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Early-Childhood Conduct Problems Predict Economic and Political Discontent in Adulthood: Evidence From Two Large, Longitudinal UK Cohorts

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Abstract

Longstanding interest has been directed toward the etiology of sociopolitical attitudes. Personality traits have been posited as antecedents; however, most work addressing such links has been limited to cross-sectional study designs. The current study used data from two large (both $Ns > 8,700$), longitudinal cohorts of individuals from the United Kingdom who were parent-assessed on a measure of temperament (assessing anxiety, conduct problems, and hyperactivity) at age 5 or 7 years and on a range of sociopolitical attitudes at age 30 or 33 years. In both cohorts, higher levels of childhood conduct problems predicted higher levels of economic and political discontent in adulthood. These associations were still evident when controlling for sex, childhood intelligence, and parental social class. In both cohorts, this pathway was partially mediated by educational attainment and achieved social class. These findings are consistent with the perspective that early-life temperament gives rise to adult political sentiment.

Over the years, considerable interest has been directed toward the etiology of social and political attitudes (e.g., Eysenck, 1954; Jost, Glaser, Kruglanski, & Sulloway, 2003). One major and longstanding focus of research has centered on whether political orientation is associated with individual differences in personality traits (e.g., Adorno et al., 1950; Eysenck, 1954; Jost et al., 2003; Sibley, Osborne, & Duckitt, 2012). Meta-analytic findings have supported the notion that personality is related to political attitudes: In Big Five personality trait terms, conscientiousness and openness are positive and negative predictors, respectively, of political conservatism (Sibley et al., 2012). A range of narrower constructs, including need for closure and intolerance of ambiguity, are also positively associated with political conservatism (Jost et al., 2003; Van Hiel et al., 2010).

A major criticism of this body of work has been the near-exclusive focus on cross-sectional study designs, although some recent exceptions to this trend are

notable. For example, Perry and Sibley (2012) analyzed data from a New Zealand sample of young adults ($N = 190$) who were assessed on Big Five personality traits, right-wing authoritarianism, and social dominance orientation twice over a 9-month period. The authors observed that across the two time points, higher levels of agreeableness led to lower levels of social dominance orientation, and higher levels of openness led to lower levels of right-wing authoritarianism (see also Sibley & Duckitt, 2010, 2013).

Perhaps most interestingly, two studies have assessed the relationship between early-childhood temperament/personality and adult political attitudes (Block & Block, 2006; Fraley et al., 2012). In the first of these studies, Block and Block (2006) found that a range of (teacher-rated)

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early-childhood characteristics—including anxiousness, fearfulness, and passivity—predicted (self-rated) political conservatism at age 23. More recently, Fraley and colleagues (2012) conducted a similar study, examining the relationship between childhood temperament at age 4 and political conservatism at age 18. In this study, political conservatism was predicted by lower levels of attentional focusing and restlessness and by higher levels of fearfulness.

While these studies have added a valuable longitudinal dimension regarding the linkages between temperament/personality and sociopolitical attitudes, important limitations are also apparent. First, the Block and Block (2006) study relied on a small sample ($n = 49$ female, $n = 46$ male; the sexes were analyzed independently), and the reported results were not statistically significant at the standard threshold (i.e., $p < .05$). Second, while Fraley and colleagues (2012) used a substantially larger sample ($N = 708$) in their study, political conservatism was assessed when the participants were in late adolescence (age 18). Late adolescence-early adulthood is a well-known period of significant attitudinal change and development (Alwin & Krosnick, 1991). As such, it is unclear whether early-life personality is predictive of mature adult sociopolitical attitudes.

Third, in both of the child-to-adult studies, the links between temperament/personality and political attitudes in adulthood were comparable in magnitude with those reported in adult cross-sectional studies (e.g., Sibley et al., 2012). This observation, coupled with work noting that temperament/personality shows only moderate stability over childhood and adolescence (Lewis & Plomin, 2015; Roberts & DelVecchio, 2000), raises a concern regarding the plausibility of such long-term effects.

More generally, these studies focused on a general political conservatism measure; however, despite arguments for the validity of a generalized "left-right" construct (Jost, Federico, & Napier, 2009), it is well established that political attitudes reflect a number of distinct components that are not well characterized by a single dimension (Cheng, Bynner, Wiggins, & Schoon, 2012; Feldman & Johnston, 2014).

Finally, the discussion regarding why early temperament predicts adult political sentiment is typically restricted to motivated social cognition accounts (e.g., Jost et al., 2003). However, it is likely that such links reflect a variety of broader mediating pathways. For example, two plausible mechanisms that have yet to be explored are educational attainment and achieved social class. Indeed, it is well noted that early-life temperament impacts educational attainment (Lewis, Asbury, & Plomin, 2017), and educational attainment and social class are well-noted predictors of political sentiment (Hello, Scheepers, & Sleegers, 2006; Phelan,

Link, Stueve, & Moore, 1995). Educational attainment and achieved social class are thus a viable piece of the broader picture.

The Current Study

Given the theoretical importance of establishing the role of early-life temperament/personality for adult sociopolitical attitudes, and to overcome limitations of previous research in the field, the current study examined this relationship in two large samples ($Ns > 8,700$) of UK individuals who were assessed on several temperament characteristics in early childhood (age 5 or 7) as well as sociopolitical attitudes in adulthood (age 30 or 33). These two data sets thus provide the best opportunity to date for testing how early-life personality relates to adult sociopolitical attitudes. In line with previous research highlighting a role for sex, parental social class, and childhood intelligence—that is, each being correlated with both childhood temperament and sociopolitical attitudes (Bradley & Corwyn, 2002; Deary, Batty, & Gale, 2008; Schoon, Cheng, Gale, Batty, & Deary, 2010)—these variables were included as covariates in the present analyses. In addition, the role of educational achievement and achieved social class as mediators of any observed relationship between early-childhood temperament and adult sociopolitical attitudes was formally assessed.

Method

Participants

The data used in this analysis were drawn from two longitudinal cohort studies in the United Kingdom: (a) the British Cohort Study 1970 (BCS1970; Elliott & Shepherd, 2006; https://discover.ukdataservice.ac.uk/series/?sn=200001) and (b) the National Child Development Study 1958 (NCDS1958; Power & Elliott, 2006; https://discover.ukdataservice.ac.uk/series/?sn=2000032).

The BCS1970 is a longitudinal study examining 17,196 people born in England, Scotland, and Wales during 1 week in 1970. The current study examined data taken from sweeps of participants at age 5 and 10, collected in 1975 and 1980 by the Institute of Child Health at the University of Bristol, and participants at age 30, collected in 2000 by the National Centre for Social Research, managed by the Centre for Longitudinal Studies. Complete data for the temperament measures were available for 12,574 individuals at age 5. Of these individuals, 8,745 provided complete data for all of the sociopolitical attitude measures, and 6,661 also had complete data for the covariate measures. Fifty-two

percent of the sample was male; 93% reported European (United Kingdom or other) ethnicity, and the rest of the sample was a mix of West Indian, Indian/Pakistani, "other" ethnicity, and those who did not state their ethnicity.

The NCDS1958 is a longitudinal study examining 17,500 people born in England, Scotland, and Wales during 1 week in 1958. The current study examined data taken from sweeps of participants at age 7 and 11, collected in 1965 and 1969 by the National Children's Bureau, and participants at age 33, collected in 2000 by the Social Statistics Research Unit at City, University of London. Complete data for the temperament measures were available for 9,646 individuals at age 7. Of these individuals, 8,777 provided complete data for all of the sociopolitical attitude measures, and 6,316 also had complete data for the covariate measures. Forty-nine percent of the sample was male; 96% reported European (United Kingdom or other) ethnicity, and the rest of the sample was a mix of African, Indian/Pakistani, and "other" ethnicities.

As noted above, data from both cohorts were collected by independent investigators, and the current study had no control over the sampling strategy or sample size (i.e., the present work is a secondary analysis of archival data). Nonetheless, statistical power in both cohorts was excellent: e.g., 95% power ($\alpha = .05$, two-tailed) to detect a zero-order association (r) of .05.

Measures

Temperament. When participants in the BCS1970 sample were age 5, their parents provided an assessment of their temperament using a 19-item version of the Rutter Behaviour Scale (Rutter, Tizard, & Whitmore, 1970). These items tap a range of behaviors broadly concerned with anxiety, conduct problems and aggression, and hyperactivity. Parallel analysis (Horn, 1965) indicated that three factors were present. Principal axis factoring (extracting three factors) with promax rotation was subsequently administered. The model solution showed three clearly interpretable factors. These factors were clearly discriminated by items reflecting anxiety, conduct problems, and hyperactivity, respectively, and so were labeled accordingly (see the Supplemental Material available online for more details). In the subsequent analyses, these factors were operationalized using a structural equation modeling approach (see further details in Results): Items that loaded ≥ .40 on a given factor were used as indicators (items that loaded ≥ .40 on more than one factor were excluded). Higher scores reflected higher levels of the construct label.

When participants in the NCDS1958 sample were age 7, their parents provided an assessment of their temperament using a 14-item version of the Rutter Behaviour Scale (Rutter et al., 1970). As in the BCS1970 data, parallel analysis (Horn, 1965) indicated that three factors were present across the items. Principal axis factoring (extracting three factors) with promax rotation was subsequently administered. The model solution was virtually identical to that of the BCS1970 sample, and so the same factor labels were used (see the Supplemental Material for more details). In the subsequent analyses, these factors were operationalized using a structural equation modeling approach (again, see further details in Results): Items that loaded ≥ .40 on a given factor were used as indicators (items that loaded ≥ .40 on more than one factor were excluded). Higher scores reflected higher levels of the construct label.

Sociopolitical attitudes. For the BCS1970 sample, five sociopolitical attitude scales were created in line with recent and comprehensive confirmatory factor analytic work performed with data from these cohorts by Cheng et al. (2012): economic conservatism (six items; sample item: "Government should redistribute income" [reverse-scored]; Cronbach's $\alpha = .68$), political cynicism (three items; sample item: "People like me have no say in what Government does"; Cronbach's $\alpha = .65$), racism (five items; sample item: "Would not want a person from other race to be boss"; Cronbach's $\alpha = .83$), authoritarianism (seven items; sample item: "Law breakers should be given stiffer sentences"; Cronbach's $\alpha = .64$), and gender inequality (six items; sample item: "Men & women should have chance to do same kind of work" [reverse-scored]; Cronbach's $\alpha = .66$). Higher scores reflected higher levels of the construct label.

In addition, much work has noted the presence of higher order sociopolitical factors (e.g., Feldman & Johnston, 2014), which could represent an important and complementary level of analysis. Parallel analysis (Horn, 1965) indicated that two factors were present across the five sociopolitical variables. Principal axis factoring (extracting two factors) with promax rotation was subsequently administered. The model solution showed two clearly interpretable factors. Factor 1 loaded on economic conservatism (−.60) and political cynicism (.59) and was labeled *economic/political discontent*. Factor 2 loaded on authoritarianism (.42), gender inequality (.43), and prejudice (.50) and was labeled *social conservatism*. (The full output is detailed in the Supplemental Material.) These factors were modeled as latent variables and assessed as dependent variables in the main analyses.

For the NCDS1958 sample, the same procedure was used to form sociopolitical attitude scales. Cronbach's αs were as follows: economic conservatism (six items; Cronbach's $\alpha = .79$), political cynicism (four items;

Cronbach's α = .68), racism (five items; Cronbach's α = .82), authoritarianism (seven items; Cronbach's α = .67), and gender inequality (six items; Cronbach's α = .68). Higher scores reflected higher levels of the construct label. Examination for the presence of the two higher order latent factors observed in the BCS1970 sample produced near-identical results (see the Supplemental Material), and so these factors were again modeled as latent variables and assessed as dependent variables in the main analyses.

Parental social class. Parental social class in the BCS1970 sample was determined from the father's occupation (or mother's occupation if no father was present) using six categories derived from the United Kingdom Registrar General's classification of occupations: (1) unskilled, (2) semiskilled, (3) skilled manual, (4) skilled nonmanual, (5) managerial and technical, and (6) professional. The median score was 3.

Parental social class in the NCDS1958 sample was determined from the father's occupation (or mother's occupation if no father was present) using five categories derived from the United Kingdom Registrar General's classification of occupations: (1) unskilled, (2) semiskilled, (3) skilled nonmanual or manual, (4) managerial and technical, and (5) professional. The median score was 3.

Intelligence. Childhood general intelligence in the BCS1970 sample was assessed when the participant was 10 years of age using a modified version of the British Ability Scales (Elliot, Murray, & Pearson, 1978), adapted to facilitate administration by teachers. Four subscales were used to assess verbal ability (word definitions, word similarities) and nonverbal ability (digit recall, matrix reasoning). A sum score of the (z-scored) subscales was used as the measure of intelligence. Higher scores reflected higher levels of intelligence.

Childhood general intelligence in the NCDS1958 sample was assessed when the participant was 11 years of age using a general ability test that was group-administered at school. The test consists of 40 verbal and 40 nonverbal items. A sum score was used as the measure of intelligence. Higher scores reflected higher levels of intelligence.

Educational attainment. At age 30, participants in the BCS1970 sample were asked about their highest academic or vocational qualification. These qualifications were divided into seven categories, reflecting increasing attainment: (1) no qualifications, (2) Certificate of Secondary Education (CSE) Grades 2 to 5 or General Certificate of Secondary Education (GCSE) Grades D to G (national examinations normally taken at the minimum school-leaving age of 16), (3) O levels or GCSE Grades A to C, (4) A levels (national examinations normally taken at 18 years old), (5) higher education diploma, (6) degree (and equivalent), and (7) higher degree. The median score was 2.

At age 33, participants in the NCDS1958 sample were asked about their highest academic or vocational qualification. These qualifications were divided into six categories, reflecting increasing attainment: (1) no qualifications, (2) CSE Grades 2 to 5, (3) O levels, (4) A levels, (5) professional qualifications, and (6) degree level or higher. The median score was 2.

Achieved social class. At age 30, participants in the BCS1970 sample were asked about their current social class using six categories derived from the United Kingdom Registrar General's classification of occupations: (1) unskilled, (2) semiskilled, (3) skilled manual, (4) skilled nonmanual, (5) managerial and technical, and (6) professional. The median score was 4. Participants in the NCDS1958 sample were asked at age 33 about their current social class using the same six categories as for the BCS1970 sample. The median score was 4.

Results

A structural equation modeling approach (using full information maximum likelihood) was used to examine the relationship between childhood temperament and adult sociopolitical attitudes. In Step 1, the three latent factors of anxiety, conduct problems, and hyperactivity were modeled as predictors of the respective sociopolitical attitude. In Step 2, this baseline model was extended to include three key covariates: sex, childhood intelligence, and parental social class. Finally, where childhood temperament was a significant predictor of the adult sociopolitical attitude in both cohorts (after adjustment for covariates), educational attainment and achieved social class were included as mediators (see Fig. 1). Findings are detailed below (see Tables 1–3 and Fig. 1; also see Tables S5 and S6 in the Supplemental Material).

Model results (without covariates)

In the basic models (i.e., without covariates), a number of associations between childhood temperament and sociopolitical attitudes were apparent. Most notably, conduct problems were positively associated with gender inequality, political cynicism, prejudice, economic/political discontent, and social conservatism and were negatively associated with economic conservatism, across both cohorts. Anxiety was negatively associated with political cynicism and economic/political discontent across both cohorts, negatively with prejudice in the
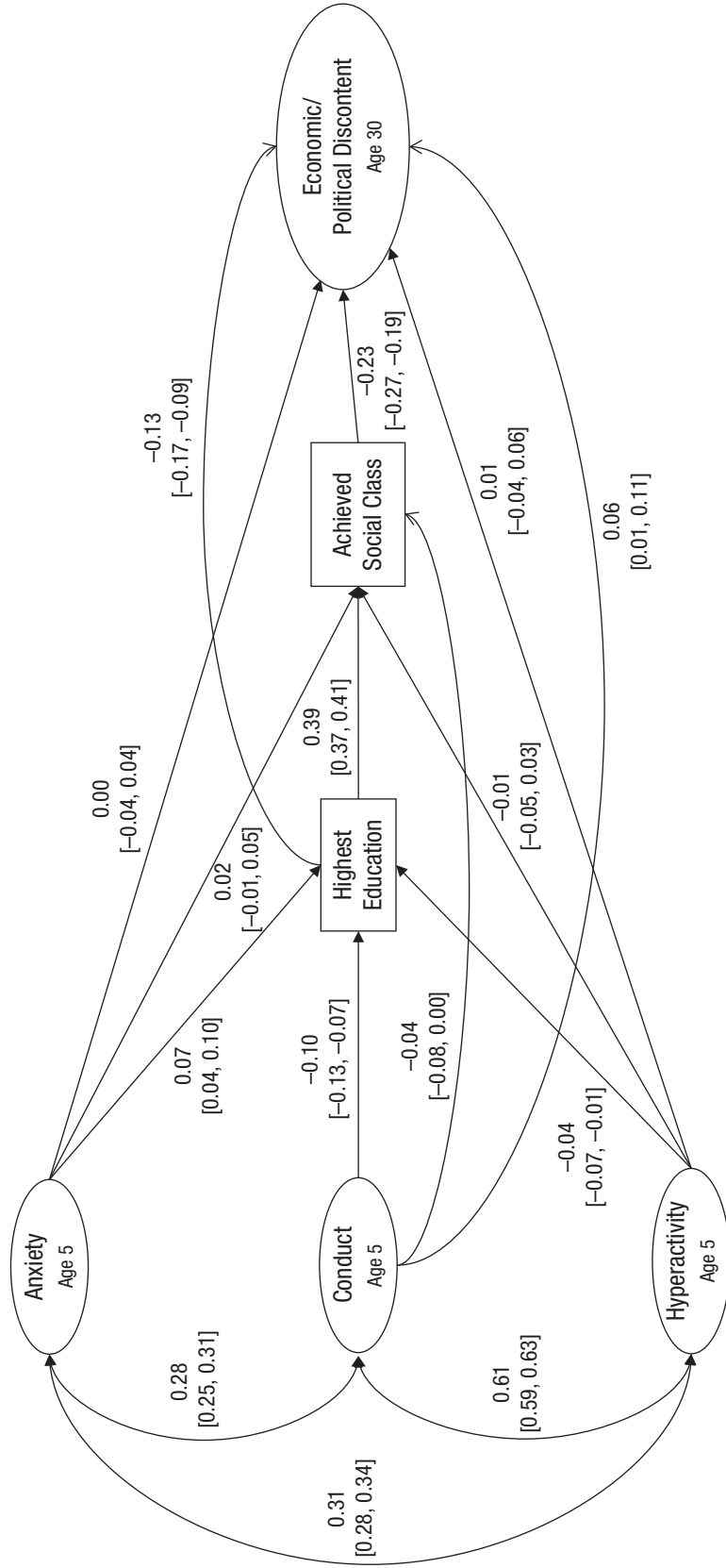
a

Economic/
Political Discontent
Age 30

Achieved
Social Class

Highest
Education

Anxiety
Age 5

Conduct
Age 5

Hyperactivity
Age 5

−0.13
[−0.17, −0.09]

0.00
[−0.04, 0.04]

0.02
[−0.01, 0.05]

0.07
[0.04, 0.10]

−0.10
[−0.13, −0.07]

−0.04
[−0.08, 0.00]

−0.23
[−0.27, −0.19]

0.39
[0.37, 0.41]

0.01
[−0.04, 0.06]

−0.01
[−0.05, 0.03]

0.06
[0.01, 0.11]

−0.04
[−0.07, −0.01]

0.28
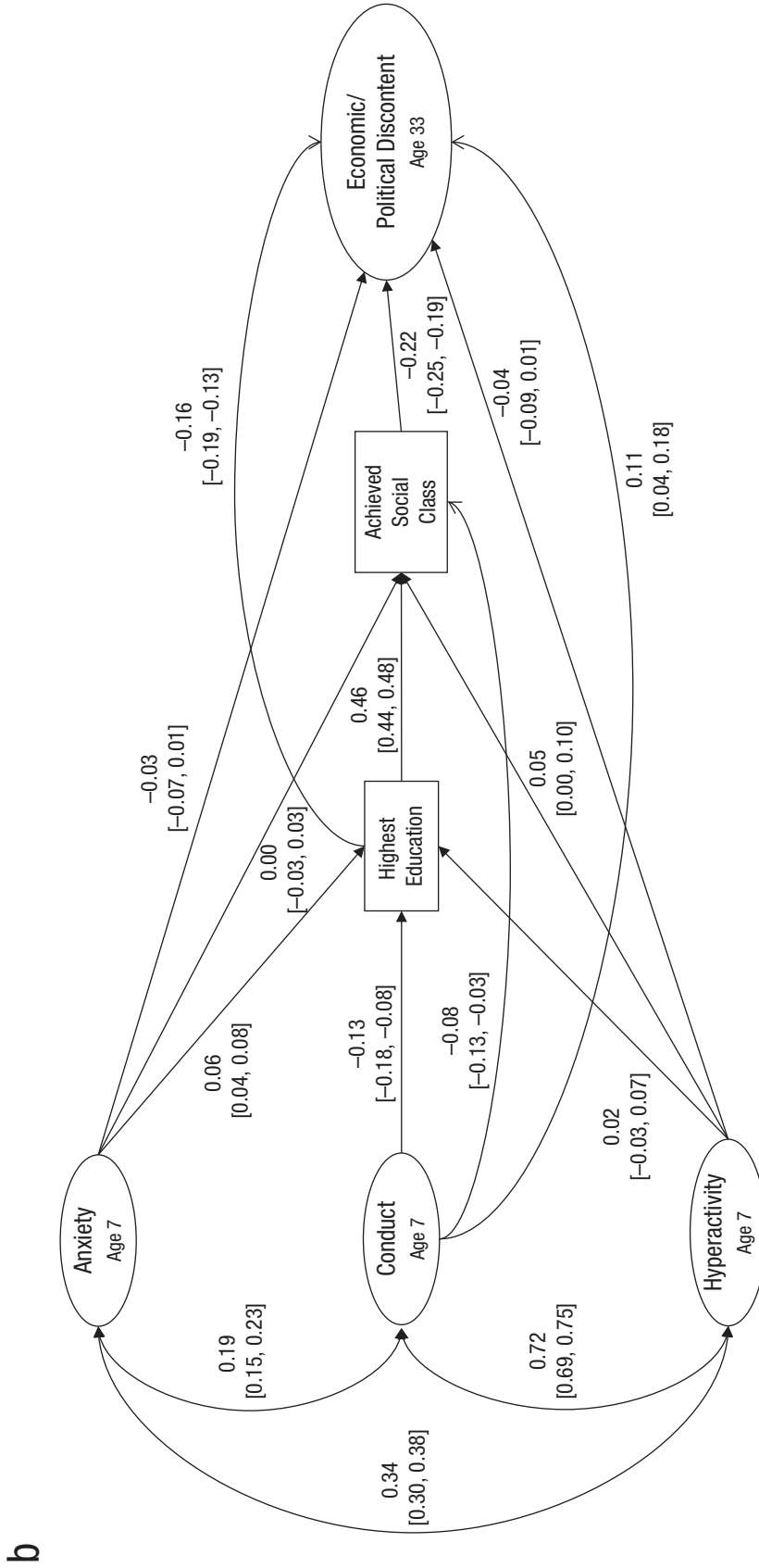[0.25, 0.31]

0.61
[0.59, 0.63]

0.31
[0.28, 0.34]

Fig. 1. (*continued on next page*)

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Fig. 1. Standardized parameter estimates and model fit for mediation models using data from (a) the British Cohort Study 1970 (BCS1970) sample, in which economic/political discontent was the dependent variable, and (b) the National Child Development Study 1958 (NCDS1958) sample, in which economic/political discontent was the outcome variable. Full information maximum likelihood was used. Standardized path coefficients are displayed, with 95% confidence intervals in brackets. The indicators for anxiety, conduct problems, hyperactivity, and economic/political discontent, as well as the covariates (sex, childhood intelligence, parental social class), are omitted here in the interests of visual clarity: See the Supplemental Material for full parameter estimates. For the BCS1970 sample, comparative fit index (CFI) = .92; root-mean-square error of approximation (RMSEA) = .04; $\chi^2(140) = 3{,}334.63$, $p < .001$. For the NCDS1958 sample, CFI = .96; RMSEA = .04; $\chi^2(60) = 1{,}045.37$, $p < .001$.

Table 1. Descriptive Statistics and Intercorrelations for All Study Measures (British Cohort Study 1970)

Variable	M (SD)						Correlations						
		1	2	3	4	5	6	7	8	9	10	11	12
1. Authoritarianism	3.66 (0.57)	—											
2. Economic conservatism	2.78 (0.60)	-.07 [-.09, -.05]	—										
3. Gender inequality	2.74 (0.56)	.18 [.16, .20]	-.08 [-.10, -.06]	—									
4. Political cynicism	3.16 (0.74)	.13 [.11, .15]	-.35 [-.37, -.33]	.07 [.05, .09]	—								
5. Prejudice	1.91 (0.67)	.20 [.18, .22]	-.04 [-.06, -.02]	.21 [.19, .23]	.11 [.09, .13]	—							
6. Anxiety	1.39 (0.38)	.02 [.00, .04]	-.02 [-.04, -.00]	.02 [.00, .04]	.00 [-.02, .02]	.00 [-.02, .02]	—						
7. Conduct	1.37 (0.33)	.06 [.04, .08]	-.11 [-.13, -.09]	.04 [.02, .06]	.09 [.07, .11]	.06 [.04, .09]	.17 [.15, .18]	—					
8. Hyperactivity	1.65 (0.54)	.06 [.04, .08]	-.07 [-.09, -.05]	.02 [.00, .04]	.08 [.06, .10]	.05 [.03, .07]	.19 [.17, .21]	.43 [.42, .45]	—				
9. Childhood intelligence	0.01 (3.01)	-.28 [-.30, -.26]	.19 [.17, .21]	-.06 [-.08, -.04]	-.16 [-.18, -.13]	-.22 [-.24, -.19]	-.04 [-.06, -.02]	-.19 [-.21, -.17]	-.14 [-.16, -.12]	—			
10. Education		-.27 [-.29, -.25]	.21 [.19, .23]	-.09 [-.11, -.07]	-.20 [-.22, -.18]	-.25 [-.27, -.23]	.00 [-.02, .02]	-.18 [-.20, -.16]	-.13 [-.15, -.11]	.42 [.40, .44]	—		
11. Parental social class		-.15 [-.17, -.13]	.20 [.18, .22]	-.01 [-.03, .01]	-.14 [-.16, -.12]	-.10 [-.12, -.08]	-.03 [-.05, -.01]	-.16 [-.17, -.14]	-.13 [-.14, -.11]	.33 [.31, .35]	.32 [.31, .34]	—	
12. Achieved social class		-.17 [-.19, -.15]	.26 [.24, .29]	-.06 [-.09, -.04]	-.19 [-.21, -.17]	-.18 [-.20, -.15]	.00 [-.03, .02]	-.15 [-.17, -.13]	-.11 [-.13, -.08]	.36 [.34, .38]	.51 [.49, .52]	.30 [.28, .32]	—
13. Sex		.07 [.05, .09]	.08 [.06, .10]	-.13 [-.15, -.11]	-.11 [-.14, -.09]	-.12 [-.14, -.10]	.05 [.03, .07]	-.17 [-.19, -.16]	-.07 [-.09, -.05]	-.03 [-.05, -.01]	.03 [.01, .05]	.00 [-.02, .01]	.08 [.06, .11]

Note: All scales here were constructed as the mean score from the relevant items; scores for sociopolitical traits ranged from 1 to 5, and scores for temperament traits ranged from 1 to 3.

Table 2. Descriptive Statistics and Intercorrelations for All Study Measures (National Child Development Study 1958)

Variable	M (SD)						Correlations						
		1	2	3	4	5	6	7	8	9	10	11	12
1. Authoritarianism	3.53 (0.59)	—											
2. Economic conservatism	2.79 (0.74)	.06 [.04, .08]	—										
3. Gender inequality	2.12 (0.55)	.25 [.24, .27]	.03 [.01, .05]	—									
4. Political cynicism	2.95 (0.75)	.16 [.14, .18]	-.45 [-.47, -.44]	.14 [.13, .16]	—								
5. Prejudice	2.22 (0.69)	.30 [.28, .32]	.05 [.03, .07]	.40 [.38, .41]	.13 [.11, .15]	—							
6. Anxiety	1.47 (0.52)	.00 [-.02, .02]	.02 [.00, .04]	-.01 [-.03, .01]	-.03 [-.05, -.01]	.01 [-.01, .03]	—						
7. Conduct	1.50 (0.37)	.03 [.01, .05]	-.09 [-.11, -.07]	.05 [.03, .07]	.10 [.08, .12]	.04 [.02, .06]	.11 [.09, .13]	—					
8. Hyperactivity	1.46 (0.54)	.04 [.02, .06]	-.05 [-.07, -.03]	.01 [-.01, .03]	.07 [.05, .09]	.01 [-.01, .03]	.19 [.17, .21]	.40 [.39, .42]	—				
9. Childhood intelligence	44.40 (15.72)	-.22 [-.24, -.20]	.25 [.23, .27]	-.18 [-.20, -.16]	-.28 [-.30, -.26]	-.17 [-.19, -.15]	.03 [.01, .05]	-.15 [-.17, -.13]	-.15 [-.17, -.13]	—			
10. Education		-.29 [-.30, -.27]	.23 [.21, .25]	-.22 [-.24, -.20]	-.32 [-.33, -.30]	-.19 [-.21, -.17]	.04 [.02, .06]	-.14 [-.16, -.12]	-.12 [-.14, -.10]	.54 [.53, .56]	—		
11. Parental social class		-.09 [-.11, -.06]	.15 [.13, .17]	-.07 [-.09, -.05]	-.13 [-.15, -.11]	-.06 [-.08, -.04]	.01 [-.01, .04]	-.04 [-.07, -.02]	-.03 [-.05, -.01]	.19 [.17, .21]	.24 [.22, .26]	—	
12. Achieved social class		-.19 [-.21, -.17]	.28 [.26, .30]	-.17 [-.19, -.16]	-.27 [-.29, -.25]	-.13 [-.15, -.11]	.03 [.01, .05]	-.11 [-.13, -.09]	-.07 [-.09, -.05]	.39 [.38, .41]	.55 [.54, .56]	.20 [.17, .22]	—
13. Sex		.04 [.02, .06]	.07 [.05, .09]	-.20 [-.22, -.18]	-.04 [-.06, -.02]	-.09 [-.11, -.07]	.02 [.00, .04]	-.16 [-.18, -.14]	-.04 [-.06, -.02]	.07 [.05, .09]	-.09 [-.10, -.07]	-.02 [-.04, -.00]	-.01 [-.03, .01]

Note: All scales here were constructed as the mean score from the relevant items; scores for sociopolitical traits ranged from 1 to 5, score for temperament traits ranged from 1 to 3, and scores for general cognitive ability ranged from 0 to 80.

Table 3. Standardized Parameter Estimates From the Structural Equation Models Predicting Adult Sociopolitical Attitudes From Childhood Temperament

Sample and sociopolitical attitude	Without covariates			With covariates		
	Anxiety	Conduct	Hyperactivity	Anxiety	Conduct	Hyperactivity
BCS1970						
Authoritarianism	−0.01	0.04	**0.06**	−0.01	0.01	0.04
	[−0.04, 0.02]	[0.00, 0.08]	**[0.02, 0.10]**	[−0.04, 0.02]	[−0.03, 0.05]	[0.00, 0.08]
Economic conservatism	0.02	**−0.14**	0.00	0.00	**−0.08**	0.01
	[−0.01, 0.05]	**[−0.18, −0.10]**	[−0.04, 0.04]	[−0.03, 0.03]	**[−0.12, −0.04]**	[−0.03, 0.05]
Gender inequality	0.02	**0.06**	−0.02	0.03	0.02	−0.01
	[−0.01, 0.05]	**[0.02, 0.10]**	[−0.06, 0.02]	[0.00, 0.06]	[−0.02, 0.06]	[−0.05, 0.03]
Political cynicism	**−0.04**	**0.09**	**0.06**	−0.02	0.02	**0.05**
	[−0.07, −0.01]	**[0.05, 0.13]**	**[0.02, 0.10]**	[−0.05, 0.01]	[−0.02, 0.06]	**[0.01, 0.09]**
Prejudice	**−0.04**	**0.07**	0.03	−0.02	−0.01	0.02
	[−0.07, −0.01]	**[0.03, 0.11]**	[−0.01, 0.07]	[−0.05, 0.01]	[−0.05, 0.03]	[−0.02, 0.06]
Economic/political discontent	**−0.05**	**0.20**	0.04	−0.02	**0.09**	0.02
	[−0.09, −0.01]	**[0.15, 0.25]**	[−0.01, 0.09]	[−0.06, 0.02]	**[0.04, 0.14]**	[−0.03, 0.07]
Social conservatism	−0.03	**0.13**	0.05	−0.01	0.00	0.04
	[−0.08, 0.02]	**[0.07, 0.19]**	[−0.01, 0.11]	[−0.06, 0.04]	[−0.06, 0.06]	[−0.02, 0.10]
NCDS1958						
Authoritarianism	−0.03	0.00	0.06	−0.01	0.00	0.01
	[−0.06, 0.00]	[−0.06, 0.06]	[0.00, 0.12]	[−0.04, 0.02]	[−0.06, 0.06]	[−0.05, 0.07]
Economic conservatism	**0.05**	**−0.15**	0.02	0.02	**−0.12**	0.06
	[0.02, 0.08]	**[−0.21, −0.09]**	[−0.04, 0.08]	[−0.01, 0.05]	**[−0.18, −0.06]**	[0.00, 0.12]
Gender inequality	−0.03	**0.09**	−0.04	0.00	0.02	−0.04
	[−0.06, 0.00]	**[0.04, 0.14]**	[−0.10, 0.02]	[−0.03, 0.03]	[−0.04, 0.08]	[−0.10, 0.02]
Political cynicism	**−0.07**	**0.12**	0.03	**−0.04**	**0.10**	−0.02
	[−0.10, −0.04]	**[0.06, 0.18]**	[−0.03, 0.09]	**[−0.07, −0.01]**	**[0.04, 0.16]**	[−0.08, 0.04]
Prejudice	0.01	**0.07**	−0.04	0.03	0.03	−0.06
	[−0.02, 0.04]	**[0.01, 0.13]**	[−0.10, 0.02]	[0.00, 0.06]	[−0.03, 0.09]	[−0.12, 0.00]
Economic/political discontent	**−0.10**	**0.20**	0.01	**−0.05**	**0.16**	−0.06
	[−0.14, −0.06]	**[0.13, 0.27]**	[−0.06, 0.08]	**[−0.09, −0.01]**	**[0.09, 0.23]**	[−0.15, 0.01]
Social conservatism	−0.02	**0.11**	−0.03	0.02	0.04	−0.06
	[−0.06, 0.02]	**[0.04, 0.18]**	[−0.11, 0.05]	[−0.02, 0.06]	[−0.03, 0.11]	[−0.13, 0.01]

Note: Values in brackets are 95% confidence intervals (CIs). Boldface indicates that the CI for that parameter estimate does not include zero. Covariates were sex, parental social class, and childhood intelligence; see the Supplemental Material for the unstandardized parameter estimates. BCS1970 = 1970 British Cohort Study; NCDS1958 = 1958 National Child Development Study.

BCS1970 sample, and positively with economic conservatism in the NCDS1958 sample. Hyperactivity was positively associated with authoritarianism and political cynicism in the BCS1970 sample. See Table 3 for full details.

Model results (with covariates)

Next, covariates were added to the models. Conduct problems were still negatively associated with economic conservatism and positively associated with economic/political discontent in both cohorts, and were positively with political cynicism in the NCDS1958 cohort. In addition, anxiety was negatively associated with political cynicism and economic/political discontent in the NCDS1958 sample, and hyperactivity was positively

associated with political cynicism in the BCS1970 sample. See Table 3 for full details.

The observation that conduct problems predicted both economic conservatism and economic/political discontent raises the following question—are the effects of conduct problems on economic conservatism direct, or do they flow through economic/political discontent? To this end, the economic/political discontent model was reestimated, but this time including a direct path from conduct problems to economic conservatism. In both cohorts, this path coefficient was estimated as zero—BCS1970 sample: β = 0.00, 95% confidence interval (CI) = [−0.02, 0.02]; NCDS1958 sample: β = 0.00, 95% CI = [−0.02, 0.02]. These observations indicate that the association between conduct problems and

economic conservatism is indirect in nature—with the more direct link evident for economic/political discontent

Educational attainment and achieved social class as mediators

Finally, the mediating roles of educational attainment and achieved social class were assessed. These analyses focused solely on economic/political discontent in line with conduct problems being a significant predictor in both the BCS1970 and the NCDS1958 samples.

In the BCS1970 sample, significant mediation was observed for the following pathways: conduct → educational attainment → economic/political discontent ($\beta = 0.01$, 95% CI = [0.01, 0.02]) and conduct → educational attainment → achieved social class → economic/political discontent ($\beta = 0.01$, 95% CI = [0.01, 0.01]). Nonetheless, a direct path from conduct problems to economic/political discontent was still evident.

In the NCDS1958 sample, significant mediation was observed for the following pathways: conduct → educational attainment → economic/political discontent ($\beta = 0.02$, 95% CI = [0.01, 0.03]) and conduct → achieved social class → economic/political discontent ($\beta = 0.02$, 95% CI = [0.01, 0.03]). As in the BCS1970 sample, though, a direct path from conduct problems to economic/political discontent was still evident. See Figure 1 for the full mediation models in both cohorts.

Discussion

The current study examined whether early-life temperament is predictive of adult sociopolitical attitudes using two large ($Ns > 8,700$), longitudinal UK cohorts: the BCS1970 and the NCDS1958 samples. The most prominent results were as follows.

Conduct problems predicted lower levels of economic conservatism and higher levels of economic/political discontent in both cohorts. These associations were robust to the inclusion of sex, parental social class, and childhood general intelligence. Of note, as economic conservatism was an indicator of the latent factor of economic/political discontent, the issue of which construct showed more proximal links to conduct problems was also assessed. These analyses revealed a direct link between conduct problems and economic/political discontent in both cohorts. Finally, this association was partially mediated by educational attainment and achieved social class in both cohorts.

How well do the current findings cohere with previous work of this kind? The present results fail to confirm a role for anxiety as an early antecedent to a right-wing political phenotype, in contrast to the findings of both Block and Block (2006) and Fraley et al. (2012). Similarly, no evidence was observed for a link between hyperactivity and any aspect of political conservatism, in contrast to recent work by Fraley et al. (2012).

There are a number of possible explanations for these differences across studies. First, it is conceivable that the current measures differ in some way from those used in previous work. While this possibility cannot be definitively ruled out at this stage, the items used across studies appear (at least at face value) to cohere fairly closely and so limit the scope of this concern. Second, sociopolitical attitudes here were measured when the participants were in their 30s (rather than late teens and early 20s, as in Block & Block, 2006, and Fraley et al., 2012), and it is well noted that sociopolitical attitudes are in a state of flux in early adulthood (Alwin & Krosnick, 1991). Third, the two previous longitudinal studies were conducted in the United States, whereas the current study used data from the United Kingdom. Sibley et al. (2012) has noted that links between personality and political attitudes may be modulated by prevailing environmental context (e.g., levels of threat), although it is perhaps questionable that the United Kingdom and United States differ so markedly as to generate distinct patterns of associations between temperament and sociopolitical attitudes. Finally, the previous studies may have capitalized on sample-specific associations that do not robustly generalize. This concern is most apparent with regard to the study of Block and Block (2006), which used a modest sample size ($N < 100$).

Early-childhood conduct problems predicted lower levels of adult economic/political discontent across two large cohorts, and so this appears to be a robust finding. What might account for this link? One explanation clearly lies with the observation of significant mediation by educational attainment and achieved social class. This mediation may reflect the socioeconomic benefits accrued from educational attainment (e.g., better-paid job, social prestige) in turn leading to a desire to protect both the status quo and one's acquired resources (Weeden & Kurzban, 2014). However, the magnitude of this indirect effect was modest, and so additional explanations are required. One possibility is that childhood conduct problems reflect enduring deficits in impulse control and long-term planning (Moffitt, 1993), which in turn lead one to favor government assistance rather than investing one's own time and efforts toward longer-term economic rewards. Another possibility is that conduct problems reflect the necessary antagonism or vigor to rebel against the status quo. Indeed, the prevailing economic model at the time that the adult sociopolitical attitudes were assessed (during the leaderships of Margaret Thatcher and Tony Blair) was, broadly speaking, one of free-market capitalism.

Taken together, these findings confirm that early-life temperament measures predict adult sociopolitical attitudes some 25 years later—at least with regard to economic and political discontent—and so are consistent with the perspective that temperament/personality acts as a shaping factor for attitudes. However, these findings should be considered carefully in light of the modest associations.

On the other hand, the remarkable stability of these associations across time and across cohort stand as a testament to their importance. And as other researchers have noted, small associations can give rise to important real-world consequences (Noftle & Robins, 2007; Ozer & Benet-Martinez, 2006). Perhaps more importantly, these findings indicate that while early temperament—at least in the context of conduct problems—is a modest predictor of adult political sentiment, it performs as well as a range of predictors that are routinely viewed to be of importance in the social sciences (Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007). For example, the model path coefficients (see Tables 1 and 2) demonstrate that the predictive power of conduct problems is comparable with attained level of education, parental social class, sex, and childhood intelligence. These findings, in turn, highlight that small effects in this domain are likely to be the norm and that large, adequately powered samples capable of reliably detecting such effects will be critical to developing a full understanding of the underlying bases of complex psychological constructs such as sociopolitical attitudes.

Specific limitations require mentioning. First, the early-life temperament measures were not ideal because they were brief instruments. Longer-form measures taken at multiple time points would enhance the reliability of the assessment. Second, the measure of childhood temperament used here clearly does not exhaust the full breadth of important childhood temperament constructs, nor does it capture well-acknowledged personality predictors of politics, such as openness to experience (Sibley et al., 2012). The current analyses were necessarily constrained by the cohort-sampling strategy. Future work, then, should look to acquire broader measures in order to establish how well childhood temperament predicts adult sociopolitical attitudes. Finally, educational attainment and achieved social class are almost certainly just two of the broader sets of mechanisms that mediate the pathway from early-life temperament to adult sociopolitical attitudes. Therefore, future research might wish to probe the nature of this pathway more extensively.

In summary, the current study examined whether early-life temperament predicted adult sociopolitical attitudes in two large samples of UK individuals. In both cohorts, early-childhood conduct problems were a negative predictor of adult economic and political discontent, and these links were partially mediated by educational attainment and achieved social class. These findings suggest that basic, early-emerging temperament gives rise to sociopolitical attitudes, at least with regard to economic and political discontent, consistent with the model that personality differences shape one's political orientation.

Author Contributions

G. J. Lewis is the sole author of this article and is responsible for its content.

References

Adorno, T. W., Frenkel-Brunswik, E., Levinson, D. J., & Sanford, R. N. (1950). *The authoritarian personality*. New York, NY: Harper and Row.

Alwin, D. F., & Krosnick, J. A. (1991). Aging, cohorts, and the stability of sociopolitical orientations over the life span. *American Journal of Sociology*, *97*, 169–195.

Block, J., & Block, J. H. (2006). Nursery school personality and political orientation two decades later. *Journal of Research in Personality*, *40*, 734–749. doi:10.1016/j.jrp.2005.09.005

Bradley, R. H., & Corwyn, R. F. (2002). Socioeconomic status and child development. *Annual Review of Psychology*, *53*, 371–399.

Cheng, H., Bynner, J., Wiggins, R., & Schoon, I. (2012). The measurement and evaluation of social attitudes in two British Cohort Studies. *Social Indicators Research*, *107*, 351–371.

Deary, I. J., Batty, G. D., & Gale, C. R. (2008). Bright children become enlightened adults. *Psychological Science*, *19*, 1–6.

Elliot, C., Murray, D., & Pearson, L. (1978). *British Ability Scales*. Windsor, England: National Foundation for Educational Research.

Elliott, J., & Shepherd, P. (2006). Cohort profile of the 1970 British Birth Cohort (BCS70). *International Journal of Epidemiology*, *35*, 836–843.

Eysenck, H. J. (1954). *The psychology of politics*. London, England: Routledge & Kegan.

Feldman, S., & Johnston, C. (2014). Understanding the determinants of political ideology: Implications of structural complexity. *Political Psychology*, *35*, 337–358.

Fraley, R. C., Griffin, B. N., Belsky, J., & Roisman, G. I. (2012). Developmental antecedents of political ideology: A longitudinal investigation from birth to age 18 years. *Psychological Science*, *23*, 1425–1431. doi:10.1177/0956797612440102

Hello, E., Scheepers, P., & Sleegers, P. (2006). Why the more educated are less inclined to keep ethnic distance: An empirical test of four explanations. *Ethnic and Racial Studies*, *29*, 959–985.

Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika*, *30*, 179–185.

Jost, J. T., Federico, C. M., & Napier, J. L. (2009). Political ideology: Its structure, functions, and elective affinities. *Annual Review of Psychology*, *60*, 307–337.

Jost, J. T., Glaser, J., Kruglanski, A. W., & Sulloway, F. J. (2003). Political conservatism as motivated social cognition. *Psychological Bulletin*, *129*, 339–375.

Lewis, G. J., Asbury, K., & Plomin, R. (2017). Externalizing problems in childhood and adolescence predict subsequent educational achievement but for different genetic and environmental reasons. *Journal of Child Psychology and Psychiatry*, *58*, 292–304. doi:10.1111/jcpp.12655

Lewis, G. J., & Plomin, R. (2015). Heritable influences on behavioural problems from early childhood to mid-adolescence: Evidence for genetic stability and innovation. *Psychological Medicine*, *45*, 2171–2179.

Moffitt, T. E. (1993). Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Review*, *100*, 674–701.

Noftle, E. E., & Robins, R. W. (2007). Personality predictors of academic outcomes: Big Five correlates of GPA and SAT scores. *Journal of Personality and Social Psychology*, *93*, 116–130.

Ozer, D. J., & Benet-Martinez, V. (2006). Personality and the prediction of consequential outcomes. *Annual Review of Psychology*, *57*, 401–421.

Perry, R., & Sibley, C. G. (2012). Big-Five personality prospectively predicts social dominance orientation and right-wing authoritarianism. *Personality and Individual Differences*, *52*, 3–8.

Phelan, J., Link, B. G., Stueve, A., & Moore, R. E. (1995). Education, social liberalism, and economic conservatism: Attitudes toward homeless people. *American Sociological Review*, *60*, 126–140.

Power, C., & Elliott, J. (2006). Cohort profile: 1958 British Birth Cohort (National Child Development Study). *International Journal of Epidemiology*, *35*, 34–41.

Roberts, B. W., & DelVecchio, W. F. (2000). The rank-order consistency of personality traits from childhood to old age: A quantitative review of longitudinal studies. *Psychological Bulletin*, *126*, 3–25.

Roberts, B. W., Kuncel, N. R., Shiner, R., Caspi, A., & Goldberg, L. R. (2007). The power of personality: The comparative validity of personality traits, socioeconomic status, and cognitive ability for predicting important life outcomes. *Perspectives on Psychological Science*, *2*, 313–345.

Rutter, M., Tizard, J., & Whitmore, K. (1970). *Education, health and behaviour*. London, England: Longman.

Schoon, I., Cheng, H., Gale, C. R., Batty, G. D., & Deary, I. J. (2010). Social status, cognitive ability, and educational attainment as predictors of liberal social attitudes and political trust. *Intelligence*, *38*, 144–150.

Sibley, C. G., & Duckitt, J. (2010). The personality bases of ideology: A one-year longitudinal study. *Journal of Social Psychology*, *150*, 540–559.

Sibley, C. G., & Duckitt, J. (2013). The dual process model of ideology and prejudice: A longitudinal test during a global recession. *Journal of Social Psychology*, *153*, 448–466.

Sibley, C. G., Osborne, D., & Duckitt, J. (2012). Personality and political orientation: Meta-analysis and test of a threat-constraint model. *Journal of Research in Personality*, *46*, 664–677.

Van Hiel, A., Onraet, E., & De Pauw, S. (2010). The relationship between social-cultural attitudes and behavioral measures of cognitive style: A meta-analytic integration of studies. *Journal of Personality*, *78*, 1765–1800. doi:10.1111/j.1467-6494.2010.00669.x

Weeden, J., & Kurzban, R. (2014). *The hidden agenda of the political mind: How self-interest shapes our opinions and why we won't admit it*. Princeton, NJ: Princeton University Press.