Beliefs About Suicide Acceptability in the United States: How Do They Affect Suicide Mortality?

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Abstract

Objectives: Societies develop cultural scripts to understand suicide and define conditions under which the act is acceptable. Prior empirical work suggests that such attitudes are important in understanding some forms of suicidal behavior among adolescents and high-risk populations. This study examines whether expressions of suicide acceptability under different circumstances are predictive of subsequent death by suicide in the general U.S. adult population and whether the effects differ over the life course.

Method: The study uses 1978–2010 General Social Survey data linked to the National Death Index through 2014 (n = 31,838). Cox survival models identify risk factors for suicide mortality, including attitudinal and cohort effects.

Results: Expressions of suicide acceptability are predictive of subsequent death by suicide—in some cases associated with a twofold increase in risk. Attitudes elevate the suicide hazard among older (>55 years) adults but not among younger (ages 33–54) adults. Fully-adjusted models reveal that the effects of attitudes toward suicide acceptability on suicide mortality are strongest for social circumstances (family dishonor; bankruptcy).

Discussion: Results point to the role of cultural factors and social attitudes in suicide. There may be utility in measuring attitudes in assessments of suicide risk.

Keywords: Attitudes and beliefs, Cohort, Life course, Suicide

Total suicide rates in the United States show considerable variation over the life course, with the risk peaking for women in midlife and escalating rapidly for men after the age of 65, although these patterns vary by race and ethnicity (Canetto, 2017). Since 1999, the risk for suicide has risen markedly among American men and women aged 35–74 years, especially among whites. For all men aged 45–64 years, suicide rates increased from 20.8 to 29.7 per 100,000 (42.9%); for women in that age group, they rose from 6 to 9.8 per 100,000 (63.3%) (Curtin, Warner, & Hedegaard, 2016). Considerable work has investigated suicide among the older population (e.g., Conwell, Duberstein, & Caine, 2002), but only in recent years, in the wake of rapidly rising rates, have researchers begun to explore suicide in midlife (Case & Deaton, 2015; Phillips, Robin, Nugent, & Idler, 2010; Phillips, 2014).

Research increasingly points to the important role of attitudes and cultural scripts in producing suicide risk. Canetto and colleagues (e.g., Canetto, 2017; Winterrowd, Canetto, & Benoit, 2017) argue that individuals draw on cultural scripts, a set of shared expectations about suicidal behavior, when determining whether and how to die by suicide and posit that these scripts shed light on the epidemiology of suicide. These studies tend to be theoretical in...
approach or based on unique and/or small samples. Other researchers have linked expressions of suicide acceptability to certain forms of suicidal behavior such as suicidal ideation (e.g., Eskin, Palova, & Krokavcova, 2014; Galynker et al., 2013; Joe, Romer, & Jamieson, 2007), although they focus almost exclusively on adolescents and/or high risk populations (but see Feigelman, Rosen, & Gorman, 2014). How such attitudes toward suicide acceptability affect actual suicide mortality in the general population and over the life course is an open question and a critical one given the recent increases in U.S. suicide rates.

In this article, we take advantage of a population-based prospective data set—the General Social Survey administered to respondents between 1978 and 2010 and linked to the National Death Index (GSS-NDI) through 2014—to investigate these issues. In particular, we ask the following questions: (a) Are expressions of suicide acceptability under certain circumstances predictive of subsequent death by suicide in the general U.S. population?; and (b) Are there differences in the association between attitudes toward suicide acceptability and suicide mortality across the life course/by cohort?

The Role of Attitudes and Cultural Scripts in Producing Suicide Risk in the United States

Most sociological research on suicide mortality over the life course adopts a Durkheimian perspective, emphasizing the role of external influences (e.g., family; religion; employment) that affect levels of social integration and regulation in Western European cultures (Cutright, Stack, & Fernquist, 2007; Gibbs, 2000; Joiner, 2007; Nisbet, Duberstein, Conwell, & Seidlitz, 2000). Yet, in addition, ideas and beliefs are undoubtedly important agents in suicide, a notion that originated with Tarde (1903). A contemporary of Emile Durkheim, Tarde theorized that shared ideas, such as those defining suicide as a positive or negative act, develop through social interaction, exposure and imitation. Investigations of suicide contagion or suicide clusters (Gould, Wallenstein, & Davidson, 1989, 1990; Romer, Jamieson, & Jamieson, 2006) and the role of the media in affecting suicidal behavior (Phillips & Carstensen, 1986) support elements of Tarde’s thesis. Ideas embodied in religious teachings have also been tied to suicidal behavior. In the United States, not only may religious attachments tend to reduce the likelihood of dying by suicide by promoting social connections and belongingness (Durkheim, 1951; Pescosolido & Georgianna, 1989; Robins & Fiske, 2009), they can also instill certain beliefs incompatible with suicide.

More recent formulations of Tarde’s theory are embodied in cultural script theory, which posits that cultures vary in their definitions or “scripts” of when the act of suicide is acceptable, and by whom and which methods. Individuals draw on such cultural scripts when determining whether and how to die by suicide and when attempting to make sense of others’ suicide deaths. Canetto and colleagues (Canetto & Sakinofsky, 1998; Canetto, 2017; Winterrowd et al., 2017) use cultural script theory to provide insight into, among other social facts, the gender paradox in suicide—the fact that in most Western countries, women have higher rates of suicidal ideation and attempts than men, yet men are more likely to die by suicide. Cultural norms about suicide and notions of masculinity produce actual differences in rates and methods of suicide (e.g., men are expected to, and therefore do, use more lethal means such as firearms) as well as reporting practices by coroners (Canetto & Sakinofsky, 1998; Canetto, 2008). Similarly, European American (hereafter, white) men appear less psychologically equipped to cope with aging challenges, such as physical illness and disability, widowhood, and retirement. For older white men in Western society, suicide may be viewed as a masculine response to the loss of status, control and power that accompanies aging (Canetto, 2017). Other studies indicate that more generally, suicide is perceived as a reasonable reaction to aging and/or serious illness (e.g., Stice and Canetto 2008; Winterrowd et al., 2017; Williams & Segal, 2017). In sum, expectations and attitudes about behaviors such as suicide clearly differ by context, are heavily influenced by culture, and may produce variation in suicide across sociodemographic groups.

When Is Suicide Deemed Acceptable?

Studies of cultural scripts point to the importance of personal physical illness in perceptions of suicide in the United States (Canetto, 2008; Stice & Canetto, 2008; Winterrowd et al., 2017). Physical illness has also been linked to more accepting views of suicide in psychological studies (e.g., Ingram & Ellis, 1995; Range & Martin, 1990), a pattern that is apparent in recent U.S. trends in suicide acceptability. Since 1999, six U.S. states have legalized physician-assisted suicide, and about two thirds of U.S. adults now view assisted suicide as morally acceptable (Lipka, 2015). A study of mostly white respondents revealed that suicide is perceived as a somewhat rational and selfless response to the difficult circumstances that accompany aging and physical illness (Winterrowd et al., 2017). Individuals may wish to avoid becoming a burden to their family members (Sullivan, Hedberg, & Hopkins, 2001) and/or anticipate significant and inevitable declines in quality of life (Wilson et al., 2000). Studies of suicide mortality demonstrate that physical illness is indeed associated with higher risk in older adults (e.g., Conwell, Van Orden, & Caine, 2011), but we don’t know how attitudes toward suicide in the case of terminal illness or general fatigue with life affect subsequent risk of suicide mortality.

Americans appear far less accepting of suicide in public or social circumstances such as family dishonor or financial ruin (Range & Martin 1990; Winterrowd et al., 2017), in contrast to some Asian cultures that view suicide as an appropriate way to atone for social disgrace (Louie,
Suicide Acceptability over the Life Course

Substantial work investigates young adults’ varying attitudes and cultural scripts regarding suicide under different circumstances, specifically that they perceive suicide to be more acceptable in cases of physical illness than mental illness (e.g., Droogas, Siiter, & O’Connell, 1983; Ingram & Ellis, 1993; Range & Martin, 1990). However, less research examines whether and how life course stage affects attitudes and cultural scripts. What does exist suggests the presence of age-related differences in suicide attitudes. Evidence based on nationally-representative samples of Americans indicates that older adults are more opposed to suicide (Pew Research Center, 2013; Sawyer & Sobal, 1987), although other studies based on smaller samples suggest the opposite (Segal, Mincic, Coolidge, & O’Riley, 2004; Winterrowd et al., 2017). Winterrowd et al. (2017) found that young and older adults consider suicide more acceptable when committed by older adults, perhaps because suicide in cases of physical illness tends to be viewed as acceptable and serious illness is more common and debilitating in later life. These patterns suggest that expressions of suicide acceptability may be a stronger marker for suicide risk at older ages.

Additionally, individuals may hold attitudes and draw upon cultural scripts surrounding suicide in different manners and to varied effect based on life course stage. As older adults, particularly white males, are at higher risk of suicide than other age groups, understanding the link between attitudes, scripts, and behavior is particularly important for suicide prevention. Canetto and colleagues argue that older European men are hindered by rigid coping mechanisms and self-concepts that are heavily influenced by hegemonic masculinity scripts (Canetto, 2017; Winterrowd et al., 2017). It is possible that in midlife, social support systems and responsibilities (e.g., children, employment) reinforce hegemonic masculine roles and deter suicide, protections that tend to disappear in older age. As a result, the masculinity cultural script may shift for older white men from “protector and provider” in midlife to “rational response to declining health and status” in later life (Winterrowd et al., 2017). With fewer social supports in older age, cultural scripts pertaining to burdensomeness may be activated for both men and women who generally find suicide acceptable.

Finally, age-based differences exist in how emotions function with respect to decision making. Older adults focus more on positive aspects of interactions and relationships and have less negative reactions to upsetting situations (Birditt & Fingerman, 2003; Carstensen, Fung, & Charles, 2003). Enhanced emotional regulation among older adults suggests that impulsive suicide deaths will be less common. Yet, at the same time, aging changes the risk and protective environment, and long held beliefs that suicide is acceptable in some circumstances may be tied to other more rational forms of suicide at older ages (Van Orden et al., 2010).

Study Contribution

This study adds to existing knowledge about the relationship between attitudes toward suicide acceptability and subsequent risk of death by suicide in three ways. First, to our knowledge, this is the first study to examine the link between attitudes toward suicide acceptability and subsequent risk of suicide mortality in the general adult population using nationally-representative U.S. data. Second, this study uses multiple measures of suicide acceptability, with attention to how private and public circumstances related to suicide acceptability are differentially associated with risk of suicide mortality. Finally, we explore whether life course stage matters for (a) attitudes toward suicide acceptability and (b) the relationship between attitudes toward suicide acceptability and suicide mortality risk.

Data and Methods

Data

To address these questions, we use the 1978–2010 General Social Survey (GSS) data linked to the National Death Index (NDI), assembled by the National Opinion Research Council (NORC). The surveys are administered bi-annually to a nationally representative non-institutionalized sample of U.S. residents aged 18 years and older and gather information on demographic and socioeconomic characteristics of respondents, as well as rich detail on their attitudes and beliefs. All 1978–2010 GSS respondents were matched to death certificate data from 1979 to 2014 (see Muennig, Johnson, Kim, Smith, & Rosen, 2011 for details). The resulting data set provides an excellent opportunity for social epidemiologists to examine the relationship between social characteristics and mortality over time.
We restrict our analysis to respondents aged 33 years and older at the time of the survey for several reasons. First, suicide risk rises for men and women in their thirties and beyond, especially for men in older age (Phillips, 2014), although little is known about attitudes and their effect on suicidal behavior at these older age ranges. Additionally, the restriction enables us to compare risk of suicide of prewar (born prior to 1946) and postwar (born after 1945) cohorts. Of the 31,838 respondents ages 33 years and older at the time of the survey, 11,163 (35.1%) have a recorded death age over the study period, 107 of which were by suicide. Suicide is a rare cause of death, but the data set contains sufficient numbers of suicide deaths to conduct analyses (Allison, 2012). Deaths included in the GSS-NDI were classified according to both the 9th and the 10th revisions of the International Classification of Diseases (ICD) for decedents from 1979–1998, and 1999 and after, respectively. We identified respondents who died by intentional self-harm or suicide using the following ICD codes: ICD-9 codes E950-E959 and ICD-10 codes U03, X60-X84, Y72-Y74. Comparative studies find a high degree of consistency between the two classification schemes for suicide deaths (Anderson, Miniño, Hoyert, & Rosenberg, 2001). Nonetheless, measurement of suicide is impeded by misclassification of some suicides as accidental or as undetermined in official mortality data (Cooper & Milroy, 1995).

Our primary independent variables of interest are attitudes toward suicide acceptability. The GSS administers a module to a random sample of two-thirds of the respondents, in which agreement with the right to kill oneself under four circumstances is assessed. The questions require a yes (coded as 1) or no (coded as 0) answer to the acceptability of suicide under the following conditions: bankruptcy, dishonoring the family, an incurable disease, and tired of living with a desire to die.

Attitudes toward suicide are influenced by a wide range of factors, many of them reflecting levels of social integration and regulation that also affect the risk of suicide completion (Cutright et al., 2007; Fernquist & Cutright, 1998; Gibbs, 2000; Joiner, 2007; Nisbet et al., 2000; Qin & Mortensen, 2003; Singh & Hiatt, 2006; Straynski & Boyer, 2001). These factors are important to incorporate in analyses to account for the possibility of spurious associations between suicide acceptability and suicide mortality. We thus control for three sets of risk/protective factors for death by suicide that capture degree of social isolation, other attitudes and belief systems, and demographic characteristics of respondents. Because of the small number of suicide deaths, we restricted the total number of predictors to 10 or 11 in the final multivariate models.

We incorporate several measures of social isolation into the analyses, including measures of family connections (whether a person is married, has children of his/her own and has siblings), living arrangements (whether a respondent reported living alone at the time of the survey), and religious participation (how frequently a person attends religious services). Those respondents who are less socially connected (i.e., not married, no children, an only child, living alone, never attends religious services) are coded as 1. All other categories for each variable are coded as 0.

We capture additional facets of attitudes and belief systems by including an indicator of whether a respondent expresses a belief in the afterlife (no belief = 1, belief = 0) and whether a respondent reports being not happy versus somewhat happy/happy (not happy = 1, somewhat happy = 0). In exploratory analysis, we considered additional measures of religion: religious affiliation and intensity. In the fully-adjusted models, these were not found to be statistically significant. We selected two variables to capture different dimensions of religion: attendance at religious services (a measure of social support) and belief in the afterlife (a measure of religious beliefs).

Finally, we control for several demographic variables associated with suicide risk and attitudes toward suicide acceptability. We control for sex (male = 1, female = 0) (Fernquist & Cutright, 1998) and race (white = 1, nonwhite = 0), and distinguish between respondents born in the postwar period, namely those born after 1945 (coded as 1) and those born earlier (coded as 0). We control for nativity in all analyses (native-born = 1, foreign-born = 0) (Singh & Siahpush, 2006). We control for social class through a measure of whether or not a person has earned a college degree (college degree = 1, no degree = 0) (Buryi & Scott, 2014; Stack & Kposowa, 2008).

For variables measured in each GSS iteration to the full sample, data are missing for only a small fraction of cases (less than 4% for most variables). However, responses to the question about happiness are missing in 10.7% of cases, and the questions about attitudes toward suicide and belief about the afterlife are administered to a two-thirds random sample of respondents and thus missing for a larger fraction of cases (35.3%–43.7%). Details are provided in Table 1.

We use 40 multiply imputed data sets to estimate these values in all analyses (White, Royston, & Wood, 2011).

The average age at time of interview for the 31,838 respondents included in the analysis was 52.2 years. About half (49.56%) were born after WWII, and the majority were white (82.3%) and born in the United States (91.2%). About a quarter (23.2%) earned a college degree, and about a third (32.3%) were unmarried at the time of interview. A majority (54.1%) expressed a belief that suicide is acceptable in the case of an incurable disease, but far fewer reported tolerant attitudes under other circumstances. About 15% found suicide acceptable in the case of tired of living, and 8% found it acceptable for bankruptcy and family dishonor. Table 1 contains complete descriptive statistics.

### Methods

We establish sociocultural variation in attitudes by assessing the bivariate association between attitudes toward suicide acceptability and the other independent variables using binary logistic regression. We then estimate the effect of
attitudes toward suicide (recorded at an earlier stage in life) on dying by suicide using Cox proportional hazard models (Allison, 2010). We use age in years to identify the hazard of death in the survival models, where respondents who had not died or died from some other cause by the end of the study period are treated as right-censored. Thus, all results are adjusted for age, an important confounder since suicide risk is closely linked to age (Korn, Graubard, & Midthune, 1997). We report all results as hazard ratios, or the ratio of the chance of dying by suicide to the chance of any other outcome.

We first estimate four baseline models, which provide the unadjusted hazard ratio for attitudes toward suicide under the four different circumstances. We then sequentially add different groups of predictors to determine the extent to which they may mediate the effect of suicide attitudes on the hazard of dying by suicide. Given well-known gender differences in suicide risk over the life course (Maris, Berman, Silverman, & Bongar, 2000), the proportional hazards assumption is likely violated so we allow for a differing hazard as a function of age for men and women. We use the stsplit option in Stata to estimate a separate hazard ratio for men relative to women for ages 33–54 years and ages 55 years and older. To examine whether the association between attitudes and suicide mortality is the same over the life course, we also allow attitudes to have a different effect on the suicide hazard by age. All analyses are conducted in Stata 14 and are adjusted using both the primary sampling unit and weights. Following the American Statistical Association’s recommendations, we report specific p values and significance levels (Wasserstein & Lazar, 2016).

Results

Table 2 displays bivariate logistic regression results of attitudes toward suicide acceptability on respondent characteristics. The associations between demographic characteristics, degree of social isolation and other attitudes and beliefs and attitudes toward suicide acceptability are similar across the four circumstances. Where there are exceptions, they are with the case of incurable disease.

The bivariate associations indicate that attitudes toward suicide acceptability vary by age, time period, and birth cohort. Those who are older tend to be less accepting of suicide under all circumstances except tired of living. Over the study period, we observe an increase in the odds of finding suicide acceptable under all four conditions. For example, the odds of finding suicide acceptable in the case of an incurable disease increase by 1.03 for each year in the survey. In other words, the odds of a respondent interviewed in 2010 reporting that suicide is acceptable are 2.65 (1.03^31) times that of someone interviewed in 1978. Finally, we observe cohort differences in attitudes toward suicide, with respondents who are members of the postwar cohort expressing more liberal attitudes.

Consistent with past work (Stack & Kposowa, 2008; Stack, 1998; Winterrowd et al., 2017), male and white respondents are more likely to find suicide acceptable than are their female and non-white counterparts. For example, men have about 1.5 times the odds of women of reporting that suicide is acceptable under any of the four conditions asked. Other characteristics largely conform to theoretical expectations. For instance, those who are more socially isolated, as measured by not being a parent and not attending religious services, are more likely to find suicide acceptable across all four conditions. Those who are not married or live alone have higher odds of finding suicide acceptable in all circumstances except the case of an incurable disease. Those who rate themselves as not very happy tend to have higher odds of reporting suicide acceptable (except in the case of incurable disease), but the association is smaller and significant at the 5% level only in the case of tired of living.

Table 3 presents nested weighted Cox regression models of the hazard of suicide death. Model 1 displays the unadjusted suicide morality hazard associated with each suicide acceptability attitude. Expressing a belief that suicide is acceptable raises the hazard of dying by suicide under all four conditions, although results are marginally
significant in the cases of bankruptcy and tired of living ($p < .10$). For example, the risk of dying by suicide is $2.39$ and $1.76$ times higher among those who reported that suicide is acceptable in the case of family dishonor and incurable disease, respectively. Given the descriptive results showing that people tend to become less approving of suicide as they age, we tested the proportional hazard assumption that the association between attitudes and suicide mortality is the same at all ages. In the cases of family dishonor, bankruptcy, and tired of living, we found a larger effect of attitudes on the suicide hazard for those aged 55 years and older. For instance, the risk of suicide death among individuals aged 55 years and older is $224\%$ higher (hazard ratio [HR] = $3.24$; $p < .05$) for those who reported that suicide is acceptable in the case of bankruptcy. For those aged 33–54 years, the risk of suicide is just $4.8\%$ higher among those who expressed support for suicide in the case of bankruptcy, and the hazard ratio is not statistically significant. However, these age-related differences in the association between attitudes and suicide mortality are not statistically significant and so should be interpreted with caution.

Model 2 adds demographic controls, including characteristics such as sex and race that are known to be associated with both suicide mortality and attitudes toward suicide. As expected, these demographic characteristics mediate some of the association between suicide attitudes and the suicide hazard (largely due to the control for sex), but for three of the four circumstances, we continue to find a large effect of suicide attitudes on the suicide hazard among those aged 55 years and older ($p < .0.05$ or $<.10$). The suicide hazards among those aged 55 years and older are $2.9$, $2.6$, and $2.1$ higher among those who express support for suicide in the cases of family dishonor, bankruptcy, and tired of living, respectively. These patterns are largely unchanged when measures of social isolation are controlled in Model 3. Once other attitudes and beliefs are included in the fully adjusted model (Model 4), the suicide hazard for those 55 and older is slightly reduced (primarily attributable to self-reported happiness levels) but nonetheless remains over twice as large among those believing suicide is acceptable in the case of family dishonor and bankruptcy. Those who believe suicide is acceptable when one is tired of living also exhibit a higher suicide hazard over ages 55, but the result is no longer statistically significant (HR = $1.88$; $p = .11$). For all circumstances and in all models, including the baseline model, we find no difference between those who find suicide acceptable and those who do not in the suicide hazard for the ages 33–54 years.

Table 4 displays the complete results for the fully adjusted model (Model 4 of Table 3) for each of the four circumstances. Other respondent characteristics are important in predicting suicide completion. Males have a higher suicide hazard than females at ages 33–54 years and at ages above 55 years. Looking at the model that includes attitudes toward suicide acceptability in the case of family dishonor,
Table 3. Nested Weighted Cox Regression Models of Suicide Mortality Risk on Suicide Attitudes

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Unadjusted</td>
<td>M1 + demographic</td>
<td>M2 + social isolation</td>
<td>M3 + attitudes/beliefs</td>
</tr>
<tr>
<td>Suicide acceptable if</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dishonor family (overall)</td>
<td>2.388 .006*</td>
<td>1.995 .028*</td>
<td>1.968 .033*</td>
<td>1.803 .067†</td>
</tr>
<tr>
<td>Dishonor family (ages 33–54)</td>
<td>1.485 .440</td>
<td>1.299 .612</td>
<td>1.282 .635</td>
<td>1.196 .732</td>
</tr>
<tr>
<td>Dishonor family (ages 55+)</td>
<td>3.724 .002*</td>
<td>2.941 .011*</td>
<td>2.897 .012*</td>
<td>2.605 .027*</td>
</tr>
<tr>
<td>Bankrupt (overall)</td>
<td>1.922 .064†</td>
<td>1.622 .171</td>
<td>1.592 .196</td>
<td>1.450 .305</td>
</tr>
<tr>
<td>Bankrupt (ages 33–54)</td>
<td>1.048 .935</td>
<td>0.918 .882</td>
<td>0.901 .858</td>
<td>0.839 .764</td>
</tr>
<tr>
<td>Bankrupt (ages 55+)</td>
<td>3.240 .014*</td>
<td>2.610 .043†</td>
<td>2.559 .048†</td>
<td>2.274 .087†</td>
</tr>
<tr>
<td>Incurable disease (overall)</td>
<td>1.758 .042*</td>
<td>1.457 .179</td>
<td>1.454 .191</td>
<td>1.375 .274</td>
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<tr>
<td>Incurable disease (ages 33–54)</td>
<td>1.568 .229</td>
<td>1.358 .423</td>
<td>1.358 .430</td>
<td>1.302 .496</td>
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<tr>
<td>Incurable disease (ages 55+)</td>
<td>1.992 .102</td>
<td>1.581 .276</td>
<td>1.573 .283</td>
<td>1.469 .372</td>
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<td>Tired of living (overall)</td>
<td>1.733 .073†</td>
<td>1.478 .206</td>
<td>1.465 .224</td>
<td>1.358 .337</td>
</tr>
<tr>
<td>Tired of living (ages 33–54)</td>
<td>1.126 .797</td>
<td>1.010 .983</td>
<td>1.005 .992</td>
<td>0.942 .901</td>
</tr>
<tr>
<td>Tired of living (ages 55+)</td>
<td>2.581 .014*</td>
<td>2.077 .056†</td>
<td>2.049 .063†</td>
<td>1.877 .107</td>
</tr>
</tbody>
</table>

Note: †p < .10, *p < .05. Results are based on results from forty imputations. Number of respondents = 31,838. Number of suicide deaths = 107. HR = Hazard ratio.

Model 1 includes suicide attitude only; Model 2 adds demographic characteristics (sex; postwar cohort; race; college degree; native born); Model adds demographic and social isolation (only child; live alone; doesn't attend religious services) controls; Model 4 adds demographic, social isolation and attitudes/beliefs (not happy; doesn't believe in afterlife) variables.

Suicide hazard associated with suicide attitude estimated for all ages together (ages 33 and older) and for ages 33–54 and 55 plus separately.

Table 4. Weighted Cox Regression Models of Suicide Mortality Risk on Select Covariates

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
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<tbody>
<tr>
<td></td>
<td>Dishonor Family</td>
<td>Bankruptcy</td>
<td>Incurable Disease</td>
<td>Tired of Living</td>
</tr>
<tr>
<td>Suicide attitude (ages 33–54)</td>
<td>1.196 .732</td>
<td>0.839 .764</td>
<td>1.302 .496</td>
<td>0.942 .901</td>
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<tr>
<td>Suicide attitude (ages 55+)</td>
<td>2.605 .027*</td>
<td>2.274 .087†</td>
<td>1.469 .372</td>
<td>1.877 .107</td>
</tr>
<tr>
<td>Demographic</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Postwar Cohort</td>
<td>1.575 .130</td>
<td>1.580 .127</td>
<td>1.539 .154</td>
<td>1.580 .127</td>
</tr>
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<td>Male (ages 33–54)</td>
<td>2.927 .001*</td>
<td>2.947 .001*</td>
<td>2.891 .001*</td>
<td>2.941 .001*</td>
</tr>
<tr>
<td>Male (ages 55+)</td>
<td>5.947 .000*</td>
<td>6.010 .000*</td>
<td>6.022 .000*</td>
<td>5.963 .000*</td>
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<td>White</td>
<td>1.509 .199</td>
<td>1.519 .193</td>
<td>1.455 .252</td>
<td>1.511 .199</td>
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<td>Native-Born</td>
<td>0.785 .477</td>
<td>0.782 .471</td>
<td>0.774 .450</td>
<td>0.779 .463</td>
</tr>
<tr>
<td>College degree</td>
<td>1.145 .573</td>
<td>1.178 .498</td>
<td>1.187 .472</td>
<td>1.189 .476</td>
</tr>
<tr>
<td>Social Isolation</td>
<td></td>
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</tr>
<tr>
<td>Only child</td>
<td>1.714 .286</td>
<td>1.717 .284</td>
<td>1.730 .276</td>
<td>1.735 .277</td>
</tr>
<tr>
<td>Lives alone</td>
<td>1.679 .019*</td>
<td>1.700 .016*</td>
<td>1.687 .017*</td>
<td>1.689 .018*</td>
</tr>
<tr>
<td>Doesn't attend services</td>
<td>0.682 .183</td>
<td>0.699 .212</td>
<td>0.686 .193</td>
<td>0.691 .195</td>
</tr>
<tr>
<td>Attitudes / Belief Systems</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-reports as “not very happy”</td>
<td>1.800 .046*</td>
<td>1.808 .044*</td>
<td>1.836 .039*</td>
<td>1.821 .041*</td>
</tr>
<tr>
<td>No belief in afterlife</td>
<td>1.623 .092†</td>
<td>1.651 .078†</td>
<td>1.648 .080†</td>
<td>1.654 .077†</td>
</tr>
</tbody>
</table>

Note: †p < .10, *p < .05. HR = Hazard ratio.

Results are based on results from forty imputations. Number of respondents = 31,838. Number of suicide deaths = 107.
the chances of dying by suicide are 2.9 times greater for men than women in the age range 33–54 but that hazard ratio increases to almost 6 for men relative to women over age 55. This pattern is consistent with national-level mortality data showing that suicide rates for men and women diverge markedly after age 55. Living alone is predictive of subsequent suicide mortality (HR = 1.7; p < .05). Finally, expressions earlier in life of being unhappy and of not believing in an afterlife are associated with higher chances of dying by suicide. Those who self-report as not very happy are about 1.8 times more likely to die by suicide (p < .05). Those who don’t express a belief in an afterlife have a suicide hazard about 1.6 times those who do report that belief (p < .10).

Discussion

Our findings reveal that expressions of suicide acceptability are predictive of subsequent death by suicide within the general population—in some cases associated with a twofold increase in risk. However, the effects of attitudes toward suicide acceptability on suicide mortality vary significantly by circumstance. Suicide acceptability in the case of an incurable disease was not associated with suicide completion once demographic and other controls were considered. The link between suicide acceptability and suicide mortality was also somewhat weaker in the case of tired of living; in the fully-adjusted model when expressions of happiness were controlled, the association no longer remained significant. The strongest effects of suicide acceptability were detected in the cases of family dishonor and bankruptcy, both of which remained significant in the fully-adjusted models.

Social circumstances are more likely to be public in nature, to be viewed as within the individual’s control, and to have negative repercussions for loved ones, with the potential to produce more shame and stigma. In contrast, the conditions of incurable disease or tired of living are more indicative of physical or mental illness for which the individual may feel less responsibility. A majority (54%) of respondents expressed tolerant attitudes toward suicide in the case of incurable disease (perhaps because death is viewed as inevitable anyway), suggesting that it is a more normative view not indicative of an underlying propensity toward suicidal behavior. In contrast, respondents were least likely to find suicide acceptable in cases of family dishonor and bankruptcy. Expressions of support for suicide in those social circumstances may be selective of those most susceptible to social pressures and feelings of burdensomeness, which are closely tied to suicidal risk (Joiner, 2007).

We found some interesting differences in the link between suicide acceptability and suicide mortality by age—attitudes appear to elevate the suicide hazard among older (>55 years) adults but not among younger (ages 33–54 years) adults. In all cases, the magnitude of the effect of attitudes toward suicide acceptability on suicide mortality is greater for individuals aged 55 years and over than for individuals aged 33–55 years. Although these differences by age are not statistically significant (in all likelihood due to limited power), the results are suggestive and we consider possible explanations for the patterns given the impending increase in the number of individuals with more accepting attitudes toward suicide who will be reaching older age. Supplemental analyses (see Supplementary Appendix) revealed that these patterns are driven largely by men; we do not have sufficient numbers of female suicides to estimate reliable models for women only.

At first blush, the pattern of stronger effects at older age ranges is surprising as older people are often better able to regulate their emotions and exhibit less intense negative reactions to stressful situations (Birditt & Fingerman, 2003; Carstensen et al., 2003). Yet, it is well established that suicide rates escalate rapidly for men after the age of 65, making older men the demographic group at highest risk (Phillips, 2014). In older age, social ties diminish due to retirement and widowhood, and feelings of burdensomeness and thwarted belongingness may increase as a result of physical decline and reduced mobility (Van Orden & Conwell, 2011). Those expressing suicide acceptability may be more likely to buy into cultural scripts that are influenced by notions of hegemonic masculinity and define suicide as an appropriate response to such adverse consequences of aging (Winterrowd et al., 2017). Men finding suicide acceptable in social situations such as family dishonor and bankruptcy may become especially vulnerable to suicide completion as they lose important protections against suicide. Perceived burdensomeness is a major risk factor for suicidal behavior in older adults (Cukrowicz, Cheavens, Van Orden, Ragain, & Cook, 2011).

The seemingly stronger effect of attitudes on suicide mortality at older ages may also be a function of age, period, and cohort effects and the shifting distribution of attitudes across these various time dimensions. Those who were older at the time of interview and/or who were interviewed during earlier waves of the GSS were less likely to express tolerant attitudes toward suicide. Of the 107 respondents who died by suicide, half (54) died at the age of 55 years or older, and these individuals were almost 18 years older on average at the time of interview (57.9 years old compared to 40.4 years old for those who died before age 55). These individuals were also somewhat more likely to have been interviewed during the earlier waves of the GSS; the median year of interview for those who died of suicide at age 55 or older was 1990, compared to 1995 for those who died before age 55. Thus, those respondents who died after age 55 and expressed tolerance toward suicide were particularly unique, given their older age, context and membership in the Silent Generation. As a group, these individuals were less likely to talk about feelings and hardship and to be diagnosed with mental illness (Currin, Hayslip Jr., Schneider, & Kook, 1998; DiGiacomo, Lewis, Nolan, Phillips, & Davidson, 2013); the expression of a liberal attitude may tap more strongly into some underlying propensity for suicidal behavior.
Research that explores the reasons for more (or less) permissive attitudes toward suicide over these time dimensions is needed. Theoretical work has delineated how attitudes may affect suicidal behavior, but this study is among the first to document that such attitudes are predictive of actual death by suicide. Thus, the growing acceptance in the United States toward suicide is troubling—while reducing stigma surrounding suicidal behavior can be beneficial (e.g., suicidal individuals are more likely to seek help), actual endorsement of the act may be perilous. A partial account for rising suicide rates among postwar cohorts may lie in increasingly liberal attitudes toward suicide, particularly with respect to social circumstances. A prominent explanation for the rising suicide rates among white, middle-aged, less educated individuals pertains to a loss of power and status brought about by fundamental changes in the U.S. economy (Case & Deaton, 2015), possibly producing a cultural suicide script among such individuals akin to that surrounding older white men (Canetto, 2017). The greater acceptance of suicide among younger cohorts of Americans raises additional concerns as they move into the older age ranges when the suicide risk for males traditionally increases and attitudes appear to exhibit stronger effects on behavior.

Furthermore, special attention should be directed toward understanding how rising rates of suicide themselves may produce changing attitudes toward the act. Greater exposure to suicide at both the personal and societal levels not only raises the possibility of the act in the minds of others but likely also changes perceptions of and attitudes toward the behavior. Consistent with this notion, Stack & Kposowa (2008) document that individuals living in societies with higher suicide rates report more tolerant attitudes toward suicide. In this study, the direction of causality is well-established, with attitudes toward suicide acceptability measured at an earlier point in time, sometimes many years earlier, and prior to the suicide death. Yet, further insight is needed into the interconnection between suicide acceptability attitudes and suicidal behavior over the life course.

Studies of suicide mortality are usually limited due to the rarity of the event. The lack of statistically significant differences between effects of attitudes on suicide mortality by age is likely due to the relatively small number of suicide deaths. Nonetheless, it is noteworthy that we detected a number of significant effects in our analyses. Results should be interpreted with caution given the extent of missing data on attitudes. However, a complete case analysis yielded the same substantive conclusions about risk factors for suicide mortality; notably, these analyses also established that accepting attitudes toward suicide (except in the case of incurable disease) increased the suicide hazard among those ages 55 years and over ($p < .05$) but not for those between 33 and 54. Future work based on longitudinal panel data would better establish how individual characteristics, including attitudes, change over the life course and relate to suicide risk. Moreover, analyses of data sets that include measures of depression and other behavioral health conditions (e.g., substance misuse and psychotic illness), which may mediate or moderate the relationship between attitudes and suicide mortality, would be valuable.

Given evidence of important differences by sex and race/ethnicity in cultural scripts and attitudes toward suicide alongside differences in sex- and race-specific suicide rates, future work should consider these aspects. Admittedly, this may be challenging given the rarity of suicide; our analyses were based on total suicides to maximize the number of events and statistical power. Qualitative work may shed light on how circumstances are interpreted and attitudes formed along gendered and cultural lines. For example, men and women may interpret the meaning of family dishonor differently due to masculinity norms. Finally, although we find timing differences in the relationship between attitudes toward suicide and suicide mortality, we are unable to disentangle the role of age, period, and cohort in producing some of these patterns, especially those concerning the differing effect of attitudes on suicide mortality by age. More research is needed to understand the mechanisms behind these patterns.

**Conclusion**

Our findings add suicide to a wider body of literature demonstrating the important linkage of attitudes to different types of behavior, such as childbearing and divorce (Amato & Rogers, 1999; Barber & Axinn, 2005). In this regard, our results have broad implications for possible interventions. The findings suggest a need to understand better the impact of media reporting on attitudes as a more distal risk factor for suicide. Current gatekeeping and prevention strategies focus on individual risk factors, such as a prior attempt or history of depression or substance abuse. Public health scholars emphasize the importance of reducing access to lethal means of suicide, given that a substantial number of suicide attempts are impulsive (Beautrais, 2007). Our results indicate that for some proportion of individuals, the decision to die by suicide may be more rational, consistent with long-held attitudes that suicide is acceptable in some circumstances. Recent work points to the potential use of questions about suicide acceptability and religious/moral condemnation of suicide as a screening tool for high-risk patients (Galynker, Yseen, Briggs, & Hayashi, 2015). There may also be utility in adding such questions, informed by gender and cultural norms, to the battery of information gathered in assessments of suicide risk among the general population, both to identify risk and to deepen our understanding of the link between suicide acceptability and suicidal behavior over the life course.
Supplementary Material

Supplementary data is available at The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences online.

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Conflict of Interest

None reported.

References


