Electoral Studies 33 (2014) 7–18

Contents lists available at SciVerse ScienceDirect

Electoral Studies

journal homepage: www.elsevier.com/locate/electstud

A generational model of political learning

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ARTICLE INFO

Article history:
Received 10 June 2013
Accepted 24 June 2013

Keywords:
Bayesian learning theory
Party identification
Partisan change
Running tally
Generational imprinting

ABSTRACT

We propose a mathematical framework for modeling opinion change using large-scale longitudinal data sets. Our framework encompasses two varieties of Bayesian learning theory as well as Mannheim's theory of generational responses to political events. The basic assumptions underlying the model are (1) that historical periods are characterized by shocks to existing political opinions, and (2) that individuals of different ages may attach different weights to those political shocks. Political generations emerge endogenously from these basic assumptions: the political views of identifiable birth cohorts differ, and evolve distinctively through time, due to the interaction of age-specific weights with period-specific shocks. We employ this model to examine generational changes in party identification using survey data from the 1952–2008 American National Election Studies.

Do political experiences in adolescence and early adulthood powerfully shape subsequent attitudes and behavior? Are citizens responsive to political information throughout their lives? Is their incorporation of new information consistent with the precepts of rational political learning? And how do individual responses to political events add up to large-scale shifts in political opinions over decades or generations?

Our aim here is to develop and apply a mathematical model of opinion change that can shed light on these questions. The model is quite simple, with only two "moving parts"—(1) a sequence of parameters characterizing the political events of successive historical periods and (2) a sequence of parameters representing the distinctive weights attached to those events by individuals at various points in the life-cycle. Despite its simplicity, the model is sufficiently flexible to subsume a variety of more specific models, ranging from Bayesian learning theories (Achen, 1992; Gerber and Green, 1998) to Mannheim's (1952) generational theory of political change.

Our empirical analysis employs longitudinal data to estimate the two sequences of parameters that interact to produce political change over time and across generations. In this respect, our work is firmly situated in the long tradition of "cohort analysis" exemplified by the work of Campbell et al. (1960, chap. 7), Carlsson and Karlsson (1970), Converse (1969, 1976), Abramson (1975), Markus (1983), and Miller and Shanks (1996), among others. However, our analysis departs in some important ways from the theoretical framework underlying most of this work, the so-called "Age-Period-Cohort" (APC) framework.

The APC framework treats political attitudes or behavior as a function—typically a simple additive function—of variables indexing each individual's age, year of observation ("period"), and year of birth ("cohort"). One fundamental (and much-remarked) problem with this approach is that the model in its general form is statistically underidentified; the age, period, and cohort variables are collinear. As a result, distinct age, period, and cohort effects cannot be disentangled without additional, more or less arbitrary assumptions.

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http://dx.doi.org/10.1016/j.electstud.2013.06.004

An even more significant (but less-remarked) limitation of the APC framework is that it lacks a clear theoretical rationale. As Markus (1983, 720) put it, "the APC model is primarily an accounting equation rather than an explanatory one. That is, its purpose is to partition variation into distinct bundles (age, period, cohort); it is rarely purported to represent in mathematical form the underlying process generating the observed data."

In combination, these two limitations of the APC framework seem to produce a pernicious mixture of empirical complexity and conceptual confusion. For example, analysts often overcome the identification problem by imposing constraints on the various age, period, and cohort effects that have odd and presumably unintended implications for observed patterns of generational change. And since no analyst really believes that an individual's birth year has a direct causal impact on her political attitudes or behavior, "cohort" effects in the APC framework are often loosely interpreted as reflecting some mysterious combination of past "period" effects and (unmodeled) generational imprinting—a state of affairs that inspired Converse (1976, 80) to wonder "who is responsible for insisting on the conceptual partition between 'period effects' and 'generational effects,' since it seems to verge on a distinction without a difference."

Our aim here is to develop an alternative to the APC framework that is more explicitly grounded in theories of political learning. Rather than attempting to partition observed variance into additive "period" and "cohort" components by brute force, we posit a single process of political learning in which the two important elements are (1) period-specific "shocks" reflecting the distinctive political events of a given time period, and (2) age-specific "weights" reflecting the extent to which these shocks are internalized by individuals at various points in the life-cycle. Generational patterns of political change arise endogenously from the interaction of these basic elements—a form of interaction that cannot be captured within the conventional additive APC framework.[1]

Our empirical analysis focuses on partisan learning as reflected in changing levels of party identification in the American National Election Studies (ANES) data from 1952 through 2008. Party identification provides a useful empirical focus for a variety of reasons as cogent now as they were for Converse a generation ago, including "the demonstrated importance of these abiding feelings of party attachments in the determination of voting choices," the fact that "few time series available in sample survey data … are now as rich or as long," and the fact that partisanship has been "a workhorse in efforts to develop a proper methodology of cohort analysis" (Converse, 1976, 9). However, our framework is intended to be sufficiently general to apply to a wide variety of political attitudes and beliefs, and we shall conclude by calling for just such comparative analysis.

1. Three models of political learning

We begin by describing three distinct models of political learning through the life-cycle. There are strong family resemblances among these three distinct models, and indeed all three will turn out to be encompassed by a more general framework in which each appears as a special case. The more general framework will serve as the basis for our empirical analysis, so that data can be used to assess the adequacy of the special assumptions underlying each of the distinct models presented here. However, from the standpoint of fixing ideas it seems preferable to proceed from the simplest model to more complex alternatives rather than beginning with the general framework and deriving the distinct models as special cases.

All three models are *generational* in the sense that they differentiate individuals at any point in time solely on the basis of when they were born. It would certainly be possible—and, for some purposes, desirable—to elaborate this framework in order to incorporate other politically relevant individual characteristics. However, in the simple formulation offered here, all the respondents of similar age in a given survey are treated as homogenous, and their political views are accounted for on the basis of the sequence of political events they experience in common at different points in their shared life-history up to the point at which they are interviewed.[2]

In each model, political events are represented as a sequence of "shocks" to existing partisanship. We do not measure these events directly, but infer their effects from observed changes in partisanship. For example, nonsouthern whites became noticeably more Republican between 1982 and 1984, and we infer that political events in that two-year period were, on balance, perceived as favorable to the Republican Party. Our analysis provides a quantitative estimate of the magnitude of the corresponding partisan shock, but does not attempt to attribute it to specific events such as the robust economic recovery from the recession of 1981–82 or the respective presidential campaigns of Ronald Reagan and Walter Mondale.

The three models differ in how individuals are supposed to incorporate relevant information at various points in their lives. In the first model, an individual's attitude or belief is based upon a simple arithmetic average of all the relevant political events she has experienced throughout her life. In the second model, recent events receive more weight than

[1] Brady and Elms (1999) proposed an APC model of political participation in which period effects multiply age- and cohort-specific baseline levels of participation. Their model, like ours, transcends the conventional additive APC framework; but from the perspective proposed here it does so in a way that is precisely backward. For Brady and Elms, time periods may be more or less intense but have no distinctive political character, while cohort-specific baseline levels of participation presumably reflect (unspecified) differences in political socialization. In the model proposed here, the defining characteristic of each time period is a distinctive political "shock"; age plays the role of multiplier, causing individuals of different ages to respond to these period effects more or less intensely.

[2] In our empirical analysis of party identification we render this assumption more plausible than it would otherwise be by excluding African–Americans and southerners—two groups that responded very distinctively to political events in the historical period covered by our analysis.