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# Explaining Changes in the Patterns of Black Suicide in the United States From 1981 to 2002: An Age, Cohort, and Period Analysis

Sean Joe

University of Michigan

*To explore the different trends of suicide incidence among Blacks and possible contributing factors, the current study compared national epidemiologic data of suicide in the United States from 1981 to 2002. For the first time, period and birth-cohort effects on the incidence trends of Black suicide were evaluated using an age-period-cohort analysis. Cohort effects were found for males and females, suggesting that younger generations of Blacks are at higher risk. If younger cohorts carry their increased suicide risk into later life, then the recent decline in Black suicide rates will be reversed. The results of the current study are only interpretable in terms of group-level characteristics and population suicide rates and not individual-level characteristics. The possible explanation and the implications for prevention and future research are discussed.*

**Keywords:** Blacks; suicide; trends; cohort effects; APC analysis

In recent years, suicide has emerged as a crucial health issue for Blacks, particularly among youth (Centers for Disease Control and Prevention [CDC], 1998; Institute of Medicine, 2002; U.S. Public Health Service, 2000). For the purposes of this article, “Black” is used as a label for Americans of African descent and refers to ethnicity and not nationality. Although suicide has traditionally been viewed as a problem that affected more Whites, there

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have been significant changes in the patterns of suicide among Blacks (Griffith & Bell, 1989; Joe & Kaplan, 2001), namely an increase in the rate of suicide completion (Garlow, Purselle, & Heninger, 2005) and nonfatal suicidal behavior (Joe & Marcus, 2003) among younger Blacks. Suicide is now the third-leading cause of death for Black adolescents aged 15 to 24 (Kochanek, Murphy, Anderson, & Scott, 2004). Despite increasing recognition of the public health significance of these changes, explanations for this phenomenon remain speculative and incomplete. Given that the Black population is projected to double by 2050, the creation of evidence-based interventions to keep succeeding cohorts of younger Blacks from suicide is an extremely important public health objective.

Why were previous generations of Blacks able to endure centuries of epic cruelty, also managing to avoid succumbing to hopelessness and depression, whereas recent generations experience higher rates of suicide, especially among the young? Suicide research on people of African heritage is at an early stage of development. Only recently have researchers been able to outline a more detailed profile of Blacks most at risk for suicide completion. The dearth in research on Black suicide has severely limited efforts to design preventive interventions for this population. The creation of preventive suicide interventions for Blacks will require further demographic, psychosocial, and psychiatric diagnostic specificity in regards to Black suicidal risk and protective factors. The growing body of research on Black suicidal behavior, however, has confirmed through numerous investigations that many of the known suicidogenic risk factors for Whites are also important risk factors for Blacks, such as mental disorders including depression (Horwath, Johnson, & Hornig, 1993; Kaslow & Kingree, 2002; Willis, Coombs, Drentea, & Cockerham, 2003), substance abuse (Castle, Duberstein, Meldrum, Conner, & Conwell, 2004; Garlow, 2002; Marzuk et al., 1992), poor social support (Joe et al., in press; Kaslow et al., 2004; Kimbrough, Molock, & Walton, 1996), family dysfunction (Fernquist, 2004; Ialongo et al., 2002; O'Donnell, O'Donnell, Wardlaw, & Stueve, 2004; Summerville, Kaslow, Abbate, & Cronan, 1994), and access to firearms (Joe & Kaplan, 2002; Kaplan & Geling, 1998). In spite of such empirical advances, little is known as to why Blacks have experienced changes in their rates of suicide.

It is important to make a distinction between research on individual suicide risk from investigations that identify population-level changes in the patterns of Black suicide or suicidal risk belief and behavior. Although these two investigative tracks are arguably linked, in the rush for explanations for the unprecedented changes in the patterns of suicide among Blacks, we must be careful not to fallaciously interpret the research results from individual risk studies as explanations for population-level changes in these patterns. In order for

individual-level investigations of the correlates of Black suicidal behavior to be used to understand population-level changes, the explanatory models should be designed to confirm the relationship among changes in population-level factors presumed to be related to Black suicide. Research on the changes in national patterns of Black suicide must be based on national longitudinal data, and up to now such research has focused on the examination of secular trends, often disaggregated by gender and method of suicide (CDC, 1998; Joe & Marcus, 2003; Kaplan, Adamek, & Johnson, 1994). These studies, although only few in number, are important because they help to define the magnitude of the problem, thus provoking needed calls to action. However, to fully explain the changes in the patterns of Black suicide, we must have a better demographic and historical understanding of the nature of those changes. In spite of the lack of empirically tested explanations for recent changes in the patterns of suicide among Blacks, current data are available for longitudinal examination of the patterns of suicide among this population. Specifically, research must inspect more closely whether there were significant age, cohort, or period effects on Blacks' trends in suicide.

The aims of the present study were to illustrate age, period, and cohort effects in relation to Black suicide data, paying particular attention to gender differences in suicide rates and the interactions of period and cohort effects on suicide rates in middle and old age. Previous studies have examined suicide using the age, period, and cohort approach (Alte da Veiga & Saraiva, 2003; Girard, 1993; Gunnell, Middleton, Whitley, Dorling, & Frankel, 2003). However, no studies were found that examined Black suicide trends in the framework of an age-period-cohort (APC) analysis.

### WHY AN AGE-PERIOD-COHORT ANALYSIS?

Researchers have posited several plausible hypotheses to explain changes in Black suicidal behavior; however, prior to testing these conjectures, we must first deal with some basic explanations. There is a need for cohort-period analyses that are specific to the U.S. Black experience and that provide a greater understanding of the nature of the changes in Blacks' patterns of suicide. For instance, research must discern whether there was really a generational change in the risk for Black suicide and for which segment of the population the shift is attributed. APC analysis examines such fundamental questions. The APC analysis is commonly used by epidemiologists to analyze mortality trends that provide three kinds of explanations (Clayton & Schifflers, 1987a, 1987b; Holford, 1991; Selvin, 1996). It is designed to estimate, in addition to the effect

of age, the individual effects of time period at time of death and the person's birth cohort, which are usually overlooked in descriptive epidemiological/cross-sectional studies. First, the age effect usually reflects physiological differences affecting susceptibility to disease among different age groups. Second, the time-period effect usually reflects factors that affect all age groups equally at a given period of time, such as the Great Depression, significant increases in civil rights, or an improvement in the completeness of mortality data. Finally, the birth-cohort effect explanation, on the other hand, indicates factors that affect unequally among different birth cohorts and require prolonged time to manifest their effects. A typical example is a change of social norms, which are usually determined early in life and act on human behavior in the later stages of the life cycle. Analysis of the age, period, and birth-cohort pattern is therefore important in understanding the developmental implications of normative changes and their impact on the trend of suicide incidence, because a great deal of social science research points to the importance of socialization that takes place when people are younger (Stevenson, McNeil, Herrero-Taylor, & Davis, 2005). Moreover, cohort effects can have relatively long-lasting impacts on the suicide pattern as the cohort ages, affecting the overall trends in suicide for the entire population. The APC analysis offers three competing ways to explain the increase in Black suicide, and a first look at any time-series data should try to disentangle their effects to shed light on the observed Black suicide trends in the past two decades.

## METHOD

### DATA SOURCE

Data concerning the age and sex of Blacks recorded as dying by suicide in America in each year from 1981 to 2002 was extrapolated from the injury mortality files from the National Center for Injury Control and Prevention at the CDC and were downloaded using the Web-based Injury Statistics Query and Reporting System (WISQARS; CDC, 2003). The National Center for Injury Control and Prevention gathers mortality data from death certificates that are reported to the National Center for Health Statistics (NCHS). Our analyses included all cases for which suicide (International Classification of Disease [ICD] 9 codes E950-E959 and ICD-10 codes X60-X84, Y87.0, \*U03) was listed as the cause of death. Age- and sex-specific suicide rates were calculated for each year of the study by summing up all deaths of Blacks classified as suicide and dividing by the total population for that year. The suicide rates for each year were calculated by summing the total annual

number of suicide deaths, dividing that sum by the population size, and then multiplying that number by 100,000.

#### APC ANALYSES

The APC modeling analysis is a method for estimating the effects of age, time period, and cohort on an observed trend in disease and mortality (Clayton & Schiffers, 1987a; Mason & Smith, 1985). This method has been widely used in analyzing secular trends for suicide in epidemiological studies (Chaudran & Remington, 1999; Gunnell, Middleton, Whitley, Dorling, & Frankel, 2003; Selvin, 1996; Sonowdon & Hunt, 2002). However, there is a basic theoretical problem with the APC model—namely, the linear dependency of the three temporal dimensions (age, period, and cohort) makes distinguishing their independent effects problematic (Clayton & Schiffers, 1987b; Mason & Smith, 1985). This identification problem can be expressed mathematically as Equation 1: Cohort = Period – Age, which raises the same questions regarding identification irrespective of the data structure (for an expanded discussion of the problem, see Clayton & Schiffers, 1987b; Fienberg & Mason, 1985). This simple mathematical truth means that we cannot separate out APC effects by simply regressing a dependent variable such as participation level ( $Y_a, p$ ) for age  $a$  at period  $p$  on variables for age ( $A$ ), period ( $P$ ), and cohort ( $C$ ) because of the perfect multicollinearity between any two of them from equation 1. Resolutions to the problem have been proposed by several authors using either statistical or graphical modeling to delineate these dimensional effects (Clayton & Schiffers, 1987a, 1987b; Fienberg & Mason, 1985; Robertson & Boyle, 1998a). Several authors have taken the stance that APC modeling is no more informative than explanatory graphical approaches (Clayton & Schiffers, 1987b; Kupper, Janis, Karmous, & Greenberg, 1985; Robertson & Boyle, 1998b). Therefore, this analysis will be restricted to graphical assessments of Black suicide trends.

To examine the impact that age, period, and cohort had on Black suicide rates from 1981 to 2002, three indicator variables were created; age (in 5-year groups, 10 to 84 years), period (one for each year from 1981 to 2002 and 3-year periods<sup>1</sup>), and cohort (5-year cohorts of birth, starting in 1897). Reference categories were the age group 10 to 14 years, the year of 1981, and the birth cohorts of 1897 to 1901 and 1902 to 1906 for different models. When appropriate, suicide mortality rates were compared using 2000 as the standard year for age adjusting. Data from subjects of the age 10 years and younger were omitted because of the low sample size. Similarly, data from Blacks aged 85 or older were excluded because of the difficulty in specifying their corresponding birth cohort.

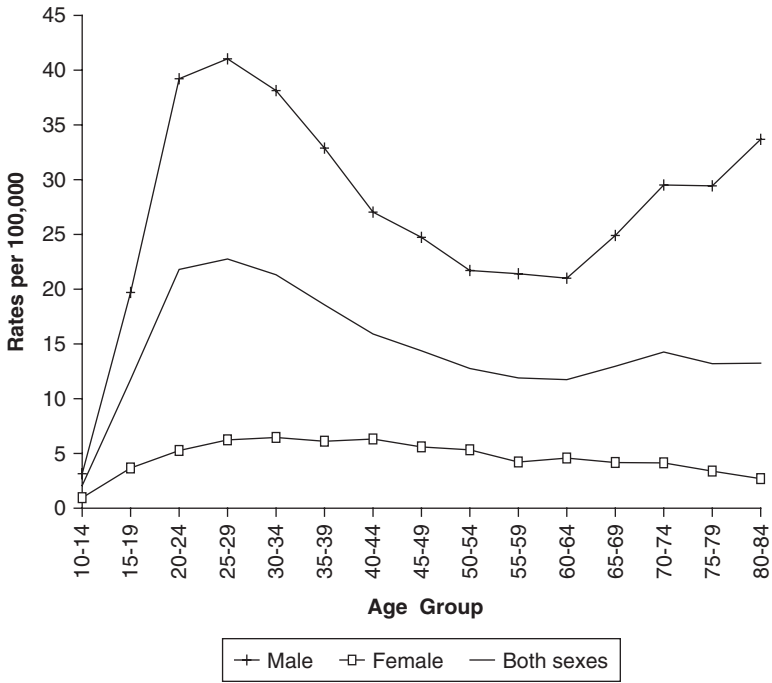
## RESULTS

### AGE AND PERIOD EFFECTS

The extent to which suicide varies with age was assessed by plotting age- and gender-specific trends in suicide within the study period and for the 15 age bands. Figure 1 shows the suicide rates for males, females, and both sexes combined from 1981 to 2002. The trends in suicide differed markedly by age and gender. The age effect is demonstrated, with the male rate at 25 to 29 and 20 to 24 being higher than the male peak in the older age groups (80 to 84). The male rate peaked at 41.05 per 100,000 among those in the 25 to 29 age group. Among females, we see slightly different age effects, with the 30 to 34 age groups having higher rates of suicide at 7.45 per 100,000, and among older women, the peak was 4.5 per 100,000 in the 60 to 64 age group. The suicide mortality rate was lower among females compared to males throughout the study period, ranging from a low of 0.96 deaths per 100,000 person-years in the age group of 10 to 14 to a maximum of 2.69 deaths per 100,000 person-years in the age group of 80 to 84. A clear bimodal age pattern is evident for males. The parallelism among the lines for males and both sexes clearly show that males are driving the higher rates of suicide among Blacks.

The trends of the relative risk of suicide mortality along the years reveal very different patterns for the two genders (see Figure 2). The relative risk ratios were calculated for each group represented in the figure using the 1981 suicide rate as the referent. A relative rate of change for each year was calculated by dividing the current suicide rate by the 1981 rate (all rates were age-adjusted). The age-adjusted suicide mortality rates increased for males from the beginning of the study until 1989, remained flat from 1990 to 1993, and then declined precipitously. In females, the trends started to rise between 1983 and 1988, and then began to decline in 1989, falling to an all-time low in 2002. It might be said that a small period effect could be observed in 1983 when the relative risk began to increase for males and females as well as for both sexes combined.

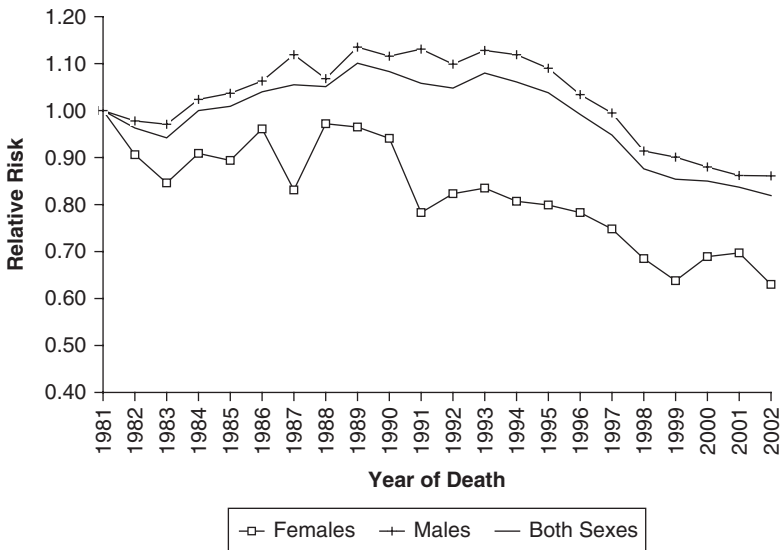
The period effect was examined by plotting age-specific suicide rates in seven different time (of death) periods: 1981-1983, 1984-1986, 1987-1989, 1990-1992, 1993-1995, 1996-1998, and 1999-2002. Figure 3a examines period effects by showing the suicide rates in the three age groups by the seven time (of death) periods. If the suicide rates at all age groups in a particular time period is higher or lower than in other time periods and if there is evidence of parallelism between the lines, then period effects are said to be evident. As illustrated in Figure 3a, the evidence is not sufficient to say that among males there is an earlier period effect. However, for the period 1999



**Figure 1: Age-Specific Suicide Mortality Rates for U.S. Blacks, 1981-2002**

to 2002, it appears that the rate of suicide is lower in this period for all age groups; thus, there was a possible period effect taking place at this time.

The period effects were also assessed by looking for trending patterns common to all age-gender groups in the graphs. For instance, Figure 3b further investigates the age-period effect, with rates for young (aged 10 to 34), those in the middle years (aged 35 to 64), and elderly (aged 65 to 84) males. The age groups were merged into three groups to make the graphical presentation of the period effects clearer. If the relative rates of different age groups vary in different time periods, then there is evidence of an age-period interaction. The rates of suicide among the three male groups have converged, which indicates a possible age-by-period interaction. The suicide rates for the young and the elderly males reach their peaks in what appears to be a lagged response to major structural changes in Black America—namely, deindustrialization

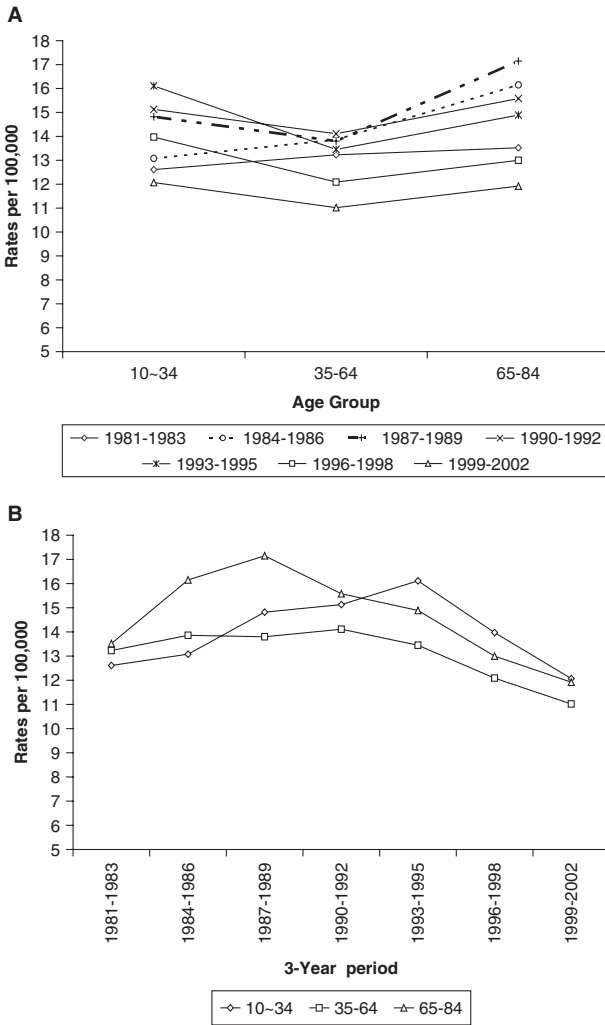


**Figure 2: Age-Adjusted Relative Risks for Suicide Mortality by Year of Death for U.S. Blacks**

and increased social deprivation. The rate for the elderly peaks around the mid 1980s, during the height of deindustrialization as described by William Julius Wilson, and then enters a declining trend well into the next decade. In contrast, the rate of suicide increased markedly among younger Blacks, peaking and surpassing the rate for the elderly in the early 1990s and then declining in the past decade. The impact of the social and macro structural changes for young Blacks was at its zenith during the time between the late 1980s and early 1990s (Wilson, 1996). Possible period effects are also suggested by the rise in the young and elderly groups in the 1983 to 1986 periods and the fall in suicide rates occurring in all age-gender groups in the 1993 to 1995 periods. The continued increase in the rate of youth suicide after the rates started to decline for the other two age groups suggests a possible cohort effect.

#### BIRTH-COHORTS EFFECTS

The extent to which cohort effects influence suicide rates was investigated by plotting suicide rates at ages 10 to 14, 15 to 19, 20 to 24, 25 to 29,



**Figure 3: Age-Adjusted Suicide Rates by Time (of Death) Period for Black Males in the United States**

30 to 34, 35 to 39, 40 to 44, 45 to 49, 50 to 54, 55 to 59, 60 to 64, 65 to 69, 70 to 74, 75 to 79, and 80 to 84 for those born in successive 5-year birth cohorts (see Table 1). Each estimate of the suicide rates for a particular

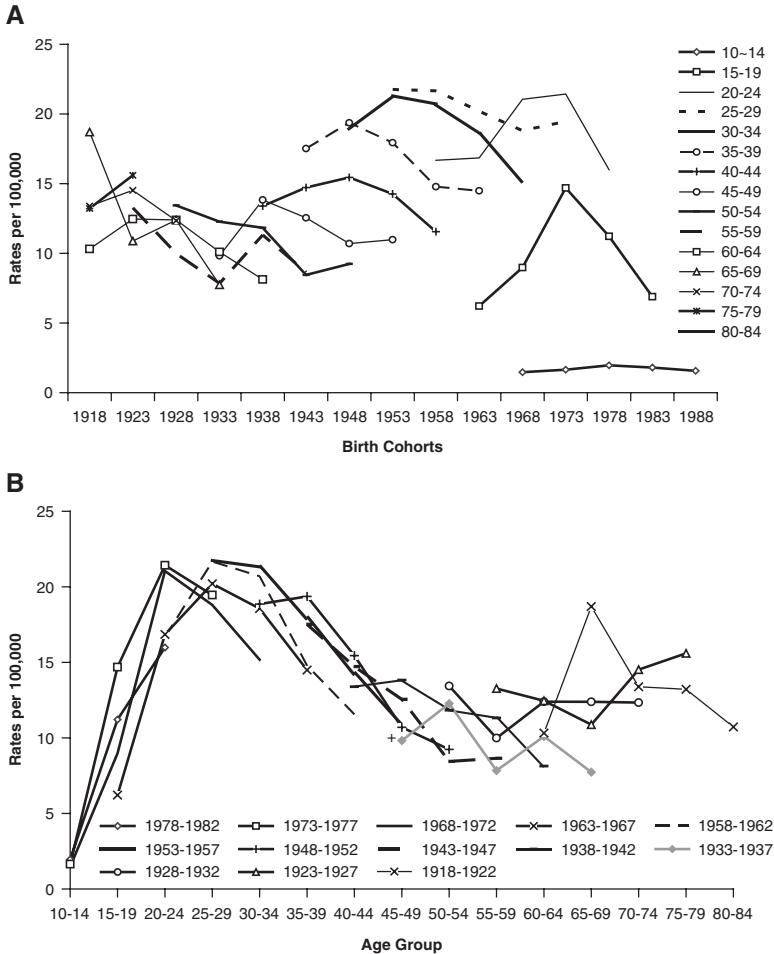
**TABLE 1**  
**Data Used to Construct Specific Suicide Rates**  
**Among Different Birth Cohorts**

<i>Birth Cohort</i>	<i>Age Group in 2002</i>	<i>Age Group in 1997</i>	<i>Age Group in 1992</i>	<i>Age Group in 1987</i>	<i>Age Group in 1982</i>
1988-1992	10-14				
1983-1987	15-19	10-14			
1978-1982	20-24	15-19	10-14		
1973-1977	25-29	20-24	15-19	10-14	
1968-1972	30-34	25-29	20-24	15-19	10-14
1963-1967	35-39	30-34	25-29	20-24	15-19
1958-1962	40-44	35-39	30-34	25-29	20-24
1953-1957	45-49	40-44	35-39	30-34	25-29
1948-1952	50-54	45-49	40-44	35-39	30-34
1943-1947	55-59	50-54	45-49	40-44	35-39
1938-1942	60-64	55-59	50-54	45-49	40-44
1933-1937	65-69	60-64	55-59	50-54	45-49
1928-1932	70-74	65-69	60-64	55-59	50-54
1923-1927	75-79	70-74	65-69	60-64	55-59
1918-1922	80-84	75-79	70-74	65-69	60-64

NOTE: Data focuses on the 1968 to 1972 birth cohort.

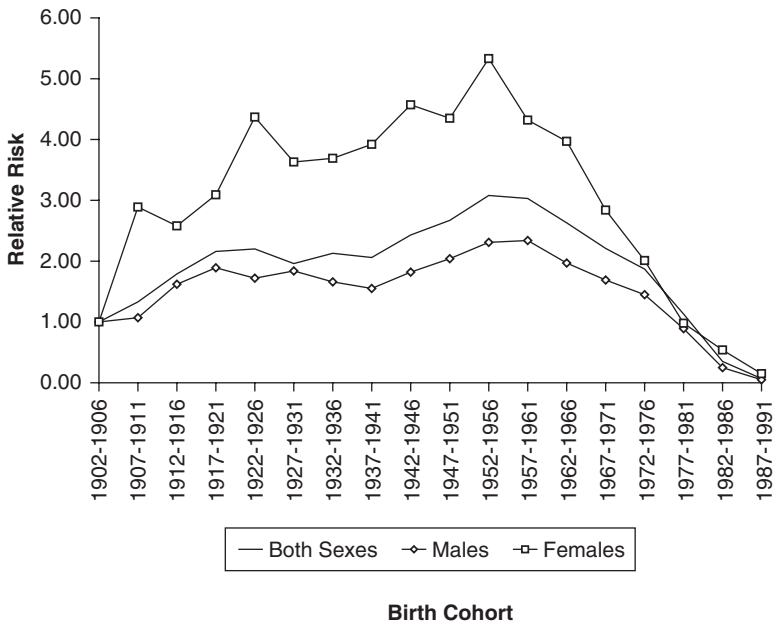
birth cohort at a given age includes the mortality of people born over the 5-year period centered on the specified year of birth of the cohort. For example, for those born between the years of 1968 and 1972, to get their suicide rates at ages 10 to 14, the data for age group 10 to 14 in 1982 was used. Similarly, to get their suicide rate when they were 15 to 19, the suicide rates for the age group 15 to 19 in 1987 was used, and so on. The figures allow for a graphical comparison of the suicide rates across cohorts.

Figure 4a illustrates the age-specific suicide mortality rates by birth cohorts. There is a noticeably higher rate of suicide among most of the younger birth cohorts regardless of age. In addition, there are marked declining trends in the suicide rates for many of the older age groups by birth cohorts. In contrast, for the later-born cohorts, the suicide rates begin to level off or decline by the third-birth-cohort generation. In Figure 4b, for the earlier-born birth cohorts, there is some evidence that suicide rates peak at successively younger ages: 65 to 69 years for the 1918-1922 cohort, 25 to 29 for the 1953-1957 and 1958-1962 cohort, and 20 to 24 for the 1973-1977 and 1978-1982 birth cohorts, indicating a possible period effect as peaks occur in the same time period (around 1986-1987 and 1993). In every 5-year age band, the suicide rates were higher in each successive birth cohort, except for the 1918-1922 cohorts. This indicates a possible birth cohort effect on youth suicide.



**Figure 4: Suicide Rates in Successive 5-Year Birth Cohorts**  
**(a) Age-Specific Suicide Mortality Rates by Year of Birth Cohort for Black U.S. Males.**  
**(b) Suicide Mortality Rates by Age for Different Black Male Birth Cohorts, United States (1982, 1987, 1992, 1997, and 2002).**

A final examination of the presence of a cohort effect was determined by assessing the gender-specific relative risk ratio using the birth cohort 1902-1906 suicide rate as the referent. A relative rate of change for each year was calculated by dividing the current suicide rate for each birth cohort by the



**Figure 5: Age-Adjusted Relative Risk for Suicide by Birth Cohort for U.S. Blacks**

1902-1906 cohort rate. As seen in Figure 5, the observed cohort effects in both sexes are very similar to the patterns for the mortality relative risk of males and females. The highest suicide-mortality relative risk ratio increased with succeeding younger cohort, which further supports the implication of an increased suicide risk for youth mentioned above. Most notable and surprising, however, was that the relative risk for suicide among females exhibited a more dramatic cohort effect than for males. This does not suggest that females have higher rates of suicide than males. What it does reveal is that the change in females' relative risk for suicide was much greater than previously described using basic trend analysis. The later convergence in relative risk for both sexes indicates a possible period effect and equal levels of suicide risk.

## DISCUSSION

This study has inherent limitations, which have relevance for the interpretation and use of its results. The main limitation of this APC analysis is that

the necessary data for examining the long trends in suicide among younger Blacks and the suicide patterns for the earlier years of the oldest age groups is not available. This is important because it is possible that as younger Blacks age, they might no longer continue to experience such high suicide rates. Another limitation of the study is the validity of vital statistics for interpreting suicide mortality trends. Previous research has also demonstrated that compared to Whites, Black suicides were more likely to be underestimated in official mortality data because of greater misclassification (Phillips & Ruth, 1993). Despite the possible underestimation caused by using official statistics data, it is clear from the evidence presented in this study, which is also consistent with previous reports (CDC, 1998), that suicide is a considerable public health problem among Blacks, particularly for males and youth. In addition, the nonidentifiability of the full APC model casts a shadow on the results derived from it. Although new methods for handling the nonidentifiability problem have been developed and tested in other reported studies (Alte da Veiga & Saraiva, 2003; Girard, 1993; Morrell, Page, & Taylor, 2002), the problem theoretically remains. Finally, it is not possible to draw definitive conclusions about the mental or physical health status of any group by conducting APC analyses of data on only one cause of death, including suicide. Given these limitations, this analysis is the first to use the APC modeling method to examine population-level trends of Black suicide. Information obtained from this study is useful in that it provides greater temporal and demographic specificity regarding when and for whom population-level changes in the Black experience might have cumulated in ways that increased their vulnerability to suicidogenic forces. In addition, the findings from the study provide a macro-level context for understanding individual risk analysis for this population and also point to important lines of future investigations regarding Blacks' suicide risk, which are described in the next section.

Consistent with previous studies, the results showed that the incidence of suicide in Black males has rapidly increased throughout the 21 years, that the age-specific trend for females was relatively flat, and that there are notable age differences (CDC, 1998; Joe & Kaplan, 2001). As expected, the relative risk for suicide was highest for Black males, particularly young adult males aged 25 to 29. There was evidence of cohort effects for males born after 1958 and females born after 1921. This may suggest that younger generations of both males and females share common environmental exposures that place them at increased risk for suicide. Cohort effects were increasing, which might suggest that younger Blacks are more susceptible to suicidal forces. Surprisingly, the APC analysis showed stronger birth-cohort effects on the trends of suicide in Black females. This stronger birth-cohort effect indicates possible differences in the reactions to changes in environmental exposure between males and females born in earlier and

later cohorts that have an important role in the pathogenesis of suicide. A stronger birth-cohort effect also suggests that there are important contributions of lifestyle and other possible environmental factors in the pathogenesis of Black suicide.

The result of the present study confirms previous findings that male suicide rates in all age groups have varied considerably during the past few decades. The bimodal age patterns of Black male suicide mirrors the patterns associated more with countries with intermediate levels of socioeconomic development (Alte da Veiga & Saraiva, 2003). Figure 3b suggests that there were two significant changes in the suicide trends found for Blacks, as evidenced by an increase that began in 1983, followed by a decrease in 1993, particularly among males. These turning points can be viewed as period effects. The most consistent evidence of the period effect was the steady increase in the suicide rate from 1983 to 1993 (see Figure 2). The 1983 period effect appeared to have a greater impact on the very young and the old, as is evident by the precipitous rise in the suicide rates for Black males in the age groups 10 to 34 and 65 to 84. The rise in suicide rates in 1983 coincides with the peak of the deindustrialization years of the early 1980s, whose impact disproportionately burdened Black families and communities (Massey & Denton, 1993; Wilson, 1996). Ensuing from changes in the macrostructure (e.g. deindustrialization) of American cities of the 1970s and 1980s was the creation of neighborhoods in which male joblessness markedly increased (Wilson, 1987, 1996), especially among Blacks; there was increased family disruption, decaying residential and commercial real estate, and poor social organization (Almgren, 2005). The young and the old are often those most susceptible to environmental changes. In addition, during this period, the onset of the crack cocaine trade resulted in the proliferation of semi-automatic firearms in these lower-resource neighborhoods (Wilson, 1996; Zimring, 2004). Previous research has pointed out that the increase in suicide among Blacks was primarily because of increases in firearm-related suicide of young males (Joe & Kaplan, 2002). The rise in Black suicide rates could also reflect the period effects coinciding with social change and upheaval, including post-civil-rights-movement reactions, such as the onset of the ultraconservative political and policy movements and elimination of major social-service programs during the period.

#### POSSIBLE EXPLANATIONS FOR COHORT EFFECTS

The increased rate of suicide among successive Black birth cohorts, particularly for males, must be placed in a broader historical and psychosocial context, which often requires informed understanding of knowledge about

the population's experience that is outside the scope of statistical methodology. Cohort effects refer to the extent to which developmental factors or previous life events are the results of the impact of an external event, or combination of external events, on a group of similarly aged, usually younger, individuals and how it continues to influence their subsequent suicidal behavior and mental health throughout their life span. A number of possible explanations for the cohort effects observed for Blacks are explored in this section, including a new developmental context, changes in attributional coping styles, and attitudes toward suicidal behavior. Although these plausible explanations are moderately supported by evidence, they are indeed speculative and should be confirmed in future research examining their direct effects on Blacks' risk for suicide.

*New developmental context.* First, recent changes in the pattern of suicide among younger Blacks may reflect their experience of growing up in more extreme and concentrated poverty at a time in which the protection provided by parents, the church, and other community institutions has been considerably weakened (Wilson, 1996). Growing up in poverty may also increase the possibility of being exposed to air pollution, lead paint, and other contaminants, which may impact mental and physical health (Bernard & McGeenhin, 2003; Krieger, Williams, & Moss, 1997; President's Task Force on Environmental Health Risks and Safety Risks to Children, 2000). Equally ominous, the social-structural landscape—marked by unprecedented underemployment, ineffective social institutions, and high personal expectations—has led to profound hopelessness, despair, demoralization, loneliness, depression, and psychological changes, particularly in the coping styles of many young Blacks (Spencer, Dupree, & Hartmann, 1997; Wilson, 1996). Coping styles refers to the cognitive and behavioral efforts employed to manage the adverse demands of the person-in-environment relationship that are appraised as stressful as well as the emotions they generate (Lazarus & Folkman, 1984, p. 19). New generations of Blacks have been raised amid extreme developmental contexts that often leave many without access to traditional symbols of hope (Gibbs, 1988) and the adaptive coping styles (e.g., religious coping, external attribution orientation) that helped many in earlier generations face the challenges of adverse life circumstances and to have lower rates of suicidal behavior. Currently, investigations into generational differences in Blacks' coping styles and suicide risk are marginal in the field of Black suicide.

*Attributional orientation hypothesis.* One important line of investigation is to discern whether the cohort and period effects found in this study evidenced by the increase in suicide among younger Blacks are linked to generational

differences in attributional coping styles. According to attributional style theory (Abramson, Metalsky, & Alloy, 1989), a maladaptive style is manifested when positive events are explained in specific yet unstable external explanations and negative events with stable internal yet global attributions. Several researchers have used attributional orientation to explain higher risk for poor mental health and death among Blacks (Jackson et al., 1996; LaVeist, Sellers, & Neighbors, 2001). Maladaptive attributional styles have also been associated with depressive symptoms among Black adolescent suicide attempters (Summerville et al., 1994) and a perceived risk for suicide among adolescents (Greening & Stoppelbein, 2002). The strength of the association between attributional style and internalizing symptoms of psychological distress that are known risk factors for suicide, such as depression (Gladstone & Kaslow, 1996; Johnson et al., 2002) and anxiety (Luten, Ralph, & Mineka, 1997), suggests that it is a likely cognitive variable that may serve as one possible pathway between younger Blacks' new developmental context and their higher suicide risk.

Therefore, a line of inquiry is proposed with several important hypotheses that are worthy of empirical examination. For instance, were there changes in the attributional orientation of Blacks, and is attributional orientation a potential effect modifier relevant to understanding how broader sociocultural changes for Blacks impact their psychological risk factors related to suicidal behavior, particularly depression? Depression is one of the strongest risk factors for suicide (Harris & Barraclough, 1997). Namely, at one time, did an external attributional orientation (which refers to system blaming) among Blacks buffer this group from internalizing limited individual success given their exposure to chronic psychosocial stressors (e.g., discrimination) dictated by a raced society, and has this mindset been replaced more recently with a more internal orientation (which refers to self-blaming), particularly among younger Blacks? Moreover, it is plausible that a system-blame attributional style, particularly in the context of high-effort coping (Bennett et al., 2004), helped previous generations of Blacks to manage their potentially deleterious chronic exposure to psychosocial stressor in the United States (Anderson, 1991; Paradies, 2006). For example, a system-blame attributional orientation might have attenuated the negative consequences of exposure to various types of discrimination by ascribing personal setbacks to external realities of racial social structures that are endemic to life in America. This assertion is not to suggest that many of the psychological and sociocultural parameters associated with decreased suicide risk in earlier cohorts of Blacks, including attributional style, did not confer risk for other adverse outcomes. For instance, high-effort coping, which is often thought of as a psychological resiliency resource for Blacks, has been linked to poor health outcomes (Bennett et al., 2004).

Future research should also consider whether the generational change in Blacks' attributional style and other coping strategies represents an unexpected outcome of American civil and social rights movements, which has been crucial in raising the personal expectations, achievement opportunity, and aspirations of Blacks. This is to say, these social movements may also have led to a greater belief among some Black youth that their opportunities are limited only by their skills and motivation—a common part of the American ethos. In turn, many Blacks, particularly males, may then become frustrated, angry, and depressed when those expectations do not materialize, because as much as normative achievement expectations may well have changed, many of the institutional and structural barriers in our society associated with the legacy of racism continue to thwart Black youths' development, individual effort, and ability (Powell & Arriola, 2003; Prelow, Danoff-Burg, Swenson, & Pulgiano, 2004; Spencer et al., 1997). Younger Blacks of today, therefore, may be more likely than previous generations to believe that their life events are solely dependent on their actions, which then may increase their susceptibility to depression and other risk factors for suicide (Joe, 2003). Although the proposed role of attributional orientation in Blacks' suicide risk requires empirical verification, it is clearly a promising and potentially fruitful line of inquiry.

*Gender differences.* Although there are many other potential reasons (e.g., biological, social) for the gender differences in suicide between Black males and females, the social, ecological, and psychological changes in the life of Blacks in the United States may explain changes in the pattern of suicide among males but not the consistently lower rates among females. The results do point to stronger cohort effects for Black females; however, they do not complete suicide at a rate comparable to males. The lower rate of suicide completion among females may be attributed to the fact that they are more likely to seek and receive emotional support (Gibbs, 1988), have different achievement expectations and experiences with strain, have less access to firearms, or have stronger religious affiliations than males (Gibbs & Hines, 1989). Females' lower rates may also be attributed to greater perceived gender discrimination and less perceived racism. Sellers and Shelton (2003), found that Black males report more experiences of racial discrimination than Black females. Although females are making more social gains, many might still experience or perceive gender discrimination; thus, they are less likely to attribute their experiences primarily to personal efficacy. Research is needed on whether females' attribution orientation is more consistent with the traditional perspective that appropriately protected many Blacks from suicidal forces.

*Suicide acceptability.* Finally, Blacks' social norms have changed, influenced by structural changes, but also because of greater acculturation into mainstream American society. Culture, which is a product of people living together and creating a conglomeration of ideas, habits, thoughts, traditions, norms and values that manifests as a pattern in a specific group of people, powerfully shapes and constrains the behavior of the individuals in the group in ways the structural aspects of society may not (Bille-Brahe, 2000). In mainstream American society, the cultural view of suicide as relatively commonplace and acceptable could permanently influence the attitudes of young Blacks regarding its cultural normality and, hence, increase their likelihood of committing suicide in times of personal crisis. Future research must examine whether the normative religious belief that Blacks once held about suicide, which served as a possible protective factor (Neeleman, Wessely, & Lewis, 1998; Prudhomme, 1938), continues to be held by younger generations because of their lower levels of participation in organized religion. This explanation assumes that suicide acceptance plays an important role in regulating people's consideration of suicide as a solution to life problems (Goldsmith, Pellmar, Kleinman, & Bunney, 2002). Despite the fact that Blacks continue to report a less accepting attitude toward suicide, recent research confirms that younger Blacks are more likely than older Blacks to be accepting of suicide (Joe, Romer, & Jamieson, 2005), thereby reducing the effects of this formerly protective factor for this population.

## CONCLUSION

The findings from this exploratory study have implications for suicide prevention and research. Namely, to reduce the suicide rates of Blacks, intervention and prevention efforts must target the young and elderly who are at highest risk. If younger cohorts carry their increased suicide rates into later life, then the recent declines in suicide rates in Blacks will be reversed. Possible explanations for the observed cohort effects must also be investigated. Research is needed to fully discern the role that racism and segregation, socioeconomic status (including indicators of extreme poverty and other limited economic opportunities), attributional styles, firearms, and the erosion of protective social-support systems in Black families, churches, and neighborhoods have on Black suicidal behavior. Future scientific inquiry will also have to examine Black suicide trends using clearer theoretical frameworks and more comprehensive and sophisticated models and approaches (e.g., structural equation or latent growth curve model) to understand the

person-in environment (macro-micro) processes that contribute to Black suicide in the context of the macro-level changes discussed in this study. Finally, given the research priorities noted above, access to better longitudinal ecological data is needed that could be used to test the potentially moderating effect of attributional style. To my knowledge, such a comprehensive data set is not current available, particularly one that contain indicators of many of the important concepts and ideas raised in this discussion that can provide an explanatory context for the changes in Blacks' suicide trends.

### NOTE

1. One 4-year period was used to capture data based on the 10th International Classification of Disease (1999-2002).

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