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# The roles of culture and gender in the relationship between divorce and suicide risk: A meta-analysis

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ABSTRACT

With some exceptions, literature has consistently shown that divorced populations are at higher risk for suicide than married ones. Here we make use of coefficients of aggravation (COAs), suicide rate ratios of the divorcees over the married, to study patterns of COAs and test the contribution of international sociocultural factors and gender to the relationship between divorce and suicide. We conducted a systematic search of electronic databases to identify ecological studies reporting suicide rates and ratios of those rates within different marital statuses between Jan 1, 2000 and Dec 31, 2013. In total, ten studies consisting in suicide statistics of eleven countries/areas were selected. Using random-effect modeling, we noted that the pooled COA for men and women were 3.49 (95% CI 2.43–4.56) and 3.15 (95% CI 1.74–4.56), suggesting both divorced men and women exhibited a greater risk of suicide than their married counterparts. Subgroup analyses revealed that COAs in Asian countries are significantly higher than those in non-Asian ones. Among the sociocultural measures retrieved from the HOFSTEDE index and the World Values Surveys, we noted significant associations between COA and four measures, including the individualism–collectivism score, the long-term orientation scores, the survival/self-expression score, and the gender inequality indices. The magnitudes and the directions of the associations however differ by sex. The results confirm that overall divorced people have an aggregate higher suicide risk than married ones. The method used in our research could reveal what cultural indicators are exerting effect on the relationship between divorce and suicide risk, which might change with sociocultural transition. More investigation into the relationships and then the construction of culturally appropriate suicide prevention policy is recommended.



## 1. Introduction

Marital dissolution or divorce is a consistently observed risk factor for suicide in most literature. This is evident in the high correlation between aggregate divorce and suicide rates (Bridges and Tankersley, 2009; Chuang and Huang, 2007; Inoue, 2009a, 2009b; Kondrichin and Lester, 2002; Leenaars and Lester, 1999; Park and Lester, 2006) as well as the higher risk of suicide among divorced populations compared to their married counterparts in population-level studies (Corcoran and Nagar, 2010; Denney et al., 2009; Kposowa, 2003; Stack and Wasserman, 1993; Yeh et al., 2008).

It is an intriguing question whether the positive relationship between divorce and suicide holds in different sociocultural contexts (Stack, 1987; Stack and Kposowa, 2011). The above effect has been found in countries of Western culture such as the U.S. (Denney et al., 2009; Inoue, 2009b; Stack, 1990b), Denmark (Stack, 1990a), Finland (Stack, 1992a), Norway (Stack, 1989), Canada (Trovato, 1987), Italy (Masocco et al., 2008), Northern Ireland (Corcoran and Nagar, 2010), Southeastern Serbia (Petrović et al., 2009), England and Wales (Yip and Thorburn, 2004) and Australia.

In countries of Eastern culture, findings were not as consistent as above. For example, in Hong Kong, the widowed and divorced women tended to have lower suicide rates than the married ones among older adults (Yip, 1998). In Japan, where family integration

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was still high in the study period (1950–1980), there was no link between divorce and suicide (Stack, 1992b). Interestingly, Chuang and Huang found that as other social and economic factors were controlled, divorce had no impacts on suicide rate in 23 cities and counties in Taiwan in 1983–1993 (Chuang and Huang, 2007). However, as the observation period extended to 1983–2001, divorce rate was found to correlate with suicide rate with similar control of other factors. In South Korea, divorce rate is shown to have correlation with suicide rate in the period of 1983–2002, however marriage rate was also positively related to suicide rate in a corrected regression analysis (Park and Lester, 2006). In a review of 789 findings from 132 studies on divorce and suicide, 615 showed positive linkage (Stack, 2000). In an ecological study on the relationship between divorce rate and suicide rate in 21 nations, 22 over 29 findings showed positive relationships (Lester and Yang, 1998). The problem is why the difference noted in the international survey and especially in Eastern Asian countries.

In a previous paper (Yip et al., 2012), we compared gender and age patterns of five countries using the 'Coefficient of Aggravation' (COA): a ratio of suicide rate among divorced to suicide rate among married groups. With an understanding based on the legacy of Confucian traditions, we suggested that socioeconomic and cultural transitions may underlie the differences in patterns observed. Gender inequality, individual-level cultural ambivalence, a desire for emotional interdependence and changing social welfare regimes were also hypothesized to play a cumulative role. As our paper points to the potential role of individualism/collectivism in influencing the relationship between divorce and suicide, literature directly dealing with the cultural moderation issue has been scant in the area. Recently, scholars began to notice the neglected impact of culture, in addition to socioeconomic determinants, on the population health (Eckersley, 2006; Mansyur et al., 2009). For example, in a collectivistic culture, people might get mutual support and make unpleasant life events less stressful (Triandis, 2000), which is potentially good for health. As social institution and beliefs are parts of culture, culture that tends to make poor people feel accountable for their own poverty may tend to have worse subjective health (Mansyur et al., 2009). Extending the above exploration, individualism as a cultural variable has been shown to have impacts on youth suicide, in which increased youth suicide might be due to a societal "tendency to promote unrealistic or inappropriate expectations of individual freedom and autonomy" (Eckersley and Dear, 2002). Cultural approval or disapproval of suicide may have increased or decreased suicide rates in different nations/areas (Stack and Kposowa, 2008). And the cultural axis of self-expressionism predicts suicide acceptability at both the individual and group levels in black males across nations (Stack and Kposowa, 2011). Research also showed that cultural practices of extended family and polygamy might render marital disintegration not a significant factor to suicide (Stack and Kposowa, 2011). Our previous study also showed that the cultural transition of family practices in East Asian countries/areas might be contributing to the patterns of the relationship between divorce and suicide (Yip et al., 2012). However, these studies did not use systematic measures of culture to conduct studies on the relationship between divorce and suicide and missed the chance to incorporate the well-established resources of cultural measurements for future comparative studies.

Since last century, in sociology and anthropology literature, culture has been used to designate "the entire way of life, activities, beliefs, and customs of a people, group, or society" (Smith and Riley, 2009). Among the hundreds of definitions of culture (Kroeber and Kluckhohn, 1952), the core theme "consists of explicit and implicit patterns of historically derived and selected ideas and their embodiment in institutions, practices, and artifacts" (Adams and Markus, 2004). Thus, culture could be construed as both "in the head" and "in the world", which have interactions with people through not only their mind but also the material world (Shore, 1996). Following the theme, the concept of culture has been quantitatively approached in two ways; either by creating dimensional measures based on individual responses to several culture-based questions (Taras et al., 2009) or using composite 'environmental' indices reflecting the socio-economic milieu i.e. cultural artefacts, institutions, systems etc. (Markus and Hamedani, 2007).

Lenzi et al. (2012) explored the relationship between culture and suicide rates using a large number of well-established systematic socio-cultural indexes (developed separately by Hofstede, Inglehart and Schwartz) and found strong positive associations with measures of secularization. They also discovered a curvilinear relationship between individualism/autonomy and suicide rates. In post-traditional countries (much more individualized) there was a negative correlation between the two (Lenzi et al., 2012). However, they did not specifically address influence of the above culture indicators on the relationship between divorce and suicide risk. Our current research fills the gap by using these cultural dimensions to test cultural moderating effects of the heterogeneity of COAs across countries/areas. Furthermore, our analysis could tease apart the potential moderation effects of individual cultural indexes, which could be used to explain the heterogeneity of COAs.

Gender inequality has been well formulated as part of the macro-factors that have impacts on population health (Krieger, 2011). There are different pathways that gender inequality leads to poor population health. For example, in addition to direct neglect of the health of women, discrimination against women may bring forth maternal deprivation, which then exert negative impact on the health of children and future adults (Osmani and Sen, 2003). As gender inequality has been implicated in our previous research on the relationship between divorce and suicide in Korea and Japan (Yip et al., 2012), we incorporate gender inequality indicators (United Nations Development Programme, 2010; World Economic Forum, 2012) in our model to systematically examine its effect on the relationship.

To summarize, we aimed to address the above research gap by expanding our previous comparisons and investigating the quantitative effect of sociocultural differences and gender inequality on the relationship between divorce and suicide risk. A systematic review and meta-analyses of literature on COAs by gender was carried out to estimate 1) differential impact by gender (if any) and 2) extent of variation within studies that is explained by sociocultural indices and practices of gender inequalities.

## 2. Methods

### 2.1. Search strategy and selection criteria

We systematically searched publications in English or Chinese addressing divorce and suicide from PubMed, PsycINFO, PsycARTICLES, Sociological Abstracts, ISI Web of Knowledge and the Chinese Database, using keywords related to divorce (divorce* OR marri* OR marital) and suicide (suicid*). Studies published between Jan 1, 2000 and Dec 31, 2013 were included. Search for additional relevant publications was conducted by scanning the reference lists of the identified publications.

We followed the MOOSE guidelines (Stroup et al., 2000). Specifically, studies were included if they (1) were with an ecological study design and (2) reported number or rates of suicides among divorced or married groups. Studies that did not report the aforementioned outcomes but directly provided the COA were also included. Studies having suicide attempts as their study outcomes were excluded, as the nature of suicide attempts and suicides differ considerably. Studies that only addressed suicides among specific