

Article

Sociopolitical Attitudes Through the Lens of Behavioral Genetics: Contributions from Dr Nicholas Martin

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Abstract

Professor Nicholas (Nick) Martin spearheaded initial investigations into the genetic basis of political attitudes and behaviors, demonstrating that behaviors that are perceived as socially constructed could have a biological basis. As he showed, the typical mode of inheritance for political attitudes consists of approximately equal proportions of variance from additive genetic, shared environmental and unique environmental sources. This differs from other psychological variables, such as personality traits, which tend to be characterized by genetic and unique environmental sources of variation. By treating political attitudes as a model phenotype, Nick Martin was able to leverage the unique pattern of observed intergenerational transmission for political attitudes to reexamine the quintessential assumptions of the classical twin model. Specifically, by creatively leveraging the nuances of the genetic architecture of political attitudes, he was able to demonstrate the robustness of the equal environments assumption and suggest corrections to account for assortative mating. These advances have had a substantial impact on both the fields of political science, as well as behavioral and quantitative genetics.

Keywords: Political attitudes; equal environments assumption; assortative mating

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Commentary

The idea that political attitudes are heritable remains a contested hypothesis in political science. When Nick Martin first published his seminal paper on the heritability of attitudes in the *Proceedings of the National Academy of Sciences* nearly 35 years ago (Martin et al., 1986), the proposition was unfathomable to most social scientists. Then, along with Eaves et al. (1989), Martin expanded his inquiry into the transmission of social attitudes, replicating his findings and pairing the investigation with the transmission of personality traits. Still, this research program was generally ignored in Political Science, which would have been the most natural audience given the subject matter; however, psychologists, especially those within the field of behavioral genetics, made occasional references to it (e.g., Bouchard et al., 1990; Tesser, 1993). The Political Science community finally took notice of the possibility that political attitudes were heritable after the publication of Alford et al.'s (2005) manuscript, which recapitulated the decades-old findings. Even 20 years after his initial publication, the suggestion that attitudes could be anything other than socially constructed was treated as heresy. In their fury, opponents of the proposition attacked the assumptions of the twin model (Charney, 2008; Suhay et al., 2007) or questioned whether it was ethical to explore possible genetic components of attitudes. At academic conferences, scientists presenting results about the heritability of attitudes were accused of being eugenicists. As the attacks raged, Nick privately counseled patience. He had witnessed

similar inquiries of twin methods in the 1970s and 1980s and, with the confidence drawn from previous experience, understood that behavioral genetic methods would again prevail over the detractors.

Social Attitudes as a Model Phenotype

While the heritability of political attitudes was ignored by political scientists, within behavioral genetics it was treated as a model phenotype due to its unique mode of intergenerational transmission. Specifically, political attitudes have a significant additive genetic component, a significant shared environmental component, and a significant unshared genetic component. By contrast, most adult psychiatric disorders and psychological behaviors tend to be characterized by additive genetic and unique environmental components (childhood and adolescent behaviors occasionally have a significant shared environmental component, the importance of which decreases at older ages). Furthermore, there is a substantial spousal correlation for political attitudes. Because of the mode of intergenerational transmission, it was possible to use political attitudes as a model phenotype to test a variety of methodological components of the classical twin design.

By using attitudes as model phenotypes, Nick Martin was able to explore two essential assumptions of the twin model to demonstrate its robustness: violations of the equal environment assumption and violations of the independent assortative assumption. These assumptions are necessary to obtain unbiased estimates of the parameters from twin models.

The equal environments assumption requires that the environments of monozygotic (MZ) and dizygotic (DZ) twins are functionally equivalent: the environments of MZ twins are

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not systematically more similar than those of their DZ counterparts. Critics of the twin model often opine that because MZ twins are more genetically similar than DZ twins, the world treats them more similarly thus violating the equal environments assumption. A cursory perusal of the items that contribute to classical zygosity assessments appears to suggest that parents (a central focus of children's environment) unwittingly treat MZ twins more similarly than DZ twins (Ooki et al., 1990). For example, as children, MZ twins are more likely to share the same bedroom, be dressed in matching clothing and have the same friends, relative to their DZ counterparts, and this environmental similarity at early ages could lead to enhanced similarity later in life. Thus, the quintessential assumption is that MZ twins are more similar because they spend more time together. This assumption, however, can be empirically tested with longitudinal twin data. What Nick Martin and his colleagues found was that attitudinal similarity leads to social contact, and reciprocally, that contact leads to increased similarity (Posner et al., 1996). As such, it is not the case that environmental treatment drives twins to be more similar, but instead that internal motivation, driven in part by genetic factors, leads MZ twins to phenotypic similarity and social contact. This clearly contradicts what would be observed if violations of the equal environment assumption caused MZ similarity.

Another place where Nick Martin was able to leverage the unique components of social attitudes was to explore the implications of assortative mating on the heritability (Baker et al., 1996). The random assortment assumption of the classical twin model requires that spouses are uncorrelated for the traits of interest. While there is minimal spousal resemblance between most personality traits or psychiatric disorders, for social attitudes and other social phenotypes such as religiosity, there is a substantial spousal correlation (Zietsch et al., 2012). Spousal phenotypic correlations increase the genetic similarity between DZ twins for the particular phenotype, consequently increasing the DZ phenotypic correlation. If assortative mating is ignored, it can inflate the estimates of the shared environment and deflate the estimate of the heritability.

When considered jointly, the lack of violation of the equal environments assumption paired with the failure of the random assortment assumption implies that the heritability of political attitudes is actually larger than would be expected by a standard twin model.

Direct Contributions to Political Science

Professor Nick Martin has coauthored more manuscripts that have appeared in top-tier political science journals than most

card-carrying political scientists, but perhaps his greatest contribution to political science was the prescience of adding items that assess social attitudes into his twin studies; specifically, in both the Canberra Twins study (circa 1980s) and the extended study of Australian Twins (circa 1989–1994), and in the Virginia 30,000 Study of Twins and their relatives (circa 1988–1994). The addition of political attitudes items to these studies made it feasible to explore the possibility that social attitudes had a genetic component and begin to map out the potential biology of political attitudes. With the data in hand, Nick Martin encouraged collaborations where he would generously provide guidance and mentorship to scholars around the globe who were interested in exploring these questions (and his generosity extended well beyond the field of political science). His collaborations with political scientists fueled a resurgence of research in modes of transmissions of cultural values.

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