The Gender Paradox in Suicide

Silvia Sara Canetto, PhD, and Isaac Sakinofsky, MD

In most Western countries females have higher rates of suicidal ideation and behavior than males, yet mortality from suicide is typically lower for females than for males. This article explores the gender paradox of suicidal behavior, examines its validity, and critically examines some of the explanations, concluding that the gender paradox of suicidal behavior is a real phenomenon and not a mere artifact of data collection. At the same time, the gender paradox in suicide is a more culture-bound phenomenon than has been traditionally assumed; cultural expectations about gender and suicidal behavior strongly determine its existence. Evidence from the United States and Canada suggests that the gender gap may be more prominent in communities where different suicidal behaviors are expected of females and males. These divergent expectations may affect the scenarios chosen by females and males, once suicide becomes a possibility, as well as the interpretations of those who are charged with determining whether a particular behavior is suicidal (e.g., coroners). The realization that cultural influences play an important role in the gender paradox of suicidal behaviors holds important implications for research and for public policy.

This article centers on a familiar but still puzzling paradox in the epidemiology of suicidal behavior. In most countries where the prevalence of suicidality has been studied, females have higher rates of suicidal ideation and behavior than males, yet mortality from suicide is typically lower for females than for males. In this paper we explore the gender paradox of suicidal behavior, examine its validity, and critically examine some of the explanations that are based on empirical data. Most of the evidence for this article comes from studies conducted in industrialized Western countries, particularly in North America and Western Europe, as well as in New Zealand, the parts of the world where the gender paradox of suicidal behavior has been documented. We should be mindful that there are vast regions of Asia, Africa, the Middle East, South America, and Eastern Europe that either do not report statistics on suicide to the World Health Organization (WHO) or whose statistics may be more inaccurate than the norm.

NONFATAL SUICIDAL BEHAVIOR

In most Western countries, females are overrepresented among those who report suicidal ideation (see Canetto & Lester, 1995b; Canetto, 1997b; for reviews). Females also tend to surpass males in rates of nonfatal suicidal behavior. In the WHO/EURO study of clinically treated nonfatal suicidal acts, for example, the average person-based, female to male ratio was 1.5:1 (Schmidtke et al., 1994). These findings emerge also in other clinical studies (e.g., Bland, Newman, & Dyck, 1994; Hawton, Fagg, Simkin, & Mills, 1994; Kreitman, Buglass, Holding, Ken-
nedy, & Philip, 1977; Morgan, Burns-Cox, Pocock, & Pottle, 1975; Sakinofsky, Roberts, Brown, Cumming, & James, 1990), as well as in community surveys of suicidal ideation and suicidal behavior conducted in North America and Europe (e.g., Angst, Degonda, & Ernst, 1992; Bellrose, Lavallée, & Camirand, 1994; Bronisch & Wittchen, 1994; Moscicki et al., 1988; Petronis, Samuels, Mościcki, & Anthony, 1990; Ramsay & Bagley, 1985; Sakinofsky & Webster, 1995). In a large community-based survey of five sites in the United States, for example, Moscicki and colleagues (1988), using the Diagnostic Interview Schedule (DIS), found that the weighted prevalence of lifetime suicidal behavior in females was 3 times that reported by males (4.2% vs. 1.5%).

Exceptions to the female preponderance among those who engage in nonfatal suicidal behavior have also been noted. For example, in Helsinki, Finland, more males than females engage in nonfatal suicidal behavior, with the female to male ratio being 0.8 : 1 (Ostamo & Lönnqvist, 1994). Another example comes from Hawaii, where 6-month rates of nonfatal suicidal behavior were found to be similar in female and male Native Hawaiian adolescents (4.49% in females and 4.13% in males) (Yuen et al., 1996). In a follow-up study of Puerto Rican patients admitted to a New York City hospital for nonfatal suicidal acts, the proportions of males and females were similar (Fernandez-Pol, 1986).

There are also variations in the absolute size of female and male rates across locations, and among ethnic and religious groups (see Canetto & Lester, 1995b, for a review). For example, in the WHO/EURO study of nonfatal suicidal behavior in 15 European sites (Schmidtke et al., 1994), the rate of nonfatal suicidal behavior in females ranged from a high of 542 per 100,000 in Cergy-Pontoise, France, to a low of 72 in Guipuzcoa, Spain. Male rates ranged from a high of 327 per 100,000 in Helsinki, Finland, to a low of 46, in Guipuzcoa. These differences between the highest and lowest rates within female and male samples are close to sevenfold.

Is the Female Predominance in Nonfatal Suicidality Real?

Is the female predominance among those with nonfatal suicidal ideation or behavior real or an artifact? Is nonfatal suicidal behavior underreported in men? According to Whitehead, Johnson, and Ferrence (1973), high rates of nonfatal suicidal behavior in females, as compared to males, may be an artifact of biased data collection, specifically, the exclusion of data on nonfatal suicidal behaviors from male-dominated institutions such as jails. In Alberta, Canada, for example, Bland, Newman, Dyck, and Orn (1990) found that 91% of 15,336 persons sentenced to correctional centers were males. Their study revealed that in correctional settings males have high rates of nonfatal suicidality. In jails and prisons in the Netherlands, 96% of those who engaged in nonfatal suicidal behavior (and 100% of suicides) were males, presumably reflecting a similar gender distribution in the base sample (Kerkhof & Bernasco, 1990).

In any case, recent reports indicate that in some countries the gender gap in nonfatal suicidal behavior may be narrowing, even in traditional data collection sites. For example, in Denmark, relatively more men engaged in nonfatal suicidal behavior in the late 1980s and early 1990s than was the case in the 1970s (Bille-Brahe, 1993). A recent New Zealand study found almost equal numbers of females and males in their sample of survivors of a medically serious suicidal act (MSSA), even though twice as many females (51%) as males (26%) had used a less immediately fatal method, overdoses, as the principal suicide method (Beautrais, Joyce, & Mulder, 1996). Similarly, a German study found females only slightly predominant (53.4%) in a medical intensive care sample (Furst & Habscheid, 1993). These findings would suggest that in clinical samples selected for MSSA the gender paradox in nonfatal suicidality does not apply.

To assess whether the lack of gender gap among New Zealand MSSA extends to other countries and includes non-
MSSAs, we reexamined data from a study conducted by one of us (Sakinofsky et al., 1990). The study examined consecutive emergency room cases from general hospitals, without regard to their medical seriousness, including those who were admitted to hospital as well as those who were sent home \((n = 228)\). After admission to the study, the cases were graded by a physician according to the potential medical lethality of the act, considering the spectrum of risk incurred if the person had not been brought to the hospital. Table 1 shows that there was no significant difference between the proportions of women and men in each category of risk. In other words, women and men were equally represented in all categories, including the highest death risk (i.e., "Would definitely have died.").

The medical seriousness of a suicidal act might not, however, correlate with suicidal intent. Again using the Canadian data set (Sakinofsky et al., 1990), we calculated suicidal intent scores based on the circumstances of the act, using the Suicidal Intent Scale (SIS) (Beck, Beck, & Kovacs, 1975; Beck, Morris, & Beck, 1974; Beck, Schuyler, & Herman, 1974). The mean score for females was 2.88 \((SD = 2.30)\), and for males, 3.07 \((SD = 2.29)\) \((n = 227, \ t = .61, \ p = .55)\). In other words, females and males appeared to be equally intent on killing themselves. Finally, we measured suicidal intent at the time of the index suicidal act, using an ordinal scale derived from early work by Shneidman (1966) and Kessel (1966). When graded according to whether the act was intentionally suicidal (cessation intended or subintended—the person wanted to die or did not care whether or not he or she lived), 18.4% of females' and 27.7% of males' suicidal acts fell into this category. The remainder were categorized as intending an outcome other than death. There was again no significant difference in motivation between women and men, \(x^2 (1, n = 224) = 2.11, p = .15\). Our findings corroborate those of several studies of intent among persons who survived a suicidal act (Bancroft, Hawton, Simkin, Kingston, & Whitwell, 1979; Casey, 1989; Stephens, 1995). For example, Casey (1989), also using the SIS, found no gender differences in suicidal intent among persons who survived a suicidal act. Similarly, a study of suicidal women by Stephens (1995) found that death was the motive in over two thirds.

It has been suggested that men's nonfatal suicidal behavior may be subject to underreporting due to cultural attitudes about masculinity and suicide (Canetto, 1992–1993, 1994, 1995). We know that in the United States, nonfatal suicidal behavior is considered unmasculine (see Canetto, 1997a, for a review). For example, males are more concerned than females about social disapproval concerning their suicidal thoughts and behavior (Rich, Kirkpatrick-Smith, Bonner, & Jans, 1992).

<table>
<thead>
<tr>
<th>Death Risk</th>
<th>Female n (%)</th>
<th>Male n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Would definitely have survived&quot;</td>
<td>81 (57.0)</td>
<td>47 (54.7)</td>
</tr>
<tr>
<td>&quot;Would probably have survived&quot;</td>
<td>37 (26.1)</td>
<td>24 (27.9)</td>
</tr>
<tr>
<td>&quot;Would probably have died&quot;</td>
<td>15 (10.6)</td>
<td>12 (14.0)</td>
</tr>
<tr>
<td>&quot;Would definitely have died&quot;</td>
<td>9 (6.3)</td>
<td>3 (3.5)</td>
</tr>
</tbody>
</table>

Note: Data are from Sakinofsky, Roberts, Brown, Cumming, and James (1990). Mantel-Haenszel chi-square: \(df = 3, n = 228, \text{value} = 1.51, p = 0.68\).
Studies conducted in the United States show that males are especially critical of and uncomfortable around suicidal persons (e.g., Dahlen & Canetto, 1996; Mishara, 1982), particularly if that person is another male (e.g., White & Stillion, 1988). These cultural attitudes about males and suicidal behavior probably affect researchers, who may be less accustomed to and less skilled at recognizing suicidal inclinations in males (Canetto, 1992-1993, 1994, 1995). These attitudes may put male researchers at a particular disadvantage in assessing nonfatal suicidality in other males. In sum, in the United States and Canada, rates of nonfatal suicidal behavior in males may be underestimated due to the combined effect of underreporting on the part of suicidal males because of fear of social stigma, as well as underreporting by researchers, who may miss suicidal clues in males.

At the same time, the association of nonfatal suicidal behavior and femininity may play a role in helping to create the gender gap in rates of nonfatal suicidal behavior. The association may actually inhibit such behavior in males more than in females: Distressed males may refrain from engaging in nonfatal suicidal behavior because of the stigma associated with it. For distressed females, on the other hand, the view of nonfatal suicidal behavior as feminine may facilitate it.

We do not know whether the association between nonfatal suicidal behavior and femininity extends beyond the United States. We also do not know whether underreporting of male suicidal behavior is of sufficient magnitude to reduce the gender gap, especially in localities where the female : male (F : M) ratios are high, as in Cergy-Pontoise, France (Schmidtke et al., 1994). Even in the United States the gender gap in rates of nonfatal suicidal behavior is not pervasive, suggesting the influence of local cultures of gender and suicidal behavior.

In sum, in Western countries, the high number of females among those who are suicidal, as compared to males, may be a less consistent phenomenon than previously thought. We have documented examples of localities (e.g., Helsinki, Finland) and ethnic minorities (e.g., Native Hawaiians in the United States) where one finds an exception to the expected pattern. Finally, we have reviewed evidence concerning the gender-related meaning of nonfatal suicidal behavior in the United States (i.e., the association of nonfatal suicidal behavior and femininity) and suggested that these beliefs may lead to underreporting by and about suicidal males. We have also speculated on the role of these beliefs in creating a gender gap in rates of nonfatal suicidal behavior.

**SUICIDE MORTALITY**

Just as nonfatal suicidal behavior among females has tended to exceed its prevalence among males, so has the prevalence of suicide mortality in males tended to surpass that in females in Western countries. This is the other arm of what we called the gender paradox in suicidal behavior.

Table 2 illustrates the relationship between male and female suicide rates in 32 countries that reported to the WHO in 1992. Because this relationship varies across age, the 15–24 year age-band was selected for the purpose of illustration. No clear geographical pattern for the ratio of male : female (M : F) suicide rates is evident. However, a group of Asian territories cluster below Mauritius, an African state at the top of the table, which reported equal proportions of male and female suicides. At the bottom of the table, with M : F rate ratios greater than 4, is a group of Western countries that includes Canada, the United States, and the United Kingdom.

The countries vary widely in the absolute size of their male and female suicide rates. Greece, Mexico, and Italy reported the lowest rates for both females and males; Switzerland and Finland reported among the highest.

With their relatively high male suicide mortality rates, a number of Western countries, namely, Finland, New Zealand, Canada, Norway, and Austria, are among
TABLE 2
Suicide Rates (per 100,000) and Ranked Male: Female Rate Ratios in Populations Ages 15–24

<table>
<thead>
<tr>
<th>Country</th>
<th>Male</th>
<th>Female</th>
<th>Ratio</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mauritius a</td>
<td>17.1</td>
<td>17.9</td>
<td>1.0</td>
<td>1</td>
</tr>
<tr>
<td>Hong Kong b</td>
<td>7.1</td>
<td>6.3</td>
<td>1.1</td>
<td>2</td>
</tr>
<tr>
<td>Singapore a</td>
<td>12.0</td>
<td>9.5</td>
<td>1.3</td>
<td>3</td>
</tr>
<tr>
<td>Japan a</td>
<td>11.0</td>
<td>6.2</td>
<td>1.8</td>
<td>4</td>
</tr>
<tr>
<td>Argentina b</td>
<td>7.4</td>
<td>3.7</td>
<td>2.0</td>
<td>5</td>
</tr>
<tr>
<td>Israel b</td>
<td>6.8</td>
<td>2.8</td>
<td>2.4</td>
<td>6</td>
</tr>
<tr>
<td>Netherlands a</td>
<td>8.5</td>
<td>3.5</td>
<td>2.4</td>
<td>7</td>
</tr>
<tr>
<td>Hungary a</td>
<td>21.9</td>
<td>8.9</td>
<td>2.5</td>
<td>8</td>
</tr>
<tr>
<td>Portugal b</td>
<td>7.3</td>
<td>2.9</td>
<td>2.5</td>
<td>9</td>
</tr>
<tr>
<td>Sweden b</td>
<td>17.7</td>
<td>7.1</td>
<td>2.5</td>
<td>10</td>
</tr>
<tr>
<td>Costa Rica b</td>
<td>8.1</td>
<td>2.9</td>
<td>2.7</td>
<td>11</td>
</tr>
<tr>
<td>Denmark a</td>
<td>15.5</td>
<td>5.4</td>
<td>2.9</td>
<td>12</td>
</tr>
<tr>
<td>Uruguay a</td>
<td>10.3</td>
<td>3.6</td>
<td>2.9</td>
<td>13</td>
</tr>
<tr>
<td>Venezuela a</td>
<td>9.2</td>
<td>2.8</td>
<td>3.3</td>
<td>14</td>
</tr>
<tr>
<td>Belgium a</td>
<td>16.2</td>
<td>4.8</td>
<td>3.4</td>
<td>15</td>
</tr>
<tr>
<td>France a</td>
<td>14.9</td>
<td>4.4</td>
<td>3.4</td>
<td>16</td>
</tr>
<tr>
<td>Italy b</td>
<td>5.0</td>
<td>1.5</td>
<td>3.5</td>
<td>17</td>
</tr>
<tr>
<td>W. Germany a</td>
<td>16.1</td>
<td>4.6</td>
<td>3.5</td>
<td>18</td>
</tr>
<tr>
<td>Switzerland a</td>
<td>27.3</td>
<td>7.7</td>
<td>3.6</td>
<td>19</td>
</tr>
<tr>
<td>Chile b</td>
<td>9.7</td>
<td>2.7</td>
<td>3.6</td>
<td>20</td>
</tr>
<tr>
<td>Mexico a</td>
<td>4.8</td>
<td>1.3</td>
<td>3.8</td>
<td>21</td>
</tr>
<tr>
<td>Austria a</td>
<td>27.9</td>
<td>7.3</td>
<td>3.9</td>
<td>22</td>
</tr>
<tr>
<td>Greece a</td>
<td>4.8</td>
<td>1.2</td>
<td>3.9</td>
<td>23</td>
</tr>
<tr>
<td>Spain b</td>
<td>7.1</td>
<td>1.8</td>
<td>4.0</td>
<td>24</td>
</tr>
<tr>
<td>New Zealand b</td>
<td>29.5</td>
<td>7.1</td>
<td>4.1</td>
<td>25</td>
</tr>
<tr>
<td>Norway a</td>
<td>23.7</td>
<td>5.3</td>
<td>4.5</td>
<td>26</td>
</tr>
<tr>
<td>Australia a</td>
<td>23.2</td>
<td>5.0</td>
<td>4.6</td>
<td>27</td>
</tr>
<tr>
<td>Ireland a</td>
<td>13.2</td>
<td>2.8</td>
<td>4.7</td>
<td>28</td>
</tr>
<tr>
<td>Finland b</td>
<td>40.1</td>
<td>8.3</td>
<td>4.8</td>
<td>29</td>
</tr>
<tr>
<td>United Kingdom a</td>
<td>10.9</td>
<td>2.2</td>
<td>4.9</td>
<td>30</td>
</tr>
<tr>
<td>United States b</td>
<td>21.7</td>
<td>4.3</td>
<td>5.1</td>
<td>31</td>
</tr>
<tr>
<td>Canada a</td>
<td>26.1</td>
<td>5.0</td>
<td>5.2</td>
<td>32</td>
</tr>
</tbody>
</table>

Note. Data are from countries reporting to the World Health Organization, 1992. Rates are averaged over 5 years.


those showing an M : F rate ratio in excess of 4. These data indicate that in all but 4 of the 32 countries selected, male suicide rates were at least double those of females, concordant with findings from a larger, WHO-based, epidemiological review (Diekstra & Gulbinat, 1993).

Is the Male Predominance among Those Who Die of Suicide Real?

Is male predominance among those who die of suicide real or an artifact? Are women’s suicides selectively underreported as accidents or undetermined deaths in countries that show high M : F suicide ratios?

Based on the WHO data, we believe the gender gap in suicide mortality is real, at least in countries where the gender suicide ratios are high. It seems unlikely that underreporting would be of sufficient magnitude to reduce the high gender suicide mortality gaps such as those found in Canada and the United States.

In a few parts of the world, the gender gap in suicide mortality may be narrowing. For example, in Denmark (Bille-Brahe, 1993) and California (Bourque,
Kraus, & Cosand, 1983) relatively more women are killing themselves, particularly in young age groups.

The gender gap in suicide mortality is, however, remaining stable in countries such as Austria (Etzersdorfer, Piribauer, & Sonneck, 1996) and the United States. Figure 1 illustrates the consistency seen in age-specific suicide mortality patterns for females and males in the United States. Averaged annual suicide rates are presented for three triennia (1979–1981, 1985–1987, and 1992–1994) and for 5-year age-bands from ages 10–14 to age 85 and older. Within each sex, the triennial data are highly intercorrelated (for females, Pearson Rs vary between .88 and .94; for males they range between .97 and .98). Triennial suicide data, however, are uncorrelated across sex. In every 5-year age-band, the male and female suicide mortality rates are widely separated. For male suicide rates, there is a peak at ages 20–24, after which the curve plateaus until it begins to rise again steeply after ages 60–64. On the same scale, the slope for female suicide rates is shallow, with only a gradual inclination to ages 50–54, after which it slowly subsides through late adulthood.

We examined the possibility of underreporting of female suicide mortality by referring to data from Sakinofsky and Roberts (1987) for mortality rates by suicide, accidental poisoning, and “injury undetermined” for the provinces of Canada during the period between 1969 and 1973 (see Table 3). We collapsed the accidental poisoning and undetermined categories as a percentage of combined female death rates. These two categories may contain potentially missed cases of suicide. The table shows that the possibility of understatement of female suicide ranged from a low of 7.0% in Ontario (where it was 4.2% for male suicide) to a high of 50.0% in Newfoundland (34.6% for male suicide). In every province the conceivable margin for error was greater in females. However, the excess proportions of putatively understated female suicides over male sui-
TABLE 3
Percentages of Deaths in Females and Males Classed as Accidental Poisoning or Injury Undetermined. The Excess Reflects Potential Understatement of Female vs. Male Suicide Mortality Rates in the Provinces of Canada (1969–1973)

<table>
<thead>
<tr>
<th>Canadian Province</th>
<th>Females</th>
<th>Males</th>
<th>Excess</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Columbia</td>
<td>42.3</td>
<td>37.5</td>
<td>4.8</td>
</tr>
<tr>
<td>Alberta</td>
<td>40.0</td>
<td>29.7</td>
<td>10.3</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>32.0</td>
<td>21.9</td>
<td>10.1</td>
</tr>
<tr>
<td>Manitoba</td>
<td>8.0</td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Ontario</td>
<td>7.0</td>
<td>4.2</td>
<td>2.8</td>
</tr>
<tr>
<td>Quebec</td>
<td>28.6</td>
<td>20.4</td>
<td>8.2</td>
</tr>
<tr>
<td>New Brunswick</td>
<td>38.9</td>
<td>32.0</td>
<td>6.9</td>
</tr>
<tr>
<td>Nova Scotia</td>
<td>28.6</td>
<td>15.8</td>
<td>12.8</td>
</tr>
<tr>
<td>Prince Edward Island</td>
<td>25.0</td>
<td>22.7</td>
<td>2.3</td>
</tr>
<tr>
<td>Newfoundland</td>
<td>50.0</td>
<td>34.6</td>
<td>15.4</td>
</tr>
</tbody>
</table>

Note: Data are from Sakinofsky and Roberts (1987).

sicides are small, ranging from 2.3% (Prince Edward Island) to 15.4% (Newfoundland).

It is unlikely that a much greater order of potential reporting bias would exist among countries shown in Table 1 that share values and social conditions with Canada, such as the United States and the United Kingdom. Therefore, the conclusion of higher male than female suicide mortality rates appears valid, at least as demonstrated in the 15–24-year-old age group in countries where the ratio is two-fold or greater. At the same time, the fact that in all Canadian provinces, female deaths possibly due to suicide are more likely than male deaths to be classified as “not suicide” suggests that the actual gender gap in suicide mortality may be less extreme than that documented in official statistics.

It has been suggested that women’s suicide may be subject to misclassification more than men’s suicide due to cultural attitudes about femininity and suicide (Canetto, 1992–1993, 1997a). We know that in the United States killing oneself is considered a less acceptable and less powerful act in females than in males (see Canetto, 1997b, for a review). For example, death by suicide in females is rated as more wrong, more foolish, and weaker than death by suicide in males (Deluty, 1988–1989). Similarly, women who kill themselves are viewed as less well adjusted than men who kill themselves, independent of the precipitant of suicide (Lewis & Shepeard, 1992).

It has also been noted that relatives may have more compelling reasons to hide a woman’s suicide than a man’s suicide (Douglas, 1967). This is because women’s suicides are more likely to be attributed to family problems than men’s (see Canetto, 1992–1993, for a review). “A woman killing herself is seen as a judgment on her husband; in contrast, when a husband kills himself, it is taken as a legitimate criticism of a particular social condition arising outside the family” writes Kushner (1995, p. 27). These cultural attitudes about females and suicide probably affect suicide ascertainment officers, who may be reluctant to classify a female death as suicide. “Coroners, physicians, and others responsible for determining whether a particular death was a suicide, are already tied to an ideology that differentiated women’s motives from men’s,” notes Kushner. “Such preconceptions are bound to influence the collection of official statistics” (p. 23).

At the same time, the association of suicide and masculinity may play a role in creating a genuine gender gap in rates of fatal suicidal behavior. Such association may actually discourage suicide in females more than in males. Females may be more reluctant to kill themselves than males because of the taboo against female suicidal death. For males, the belief that killing oneself is masculine may serve as a facilitating factor: Males may actually “structure any suicidal act in such a way as to reduce the likelihood of surviving it” (Stillion, 1995, p. 72).

Another factor that may exaggerate the lower rates of suicide mortality in females, as compared to males, is that females tend to use less immediately lethal methods. The role of method in coroners’ determination of a death as suicide was assessed in a recent British study by
Neeleman and Wessely (1997). These researchers found that, over successive triennia between 1974 and 1991, the open verdict to suicide verdict ratio was greater for women than for men in every triennium, when period was considered alone. There were significant differences between women and men in the potential margin for misclassification that were based on the method of demise. Hanging, drowning, and jumping deaths produced a lower ratio of open to suicide verdicts for women than men, but drug overdoses and gas poisonings produced the reverse outcome. In another British study, of 242 suicides who jumped in front of trains in the London Underground subway system, open or accidental verdicts were returned in half the men and only one quarter of the women (O'Donnell & Farmer, 1995). These studies support the suggestion by Canetto and Lester (1995b) that the less immediately lethal methods of suicide preferred by women, such as self-poisoning, are more likely to be misclassified as accidental than the more immediately lethal methods of suicide preferred by men.

In sum, in many Western countries males are disproportionately more likely than females to die as a result of a suicide. This gender gap in suicide mortality seems to be stable in some regions and in flux in other regions. We examined the possibility that the gender gap may be due to selective underreporting of female suicide mortality. There is evidence suggesting that suicide ascertainment officers in Western cultures may be particularly reluctant to classify possible suicide deaths in females as suicides, unless the use of an unambiguously suicidal method overcomes their inhibition. Stereotyped attitudes about women and suicide may play a role in this inhibition. We have also considered the role of method in the differential death rates of suicidal women and men. Our conclusion is that in spite of such classification biases, the magnitude of the understatement of suicide mortality in females is not large enough to vitiate the overall pattern of higher rates of suicide mortality for males than females in Western societies.

EXPLANATIONS OF THE GENDER PARADOX OF SUICIDAL BEHAVIOR

Many explanations for the gender paradox have been proposed. In this section we consider several of the most popular explanations in light of relevant evidence.

Mościcki (1994, p. 155) discussed the “intriguing epidemiologic problem” of the gender differences in suicidal behavior in the United States in terms of four possible explanations: lethality, recall bias, differential rates of depression and alcohol abuse, and socialization. The lethality explanation focuses on gender differences in method. In the United States, women are more likely than men to use less immediately lethal methods, such as poisons. The gender paradox is viewed as an artifact of different rates of survival from suicidal acts, due to the different rescuability potential of various suicide methods, rather than as the reflection of gender differences in prevalence or intent. The recall bias theory posits that women are “better reporters of health history” than men (Moscicki, 1994, p. 156), hence community survey statistics give a fair account of the prevalence of nonfatal suicidal behavior among them but understate that of men. Third, according to Mościcki, an “explanation for the gender differences may be found in the differential rates of depression and alcohol abuse” (p. 156). Women’s high rates of suicidal behavior and low rates of suicide mortality are attributed to women’s high treatment rates for depression, a common precursor of suicide. High rates of alcohol abuse in men are linked to suicide mortality when comorbid with depression and interpersonal loss (Murphy, Wetzel, Robins, & McEvoy, 1992). Finally, according to Mościcki, an “explanation to account for differential gender rates may be gender differences in socialization” (p. 156). Mościcki describes earlier work by Canetto (1991, 1992) suggesting
that divergent patterns of suicidal behavior in women and men in the United States are related to the association of femininity and nonfatal suicidal behavior, and the association of masculinity and killing oneself.

The Lethality Theory

Mościcki (1994) argues against the lethality explanation of the gender paradox: "It does not take into account intent to die... and disregards the role of self injury as a signal for help. It also does not offer reasons as to why men use more lethal methods, particularly in light of the fact that a firearm, an especially lethal means, is the method of choice for both men and women" (pp. 155–156). We agree with Mościcki that suicide method is not a substitute measure of considered intent. The same method may be used with very different intentions. A low-lethality method may be associated with high death intentionality, and a high-lethality method may be used on sudden impulse by someone whose considered desire would be in favor of life. As noted by Stephens (1995), "We cannot overestimate the inexperience of individuals when it comes to the technology of ending life. Few people in suicidal crisis seem to be able or willing to research the most effective ways of doing it... Individuals who 'study up' on better ways to kill themselves are a rarity" (p. 91). A frequent statement made by the participants in her study was "that they were surprised to be still alive" (pp. 91–92).

Outcome is not the best measure of intent either. Intention does not necessarily lead to the desired outcome. Some individuals survive what they may have thought as a lethal suicidal act, such as a car crash. Others will die of an action they did not think would be life-ending, like an overdose of Tylenol (Canetto & Lester, 1995a; Kushner, 1995).

As noted in a previous section, method influences the likelihood that a death is interpreted as suicide. The less immediately lethal methods of suicide preferred by women are more likely to be misclassified as accidental than the more immediately lethal methods of suicide preferred by men.

We disagree with the statement that a distinguishing characteristic of nonfatal suicidal behavior, compared with fatal suicidal behavior, is that it necessarily represents a "signal for help" (Mościcki, 1994, p. 155). The implication is that only nonfatal suicidal acts are rooted in the fantasy of being rescued from the consequences of the act, while fatal suicidal acts are not. In our view the majority of nonfatal and fatal suicidal acts are to some degree ambivalent with regard to death intent or rescue. We concur with Stephens (1995) that "most behavior rarely arises from a single intention, but rather it is accompanied by a complexity of purposes... Surely, suicide intentionality cannot be expected to be less complicated" (p. 91). We also concur with Kushner (1995) that "all suicidal acts (fatal as well as nonfatal) involve a fantasy component, not the least of which may be imagining others' reactions to the suicidal act" (p. 25).

Mościcki (1994) further argues that a firearm is a high-lethality method equally preferred by most men and women who commit suicide. This statement is basically accurate for the United States, but several qualifications are in order. While on average, firearms are a favorite method for both U.S. women and men, the firearm preference applies more to men than to women. For men, firearm suicides by far outnumber suicides by all other means. For women, the same proportion of suicides are by firearms and poisoning (over a third for each) (see Table 4). The proportion of women who use firearms to kill themselves is about half that of men. Figure 2 shows the mean ratios of firearm suicide mortality rates to suicide by all methods combined in the United States, for three triennia across 1979–1994. The firearm suicide: all suicide ratios for women, adjusted for all ages, were 1979–1981,
### TABLE 4
Comparison of Suicide Methods by Gender between United States and Canada

<table>
<thead>
<tr>
<th>Method</th>
<th>U.S. males</th>
<th>Canadian males</th>
<th>U.S. females</th>
<th>Canadian females</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guns, explosives</td>
<td>12937 (63.1)</td>
<td>15802 (64.6)</td>
<td>3218 (41.1)</td>
<td>20505 (100)</td>
</tr>
<tr>
<td>Hanging</td>
<td>2997 (14.6)</td>
<td>3822 (15.6)</td>
<td>1920 (24.5)</td>
<td>2367 (38.9)</td>
</tr>
<tr>
<td>Self-Poisoning</td>
<td>2997 (14.6)</td>
<td>3262 (13.3)</td>
<td>844 (10.8)</td>
<td>993 (40.5)</td>
</tr>
<tr>
<td>Cutting</td>
<td>305 (1.5)</td>
<td>336 (1.4)</td>
<td>141 (1.8)</td>
<td>43 (1.8)</td>
</tr>
<tr>
<td>Jumping</td>
<td>576 (2.8)</td>
<td>475 (1.9)</td>
<td>321 (4.1)</td>
<td>157 (6.4)</td>
</tr>
<tr>
<td>Drowning</td>
<td>326 (1.6)</td>
<td>243 (1.0)</td>
<td>333 (4.3)</td>
<td>208 (8.5)</td>
</tr>
<tr>
<td>Gassing and Other</td>
<td>367 (1.8)</td>
<td>504 (2.1)</td>
<td>1053 (13.4)</td>
<td>313 (12.8)</td>
</tr>
<tr>
<td>Total</td>
<td>20505 (100)</td>
<td>24444 (99.9)</td>
<td>8471 (99.9)</td>
<td>2454 (100.2)</td>
</tr>
</tbody>
</table>

34.8%; 1985–1987, 37.0%; and 1992–1994, 39.0%. The same ratios for men were 1979–1981, 69.0%; 1985–1987, 72.4%; and 1992–1994, 72.6%. Figure 2 shows a bulge in each triennium for firearm suicide preference in teenage males, and again a rise extending upward from middle age to old age, with a decline after age 70. We note the gradual creep up of the proportion of gun-related suicides in U.S. women in recent years. As the graph shows, this increase is concentrated in women over the age of 60.

Like the sex- and age-specific suicide mortality rates presented in Figure 1, the mean ratios for each triennium shown in Figure 2 are highly intercorrelated within, but not between, the sexes. Pearson correlation coefficients within the triennia for female ratios range between .92 and .97; for males the range is .78–.94.

Mościcki’s statement about method preferences does not hold for other countries where the gender paradox has been recorded. One example is Canada, where poisoning by overdose was the most common suicide method for females during 1980–1982 as well as in 1990–1992 (40.5% and 37.4%, respectively). Canadian females’ ratios of suicide mortality by firearms were substantially lower than those recorded in the United States, 11.3% in 1980–1982, and 8.8% in 1990–1992 (Sakinofsky, 1998). Although firearms were the most common suicide method used by males in both countries, in Canada male firearm suicides represented a much smaller proportion of all male suicides than in the United States, specifically, 41.1% during 1980–1982, and 35.6% in 1990–1992. In the United States the proportions of firearm suicides did not change over time, but in Canada there was a slight decline in firearms mortality for both women and men. In both countries and during both time periods, self-poisoning was used in over a third of women’s suicides but accounted for much smaller proportions of men’s suicides. Hanging or strangulation was more commonly used by both women and men in Canada than in the United States; cutting
and stabbing were methods used in a minority of cases. The Canadian and U.S. data suggest that more widespread firearm ownership and a permissive gun culture may play a role in the high prevalence of firearm suicide in the United States.

Does the choice of a method, such as firearms, which carries over 92% risk of lethality (Card, 1974), influence suicide mortality? Figure 3 presents the mean ratios (percentage) of firearm suicide rates to suicide mortality rates from all methods combined in the United States during the period between 1992 and 1994, and compares them with mean suicide mortality rates for the same triennium (1992-1994). For females the ratio is highest in late adolescence (ages 15-19). It declines until ages 40-44, then continues horizontally through to the mid-60s (with a slight bulge), and gradually falls throughout old age. There seems to be no positive relationship between women's preferred choice of firearms in suicide and their age-related suicide mortality. In fact, the relationship is inverse ($r = -0.53, p = 0.034$). For males, a bulge in the firearm suicide: all suicide ratio is perceptible at ages 15-19. This bulge is followed by a decline to ages 35-39, but, unlike the plateau in females, there is a continuing upsweep thereafter in the ratio through to the 70s, before an eventual decline. Although the correlation between the firearm suicide ratio and the suicide mortality rates is positive, it does not achieve statistical significance ($r = 0.48, p = 0.063$).

Table 5 reports on the relationship between mean suicide rates by firearms and mean suicide mortality rates from all methods combined, for each 5-year age-band during the period between 1979 and 1994 in the United States. Here we do see a clear relationship, for men in particular, between the use of firearms as a method and suicide mortality, with large and statistically significant correlation coefficients in all but two 5-year age groups. For females, the correlations are significant in the age groups 10-14, 20-34, 45-64, and 80-84.

Clearly, although firearms are among a cluster of highly lethal methods used for suicide, sex- and age-specific suicide rates are not determined by firearm use alone. This argument does not weaken the strong body of research findings that concludes that the availability of firearms in the homes of impulsive people, particularly in the presence of substance abuse, facilitates suicides that might not otherwise occur (Brent, Perper, & Allman,
### Table 5
Correlations between Mean U.S. Suicide and Firearm Suicide Mortality Rates, 1979–1994

<table>
<thead>
<tr>
<th>Age</th>
<th>Suicide</th>
<th>Firearms</th>
<th>r</th>
<th>Suicide</th>
<th>Firearms</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-9</td>
<td>0.01</td>
<td>0.00</td>
<td>0.30</td>
<td>0.04</td>
<td>0.01</td>
<td>0.64**</td>
</tr>
<tr>
<td>10-14</td>
<td>0.68</td>
<td>0.35</td>
<td>0.86***</td>
<td>1.98</td>
<td>1.14</td>
<td>0.98***</td>
</tr>
<tr>
<td>15-19</td>
<td>3.62</td>
<td>1.83</td>
<td>0.42</td>
<td>15.97</td>
<td>10.65</td>
<td>0.97***</td>
</tr>
<tr>
<td>20-24</td>
<td>4.71</td>
<td>2.44</td>
<td>0.96***</td>
<td>25.75</td>
<td>16.43</td>
<td>0.88***</td>
</tr>
<tr>
<td>25-29</td>
<td>5.70</td>
<td>2.69</td>
<td>0.95***</td>
<td>25.66</td>
<td>15.18</td>
<td>0.75***</td>
</tr>
<tr>
<td>30-34</td>
<td>6.44</td>
<td>2.70</td>
<td>0.87***</td>
<td>24.36</td>
<td>13.84</td>
<td>0.72***</td>
</tr>
<tr>
<td>35-39</td>
<td>7.16</td>
<td>3.22</td>
<td>-0.12</td>
<td>23.40</td>
<td>13.36</td>
<td>-0.05</td>
</tr>
<tr>
<td>40-44</td>
<td>7.80</td>
<td>5.26</td>
<td>0.34</td>
<td>22.44</td>
<td>13.44</td>
<td>0.15</td>
</tr>
<tr>
<td>45-49</td>
<td>8.43</td>
<td>3.16</td>
<td>0.92***</td>
<td>22.63</td>
<td>14.24</td>
<td>0.92***</td>
</tr>
<tr>
<td>50-54</td>
<td>8.42</td>
<td>3.23</td>
<td>0.93***</td>
<td>23.70</td>
<td>15.62</td>
<td>0.85***</td>
</tr>
<tr>
<td>55-59</td>
<td>8.11</td>
<td>3.06</td>
<td>0.89***</td>
<td>25.20</td>
<td>17.14</td>
<td>0.86***</td>
</tr>
<tr>
<td>60-64</td>
<td>7.27</td>
<td>2.81</td>
<td>0.71*</td>
<td>25.65</td>
<td>18.28</td>
<td>0.90***</td>
</tr>
<tr>
<td>65-69</td>
<td>6.76</td>
<td>2.60</td>
<td>0.41</td>
<td>28.61</td>
<td>21.33</td>
<td>0.94***</td>
</tr>
<tr>
<td>70-74</td>
<td>6.51</td>
<td>2.26</td>
<td>0.44</td>
<td>36.31</td>
<td>27.73</td>
<td>0.95***</td>
</tr>
<tr>
<td>75-79</td>
<td>6.35</td>
<td>1.92</td>
<td>0.32</td>
<td>46.64</td>
<td>35.37</td>
<td>0.94***</td>
</tr>
<tr>
<td>80-84</td>
<td>5.90</td>
<td>1.37</td>
<td>0.61*</td>
<td>56.28</td>
<td>41.24</td>
<td>0.97***</td>
</tr>
<tr>
<td>85+</td>
<td>5.16</td>
<td>0.94</td>
<td>0.49</td>
<td>59.80</td>
<td>39.43</td>
<td>0.97***</td>
</tr>
<tr>
<td>All ages</td>
<td>4.90</td>
<td>1.73</td>
<td>0.35</td>
<td>18.54</td>
<td>11.85</td>
<td>0.92***</td>
</tr>
</tbody>
</table>

Note. Based on data from the Centers for Disease Control (courtesy of Dr. Alex Crosby).

* p < .05; ** p < .01; *** p < .001.

The act of suicide plays out a scenario calling for a specific method (Kreitman, 1976) that is scripted according to the individual’s sex, age, and cultural value system, and is also determined by the availability of the method (Marzuk et al., 1992). It is clear from our data (Figure 2) that firearms are being written into the suicide scenario of teenage girls and boys in the United States. Whereas the firearms preference increases among U.S. males from midlife on, it declines in U.S. women after their 20s. It is possible that the preference now being seen among late teenage girls signals a cohort-based change in death scenario to continue over their later years. The increased favoring of guns by older women in recent years is notable. Firearm use in suicide in U.S. females is probably more common than in most other countries in the world. Nevertheless, the differential use of firearms in suicide by U.S. men and women does not seem to explain the gap between their suicide mortality rates. The data in Table 4 show that in two neighboring countries, the United States and Canada, sharing similar economic and cultural influences but retaining some essential differences, the methods of suicide customarily employed by women and men are not quite the same. Canada does not have the same general acceptance of firearm ownership for self-protection as the United States. Repeated sets of legislation have been enacted in order to control the ownership and abuse of firearms in Canada. Therefore, it is not surprising that the proportion of suicides by firearms is smaller in Canadian than U.S. males, and much smaller yet in Canadian females than in both U.S. males and females. Firearms and poisoning are
equally likely to be used as a suicide method in the United States, while the latter is by far the method of choice for women in Canada. However, in Canada hanging is becoming more common in both women and men.

In conclusion, given the persistent disparity between women's and men's suicide survival rates despite variations in method over time and across countries, it appears that the gender paradox of suicide is not purely an artifact of gender differences in method. While method lethality contributes to the gender differences in mortality, it is likely that more suicidal acts by women are intended as nonfatal, as compared to those by men. This interpretation of the method data is consistent with data showing that in countries such as the United States, where the gender paradox has been documented, female death by suicide is viewed more negatively than male death by suicide, although nonfatal suicidal behavior is perceived as feminine. In other words, one of the reasons women do not kill themselves in the same numbers as men, even though they represent a majority of those who are suicidal, may have to do with the fact that killing oneself is considered unsuitable for women. A comparison of methods between the United States and Canada reveals that cultural factors are also influential in the choice of method. In countries like the United States, where guns are available and firearm use is socially acceptable, especially for men but also for women, guns are a method of choice for both women and men, and particularly so for men. A comparison of U.S. and Canadian data on suicide method also challenges the notion that women would always choose certain methods over others because of some intrinsic "womanly" characteristics. Clearly, the choice of method for women is embedded in local scripts of gender and suicidal behavior. Where a method assumes a gendered connotation, it tends to be selectively used; for example, when poisoning by psychotropic drugs was associated with femininity in some Western countries, it became the method of choice for women in those countries. Conversely, when a method loses its gendered connotation, as has been the case of firearms in the United States, it is increasingly used by both women and men. In recent years, women in the United States have used guns in suicides more often than men in Canada. Thus, gender cultures of suicidal behavior probably play a significant role in the differential lethality of suicides by the same method, as well as in the differential method preferences found in women and men in some communities.

The Recall Bias Theory

The second theory quoted by Moscicki (1994) states that the gender paradox may be an artifact of gender differences in reporting. Because women give more accurate accounts of their health history than men, it is assumed that they are also more able and/or willing to report their suicidal behavior. Hence, self-report studies would provide a fairly accurate representation of the prevalence of nonfatal suicidal behavior among women but would underestimate that of men. This theory addresses the high prevalence of nonfatal suicidality among women but does not explain men's high rates of suicide mortality.

We dealt with the question of whether the predominance of women among the suicidal is a reporting artifact in an earlier section of this article. Our conclusion was that the disparity in rates of nonfatal suicidal behavior between women and men is probably real, although perhaps less extreme than recorded, due to the stigma associated with male nonfatal suicidal behavior. We reviewed evidence showing that an excess of females among suicidal persons has been a consistent finding in both community and clinical studies from different localities. We also noted that at least in one country where the gender paradox has been documented, the United States, "attempting suicide" is perceived as a feminine act. In addition, we highlighted data showing that males in the United States are more concerned than fe-
males about being disapproved of for their suicidal thoughts and behavior. We also reported on data from U.S. and Canadian studies indicating that males are more critical of suicidal persons than females, particularly if the suicidal person is a male. Based on this evidence, we concluded that critical attitudes about male nonfatal suicidal behavior probably discourage such behavior, as well as its reporting in males.

A question that may be raised about the recall bias theory is why men, more than women, would minimize their nonfatal suicidal behavior, given that they acknowledge engaging in other kinds of potentially embarrassing behaviors. For example, male participants in a recent self-report study (Kessler, McGonagle, Zhao et al., 1994) admitted to higher prevalence rates of alcohol and drug dependence than female participants. Even more compelling are the figures for antisocial personality disorder (only lifetime figures can be reported because of small numbers), which were 5.8% for men, 1.2% for women. One of the reasons why males admit to engaging in antisocial behavior or drug abuse and yet may forget, deny, or repress their nonfatal suicidal behavior has to do with perceptions of the gender meanings of different deviant behaviors. In the United States, antisocial behaviors or illegal drug use are perceived as masculine, while nonfatal suicidal behavior is viewed as feminine (Canetto, 1991). Thus, a very unique and more serious stigma is attached to male nonfatal suicidal behavior, a stigma that may lead to selective recall in males.

In conclusion, the recall bias theory does not account for the gender paradox of suicide. A main limitation is that it addresses females' high rates of nonfatal suicidal behavior but does not deal with males' high rates of fatal suicidality. Furthermore, current data do not support recall bias explanations for men's low rates of nonfatal suicidal behavior. A disparity in women's and men's self-reported rates of suicidal behavior has been documented in independent studies in different locations, making it unlikely that the data simply reflect a recall bias. Data from the United States, however, suggest that negative attitudes toward male nonfatal suicidal behavior probably inhibit somewhat both the behavior as well as its reporting.

The Theory of Differential Rates of Depression and Alcohol Abuse

According to Mościcki (1994), the gender paradox of suicidal behavior may also be explained by "the differential rates of depression and alcohol abuse. Women have higher incidence and prevalence of depression, higher rates of recurrent episodes, and higher treatment rates than do men. Men, on the other hand, have higher rates of alcoholism and alcohol abuse" (p. 156). Mościcki speculates that women's high rates of suicidal behavior and low rates of suicide mortality may be related to women's high rates of depression and high treatment rates for depression: "Women may be as suicidal as men, but successful treatment for depression attenuates its severity and prevents suicide" (p. 156). According to Mościcki, however, "this explanation is not consistent with the higher observed rates of completed suicide in men" (p. 156). In other words, the differential morbidity theory of the gender paradox does not explain men's high rates of suicide mortality. But does it at least explain women's patterns of suicidal behavior?

Recent findings on gender and psychopathology are consistent with one of the premises of the differential psychopathology theory, that is, that females have higher rates of depression than males. For example, a recent U.S. National Comorbidity Survey (NCS) reported a higher prevalence of current (30-day) major depression in females than males (Blazer, Kessler, McGonagle, & Swartz, 1994; Kessler, 1995). An excess of females among the depressed was also observed over the 1-year and lifetime time frames, 12.9% in females versus 7.7% in males over 1 year, and 21.3% in females versus 12.7% in males lifetime (Kessler, McGo-
The NCS prevalence data are higher than those found in a similar study conducted in Ontario, Canada, but the gender ratio is the same (Offord et al., 1996). In addition, the data from the NCS show that the sex ratio has remained the same for over 40 years, although there has been increasing lifetime prevalence of major depressive episodes among both males and females in recent cohorts. Finally, in females, the lifespan course of depression, suicidal ideation, and nonfatal suicidal behavior conform to a similar pattern: They rise during adolescence and are high during young adulthood (Lewinsohn, Rohde, & Seeley, 1996).

A second premise of the differential psychopathology theory, that women have higher rates of treatment for depression than men, is also still supported by the data. Women represent a majority of people in psychotherapy in countries where the gender paradox has been recorded. For example, more women than men seek professional help for mental health problems in Ontario, Canada (9.7% vs. 5.8%, p < .0001) (Lin, Goering, Offord, Campbell, & Boyle, 1996). Women are overrepresented among those treated for depression in the United States (Hanna & Grant, 1997; see Nolen-Hoeksema, 1987, 1990, for reviews). For example, a U.S. survey of 42,862 respondents found that women with a single diagnosis of major depression, as well as those with a primary depression (defined as age of onset of major depression preceding that of alcohol use disorder), were more likely to have been treated for a depressive episode than men with the same diagnosis.

Mościcki speculated that women may be as suicidal as men, but that treatment prevents their suicide. If one takes into account the large number of females who experience suicidal ideation or behavior, as compared to the minority of men who kill themselves, women are, and continue to be, more suicidal than men. Death by suicide is actually a "low frequency event" compared to nonfatal suicidal behavior, especially during adolescence (King, 1997, p. 68).

The conclusion that women kill themselves in lower numbers than men because they are more successfully treated for their depression is not supported by the data. A National Institute of Mental Health (NIMH) naturalistic follow-up study of patients treated for depression over 18 months showed no main effects for gender or any significant interactions between gender and any other variable of interest including types of treatment, life events, and social support (Zlotnick, Shea, Pilkonis, Elkin, & Ryan, 1996). Women who have been treated for a mental disorder actually appear to be at greater risk for death by suicide than men (Allgulander, 1994; Black, Warrack, & Winokur, 1985; Borg & Stahl, 1982). For example, a U.S. study by Black and colleagues (n = 5,412) found that the standardized mortality ratio (ratio of observed deaths over expected deaths) from suicide, following discharge from the hospital, was almost 3 times higher in women than in men, 41.3 versus 15.0. The standardized mortality ratio for accidental death in women was also twice that observed in men, 4.0 versus 1.9, respectively. Similarly, a Swedish study by Allgulander (1994) recorded that the standardized mortality ratios of suicide before age 45 in persons treated for depressive neurosis were higher for women than for men, 15.7 versus 12.6, respectively. A serious limitation in the literature on suicide mortality following treatment is that a majority of longitudinal studies either included very few women (Pokorny, 1964, 1983, 1993), or did not examine gender patterns (Fawcett et al., 1990).

The conclusion that women's lower rates of death from suicidal behavior may be the outcome of successful treatment also ignores the fact that women's rates of suicide mortality have been fairly stable over recent decades. We have yet to note a preventive effect of psychological treatment on women's suicide mortality. In addition, rates of nonfatal suicidal behavior have been consistently high in women. If women had been receiving successful treatment, we should have recorded a drop
in their nonfatal suicidal behavior, which we have not.

A third premise of the differential psychopathology theory is that men have higher rates of alcohol and illegal substance abuse and dependence than women. Recent studies support this premise. For example, Kessler, McGonagle, Zhao and colleagues (1994) found that the U.S. lifetime and 1-year prevalence of alcohol abuse (without dependence), respectively, were 12.5% and 3.4% in males, but only 6.4% and 1.6% in females. For alcohol dependence the prevalence figures were also preponderantly male: 20.1% and 10.7% for male; 8.2% and 3.7% for female. For drug dependence, they were 9.2% and 3.8% for males, 5.9% and 1.9% for females. The ratio of male problem drinkers to female problem drinkers has remained the same over many decades (Gomberg, 1993; McCrady, 1988).

The ultimate weakness of the differential psychopathology theory is that it does not articulate a relation between men's high rates of alcohol abuse and suicide mortality. If one were to make a hypothesis for men, alcohol abuse, and suicidal behaviors parallel to the one proposed for women depression and suicidal behaviors, one would speculate that men's low rates of nonfatal suicidal behavior are related to their high treatment rates for alcohol abuse. It may be hypothesized that men may be as suicidal as women, but successful treatment for alcohol abuse prevents them from acting out their suicidal thoughts, except in a minority of cases, which have a fatal outcome. One could speculate that suicide mortality in men is higher precisely because of their higher rates of alcohol abuse, a hypothesis that finds some support in the high numbers of males who were found to be intoxicated at the time of their suicidal death (Mościcki, 1994). One would expect to see a decrease in rates of male nonfatal suicidal behavior concomitant with increased rates of treatment for their alcohol abuse. No research so far has documented this effect.

In sum, the differential psychopathology theory does not account for the gender paradox of suicidal behavior. Available data do not support the hypothesis of a preventive effect of depression treatments on women's suicidal behaviors, either fatal or nonfatal. In addition, the differential psychopathology described by Mościcki does not propose a relationship between alcohol abuse and suicidal behaviors in males.

The Socialization Theory

The fourth theory of the gender paradox discussed by Mościcki (1994) is that of "gender differences in socialization" (p. 156). She summarizes earlier work by Canetto (1991, 1992) indicating that in the United States "there are gender differences in culturally acceptable self-destructive behaviors" (p. 156): Specifically, suicide is viewed as a masculine behavior, as are alcohol and illegal substance abuse. They are disapproved of in women, but tolerated and even encouraged in men in some circumstances. For example, in the United States killing oneself may be viewed as a relatively powerful act for a male in response to a debilitating illness or a serious achievement failure (Canetto, 1997a). Conversely, "attempting suicide" is regarded as feminine. It is a behavior that is viewed negatively, especially by males, but one that is expected in females, in some circumstances. For example, "attempting suicide" may be viewed as an understandable "feminine" response to couple problems, particularly breakups and separations (see Canetto, 1992–1993; 1997a; 1997b; for reviews). According to the "socialization" theory, the gender paradox in the epidemiology of suicidal behavior flows from these gendered narratives of suicidal behaviors. It is suggested that women and men will tend to adopt the self-destructive behaviors that are congruent with the gender scripts of their cultures. For example, in the United States alcohol abuse may be the male alternative to "attempting suicide," given the stigma associated with explicit nonfatal suicidal behavior, especially nonfatal self-poisoning (Canetto, 1991).
The socialization theory of the gender paradox has received indirect support from several independent sources. First, females in the United States continue to be overrepresented among those who engage in nonfatal acts of suicidal behavior, while males continue to represent a majority of those who die of suicide. Thus, we have a congruence in the findings from the research on the epidemiology of suicidal behavior and the findings from the research on the acceptability of suicidal behavior.

Second, the gender paradox is most pronounced among adolescents and young adults of European American background, a group where the beliefs that "attempting suicide" is feminine and killing oneself is masculine have been most consistently documented. At the same time, exceptions to the gender paradox have been observed among some ethnic minority adolescents (e.g., Native Hawaiians), a finding that supports the hypothesis that the gender paradox is dependent on culture-specific narratives.

Third, there is evidence that identification with, or adoption of, behaviors considered feminine in the United States is associated with increased risk for nonfatal suicidal behavior (Harry, 1983; Remafedi, Farrow, & Deisher, 1991). For example, Harry found that males who were perceived as acting "feminine" during childhood were more likely to be suicidal during adulthood than "masculine" girls. Similarly, in their study of gay and bisexual male youth, Remafedi and colleagues observed that adolescents who scored high on a measure of conventional femininity were likely to have a history of nonfatal suicidal behavior.

Indirect evidence in support of the socialization theory also comes from communities where, because of their cultural distinctness, one finds variations and exceptions to dominant patterns of gender and suicidal behavior. One such culturally distinct community is the military. Earlier we noted that a dominant U.S. narrative is that women, not men, become suicidal in response to couple difficulties. A similar narrative has been documented in Canada (DeRose & Page, 1985). This narrative is very entrenched in the professional literature: It still influences the direction of much new research, as well as the interpretation of existing findings (see Canetto, 1992–1993; 1997a; for reviews). Studies conducted in the United States and Canada (Rothberg, Pagan, & Shaw, 1990; Rothberg & McDowell, 1988; Rothberg, Rock, Shaw, & Del Jones, 1988; Sakinofsky et al., 1996), however, have documented that, in the military, couple problems are by far the most common obvious precipitant of male suicides. A majority of these male suicides follow the breakdown of a relationship with a woman (Rothberg et al., 1988). For example, Rothberg and McDowell (1988) reported that relationship problems seemed to be associated with 94% of U.S. Air Force personnel suicides. Sakinofsky and colleagues found relationship problems to be the apparent leading "cause" of 72.7% of Canadian military suicides. These findings suggest that choices of suicidal behaviors are influenced not only by past gender socialization experiences but also by current ones. Narratives of gender that are dominant in one's current community may play as important a role as those dominant in one's community of origin. Males in the military, like civilian males, are overrepresented among those who die of suicide, a finding that suggests a continuity of male cultures across two different communities. Males in the military, however, have adopted a script of suicidal behavior that, among civilians, is considered a female script. The findings on male military suicide show that a more accurate name for the theory described in this section is cultural script theory, because the word socialization renders invisible the influences of adult socialization experiences. An important test of the cultural script theory of suicidal behavior would involve directly documenting prevailing meanings of gender and suicidal behavior in the military.

Another example of the role of cultural scripts on individual behavior comes from Micronesia via the work of Rubinstein (1983, 1987, 1995). Rubinstein found that
the actors, method, themes, and scenarios of suicidal acts of Micronesian youth were modeled after specific local scripts. For example, he documented that parent-child quarrels were predominantly scenarios of male adolescent suicide in Chuuk and Pohpei, but less so in the Marshall Islands, where the predominant scenario centered on love quarrels. In one island he was able to trace the original male suicide case that became the cultural model for later male suicides. Based on this research, Rubinstein (1983) concluded that cultural narratives “influence the dynamics and frequency” (p. 664) of individual suicides. Rubinstein (1987) explained that “individuals draw upon these cultural meanings in choosing their course of action and in giving this course of action some public legitimacy” (p. 145).

The cultural scripts theory of the gender paradox can account for some of the evidence reviewed in the lethality theory section. For example, it can explain why in some localities and during particular periods, women and men use different methods while at other times and places they do not, and why the mortality rates from the same method may vary by gender.

In addition, the cultural scripts theory can address the gender differences in reporting behaviors described in the recall bias section. For example, it can explain male reluctance to report on certain mental disorders and not others.

Cultural scripts can also explain the gender differences in psychopathology recorded in Western countries. For example, it can address why, in Western countries, depression is more common among women while alcohol abuse is more common among men. It can also account for the fact that the gender patterns of psychopathology observed in recent decades in Western countries are not replicated in all developing or non-Western countries. For example, in developing countries depression is not consistently more common in women than in men (Culbertson, 1997). Similar findings have been reported for Asian Americans (Root, 1995).

Finally, the cultural scripts theory can account for the gender paradox of suicidal behavior, as well as for exceptions to the gender paradox recorded so far around the world. In sum, the cultural scripts theory holds the most explanatory potential of the theories of the gender paradox reviewed in this article.

SUMMARY AND CONCLUSIONS

In this article we have focused on the gender paradox of nonfatal suicidal behavior, namely, reversed gender patterns of nonfatal and fatal suicidal behavior. This paradox has primarily been noted in English-speaking Western countries, such as Canada, the United States, the United Kingdom, and New Zealand. We addressed what we consider to be the most important questions concerning the gender paradox. Is it real or is it an artifact? If it is real, what might account for it?

Our first conclusion is that the gender paradox of suicidal behavior is a real phenomenon, not an artifact of data collection. At the same time, we find that it is a more unstable and more culturally bound phenomenon than traditionally assumed.

An important influence on the gender paradox may be cultural expectations about gender and suicidal behavior. Evidence from the United States suggests that the gender paradox may be prominent in localities or cultural communities where different suicidal behaviors are expected of females and males. These divergent expectations may affect the choices of both women and men, once suicide becomes a possibility, as well as the interpretations of those who are charged with determining whether a particular behavior is suicidal (e.g., coroners and clinicians). Cultural expectations about gender and suicidal behavior function as scripts; individuals refer to these scripts

3It is possible that as more countries and communities report their suicidal behavior statistics, we will find more exceptions and variations to the gender paradox of suicidal behavior.
as a model for their suicidal behavior, and to make sense of others’ suicidal behavior.

Of the theories reviewed in this article, the cultural scripts theory is the one that best accounts for the available data. In countries like the United States and Canada, where much of the relevant research has been performed, the cultural scripts theory can explain the genuine differences in rates and methods of suicidal behaviors in women and men, as well as the recording biases (e.g., the gender biases in death classification and the gender differences in reporting of past suicidal behavior) that may inflate the gender-divergent rates. Among the theories discussed here, the cultural scripts theory also generates the most testable hypotheses to address as-yet unanswered questions.

We have described some possible directions for future research suggested by the cultural script theory. The cultural scripts theory has also implications for public policy. For example, the data on the cultural influences of suicidal choices suggest some new possibilities for planning primary prevention programs. For example, educational programs to prevent suicide may do well to explicitly incorporate a gender-focused curriculum, which might include questions concerning the perceived acceptability of different suicidal behavior for females and males. A discussion of the limitations that gender ideologies impose on coping options may also be added to such programs. All things considered, the cultural scripts theory, and the findings obtained so far in its support, gives us some optimism about the prospect of undoing what otherwise may seem a fixed epidemiological gender phenomenon.

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