



# Genetic and environmental contributions to relationships and divorce attitudes



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## ABSTRACT

Attitudes toward divorce are believed to play a critical role in marital quality and the probability of divorce later in life. They are traditionally understood to result from social, demographic and environmental factors, including personal experience in relationships, family values, religion and economic incentives. An alternative line of research suggests that genetically influenced psychological dispositions have an important role in divorce and other relationship attitudes as well. The integration of these two lines of research however, remains embryonic. Here we address this lacuna by exploring how social and genetic factors correlate with each other, and are modified by one another. Specifically, we find that environmental factors and life events, such as going through a divorce, moderate reported genetic influences on attitudes toward divorce. The reduction in the heritability of divorce attitudes by life events is complex however. We find that the genetic influence to select into or experience a divorce is correlated with the genetic influence toward divorce attitudes. In addition, we also identify notable sex differences in the effect of divorce itself on subsequent attitudes toward divorce. Specifically, the importance of personal experience increases among women, while the importance of familial factors increases for men.

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## 1. Introduction

One of the primary causal factors of increasing rates of divorce in Democratic countries has been more accepting attitudes toward divorce within broader society (Thornton & Young-DeMarco, 2001). Traditionally, sources of attitudes on divorce have been located in social and environmental factors, such as the sum total of personal divorce experience, religious beliefs, or upbringing, including being raised in a divorced home (Amato, 2010; Kapinus, 2004; Sieben & Verbakel, 2013). However, as the study of human behavior has become more interdisciplinary, another stream of research has emerged, suggesting that, in addition to social and economic factors and the environmental precipitants surrounding these influences, a genetic component may contribute to differences in how individuals see, engage in, and react to, the world, thereby contributing to the variation in divorce attitudes and outcomes (Bouchard, Lykken, McGue, Segal, & Tellegen, 1990; Eaves, Eysenck, & Martin, 1989; Jockin, McGue, & Lykken, 1996; Olson, Vernon, Harris, & Jang, 2001; Spotts et al., 2004).

Regarding pro-divorce attitudes, these two lines of inquiry, social and genetic, have remained largely independent of one another, and the interplay between them is only beginning to be explored. Such continued exploration is important because if social, environmental and genetic factors all play some role in contributing to relational styles and outcomes, however large or small, proximal or distal, through attitudes or other factors, then investigating their integration may enlighten our understanding of the ways people enter relationships, the reasons why those relationships often dissolve, and how individuals differ in selecting into, experiencing and reacting to such events.

Here, we examine the interplay between genetic and environmental influences on divorce attitudes and relationship life-events. Within estimates of genetic and environmental influences resides the potential for an individual's genes to be correlated with, or conditional upon, environmental stimuli. Certain people may be more likely, based in part on genotypic factors, to enter into particular environments than others. As a result, due to one's particular genotype, some people may experience multiple doses of an environmental stimulus that lead to pro-divorce attitudes and divorce itself, while others may receive none at all. This occurrence may be labeled gene–environment correlation. In addition, more

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genetically similar individuals may also react more similarly to certain experiences such as getting a divorce. Thus, we also explore the possibility of a gene–environment interaction, in which the life event of a divorce may moderate genetic influences on attitudes toward divorce.

We proceed with a brief review of the sociological and behavior-genetic literature on divorce and divorce attitudes. We then present our analysis of the correlation between relationship risk events such as divorce and marital separations, and attitudes toward divorce. We provide evidence of gene by environment correlation and interaction between attitudes and life experiences, noting important sex differences in our findings. We conclude with a discussion of the importance of including underlying biological factors for developing comprehensive and accurate models of how attitudes toward divorce and divorce itself affect each other.

### 1.1. Where do divorce attitudes come from?

The literature on divorce identifies an important relationship between attitudes toward divorce and experiencing divorce. In this view, the risk for divorce is partly attributed to intergenerational transfer of attitudes, whereby experiences in the home, including having divorced parents, affect a child's attitudes toward divorce and their eventual risk for divorce in adulthood (Cunningham & Thornton, 2006; Thornton, 1985). That is, “attitudes toward marriage and divorce are partially pre-formulated beliefs individuals carry into their relationships” (Miles & Servaty-Seib, 2010, p. 209). Adult children's acceptance of divorce is also affected by their own marriages: marriage without prior cohabitation decreased divorce approval, while divorce from a first marriage increased it. Longitudinal studies revealed that those who had experienced divorce themselves developed more favorable attitudes toward divorce, and remarried individuals held more positive attitudes toward divorce, which in turn increased the risk of undergoing a subsequent second divorce (Amato & Booth, 1991; Whitton, Stanley, Markman, & Johnson, 2013). Similar results have been found in Australia and Europe (Sieben & Verbakel, 2013). In summary, attitudes toward divorce constitute an important independent risk factor because they influence the risk of divorce itself (Kapinus, 2004; Kurdek & Siesky, 1981; Sieben & Verbakel, 2013).

The effect of parental divorce on attitudes toward divorce differs by sex. Females whose parents are tolerant of divorce, who feel their parents should divorce, or who are not close to their fathers have the most positive attitudes toward divorce, while males who share the first two characteristics but who are not themselves married are most likely to endorse divorce (Kapinus, 2005). Additional indicators suggest that different attitudes toward divorce may be driven, at least in part, by women's education and economic independence. Examining changing attitudes toward divorce from 1974 to 2002, Martin and Parashar (2006) find that women with college degrees have moved from being the most permissive in their attitudes toward divorce to becoming much more intolerant of divorce. The commitment to high-investment parenting in the face of modern societal pressures and a global economy is believed to be the reason. On the other hand, women with no high school degree have become increasingly permissive in their attitudes toward divorce.

### 1.2. Behavior genetic research – Why people differ

A separate stream of research focuses on behavior-genetic techniques and the source of variance has found that the tendency to get married and divorced is partly heritable (Jerskey et al., 2010; McGue & Lykken, 1992). These genetic influences, however, can also be mediated through certain behaviors and personality traits (Jockin et al., 1996). Trumbetta, Markowitz, and Gottesman

(2007), building upon earlier works elucidated the role of genes and environment for marital status, find that genetic factors have a role in stable marriages, but environmental factors play the primary role in the propensity to wed more than once. Furthermore, genetic and environmental influences on marriage itself change in response to life events. For example, Spotts and colleagues found that genes have little role in explaining perceived marital quality and satisfaction (Spotts et al., 2004; Spotts, Prescott, & Kendler, 2006). Rather, the overwhelmingly amount of variance could be attributed to environmental factors.

Attitudes toward divorce have also shown to be heritable (Bouchard & McGue, 2003; Eaves & Eysenck, 1974; Martin et al., 1986). Extant studies report that roughly 52–58% of the variance on divorce attitudes can be attributed to unique experiences, 0–23% to shared familial experiences, and 25–47% to genetic influences. However, such univariate estimates represent only an initial approximation. They do not include the potential for genetic influences to have a role in how individuals select into, modify, construct and reconstruct their experiences. This is important because if attitudes toward divorce are genetically influenced, as is the risk for divorce itself, it may be that people with such liability may self-select into environments, or partners, and also information differentially, which place them at higher risk for divorce, and this factor may become inadvertently conflated in estimates of genetic influences on other social and genetic forces. For example, people with more tolerant attitudes toward divorce may be more likely to enter a wide variety of relationships that provide incentives, reinforcements and rejections that make them more likely to marry, even when they are not confident that their relationship will endure. They may also prove more likely to seek exit rather than work on a challenging relationship. These are only a few possibilities that may influence how environmental and genetic forces can interact to differentially influence liability for divorce. Thus, there may be shared genetic factors, which influence both divorce attitudes as well as risk for divorce itself. On the other hand, and equally important, environmental factors may mediate or moderate genetic influences.

Given that genetic and environmental influences are found for both attitudes toward divorce as well as divorce itself, parents may transmit a double dose of risk to their offspring. In addition, empirically, the two may be conflated in univariate estimates. That is, the actual experience of divorce may itself shift the relative contribution of genetic and environmental factors in constituting subsequent attitudes toward divorce, and thus may, in turn, affect the risk of actual divorce as well.

We begin our analysis by exploring if attitudes toward divorce differ between people who have been divorced or separated and those who have not been divorced or separated. We then seek to affirm that these attitudes and the likelihood of experiencing a divorce are in part genetically influenced, and do so using a very large sample of twins and relatives. These preceding steps are necessary to test our main hypotheses, that *genetic factors, which influence attitudes toward divorce, are correlated with the actual life event of getting divorced or experiencing a marital separation. In addition, we expect genetic and environmental influences on divorce and cohabitation attitudes are moderated by experiencing a divorce, marital separation or broken relationship.*

## 2. Methods

The sample consists of a large study of twins ( $n = 14,781$ ), aged 18–96 years ( $\mu = 49.5$ ,  $\sigma = 17.6$ ). Complete twin pairs include 1885 female monozygotic (MZ) twin pairs, 1183 female dizygotic (DZ) twin pairs, 790 male MZ pairs, 583 male DZ pairs, and 1134 female–male twin pairs. A large questionnaire on “Health and Life

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