

# Gender and Suicide Method: Do Women Avoid Facial Disfiguration?

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**Abstract** This study hypothesizes that women are less likely than men to use suicide methods that disfigure the face. Gender differences in the use of suicide methods that disfigure the face were examined using medical examiner's files of 621 suicides covering a 10-year period from Summit County, Ohio in the U.S. Results showed that while firearms are the preferred method for both women and men, women were less likely to shoot themselves in the head. A series of logistic regression analyses revealed that gender, age, stressful life events and prior suicide attempts were predictors of methods that disfigure the face/head. Significant differences between men and women in correlates of suicide method emerged when the sample was split by gender. The results support the position that women who commit suicide are more likely than men who commit suicide to avoid facial disfiguration.

**Keywords** Suicide · Gendered explanations · Firearms

## Introduction

It has long been popularly held that female victims of suicide prefer methods which, to the extent practicable,

preserve their facial appearance after death. Media coverage of celebrity suicides has only underpinned this belief. For example, the English writer Virginia Woolf drowned herself (Whitworth 2005) and Sylvia Plath, the poet and essayist, used a gas oven to end her life (Kirk 2004). These and other suicides of famous women serve to reinforce the cultural stereotype that women want to preserve their looks even in suicide. Contrast these images with those of well-publicized male suicides over the past century. Ernest Hemingway, the Nobel-winning author, shot himself in the head with a shotgun (Meyers 1985). More recently, musician Kurt Cobain (Cross 2001) and gonzo journalist Hunter S. Thompson (Cohen 2005) both ended their lives with gunshot wounds to their heads. The nature of these notorious suicides supports the notion that men's suicides are aggressive and violent.

Although several studies have compared gender differences in suicide risk, few have examined gender differences in suicide methods, especially those that disfigure the face or head (unless noted, empirical studies are from the United States). Most of the studies that have noted gender differences in methods that disfigure the face were studies of gunshot wound locations among firearm suicides and, as Stack and Wasserman (2009) note, facial disfigurement was not the main focus. Of these studies, two found little gender difference in gunshot wounds to the head (Eisele et al. 1981; Stone 1987), but others reported a larger gender gap (Kohlmeier et al. 2001; Mitchell and Milvenan 1977). For example, Cohle's (1977) analysis of 121 handgun suicides found that 88.9% of men shot themselves in the head compared to 48.4% of women, and Stone (1992) reported that among firearm suicides, 80% percent of men had gunshot wounds in the head/mouth/neck area compared to 67% of women. More recently, Stack and Wasserman's (2009) analysis of 1,412 firearm suicides found a statisti-

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cally significant difference in the percentage of men that shot themselves in the head (85.2%) compared to women (75.5%). Moreover, women were 47% less likely to shoot themselves in the head than men, controlling for age and race/ethnicity.

Explanations for why individuals choose a particular method are lacking in suicide research. A review of the literature found only one study that has examined gender differences in possible motivations for suicide method. It used a sample of college students who were asked to speculate what type of method they preferred if they were to commit suicide, and why (Lester 1988). Female students were 50% more likely than men to choose an overdose of medication, whereas male students were twice as likely as women to choose firearms. Moreover, the largest gender difference in reasons for selecting a specific method was avoiding disfigurement, which factored prominently in women's choice of preferred method, but was of little concern for men.

The current study will examine the extent of gender difference in using suicide methods that disfigure the face using data from a population of deaths ruled as suicide in a Midwestern county in the U.S. Should such a difference exist, the explanations most likely lie in cultural norms about gender behavior and not in gendered explanations such as personal vanity. This approach is justified based on gender theories of suicide behaviors. And inasmuch as gendered views of acts such as suicide can be found outside the U.S., the results should be of interest to suicide researchers in other countries.

### Cultural Scripts and Suicide by Women

Canetto (2008) argues that culture not only influences how suicidal behavior is viewed by societal members, but also provides scripts for acceptable behaviors by gender. In the U.S., for example, the cultural script allows women to both attempt and survive suicide. In contrast, suicide actions contradict the social construction of masculinity as powerful and in control. Because suicide is not viewed as an acceptable option for men, "if they choose that route, they are expected not to survive" (p. 264). With regard to suicide methods, there are three principal gendered ways in which these cultural scripts have been theorized to operate: the beautiful corpse thesis, access to and familiarity with firearms, and women as relational beings.

#### *The Beautiful Corpse Thesis*

Suicidologists have referred to the cultural tendency for women to commit suicide in manners that reflect concern with preservation of physical appearance (Cohle 1977; Maris et al. 2000, p. 294; Stack and Wasserman 2009;

Suter 1976, p. 136–137), giving rise to the 'beautiful corpse thesis' (Schmeling et al. 2001). According to this hypothesis, women are more likely than men to commit suicide in ways that minimize disfigurement of the face and head, such as a drug overdose or carbon monoxide poisoning, instead of using firearms or jumping from heights. The former methods minimize trauma to the physical body whereas the latter methods virtually guarantee it.

Beginning early in childhood, girls are socialized to be concerned with physical beauty. Girls learn that physically attractive women are more desirable to men and fare better in life than women who are not as physically attractive (Buss 1989). There is also evidence that this emphasis on physical beauty operates in Asian (Chuang and Huang 2004) and other cultures (Gottschall 2008).

Their experiences are reinforced by mass media that aggressively market beauty to women and girls (Hentges et al. 2007; Hesse-Biber et al. 2006) and strengthen the notion that girls and women should be attractive (Labre and Walsh-Childers 2003). Studies in the US and the UK have found these media messages have negative effects on female consumers, including lowered self-esteem (Clay et al. 2005; Hawkins et al. 2004; Sanchez and Crocker 2005), and anxiety, depression and anger (Hawkins et al. 2004). Markey and Markey (2009) found that women who were more likely to internalize media messages about physical appearance were also more likely to desire cosmetic surgery.

In sum, girls and women are bombarded with messages from mass media and other sources which tell them that they should be concerned with their physical appearance. The history of female suicide in Western cultures has constructed gendered scripts about suicide wherein a woman intent on taking her life may feel that she is expected to somehow preserve her looks. Thus, the present study should find that women would be less likely than men to use disfiguring methods to suicide.

#### *Familiarity with Firearms*

The second perspective suggests that women are less likely than men to use firearms to suicide because they are less likely to own a gun (as has been found in Australia (Klieve et al. 2009) and the US (Smith and Smith 1995)), and because they are less familiar with firearms (Marks and Stokes 1976). As such, they would not only be less likely than men to use firearms to suicide, but they also might not be successful should they use one. Since very few studies have examined gender differences in method of suicide among attempters, it might be that women do not understand the best way to ensure death by firearm and believe that a gunshot to the torso is as likely to result in

death as a gunshot to the face/head. If this is true, among female suicides one would expect to find a higher rate of gunshot wounds to the torso than is found among male suicides.

### *Women as Relational Beings*

Some have suggested that women are socialized to be relational beings, and as such, are less likely to disfigure their corpse out of consideration for their loved ones (Kaplan and Klein 1989). Rather than a concern over appearance or ignorance about firearms, this script suggests a compassionate stance on the part of the suicidal woman. She does not want to traumatize those who will find her remains, but instead wants to protect them from this experience (Payne et al. 2008).

Given the existing theory and empirical research on gender differences in suicide method, this study should find that women were more likely than men to use suicide methods that would not disfigure their facial appearance. Additionally, among firearm suicides, women should be less likely than men to shoot themselves in the face/head. However, in order to test if the beautiful corpse theory, familiarity with firearms, or women as relational beings influences gender differences in suicide methods, studies would need to examine the reasons *why* individuals chose their method. Since we cannot question the dead, the only other avenue would be to question those that have attempted suicide but survived. But prior research suggests there are problems with generalizing from attempters to completers (see Moscicki 1994). The most oft-cited reason is that some individuals that attempt suicide may not be intent on killing themselves, but instead are signaling to others that they need help. In fact, this stereotype has long been used to explain why women in Western cultures attempt suicide at far higher rates than men, but have much lower rates of suicide completion (see Canetto and Sakinofsky 1998, for review).

Since the data used in this study are of suicide completers, it precludes directly testing the motivations behind choice of suicide method. The data, however, can be used to examine if other factors correlated with gender differences in suicide risk are also relevant to gender differences in suicide method, which has not been done heretofore. Understanding gender differences in suicide method also has important implications for suicide prevention efforts.

### Gender and Correlates of Suicide Risk

There are a host of known correlates of suicide that vary by gender, which might also be correlated with suicide method. First, studies of those who have attempted

suicide and lived, whether it was due to an unsuccessful attempt, interruption, or a change of heart, have found these individuals to be at much higher risk of attempting suicide again (Barber et al. 1998; Rich et al. 1988; Steer et al. 1988). Further, a study of suicide attempters in Sweden found that men were apt to use more lethal means in subsequent attempts than were women (Skogman et al. 2004). Because women in the United States are nearly four times more likely to attempt suicide than men, the analysis examines whether gender interacts with prior suicide attempts in determining choice of suicide method. It is predicted that the higher the number of prior attempts, the higher the likelihood these individuals would use more lethal (and therefore, disfiguring) methods to suicide; namely, using a gun and among those who used a gun, shooting themselves in the head. Moreover, the relationship between prior attempts and gunshot wounds to the head should be stronger for men than for women.

A growing body of research suggests that while the majority of suicide decedents have ongoing mental health problems, the suicide act is often triggered by precipitating stressful events, such as loss of a job, death in the family, or marital dissolution (Hendin et al. 2001; Maltzberger et al. 2003; Mann 2004). Although suicide research has not yet examined these influences across gender, studies have found that women are socialized to openly discuss their problems and emotions whereas men learn to mask problems or react to them with aggression and violence (Payne et al. 2008). Additionally, contact with mental health professionals before suicidal behavior is significantly higher for women than men (Campbell 1997; Luoma et al. 2002). Therefore, the higher the number of stressful precipitating events, the greater the likelihood that men will choose a more lethal method of suicide compared to women and the greater the likelihood that men will shoot themselves in the face/head.

Of particular concern is that those experiencing stressful events may suicide impulsively. The presence of easily available suicide methods, such as a firearm in the home, as well as being intoxicated have been found to increase the odds of impulsive suicide behavior in Scotland (Cavanagh et al. 1999) and the US (Kung et al. 2003; Tewksbury et al. 2010). However, research has not yet determined if alcoholic intoxication increases the odds of using a firearm to suicide, let alone if intoxication is related to shooting oneself in the head.

Nevertheless, research on the relationship between alcohol use and violence against others suggests that intoxication affects cognitive functioning, the ability to read social cues, and the ability to control aggressive behavior (see Bushman 1997 for overview). But as Parker and Rebhun (1995) argue, disinhibition appears selective and conditioned by a complex set of social and cultural

factors. They suggest that when conflicting normative structures about violent behavior exist, individuals must actively choose not to engage in violence to resolve interpersonal conflict. Since the cognitive functioning of intoxicated individuals is impaired, this often precludes them from choosing this option. Although this body of research investigates outwardly directed violence as a response to interpersonal conflict, it seems plausible that the same arguments can be used about the role of alcohol in self-directed violence. In other words, intoxicated individuals under duress from interpersonal conflict or other life stressors may be more inclined to use shoot themselves to end their misery, and perhaps, more likely to shoot themselves in the head. While the data did not include the presence of easily available suicide methods, it did contain blood alcohol content (BAC) at the time of autopsy, which is included in the analyses.

### Control Variables

Age, marital status, and reported history of substance abuse are controlled for in the analytical models since prior research finds these are correlated with suicide behaviors. Studies in Australia and the US have found, for example, that older individuals are less likely to hang themselves than are younger suicide decedents, which has been explained by the physical effort required to kill oneself in this manner (Kosky and Dundas 2000; Kposowa and McElvain 2006; respectively). Additionally, firearm suicides appear to increase with age, especially among men (Moscicki 1995; Tewksbury et al. 2010). Marital status has been found to be related to suicide method; often married individuals are more likely to suicide by firearm. Substance abuse was also included as this is one of the larger covariates of suicide attempts and completions (Conwell and Brent 1995; Kessler et al. 1999; Skogman et al. 2004), which appears to vary by gender. Male suicide decedents in the US and Scandinavia have higher rates of substance abuse disorder than women (e.g., Conwell et al. 1998; Henriksson et al. 1993; respectively), although some studies suggest this gender gap is minimal among younger age suicides (Martunnen et al. 1995; Rich et al. 1988). Given that substance abuse of suicidal persons appears to vary by gender, this variable is added as a control in the models.

Clearly, more research is needed to better understand gender differences in suicide methods. The purpose of this study is to examine these differences using detailed information about suicide decedents from medical examiner's records. Gender differences in suicide methods that disfigure the face/head are explored, as well as gender differences in firearm suicides, and then among firearm suicides, in location of gunshot wound.

### Hypotheses

1. Men will be more likely than women to use a disfiguring method to suicide.
2. Men will be more likely than women to use a firearm to suicide.
3. Of those who use a firearm to suicide, men will be more likely than women to shoot themselves in the head/face.
4. The higher the number of prior suicide attempts, the more likely individuals will use a gun to suicide.
  - a. The relationship will be stronger for men than women.
5. The higher the number of prior suicide attempts, the more likely individuals will shoot themselves in the head.
  - a. The relationship will be stronger for men than women.
6. The higher the number of stressful precipitating events, the greater the likelihood that individuals will use a disfiguring method to suicide.
  - a. The relationship will be stronger for men than women.
7. The higher the number of stressful precipitating events, the greater the likelihood individuals will use a firearm to suicide.
8. The higher the number of stressful precipitating events, the greater the likelihood that individuals will shoot themselves in the head.
9. The higher the blood alcohol content (BAC), the more likely individuals will use a disfiguring method to suicide.
10. The higher the BAC, the more likely individuals will use a gun to suicide.
11. The higher the BAC, the more likely individuals will shoot themselves in the head.

### Method

#### Data

The data used for this study consist of all 621 suicide cases in Summit County, Ohio over a ten-year span, 1997–2006. All suspicious deaths in Summit County are investigated by specialists in the Medical Examiner's Office. The death investigators are required to have police officer certification or a degree in criminal justice, and they receive board certified classroom instruction in death investigation as well as on-the-job training working



alongside an experienced investigator. The Medical Examiner (M.E.) and assistant medical examiners, who conduct the autopsies, are licensed physicians with specialized training in forensic medicine.

Every death inquiry results in three documents: an investigator's report, an autopsy report, and a toxicology screen (either blood or urine, or both). The data used in this study are mainly derived from the investigator's report. Death investigators arrive on the death scene and make a preliminary assessment of the manner of death and circumstances surrounding the event. They determine the location and position of the deceased's body, as well as objects that may have facilitated the death, such as weapons, drugs, ligatures and so forth. They interview law enforcement or other first responders to the scene as well as the person(s) who discovered the deceased. The investigator also attempts to understand the circumstances that led up to the death, by interviewing family members and other intimates, friends, neighbors, and on occasion, the decedent's doctor or other medical or mental health providers. Altogether, the investigator's report details the death event, actions and manner of the decedent in the days and hours before death, as well as known physical and/or mental health problems, substance abuse, and other life circumstances that may have contributed to the suspicious death. The autopsy report, which is prepared by the medical doctors, details the manner and causes of death, as well as any pre-existing physical pathology. The toxicology results denote the type and quantity of any drugs, legal or illegal, in the decedent's system at the time of death. Information from the autopsy, toxicology results, and death investigation is used by the M.E. in determining if the death is a suicide.

After obtaining approval from the Institutional Review Boards at the authors' respective institutions, copies were obtained of each investigative, autopsy, and toxicology report. Every investigative report, including the narrative, toxicology screen and portions of the autopsy report were numerically coded by a team of graduate students and the study authors. In consultation with the M.E., the study authors developed a coding scheme to capture the data in these documents from a pilot sample of twenty cases. Then, each case was independently coded by at least three members of the research team. Meetings between the coders and the study authors were regularly held so that all cases were reviewed and to resolve any coding disagreements. Additionally, each coded record was then checked for accuracy by at least one of the two authors. Items without group consensus were coded as missing. (The data coding technique precluded the use of Cohen's Kappa or other statistics for estimating inter-coding agreement). Approximately twenty percent of all cases were audited by the study authors to check for accuracy of data entry. Of the 621 suicides, 480 were male (77.3%) and 141 were female (22.7%).

Measures

### *Dependent Variables*

The three dependent variables used in the analyses are: 1) any methods with the potential to disfigure the face/head; 2) firearm suicides; and 3) among firearm suicides, gunshot to the head. Each is a dichotomous measure (yes=1, no=0). Suicide methods categorized as disfiguring were jumping from heights, putting oneself in front of a moving vehicle or train, setting oneself on fire, shooting oneself in the face/head, and other (all four other cases involved facial disfigurement, such as setting off an explosive in one's mouth). Hanging, drowning, suffocation, poisoning, cutting, carbon monoxide poisoning, and gunshot wound sites other than the face/head were coded as non-disfiguring.

### *Independent and Control Variables*

The independent variables used in the models are number of prior suicide attempts, number of precipitating stressful events, and BAC at the time of autopsy. Gender, age, marital status, and history of substance abuse (drugs and/or alcohol) are the control variables. Of note, history of substance abuse, number of prior attempts, and number of stressful precipitating events comes from information gathered from family members, friends, and in some cases, attending medical and/or mental health personnel as part of the death investigation report.

Three variables were measured dichotomously – gender (male = 1), marital status (married = 1; never married, divorced, separated, and widowed = 0) and history of substance abuse (yes=1, no=0). Categories coded as zero were the reference categories in the logistic regression models. Age, number of prior attempts, number of stressful precipitating events, and BAC are continuous measures.

The number of stressful precipitating events was an index comprised of eight factors measured dichotomously: 1) loss of job, 2) work-related problems, 3) financial crisis, such as a house foreclosure, 4) being accused or charged with a crime, 5) relationship break-up, 6) upsetting health news about oneself or a close family member, 7) serious family or relationship discord, and 8) death of a close family member, with a possible range from 0 (no stressful precipitating events) to 8 (all stressful precipitating events). Although there may be gender bias in the reporting of stressful precipitating events insofar that women may be more inclined to tell others about their problems, the men in this study actually had a higher mean number of stressful events than women.

## Results

### Descriptive Results

Table 1 displays the distributions of the independent and control variables used in the analyses by gender; specifically, age, married or not married, number of prior attempts, history of substance abuse, the number of stressful precipitating events, and BAC at autopsy. There are statistically significant gender differences for three of these factors. The mean number of prior suicide attempts among female suicides (.70) was nearly three times higher than the mean number of prior attempts by men (.24). Men had more stressful precipitating events than women and also had much higher BAC in their system at the time of death; there were no gender differences in reported substance abuse history.

Table 2 presents the distribution of suicide method by gender. Women were significantly less likely than men to use suicide methods with the potential to disfigure the face/head (38.3% and 48.1%, respectively). Consistent with a number of other studies (e.g., Denning et al. 2000; Romero and Wintemute 2002), women were more likely to commit suicide by poisoning than men (22.0% versus 6.9%, respectively), and less likely to suicide with firearms (38.3% versus 51.8%, respectively). Within firearm suicides, women were less likely to shoot themselves in the head or face. Specifically, 72.2% of the female firearm suicides shot themselves in the head/face compared to 86.3% of the male firearm suicides; these figures are nearly identical to the gender distribution of gunshot wound locations in a recent study of firearm suicides (Stack and Wasserman 2009).

### Multivariate Results

The multivariate analyses consisted of a series of binomial logistic regressions, which are appropriate for dichotomous

dependent variables. Because the dependent variables are not mutually exclusive (e.g., firearms to the head are a subset of all firearm suicides), this precluded the use of multinomial logistic regression. Multicollinearity was assessed with a series of bivariate and partial correlations, and with Variance Inflation Factors (VIF) and tolerance tests of the multivariate logistic regressions. Although VIF and tolerance are normally used to detect multicollinearity in OLS regression models, the form of the dependent variable is irrelevant since the test concerns the multicollinearity among the independent variables (Menard 2002). None of the bivariate or partial correlations were higher than .40, VIF was never above 1.4 and tolerance tests did not fall below .70.

Hypothesis 1: Men will be more likely than women to use a disfiguring method to suicide.

As seen in the model “All Disfiguring Methods to Head/Face” in Table 3, the odds of men using a method that disfigured the face/head was nearly twice that of the odds of women using a disfiguring method (OR=1.896,  $p<.01$ ), supporting Hypothesis 1.

Hypothesis 2: Men will be more likely than women to use a firearm to suicide.

Presented in Table 3, the odds of men using a firearm to suicide were almost 60% higher than the odds of women using a firearm to suicide (OR=1.60,  $p<.05$ ), supporting Hypothesis 2.

Hypothesis 3: Of those who use a firearm to suicide, men will be more likely than women to shoot themselves in the head/face.

As presented in the model “Gunshot to the Head/Face” in Table 3, the odds of men shooting themselves in the head or face were substantially higher than the odds of women shooting themselves in the face (OR=3.483,  $p<.001$ ), supporting Hypothesis 3.

**Table 1** Characteristics of suicide decedents and suicide method by gender

	Total (N=621)	Male (n=480)	Female (n=121)
Age in Years (SD)	45.9 (19.2)	46.4 (19.82)	44.4 (16.77)
Married	30.6%	30.3%	31.9%
Number of Prior Attempts (SD)	.34 (.76)	.24 (.62)	.70 (1.05)***
History of Substance Abuse	22.2%	22.2%	22.1%
Number of Precipitating Stressful Events	.91 (.92)	.96 (.93)	.76 (.86)*
Blood Alcohol Content (SD)	.04 (.08)	.45 (.09)	.03 (.08)*

Mean is reported for age, number of prior attempts, number of precipitating events and blood alcohol content; SD=standard deviation; t-tests were conducted for comparisons of means across gender, chi-square for comparisons of percentages across gender

\* $p<.05$ , \*\* $p<.01$ , \*\*\* $p<.001$

**Table 2** Method of suicide by gender

	Total (N=621)	Male (n=480)	Female (n=121)
Method of Suicide			
“Shot self in the head” is not a mutually exclusive category. Percentages do not add to 100% because suicide methods used by fewer than 2.0% of the sample (such as drowning) were not included in the table. Chi-square statistics used to test for differences across gender * $p < .05$ , ** $p < .01$ , *** $p < .001$			
Hanging or Strangulation	21.4%	23.1%	15.6%
Firearm	48.6%	51.8%	38.3%**
Shot Self in the Head	83.8%	86.3%	72.2%**
Poisoning	10.3%	6.9%	22.0%***
Carbon Monoxide (CO)	5.8%	5.6%	6.4%
Suffocation	2.7%	2.1%	5.0%
Jumped from Height	5.3%	5.2%	5.7%
All Methods that Disfigure	53.3%	48.1%	38.3%***

Hypothesis 4: The higher the number of suicide attempts, the more likely individuals will use a gun to suicide. Hypothesis 4a: This relationship will be stronger for men than women.

As seen in the model “Firearm” displayed in Table 3, Hypothesis 4 was not supported. In fact, the data show a negative relationship between the number of prior attempts and using a firearm to suicide ( $OR = .693$ ,  $p < .01$ ). To test Hypothesis 4a, the odds ratios for the relationship between number of prior attempts and using a firearm to suicide were compared between men and men. To ascertain if the odds ratios were significantly different between men and women, z-scores and their associated probabilities were computed. The test statistic is  $Z = (b_1 - b_2) / \sqrt{(SEb_1^2 + SEb_2^2)}$ ; see Altman and Bland 2003. As shown in Table 5, the number of prior suicide attempts decreases these odds of using a firearm to suicide for both men and women; the absolute z-score = .515 ( $p > .05$ ), suggests there are no gender differences, which does not support Hypothesis 4a that the odds ratio would be even higher for men than women.

Hypothesis 5: The higher the number of prior suicide attempts, the more likely individuals will shoot themselves in the head. Hypothesis 5a: The relationship will be stronger for men than women.

As displayed in the model “Gunshot to the Head/Face” in Table 3, Hypothesis 5 was supported ( $OR = 3.047$ ,  $p < .05$ ). Every prior suicide attempt elevated the odds of shooting oneself in the head by a factor of three. The odds ratio was not higher for men, however, as seen in Table 6 (absolute value z-score = .355,  $p > .05$ ). Thus, no support was found for Hypothesis 5a.

Hypothesis 6: The higher the number of stressful precipitating events, the greater the likelihood individuals will use

a disfiguring method to suicide. Hypothesis 6a: The relationship will be stronger for men than women.

As seen in Table 3 under the model titled, “All that Disfigure Head/Face” the number of stressful events was not related to individuals using a disfiguring method to suicide ( $OR = .943$ ,  $p > .05$ ). Thus, Hypothesis 6 was not supported. Moreover, as shown in Table 4, men were not more likely than women to use a disfiguring method to suicide in response to stressful precipitating events (absolute z-score = .326,  $p > .05$ ). The data do not support Hypothesis 6a.

Hypothesis 7: The higher the number of stressful precipitating events, the greater the likelihood individuals will use a firearm to suicide.

There was no support found for Hypothesis 7. The number of stressful events had no influence on using a firearm to suicide ( $OR = 1.019$ ,  $p > .05$ ), as seen in the model titled “Firearm” in Table 3.

Hypothesis 8: The higher the number of stressful precipitating events, the greater the likelihood individuals will shoot themselves in the head.

Of those individuals that used a firearm to suicide, stressful precipitating events was not related to whether they shot themselves in the head ( $OR = 1.261$ ,  $p > .05$ ), as seen in the model titled “Gunshot to the Head/Face” in Table 3. Thus, the data do not support Hypothesis 8.

Hypothesis 9: The higher the BAC, the more likely individuals will use a disfiguring method to suicide.

As presented in Table 3, BAC was positively correlated with using a disfiguring method, supporting Hypothesis 9. The odds ratio was 1.098 ( $p < .05$ ); meaning that for every one-unit increase in BAC, the odds of using a disfiguring method to suicide increased by nearly ten percent.

**Table 3** Logistic regression coefficients of gender and other suicide-related factors for all suicide methods that disfigured the face/head, involved a firearm, or involved a gunshot wound to the face/head

	All that Disfigure Head/Face ( <i>n</i> =310)			Firearm ( <i>n</i> =302)			Gunshot to the Head/Face ( <i>n</i> =253)		
	b	se	OR	b	se	OR	b	se	OR
Gender (male =1)	.640**	.211	1.896	.445*	.215	1.560	1.248***	.385	3.483
Age	.016**	.005	1.016	.021***	.005	1.021	.001	.010	1.001
Married	.075	.193	1.078	.489**	.195	1.631	-.554	.340	.575
Prior Attempts	-.067	.118	.936	-.366**	.130	.693	1.114*	.522	3.047
History of Substance Abuse	-.594**	.216	.563	-.270	.213	.763	-.483	.444	.617
Precipitating Events	.062	.097	.943	.019	.048	1.019	.232	.217	1.261
Blood Alcohol Content	.094**	1.050	1.098	.300	1.063	1.350	-2.130	1.942	.119
Constant	-1.076***	.320	.341	-1.366***	.327	.255	.645	.642	1.907
Nagelkerke <i>R</i> <sup>2</sup>	.085			.126			.126		

OR odds ratio

†  $p \leq .10$ , \*  $p \leq .05$ , \*\*  $p \leq .01$ , \*\*\*  $p \leq .001$

Hypothesis 10: The higher the BAC, the more likely individuals will use a firearm to suicide.

No support was found for a positive relationship between BAC and the use of firearms to suicide (OR=1.350,  $p > .05$ ), as seen in the model “Firearm” in Table 3.

Hypothesis 11: The higher the BAC, the more likely individuals who used a firearm to suicide will shoot themselves in the head.

No support was found for Hypothesis 11; the odds ratio was .119 ( $p > .05$ ), as shown in Table 3.

#### Exploratory Multivariate Regressions

Although the analyses in Table 3 can ascertain if the various independent variables as well as gender have influence on the three suicide methods, merely controlling for gender does not explain the specific ways in which gender might matter. Splitting the sample by gender can reveal processes

related to method of suicide that may differ between men and women (as was done to test Hypotheses 4a, 5a, and 6a.) Therefore, to examine if the independent variables of the number of prior attempts, number of stressful precipitating events, and BAC interact with gender, the sample was split by gender. Tests for interactions were conducted using Altman and Bland’s (2003) computation to determine if differences in odds ratios between two subgroups (i.e., men and women) were statistically significant.

When the sample was split by gender, interesting differences emerged between men and women. As seen in Table 4, most variables worked similarly across gender. Age elevated the odds of using a disfiguring method for men and women. The number of stressful precipitating events slightly increased the odds of women using a disfiguring method to suicide, but slightly decreased the odds of men using a disfiguring method; however the difference was not statistically significant. Men were less likely to use a disfiguring suicide method if they had a reported history of substance abuse (OR=.554,  $p < .05$ ), but the test for

**Table 4** Logistic regression coefficients and odds ratios of suicide-related factors for suicide methods that disfigure the face/head by gender

Variable	Women ( <i>n</i> =137)		Men ( <i>n</i> =459)	
	Coefficient	OR	Coefficient	OR
Age	.023*	1.023	.014*	1.014
Married	.087	1.091	.136	1.146
Prior Attempts	.285	1.330	-.296†	.744
History of Substance Abuse	-.599	.549	-.570*	.566
Precipitating Events	.411†	1.509	-.181†	.835
Blood Alcohol Content	-4.524	.011	.993	2.699
Intercept	-1.907**	.149	-.244	.783
Nagelkerke <i>R</i> <sup>2</sup>	.108		.083	

OR odds ratio

†  $p \leq .10$ , \*  $p \leq .05$ , \*\*  $p \leq .01$ , \*\*\*  $p \leq .001$



**Table 5** Logistic regression coefficients and odds ratios of suicide-related factors for firearm suicides by gender

	Women ( <i>n</i> =137)		Men ( <i>n</i> =459)	
	Coefficient	OR	Coefficient	OR
Age	.001	1.001	.026***	1.026
Married	.644 <sup>†</sup>	1.905	.488*	1.475
Prior Attempts	-.312	.732	-.409*	.664
History of Substance Abuse	-.437	.646	-.223	.800
Precipitating Events	.218	1.243	-.028	.973
Blood Alcohol Content	.248	1.281	.517	1.667
Intercept	-.674	.509	-1.087**	.337
Nagelkerke <i>R</i> <sup>2</sup>	.080		.133	

OR odds ratio

<sup>†</sup>  $p \leq .10$ , \* $p \leq .05$ , \*\* $p \leq .01$ , \*\*\* $p \leq .001$

interaction determined this relationship was the same for women. The biggest gender difference was for BAC, which significantly lowered the odds of women using a disfiguring method to suicide, but increased the odds of using this method among men.

Table 5 presents the logistic regression coefficients and corresponding odds ratios for firearm suicide by gender. Most factors operated similarly for men and women. Being married increased the odds of using a firearm to suicide; whereas prior attempts decreased these odds. However, among men, the odds of using a firearm to suicide increased significantly with age (OR=1.026,  $p < .0001$ ), but age had no effect on the likelihood of women using firearms to suicide.

Gender differences are even more apparent in gunshot wound location among those who shot themselves. As displayed in Table 6, none of the variables in the model influenced the odds of men shooting themselves in the head. On the other hand, two factors were correlated with the probability of women shooting themselves in the face or head. Specifically, the number of stressful precipitating events elevated the odds of women shooting themselves in the face/head (OR=4.813,  $p < .05$ ). The number of prior attempts also elevated the odds of women shooting themselves in the head, but the odds ratio (6.451,  $p < .10$ ) did not meet the standard criterion of .05 for statistical

significance. None of the women that shot themselves in the head had any trace of alcohol in their bloodstream, which is why this variable was omitted from the model for women. In contrast, BAC had no effect on gunshot wound location among men. (Results for men did not differ when BAC was excluded from the model.)

## Discussion

The results show that women were less likely than men to take their lives using a method that disfigures. Firearms were the most common method of suicide among both genders, but women were less likely than men to use a firearm to suicide and they were less likely to shoot themselves in the face or head. Several variables played key roles in the odds of using a disfiguring method to suicide, and among firearm suicides, of shooting oneself in the head. For example, prior suicide attempts figured prominently and interestingly among factors responsible for the use of firearms and for shooting oneself in the head. The greater the number of suicide attempts, the less likely one was to use a firearm to commit suicide. However, among those who used firearms, those with prior attempts were more likely to shoot themselves in the head.

**Table 6** Logistic regression coefficients and odds ratios of suicide-related factors for firearm suicides with gunshot wound location in the face/head by gender

	Women ( <i>n</i> =39)		Men ( <i>n</i> =214)	
	Coefficient	OR	Coefficient	OR
Age	.006	1.006	.001	1.001
Married	-.488	.614	-.425	.654
Prior Attempts	1.864 <sup>†</sup>	6.451	.860	2.364
History of Substance Abuse	.085	1.089	-.456	.634
Precipitating Events	1.571*	4.813	-.033	.968
Blood Alcohol Content	–	–	.421	1.524
Intercept	-.311	.732	1.956**	7.061
Nagelkerke <i>R</i> <sup>2</sup>	.488		.032	

OR odds ratio

<sup>†</sup>  $p \leq .10$ , \* $p \leq .05$ , \*\* $p \leq .01$ , \*\*\* $p \leq .001$

Splitting the sample by gender revealed differences between men and women who shot themselves in the head that were not apparent when the analyses only controlled for gender. Whereas none of the variables examined played critical roles in whether men shot themselves in the head, two variables emerged as significant for women. Both the number of prior suicide attempts and the number of precipitating events increased the odds of shooting themselves in the face/head. Additionally, none of the women that shot themselves in the face or head had alcohol in their bloodstream at the time of autopsy.

### Cultural Scripts and Suicide

So what, if anything, are we to conclude with regard to cultural scripts and the ways in which they manifest themselves in suicidal behavior? We could argue that if the emphasis on female beauty is central to women's self-worth, we should expect to see far fewer women shooting themselves in the head than we do. Whereas men were much more likely to use firearms to commit suicide than were women, when women used a gun they were more likely to shoot themselves in the head than elsewhere on the body, particularly if they had attempted suicide before. This suggests that for women and girls truly intent on committing suicide, that intent overrides cultural concerns with appearance, casting doubt on the so-called beautiful corpse thesis.

Gender differences in gunshot wound location could also be due to gender differences in familiarity with firearms. Men, due to sociocultural influences, appear to be more familiar with the lethality of firearms. In contrast, lack of knowledge about firearms may lead women to think that a gunshot to the chest is just as likely to bring about death as a gunshot to the head. Thus, the lower rates of female firearm suicides by gunshot wounds to the face/head may also reflect a lack of familiarity with firearms.

To our knowledge, only one study to date has examined gender differences in both access to, and familiarity with, firearms. This study found that almost all males raised in a home where a gun was present reported they were familiar with guns, but significantly fewer women raised in gun-owning households reported being familiar with firearms, although this varied by region (Marks and Stokes 1976). These regional variations in firearm familiarity are reflected in firearm suicide data that find firearm suicide rates for both men and women are highest in regions where gun ownership is also highest (Kaplan and Geling 1998). The question that remains unanswered is how familiarity with guns impacts gender, regional and age firearm suicide rates, but suicide research will not be able to address this until nationally representative data on individual gun ownership is available.

The third cultural script, that women are relational beings who shield survivors from suicide's traumatic aftermath, does not receive overwhelming support from these data. First, women who are married are no more likely to use a disfiguring method to suicide than are women who are not married. Second, the fact that women who were not under the influence shot themselves in the head suggests again that some aspect of suicidal motivation or ideation eclipses concern for those who might later have to view the deceased. So while women may ordinarily demonstrate consideration for loved ones, much like concern for physical appearance, this tendency may be suppressed by the decision to end their lives.

In sum, there was no overwhelming support for the three versions of cultural scripts that theoretically might guide women's suicidal behavior with respect to disfiguring methods. The argument regarding firearm access and familiarity is the most persuasive, but a true test of all three requires more detailed data. So what else might account for gender differences in use of suicide methods that disfigure?

### Alternative Explanations

One of the most consistent findings in the research literature on suicide is that women's rates of suicide completion are far lower than men's. This gender gap is nearly universal but is highest in Western industrialized countries (see Canetto 2008 for discussion). There is a body of work which suggests that women use less violent means of suicide than men because they are less intent on dying. If women were less intent on dying, this means that the percentage of women in the study who shot themselves in the face/head should have been much lower than what was found.

The findings suggest there are two groups of suicide attempters – those who do not necessarily intend to die, and those who intend to die but fail in the attempt (Barber et al. 1998). First, the analyses found that those with prior attempts were less likely to use a gun to suicide, irrespective of gender. The reasons for this are not discernable from the data, but it could be that these individuals were not intent on dying. Of those with prior attempts that used a gun, however, almost all shot themselves in the head. This suggests that a subset of men and women who were serious about dying may have had one or more unsuccessful attempts, but they made sure their subsequent suicide actions were lethal. Of interest, this relationship was stronger among women than men; all of the women who had prior suicide attempts that used a gun to suicide this subsequent time shot themselves in the face/head.

The large number of female suicide attempts relative to men, coupled with the far lower number of completions, has prompted some to suggest that women's suicidal behavior is often an effort at manipulation rather than actual intent to die (Holden and McLeod 2000). According to this position, women choose suicide methods that are less lethal (Kushner 1995). Most studies that examine these gender differences in intent to die have used method choice as a proxy for intent, categorized such as lethal versus non-lethal or violent versus non-violent. As Canetto and Sakinofsky (1998) note, this conflates method with intent. Only a few studies have studied intent to die by interviewing suicide attempters (or completers using the psychological autopsy); those that have find no gender differences among attempters (Canetto and Sakinofsky 1998) or completers (Denning et al. 2000).

Future suicide research should examine the gender-biased assumptions of much of the field, as Canetto (1992) and others have suggested. The field is riddled with empirically unsupported explanations that characterize the suicidal behavior of women as motivated by selfish or trivial concerns. To suggest that women are less likely to shoot themselves in the face or head because they are more concerned with their appearance than men is to minimize what Maris et al. (2000) called the "final desperate act." If anything, the data reveal that women who shoot themselves in the head or face seemed serious about their intent to die. That is, they were more likely than men to have had prior suicide attempts and experienced stressful events in the months prior to their suicide. Less gendered explanations, therefore, will likely yield more promising results for both theory and research on gender differences in suicide.

### Limitations

This study has a number of limitations that must be noted. First, the data derive from one metropolitan county in Ohio, making it impossible to draw inferences about other geographic regions. This limitation is noteworthy since prior studies have found regional differences in firearm suicides among women (e.g., Kaplan et al. 1997). The largest city in Summit County, Ohio is Akron, a rustbelt community whose population has endured the attendant economic and social challenges implied in that term. Consequently, the nature of its suicides may be different from suicides in areas not stricken by industrial decline.

Further, the data cannot reveal what proportion of suicide *attempts* involved gunshots to the head versus gunshots to the torso. It may be that many women who attempt suicide by shooting themselves in the torso actually survive. An examination of gunshot wound site among attempted suicides might offer insights into this issue. Interviews with those who survive such attempts may also

yield insights into which factors guided their decision on where they decided to shoot themselves. Since the data are limited to completed suicides, we can say nothing about how unsuccessful suicide attempts might illuminate this question. Future studies should explore these questions using datasets that include both successful and unsuccessful suicide attempts.

### Implications for Prevention

One important aim of examining gender differences in suicide methods should be to construct gender-specific prevention strategies (Denning et al. 2000). The findings suggest that women who have earlier unsuccessful suicide attempts may later try again using more lethal methods. This counteracts gendered assumptions that attempts by women are merely cries for help. The preventive implications of this are both obvious and subtle. First, we need to treat all suicide attempts, irrespective of method, as indicative of personal problems that require immediate intervention. Second, as earlier studies have recommended in light of the risk of suicide associated with firearm ownership and possession, gun owners should carefully guard access to their weapons and be apprised of the hazards of gun ownership (Kellermann et al. 1998; Wintemute et al. 1999). Such strategies do not eliminate access to other methods, but they can reduce the risk of an extremely lethal method, one most frequently used by both women and men.

Stressful life events, shown to be important in previous research (e.g., Heikkinen et al. 1995), played a role in these suicide cases. What sets these findings apart from prior research, however, is that these stressful life events were not simply related to suicide, but to the use of disfiguring methods (that were also more lethal), and among women who used a firearm, the selection of the head as target. This suggests that those experiencing stressful life events are at far greater risk of employing an especially lethal method of suicide than those not experiencing such events. From an intervention standpoint, many stressful life events are obvious to others, namely family and friends. Lethal firearm suicides by women, therefore, may be preventable events due to discernable cues in the lives of those at risk.

If future research finds that female attempts to commit firearm suicides are less successful than men because women are less familiar with firearms, and not because they have less intent to die, we would expect female suicides to rise as women occupy social spaces and roles traditionally associated with men. These changing norms might lead to an increase in women's ownership of, and familiarity with firearms, which could lead to a higher proportion of women who successfully suicide by firearms.

## Conclusion

The data cover only ten years, not long enough to test for changes in social norms and conventions. To adequately address the impact of changing gender norms on suicide behavior, studies should examine multiple decades of detailed data that cover the time periods before, during and after significant changes in gender roles and social norms in the US and other countries. The analyses, however brief, reveal that gender differences in suicide method are complicated concerns. Researchers, therefore, should critically examine the set of assumptions that have guided much of the prior studies to date and work to collect better data to answer these questions.

## References

- Altman, D. G., & Bland, M. (2003). Interaction revisited: The difference between two estimates. *British Medical Journal*, *326*, 219. doi:10.1136/bmj.326.7382.219.
- Barber, M. E., Marzuk, P. M., Leon, A. C., & Portera, L. (1998). Aborted suicide attempts: A new classification of suicidal behavior. *American Journal of Psychiatry*, *155*, 385–389.
- Bushman, B. J. (1997). Effects of alcohol on human aggression: Validity of proposed explanations. In M. Galanter (Ed.), *Recent developments in alcoholism: Alcohol and violence* (pp. 227–243). New York: Plenum Press.
- Buss, D. M. (1989). Sex differences in human mate preferences: Evolutionary hypotheses tested in 37 cultures. *Behavioral and Brain Sciences*, *12*, 1–49. doi:10.1017/S0140525X00023992.
- Campbell, F. R. (1997). Changing the legacy of suicide. *Suicide & Life-Threatening Behavior*, *27*, 329–338. doi:10.1111/j.1943-278X.1997.tb00512.x.
- Canetto, S. S. (1992). She died for love and he died for glory: Gender myths of suicidal behavior. *Omega*, *26*, 1–17. doi:10.2190/74YQ-YNB8-R43R-7X4A.
- Canetto, S. S. (2008). Women and suicidal behavior: A cultural analysis. *American Journal of Orthopsychiatry*, *78*, 259–266. doi:10.1037/a0013973.
- Canetto, S. S., & Sakinofsky, I. (1998). The gender paradox in suicides. *Suicide & Life-Threatening Behavior*, *28*, 1–23. doi:10.1111/j.1943-278X.1998.tb00622.x.
- Cavanagh, J. T. O., Owens, D. G. C., & Johnstone, E. C. (1999). Life events in suicide and undetermined death in south-east Scotland: A case-control study using the method of psychological autopsy. *Social Psychiatry and Psychiatric Epidemiology*, *34*, 645–650. doi:10.1007/s001270050187.
- Chuang, H.-L., & Huang, W.-C. (2004). A multinomial, logit analysis of methods used by persons who completed suicide. *Suicide & Life-Threatening Behavior*, *34*, 298–310. doi:10.1521/suli.34.3.298.42779.
- Clay, D., Vignoles, V. L., & Dittmar, H. (2005). Body image and self-esteem among adolescent girls: Testing the influence of socio-cultural factors. *Journal of Research on Adolescence*, *15*, 451–477. doi:10.1111/j.1532-7795.2005.00107.x.
- Cohen, R. (2005, April 17). Gonzo nights. *New York Times*.
- Cohle, S. (1977). Handgun suicides. *Forensic Science Gazette*, *8*, 2.
- Conwell, Y., & Brent, D. (1995). Suicide and aging: I. Patterns of psychiatric diagnosis. *International Psychogeriatrics*, *7*, 149–181. doi:10.1017/S1041610295001943.
- Conwell, Y., Duberstein, P. R., Cox, C., Herrmann, J. H., Forbes, N. T., & Caine, E. D. (1998). Age differences in behaviors leading to complete suicide: A psychological autopsy. *American Journal of Geriatric Psychiatry*, *6*, 122–126.
- Cross, C. R. (2001). *Heavier than heaven: A biography of Kurt Cobain*. New York: Hyperion.
- Denning, D. G., Conwell, Y., King, D., & Cox, C. (2000). Method choice, intent and gender in completed suicide. *Suicide and Life-Threatening Behavior*, *30*, 282–288. doi:10.1111/j.1943-278X.2000.tb00992.x.
- Eisele, J. W., Reay, D. T., & Cook, A. (1981). Sites of suicidal gunshot wounds. *Journal of Forensic Science*, *26*, 480–485. doi:10.1520/JFS11388J.
- Gottschall, J. (2008). The “beauty myth” is no myth: Emphasis on male-female attractiveness in world folk tales. *Human Nature*, *19*, 174–188. doi:10.1007/s12110-008-9035-3.
- Hawkins, N., Richards, P. S., Granley, H. M., & Stein, D. M. (2004). The impact of exposure to the thin-ideal media image on women. *Eating Disorders*, *12*, 35–50. doi:10.1080/10640260490267751.
- Heikkinen, M. E., Isometsa, E. T., Aro, H. M., Sarna, S. J., & Lonnqvist, J. K. (1995). Age-related variation in recent life events preceding suicide. *The Journal of Nervous and Mental Disease*, *183*, 325–331. doi:10.1097/00005053-199505000-00009.
- Hendin, H., Maltsberger, J. T., Lipschitz, A., Haas, A., & Kyle, J. (2001). Recognizing and responding to a suicide crisis. *Suicide and Life-Threatening Behavior*, *31*, 115–127. doi:10.1521/suli.31.2.115.21515.
- Henriksson, M. M., Hellevi, M. A., Marttunen, M. J., Heikkinen, M. E., Isometsa, E. T., Kuoppasalmi, K. I., et al. (1993). Mental disorders and comorbidity in suicide. *The American Journal of Psychiatry*, *150*, 935–940.
- Hentges, B. A., Bartsch, R. A., & Meier, J. A. (2007). Gender representation in commercials as a function of target audience age. *Communication Research Reports*, *24*, 55–62. doi:10.1080/08824090601128174.
- Hesse-Biber, S., Leavy, P., Quinn, C. E., & Zoino, J. (2006). The mass marketing of disordered eating and eating disorders: The social psychology of women, thinness and culture. *Women's Studies International Forum*, *29*, 208–224. doi:10.1016/j.wsif.2006.03.007.
- Holden, R. R., & McLeod, L. D. (2000). The structure of the Reasons for Attempting Suicide Questionnaire (RASQ) in a nonclinical adult population. *Personality and Individual Differences*, *29*, 621–628. doi:10.1016/S0191-8869(99)00214-7.
- Kaplan, M. S., & Geling, O. (1998). Firearm suicides and homicides in the United States: Regional variations and patterns of gun ownership. *Social Science & Medicine*, *46*, 1227–1233. doi:10.1016/S0277-9536(97)10051-X.
- Kaplan, A. G., & Klein, R. B. (1989). Women and suicide. In D. Jacobs & H. N. Brown (Eds.), *Suicide: Understanding and responding: Harvard Medical School Perspectives* (pp. 257–282). Madison: International Universities Press.
- Kaplan, M. S., Adamek, M. E., Geling, O., & Calderon, A. (1997). Firearm suicide among older women in the U.S. *Social Science & Medicine*, *44*, 1427–1430. doi:10.1016/S0277-9536(96)00325-5.
- Kellermann, A. L., Somes, G., Rivara, F. P., Lee, R. K., & Banton, J. G. (1998). Injuries and deaths due to firearms in the home. *The Journal of Trauma: Injury, Infection, and Critical Care*, *45*, 263–267.



- Kessler, R. C., Borges, G., & Walters, E. E. (1999). Prevalence of and risk factors for lifetime suicide attempts in the National Comorbidity Survey. *Archives of General Psychiatry*, *56*, 617–626. doi:10.1001/archpsyc.56.7.617.
- Kirk, C. A. (2004). *Sylvia Plath: A biography*. Westport: Greenwood.
- Klieve, H., Svetcic, J., & De Leo, D. (2009). Who uses firearms as a means of suicide? A population study exploring firearm accessibility and method choice. *BMC Medicine*, *7*, 52–60. doi:10.1186/1741-7015-7-52.
- Kohlmeier, R. E., McMahan, C. A., & DiMaio, V. J. M. (2001). Suicide by firearms: A 15-year experience. *American Journal of Forensic Medicine and Pathology*, *22*, 337–340.
- Kosky, R. J., & Dundas, P. (2000). Death by hanging: Implications for prevention of an important method of youth suicide. *Australian and New Zealand Journal of Psychiatry*, *34*, 836–841. doi:10.1046/j.1440-1614.2000.00807.x.
- Kposowa, A. J., & McElvain, J. P. (2006). Gender, place, and method of suicide. *Social Psychiatry and Psychiatric Epidemiology*, *41*, 435–443. doi:10.1007/s00127-006-0054-2.
- Kung, H.-S., Pearson, J. L., & Liu, X. (2003). Risk factors for male and female suicide decedents ages 15–64 in the United States. *Social Psychiatry and Psychiatric Epidemiology*, *38*, 419–426. doi:10.1007/s00127-003-0656-x.
- Kushner, H. I. (1995). Women and suicidal behavior: Epidemiology, gender and lethality in historical perspective. In S. S. Canetto & D. Lester (Eds.), *Women and suicidal behavior* (pp. 11–34). New York: Springer.
- Labre, M. P., & Walsh-Childers, K. (2003). Friendly advice? Beauty messages in websites of teen magazines. *Mass Communication & Society*, *6*, 379–396. doi:10.1207/S15327825MCS0604\_3.
- Lester, D. (1988). Why do people choose particular methods for suicide? *Activitas Nervosa Superior*, *30*, 312–314.
- Luoma, J. B., Martin, C. E., & Pearson, J. L. (2002). Contact with mental health and primary care providers before suicide: A review of the evidence. *The American Journal of Psychiatry*, *159*, 909–916. doi:10.1176/appi.ajp.159.6.909.
- Maltsberger, J. T., Hendin, H., Haas, A. P., & Lipschitz, A. (2003). Determination of precipitating events in the suicide of psychiatric patients. *Suicide and Life-Threatening Behavior*, *33*, 111–119. doi:10.1521/suli.33.2.111.22778.
- Mann, J. J. (2004). Searching for triggers of suicidal behavior. *The American Journal of Psychiatry*, *161*, 395–397. doi:10.1176/appi.ajp.161.3.395.
- Maris, R. W., Berman, A. L., & Silverman, M. M. (2000). *Comprehensive textbook of suicidology*. New York: Guilford.
- Markey, C. N., & Markey, P. M. (2009). Correlates of young women's interest in obtaining cosmetic surgery. *Sex Roles*, *61*, 158–166. doi:10.1007/s11199-009-9625-5.
- Marks, A., & Stokes, C. S. (1976). Socialization, firearms, and suicide. *Social Problems*, *5*, 622–639.
- Martunen, M. J., Henriksson, M. M., Hillevi, M. A., Heikkinen, M. E., Isometsa, E. T., & Lonnqvist, J. K. (1995). Suicide among female youth: Characteristics and comparisons with males in age groups 13 to 22 years. *Journal of the American Academy of Child and Adolescent Psychiatry*, *34*, 1297–1307. doi:10.1097/0004583-199510000-00015.
- Menard, S. W. (2002). *Applied logistic regression analysis* (2nd ed.). Thousand Oaks: Sage.
- Meyers, J. (1985). *Hemingway: A biography*. London: Macmillan.
- Mitchell, J. S., & Milvenan, J. (1977). Shotgun suicides. *The Forensic Science Gazette*, *8*, 3.
- Moscicki, E. K. (1994). Gender differences in completed and attempted suicides. *Annals of Epidemiology*, *4*, 152–158. doi:10.1016/1047-2797(94)90062-0.
- Moscicki, E. K. (1995). Epidemiology of suicide. *International Psychogeriatrics*, *7*, 137–148. doi:10.1017/S1041610295001931.
- Parker, R. N., & Rebhun, L. A. (1995). *Alcohol and homicide: A deadly combination of two American traditions*. New York: State University of New York Press.
- Payne, S., Swami, V., & Stanistreet, D. L. (2008). The social construction of gender and its influence on suicide: A review of the literature. *Journal of Men's Health & Gender*, *5*, 23–35. doi:10.1016/j.jomh.2007.11.002.
- Rich, C. L., Ricketts, J. E., Fowler, R. C., & Young, D. (1988). Some differences between men and women who commit suicide. *The American Journal of Psychiatry*, *45*, 718–722.
- Romero, M., & Wintemute, G. J. (2002). The epidemiology of firearm suicide in the United States. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, *79*, 39–48. doi:10.1093/jurban/79.1.39.
- Sanchez, D. T., & Crocker, J. (2005). How investment in gender ideals affects well-being: The role of external contingencies of self-worth. *Psychology of Women Quarterly*, *29*, 63–77. doi:10.1111/j.1471-6402.2005.00169.x.
- Schmeling, A., Strauch, H., & Rothschild, M. A. (2001). Female suicides in Berlin with the use of firearms. *Forensic Science International*, *124*, 178–181. doi:10.1016/S0379-0738(01)00594-1.
- Skogman, K., Alsen, M., & Ojehagan, A. (2004). Sex differences in risk factors for suicide after attempted suicide: A follow-up study of 1052 suicide attempters. *Social Psychiatry & Psychiatric Epidemiology*, *39*, 113–120. doi:10.1007/s00127-004-0709-9.
- Smith, T. W., & Smith, R. J. (1995). Changes in firearms ownership among women, 1980–1994. *Journal of Criminal Law & Criminology*, *86*, 133–149.
- Stack, S., & Wasserman, I. (2009). Gender and suicide risk: The role of wound site. *Suicide and Life-Threatening Behavior*, *39*(1), 13–20. doi:10.1521/suli.2009.39.1.13.
- Steer, R. A., Beck, A. T., Garrison, B., & Lester, D. (1988). Eventual suicide in interrupted and uninterrupted attempters: A challenge to the cry-for-help hypothesis. *Suicide & Life-threatening Behavior*, *18*, 119–128. doi:10.1111/j.1943-278X.1988.tb00146.x.
- Stone, I. C. (1987). Observations and statistics relating to suicide weapons. *Journal of Forensic Sciences*, *32*, 711–716.
- Stone, I. C. (1992). Characteristics of firearm and gunshot wounds as markers of suicide. *The American Journal of Forensic Medicine and Pathology*, *13*, 275–280.
- Suter, B. (1976). Suicide and women. In B. Wolman & H. Krauss (Eds.), *Between survival and suicide* (pp. 129–161). New York: Gardner.
- Tewksbury, R., Suresh, G., & Holmes, R. M. (2010). Factors related to suicide via firearms and hanging and leaving of suicide notes. *International Journal of Men's Health*, *9*, 40–49. doi:10.3149/jmh.0901.40.
- Whitworth, M. H. (2005). *Virginia Woolf*. New York: Oxford University Press.
- Wintemute, G. J., Parham, C. A., Beaumont, J. J., Wright, M., & Drake, C. (1999). Mortality among recent purchasers of handguns. *New England Journal of Medicine*, *341*, 1583–1589. doi:10.1056/NEJM199911183412106.



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