Youth Suicide: New Research Focuses On a Growing Social Problem

The increase in suicides in young people, mostly in white males, is tied not only to high rates of drug abuse and conduct disorders, but also to previously unrecognized depression

THE rate of suicide among young people has tripled in the past 30 years. Most affected are males between 20 and 24, for whom the rate peaked at 27.8 per 100,000 in 1980, compared with 11.9 for the general population. While the increase in drug and alcohol abuse is a highly relevant factor, it is more a symptom than an explanation of the problem.

Research on youth suicide is an emerging field whose development has accompanied the growing recognition that children are as vulnerable to depression and despair as adults—a recognition delayed by the powerful sway of Freudian psychodynamic theories. Notions of etiology are yet murky, and different professionals emphasize different aspects of the psychopathologies involved. Data on unsuccessful suicide attempts are skimpy and uncertain, so it is not clear to what extent the psychological problems of "attempters" resemble those of the "completers."

According to psychiatrist Donald J. Cohen, director of Yale University's Child Study Center, there are at least three basic patterns for youth suicides. The majority are those with conduct disorders, usually mixed with drug abuse—the typical pattern for males. Then there is a group of "pure" depressives, usually females. And there is a third group, also primarily male, of hard-striving perfectionists, socially inhibited and prone to extreme anxiety in the face of any social or academic challenge.

Efforts are now under way to identify specifically the psychosocial, emotional, and possible biological roots of suicide among youth.

At the University of Kentucky, psychiatrist Mohammad Shafii has been conducting a project involving "psychological autopsies" of youth suicides. This approach has been used in adults, but this study is the first to include a control group, says Shafii. Controls, closely matched for age, sex, race, education, religion, and family income, were selected from friends of the victims and also were found to have a lot of problems.

The study examined the lives of 21 of the 27 youths who had killed themselves in the county between 1980 and 1983. All but two were males. From interviews with families, friends, teachers, and other contacts, the researchers determined that 95% of the victims had at least one psychiatric disorder according to the psychiatric diagnostic manual (DSM-III), in contrast with 48% of the controls. They had undergone significantly more psychosocial stress and had undergone significantly more deterioration in functioning than the controls during the year before their deaths. About 70% were alcohol or drug abusers and 76% were diagnosed as depressed (24% of the controls had a mood disorder). Seventy percent were in trouble with the law or had manifested other signs of antisocial behavior. And 65% had what the researchers labeled "inhibited" personalities—meaning they were rigid, perfectionistic, and tended to isolate themselves.

The study undermines some popular ideas about youth suicide. Says Shafii: "we believe that completed suicide in children and adolescents does not occur on the spur of the moment or as an impulsive act of an otherwise healthy child" who is reacting to a personal crisis. In almost all cases, he says, suicide is the final outcome of "serious emotional disorders which, in most cases, were not recognized or not treated." Although some professionals have characterized the act as a case of turning aggression on the self instead of others, the study found that "a large number of victims had also been destructive toward others." This has also been confirmed by data from the National Institute of Mental Health's 1983 Epidemiological Catchment Study. According to sociologist Lee N. Robins of Washington University in St. Louis, who has been analyzing the data, "suicide and violence are closely linked."

Shafii's findings also downplay the idea that attempters constitute a separate group from the completers: it found that 85% of the study group had talked about their intent in one way or another, and 40% had made a prior attempt. "Talk [of suicide] should be taken very seriously," says Shafii. "A very direct relationship exists between the talkers and the doers."

Suicide does not occur on the spur of the moment but is the final outcome of "serious emotional disorders which, in most cases, were not recognized or not treated," says Shafii. "Talk of suicide should be taken seriously."

Another much larger psychological autopsy study, conducted by psychiatrist David Shaffer of Columbia University, downplays the role of depression and emphasizes the connection with impulsivity and antisocial behavior. He is currently analyzing data on the lives of 160 youths aged 19 and under who killed themselves in the 2 years before 31 May 1986 in the greater New York area. Eighty percent were males. Data on families, backgrounds, drug abuse, and psychopathology are being compared with data from a group of normal controls as well as that from a group of suicide attempters matched for age, race, and sex.

Shaffer, observing that the increase in

Depression among youth is a major focus in the American Mental Health Fund's new campaign to educate people about mental illness.

youth suicide has been largely confined to white males, believes there is little evidence that an increase in the rates of depression is tied to rising suicides among youth, since if that were the case, it would be reflected in a rising female suicide rate. He says that the majority of the victims were not depressed according to DSM-III criteria, which stress biological signs of depression, feelings of worthlessness, and despair. Rather, he says, a great many of them had repeatedly gotten into trouble for antisocial behavior (often complicated by drugs), and a very common pattern is to commit suicide shortly after getting into trouble.

Shaffer—in sharp contrast to Shafii—says that only one-fifth of the sample qualified for a formal psychiatric diagnosis of depression, and that there was no evidence of lengthy prior "brooding" in the majority of the cases. However, the proportion of those who had made previous attempts roughly corresponds with Shafii's finding.

The etiologies of the disorders that lead to suicide are still understood only in the vaguest of terms. The increased rates of drug and alcohol abuse are a primary factor, but the reasons for the increase are unclear. Lee Robins points out there are dozens of possible reasons, ranging from family breakdown to demographic changes to the earlier onset of puberty.

Although family turmoil contributes, divorce per se has not been found to be a predictor. Both Shafii and Shaffer have found, though, that strife and psychological abuse are significantly higher in the families of the suicides. There is also a higher rate of suicide among family members of suicide victims, but the nature of the connection has not been established. Evidence supports both the theory of a genetic factor in suicide, and the theory that suicidal behavior can be spread like a disease through "behavioral modeling," according to Lucy Davidson of the Centers for Disease Control (CDC).

There is no question that changes have occurred not only in the rates of suicide but in the pattern. Robert E. Litman of the Los Angeles Suicide Prevention Center says that in a study he did of 31 youth suicides in Los Angeles in 1964, about half the males were depressed and withdrawn, and half had conduct disorders often complicated by drugs and alcohol. While the rates of depression seem not to have changed, there is now a significant increase in conduct disorders. Another change has been more violence among female suicides, who are commonly thought to use "quiet" means, namely pills. According to a study of youth suicides in the state during the first half of this year, Litman estimates that perhaps one-third of the girls shot themselves to death (about two-thirds of the boys used guns).

Impulsivity seems increasingly to be a major factor that distinguishes patterns of youth from adult suicides. Litman says the breakup of a relationship is the "number one traumatic event" triggering suicide for both sexes. Factors having to do with shame, guilt, and humiliation seem to be especially overwhelming to immature egos. Robins has conducted interviews with 3000 youths aged 13 to 18, in an attempt to develop a set of questions that are predictive of high risk for suicide. One factor that is "very strikingly predictive," she says, is a recent arrest or an experience of having been beaten up, raped, or assaulted. "Young people seem to feel more shame," she says, and can manifest extreme guilt both from having been assaulted and from having survived.

Sex differences in suicide are particularly evident among youth. The proportion of boys to girls who kill themselves is somewhat higher—a ratio of 4 or 5 to 1—than it is with adults, in whom the ratio is closer to 3 to 1. Shaffer's colleague Madeleine Gould says boys who kill themselves often have histories of depression mixed with aggression and impulsivity and, unlike many of the girls, do not present "the classical picture of depression."

Girls are much more likely than boys to make an unsuccessful suicide attempt, but numbers are very uncertain, with the ratio of female to male attempters estimated at anywhere from 2:1 to 8:1. Since suicide attempts are often "cries for help," the discrepancy reflects in part the willingness of females to seek help. Males are less likely to ask for help either before or after a suicide attempt. Says Litman: "when a man gets that far down he's really hurting a lot. It's easier for a woman to make a suicide attempt and retain her sense of self." Girls also have better social support systems than do boys, says Cohen. "The social life of teenaged boys and girls is very different." Nonetheless some researchers, such as Shaffer, say there is no clear evidence that the sex discrepancy is due to anything more than the masculine preference for more lethal modes of self-annihilation.

The extent to which suicide attempters constitute a separate population from completers has long been debated. The typical attempter is a young woman; the typical completer, an older, depressed male. But data on the extent of overlap are hard to come by according to Patrick O'Carroll of

the CDC. In emergency room records, people who come in with slit wrists are simply recorded as having lacerations. O'Carroll says he found that when he looked up figures on aspirin overdoses in the National Hospital Discharge Survey, they were coded "accidental" even though there was a clear increase in such overdoses among late adolescents.

Litman and psychiatrist Norman L. Farberow of the Los Angeles Suicide Prevention Center are now conducting a survey to better identify youths susceptible to suicide as part of a 5-year program recently enacted by the California legislature. This involves a random survey of 1000 teenagers and a like number of parents. Teens are being asked if they know anyone who has tried to harm or kill himself; why they did it; and what could have been done to prevent it. They are then asked if they themselves have considered or attempted suicide. Between 11 and 12% report attempts.

Data on psychopathology and suicide in the families of victims has become increasingly important as researchers look for evidence of biological influences. Shaffer's study has found that one-third of the suicide victims had relatives who attempted suicide. He hopes to illuminate the family question further by looking at family psychopathology, particularly the rate of bipolar illness (manic depression). Measures are also being taken of 5HIAA (5-hydroxyindoleacetic acid), a serotonin metabolite, low levels of which have been found in the spinal fluid of violent suicide attempters. Shafii, in his study, is testing levels of urinary melatonin, a product of serotonin secreted by the pineal gland, in people admitted to the hospital for suicidality.

NIMH has become very interested in suicide among youth and has organized three conferences: on risk factors, prevention and intervention, and strategies for the future. The first conference, held in May, reported that "comorbidity (or co-occurrence) of antisocial and depressive symptoms appears to be a particularly lethal combination." Participants recommended a closer look at high risk groups, for example the children of a depressive mother and an alcoholic father, a frequent combination and one highly likely to produce disturbed offspring. ■ CONSTANCE HOLDEN

ADDITIONAL READING

M. Shafii *et al.*, "Psychological autopsy of completed suicide in children and adolescents," *Am. J. Psychiatry* **142**, 1061 (1985).

"Suicide Surveillance Report, United States, 1970–1980" (Centers for Disease Control, Department of Health and Human Services, 1985).

D. Kupfer, Ed., "Summary of the conference on risk factors for youth suicide" (Department of Health and Human Services, in press).

Briefing:

Astronomers Find Their First Embryonic Star

The nearby regions of the Milky Way offer abundant evidence that star formation is an ongoing process. Astronomers have mapped out the dense molecular clouds where stars condense from interstellar gas. They have photographed clusters of hot young stars ionizing the surrounding cloud material with intense ultraviolet radiation. They have seen massive stars no more than a few million years old exploding as supernovas. And yet, despite years of searching, astronomers have never been able to catch an embryonic star at the moment of formation.

Now, however, a team of researchers from the Universities of Arizona and Missouri* have done just that. "We're pretty confident we've actually detected the collapse," says team member Charles J. Lada of Arizona. "And that's very exciting, because it's the first observation we can use to test our theories of the star formation process."

What has made the detection challenging, he explains, is that star formation takes place behind a kind of interstellar smoke screen. The molecular clouds consist of dense molecular hydrogen laced with interstellar dust, and are essentially opaque to visible light. Only in the 1970's did astronomers develop the instrumentation to peer into the clouds at infrared and microwave wavelengths, where the gas is much more transparent and where the warm regions of active star formation tend to shine most brightly.

"Infrared sources were found in great numbers in the 1970's," says Lada. "A couple of dozen of those had spectral signatures that led us to believe they were protostars—that is, stars still in the process of pulling together material by gravity. But then we got worried. Whenever you started looking in detail, you always found that the best candidates for protostars were actually sources of very energetic outflows." Indeed, these outflows are now thought to be ubiquitous: for reasons that no one fully understands, every young star appears to go through a phase where it sends massive amounts of material streaming back into interstellar space. Understanding just how and why such outflows begin is in fact a major reason that astronomers want to study embryonic stars.

The star that finally ended the search was actually first detected by the Infrared Astronomy Satellite (IRAS), as part of the spacecraft's pioneering infrared survey in 1983. IRAS 1629A, as the object is known, lies about 520 light years from Earth in the Rho Ophiuchi molecular cloud, which in turn lies just north of the bright star Antares in the constellation of Scorpius. The Rho Ophiuchi region is well studied—it is one of the closest molecular clouds—but this particular source had never been noticed before; Lada and his colleagues accordingly examined it in detail last January using the National Radio Astronomy Observatory's 12-meter dish located on Kitt Peak in Arizona. They looked specifically at two transition lines of the carbon monosulfide molecule, which is sufficiently abundant in the cloud to serve as a tracer of the overall gas motions.

The astronomers already knew that IRAS 1629A is emitting strong jets of material into the surrounding molecular cloud, just as other such infrared sources do. However, they found that the object shows a definite elongation along the direction perpendicular to the jets, which suggested that it might be a disklike structure with the jets squirting out the axis of the disk. (If so, the disk is about 1600 astronomical units across, or about 20 times the diameter of Pluto's orbit in our own solar system.) And when Lada and his colleagues scanned across the source in the direction of elongation, they found emission-line profiles that showed the clear signature of infalling gas. Indeed, through a careful analysis of the profiles they could infer that the inner parts of IRAS 1629A are collapsing onto a central core—the embryonic star itself—while the outer parts are static. "This is exactly what you would expect," says Lada. "Most theories of star formation imply that protostars will collapse from the inside out."

A comparison of the data with standard theories also suggests that the collapse of IRAS 1629A began only about 30,000 years ago, which makes the object extremely young by stellar standards. If the collapse should continue for another 100,000 years or so, notes Lada, the central core will have approximately the same mass as our sun. "So what we're seeing here is something very similar to what happened when our own solar system formed." ■

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*Christopher K. Walker, Charles J. Lada, Erick T. Young, and Phillip R. Maloney, University of Arizona; Bruce A. Wilking, University of Missouri.

ADDITIONAL READING

C. K. Walker *et al.*, "Spectroscopic evidence for infall around an extraordinary IRAS source in Ophiuchus," *Astrophys. J. Lett.*, in press.