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EDUCATION, RACE/ETHNICITY, AGE, SEX, AND SUICIDE: INDIVIDUAL-LEVEL DATA IN THE UNITED STATES, 1991-1994¹

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ABSTRACT

Although numerous factors have been identified in the scientific study of suicide, relatively little attention has been given to education, especially when considering racial/ethnic differences in educational attainment. Given that education was one of the variables in Durkheim's (1897[1951]) discussion of social integration, the relationship between education and suicide is examined herein. Individual-level data on suicides in the United States from 1991-1994 are studied and results indicate that the distribution of suicide rates according to the level of education compared to the distribution of population according to the level of education differs for most age-sex-racial/ethnic groups. Both classic social theory on suicide and recent developments in identity theory are used to explain the results of this study.

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INTRODUCTION AND THEORY

Suicide rates are reported to have correlations with a wide variety of variables, from gender to income to race (Stack 2000). Education, one of the variables Durkheim (1897[1951]) used to measure social integration, is a focus in this current research since its relationship with suicide rates is currently not well understood.

Durkheim (1897[1951]) argued that education is, in general, positively related to suicide because education "weaken(s) . . . traditional beliefs and . . . (encourages a) state of moral individualism" (p. 168). It is not the 'learning process' that compels people to commit suicide, but rather ". . . the loss of cohesion" with society that results from becoming educated (p. 169). Education, therefore, weakens social integration, a variable Durkheim claimed was central to lowering suicide rates. Durkheim's own analysis, though, never fully supported his theory that educational attainment increases suicide (Pope 1976). Further, the level of education attained by individuals has markedly changed from Durkheim's time to today, and I question Durkheim's hypothesis

that education weakens social integration now that more and more people are becoming educated. For example, in 1900 in the United States, there were 38.6 people per 100,000 population whose highest level of education was a Bachelor's degree, a Masters degree, or a Ph.D. The comparable rate for 1990 was 566.8 (US Bureau of the Census 2000; U.S. Department of Education 1998, table 244).

In Status Integration theory, Gibbs and Martin (1964) argue that as role conflict within status configurations decreases, suicide rates will be low since persons in the given status configuration(s) share common conditions and situations. In other words, if all (or most) salesmen are White, politically active, married males aged 25-54, suicide rates would be low for this configuration of statuses since all (or most) of these persons involved share similar characteristics and are well integrated with each other (and with society as a whole). Davis (1982) argues that status integration theory would predict that as African Americans have entered the middle and upper-classes, difficulty becoming truly accepted in mainstream American culture could result in "A corroding sense of internal alienation (which) ultimately may result in self-destruction" (p. 310). Davis (1980) further asserts that the egoism and anomie that result from not being accepted into mainstream society is of particular concern for young African American males who believe "that they are integrated totally in the desired stream of society (White middle class), although they are not" and who have difficulty "adjust(ing) properly to social change" (p. 227).

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Using individual-level data on suicides in the United States from 1991-1994, I examine the relationship between suicide and educational attainment, controlling for sex, age, and race/ethnicity. I will use both Durkheim's theory of social integration and Gibbs and Martin's theory of status integration to interpret the results. I then extend these social theories of suicide by discussing how, for different groups, suicide represents a social-psychological response to frustration and depression.

LITERATURE REVIEW

Research on education and suicide in the United States has produced inconsistent conclusions. Lester (1985) and Barnes (1975) find that increased education is associated with higher suicide in America, while Gove and Hughes (1980) write that, in 389 American cities, the percentage of the population with less than five years of education is not significantly related to suicide rates in their regression model. Kachur, Potter, James, and Powell (1995 p. 13) report that "Until late in life, higher levels of education are associated with lower suicide rates." Saucer (1993) finds no significant association between education and suicide rates.

Stack (2000, p. 164) argues that the impact of education on suicide ". . . varies according to race." He asserts that:

The main influence of education on suicide is tied to the extent that it benefits groups in their materialistic quest for better jobs and higher incomes. Groups such as women and minorities

who have not received the same payoff from education as Caucasian men, will illustrate a positive relationship between education and suicide. This will not be because of secularization, but instead the frustrations associated with discrimination (p. 164).

Stack (1998) further finds that educational attainment is positively related to suicide for African American males, while the two variables are inversely related for White males. Stack concludes that "While the means to success prevent suicide among Whites, the means to success seem to aggravate the risk of suicide among African Americans" since the *desire* for educational success has not been equaled by *actual* educational attainment of African Americans (1998 p. 300). No systematic work on other racial/ethnic groups, though, has been done in the sociological field of suicidology.

Because studies on education and suicide need to include racial/ethnic differences, I examine the educational distribution of suicide in the United States from 1991-1994 according to age, sex, and race/ethnicity. As educational attainment in America differs greatly by age, sex, and race/ethnicity (U.S. Bureau of the Census 1994, table 1), these demographic variables are important to consider in examining the relationship between educational attainment and suicide rates.

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TOWARDS AN EDUCATIONAL DISTRIBUTION OF SUICIDE RATES

Steffensmeier, Allan, Harer, and Streifel (1989) examine changes in the age distribution of criminals committing the same types of crimes over time. They use the index of dissimilarity, a commonly used statistic by demographers (Shryock and Siegel 1976), to compare age distributions of crime. I use the index of dissimilarity to compare (1) the distribution of suicide rates according to the level of educational attainment to (2) the distribution of the population according to the level of educational attainment for five different racial/ethnic groups. To compute the index of dissimilarity in the educational structure of suicide between the two distributions, the education-specific suicide rates are summed, and then the percent that each education-specific rate is of the total sum is computed. I then compare the percent that each rate is of its whole to the corresponding percentage of people in that educational category. In addition to the index of dissimilarity, I examine the chi-square distribution of suicide rates and population compositions for each demographic group to test the hypothesis that the distribution of suicide rates according to educational attainment is homogeneous to the distribution of the population according to educational attainment.

METHODS AND ANALYSIS

Individual-level data on the number of suicides for American males and females aged 25-54 and 55 and over from 1991-1994 are from the U.S. Department of Health and Human Services (1997-1998). Suicide rates per 10,000 in each of five educational attainment categories (0-8, 9-11, 12, 13-15, 16 and more) for 25-54 year-old and 55 year-old and older males and females were calculated separately for non-Hispanic Whites, African-Americans, Hispanics, Native

Americans, and Asian Americans using age-sex-race/ethnic-education specific population figures from the 1990 Census (U.S. Bureau of the Census 1994, table 1). These rates, therefore, represent the total number of suicides over the four-year period divided by 1990 population figures.

Following the methodology of Steffensmeier et al. (1989) I calculate the percentage that both suicide rates and population size are of their respective totals. For example, there was a total population of African American females aged 25-54 of 6,581,000 and there were approximately 300,000 African American females aged 25-54 in the United States who had less than nine years of education. Therefore, 4.56% of all African-American females aged 25-54 had less than nine years of education (table 1 lists these percentages). The suicide rate for African American females aged 25-54 with less than nine years of education is 0.70, and this rate is 13.75% of the sum of all suicide rates for African-American females aged 25-54. Whereas Steffensmeier et al. calculate percentage age involvement (PAI) in their study of the age distribution of crime, I

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calculate the percentage education involvement (PEI) for both population composition and suicide rates. I employ both the chi-square and index of dissimilarity tests of independence between the distribution of the suicide rate PEI's and population distribution PEI's. Because of the sensitivity of the chi-square statistic to cell frequencies, I multiplied each PEI in table 1 by 10 in the calculation of the chi-square statistic, so that the sum of all PEIs for a given racial/ethnic/sex group is 1000 instead of 100. Chi-square statistics are calculated for each age-sex-race/ethnic group separately. The index of dissimilarity (D), also calculated for each age-sex-race/ethnic group separately, is calculated as $D = \frac{1}{2}G \sum |r_{si} - r_{pi}|$ where r_{si} refers to the PEI for suicide of persons in educational category i and r_{pi} refers to the PEI for the population of persons in education category i . Also following Steffensmeier's et al.'s methodology, if **both** the chi-square statistic is significant and the value of the index of dissimilarity is 15 or greater, then we can reject the hypothesis that the distribution of suicide rates according to educational attainment is homogeneous to the distribution of the population according to educational attainment.

RESULTS AND DISCUSSION

Table 1 shows the population and suicide PEIs. Chi-square and D statistics are significant for all age-sex-race/ethnic groups excepting older White males and older Asian American males. With the exception of these two groups, then, we can conclude that the distribution of suicide rates according to educational attainment differs significantly from the distribution of the population according to educational attainment for the age-sex-race/ethnic groups in table 1. Results for each racial/ethnic group are discussed below. During the discussion of table 1, focus will be on the lower levels of educational attainment (e.g., less than a high school education) and the higher levels (at least some college education).

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Table 1. The Distribution of Suicide Rates and Population Size, 1991-1994

Non-Hispanic Whites								
	Males 25-54		Females 25-54		Males 55+		Females 55+	
Education	Population PEI	Suicide PEI	Population PEI	Suicide PEI	Population PEI	Suicide PEI	Population PEI	Suicide PEI
0-8	3.14	20.13	2.34	22.10	18.29	23.34	17.35	12.36
9-11	7.04	33.31	6.90	26.94	14.25	19.01	15.55	14.32
12	31.65	25.49	35.37	21.49	31.47	25.14	39.84	22.86
13-15	29.20	11.27	31.24	14.16	17.60	14.11	16.97	20.78
16+	28.98	9.80	24.14	15.30	18.39	18.40	10.30	29.68
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
X ² (df=4)	476.10		396.29		23.84		152.70	
D	43.26		39.80		9.82		23.20	
African Americans								
	Males 25-54		Females 25-54		Males 55+		Females 55+	
Education	Population PEI	Suicide PEI	Population PEI	Suicide PEI	Population PEI	Suicide PEI	Population PEI	Suicide PEI
0-8	6.33	13.39	4.56	13.75	39.96	15.62	34.40	12.98
9-11	15.28	27.94	14.09	21.83	19.98	17.47	22.97	10.53
12	38.96	29.41	37.26	25.56	23.34	29.69	26.04	22.86
13-15	27.02	15.44	30.41	15.52	10.35	13.29	9.79	18.06
16+	12.41	13.81	13.69	23.33	6.38	23.94	6.80	35.57
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
X ² (df=4)	108.04		158.06		221.17		365.16	
D	21.12		26.59		26.85		37.05	
Hispanics								
	Males 25-54		Females 25-54		Males 55+		Females 55+	
Education	Population PEI	Suicide PEI	Population PEI	Suicide PEI	Population PEI	Suicide PEI	Population PEI	Suicide PEI
0-8	26.42	16.54	24.72	12.16	48.99	16.44	52.92	10.09
9-11	14.03	30.30	13.88	20.51	12.75	12.63	12.89	10.56
12	27.95	28.27	29.83	25.33	20.04	27.31	21.86	23.96

13-15	21.06	12.29	22.16	15.53	10.63	15.64	7.85	13.35
16+	10.54	12.61	9.41	26.47	7.59	17.97	4.48	42.04
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
X² (df=4)	107.39		152.01		299.33		611.87	
D	18.65		23.69		32.66		45.16	
Native Americans								
	Males 25-54		Females 25-54		Males 55+		Females 55+	
Education	Popluation PEI	Suicide PEI	Popluation PEI	Suicide PEI	Popluation PEI	Suicide PEI	Popluation PEI	Suicide PEI
0-8	8.40	18.69	7.45	12.57	34.98	19.51	34.87	10.23
9-11	14.59	36.97	16.07	37.89	19.73	15.96	18.55	19.23
12	37.33	28.19	35.64	23.66	20.63	35.62	25.22	28.28
13-15	29.67	9.88	31.45	13.41	16.14	22.76	15.58	11.45
16+	10.01	6.27	9.39	12.48	8.52	6.16	5.79	30.82
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
X² (df=4)	256.49		202.39		102.92		313.97	
D	32.66		30.02		21.60		28.77	
Asian Americans								
	Males 25-54		Females 25-54		Males 55+		Females 55+	
Education	Population PEI	Suicide PEI	Population PEI	Suicide PEI	Population PEI	Suicide PEI	Population PEI	Suicide PEI
0-8	6.38	15.96	10.22	14.01	32.52	24.44	34.97	27.19
9-11	3.87	29.95	4.97	25.05	8.42	16.35	8.48	13.13
12	18.91	31.73	23.21	29.77	26.24	29.00	30.45	18.21
13-15	25.05	12.85	24.28	12.82	15.59	9.86	13.36	15.41
16+	45.80	9.51	37.32	18.35	26.24	20.36	12.77	26.06
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
X² (df=4)	551.95		248.54		47.29		97.63	
D	48.48		30.44		11.61		20.03	

Note. All X² statistics at the .001 level; only those D statistics 15.0 or greater are significant.

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Whites

For both males and females aged 25-54, a much larger percentage of suicides occur for persons with less than 12 years of education than would be expected given population percentages of persons with less than 12 years of education. Conversely, smaller PEI's for suicide occur for 25-54 years olds at higher levels of education. This corroborates Stack's (1998) findings that education is inversely related to suicide for White males, although our results are for younger (25-54) White males and females. For older females, the most noticeable difference in table 1 is a larger PEI for suicide relative to the population PEI for those females with a college education. Social integration could be low for this group of women due to the difficulty of older qualified women in the labor force climbing the 'corporate occupational ladder', or as Stack (2000) says, not receiving their expected payoff from a high level of education.

African Americans

As with their White counterparts, African American males and females aged 25-54 have a higher than expected suicide PEI at lower levels of education, given their population PEI's. My research supports Davis' (1982) assertions that as younger African American's aspirations to increase their economic position in society have fallen well short of reality, they experience egoism. Interestingly, we can make the same conclusions about younger Whites at lower levels of education. For older African Americans at the lower end of the educational attainment spectrum, we see low suicide PEIs relative to population PEIs. Perhaps older African Americans never expected much chance to obtain an education in America. Even though four in 10 older African American males and more than one in three older African American females have less than nine years of education, suicide PEI's in this educational category are quite low. I suggest that for older African Americans, as Nisbet (1996 p. 327) argues is the case for African American females in general, "When upward social mobility remains low, dependency on and availability of support resources from support systems (such as kinship networks) remain more stable." It is for younger African American females and older African Americans at high levels of education where we see results similar to Stack's (1998) conclusions about African American suicide and education--an increased likelihood of suicide at higher levels of education. As with older White females, younger African American females and older African Americans who have high levels of education are perhaps frustrated with discrimination in the labor force and are not getting the desired payoffs from education (Stack 2000).

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Hispanics

Regardless of age of sex, Hispanics consistently have much lower suicide PEIs relative to population PEIs for persons with 0-8 years of education--although this is more true for older Hispanics. Nisbet's (1996 p. 327) concept of receiving ". . . support resources from support systems" appears to be operative for Hispanics with little education, too. The reverse is the case for persons with 16 or more years of college, especially for younger females and older Hispanics--higher suicide PEIs relative to population PEIs. Here again we can turn to Stack's (2000) arguments that education is not paying off for these Hispanic groups.

Native Americans

Younger Native Americans and older Native Americans tend to have opposite trends regarding suicide and population PEIs for less educated persons. For younger males and females, suicide PEIs are higher than population PEIs for those with less than 12 years of education. Perhaps we are seeing a group of people who hopes to increase in social status, but are unable to with such little education. For older persons with 0-8 years of education, suicide PEIs tend to be lower than population PEIs. These results also support Nisbett's (1996) arguments about strength of support systems. For males with 16 or more years of education, PEIs are slightly lower than population PEIs; for women in the same educational category, though, suicide PEIs are higher than respective population PEIs—especially for older women. As with older White, African American, and Hispanic (but especially for the minority) females, suicide PEIs are much higher for older, highly educated women than for any other age-sex-race/ethnicity group. Perhaps the social networks that Nisbett (1996) and Davis (1982) assert help other groups effectively deal with troubles and disappointment are absent for older, highly educated Native American females (and for older, highly educated women in general) who are not able to live near kinship networks due to work responsibilities.

Asian Americans

Of all the racial/ethnic groups in table 1, it is Asian Americans who seem to place the most importance on education as a key to success in life (Marger 2000; Taylor 1998). One conclusion that can be drawn from the strong cultural norm of education is that those who fail to attain a high level of education would feel like they have failed in life. We see evidence of this in table 1, where there are higher suicide PEIs relative to population PEIs for younger persons with less than a high school education and lower suicide PEIs for younger persons with college experience, although these trends are more pronounced for males. The distribution of suicide and population PEIs for older Asian American males are not significantly different, as shown by the D-value of 11.61. Thus, as with older White males, there is no significant difference between the distribution of suicide rates in relation to the distribution of population according to educational attainment. For older Asian American females, we see that the suicide PEI is higher than the population PEI for those with a college degree. Given that Asian American culture is quite patriarchal (Iga 1986), older women with a high level of education would likely have low social integration with Japanese culture since it is not expected that these women obtain a high level of education.

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CONCLUSION

Durkheim argues that there is an inverse association between social integration and suicide rates (excepting, of course, cases of altruism). Durkheim reports that education, one of the variables he used to measure social integration, was positively related to suicide rates since education, in general, lessens the amount of integration people have with society. Of the 20 different age-sex-race/ethnic groups examined in table 1, we see that suicide PEIs at the highest level of education are at least five percentage points higher than respective population PEIs in nine of the 20 groups (five percent being an arbitrary designation of difference between the two PEIs). Further, eight of these nine groups are racial minorities, all nine are among non-White males, and all older women

are represented in this group. Therefore, if we are to apply Durkheim's theory of social integration to the association between educational attainment and suicide, and given that high levels of educational attainment are much more common today than in Durkheim's time (US Bureau of the Census 2000; U.S. Department of Education 1998), we need to specify that increased education is associated with a higher risk of suicide largely for older females and to a lesser degree younger females. Why? Here we can turn to Stack (2000) to complement Durkheim's theory by arguing that those people who feel that their educational attainment is not paying off as it should (whether it be in the form of lower than expected income, fewer promotions than expected, the type of job obtained, etc.) will experience weakened social integration due to the despair and frustrations that result from these feelings.

On the other end of the educational spectrum are persons who have little educational attainment and have high suicide PEIs. As with those persons who have a high level of education and high suicide PEIs, these are people who are experiencing low levels of social integration. Of the 19 groups in table 1 with less than a high school education who have suicide PEIs at least five percentage points higher than their respective population PEIs, 17 occur among younger persons. If individual's aspirations to increase their economic position in society, then, have fallen well short of reality, they experience egoism, as Davis (1982) asserts. A lack of educational attainment, then, appears to weaken social integration for those persons who expected to obtain a high level of education, but failed to do so.

For younger White and Asian persons who, presumably, expected to attain a high level of education and have actually done so, we see low suicide PEIs relative to their population PEIs. This would suggest that education can actually increase social integration **if** expectations are met regarding educational attainment. The same can be said of older Hispanics, older African Americans, and older Native Americans where cultural expectations do not stress the importance of education, but rather stress the importance of family and close relationships (Taylor 1998). Even though a very large percentage of older Hispanics, older African Americans, and older Native Americans have less than nine years of education, suicide PEIs are low since social integration among these groups are high—high because they are meeting expectations placed on them by their culture.

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Overall we see, therefore, that Durkheim's theory of education needs to be reformulated to reflect differences among groups according to race/ethnicity, age, and sex. We can not simply state that education and suicide are positively (or negatively) related. Rather, we must specify which demographic group we are studying and what the cultural expectations regarding educational attainment among the group are before assessing the association between education and suicide.

Turning to status integration theory, the theory would predict that as more and more persons come to share characteristics, integration among this 'status group' would increase and suicide rates would be low. In looking at table 1, and using population PEIs of 33% or more as an arbitrary designation of people who share significant characteristics (e.g., age, race, sex, and educational attainment in this case), we see 16 different sub-groups of people who, in their age-

sex-racial classification, have the same level of educational attainment (e.g., the population PEI for White females aged 25-54 with a high school education is 35.37%, for African American males aged 55 and over with less than nine years of education the population PEI is 39.96%, etc.). In all 16 of these sub-groups, suicide PEIs are lower than their respective population PEIs. Further, for the most extreme cases where about one-half of the population is in the same status configuration (e.g., older Hispanics with 0-8 years of education and younger Asian males with 16+ years of education), suicide PEIs are about three to five times *lower* than population PEIs. Clearly, then, status integration theory receives support from the present study. We can tentatively conclude that when studying the association between education and suicide, status integration theory explains the distribution of suicide among various age-sex-racial groups better than Durkheim's theory of social integration. Future research on education and suicide should consider the impact that race, sex, and age have on the association between education and suicide as well as the usefulness of status integration theory. Future research could also include other relevant statuses such as marital status and occupation (a central status for the original work of Gibbs and Martin).

Although Durkheim's and Gibbs and Martin's social theories of suicide help explain why suicide occurs, they do not fully explain social-psychological processes related to suicide. Therefore, I turn to the work of Thoits to examine how, for each of the different racial/ethnic groups herein, suicide represents a social-psychological response to frustration and depression. To begin with, Thoits (1995) explains that social integration (which is perhaps *the* classic way to study suicide from a social perspective) is related to better mental and physical health for individuals. In her examination of identity theory and stress research, Thoits (1991) argues that strains and stresses people experience in highly salient areas of their lives will be more detrimental to them than strains and stressors they experience in less important aspects of their lives. For example, Thoits (p. 107) writes that ". . . women may view and value themselves more often in terms of primary relationships . . . because of differential gender association, whereas men may view and value themselves predominantly in terms of their occupational or

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achievement-related activities." As a result of these values, work-related stressors will negatively impact males more than females (in general), while problems in primary relationships (e.g., spouse ,friend, etc.) will be more problematic for females. "In other words, *identity-relevant experiences* may be more powerful predictors of psychological distress (and well-being) than identity-irrelevant experiences . . ." (p. 106). Related to my research on suicide, I argue that the reason some groups of persons have low levels of education and low levels of suicide (e.g., older Hispanic, Native-American, and African-American males and females) while other groups of persons have low educational attainment and high levels of suicide (e.g. younger Asian males, younger white males and females, and younger African-American males and females) rests on the idea that education is an identity-relevant domain for some demographic groups while it is identity-irrelevant for other demographic groups. Because, for example, education is more central to the lives of younger Asian males, younger white males and females (Marger 2000), and younger African-American males and females (Davis 1980), failing to achieve a high level of education for these persons is psychologically damaging, frustrating, and depressing (the data in table 1 suggest this is also the case for younger Native-Americans). For older Hispanics,

Native-Americans, and African-Americans, though, not achieving at high level of education is not as psychologically damaging because education is more of an identity-irrelevant domain for these persons. My use of Thoits' work on identity theory is in agreement with work done by Gove (1973 p. 61; see also Gove and Tudor, 1973) in which he says that ". . . variations in . . . mortality rates are particularly large where one's psychological state . . . appears to play a direct role in death, as with suicide." Thoits' work on identity theory, therefore, should become more central to the social study of suicide since individuals do vary to the extent that they value some areas of life over others.

In addition to specifying relevant demographic and social variables (i.e., age, gender, race/ethnicity, social class, etc.) when studying suicide from a social or social-psychological perspective, case studies of persons who have attempted (but not completed) suicide and psychological autopsies (interviews with family and friends of the deceased) are useful methodologies to help researchers better understand the social-psychological processes which can explain different patterns of suicide (and suicidal behavior) of different groups of people.

NOTES

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