of rewards keeps increasing, the level of aspiration will rise accordingly, and vice versa.

Lastly, equations (10) and (11) dictate the variation of the level of aspiration over time as a function of the change in the rate of change of the level of rewards. Equation (10) states that, whenever the rate of increase in the level of rewards changes (increases or decreases) at an increasing rate, the level of aspiration will vary directly with the level of rewards. Equation (11) postulates that, if the rate of change of the level of rewards changes at a decreasing rate, then the rate of change of the level of aspiration will change at a faster rate than the rate of change of the level of rewards.[1]

Based on these formulations and assumptions, the suicide rate should be a positive function of the business cycle index. In other words, the total differential of S with respect to y should be as follows:

$$\frac{ds}{dy} = \frac{df}{dD} \cdot \frac{\partial D}{\partial R} \cdot \frac{dR}{dy} + \frac{df}{dD} \cdot \frac{\partial D}{\partial A} \cdot \frac{dA}{dy} = \frac{df}{dD}\left[\frac{\partial D}{\partial R} \cdot \frac{dR}{dy} + \frac{\partial D}{\partial A} \cdot \frac{dA}{dy}\right]$$

According to the principles postulated in equations (10) and (11), the impact of the economic condition on the level of aspiration will be greater than on the level of rewards, that is,

$$\left|\frac{\partial D}{\partial A} \cdot \frac{dA}{dy}\right| > \left|\frac{\partial D}{\partial R} \cdot \frac{dR}{dy}\right|$$

With $\frac{df}{dD} > 0, \frac{dA}{dy} > 0, \frac{dR}{dy} > 0, \frac{\partial D}{\partial A} > 0, \text{ and } \frac{\partial D}{\partial R} < 0$

[1] The rate of variation of the levels of aspiration and rewards is indicated by the differentiation of the variable with respect to time for the sake of simplicity. Presumably they are driven by the cyclical business activity as postulated by Ginsberg.

this implies that $\frac{ds}{dy} > 0$ (see footnote [2])

When the economy is expanding, the level of rewards in the society also grows, as does the level of aspirations, and so also will the suicide rate. If the economy keeps its growth momentum, then the level of aspirations will rise at a faster rate than will the level of rewards. Therefore, the suicide rate will also rise due to the growing level of anomic dissatisfaction as a result of the increasing disparity of aspirations from rewards. However, this is true before the economy reaches its peak of economic expansion because, as the economy nears the peak, there is a slowdown in the rate of expansion.

By the same token, when the economy is running into a recession, the rate of aspiration is decreasing because the level of rewards is decreasing. As the economy approaches the trough, the rate of decline of the economy slows down, the level of aspiration decreases at faster rate than the level of rewards, and the discrepancy between the levels of reward and aspiration shrinks. This leads to a lower level of societal dissatisfaction and ultimately a lower suicide rate. It should be noted that the declining suicide rate will reverse near the trough of the business cycle.

In summary, the suicide rate as a function of the business cycle should be an upward-sloping curve except at the extremes of the business cycle (the peaks and the troughs) as shown in Figure 1. Interestingly, the conclusions drawn by Ginsberg for recessions indicate that the declining suicide rate occurs only as a special case of sharp downswings (Lester, 1972, p. 85).

Even though Ginsberg claimed that the declining suicide rate during recessions was a special case of his theory, his theory seems to imply that only the declining suicide rate during recession is consistent with the principles postulated in equations (10) and (11).

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[2] Among those inequalities,

$$\frac{dt}{dD} > 0, \frac{dR}{dy} > 0, \frac{\partial D}{\partial A} > 0, \text{ and } \frac{\partial D}{\partial R} < 0$$

are in accordance with equations (6), (7) and (8), whereas $\frac{dA}{dy}$ can be derived as follows:

$$\frac{dA}{dy} = \frac{dK}{dR} \cdot \frac{dR}{dy} \left[\text{because } A = k(R) \right]$$

As $\frac{dk}{dR}$ and $\frac{dR}{dy}$ are positive, according to equation (8) and (9), therefore, $\frac{dA}{dy} > 0$

Henry And Short's Countercyclical Theory

Henry and Short's (1954) prediction of the relationship between the business cycle and suicide is that suicide rates are countercyclical. That is, suicide rates tend to fall during times of business prosperity and rise during times of business depression. They interpreted this relationship in terms of the frustration-aggression hypothesis.

Henry and Short established their hypothesis on the basis of the following assumptions: (i) frustration often results in aggression, (ii) business cycles affect the hierarchical rankings of persons by status, (iii) frustrations are caused by a failure to maintain a constant or rising position in the status hierarchy relative to the status position of other groups, (iv) high status persons lose status relative to low status persons during business contraction, while they gain relative status during business expansion, and (v) suicide occurs mainly in high status persons.

Following these assumptions, Henry and Short's model includes the following equations and one inequality:

$$(12)\ S = f(RS),\ f' = \frac{df}{dRS} < 0$$

$$(13)\ RS = E_H/E_L$$

$$(14)\ E_H = g(y),\ g' = \frac{dE_H}{dy} > 0$$

$$(15)\ E_L = h(y),\ h' = \frac{dE_L}{dy} > 0$$

$$(16)\ g'/E_H > h'/E_L$$

where

S is the suicide rate
RS is the relative status of high-status persons
E_H is the hierarchical position of the high-status persons
E_L is the hierarchical position of the low status persons
y is the business cycle index

Equations (12) and (13) together state that suicide is negatively related to the relative status of the high-status persons, with their relative status defined as the ratio of the hierarchical position of the high-status persons to

that of the other groups. The higher the ratio, the less frustration the high-status persons tend to feel and the lower the suicide rate.

Equations (14) and (15) indicate that the hierarchical position of both high status and low status persons should rise or fall with business expansions or contractions. However, the degree of impact of the business cycle on both groups is different as shown by equation (16). The impact of the business cycle on the high-status groups is greater than on the other groups. This is why, when the economy expands, the high-status group's hierarchical position improves relatively more than that of the other groups whereas, when the economy contracts, the high-status group's hierarchical position worsens relatively more than that of the other groups. As a consequence, the suicide rate shows a negative relationship with the business cycle index.

This conclusion may be derived by differentiating the suicide rate with respect to the business cycle index.

$$\frac{ds}{dy} = \frac{dS}{dRS} \cdot \frac{\partial RS}{\partial E_H} \cdot \frac{dE_H}{dy} + \frac{dS}{dRS} \cdot \frac{\partial RS}{\partial E_L} \frac{dE_l}{dy}$$

$$= f^1 \left[\frac{1}{E_L} g^1 - \frac{E_H}{E_L^{\,2}} h^1 \right]$$

$$= RSf^1 \left[\frac{g^1}{E_H} - \frac{h^1}{E_L} \right]$$

With equations (12) and (16), plus RS > 0, this implies that $\frac{ds}{dy} < 0$

Henry and Short's countercyclical theory of suicide is depicted by a downward sloping curve in Figure 1.

Empirical Tests of the Theories

Surprisingly, there have not been many tests of these three alternative theories. There has, of course, been a great deal of empirical research into the relationship between economic variables and the suicide rate, and we will review this research in Part 4 of this book. However, that research has rarely been designed to test which of the three theories reviewed in this section is valid. For example, to explore whether suicidal behavior is more common in those who are unemployed than in those who are employed is of great interest, but it does not formally test the three theories.

The first major test of the three theories was published by Pierce (1967) who examined the suicide rate in the United States from 1919 to 1940. Pierce examined several economic indicators, including the Ayres index of industrial activity, relative income, the unemployment rate, and the construction of new dwelling units. He also examined the effects of using absolute values of the economic indicators versus year-to-year differences, linear, exponential and polynomial regression, and various lags between the economic indicators and age-standardized suicide rates of white males.

He concluded that year-to-year differences in the economic indicators made better theoretical sense than the use of absolute levels, and that the public's definition of the economic situation would be the best economic indicator. Consequently, "the absolute values of the first differences of the index of common stock prices were correlated by a one-year lead with the suicide rates" (Pierce, 1967, p. 461). We quote the exact words used by Pierce since he has been extensively criticized for his methodology. He found a correlation of 0.74, accounting for 55 percent of the variance in the suicide rates. Taking into account the direction of the differences reduced the size of the correlation to -0.49. Pierce concluded that his results supported Durkheim's hypothesis that economic change, regardless of its direction, led to increased suicide rates, and failed to confirm Henry and Short's hypothesis.

Marshall and Hodge (1981) criticized Pierce's study. First, only after 1933 did all states report mortality statistics to the federal government. Thus, the time period should be from 1933 on. Marshall and Hodge also claimed that Pierce used negative time lags, that is, he compared the economic variable in year t with the suicide rate in year (t-1), resulting in "nonsense" correlations. If Marshall and Hodge are correct, then Pierce's study is indeed faulty. However, if we examine the exact wording used by Pierce in his critical correlation and quoted above, it is by no means clear that Marshall and Hodge's interpretation is correct.

Marshall and Hodge also suggested the usefulness of a multiple regression analysis. They hypothesized that changes in the suicide rate would be a linear function of:

(1) the state of the economy (the unemployment rate)

(2) economic improvement or deterioration (the first difference in the yearly stock market price)

(3) economic change (the absolute value of the first difference in the yearly stock market price)

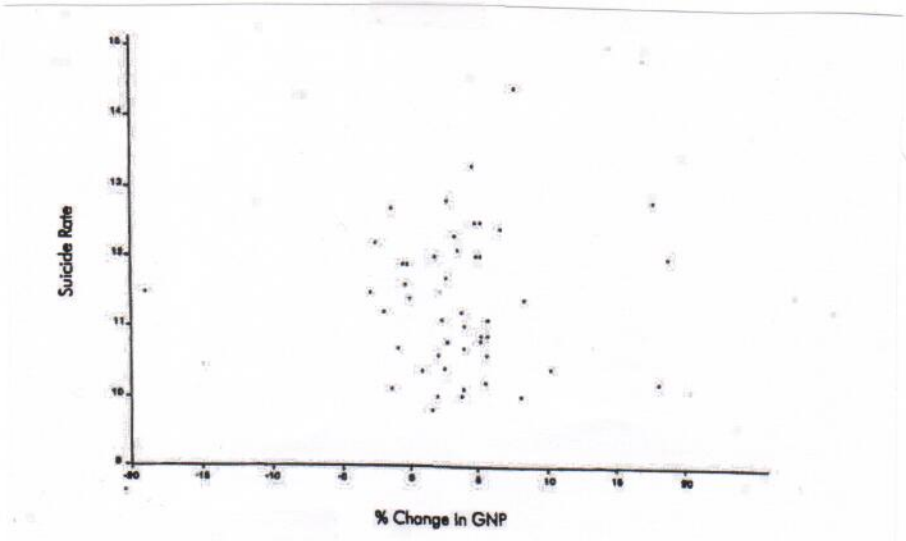
(4) and the pre-existing level of suicide.

Examining the United States from 1933 to 1976, Marshall and Hodge found that three of these variables were significant in the multiple regression, the pre-existing suicide rate and the unemployment rate positively and the first difference in the yearly stock market price negatively.

Marshall and Hodge argued, therefore, that the importance of the absolute magnitude of change was not supported by their data. Rather, economic hardship appeared to be related to suicide as Henry and Short's theory would predict. Suicide rates are higher when unemployment rates are higher and when there are negative changes in the economy.

Reflection on these two studies shows that neither measured economic expansion and contraction adequately, and neither made an attempt to geometrically plot the suicide rate against economic change. What would happen if we attempted this? We plotted the year-to-year percentage change in the gross national product (in constant 1982 dollars) against the suicide rate of the United States from 1933 to 1986 -- see Figure 2. It is clear that there was no association.

Figure 2: The suicide rate and the business cycle, 1933-1986



We also plotted the year-to-year percentage change in the gross national product against the signed difference between the suicide rate each year and the five-year moving average of the suicide rate. The suicide rate changes over time in the United States, and a five-year moving average identifies the long-term trend, around which there are yearly fluctuations -- see Figure 3. Our second plot examined whether economic expansion and contraction was related to the size of these yearly fluctuations. The result is shown in Figures 4 and 5.

Figure 3: The yearly suicide rate and the five-year moving average

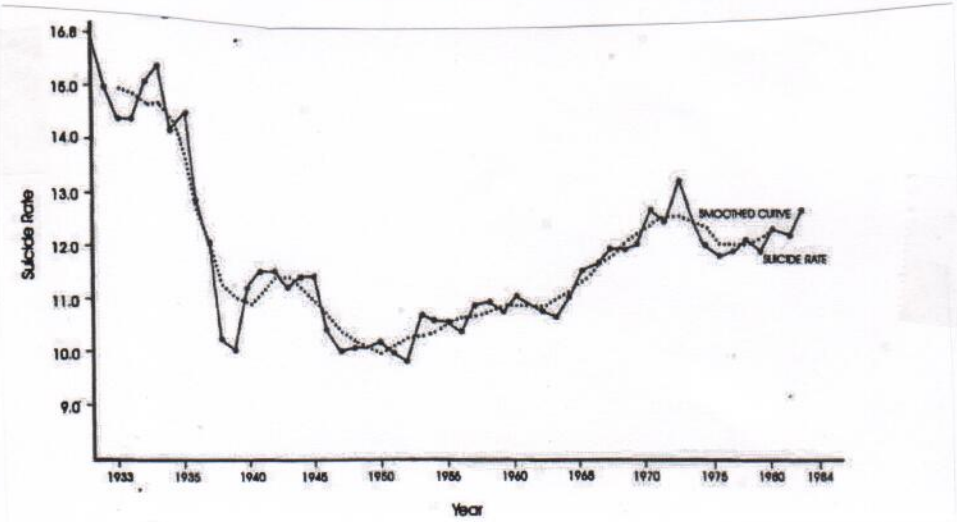


Figure 4: The business cycle and fluctuations in the suicide rate, 1933-1986

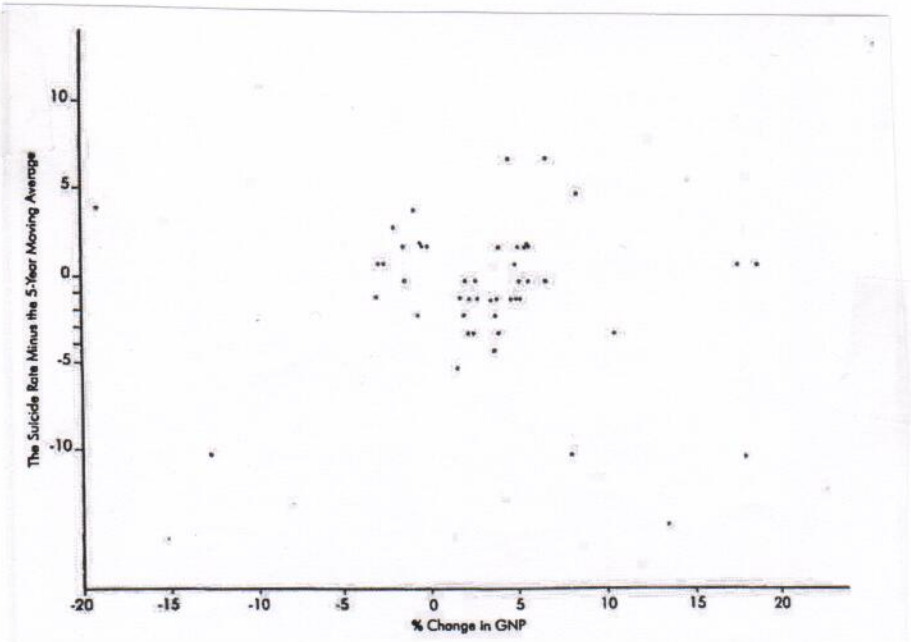
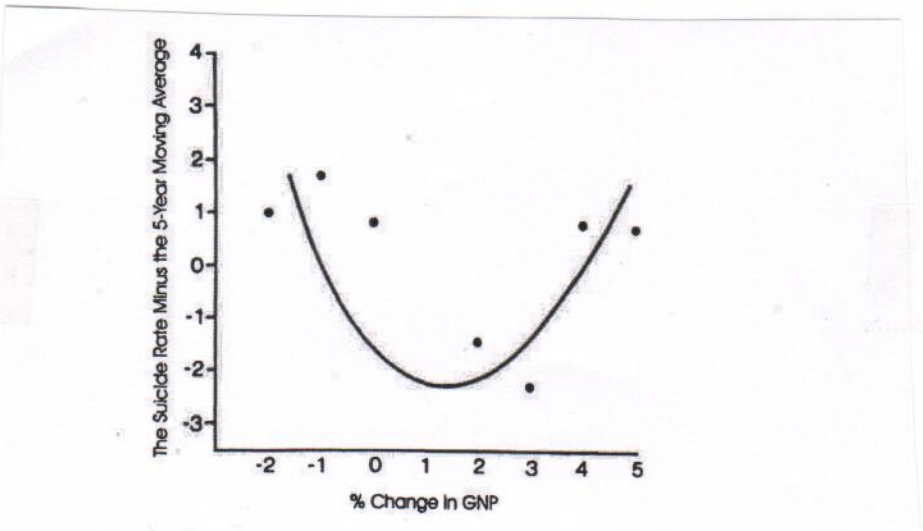


Figure 4 includes all of the data points, and examination of the cloud of points suggests a V-shaped function. To heighten this, we averaged the data points within each unit of economic change -- see Figure 5. Now the V-shaped function is clearer. Extreme economic changes, both expansions and contractions, in the United States during this period were associated with increases in the actual suicide rate over the long-term trend. These data, therefore, support Durkheim.

Figure 5: The business cycle and fluctuations in the suicide rate - averages



It is safe to say, however, that the debate will continue in the future, and hopefully in a few years we will be able to evaluate the three theories more adequately.

Discussion

While Durkheim claimed that suicide rates tend to climb during times of economic expansion and contraction, Ginsberg argued that suicide rates should rise only in times of economic expansion while dropping during times of economic recession. In contrast, Henry and Short argued that suicide rates rise only during economic contraction but not in times of economic expansion. Despite these differences, these three theories share several features in common.

First, the suicide rate is related to the business cycle. Therefore, the suicide rate should be a function of the economic activity of the entire community.

Second, even though they all recognized the driving force of the economy behind the suicide rate, this force was mediated through other variables. In Durkheim's case, the mediating variables are social integration and social regulation. In Ginsberg's case, the mediating variable is aspirations relative to actual rewards received. In Henry and Short's case, the mediating variable is the relative status of social groups. This feature may be used to justify the assumption that economic variables cannot be treated as the single force that "causes everything to happen. All social and political life waits for the economy to tell it what to do" (Marshall & Hodge, 1981, p. 107). It seems more likely that both social variables and economic variables play a role in the determination of the suicide rate of a society.

Third, even though the rise and fall of the suicide rate as a function of the economy is different in each theory, all the theories predict that the curve intersects the vertical axis at a certain level during normal economic conditions. This seems to imply that for every society there is some inevitable minimum suicide rate. We may call this the *natural suicide rate* (Yang & Lester, 2009, 2021). These sociological theories imply that this rate is greater than zero.

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SUICIDE IN FIREFIGHTERS[1]

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Abstract: Research on suicidal behavior in firefighters is reviewed. The research is criticized on ethical grounds and deficiencies in the research, for example, the use of the Suicidal Behaviors Questionnaire (SBQ) and the failure to use factor analysis to identify clusters of related variables. In the most important area of concern, the research appears to indicate a lower than expected rate of suicide in firefighters.

There is a growing body of work on suicide in those with different occupations, for example, farmers (Hawton, et al., 1999) and police officers (Violanti, 2010). Stack (2001) found several occupations with a significantly hig her suicide rate (e.g., dentists, artists, machinists, auto mechanics, and carpen ters) and several occupations with a significantly lower suicide rate (e.g., clerks, elementary school teachers, and cooks) than the rest of the working-age population.

It is often claimed the firefighters have a high risk for suicide (e.g., Henderson, et al. 2016), and Henderson, et al. suggested that PTSD and alcohol abuse might contribute to suicide in firefighters but presented no data on this. This essay explores what is known about suicidal behavior in firefighters.

Suicide

Gist, et al. (2011) reported that clusters of suicides in firefighters had occurred in several American cities (mentioning Chicago, Phoenix and Philadelphia) but did not present any evidence for this. What is the risk of suicide for firefighters?

The Incidence and Rates of Suicide

[1] It is important to note that deaths from cancer are a major focus in mortality in firefighters, and recent research has shown that their uniforms may be carcinogenic.

Musk, et al. (1978) studied Boston (Massachusetts) firefighters for the period 1915-1975 and found an SMR of 19. Forty-one suicides were expected based on mortality rates in Massachusetts and only eight were identified. Musk, et al. attributed this low suicide rate to the fact that the majority of Boston firefighters were of Irish and Italian ethnicity, and both of these countries have low suicide rates. Firefighters are financially secure, screened thoroughly for hiring, and, as firefighters, they receive support from a relatively stable work group. A career devoted to saving lives may make suicide less of a personal option. However, Musk, et al. did note that there may be a reluctance to certify deaths in firefighters as suicide.

Feuer and Rosenman (1986) studied active and retired firefighters in New Jersey for the period 1974-1980. There were 158 deaths among active firefighters and 105 deaths among retired firefighters. For the white firefighters, 5 of the deaths were by suicide compared to 6.23 expected suicides, giving a PMR based on the New Jersey population of white males of 0.80.

Vena and Fiedler (1987) studied active and retired white male firefighters in Buffalo (New York) for the period 1950-1979. The expected SMR was 95, based on the age and sex of the men, and the SMR for suicide was 21. There were 9.6 suicides expected, but only two were documented.

Heyer, et al. (1990) studied 2,289 Seattle firefighters in Seattle in the period 1945-1983, with 383 deaths. They calculated SMRs compared to white males in the USA. Five of the deaths were from suicide whereas 13.2 were expected, giving a SMR of 37 (95% confidence interval 12-89).

Tornling, et al. (1994) studied firefighters in Stockholm (Sweden) 1931-1983. The SMR for suicide was 33, with 12 expected suicides and only four observed. They attributed the low suicide rate to effective screening and the strong social support system among firefighters.

In urban Alberta (Canada) for the period 1927-1987, Guidotti (1993) identified 7 suicides whereas 18.2 were expected, giving a SMR of 38.5.

Baris, et al. (2001) studied 7,789 firefighters in Philadelphia from 1925 to 1986. The SMR for suicide was 0.66 (95% confidence interval 0.48 to 0.92). The SMRs by duration of employment were 0.78 for less than 9 years, 0.37 for10-19 years, and 0.89 for more than 20 years. By job type, the SMRs were 0.66 for engine company, 0.88 for ladder company and 0.65 for both. For those hired before

1935, the SMR was 0.58, for those hired 1935-1944 the SMR was 0.46, and for those hired after 1944 the SMR was 0.80. The SMRs based on the number of runs were all < 0.88. The suicide rate among this sample of firefighters was, therefore, low, but the rate did differ by variables associated with the work. However, Baris, et al. did not compare the different SMRs to see if the differences were statistically significant.

Savia (2008) studied suicide in firefighters in North Carolina for the period 1984-1999. She identified 25 suicides among active, disabled and retired firefighters, some 2.5% of all deaths of firefighters in the state in that time period. In this group of suicides were 21 white males, 2 white females and 2 black males. Firearms were used by 84% of the suicides, and the percentage of deaths by suicide was greater the younger the firefighters (50% for those aged 15-24 and36% for those aged 25-34 dropping to 0% for those over the age of 85). Savia reported that, compared to the population in North Carolina, the firefighters were more likely to die from suicide (22 suicides versus an expected number of 13), but it seems that she used the total population of North Carolina as the comparison group without taking into account the sex of the population.

Antonellis and Thompson (2012; Anon, 2012) reported the number of suicides among firefighters in the USA from 1880-2011. For the data reported by year, the number ranged from 12 in 2007 to 36 in 2011. The most common method was firearms, followed by hanging. The National Fire Protection Association (www.nfpa.org) identified 69 suicides among firefighters in 2013, 110 in 2014, 116 in 2015, 91 in 2017, 82 suicides in 2018 and 119 in 2019.[2] These data, probably incomplete, are produced by the Firefighter Behavioral Health Alliance (FBHA).

Finney, et al. (2015) noted 8 suicides by active-duty firefighters in the Houston fire department for the period 1984-2007, with an estimated 4,000 firefighters. This would be an estimated suicide rate of 8.3 per 100,000 per year, a very low rate for a predominantly white male population. Finney, et al note that three suicides occurred in a three-year period (2005-2007) which is a suicide rate of 25, but the rate in other years was, therefore, even lower than 8.3 (6.0). Finney et al. also noted four retiree suicides in the period 2001-2007, but no population base was reported for retirees.

[2] One of these was while on duty and occurred at the fire station in an individual who had been diagnosed with PTSD.

Ma, et al. (2005) studied mortality in Florida firefighters for the period 1972-1999 and found a low standard mortality rate (SMR) for suicide in the men (0.55) and a high SMR (2.52) for the women.

Aronson, et al. (1994) followed up 5,415 male firefighters from Toronto (Canada who worked between 1950 and 1989. and identified 18 suicides compared to 26.28 expected.

The conclusion from these studies is that firefighters have a lower rate of suicide than expected.

Firefighters versus Other Groups

Using a national data base for 28 states for the period 1984-1998, Violanti (2010) found that suicide rate for police officers was 4 times higher than that for firefighters: police and fire-fighters. Police had the higher percentage of deaths from suicide (3%) compared to firefighters (2.5%). The PMR for Caucasian male firefighters was 103, for male police officers 130, and 110 for male military personnel. African American firefighters, police officers and military personnel had higher PMRs (228, 203, and 175, respectively), as did Caucasian females (243, 206 and 178, respectively).

In a study of EMTs in Minnesota for the period 2001-2016, Caulkins (2018) found crude suicide rates of 21.26 for firefighters and 23.77 for law enforcement officers. Caulkins reported the suicide rate for the general public, but this was for men and women together and so irrelevant. The male suicide rate in Minnesota in 2010 was 17.5, so these crude suicide rates seem to be high.[3] The odds of suicide by those with no credentials was found to be less compared to those with EMR credentials, while those with higher education had a higher suicide rate.

Attempted Suicide and Suicidal Ideation

Maina (undated) surveyed 74 members of the Miami fire department and found that 39% reported suicidal ideation. Those with rank of Lieutenant showed had highest percentage (55%), while Captains and Chiefs had lower percentages (11% and 17%, respectively), but Maina did not report on the sample sizes by rank.

[3] https://www.kff.org/other/state-indicator/suicide-rate-by-sex/?dataView=1&currentTimeframe=12&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D

Carpenter, et al. (2015) studied 334 professional firefighters, measuring occupational stress, social support and current suicidal ideation. They found that only 12 (3.6%) of the firefighters reported current suicidal ideation. This percentage was higher in those below the median score for social support (7.1% versus 0.6%) as well as those above the median in occupational stress (6.6% versus 1.7%). Those firefighters below the median in social support and above the median in occupational stress, therefore, had the highest rate of suicidal ideation (11.0%).

Anon (2012) reported the results of a survey of 802 career and volunteer. firefighters, mostly white males, and found that 24% had lifetime suicidal ideation, but none reporting attempting suicide during their career as firefighters, although 10.7% had considered the means to be used and 8.8% had a plan.

Kimbrell, et al. (2016) studied 61 professional firefighters who reported an average of 13.1 encounters with suicide attempters (standard deviation 16.6) over their lifetimes. This sample seemed to have a high rate of suicidality, with 41% reporting lifetime suicidal ideation, 11% suicidal ideation in the past year, and 12% at risk of suicide according to the SBQ-R. Although exposure to attempted suicide was noted, all of the measures were defined as "exposures to suicide attempts and deaths" which is unclear. Who is dying? For this variable, the authors also noted whether it: (i) was while responding to calls, (ii) involved firefighter co-workers, (iii) involved friends, (iv) involved relatives, or (v) involved acquaintances. For lifetime exposure, the critical cut-off appeared to be 12 exposures. Firefighters with 12 or more exposures to suicide attempters had higher scores for the measures of suicidality. Interpretation of this study is hindered by the failure to distinguish between suicidal behavior as part of the job versus outside of the job and also between attempted suicide and deaths from suicide.

Bartlett, et al. (2018) studied 765 firefighters in one department who were involved in both fire suppression and emergency medical services. They were screened for the experience of traumatic life experiences and given scales to measure PTSD symptoms, distress tolerance, depression and current and prior suicidality (using the SBQ-R scale). The total suicidality score was associated with sex (with males obtaining a higher score), positively with depression, experience of traumatic events and PTSD symptoms and negatively with distress tolerance. All but distress tolerance contributed to the global suicidality score in a multiple regression.

Streeb, et al. (2019) studied 216 career and volunteer firefighters for their fit to Joiner's (2005) theory of suicide. Scores for thwarted belongingness and perceived burdensomeness were associated, but neither of these were associated with fearlessness about death. These variables were not associated with the number of critical incidents experienced, but they were associated with social support and perceived coping efficiency for trauma and firefighting.

Bing-Canar, et al. (2019) studied a sample of firefighters who reported at least one major traumatic event in their lives. They found that SBQ scores were associated positively with PTSD symptom scores (in all areas: intrusion, avoidance, negative alterations in cognition and mood, and alterations in arousal and reactivity), alcohol use disorder scores, and total stressful life events.

Martin, et al. (2017a) studied firefighters in a southern city (USA) where firefighters also had EMS duties. Prior suicidal ideation was associated with alcohol abuse (using a standardized screening test), but alcohol abuse was no longer a significant predictor when depression and PTSD symptoms were added to the model. Having a romantic partner, more education and identifying as an ethnic minority all were associated with less suicidality, while having served in the military was associated with greater suicidality. Age and years of service as a firefighter did not predict suicidality. Martin, et al. (2017b) confirmed, perhaps in the same sample, that depression and PTSD symptoms, but not alcohol use, predicted lifetime suicidal ideation.

Park, et al. (2019) surveyed 45,698 Korean firefighters and found that suicidal ideation in the past year was associated with older age, being female, being divorced separated or widowed, having worked for more years, recent trauma, being an officer, occupational stress and emotional stress, PTSD symptoms and depression.

In a study of Korean firefighters, Kim, et al. (2018) found that suicidal ideation was associated with alcohol use disorders, insomnia, symptoms of PTSD, experience of traumatic events, and assignment as paramedics and for rescue.

These studies confirm the validity of well-known risk factors for suicide and theories of suicide in firefighters. However, they do not identify important risk factors relevant to firefighters.

***Stanley et al.*[4]**

Stanley and colleagues appear to have collected data from a national sample of firefighters and published many articles on the same sample. They do not clarify this in many of their reports. I will, therefore, note the sample size in each report.

In a sample of 831 firefighters, Stanley et al. (2018a) found that occupational stress and depression were positively associated with lifetime suicidal ideation, threat and attempts, past year suicidal ideation and current suicidal intent while distress tolerance was negatively associated with these suicidal measures.

In a sample of 831 firefighters, Stanley et al. (2018b) found that current suicidal ideation was associated with depression scores, and scores on anxiety sensitivity measures (cognitive, social, physical and total scores).

In an online national survey of 1,027 firefighters, Hom, et al. (2016) noted that 483 reported past suicidal behavior. Thery found that 16.1% reported having attempted suicide, 5.2% reported planning suicide, and 26.7% reported past suicidal ideation.

Stanley, et al. (2015), in the sample of 1,027 firefighters, found that career suicidal behavior (ideation, plans, attempts and self-harm) was associated lower firefighter rank, fewer years of firefighter service, membership in an all-volunteer department, a history of professionally responding to a suicide attempt or death, and active-duty military status.

Hom, et al. (2017a) studied an online national sample of 834current and 95 retired firefighters out of a total sample of 1,027. A history of suicidal ideation or attempted suicide was significantly associated with a history of physical abuse and a history of sexual abuse. After controlling for sex, age, ethnicity and years of service, additional predictors were depression, insomnia, post-traumatic stress, and scores on the three variables proposed by Joiner's (2005) theory of suicide (perceive burdensomeness, thwarted belong and an acquired capability for self-harm).

Hom, et al. (2019) studied the attitudes toward suicide of 818 current firefighters. Compared to those who had not made a suicide attempt, the attempters

[4] Before conducting these studies, Stanley, et al. (2016 reviewed the previous research on police officers, firefighters, EMTs, and paramedics.

viewed suicide as more normal and glorified it. They were less likely to see suicide as resulting from isolation or depression. Their estimate of future suicidal behavior was associated with more stigmatizing attitudes toward suicide and greater normalization/glorification of suicide.

Stanley, et al. (2019) reported on 831 career firefighters and found that suicidality (past and present ideation and attempts) was associated positively with PTSD symptoms and several scores on the Five Facet Mindfulness Scale (positively with observing and non-reactivity to inner experience, negatively with acting with awareness and not with describing).

In a study of 831 firefighters, Boffa, et al. (2017) found that that greater PTSD symptom scores (significant for all subscale scores) and depression were associated with greater risk of reporting lifetime suicidal ideation and attempts.

Stanley, et al. (2018c) studied 20 firefighters who were wildland firefighters out of a sample of 1,131 firefighters. Suicidality (past and present ideation and attempts) was higher in these firefighters than in the regular firefighters, and they scored higher for thwarted belongingness but not significantly different for perceived burdensomeness, components of Jonier's (2005) theory of suicide.

Stanley, et al. (2017c) studied 525 firefighters and found that career suicidal ideation and SBQ scores were associated with insomnia, PTSD symptoms, alcohol use and perceived stigma to receiving psychological/psychiatric help. In the same sample, Stanley, et al. found that volunteer firefighters reported significantly elevated levels of depression, posttraumatic stress, and suicidal symptoms compared to career firefighters.

Boffa, et al. (2018) studied 214 trauma-exposed male firefighters with non-zero suicide risk. Suicidality was associated with depression, all anxiety sensitivity subscale scores and all PTSD sub scale scores. Military status (active), younger age and Native American ethnicity also were significant predictors.

Healy and Vujanovic (2021) used Stanley's sample of firefighters but restricted the sample to those reporting at least one PTSD traumatic event (n=802). Scores on the SBQ were positively associated with sleep disturbance (and all three subscale scores), total stressful life events, occupational stress, and PTSD severity, but not sex or years in firefighting service.

Serrano, et al. (2020) studied 865 firefights and found that SBQ scores were associated with life events, occupational stress, anxiety and stress and sleep problems positively and some of the aspects of mindfulness (e.g., acting with awareness and nonjudging of inner experiences) negatively.

Chu, et al. (2016) studied 863 firefighters and found that career attempted suicide was associated negatively with years of service and fearlessness of death and positively with thwarted belongingness and perceived burdensomeness, thereby supporting Joiner's (2005) theory of suicide. The results for career suicidal ideation were similar except that fearlessness of death was no longer significant.

Gallyer, et al. (2018) studied 944 firefighters and found that suicidal ideation was associated with thwarted belongingness and perceived burdensomeness and problematic alcohol use.

Female Firefighters

Osman, et al. (2001) developed a scale to assess past suicidal behavior and the respondent's estimate that they might die by suicide, called suicide risk. In a national online sample of female firefighters (n=266), Hom, et al. (2018a) found that scores on this scale were higher if the respondent had known someone who had died by suicide (and psychiatric symptoms were more common also). In a sample of 119 current women firefighters, Hom, et al. (2018b) found that 44.7% of them reported lifetime suicidal ideation or attempts.

In a sample of 313 current female firefighters, Stanley, et al. (2017a) found that pre-career suicidal behavior was associated with career suicidal behavior. Younger respondents, those not married, and those without children were more likely to report suicidal behavior, but ethnicity, sexual orientation, education, years of firefighter service, career versus volunteer service, rank, EMS service and number of women in the fire department were not associated with suicidality.

In a sample of 254 female firefighters, Stanley, et al. (2017b) found that depression scores, anxiety-sensitivity scores (cognitive, social, physical and total scores), and PTSD scale scores (re-experiencing, avoidance, numbing, hyperarousal and total) were associated with suicidality (presence, severity, and frequency of lifetime suicide ideation and attempts, as well as the individual's perceived likelihood of making a future suicide attempt).

Hom, et al. (2017b) studied workplace harassment in 290 female firefighters. Harassment was common, and sexual harassment and other threats/harassment were associated with career suicidal ideation and more severe psychiatric symptoms. SBQ scores were associated with anxiety sensitivity, alcohol use, depression, insomnia, PTSD symptoms, thwarted belongingness, and perceived burdensomeness.[5]

Gallyer, et al. (2018) studied 241 female firefighters and found that suicidal ideation was associated with thwarted belongingness and perceived burdensomeness and problematic alcohol use.

Comment

It is obvious that many of these studies report the same correlates of suicidal behavior, with almost all of the risk factors well documented in the general suicidology research literature. It is also obvious that the research repeatedly reported tests of Joiner's theory of suicide, apparently on subsets of the same sample of firefighters. Almost all of the studies appeared as articles with many pages in leading scholarly journals.

Firefighters Compared to Others

In a study of first responders (law enforcement officers, emergency medical technicians, and firefighters), Bond and Anestis (2023founmd that first responders reported more lifetime suicidal ideation and higher acquired, practical, and dispositional capability for suicide than did non-first responders, and, for the first responders, a military background played no role. Law enforcement officers reported more lifetime suicidal ideation than emergency medical technicians but did not differ from firefighters. The three groups did not differ in the capability for suicide.

Discussion

Suicide is an important behavior for us to study, theorize about, and prevent. My criticisms that follow are of these research papers I have reviewed, and I do not intend to minimize the importance of the topic.

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[5] Smith (2016) noted the case of a female firefighter with the Fairfax County (VA) fire department who died by suicide in Shenandoah National Park leaving a suicide note blaming cyberbullying by her fellow firefighters.

The first comment is on the multiple papers based on one sample of firefighters. This has been done in an extreme fashion by Stanley's team, but others whose papers are reviewed above have done this also, albeit to a lesser extent. Since the number of subjects differs slightly in these multiple papers by Stanley's team, the authors are not always clear about which sample they are using and why the sample size has changed.

These studies of one sample that appear in multiple papers raises the question of why the variables and analyses were not combined into one paper. The research was apparently supported by grants and, therefore, the grantors need to be made happy. There are also careers to be taken into account. These concerns should not impact the research and the presentation of results. In my opinion, many of the results reported on a single sample could, and should, have been presented in one article.

Furthermore, in most of these studies, the teams presented analyses to show which variables had direct impact on suicidality and which were mediators. Looking at their correlation tables, often nearly all the variables were significantly associated. Mediation analyses (and path analyses) do not test whether the critical correlations differ significantly from a statistical viewpoint from one another. If they do not, then the choice of one mediator (or one path) is arbitrary. In my opinion, a factor analysis of the variable set would make much better sense, and factor scores used to predict suicidal behavior.

The use of the SBQ is also a weakness. Almost all research into suicide distinguishes between suicidal ideation and attempted suicide. The SBQ does not, and the overall scores, often called *suicide risk*, confuses these behaviors. In addition, the focus on Joiner's theory of suicide in many of the studies, a theory which has been criticized (Hjelmeland & Knizek, 2020; Lester, 2024), and the exclusion of other theories of suicide, lessens the usefulness of the research.

Stack (2001) in his study of the suicide rate compared the suicide rates by occupation with those of the working-age population. Sex must also be controlled for. It is not sound methodology to compare estimated suicide rates in firefighters with the suicide rate of the general population.

The most disappointing conclusion is that we have learned little or nothing about suicide in general and little to help prevent suicide specifically in firefighters. The majority of the variables studied have long been known (and documented) to impact suicidal behavior. It is interesting to have the associations

confirmed in firefighters after years of studies of college students and psychiatric patients, but not that important.

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SUICIDE IN THOSE WITH ALZHEIMER'S DISEASE[6]

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Abstract: A review of research on suicide in patients with Alzheimer's disease had identified very few meaningful studies. The most comprehensive study (from Denmark) showed a very high suicide rate, especially for those aged 50-69.

The present essay focuses on suicidal deaths and attempted suicide. Studies on suicidal ideation are not considered. However, it must be noted that a valid diagnosis of Alzheimer's disease is not possible until an examination of the individual's brain, and this is not done in most of the research.

Suicidal Deaths and Alzheimer's Disease (AD)

Rubio, et al. (2001) compared 28 suicides over the age of 60 in one city in the United States with 56 controls who died from natural causes for neurofibrillary pathology in the hippocampus. The suicides had more neurofibrillary pathology than the controls, and Rubio, et al. concluded, after their microscopic study, that the suicides more often had AD pathology (29% versus 4% of the controls).

Peisah, et al. (2002) compared 143 suicides over the age of 65 in the community with 59 individuals dead from car crashes in Australia. Six percent of the suicides (6.5%) and5% of the controls had a history of dementia. They found no differences in the plaque score or neurofibrillary tangle staging between the suicides and controls. None of the subjects with a history of dementia had neuropathologically confirmed AD.

Matschke, et al. (2018) compared the brains of 162 German suicides (of all ages) with the brains of those dying from other causes. The suicides had lower β-amyloid loads than the controls, allowing the researchers to conclude that neuropathological characteristics of Alzheimer's disease and common tauopathies associated with age were of limited relevance for suicide.

[6] For an earlier review, see Serafini, et al. (2016).

Erlangsen, et al. (2008) studied suicides in Denmark for the period 1990-2000. In these 11 years, 136 people aged 50+ diagnosed with dementia (during a full-time hospitalization) died by suicide out of a population of 5,699 suicides. The estimated suicides rates (per 100,000 per year) were:

	Total	With dementia
Men		
50-69	35.5	296.6
70+	56.6	173.3
Women		
50-69	19.6	217.8
70+	23.8	70.6

For the men with dementia, 24% of the suicides occurred within 3 months after the diagnosis and, for women, 15% occurred within 3 months of the diagnosis. It is interesting to note that the suicide rate was lower for those 70+ than for those 50-69, perhaps indicating that dying by suicide becomes more difficult with increasing age in patients with dementia. (The authors did not report the exact age at diagnosis.)

Attempted Suicide

Barak and Aizenberg (2002) studied 1,551 admissions aged 65 or older to a mental health center in Israel. Of these, 341 were diagnosed with dementia and, of these, 215 (63%) as having AD. Sixteen AD patients were admitted after a suicide attempt. Each of these 16 patients were matched with the next AD admission. The attempters had *lower* scores on a scale to assess the level of dementia, had more often attempted suicide in the past, and more often had a history of affective disorder. This study suggests that suicidal behavior is more likely in the earlier stages of AD when decision making is more feasible.

Discussion

The major problem with the study of suicide in patients with Alzheimer's disease or other forms of dementia is that, as the disease progresses, the patient is less able to make a decision about whether to die by suicide or not. If the patient is going to make a decision to die by suicide, physician-assisted or not, that decision has to be made early.

Relevant to this, the only study that estimated suicide rates in patents with AD, Erlangsen, et al. (2008) found higher suicide rates in the AD patients aged 50-69 compared to those aged > 70. It would of interest to compare these suicide rates with patients diagnosed with cancer, especially terminal cancer.

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METHODOLOGICAL PROBLEMS IN ECOLOGICAL STUDIES OF SUICIDE

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Abstract: This paper examines ways in which decisions made in sociological research impact the results.

Studies of suicide rates over regions within a country, such as the United States, are popular, but they involve making decisions about the data set and the statistical analyses, decisions which have an impact on the results. Similar problems are present in time-series studies. This paper examines some of these methodological issues.

Choice of Data Set

There is a major choice that researchers have to make in studies of American state data. Should all states be included which involves including Alaska and Hawaii? Some researchers, including myself, have in the past considered only the 48 continental states, arguing that Alaska and Hawaii differ in that both geographical distance (which has economic implications) and probably less interstate migration may impact socio-economic variables. Occasional researchers include Washington DC in the data set, resulting in 51 data points.

Let us look at a simple analysis to illustrate the impact of this choice. Is the rate of abortions (per 1,000 women aged 15-44) associated with the suicide rate? The data for suicide rates in 2000 come from KFF[7] and the data for abortion rates in 2000 from the Wm. Robert Johnson archive.[8]

[7] https://www.kff.org/other/state-indicator/suicide-rate-by-sex/?dataView=1&currentTimeframe=22&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D

[8] www.johnstonsarchive.net/policy/abortion/index.html#US

Table 1: Abortion rates and suicide in regions of the United States

	n=48	n=50	n=51
Abortion rate &			
Suicide rate	-0.31*	-0.31*	-0.40***
Male suicide rate	-0.35*	-0.35*	-0.44***
Female suicide rate	-0.14	-0.16	-0.25*

*** p< .001
* p<.05

Only for the use of 50 states plus Washington DC does the correlation coefficient between the female suicide rate and the abortion rate become statistically significant. This choice of which regions to include often impacts the results.

Intercorrelated Variables

Typically in research, we choose several variables, examine their correlation with our target variable and draw conclusions. However, often socio-economic and personal variables are associated and, therefore, our conclusion may be invalid. For example, let us look at whether the southern states have higher or lower suicide rates. Gastil (1971) rated every state for its southernness, and this variable has been used in many studies. In addition, research has examined whether the estimated average intelligence of the residents of the states is associated with socio-economic variables (Yang & Lester, 2016). Let us look at the correlations for the 48 continental states of these two variables (IQ and southernness) with the suicide rate. Ratings of southernness come from Gastil (1971) and ratings of state IQs from McDaniel (2006).

Table 2: IQ, southernness and the suicide rate

	IQ	southernness
Suicide rate	-0.25^	+0.31*
IQ	-	-0.75***

*** p< .001
* p<.05
^ p<.10

Lester (1986-1987) found that southernness was not associated with the total suicide rate of the states in 1960. We can see above in Table 2 that the positive association in 2000 was statistically significant. The suicide rates were also

associated (negatively) with estimates of the mean IQ of each state, but the association only approached statistical significance (p<.10).

However, the important point here is that southernness and the mean IQ of the states are strongly associated. The higher the southernness score of the state, the lower the estimated IQ of the residents. Often, the predictor variables in sociological studies of a target variable are inter-correlated, and it would be a mistake to single out one variable as the important correlate. Researchers who carry out path analyses or multiple correlations never test whether correlations with suicide rates are significantly different. One correlation may be higher than another but not statistically different.

Multiple Regression versus Factor Analysis

Researchers typically prefer simple bivariate correlations and multiple regressions. I have argued for the use of factor analysis to identify clusters of associated variables. Let us examine these approaches for the 48 continental states. Rentfrow, et al. (2008) used respondents in each state to measure the average personality of the residents of each state: E extraversion, A agreeableness, C conscientiousness, N neuroticism and O openness. How do these personality measures (usually called the Big Five personality traits) and the measure of IQ correlate with the suicide rate for the 48 continental states?[9] The results are shown in Table 3.

Table 3: Predicting suicides rates with the Big Five personality traits and IQ

	r	Full MR β	Forward MR β
Suicide rate &			
IQ	-0.25^	-0.21^	-0.34**
E	-0.11	-0.36*	
A	-0.10	-0.41*	-0.27*
C	+0.32*	-0.36*	
N	-0.49***	-0.52***	-0.61***
O	-0.08	-0.38**	

*** p< .001
** p< .01
* p<.05
^ p<.10

[9] Voracek (2009) studied the association of the five personality variables with suicide rates in a different year using simple correlations and partial correlations.

Looking at the simple correlations in Table 3, the suicide rate is associated with scores for C and N and a tendency with IQ. The correlation of the suicide rate with N scores replicates the finding by Voracek (2009) who used the 50 states plus Washington DC. In Table 3, it can be seen that, in the full multiple regression, all of the variables contributed to the prediction of the suicide rate. In a forward multiple regression, only IQ, A and N scores predicted the suicide rate.

What if we factor analyzed the six variables (using a Principal Components extraction and a Varimax rotation)?

Table 4: A factor analysis of the variables

	Factor 1	Factor 2	Factor 3
IQ	+0.08	+0.04	-0.94#
E	+0.87#	+0.23	-0.01
A	+0.60#	+0.55#	+0.19
C	+0.24	+0.76#	+0.49#
N	+0.01	-0.87#	+0.25
O	-0.89#	+0.08	+0.09
Correlation with suicide rate	-0.15	+0.38**	+0.14

considered to be large enough to label the factor
** p< .01

It can be seen that the six variables form three clusters: Factor 1 is loaded with high extraversion and low openness, Factor 2 is loaded with high agreeable and conscientious and low neuroticism, while Factor 3 is loaded with high conscientious and low IQ. It can be seen in Table 4 that the suicide rate was associated only with Factor 2 scores. The suicide rate is higher in the agreeable, conscientious and non-neurotic states.

One problem with this methodology is that it is not always easy to label the factors, but this is not always an issue. For example, in a study by Lester (1994) of the correlates of suicide rates over the 48 continental states of America in 1980, seven factors were identified from a factor analysis of 37 socio-economic variables (see Table 5).[10] Factor 2 had high loadings from interstate migration, divorce rate, crime rate and alcohol consumption positively and with church attendance

[10] Lester labelled the seven factors as: I urban/wealth, II social disintegration, III age, IV southern, V labor force participation, VI unemployment and VI Roman Catholic.

negatively. Lester labeled this factor *social disorganization*, and the correlation of this factor score with the suicide rate was 0.85 ($p<.001$).

The proposal of using broad social and cultural characteristics, rather than single variables, in order to understand the regional variation in suicide rates was also proposed by Moksony (1990) and Taylor (1990).

Table 5: Results of the factor analysis with decimal points omitted (from Lester, 1994)

	Factor						
	I	II	III	IV	V	VI	VII
median family income	+74#	-04	-01	-14	+58#	+08	-11
% urban	+92#	09	-08	+13	-01	-05	+06
per capita income	+79#	+08	+21	-14	+48#	-07	-16
population	+62#	-19	+14	+25	-16	+18	-40
population density	+54#	-38	+37	+11	+08	+07	+44#
personal income	+80#	+14	+23	-13	+47#	-07	-13
% in poverty	-50#	-06	-13	+47#	-54#	+02	+01
gross state product	+42#	+26	-28	-09	+33	-29	-33
% immigrants	+86#	+08	+23	-03	-10	+01	+18
% Roman Catholic	+60#	-08	+32	-32	+16	+06	+45#
% born in state	-40#	-81#	+05	+07	-12	+19	-12
crime rate	+72#	+53#	-01	+17	+05	+05	+15
divorce rate	-02	+88#	-16	+02	-03	-01	-08
interstate migration	-04	+83#	-27	-10	+11	-32	+13
church attendance	-10	-73#	-20	-20	-19	-33	+21
% divorced	+15	+91#	-08	-07	+06	+13	-16
gun control strictness	+27	-58#	+18	+13	+13	+20	-08
alcohol consumption	+31	+53#	+14	-16	+39	-15	+35
females/males	+10	-50#	+55#	+34	-31	+21	+26
longitude	+10	+50#	-54#	-28	-07	-09	-38
birth rate	-14	+11	-92#	-14	-12	-18	-10
% voting for Reagan	+05	+23	-58#	-33	-08	-45#	-05
% over 65 years	-05	-22	+69#	-29	-51#	-20	-02
death rate	-10	-32	+79#	-05	-43#	-01	-04
% under 15 years	-32	-05	-91#	-01	-12	+06	+02
median age	+31	+03	+92#	-02	-15	-01	+01
southern index	-26	+27	-12	+73#	-30	+11	-34
% separated	+26	-04	+18	+84#	+12	+14	+15
% black	-10	-16	+04	+92#	-10	+13	-01
Latitude	+02	-13	+08	-77#	+43#	+16	+05
infant mortality rate	+05	-25	+17	+82#	-17	+15	+01
females in labor force	+12	+10	-02	-15	+81#	-32	+14
males in labor force	+19	+03	-34	-26	+80#	-29	-01
employment ratio	+03	+08	-15	-20	+75#	-47#	+02
unemployment rate	+01	-05	+03	+07	-20	+96#	-01
male unemployment	+07	-07	+06	-07	-17	+93#	-08
female unemployment	-06	-01	-03	+27	-21	+88#	+12
% of variance	26%	21%	13%	8%	7%	5%	3%
Correlation with suicide rate	-0.02	+0.85*	-0.24	-0.11	-0.03	-0.07	-0.04

Time Series Studies

One problem with time-series studies is that many variables change over time, and it is difficult to choose one as the critical variable. There are many techniques to choose from in order to conduct multiple regressions such correcting for serial autocorrelation. As noted above, it is helpful to examine the relationship between the variables using factor analysis.

Let us look at one data set. Steen and Mayer (2004) looked at the male/female suicide rate ratio in India for the period 1967-1997 and concluded that *modernization did not impact this ratio*. They also included their data set in their paper enabling others to analyze their data.

The correlation between the male/female suicide rate ratio and modernization was -0.56 ($p = .001$) which indicates a strong relationship. The male/female suicide rate ratio was correlated with urbanization ($r = -0.43$, $p < .05$) and female literacy ($r = -0.55$, $p = .001$) but not with female participation in the workforce ($r= -0.19$), the three components that made up Steen and Mayer's measure of modernization. Steen and Mayer's conclusion seems, therefore, to be wrong.

All of these variables showed time trends. The correlations with year were: male/female suicide rate ratio -0.57 ($p<.001$), urbanization +0.82 ($p<.001$), female literacy +0.99 ($p<.001$) and modernization +0.99 ($p<.001$), but only +0.32 ($p<.10$) with female participation in the workforce. Steen and Mayer's conclusion that the male/female suicide rate ratio was not associated with modernization was after they controlled for *the passage of time*.

In a backward multiple regression with the three components of modernization, only female literacy was left to predict the male/female suicide rate ratio ($\beta=-0.55$, $p=.001$). A Principal Components factor analysis for the three components of modernization extracted only one factor. The three variables are inter-correlated. It would be a mistake, therefore, to focus on one of the variables since all the variables are inter-correlated.

There is an interesting sidenote here. Cutright and Fernquist (2003) suggested using the difference between the male and female suicide rates as a measure rather than the ratio of these two rates. This difference score was not associated with the year ($r=+0.02$), nor with urbanization ($r=+0.10$), female literacy

(+0.09), female participation in the labor force (r=0.13) or modernization (r=+0.11).

As noted above, Steen and Mayer concluded that modernization was not associated with the male/female suicide rate ratio. The statistics that I have presented indicate a very different picture. As components of modernization increased over time, that ratio declined. All of the variables showed trends over time, and so the design of this study is not methodologically sound enough to draw conclusions.

Discussion

My aim here has been to show that decisions that are made in the design and statistical analysis of a study have major implications for the results. There is no *right or wrong*, but it is important to explore the impact of these decisions on the results and conclusions.

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A REVIEW OF RESEARCH ON SUICIDE IN 2004[11]

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From 1897 (the date of the publication of Durkheim's book on suicide) until 1997, I read every article in English on suicidal behavior. I had many boxes of 3x5 index cards, one for each article, chapter and book. I used every abstracting service available to locate these scholarly works. I reviewed the research in four books called *Why People Kill Themselves*, published by Charles Thomas.

At that point, the volume of scholarly work on suicidal behavior was too great. Locating and reviewing the articles was taking up too much of my time (I did have a full-time job as a professor), and so I stopped. One hundred years seemed like a great achievement.

No-one took up this task. Of course, reviews of selected topics appeared, but no comprehensive review. I am now retired, and hence this is an attempt to do a reasonably thorough review, although it will not be comprehensive. I do not have access to all the abstracting services that existed in the 20th century. Furthermore, articles in the predatory journals (those that developed to help scholars publish their work for a fee) are not typically included in the abstracting services. Therefore, many, possibly important, ideas are difficult to locate.

My goal is to see whether there have been important research and theoretical findings in the more recent literature. I have not included reviews of the literature in this essay but, of course, those reviews of the literature on specific topics may be valuable to researchers. (I have started to mention reviews of physiological research because the articles typically have no meaning for me, and I do include the results of meta-analyses.) I have also not cited qualitative reports. These may throw light on suicides in certain people or in specific instances, but qualitative reports are difficult to incorporate into an essay such as the present one.[12]

[11] I keep this standard Introduction so that each review can stand as an independent article.
[12] My positive opinion of qualitative essays is illustrated by the essays I have written on more than 75 famous suicides (www.drdavidlester.net).

The reviews of scholarly research published in 1998-2003 are published (Lester, 2024a, 2024b, 2024c, 2024d, 2024e, 2024f). This is the review for 2004. To indicate where I searched, here is a list of abstracting services used.

Source	1998	1999	2000	2001	2002	2003	2004
Sociological Abstracts	93 items	106	55	56	67	62	64
Criminology Abstracts	78 items	94	80	98	67	73	63
Psychological Abstracts	401 items	460	388	425	441	510	541

Studies of Suicide Rates and Suicidality

Methodological Issues

Pearson-Nelson, et al. (2004) documented that changes in the World Health Organization classification of diseases had an impact on reported suicide rates, especially ICD-9 to ICD-10.

Theory

Yang and Lester (2004) had proposed a theory of the *natural suicide rate*, that the suicide rate of a region could never be zero but always positive. In a study of the states, provinces or regions of 10 countries, they derived regression equations to predict the suicide rates from unemployment and divorce. Setting these social indicators to zero always left a positive suicide rate (i.e., the constant was positive). Of course, other social indicators might result in a different result.

Regional Studies

In a study of 85 countries, Voracek (2004b) found that estimates of national IQ was positively associated with male and female suicide rates. In a smaller set of 36 countries, the association was the same but no longer statistically significant after controls for divorced and unemployed rates and the age of the population.

In a sample of 51 countries, Lester (2004c) found that suicide rates were negatively associated with the proportion of the population with Type O blood and positively with the proportions of people with Types A and AB blood.

In a study of 29 European countries, Voracek (2004s) found that suicide rates were negatively correlated with the proportion of people with Type O blood. The same result was found for 10 non-European countries.

In a study of 20 (or 30) European countries, Voracek and Formann (2004) found that suicide rates were positively associated with the percentage of Finno-Ugrians and negatively with the percentage of people with Type O blood. They argued, however, that latitude and latitude squared times longitude were stronger predictors of suicide rates. This, of course, is merely statistical manipulation and does not provide any insight into causal factors for national suicide rates.

In a sample of 4 countries (Croatia, Hungary, Slovenia and Italy), Pavlović (2004) found that Croatia ranked 3rd for the female suicide rate and 4th in the percentage of induced abortions.[13]

Regions within a Country

In a study of the American states, Cutright and Fernquist (2004) found that male and female suicide rates were predicted by the divorce rate, church membership, approval of suicide, population density and in-migration. The percentage of Native Americans in the states and the use of firearms for suicide did not play a role. Typical of this research team, some of the variables are statistically manipulated.

In Russia, Kandrychyn (2004) found that suicide rates were higher in the northern regions of European Russia than in the south of the country. The historical prevalence of Finno-Ugrians in the north of the country may be responsible for its higher suicide rate.

In a study of the American states, Price, et al. (2004) found that firearm suicide rates were associated positively with the prevalence of firearms and of gun dealers, negatively with strict gun control laws, urbanization and per capita alcohol consumption, poverty and unemployment.

Bridges (2004b) looked at the association of suicide rates and birth rates over the 10 provinces of Canada for every year from 1961 to 1999 and also over time for each province. Bridges found a small average negative correlation for these two variables, replicating a report by Lester (2000).

In a study of Japanese prefectures for three years (1980, 1985 and 1990), Otsu, et al. (2004) studied 20 social life indicators for their impact on suicide rates.

[13] I was tempted to not report this study.

Factor analyses of the variables produced slightly different factors for each of the three years. Otsu, et al. summarized their results by noting that male suicide rates were negatively associated consistently in the three years only with urbanization/economic development. None of the factor scores were associated with female suicide rates.

Bridges (2004c) found that for 1992 (but not 2000) that the more people in the American states drinking fluoridated water, the lower the rates of crude and age-adjusted suicide rates.

In a study of 9,264 electoral wards in England and Wales, Middleton, et al. (2004) found that indicators of social fragmentation (e.g., proportion of people living alone or population mobility) predicted suicide rates.

In a study of the 16 Polish counties, Lester and Krysinska (2004) found that suicide rates were associated with unemployment rates, divorce rates, and between-county migration.

In Finland, Martikainen, et al. (2004) found that suicide rates were higher in areas with a high proportion of manual workers, high unemployment rate, low family cohesion and low voting turnout and less strongly with median income and income inequality of areas. Alcohol associated suicide rates did not show such associations.

Regions within a State or Province

In electoral wards of a town in England, Evans, et al. (2004) measured psychiatric admissions, economic deprivation e.g., (unemployment, households not owner occupied) and social fragmentation (e.g., the percent unmarried, population turnover). Suicide rates were more strongly associated with social fragmentation than with social economic deprivation and psychiatric admissions, significantly for males aged 45-64. The presentation of results is poor, with no multiple regressions carried out.

Bridges and Clark (2004) found no differences in suicide rates in urban and rural counties in California.

Time-Series Studies

United States

In the United States 1976-2001, Webster, et al. (2004) found that minimum purchase-age and possession-age laws for firearms were not associated with reductions in suicide rates among youth aged 14 through 20 years, but state child access prevention laws requiring safe storage of firearms were associated with an 8.3% decrease in suicide rates among 14- to 17-year-olds.

Fernquist (2004a) looked at male black suicide rates by age over a 50 year period in the United States. Fernquist found that poverty was inversely related to suicide rates while educational attainment was positively related to suicide rates for black males aged 15-44. Educational attainment was inversely related to suicide rates for black males aged 55-64.

Fernquist (2004b) found that single motherhood was inversely related to suicide rates of female African Americans, supporting an argument that being a single mother increases the need for African American mothers to rely on social networks for support and increases their sense of responsibility.

In the United States from 1968-1996, Lester and McIntosh (2004) found that the mean age of the suicides each year was not associated with Diekstra's measure of the variation of suicide rates across ages.

For the United States for 1960-200, Batton (2004) explored the variation in homicide rates relative to suicide rates (the lethal violence rate and the suicide homicide rate ratio), although she used arrest rates for homicide so as to measure the rates separately for males and females. These measures were associated in a similar fashion for both sexes with social variables (e.g., family poverty, female labor force participation, unemployment, and deaths from cirrhosis of the liver).

Japan

Yamasaki, et al. (2004a) studied the Japanese suicide rate from 1976 to 1994 using monthly data. The male suicide rate was positively associated with the unemployment rate and the rate with which enterprises failed. The female suicide rate (which was positively associated with the male suicide rate) was associated only with enterprise failures.

In Japan from 1981-2000, Abe, et al. (2004) found that the unemployment rate was associated with the percentage of suicides using hanging, but not with other methods of suicide.

Other Countries

For the period 1974 to 1999, Bridges and Kunselman (2004) found that the relative availability of firearms in Canada as measured by the rate of accidental death from firearms and the average of the percentages of suicides+homicides using firearms was positively associated with the rate of suicide by firearms and negatively associated with the rate of suicide by all other methods.

Jakovljević, et al. (2004) found that, prior to the civil war (1966-1990) in Croatia, the suicide rate was increasing but, after the war (1993-2002), the suicide rate declined.

Gaillienė (2004) documented a rise in the suicide rate in Lithuania after the fall of the Soviet Empire in 1990, especially in rural males.

Steen and Mayer (2004) looked at the male/female suicide rate ratio in India for the period 1967-1997 and concluded that modernization did not impact this ratio. However, their tables seem to show that urbanization and female literacy did impact this ratio, but not female participation in the workforce. One problem with the data set is that many of the variables changed linearly over time.

Research on Distal Variables

Season, Day of Week and Time of Day

Corcoran, et al. (2004a) looked at suicides in Ireland. The male suicide rate was higher on working Mondays and Saturdays, and during April, June, and August. Female suicide rates were higher only in August and showed no variation by day. The temporal pattern varied by age.

In Austria, Kapusta and Sonneck (2004) found a peak in suicides in May and a trough in January.

In a sample of Austrian prisoners, Fruehwald, et al. (2004b) found no variation over weekdays, months and seasons of the year,

In Padua (Italy), suicides peaked in July followed by May, January and December (Majori, et al., 2004).

In Finland, Partonen, et al. (2004a) found that suicides peaked in April, May and June. This seasonal peak was most marked in years when there were fewer suicides. High levels of solar radiation activity were associated with an increased rate of suicide, but there was no effect of geomagnetic activity. Also in Finland, Partonen, et al. (2004b) found that suicides peaked in May, on Fridays, and from 10.00 to 11.00 am. In the northernmost part of Finland only, suicides also were common on days when the climate was mismatched with the season (for example, changes to colder preceded suicides in the spring). In a northern province of Finland, Partonen, et al. (2004c) found more suicides during the long days of the year and during the new moon phase, but no associations with meteorological variables.

In one region of Finland, Timonen, et al. (2004) examined the seasonal distribution of suicides with atopic diseases (an array of genetically mediated allergic diseases). The suicides with atopic disease died by suicide more in the first half of the year, while non-atopic suicides showed no variation.

In Hong Kong, Yip and Yang (2004) found no seasonal pattern for suicides. For suicide attempts, a bi-seasonal pattern was found for females with peaks in May and October and for males a peak in December. Female attempters who used non-violent suicide methods contributed to the peak in October. Therefore, a significant difference in seasonal variation existed between suicides and attempts.

In Lithuania, Kalediene and Petrauskiene (2004) found that suicides occurred more often on Mondays and on the first days after major holidays. Suicide rates were higher in rural areas, but the daily variation of suicides was greater in urban areas.

In a study of 50 suicides in Sweden who jumped off bridges, Lindqvist, et al. (2004) found that most occurred during the summer months and during the weekends.

In Japan for the period 1976-1994, Yamasaki, et al. (2004b) found that the suicide rate was highest in April for both sexes.

Lester (2004b) found no support for the hypothesis that former major league baseball players do not die by suicide during the baseball season.

Bridges (2004d) found fewer suicides on national holidays in the United State except for New Year's Day.

In a study of male suicides in Montreal (Canada), Kim, et al. (2004a) diagnosed the suicides using informants. They found that depressed suicides with comorbid cluster B personality disorders did not show seasonality, while depressed suicides without comorbid cluster B personality disorders died by suicide in the spring/summer. Suicides with schizophrenia committed suicide in the fall/winter.

Pandit (2004) looked at circadian rhythms of suicides and attempted suicides by self-poisoning in Nepal. The attempters peaked at 18:00 hours, while the suicides had peaks at 7:00 and 18:00 hours.

Ethnic Prejudice

Mullen and Smyth (2004) studied the suicide rates of 10 immigrant groups from Europe to the United States and the suicide rates in their home countries for their association with hate speech measured by the negativity of ethnophaulisms (ethnic slurs). The suicide rates in the United States were associated with the suicide rates in their home countries and the negativity of the ethnic slurs (even after controlling for the suicide rate in the home country), but not by the size of the immigrant group or the complexity of the slurs (slurs about physical traits, personal traits, personal names, food habits, and group names).

Occupation

Stack (2004a) found a higher suicide rate than expected for social workers in the United States, but not higher than for other professional-managerial occupations. Stack (2004b) found a higher suicide rate than expected in doctors after controls for other personal variables.

Sawchuk, et al. (2004) documented a higher suicide in the military occupiers of Gibraltar than in the civilians.

Other Distal Variables

In a study of suicides in the United States, Shenassa, et al. (2004) found that decedents who stored their firearm unlocked or loaded, were more likely to die from firearm suicide versus all other causes of death. The suicides differed in age

(younger), gender (more males), decedents' alcohol consumption, employment change, and visits to a mental health professional during the last year of life but was independent of level of education and race/ethnicity. As far as one can tell, the comparison group is those dying from all *other causes of death* (this is their terminology) and not *suicides* by other methods, which is rather bizarre.

Goren, et al. (2004) documented a higher suicide rate for women than for men in Diyarbakir, Turkey

Nichols, et al. (2004) compared 8 communities in the United States that adopted casino gambling with 8 control regions and found no impact on suicide rates.

De Lange and Neeleman (2004) looked at suicide in the Netherlands after the 9/11 attack on the United States. Rates of suicide and attempted suicide rose in the weeks afterwards. The peak in suicides occurred 56 days after 9/11. Attempted suicides increased in the 28 days after 9/11.

Bridges (2004a) looked at the impact of a gun control bill in 1991 in Canada. The percentage of suicides using guns declined after the passage of the bill, as did the suicide rate using firearms, but the overall suicide rate did not change, indicating the would-be suicides switched methods for suicide.

Caron (2004) looked at suicides in a region of Quebec (Canada) after the passage of a law promoting safe storage of firearms (including storing ammunition away from firearms and locking up firearms or having a lock on the gun). Although the use of firearms for suicide decreased, the overall suicide rate did not, indicating that people switched to other methods for suicide.

Tooding, et al. (2004) looked at suicide rates in Baltic countries (Estonia, Latvia and Lithuania) after the fall of the Soviet empire in the early 1990s and noted rising trends of suicide rates among the youngest men and 45-75-year-old men, but not in the age group of 25-34-year olds. For women there was a clear rise in the 15-24 age group and fall among 25-34-year-olds, while the other age groups lacked clear trends.

Bogoiavlenskii (2004) documented that, during perestroika in 1985, Russian suicide rates declined, but after the fall of the Soviet empire, suicide rates rose.

Ladwig and Baumert (2004) studied suicides in the Munich (Germany) subway. Subway suicides were markedly younger, and the percentage of women was higher than for other methods of suicide. The peak time of day for women was during the late morning and early afternoon hours while the peak for men was the evening hours. Female suicides peaked on Monday, while male suicides peaked on Tuesday. No consistent seasonal variation was observed.

Etzerdorfer, et al. (2004) documented a rise in suicides by firearm in Austria after a celebrity firearm suicide that received media attention. The distribution of the major newspaper by region was associated with the rise in firearm suicides.

Lester (2004a) calculated that, contrary to reports of suicide being rare during World War Two in German-run concentration camps, the rate was probably at least 25,000 per 100,000 per year.

In a study of suicides in England, Yip and Thorburn (2004) found that suicide rates were lower in those who were married. The rates by marital status varied with age. For example, those widowed ages 20-39 years for both sexes had the highest rate, and the suicide rate for this group declined with age.

Studies of Suicides

Methodological Issues

Carr, et al. (2004) documented a misclassification of suicides in the American military of about 21%.

Theories of Suicide

Lau, et al. (2004) proposed that Teasdale's (1988) differential activation hypothesis, a cognitive vulnerability to depression may be applicable to suicidal behavior. This theory would propose that important factors determining whether one's initial suicidality becomes more severe or persistent are the degree of activation, and content, of negative thinking patterns that become accessible in the suicidal state, a process known as cognitive reactivity.

Rudd (2004) presented their cognitive theory of suicide previously published.

1. The central pathway for suicidality is cognition.

2. The relationship between the suicidal belief system and the other psychological variables (e.g., behavioral, emotional variables) and physiological systems is interactive and interdependent.
3. The suicidal belief system will have some uniformity in themes (e.g., helplessness, perceived burdensomeness).
4. Individuals are predisposed to suicidality as a function of cognitive vulnerabilities, or faulty cognitive constructions.
5. Suicidality and the suicidal belief system reside at three distinct levels, the preconscious or automatic level, the conscious level, and the metacognitive (unconscious) level.

Physiological Research and Medical Issues

It should be noted that, too often in the following studies, the suicides are compared with psychiatry healthy controls, rendering the results useless for understanding suicide rather than psychiatric disturbance. These researchers also, too often, refer to their subjects as *suicide victims*.

Genes

Baldessarini and Hennen (2004) reviewed research on the genetics of suicide.

Zill, et al. (2004) compared suicides with healthy controls for single nucleotide polymorphism and haplotype analysis of a novel tryptophan hydroxylase isoform (TPH2) gene and found that the suicides more often had one single nucleotide polymorphism.

In a study of catecholaminergic dysfunction, Ono, et al. (2004) found that the genotype distribution of the COMT 158Val/Met polymorphism was different between male suicides and healthy male controls, while the frequency of the Val/Val genotype, a high-activity COMT genotype, was less in male suicides than in male controls. These differences were not found in females.

Lalovic, et al. (2004b) compared suicides to healthy controls and found no differences in cholesterol relevant allele or genotype frequencies (HMG CoA reductase (HMGCR), 7-dehydrocholesterol reductase (DHCR7), lipoprotein lipase (LPL), low-density lipoprotein receptor (LDLR), and apolipoprotein E (APOE) genes).

Brain

Escribá, et al. (2004) found that the expressions of a2A-adrenoceptors, 5-HT1A, 5-HT2A serotonin receptors, and m-opioid receptors were elevated in the post-mortem brains of suicides versus matched controls.

Pandey, et al. (2004) compared teenage suicides with healthy controls and found that protein kinase C activity was decreased in membrane and cytosol fractions of the prefrontal cortex and hippocampus of the teenage suicides.

Dwivedi, et al. (2004) found that [^{3}H]cyclic adenosine monophosphate binding and total and endogenous protein kinase A activity were decreased in the membrane and cytosol fractions of the prefrontal cortex of depressed suicides versus non-psychiatric controls. Selective reduction (36%–41%) in mRNA and protein expression of the regulatory *RII*β and the catalytic Cβ was observed.

Hungund, et al. (2004) compared depressed suicides with non-psychiatric controls and concluded that, "The observed upregulation of CB1 receptors with concomitant increase in the CB_1 receptor-mediated [^{35}S]GTPγS binding suggests a role for enhanced cannabinoidergic signaling in the prefrontal cortex of [depressed suicides]" (p. x).

Merali, et al. (2004) compared suicides with controls and found that, for the suicides, "CRH [Corticotropin-releasing hormone] levels were elevated in frontopolar and dorsomedial prefrontal cortex, but not in the ventrolateral prefrontal cortex of suicide victims. Conversely, using quantitative PCR analyses, it was observed that, in frontopolar cortex, mRNA for CRH_1, but not CRH_2, receptors were reduced in suicide brains, possibly secondary to the high levels of CRH activity. In addition, mRNA of the α1, α3, α4, and δ receptor subunits was reduced in the frontopolar region of suicide victims (p. 1478)."

Sibille, et al. (2004) found no evidence for molecular differences (gene expression) in the prefrontal cortex that correlated with depression or suicide.

Young, et al. (2004) found increased numbers of response element binding protein (pCREB) stained cells in several amygdalar nuclei in suicides regardless of psychiatric diagnosis.

Rosel, et al. (2004) reported that "A significantly higher number of 5-HT4 receptors and higher second messenger cAMP concentrations were found in the

frontal cortex and caudate nucleus of the depressed suicide victims as compared with the control group. Furthermore, significantly increased 5-HT2A binding sites and IP_3 concentrations were noted in the caudate nucleus of the suicide victims, together with a significantly reduced number of 5-HT2A binding sites, higher binding affinity and increased IP_3 concentrations in the hippocampus" (p. 189).

Other

Stefulj, et al. (2004a) found no differences between suicides and healthy controls in polymorphism in the serotonin 2C (5HT-2C) receptor coding region (Cys23Ser). Stefulj, et al. (2004b) found no difference in G861C polymorphism of the 5HT-1B receptor gene between suicides and healthy controls

Yerevanian, et al. (2004) gave the dexamethasone suppression test to a small sample of patients with major depressive disorder or dysthymic disorder and followed them up for roughly two years. Non-suppressors had a higher rate of suicide and of attempted suicide.

Cheema, et al. (2004) appear to have studied suicide and concluded that "The extracellular matrix, p53 and estrogen compete to regulate cell-surface Fas/Apo-1 suicide receptor expression in proliferating embryonic cerebral cortical precursors, and reciprocally, Fas-ligand modifies estrogen control of cell-cycle proteins. (p. 1)"

Suicide Notes

O'Connor and Leenaars (2004) compared suicides from Northern Ireland and the United States on 8 themes. Only one theme was significantly different with the Northern Irish suicides having more communication about identification-egression. In particular, they communicated more about escaping from pain, distress, and feelings of loss and desertion from their closest companion (or other ideal).

Girdhar, et al. (2004) found that suicides who left suicide notes were more often males, educated, and single or married.

In a sample of Australian suicide notes, Lester, et al. (2004) found that men less often had escape from pain as a motive for their suicides and more often had love/romantic problems. The suicides of older people were more often motivated by escape from pain and less often had love/romantic problems.

Youth Suicides

In a study of youth suicides (5-17 years old) in Arizona (USA), Azrael, et al. (2004) found that those who used a firearm were more often white, 10-14 years old, were at home, after a life crisis, and less likely to express suicidal thoughts.

In Quebec (Canada), Farand, et al. (2004) found that youths involved with Juvenile Justice or Child Welfare agencies had a higher suicide rate than the general population of adolescents.

Adult Suicides

In a 20-25 year follow-up study of Swedish people, Mittendorfer-Rutz, et al. (2004) found that suicide was predicted by low birth weight and teenage motherhood. Attempted suicide was associated with individuals of short length at birth length, born fourth or more in birth order, born to mothers with a low educational level, and mothers aged 19 years or younger.

Zhang, et al. (2004) compared data from suicides and living controls using informants for both groups (a methodologically sound procedure) in rural China. The suicides had less education, less income, more often a psychiatric illness, higher anxiety and depression scores, less social support and more stressful life events. The suicides peaked in the summer (July). For the suicides, the leading stressors were loss of face, fights with spouse and family members, and reduced income. A multiple regression found that the predictor variables were depression, mental disorder, physical health, social support variables, and negative life events.

Thoresen and Mehlum (2004) studied Norwegian peacekeepers and compared suicides with alcohol-related fatal accidents and those dying from other accidents. For having served more than one 6-month term, rank of private, and having been repatriated from service, the alcohol-related fatal accidents resembled the suicides, and both groups differed from those dying from other accidents. The suicides and alcohol-related fatal accidents were also similar in depression, alcohol and substance abuse, and various social problems, The authors did not go as far as suggesting that the alcohol-related fatal accidents are suicidally motivated.

Beautrais (2004) followed up medically serious attempted suicides for 5 years and found that 37% made a further attempt and 6.7% died by suicide. Subsequent attempt was associated with being female, parental separation, sexual

abuse, eating and antisocial disorder, hopelessness, neuroticism, self-esteem and anger that they did not die. Suicide was not associated with the variables studied.

Schernhammer and Colditz (2004) conducted a meta-analysis of suicide in physicians and found higher rates than for the general population, especially for females.

In a 13-year follow-up study of a community sample in Baltimore, Kuo, et al. (2004) found that hopelessness score at baseline predicted suicide and, less strongly, depression and substance abuse. Depression and hopelessness predicted attempted suicide and substance abuse predicted suicidal ideation.

Suominen, et al. (2004a) followed up a sample of 224 Finnish attempted suicides for 12 years. Fifty had died, including 17 by suicide. Male sex, older age, physical illness or disability and high scores on a suicidal intention scale for the attempt predicted death from all causes, but only suicidal intent for the attempt predicted suicide.

Hendin, et al. (2004) interviewed therapists who had a patient die by suicide and asked them to compare the suicides with another depressed non-suicidal patient . The suicides and controls did not differ in having a major depressive disorder, but the suicides showed more desperation and also more hopelessness, rage, abandonment, self-hatred, and anxiety.

Erazo, et al. (2004) examined suicides and attempted suicides (90% and 10%of the sample, respectively) on German railways. The acts peaked in April and September, on Mondays and Tuesdays and with morning and evening peaks. In summer, female acts peaked in the morning while male acts peaked in the evening. The females were older than the males.

Zahl and Hawton (2004) followed up attempted suicides presenting at a general hospital. Subsequent suicide was more common in repeat attempters and in males

Neeleman, et al. (2004) surveyed Dutch people and again one year later. Suicidality (ideation and attempts) were associated with female gender, lower income and educational attainment, lack of paid employment, being single, immigrant status, lack of religious affiliation, recent experience of negative life events, mental illness, hopelessness, neuroticism, and a family history of

completed suicide. Whether these variables were significant depended upon the lifetime suicidal behavior prior to baseline.

Chuang and Huang (2004) studied the methods used by suicides in Taiwan. The method used was associated with sex, age, if a serviceman, occupation (and whether a student or housewife) and urban/rural, but rarely with season. The multiple regressions for each method differed slightly.

In a national sample of suicides in China, Phillips, et al. (2004a) found that the suicide rate was greater in women than in men and in rural areas than in urban areas The rate of suicide in individuals with schizophrenia compared with those without schizophrenia was 24 times higher. The suicide rate in rural residents with schizophrenia versus those without was higher in men than in women, but in urban residents with schizophrenia the rate was lower in men than women.

Castle, et al. (2004) compared black and white suicides with black and white decedents from accidents. Suicides differed from accidental deaths in both black and whites in death ideation, suicidal ideation, bizarre behavior, and making violent threats. Reports of community complaints and problem drinking were more powerful predictors of suicide in whites than in blacks.

Stander, et al. (2004) found that Marines had higher suicide rates than Navy personnel, and suicide rates were higher in the enlisted than in officers.

Driver and Abed (2004) compared female suicides in one region of England with data from the general population. The suicides did not differ in being childless, but females with offspring living at home (versus offspring not living at home or childless) regardless of age were less common in the suicides. The suicides were more often divorced/separated.

Elderly Suicides

Duberstein, et al. (2004a) compared elderly suicides (>50 years of age) with living controls, using informants for both groups (a sound methodology). The suicides less often had siblings, less often were ever married or had children and, currently, were less often married or living with family members. The suicides also had fewer social interactions, less instrumental support, less often participated in organizations and engaged in less religious practice. The results held after controls for affective disorder and unemployment. The suicides were, therefore, less socially integrated.

In the same sample, Duberstein, et al. (2004b) found that the suicides more often had perceived physical illness, family discord and employment change. Only the effect of physical illness was significant after controlling for all mental disorders.

Using the same sample, Conner, et al. (2004) found that the suicides had more general aggression for both men and women and for those aged 50-64 and those aged 65+. Controls for depression eliminated this difference. The suicides more often lived alone and were not married and more often had a mood disorder, as might be expected.

Chiu, et al. (2004) compared elderly suicides in Hong Kong with community living controls interviewed face-to-face, a poor methodology. The suicides more often had psychotic and depressive disorders and had more often attempted suicide in the past, obvious results from the choice of comparison group.

In a sample of inner-city African Americans, Friedman, et al. (2004) found that attempting suicide and the number of attempts were positively associated with illicit drug use (especially cocaine/crack) but negatively associated with alcohol and marijuana use.

People with Psychopathology

In a 37-year follow-up of Finnish attempted suicides, Suominen, et al. (2004c) found that 26% of the men and 8% of the women had died from suicide. In a 5-year follow-up of Finnish attempted suicides, Suominen, et al. (2004b) found that subsequent suicide was predicted by being male, substance abuse, making a violent attempt at baseline and lifetime attempted suicide.

In a sample of psychiatric inpatients and outpatients, Kessing and Munk-Jørgensen (2004) found that inpatients diagnosed with depression had the highest rate of subsequent suicide.

In a meta-analysis of psychiatric diagnoses in suicides, Arsenault-Lapierre, et al. (2004) found that diagnoses of substance-related problems, personality disorders and childhood disorders were more common in male suicides, whereas affective disorders, including depressive disorders were more common in female suicides.

Skogman, et al. (2004) followed a sample of attempted suicides to predict who would subsequently die by suicide. Suicide was more likely in men. For men, suicide was predicted by having made attempts prior to the index attempt and use of a violent method while, for women, suicide was predicted by older age and a high suicidal intent score for the index attempt. Major depression was a risk factor for both men and women.

In one region of England, Pritchard and King (2004) found that suicide rates were higher in those diagnosed with major depressive disorder, in those who were victims of childhood sexual abuse, and especially high in those who were perpetrators of child sexual abuse (both intra- and extra-family abusers). [14]

In a study of suicides, Ernst, et al. (2004) studied 16 out of 168 suicides who had no Axis I psychiatric disorder. Fifteen of these had personality disorders, a history of attempted suicide or excessive gambling. Only one had no signs of pathology.

Yim, et al. (2004) compared patients discharged from a psychiatric unit who attempted suicide with discharged patients who did not do so. Suicide was associated with unemployment, maternal mental illness and suicidal behavior (ideation or attempt) before the admission.

Affective Disorders

Corruble, et al. (2004) compared depressed inpatients who had attempted suicide with non-attempters for their defense style. The attempters had higher scores on immature style, especially acting out, passive aggression, autistic fantasy and projection.

In a 20-year study of patients with affective disorder, Høyer, et al. (2004) found that suicide rates were high soon after admission and soon after discharge. Suicide was associated with a short duration of the affective disorder, a history of multiple admissions, male sex, and increasing age

[14] Lester and Baker (1989) documented suicide in sex offenders after identification and arrest. The high rates of suicide in this sample of child sexual abusers may have resulted from their mental state after arrest.

Kessing (2004) followed up patients admitted with a single depressive episode and found that suicide was more common in those rated as more severe at intake.

Schizophrenia

In a sample of schizophrenic patients, Sinclair, et al. (2004) compared the suicides with living patients. The two groups did not differ in type of schizophrenia, marital status, a history of violence, a history of alcohol or substance misuse, and a family history of suicide or family mental illness. The suicides were more depressed on admission. The predictors of suicide were a history of attempted suicide, depressive symptoms, and involvement of the police at final admission. Compared to patients with other diagnoses, those with diagnoses other than schizophrenia (both cases and controls) were more likely to have symptoms of depression, hopelessness, and suicidal ideas and to acknowledge interpersonal difficulties as a precipitant to the index admission.

Kelly, et al. (2004a) studied a sample of patients diagnosed with schizophrenia who died by suicide versus those who died from other causes. The suicides more often had thoughts of suicide and previous suicide attempts and had a higher rate of depressive symptoms and depressed mood. The suicides more often showed loss of interest and had higher lifetime rates of positive symptoms (thought control, flight of ideas, and loose associations).

Reith, et al. (2004) followed up suicide attempters using overdose for 9 years. Suicide was more common in those with disorders usually diagnosed in infancy, childhood and adolescence, male gender, and increasing age. Men and women differed in risk factors for suicide (with prior attempts predictive for women), but increasing age and discharge to an involuntary psychiatric admission was predictive for both.

Eating Disorders

In a meta-analysis of studies on suicide in patients with anorexia nervosa, Pompili, et al. (2004) found a higher suicide rate than expected compared to the general population.

Intellectually Disabled

In a 35-year follow-up study of 2,677 persons with intellectual disabilities, in Finland, Patja (2004) found only 10 suicides, a suicide rate of roughly 10 per 100,000 per year, quite low. The ten had psychiatric disorders and difficulties in adjusting to challenging care needs.

Drug & Alcohol Abusers

Wilcox, et al. (2004) conducted a meta-analysis of studies of the association of suicides with drug use and calculated SMRs for alcohol use, opioid use, intravenous drug use, mixed drug use and heavy drinking, overall and by sex.

Prisoners

Daigle (2004) compared male prisoners who were suicides, attempted suicides and non-suicides on the MMPI. Suicides scored higher on only one scale (Mf) and only against the non-suicides. Attempted suicides scored higher on 7 of the 8 MMPI scales (significant for 4 scales) versus the non-suicides. Therefore, the attempted suicides appeared to have had the most pathology.

Fruehwald, et al. (2004a) compared suicides in prison with controls and found that the suicides more often had history of suicidality (attempted suicide and suicide threat), a psychiatric diagnosis, taking psychotropic medication, a highly violent index offence and single-cell accommodation.

In a study of English juvenile prisoners, Morgan and Hawton (2004) found that a history of attempted suicide was associated with sexual abuse and problems with peer relationships, and a trend towards having a death in the family, remembering a suicide in the media, report of previous physical abuse, and problems with schoolwork.

Medical Issues

Baliko, et al. (2004) found a high number of suicides in patients with Huntington's disease, but did not calculate a suicide rate.

McLaughlin, et al. (2004) conducted a meta-analysis of studies of suicide in women with breast cancer and found a significantly higher suicide rate.

In a study of suicides in Finland, Latto, et al. (2004) found that survival times for patients with both medical diseases and psychiatric disorders was less than those without psychiatric disorders with one exception. Patients with malignant cancers and no psychiatric disorder survived on average only 3 days. Latto, et al. concluded that a "history of hospital-treated psychiatric disorders was linked with shorter survival times between a last hospital discharge and a suicide, even if the last hospitalization had been due to a somatic complaint" (p. 823).

Suicide Bombings

Schumm (2004) documented that, after the United State invasion of Iraq in March 2003, there was a reduction in casualties from suicide bombings in Israel and a tendency to fewer attacks.

Studies of Attempted Suicides

Physiological Research

Müller-Oerlinghausen, et al. (2004) reviewed research on serotonergic platelet markers of suicidal behavior.

In a meta-analysis, Lin and Tsai (2004) no association between 5-HTTLPR polymorphism and suicidal behavior compared to normal controls. In studies of attempters versus non-attempters with the same psychiatric diagnosis the genotypes carrying the s allele were significantly more frequent in suicide attempters than in non-attempters. Compared to healthy controls, only those making violent attempts differed from the controls.

Bellivier, et al (2004) reported a meta-analysis of studies on the TPH Gene A218C polymorphism and suicidal behavior, without, however, defining suicidal behavior, and found a positive association.

In a sample of schizophrenic, Hong, et al. (2004) found no differences between the attempted suicides and non-attempters for 5-HT1B genetic polymorphism.

Westling, et al. (2004a) studied violent suicide attempters and found that CSF levels of insulin were higher in those making violent attempts but was not related to the presence of a major depressive disorder. In a sample of attempted suicides, Westling, et al. (2004b) found that CSF leptin was lower in males.

Females who had major depressive disorders (MDD) had lower levels of CSF leptin than those with non-MDD, but this not found for males. For females (but not for males), CSF leptin levels did not differ between those making violent versus non-violent attempts and between multiple versus first-time attempters.

Huan, et al. (2004) compared attempted suicides with accident victims and found that eicosapentaenoic acid (EPA) levels in red blood cells in the attempters were lower than those of the control subjects, suggesting the role of low n-3 fatty acid levels in suicidal behavior.

Zubenko, et al. (2004) studied patients with Recurrent, Early-Onset, Major Depressive Disorder who had attempted suicide versus those who had not done so. They identified chromosomal regions (six linkage peaks) that had genes that influenced the risk of attempted suicide.

Kunugi, et al. (2004) found that the S205L polymorphism of the p^{75NTR} gene was found more often in attempted suicides with major depression than in non-depressed controls.

Kim and Myint (2004) found lower serum cholesterol levels in attempted suicides with depressive disorder than in non-suicidal depressed controls and in those making violent versus non-violent suicide attempts. The attempted suicide did not differ in BMI but did have lower serum protein levels.

Baca-Garcia, et al. (2004c) compared attempted suicides and healthy controls and found no differences in polymorphic variations in the a3 subunit GABA receptor gene (GABRA3).

Lindström, et al. (2004) found no differences in whole brain binding potential of the serotonin transporter (5HTT) and dopamine transporter (DAT) between attempted suicides and healthy controls. For the attempters, impulsiveness was associated with 5HTT, but not in controls.

Ertugrul, et al. (2004) found no association of the T102C polymorphism of the serotonin 2A receptor gene (HTR2A) with suicidality (past and current) in patients with schizophrenia or schizoaffective disorder.

In a sample of adolescent psychiatric inpatients, Ehrlich, et al. (2004) found that a history of attempted suicide (and more severe attempts) in those with

unipolar depression (but not in those with other diagnoses) was associated with white matter hyperintensities.

Baca-Garcia, et al. (2004b) compared attempted suicides and blood donors and found no differences in whether they were S individuals (sys or syl) with low expression of the serotonin transporter, or L individuals (lyl) with high expression. High scores on an impulsiveness scale and an aggressive behavior scale were associated with being an attempter.

In a sample of inpatients with major depression, Deisenhammer, et al. (2004) found no association between serum cholesterol levels and attempting suicide. There was a tendency for those using violent methods versus overdoses to have lower levels. Clinical improvement was not associated with serum cholesterol levels.

In a one-year follow-up study of attempted suicides, Courtet, et al. (2004) found that re-attempters had higher frequencies of the S allele and the SS genotype of the serotonin transporter gene.

In a sample of patients with major depressive disorders, Tsai, et al. (2004) found no differences between attempted suicides and others in serotonin 1B receptors (t 5-HT1B A-161T).

Youths

In a sample of German adolescents, Kirkcaldy, et al. (2004) found that suicidal ideation in the boys was predicted positively by trait addiction (which was never defined) and maternal rejection and negatively by paternal acceptance, self-image and linguistic competence. For girls, with predictors were trait addiction and stomach complaints positively and self-image negatively. For the girls, suicidal ideation was also predicted by tiredness, social problems and maternal rejection. Attempted suicide was predicted for boys by self-image, anxiety-depression and circulatory disorder positively and maternal rejection negatively and, for girls, anxiety-depression and circulatory problems positively and social problems negatively.

In a sample of adolescents seen at a mental health clinic, Cosgrave, et al. (2004) found that a history of attempted suicide was associated with having a psychiatric disorder but not with illicit drug use or heavy drinking.

Ialongo, et al. (2004) followed up African American children aged 6 until they were 19-20. The strongest predictor of attempted suicide during adolescence was their baseline depression score. Teacher-reports of youth aggressive behavior predicted attempts in 4th and 5th grade (but not 6th grade) for the sample as a whole. The relationships between family demographic characteristics and attempts failed to reach statistical significance.

In a sample of students (mean age 14), Liu (2004a) found that suicidal ideation and suicide attempts were associated with sleeping less than 8 hours at night, insomnia, and frequent nightmares after adjustment for age, sex, father's occupation, and depressive symptoms.

In a sample of adolescent psychiatric inpatients, Mäkikyrö, et al. (2004) found that attempted suicide (and self-mutilation but not suicidal ideation) was associated with daily smoking, being female and having an affective disorder.

Gould, et al. (2004) found that high school students who were seriously suicidal (ideation and attempts) more often used maladaptive coping strategies (such as keeping their thoughts and feelings to themselves) and less often used helpful coping strategies (such as talking to a friend).

Wu, et al. (2004) studied a community sample of adolescents and found that attempting suicide was associated with alcohol abuse and dependence, drug use and frequent cigarette smoking, even after controls for depression. These variables did not predict suicidal ideation after controls for depression. Attempting suicide was also associated with being female, not living with biological parents and anxiety disorder.

In a large Australian sample of adolescents, Martin, et al. (2004) found that, for boys, a history sexual abuse was associated with suicidal ideation and attempts, after controlling for current levels of depression, hopelessness, and family dysfunction. For girls, the relationship between sexual abuse and suicidality was mediated fully by depression, hopelessness, and family dysfunction. Adolescents who reported current high distress about sexual abuse had an increased risk of suicidal ideation and attempts.

In a sample of high school students in Hong Kong, Yip, et al (2004) found that suicidality (ideation and attempts) was predicted by depression symptoms, age, sex, an unhappy family life, sexual intercourse before age 14, poor self-rated physical health, upset over appearance, drinking alcohol (either a lot or not much),

having few friends, poor family relationships, not living with both parents, poor academic performance, smoking cigarettes, and use of inhalants and other drugs. The correlates varied a little depending on which groups were compared.

In a study of high school-aged students in South Africa, Wild, et al. (2004a) found that suicidal ideation and attempts were associated with depression and low self-esteem in six realms (peers, school, family, body, sports and global). Attempters differed from ideators only in family context self-esteem. In a smaller sample of students, Wild, et al. (2004b) found that suicidal thoughts or behavior increased with lower scores in the family and body image domains of self-esteem and with lower global self-worth.

In a national sample of adolescents in grades 7-12, Bearman and Moody (2004) found that attempted in boys was predicted having a gun in the home and having a friend attempt suicide, and in girls by having a friend attempt suicide, low self-esteem, and frequent drunkenness. Suicidal ideation in both boys and girls was predicted by depression, having a friend or family member attempt suicide, frequent drunkenness, homosexual attraction and parental distance.

In a sample of African American and Latino adolescents, O'Donnell, et al. (2004) found that suicidal ideation was associated with being female, having basic needs unmet, engaging in same-gender sex, and depression. Family closeness and religiosity were negatively associated with suicidal ideation. Having attempted suicide was associated with being female, being Hispanic and depression and negatively with family closeness. Family composition, ethnic identity, coping style, peer support, and school attachment did not predict suicidal ideation or attempts.

Glowinski, et al. (2004) studied the adolescent and young adult offspring of same sex male twins who both served in Vietnam. Attempted suicide (but not suicidal ideation) in the offspring was predicted by paternal alcohol dependence and paternal major depression and being female. Whether the twins were MZ or DZ apparently did not impact the results.

In a national sample of adolescents, Liu (2004b) found that emotional distress and delinquency predicted suicidal ideation and prior attempted suicide. However, for girls, the interaction of high emotional distress and high delinquency reduced the incidence of suicidal behavior.

In a national sample of adolescents, Hallfors, et al. (2004) found that suicidal ideation and attempt were associated with involvement in any drinking, illegal drug use, smoking, and sexual activity (i.e., risky behaviors), as well as some family and demographic variables.

Hull-Blanks, et al. (2004) studied talented adolescent girls who were judged to be at risk of suicidality because of behaviors such as suicidality, substance use, body image or eating behaviors, sexual activity, gang involvement, cutting classes and poor attitudes. Those with prior suicidal ideations or attempts had higher levels of substance use, impulsivity, aggression, and social recognition (e.g., concern about reputation) and lower levels of self-esteem and harm avoidance. Girls without past suicidality were more likely to come from single-mother families.

In a sample of inpatient adolescents, D'Eramo, et al. (2004) found that multiple attempters were more often female, diagnosed with at least one externalizing disorder (especially substance use disorders) and to have more than one comorbid diagnosis (especially major depressive disorder) than adolescents with no suicidal behavior or a history only of ideation. Non-suicidal adolescents, suicidal ideators, single attempters and multiple attempters did not differ in age, race, whether impoverished or from a single parent.

In a national sample of youths in Guam, Pinhey and Millman (2004) found that attempted suicide and suicidal ideation were more common in those with same sex orientation. Other predictors were physical abuse in the romantic relationship, engaging in binge drinking, and experiencing feelings of hopelessness. Ethnicity also played a role.

Séguin, et al. (2004) compared adolescent attempted suicides, those with suicidal ideation and those who were non-suicidal. The attempters and ideators did not differ on the variables but they did differ from the non-suicidal adolescents in depression, self-esteem, irrational thinking, fewer reasons for living and overprotective parents, with lower care and worse family functioning.

Rutter and Behrendt (2004) studied suicidal behavior in teenagers (17-19 years of age) from a sexual minority support agency and found that suicidality (attempts and ideation) was associated with hopelessness. Suicidality was not associated with sexual orientation, but 50% of the sample described themselves as heterosexual. The *Abstract* mentions correlations with hostility, negative self-concept, and isolation, but these results are not in the text.

Freedenthal and Stiffman (2004) compared Native American adolescents living in an urban area and those living on a reservation. More of the reservation adolescents reported lifetime suicidal ideation but did not differ in attempted suicide. The urban youths had fewer mental health and behavioral problems. Attempted suicide in the urban youths was predicted by alcohol dependence and abuse, suicidal behavior in family members and poor social support. Attempted suicide in the reservation youths was predicted by depression, family substance abuse, cigarette smoking and conduct disorder.

Pagès, et al. (2004) compared adolescent attempted suicides who were hospitalized with those who were not and with non-suicidal adolescents. For boys, the attempters as a group were distinguished by running away, depression, heavy tobacco use, low self-esteem, repeated consumption of illicit drugs other than cannabis, poor relations with mother, consumption of cannabis more than 10 times a year, physical fighting and frequent absence from school. For girls, attempters were predicted by running away, heavy tobacco use, experience with illicit drugs other than cannabis, depression, physical fighting, low self-esteem, poor relations with father, poor relations with mother, poor relations with friends, having a single-parent family, and pursuing studies in an institution other than a general lycée. In multivariate analyses, for boys, only violent behavior predicted hospitalization for an attempt; for girls, private school education, running away and illicit drug use other than cannabis predicted hospitalization for an attempt.

In a study of Canadia adolescents, Nower, et al. (2004) found that pathological gamblers more often reported suicidal ideation than social gamblers and non-gamblers. Attempting suicide was predicted by depression and sex but not by gambling behavior.

In a national sample of high school students, Valois, et al. (2004) found that self-reported poor life satisfaction was associated with poor mental health days, poor mental/physical health days, suicidal ideation and a history of attempted suicide.

Muehlenkamp and Gutierrez (2004) compared adolescent attempted suicides with those engaging in self-harm. The attempers scored higher for depression, suicidal ideation and attraction to death and repulsion to life.

Votta and Manion (2004) found that Canadian male homeless youths had more lifetime suicidal ideation and attempts than adolescents living with parents or

guardians. For the homeless youths, suicidal ideation and attempts were predicted by negative life events and a disengagement coping style.

In a national sample of high school students, Swahn, et al. (2004) found that students who reported attempting suicide during the prior year were nearly four times more likely also to have engaged in fighting than those who did not report attempting suicide, for both boys and girls.

In a sample of adolescents in Hong Kong, Lam, et al. (2004) found that suicidal behavior (ideation and attempts) was negatively associated with endorsement of self-direction for boys (but not for girls). Traditional emphases on obedience and respect for elders were protective against suicidality for girls but inconsistent predictors for boys. Family relationships and depression also impacted suicidality, but did not eliminate the impact of values.

In Ireland, Mills, et al. (2004) found that suicidal ideation and attempted suicide (and depressive disorder) in 12-15-year-olds was associated with being a victim of bullying.

In a sample of Slovenian adolescents, Marušič, et al. (2004) found that having a relative attempt suicide was associated with suicidal ideation and attempts in the adolescents, especially in the boys.

In a sample of adolescents in one province of South Africa, Madu and Matla (2004) found that suicidal ideation and attempts were associated with family conflict (out of ten family variables).

Adults

In a sample of college students, Langhinrichsen-Rohling, et al. (2004) found that suicidality (ideation and attempts) was associated with depression and self-reported delinquency (including arrest history) for both men and women. Suicidality was associated with depression, hopelessness, impulsiveness, hostility and delinquency.

In a sample of attempted suicides in Ireland, Corcoran, et al. (2004b) found repetition in the following year was more likely in men in their thirties and in those who had attempted suicide in the preceding 12 months, particularly for women.

In a sample of urban African Americans, Kaslow, et al. (2004) compared male and female attempted suicides with patients at the hospital for medical problems. The attempters reported more psychological distress, aggression, substance use, and maladaptive coping strategies and less religiosity/spirituality.

Simon, et al. (2004) compared serious suicide attempters and community controls aged 13-34. The attempted suicides were less likely to report physical activity in the prior month. The attempted suicides were more often male, Hispanic, reporting symptoms of depression, hopelessness, and alcoholism, and having a serious medical condition, but did not differ in BMI or the use of social support.

Osman, et al. (2004) developed a scale to measure resilience (rather than pathology) with three elements: Internal Protective (personal attributes), Emotional Stability, and External Protective (social environmental resources). Scores differentiated suicidal people (ideation and attempts) from non-suicidal people.

In a sample of young adults who had attempted suicide, Pettit, et al. (2004) found that the number of attempts was associated with life stress and suicidal ideation, but not with sex or the lethality of the current attempt.[15]

Forman, et al. (2004) compared single attempters with repeat attempters. Multiple suicide attempters had more deleterious backgrounds (e.g., a history of childhood emotional abuse, family suicide), increased psychopathology (e.g., depression, substance abuse), higher levels of suicidal ideation, and poorer interpersonal functioning. Profile differences existed even after controls for borderline personality disorder.

Aghanwa (2004) reported differences between male and female attempted suicides in Fiji. For example, the men were older and more often had alcohol misuse.

Douglas, et al. (2004) compared near-fatal and less lethal attempters. The near-fatal attempters were more often male, unemployed, living alone and unmarried. They had greater suicidal intent, more often left a suicide note, had alcohol and drug misuse and a past psychiatric history, were more depressed and hopeless, and more often had psychotic symptoms.

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[15] The authors saw their results as not supporting a kindling and sensitization model.

Wilcox and Anthony (2004) followed up first-graders for roughly 15 years. Early-onset of cannabis use and inhalant use for females (but not for males) predicted future suicide attempt. Early-onset of cannabis use by females (but not for males) predicted future suicidal ideation. Early-onset alcohol and tobacco use were not associated with later risk of suicidal ideation or attempt.

Sayar, et al. (2004) compared Turkish suicide attempters with healthy controls. The attempters were more depressed and hopeless and had more suicidal ideation. Suicidal intent was predicted by depression scores, but lethality was not predicted by depression or hopelessness. Repeat attempters had more suicidal ideation, and their attempts were more lethal.

Brown, et al. (2004) studied a sample of attempted suicides and found no association between suicidal intent and the lethality of the attempt. However, an association was found for those individuals who had more accurate expectations about the likelihood of dying from their attempts.

In an American national sample, Goodwin, et al. (2004) found that the offspring of parents who reported suicidal ideation and who reported attempting suicide were themselves more likely to have suicidal ideation and prior attempted suicide for both sexes and after adjusting for confounding factors (including age, gender, race, marital status, income and education, as well as depression, dysthymia, bipolar disorder, panic attacks, agoraphobia, generalized anxiety disorder, specific phobia, social phobia, non-affective psychosis, alcohol dependence, and substance use dependence).

In a sample of attempted suicides, Astruc, et al. (2004) found that suicidal intent was higher in those making violent attempts (but not in those making nonviolent attempts) if they had a history of major depressive disorders.

Titelman, et al. (2004), using a new projective test, found that, compared to non-suicidal psychiatric patients, attempted suicides showed more anxiety for a variety of themes (such as attachment and separation). In addition, “their defenses resembled those seen in borderline pathology; depressive reactions were limited in symbolic content; reality testing was poor” (p. 239).

Using a national sample of Hispanic Americans, Oquendo, et al. (2004a) found higher rates of lifetime attempted suicide in Puerto Ricans than in Mexican and Cuban Americans (and also compared to whites and African Americans).

Ystgaard, et al. (2004) studied a group of attempted suicides and found that multiple attempts were associated with a history of physical and sexual abuse, and these two factors distinguished between repeat attempters who also self-mutilated and those who did not. Neglect and antipathy ny parents, loss of parents and parental conflict/violence did not distinguish between one-time and multiple attempters.

Pollock and Williams (2004) found no differences between attempted suicides and a non-suicidal psychiatric control group on hopelessness or problem-solving scores.

Molavi, et al. (2004) compared Iranian attempted suicides with normal controls. The attempters differed on the MMPI scales for depression, hypochondriasis, hysteria, psychopathic, paranoia, schizophrenia and mania, and in family problem solving, communication, family roles, behavior control, education and economic status.

Henriques, et al. (2004) compared attempted suicides in 1970-1973 and 1999-2002. Present-day suicide attempters had higher levels of depression, hopelessness, suicide intent, psychiatric pathology (such as hallucinations and phobias) and illicit drug use. The 1999-2002 group more often made multiple attempts. The two groups differed in psychiatric variables and socio-economic variables, but they came from different hospitals which is a confounding variable (a general hospital and a university hospital).

LeMaster, et al. (2004) studied suicidal behavior in Northen Plains American Indians. Suicidal behavior (ideation and attempts) was more frequent in males, younger people, those with depressive disorder, PTSD and substance use/dependence, and with violent ideation and aggression.

Roy (2004a) found that attempted suicides who reported a family history of suicidal behavior attempted suicide at an earlier age than those without a family history of suicidal behavior, especially so for those reporting two or more family members attempting or dying by suicide.

In a sample of Australians, Taylor, et al. (2004) found that attempting suicide was not associated with education after controls for age, country of birth, urban/rural location and mental illness, but occupational status (unemployment) was associated with attempting suicide for both men and women.

Dougherty, et al. (2004) found that a measure of behavioral impulsivity was highest in multiple attempters, moderate in single attempters and lowest in non-attempters. The single and multiple attempters did not differ on an impulsiveness scale. The multiple attempters more often had a lifetime history of aggression.

Borges, et al. (2004) compared the use of alcohol withing 6 hours of a suicide attempt with the patient's drinking pattern over the last year. More had drunk prior to the attempt than expected on the basis of their drinking pattern. The were no sex differences in this difference.

Lester (2004d) found no differences in the severity of suicide attempts using opium in Iran.

In a national sample, Cox, et al. (2004) found that lifetime and past year suicidal ideation and attempts were associated with hopelessness and self-criticism. In addition, suicidal ideation was associated with neuroticism.

In a community sample, Verona, et al. (2004) found that those with only an internalizing diagnosis were more likely to have attempted suicide than those with only an externalizing diagnosis, but those with both diagnoses were more likely to have attempted suicide than those with only one diagnosis.

In a poorly reported and with poor statistical analysis of an online recruited female sample, Mathy and Lehmann (2004) found that attempted suicide and suicidal ideation were less common in those who were married than in those in committed relationships or single, and more common in bisexuals than in heterosexuals and lesbians.

In a sample of psychiatric inpatients and outpatients, Jekkel and Tringer (2004) found that the attempters were more irritable and had more dysfunctional attitudes and coping style (e.g., emotional and impulsive behavior), but did not differ in depression or anxiety.

Menstrual Phase

In a sample of female attempted suicides, Çayköylü, et al. (2004) found more than expected in the menstrual follicular phase of menstruation. Women attempting suicide during this phase did not differ in socio-demographic or clinical variables. The hormonal levels (estrogen and progesterone) of the attempters did not differ from healthy controls.

In a sample of attempted suicides, Baca-Garcia, et al. (2004a) found a higher frequency of Premenstrual Dysphoric Disorder (PMDD) in attempted suicides than in healthy controls. Attempts during the luteal phase were not more frequent in females with PMDD than in those without PMDD. The two groups did not differ in the impulsivity of the attempts, but the attempts of the PMDD group were more lethal.

Adults with Psychopathology

Farooqi (2004) compared small sample of psychiatric patients in the United States and Pakistan. The Americans scored higher on the Firestone Assessment of Self-Destructive Thoughts (FAST), had made more suicide attempts, and had more precipitating factors (family conflicts, work pressure, wish for death, loneliness, financial problems, and mental disorders/drug withdrawal). Scores on the FAST had a strong association with attempted suicide.

Rudd, et al. (2004) studied a sample of suicidal ideators, one-time attempters and multiple attempters with and without a childhood psychiatric diagnosis. A longer duration of childhood disorder and comorbidity predicted multiple attempts. Females (but not males) were more often multiple attempters if they had a childhood anxiety disorder.

In a sample of patients with major depression or schizophrenia, Correa, et al. (2004) found that a history of attempted suicide was associated with a family history of suicide (but not the type or lethality of the attempt) but not with the 5-HTTLPR polymorphism.

In a sample of Chinese patients with mood disorders or schizophrenia, Ran, et al. (2004) found that lifetime suicidality (ideation and attempts) was higher in the patients with mood disorders and higher in those with major depressive disorders than in those with bipolar disorder. Mood disorder patients made more serious attempts, while schizophrenic patients made their first attempt at an earlier age.

Across all Axis-I psychiatric disorders, Comtois, et al. (2004) found an association between substance abuse (SUD) and lifetime attempted suicide. In bipolar patients, SUD and SUD plus substance induced symptoms increased the likelihood of a current suicidal crisis.

In psychiatric patients with major disorders, Krakowski and Szobor (2004b) found no differences between suicide attempters and non-attempters on any measure of violent behavior or hostility. The attempters did not differ from non-attempters in psychotic symptoms but had more severe depression and anxiety. Krakowski and Czobor (2004a) compared psychiatric who had assaulted patients or staff with non-assaulters. The two groups did not differ in lifetime attempted suicide. Suicide attempts were associated with a history of head trauma, harsh parental discipline and parental psychopathology. Violence against others was associated with a history of school truancy and foster home placement.

In a sample of acute psychiatric inpatients, McCloud, et al. (2004) found that suicidal ideation and attempts were predicted by excessive alcohol use, irregular sleep and severe psychiatric disorder.

Depression

Brent, et al. (2004) studied the offspring of people with mood disorders. Attempted suicide in the offspring was associated with offspring mood disorder, sexual abuse (I assume experience of sexual abuse but this is not clear) and impulsive aggression.

In a study of psychiatric inpatients with major depression, Dervic, et al. (2004) found that those with no religious affiliation more often had made a suicide attempt and had a first-degree relative die by suicide, but they were not more depressed or hopeless. They were more aggressive, hostile and impulsive on inventories. Controls for other variables eliminated the significance of religious affiliation.

In a sample of depressed inpatients, Palmer (2004) compared those who had lifetime suicidal ideation, attempts and neither. Both suicidal groups had higher scores on a suicide risk scale and lower scores for self-esteem.

In a sample of depressed women over the age of 50 admitted to a psychiatric unit, Talbot, et al. (2004) found that a history of childhood sexual abuse was associated with a history of attempted suicide (and multiple attempts) and current suicidal ideation.[16]

[16] In my first review in this series on research on suicide in 1998 (Lester, 2024a), I complained how every year one or more papers are published on the association of childhood sexual abuse and suicidal behavior, and I located articles on the topic in the year 2023. It is an important topic,

In a sample of attempted suicides in inpatient care, Raja and Azzoni (2004) found that the more lethal attempters were more often men, bipolar, with fewer positive symptoms, and lower scores on a measure of psychotic symptoms.

In a sample of depressed inpatients over the age of 50, Useda, et al. (2004) found that those who had attempted suicide were younger, and more depressed. On the NEO inventory, the number of attempts and the severity of suicidal ideation was associated only with less warmth and more self-effacement.

Slama, et al. (2004) found that lifetime attempted suicide in bipolar patients was associated with history of suicidal behavior in first-degree relatives (but not with a familial history of mood disorder), as well as with early age at onset of mood disorder, total number of previous depressive episodes, alcohol and tobacco use, social phobia, antidepressant-induced mania, and a personal history of head injury. No association was found for gender or diagnosis of bipolar I or II disorder. Social phobias, tobacco use, and personal history of head injury were no longer associated with suicidal behavior in a multivariate analysis.

Oquendo, et al. (2004b) studied a sample of patients with a major depressive disorder or bipolar disorder and followed them up for 2 years. Suicidal acts (90% attempts and10% suicides) were predicted by a history of attempted suicide, subjective rating of the severity of depression, and cigarette smoking.

Michaelis, et al. (2004) found that impulsivity and hostility were associated in bipolar patients who had attempted suicide, but not in the non-suicidal patients. The attempters had higher scores for impulsivity and hostility, even after controls for depression.

Fagiolini, et al. (2004) found that patients with Bipolar Disorder 1 who had attempted suicide had higher body mass index (BMI) and greater severity of bipolar disorder (higher depression scores and more previous episodes).

In a sample of patients with bipolar disorder, Engström, et al. (2004) found that those who had attempted suicide had an earlier age of onset, higher scores for harm avoidance and reward dependence, were more often female and had a family history of suicide.

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but it does not advance our knowledge of or understanding of suicide to repeat the same research year after year after year.

Pendse, et al. (2004) compared patients with seasonal affective disorder with attempted suicides in major depression, and it is not clear why this comparison is of interest. The attempters had lower depression scores and many symptoms on the Comprehensive Psychopathological Rating Scale (e.g., hostile feelings, lassitude, failing memory, increased sleep, muscular tension, loss of sensation or movement).

In a sample of patients with mania, Sato, et al. (2004) found that both suicidal ideation and attempted suicide were predicted by a diagnosis of mixed mania, depression severity, and the Global Assessment of Functioning (GAF) score.

Grunebaum, et al. (2004) compared suicide attempters with patients with melancholic and non-melancholic major depression. Melancholia at baseline assessment was associated with more serious past suicide attempts and with a higher probability of attempted suicide during follow-up.

In a sample of psychiatric inpatients, Grube (2004) found that attempting suicide was associated with depressive disorder, but not with any score on a measure of aggressive behavior. In contrast, those with self-injurious behavior had higher scores for aggressive behavior, but did not differ in depression.

Schizophrenia

Evren and Evren (2004) found that schizophrenics with lifetime attempted suicide more often had suicidal ideation, depression, paranoid type schizophrenia and first-degree relatives with psychiatric disorder. They had higher insight scores and lower PANSS Negative symptoms subscale scores but did not differ in scores on PANSS Positive symptoms and General Psychopathology subscales.

In a sample of schizophrenics, Bourgeois, et al. (2004) found that awareness of their psychiatric condition at baseline was associated with an increased risk of attempted suicide during follow-up, mediated by depression and hopelessness Changes in awareness associated with treatment decreased the risk of attempted suicide.

Jarbin and von Knorring (2004) followed a sample of patients with adolescent-onset psychotic disorders for 10 years. Attempting suicide was predicted by more depressive symptoms but fewer negative symptoms at first episode, the number of admissions and dependence on nicotine. Satisfaction with

religion, health, family relations and safety at follow-up were negatively associated with attempted suicide, but only satisfaction with religion was significant after controls for anxiety and depression.

Tarrier, et al. (2004) studied patients with recent onset schizophrenia. Hopelessness, depression, a lower self- evaluation and longer duration of the disorder were associated with suicidal ideation and attempts.

Barak, et al. (2004) compared schizophrenics over the age of 60 with and without a prior suicide attempt. The attempters were more often males, but age, physical comorbidity, diagnosis, and season were not significant.

In a sample of Xhosa (South African) schizophrenics, Niehaus, et al. (2004) found that those who attempted suicide were more often unmarried/divorced, without siblings[17], and lower age of onset.

Harkavy-Friedman, et al. (2004) compared patients with schizophrenia or schizoaffective disorder who had attempted suicide versus non-attempters. The attempters were younger when psychotic symptoms appeared, had more psychiatric hospitalizations and a longer duration of the illness, had a history of major depressive disorder and were more often schizoaffective, but did not differ in depression or hopelessness scores.

Kallert, et al. (2004) studied a sample of chronic schizophrenics living in the community and found that those judged to be suicidal more often were admitted initially for suicidal ideation or attempt and had higher scores for suicidal ideation and depression/anxiety one month after release.

Warman, et al. (2004) studied a group of attempted suicides with and without psychotic disorders. Those with psychosis had higher scores for suicidal ideation and suicidal intent, even after controls for depression, hopelessness, social problem-solving and substance abuse but did not differ in the lethality of their attempt. In the next two years, those with psychosis were more likely to re-attempt.

Anxiety Disorders

In a national sample, Vickers and McNally (2004) found that lifetime panic disorder history, in the presence of other disorders, was unrelated to a higher

[17] An interesting new variable. Are siblings a protective factor?

incidence of attempted suicide. A history of attempted suicide was higher in those with general anxiety disorder, PTSD, major depression, dysthymia, drug dependence and conduct disorder. Suicide attempters were less often married, less often white, more often Protestant, poorer and less educated.

Personality Disorder

In a 2-year follow-up study of a sample of patients with borderline personality disorder, Yen, et al. (2004) found that attempted suicide was predicted by the symptoms of affective instability, identity disturbance, impulsivity, and childhood sexual abuse.

In a comparison of psychiatric outpatients with personality disorders and those with Axis I disorders, Chioqueta and Stiles (2004b) found that clusters A and B personality disorders and, in addition, dependent, but not avoidant or obsessive-compulsive personality disorders, were associated with attempted suicide.

Eating Disorders

In a sample of patients with eating disorders, Stein, et al. (2004) found that a history of attempted suicide or self-harming was associated with bingeing/pursing, using more than one type of purging method, and a lifetime history of a drug use disorder, impulse control problems, and bipolar disorder.

Franko, et al. (2004) followed up female patients with eating disorder for 8 years. Suicide attempts during the follow-up were more common in anorexic than in bulimic patients. Attempted suicide in anorexic patients was predicted by the severity of both depressive symptoms and drug use. Attempted suicide in bulimic patients was predicted by depression, a history of drug use disorder at intake and the use of laxatives during the study.

Milos, et al. (2004) studied suicidal behavior (ideation and attempts) in females with eating disorders (ED). Subjects with a bulimia nervosa purging type ED more often had a history of attempted suicide than non-purgers. A history of suicide attempts was associated with higher levels of Axes I and II comorbidity, in particular, with affective disorders and Cluster B personality disorders. Current suicidal ideation was linked to higher levels of all types of Axis I and Axis-II comorbidity. Suicidal ideation and attempts were most common in those patients with anorexia nervosa binge-purge type.

Favaro, et al. (2004) studied female patients with anorexia nervosa who had attempted suicide, made impulsive self-injurious behavior or who had current suicidal ideation. They had lower cholesterol levels than non-suicidal patients. Cholesterol levels were negatively correlated with the severity of depressive symptoms in the total patient sample with the exception of those with recurrent binge eating. The results were not impacted by nutritional and metabolic factors.

In a sample of females (aged 18-24) with eating disorders, Youssef, et al. (2004) found that attempted suicide was most common in those with purging behavior (anorexia and bulimia). On the MMPI-2 versus controls, for women with anorexia-restrictive, the scores for Depression and Antisocial practices predicted attempts; for women with anorexia-purging. The scores for Hysteria, Psychopathic Deviate, Shyness/Self-consciousness, Antisocial Practices, Obsessiveness and Low Self-Esteem predicted attempts; and for women with bulimia-purging the Psychasthenia, Anger and Fear scores predicted attempts.

Machado, et al. (2004) found that female eating disorder patients who had attempted suicide differed in weight history, binge-purge attacks, use of vomiting to control weight, use of alcohol and psychotropics, menstrual pattern, and some SCL-90 subscales.

Drug and Alcohol Use

In patients addicted to heroin, Darke, et al. (2004) found that those who had attempted suicide was associated with being in treatment, female gender, younger age, less education, more extensive polydrug use, benzodiazepine use, recent heroin overdose, major depression, current suicidal ideation, borderline personality disorder and PTSD.

Lynskey, et al. (2004) studied same-sex twins discordant for cannabis dependence and early-onset cannabis use. The twins with cannabis dependence more often reported lifetime suicidal ideation and attempted suicide. Early-onset of cannabis use predicted attempted suicide but not suicidal ideation. Cannabis dependence also increased the risk of major depressive disorder in dizygotic twins but not monozygotic twins.

Wines, et al. (2004) followed up patients in a drug detoxification unit for two years. Lifetime suicidal behavior was more frequent in younger, female and Hispanic patients, along with more depressive symptoms, past sexual abuse, and problem sedative or alcohol use. Suicidal behavior at follow-up included past

suicidal behavior, more depressive symptoms, and more frequent benzodiazepine and alcohol use, but not with cocaine and heroin use. Controls for depression reduced the significance of these correlates.

In a sample of 15-30-year-old injection drug users, Havens, et al. (2004) found that found that suicide attempts in the prior 6 months were associated with a lifetime history of mental health facility admission and sexual abuse. In a multiple regression, additional predictors were age and exposure to violence.

Roy (2004b) studied abstinent cocaine and opiate users. Those who had attempted suicide did not differ in impulsivity (on any of the subscales) from those who had not done so.

da Silveira and Jorge (2004) found that Brazilian psychoactive substance addicts who attempted suicide were more often female while males made more serious attempts. Depression was associated with attempting suicide for the men but not for the women.

Ilgen, et al. (2004) studied male patients in drug treatment for 5 years. A prior suicide attempt in the 3 months prior to entry into treatment was associated with a severe pattern of alcohol use, worse psychiatric symptoms (especially affective and anxiety disorders and psychotic symptoms), and a greater distressed mood.

In a sample of methadone-maintained addicts, Phillips, et al. (2004b) found that prior attempted suicide was predicted by being female, violent behavior in the past thirty days and lifetime, and less education. Current suicidal ideation was predicted by family conflict and depression severity.

In a study of elderly substance dependent patients, Roy (2004c) found that a history of attempted suicide was associated with being female, higher childhood trauma scores and trauma at a younger age. The more attempts in their history, the more severe the childhood trauma.

In a sample of adolescent substance abusers with Axis I disorders, Kelly, et al. (2004b) found that males who attempted suicide had an earlier onset of alcohol use disorders (AUD) and significantly more mood, AUD, and disruptive behavior disorder symptoms and more often had ADHD. Females who attempted suicide had an earlier onset and more mood disorder and SUD symptoms.

PTSD

In a sample of Vietnam War veterans, Price, et al. (2004) found that attempting suicide after return was associated with major depression, drug dependence and antisocial personality disorder, but not with alcohol dependence. The impact of PTSD was not significant overall but played a greater role over time (in a 25-year follow-up).

Tarrier and Gregg (2004) studied patients with PTSD and found that suicidal behavior (ideation and attempts) was more common than in the general population and predicted by depression and life impairment (impaired functioning).

Gamblers

Ledgerwood and Petry (2004) studied pathological gamblers in treatment. Those who had suicidal ideation or a past suicide attempt had greater gambling severity, gambling as an escape, dissociation and attention seeking, greater impulsivity and generalized dissociative experience, but did not differ in empathy or venturesomeness.

Medical Disorders

Lalovic, et al. (2004a) found that patients who were carriers of Smith-Lemli-Opitz syndrome more often had relatives who had attempted or completed suicide compared to controls (caregivers of other types of patients) and had more suicide attempters and completers among their biological relatives but not a family history of psychopathology. The carriers themselves did not more often have suicidal ideation or had attempted suicide. The authors saw their results as indicating the influence of cholesterol metabolism in suicidal behavior.

Oquendo, et al. (2004c) found mild traumatic brain injury (MTBI) in 44% of a sample of depressed patients. MPTI was associated with a history of attempted suicide. Attempters with MTBI did not differ from attempters with no MTBI in age at first suicide attempt, suicidal ideation, suicide intent, number of suicide attempts, or maximum lethality of the suicide attempts. Among the group with MBTI, the attempters scored lower on aggression and hostility and were more likely to have substance abuse and cluster B personality disorder.

In a sample of psychiatric outpatients. Chioqueta and Stiles (2004a) found that attempted suicide was more common in those with somatization disorder even

after controls for comorbid major depressive disorder and comorbid personality disorder.

Studies of Suicidal Ideation

Methodological Issues

Manor, et al. (2004) argued that the wish to die by suicide and the wish to die are different ideations. This suggests that different scales are needed for each type of ideation.

Yigletu, et al. (2004) found that self-report of suicidal ideation and clinical assessment disagreed for 19% of inpatients with mood or anxiety disorders. Anon (2004) noted that different ethnic groups may respond differently when being screened, and that screening should be culturally sensitive to provide valid data.

In Sri Lankan outpatients at a general hospital, Sumathipala, et al. (2004) found that patients did not volunteer suicidal ideation but did admit to "life weariness."

Physiological Studies

In a study of blood samples, Özer, et al. (2004) found that patients with panic disorder who were suicidal (not defined) had lower serum total cholesterol and low-density lipoprotein than non-suicidal patients with panic disorder and normal controls.

Youths

Ang and Ooi (2004) studied a sample of 8th and 9th grade children in Singapore. Suicidal ideation was higher in boys from single parent families than boys from two-parent families. This difference was not found for girls. The main effects of sex and marital status were not significant.

Eskin (2004) compared Turkish adolescents in religious education versus secular education. Suicide ideation was more frequent in adolescents in secular education than in those in religious education. The secular group was more accepting of suicide in general, but the religious group was more accepting of a suicidal close friend.

Violato and Arato (2004) compared a small sample of inpatient adolescents considered to be suicidal with community controls. The suicidal patients more often reported sexual abuse, heavy drinking, problem behaviors (e.g., delinquency, aggressive behavior, somatic complaints), and less attachment to parents, especially the mother.

Tarter, et al. (2004) studied 10-12-year-olds and followed them up to age 19. They found that adolescent substance use disorder and neurobehavior disinhibition (executive cognitive capacity, affect modulation and behavior control) predicted suicidal risk during the age of 16-19. Parental substance use disorder was not associated with the child's suicide risk.

In a study of young men aged 16-19, Connor, et al. (2004) found that suicidal ideation was associated with psychopathy, alcohol dependence, guilt, irritability, suspiciousness and impulsivity.

In a sample of Irish 12-15-year-olds, Lynch, et al. (2004a) found that suicidal ideation was associated with not living with biological parents, being in the fifth or later ordinal position in the family and, for girls, attending a co-educational school.

Wong (2004) confirmed the association of scores for attraction to and repulsion by life and death and suicidality in Hong Kong secondary school students (aged 11-16).

Adults

Violanti (2004) found that PTSD as a result of trauma encountered at work and alcohol use were associated with suicidal ideation in a sample of police officers.

Aubert, et al. (2004) compared college students in Canada of Chinese origin and other ethnicities. The Chinese Canadian students scored higher on hopelessness, negative self-evaluation and hostility, but lower on aggression toward the self or others. With respect to suicidal ideation, the authors are confused, reporting no difference in suicidal thoughts but higher scores for suicidal ideation for the Chinese Canadian students. For the Chinese Canadian students, being born in Canada versus immigration after the age of 10 did not impact suicidal ideation. The authors did not explore correlates of suicidal ideation in either group.

In a sample of the Finnish population, Hintikka, et al. (2004) found that suicidal ideation was predicted by alexithymia and depression even after controls for sex, age and psychosocial and socioeconomic factors. Male sex, financial hardship, unemployment, being not married or with a partner, poor subjective health, daily smoking, and frequent alcohol use were also associated with suicidal ideation. Changes in alexithymia after one year predicted changes in suicidal ideation.

In a sample of bereaved adults, Latham and Prigerson (2004) found that complicated grief was associated with suicidal ideation even after controlling for other factors (gender, race, major depressive disorder, posttraumatic stress disorder and social support).

Steinhausen and Metzke (2004) compared groups with suicidal ideation as preadolescents only, adolescents only, young adults only, enduring suicidal ideation and non-suicidal controls. The pre-adolescent, young adult and the enduring groups were most abnormal in psychopathology (e.g., any psychiatric disorder and comorbid disorders) and young adult and the enduring groups most abnormal in behavioral and emotional problems (e.g., internalizing and externalizing scores).

In a sample of men with no psychopathology, Ben-Ya'acov and Amir (2004) found that suicide risk was associated with depression, anxiety and hostility and with intrusion, avoidance and arousal on a measure of PTSD symptoms, as well as socio-demographic variables.

Gutierrez, et al. (2004) found that scores on a measure of attraction and repulsion to life and death correlated with suicidal ideation in white and American Asian college students, but not in African American or Latino students.

In a national survey of English residents, Gunnell, et al. (2004) found that suicidal ideation was associated with age 16-24, not being in a stable relationship, low levels of social support, stressful life events, low income, manual laborer, and being unemployed.

In a study of Norwegian medical doctors in their postgraduate years, Tyssen, et al. (2004) found that suicidal ideation was associated with neuroticism, severe depressive symptoms, and negative life events.

In a sample of Spanish college students, Poch, et al. (2004) found that suicidal ideation was associated with hopelessness and depression scores.

Akbiyik, et al. (2004) found no differences in suicidal ideation three years after an earthquake in Turkey between small samples of those who experienced the earthquake and those who did not.

Dikeos, et al. (2004) interviewed members of three-generation families, one of whom was a psychiatric patient. Suicidal ideation was found more often in other family members for males, but not for females. Suicidal ideation was not associated with gender, age, neuroticism, mania or psychosis, but only with depressive symptomatology.

In a sample of police officers in South Africa, Swanepoel and Pienaar (2004) found that suicidal ideation was predicted by a previous suicide attempt, passive coping styles, having been charged in terms of the disciplinary code, medical conditions and gender.

Elderly

In a sample of elderly patients visiting their GPs, Pfaff and Almeida (2004) found that suicidal ideation was associated with depression and a prior history of attempted suicide. Sleeping problems, smoking and poor and declining physical did not enter into a multiple regression although they did correlate with suicidal ideation.

Barnow, et al. (2004) found that the wish to die in a sample of elderly (aged 70-103) was predicted by depression score and having a major depressive disorder. A higher age, female gender, subjective assessment of physical health and negative living conditions were all moderately related to death wishes, but did not appear in the multiple regression.

Ron (2004) found that Israeli elderly people in nursing homes more often had suicidal ideation than those living in the community, as did females, the widowed, and Holocaust survivors.

In a sample of elderly primary care patients, Oslin, et al. (2004) found that the presence of suicidal ideation was not associated with having a firearm in their home.

Patients with Psychopathology

In a sample of psychiatric inpatients and outpatients, Heisel and Flett (2004) found that measures of purpose in life and satisfaction with life predicted suicide ideation, along with neuroticism, depression and social hopelessness.

Depression

Benazzi (2004) studied patients with a major depressive episode and found that the symptom of worthlessness predicted suicidal ideation as well as the symptoms of depressive mixed states of psychomotor agitation and racing/crowded thoughts.

In a sample of depressed older adults, Lynch, et al. (2004b) found that suicidal ideation was associated with hopelessness, ambivalence over emotional expressiveness and a tendency to suppress thoughts, but not with negative intensity or reactivity of affect.

Beevers and Miller (2004) followed up psychiatric inpatients with major depressive disorder 6 months later. Higher perfectionism, hopelessness and negatively biased self-referent cognitive style at baseline predicted suicidal ideation later.

Fountoulakis, et al. (2004) found that patients with major depressive disorders with suicidal ideation had lower self-confidence levels and more overdependency on others and intro-punitiveness. The suicidal patients had a significantly prolonged pattern-reversal visual evoked potential latency in comparison with the other patients, but did not differ on the dexamethasone suppression test, dexfenfluramine challenge test, or brain Tc-HMPAO SPECT.

Schizophrenia

In a sample of patients with acute schizophrenia, Kontaxakis, et al. (2004) found that suicidal ideation was associated with the severity of depressive symptoms, motor retardation, guilt feelings, pathological guilt, and self-depreciation.

In a sample of treatment resistant patients with schizophrenia, Hansen, et al. (2004) found that suicidal ideation was not associated with akathisia or Parkinsonism.

Psychosis

In a sample of psychiatric patients judged to be psychotic, Schwartz and Smith (2004) found that suicidal ideation was associated with increased insight into their illness, fewer years of treatment, and more severe depressive symptoms.

Addiction

In a sample of drug users one year post-treatment, Wilke (2004) found that the frequency of attendance at Alcoholics Anonymous meetings was positively associated with suicidal ideation. Low self-esteem was associated with suicidal ideation, as was depression and childhood sexual abuse.

Medical Issues

Dafoe and Stewart (2004) found that suicidal ideation in HIV-positive patients was predicted by having a psychiatric disorder and level of pain (but not by locus of control or coping style).

In a sample of adolescents (aged 9-17), Goodwin and Marušič (2004) found that asthma was associated with suicidal ideation, even after adjustment for age, gender, socioeconomic status, single parent, depressive disorders, anxiety disorders, and substance use disorders.

In a sample of mentally retarded adults, Lunsky (2004) found that suicidal ideation was associated with loneliness, stress, anxiety and depression, along with less social support and not working.

Smith, et al. (2004b) studied patients with non-cancer chronic pain and found that suicidal ideation was predicted by pain intensity and sleep onset insomnia primarily, and also by depression and daytime dysfunction. In a different sample, Smith, et al. (2004a) studied patients with nonmalignant chronic musculoskeletal pain. They found that suicidal ideation was positively associated with a family history of suicide attempts/completions and having abdominal pain and negatively with neuropathic pain. Demographics, pain severity, and depression severity were not associated with suicidal ideation.

Attitudes Toward Suicide

Segal, et al. (2004) compared college students with adults in senior housing for their attitudes toward suicide. The students scored higher on a suicidal risk scale but had less favorable attitudes toward suicide on a suicide opinion scale.

Westefeld, et al. (2004) surveyed psychologists, nurses, and state legislators about their attitudes toward rational suicide (RS). Their agreement that rational suicide was possible was not associated with sex, occupation, or level of education. Approval of the concept of RS was lower in those with religious affiliations, while Methodists and no-affiliation found RS more acceptable.

Haddad (2004) found that "approval of suicide [terrorism] is more pronounced among Lebanese than Palestinians. These findings hold even after controlling for individual socio-economic and demographic characteristics. For both populations, support for suicide attacks is more evident among women than men. Among Lebanese, support for suicide attacks is also a function of low income and among Palestinians, a function of residence in camps. For both samples, the most important determinant of support for suicide attacks is attachment to political Islam" (p. 337).

Physician-Assisted Suicide (PAS)

Miller, et al. (2004) found that social workers in Oregon were more supportive of PAS than were hospice nurses.

Kaldjian, et al. (2004) studied the attitudes of American medical officers toward PAS. Approval was less in those with 3 or more years of experience and with more religious commitment.

The Language of Suicide and Methodology

It is time to note that the use of terms such as *self-harm* and *parasuicide* render the research impossible to interpret and to assess its relevance to suicidal behavior. There is a perfectly good term (*self-mutilation*) which refers to injuring oneself without suicidal intent (Lester, 1972). For attempted suicide, it is meaningful to refer to the lethality of the attempt, the method of the attempt (*violent* versus *non-violen*t is becoming popular), and to the level of suicidal intent. If a researcher uses the term *parasuicide*, it is difficult to know whether this has

quantitative criteria (if so, this is never stated) or is merely the researchers' opinion.

Furthermore, the use of the term *suicidality* is ambiguous. Does suicidality refer to suicidal ideation, attempted suicide or both. The same objection applies to the term *suicide risk*. The use of these terms to define the sample render the research impossible to interpret and integrate with other research.

It is becoming common to combining individuals with suicidal ideation and those who have attempted suicide. This is bad! Studies of attempted suicides might throw light on suicide (especially if researchers classified their attempters by severity of intent or the medical lethality of the attempt as Lester, et al. [1975] suggested), but studies of those with suicidal ideation are less likely to throw light on suicide.

Discussion

Personal Comments

I have frequently criticized research reported in these reviews. The majority of the research simply re-discovers results published in the past, and many of the studies report "obvious" results. Some research is expensive, and grantors that fund the research demand publications. Researchers need publications to get hired, receive tenure and obtain promotions, and scholarly journals need articles to justify their existence (and charges for [open access] publications). For example, Havens, et al. (2004) reported on 2,219 young injection drug users obtained at 6 sites in 5 cities. The findings were obvious: suicide attempts in the prior 6 months were associated with a lifetime history of mental health facility admission and sexual abuse. The publication had 10 co-authors and was published in a prestigious journal but threw no new light on suicide.

This is why we have learned very little about why people die by suicide. To be fair, the above comment applies to the majority of research studies reported in this and earlier reviews. Note also that my research is reported in these reviews, but rarely appears in the sections *What Have We Learned About Suicide?*

I am also disappointed by the poor statistical analyses in many papers. The use of a statistical consultant would add much to the published reports, but the statistical consultant should be a social scientist whose statistics are not so esoteric

that readers cannot understand them and are forced to accept the conclusions without understanding how they were justified.

I continue to wonder at the physiological research studies on suicides and suicidal individuals. It is as if the researchers are in their own universe, doing research which sheds no light on suicide. Not only is it unintelligible to those of us in this universe, but many of the meta-analyses show no differences.

What Have We Learned About Suicide?

The theory of suicide proposed by Lau, et al. (2004) is interesting – his application of a differential activation hypothesis which may be a cognitive vulnerability to depression. Rudd's (2004) restatement of his theory of suicide is worth re-visiting.

Yang and Lester (2004) examined their theory that the suicide rate of a society can never be zero (the *natural suicide rate*), and this idea merits further research.

Finally, Niehaus, et al. (2004) explored whether the presence of siblings has an impact on attempted suicide, an interesting new variable, and I have urged for many years that research comparing suicides with their same sex siblings (controlling for birth order) might advance our understanding of suicide.

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SCHEMAS AND SUICIDE

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Abstract: This essay explores the relevance of Schema Therapy to Lester's subself theory of personality and, in particular, to his two-self theory of suicide in which the mind has a life-oriented subself and a suicide-oriented subself.

Schema therapy (Young, et al, 2006) is a relatively new approach to psychotherapy. A *schema* may be defined as an emotional and cognitive pattern, while a *schema mode* is a combination of activated schemas and coping strategies, Edwards (2022) described the process of schema therapy as using a variety of techniques (e.g., psychodrama, chair-work,) to separate out, describe and have clients engage with their schemas. Schema therapists are especially focused on maladaptive schemas, defined by Edwards as "emotionally charged meaning structures learned in early childhood in adverse situations of unmet need, that are often at the root of current problems" (p. 214). Needs must also not be excessively gratified. The satisfaction of needs should be at an optimal level. The core emotional needs are:

- 1 Secure attachment to others (includes safety, stability, nurturance, and acceptance)
- 2 Autonomy, competence, and sense of identity
- 3 Freedom to express valid needs and emotions
- 4 Spontaneity and play
- 5 Realistic limits and self-control, secure borders

"Schemas (in general) incorporate our beliefs about ourselves, the world around us, and the world of others. These beliefs operate in the background of our awareness. However, they have great influence over our sense of self, our expectations about life, and the quality of our relationships." [18] There are child schema modes, parent schema modes and healthy adult schema modes. However,

[18] https://www.attachmentproject.com/blog/early-maladaptive-schemas/

there are also maladaptive schema modes, and Schema Therapy focuses on early maladaptive schemas.

Young et al. (2003, p. 7) define an early maladaptive schema as**:**

- "a broad, pervasive theme or pattern
- comprised of memories, emotions, cognitions, and bodily sensations
- regarding oneself and one's relationships with others
- developed during childhood or adolescence
- elaborated throughout one's lifetime and
- dysfunctional to a significant degree" (p. 7).

Early maladaptive schemas that are found in clients can be divided into five domains:

1. Disconnection & rejection
2. Impaired autonomy & performance
3. Impaired limits
4. Other directedness
5. Over-vigilance & inhibition

Each of these domains contains several early maladaptive schemas.

Disconnection and rejection:
- Abandonment
- Distrust/abuse
- Emotional deprivation
- Defectiveness/shame
- Social isolation

Impaired autonomy & performance
- Dependence/incompetence
- Vulnerability to harm/illness
- Enmeshment/undeveloped self
- Failure

Impaired limits
- Entitlement/grandiosity
- Insufficient self-control/self-discipline

Other-directedness
- Subjugation
- Self-sacrifice
- Approval/recognition seeking

Over-vigilance & inhibition
- Negativity/pessimism

Emotional inhibition
Unrelenting standards
Punitiveness

Although all of these early maladaptive schemas may be relevant to suicide several of these themes have been explored for their relevance to suicide. For example, Lester (1997) explored the role of shame in suicide. He gave the example of Admiral Mike Boorda, chief of naval operations, who claimed to have served in combat in Vietnam when he had not done so. On an afternoon in 1996, when a reporter was scheduled to interview him about his claim, he shot himself in the chest (where the combat medal had hung).

The role of negativity and pessimism in suicidal behavior is evidenced by the more than 8,350 citations for the Hopelessness Scale (Beck, et al. 1974) which has been used in scores of studies on suicidal behavior. The presence of childhood sexual and physical abuse in suicidal individuals has been well documented from 1986 to the present time (Briere & Runtz, 1986; Kennedy, et al., 2024).

Schema theory clearly has similarities to earlier models for psychotherapy, such as Gestalt Therapy (Perls, et al., 1951) and Firestone's Voice Therapy (Firestone, 1986). Lester (2010, 2015) has proposed a theory of personality based on the proposition that the human mind is made of several subselves. A subself is a relatively autonomous and organized set of psychological processes in the mind (such as thoughts, emotions and desires) that co-exists with other similar sets. A subself, therefore, overlaps with the construct of a schema.

Just as schema therapy focuses on maladaptive schemas, Lester's Postulate 12 states that subselves may be formed as a result of early experiences, and obviously some of these subselves may be healthy while others may be maladaptive. Postulate 16 suggested that the concept of subselves may be useful for psychotherapy and counseling. Lester (2021) proposed a theory of suicide based on the proposition that most people have two subselves, a life-oriented subself and a suicide-oriented subself, and he explored how psychotherapy could use the existence of these two subselves to help clients resolve this conflict.

In Transactional Analysis, it has been proposed that the suicidal impulse (and in the Lester's theory, the suicidal subself) stems from the parent's early injunctions that the child should never have been born and that the child should cease to exist (Woollams, et al., 1977). The infant or child can receive a "do not exist" message at any age and in various ways. The infant may be handled stiffly

or with distaste. Perhaps a parent actually says, “I wish you’d never been born.” The child may perceive such an injunction even when there is no specific injunction. For example, if the birth was a difficult one, and the child hears about this, the child may think unconsciously that he or she deserves punishment for hurting the mother.

Lester argued that it is important in psychotherapy for the psychotherapist to help the client identify his or her subselves. It often helps if the client can assign names to the subselves, and it is useful also for the client to develop new subselves, such as a mediator subself or a recording secretary subself.[19] The resolution is to have the client integrate the subselves, and integration can entail different options, such as integrating the many subselves into one subseelf (which is unlikely) or having peaceful co-existence of the many subselves. This applies not only to the mind made up of many subselves but also to the notion of a life-oriented and suicide-oriented pair of subselves.

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[19] The same suggestion can be made for schema modes.

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FACTORS IMPACTING SUICIDE IN MILITARY VETERANS

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Abstract: A factor typically ignored in studies of suicide in military veterans is the type of person who enlists in the military and the fact that many enlistees are forced out of the military for not advancing their military career.

There has been concern with suicide in the military which in recent years appears to be more common (Anon, 2004). In 2020, the suicide rate for veterans was 31.7 per 100,000 per year (compared to 22.0 for men in general in the United States) and the second leading cause of death for veterans under the age of 45. Howard, et al. (2023) found that suicide was less common in African American and Hispanic American veterans than in white Americans and in those deployed, but more common in men than women and in those with traumatic brain injury.

There are many factors that contribute to suicide in veterans. There is evidence for high rates of alcohol and substance abuse, PTSD symptoms, and social problems such as homelessness and difficulties finding employment. There is the fact that veterans are familiar with firearms and often own firearms, a popular method for suicide in the United States. Jamieson, et al. (2023) have suggested that moral injury may also play a role, that is, a form of bio-psycho-social-spiritual distress that arises from a breach or betrayal of one's moral values and or beliefs (Shay, 1994).

There are however, other aspects of military service that are rarely discussed in regard to their relevance for suicide in veterans.

Recruitment

How are service members recruited and how are they screened? Here we are not interested in those graduating from military academies or university ROTC programs, but rather those recruited by recruiting offices from the general

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population. A recruit has to be over the age of 17 and with a high school diploma, and recruits have to take an Armed Forces Qualification Test. Online, the description of a soldier sounds excellent. Here is a quote: “Infantry soldiers tend to be enterprising individuals, which means that they are usually quite natural leaders who thrive at influencing and persuading others. They also tend to be realistic, which means that they often enjoy working outdoors or applying themselves to a hands-on project”.

However, there is a shortage of people volunteering to serve. From online: “The Army has failed to meet its manpower goals for the last two years and missed its 2023 target by 10,000 soldiers, a 20 percent shortfall. Today, the active-duty Army stands at 445,000 soldiers, 41,000 fewer than in 2021 and the smallest it has been since 1940.” In such situations, the criteria for entrance may be relaxed. Indeed, whereas in the past a criminal record disqualified an applicant from service, now only conviction for a felony may lead to disqualification.

Recruits are examined and tested. In a study of the hiring of police officers by a police department, Lester, et al. (1980) found that those in charge ignored the recommendations of those they hired to examine the potential police officers and made their own independent decisions about whom to hire. This is further complicated by the pressure on recruiters to reach high numbers of recruits which can lead them to lower standards occasionally and let recruits into military service who do not meet the standards, and this may have occurred more often when there was a shortage of recruits.

There is a strong possibility that military recruits are applying because they have few, if any, other alternative employment opportunities, and the military does offer housing, pay, and some security.

Termination

Recruits may assume that they can coast through military service until they retire with a pension. The reality is that military personnel must obtain education credits, work hard and seek promotion. If they fail to do this, they will be terminated after five or six years. The result is that marginal people, who joined because they had few alternatives, now find themselves back in the outside world, and they will now have to once again face their minimal opportunities in that world. They will encounter and develop many of the risk factors for suicide, including alcohol and drug abuse, homelessness, and lack of social support. To

seek the opportunities for support available for veterans requires enterprise and initiative, and this may have always been lacking in these veterans.

Even if termination is voluntary, Wang, et al. (2023) found that those separating from the National Guard were more likely to report financial and healthcare access problems Female service members were more likely to experience interpersonal adversity, while Army and Marine service members were more likely to experience job-employment adversity and financial adversity

Comment

Previous research on suicide in members of the military and in veterans has not focused on the type of individuals applying to join the military and their reasons for joining. In studies of veterans, not enough attention has been focused on the pathways to becoming a veteran, for example, voluntary termination versus forced termination.

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