



The Danish Political Twin Study: Political Traits in Danish Twins and the General Population

Robert Klemmensen,¹ Sara B. Hobolt,^{1,2} Peter T. Dinesen,¹ Axel Skytthe,³ and Asbjørn Sonne Nørgaard¹

¹ Department of Political Science, University of Southern Denmark

² European Institute, London School of Economics and Political Science

³ The Danish Twin Registry, University of Southern Denmark

We compare a recent Danish twin survey on political attitudes and behaviors to a nationally representative survey covering similar topics. We find very similar means and variances for most of our constructed scales of political attitudes and behaviors in the two surveys, although even small differences tend to be statistically significant due to sample size. This suggests that the twin study can be used to make inferences on the heritability of several political traits in the Danish population.

■ **Keywords:** political traits, Danish twin study, general population

The Danish Twin Survey on Political Orientations and Behaviors

The Danish Twin Registry is the oldest nationwide twin registry in the world and hosts information on 75,000 twin pairs collected over the past 130 years (Skytthe et al., 2006). The twin survey examined here was conducted by the Danish Twin Registry and was fielded in the period from October 1, 2009 to March 1, 2010. It was administered as a web survey, and 6,707 invitations were sent out to twins aged between 19 and 39 years who had previously agreed to participate in survey inquiries. These two selection criteria were used to maximize response rates and potential retention rates in subsequent waves, as the survey is the first wave of a panel study. Because this survey is also the first online survey conducted by the Danish Twin Registry, we recruited respondents from a younger, and presumably more web-savvy, age group. In total, 3,616 persons answered the questionnaire (a response rate of 53.9%), and of those, 3,345 agreed to answer questions concerning political attitudes and behaviors, resulting in a response rate of 49.9%. Thus, only 7.4% of the survey respondents chose not to answer the political questions after having answered questions on health issues.

Danish twins generally display a high willingness to participate in surveys concerning health issues and the Registry records participation rates between 72 and 83%,

depending on age (Skytthe, Kyvik, Holm, Vaupel, & Christensen, 2002). Asking questions about values and attitudes and switching to a web-based format seemed to reduce the traditionally high response rates somewhat.

The zygosity of twins in our sample has been determined in previous studies by asking four standard similarity questions. A recent test of this method suggests that the highest rate of misclassification was 8%, while the overall misclassification percentage in a sample of 867 twins was 4% (Christiansen et al., 2003).

In this article, we compare this twin sample to a representative sample of the Danish population surveyed for the same political attitudes and behaviors. The survey was conducted between May 26 and June 6, 2010, by the Gallup organization, using their Internet panel.

Twin studies are never a random sample of the population, and the extent to which a specific twin sample is representative of the general population with regard to the traits that are studied is therefore always an issue. Lack of

RECEIVED 17 October, 2011; ACCEPTED 01 December, 2011.

ADDRESS FOR CORRESPONDENCE: Asbjørn Sonne Nørgaard, Department of Political Science, University of Southern Denmark, Campusvej 55, DK-5230 Odense M., Denmark Email: ano@sam.sdu.dk

representativeness may have implications for the external validity of twin studies. To our knowledge, no previous twin study of political traits has systematically examined the representativeness of the sample. With regard to school achievement, it has previously been shown that there are no significant differences between twins from the Danish Twin Registry and nontwins in a large representative sample (Christensen et al., 2006).

Political Traits and Scales in the Twin Survey

We have created 13 scales that measure key political traits concerning ‘political and civic involvement’ (political participation, voting, organizational membership); ‘approach

to politics’ (political interest, efficacy, civic duty, generalized and political trust, role of government); and ‘political attitudes and orientations’ (left–right orientation, old and new left–right dimensions). The scales are based on questions that have been tested and used by the International Social Survey Programme (ISSP), the European Values Survey or the Danish Election Study. By using already validated questions and scales, we make comparisons to these data sets possible and avoid problems associated with developing and testing new items.

Description of Scales

All scales, except the two on organizational membership that range from zero to 6, have been standardized to vary

TABLE 1
Descriptive Statistics for Scales of Political Attitudes and Behaviors in Twin Sample and Nationally Representative Sample in Denmark

Scale	Description	N Twin	N Gallup	N Gallup (19–39 years)	Mean Twin	Mean Gallup	Mean Gallup (19–39 years)			
Age	-	3345	3612	892	29.27	52.25	30.43			
Male	-	1381	1904	452						
Female	-	1964	1708	440						
Political and Civic Involvement										
Political participation	0–1 (maximum participation)	2911	3283	810	0.45	0.47	0.47			
Electoral participation	0–1 (participated in all type of elections)	2887	3398	790	0.87	0.95	0.93			
Active membership of organizations	0–6 (active in all types of organizations)	2976	3354	811	0.84	1.00	0.89			
Passive membership of organizations	0–6 (passive member in all types of organizations)	2976	3354	811	1.17	1.37	1.38			
Approach to Politics										
Political interest	0–1 (high interest)	3343	3612	892	0.63	0.75	0.69			
External efficacy	0–1 (high efficacy)	2987	3472	827	0.56	0.45	0.47			
Civic duty	0–1 (maximum importance)	3009	3387	835	0.68	0.71	0.67			
Political trust	0–1 (high trust)	2901	3350	807	0.47	0.40	0.40			
Generalized trust	0–1 (high trust)	3058	3384	832	0.67	0.63	0.61			
Role of government	0–1 (strong)	3189	3557	877	0.31	0.38	0.39			
Political Attitudes and Orientations										
General left–right scale	0 (left-leaning)–1 (right-leaning)	3305	3602	887	0.50	0.53	0.51			
Old/economic left–right scale	0 (left-leaning)–1 (right-leaning)	3290	3588	884	0.59	0.55	0.54			
New/social issues left–right scale	0 (left-leaning)–1 (right-leaning)	3300	3600	887	0.47	0.55	0.51			
Scale	SD Twin	SD Gallup (full)	SD Gallup (19–39 years)	Variance Twin	Variance Gallup (full)	Variance Gallup (19–39 years)	Alpha Twin	Alpha Gallup (full)	Alpha Gallup (19–39 years)	No. items in scale
Age	6.12	16.19	5.97	37.49	262.10	35.68				
Male										
Female										
Political and Civic Involvement										
Political participation	0.17	0.19	0.19	0.03	0.04	0.03	0.77	0.77	0.77	9
Electoral participation	0.25	0.16	0.19	0.06	0.02	0.04	0.65	0.62	0.65	3
Active membership of organizations	0.97	1.11	0.98	0.94	1.28	0.97	0.37	0.45	0.35	6
Passive membership of organizations	1.05	1.09	1.06	1.10	1.19	1.13	0.40	0.35	0.35	6
Approach to Politics										
Political interest	0.25	0.21	0.22	0.06	0.04	0.05	0.79	0.76	0.76	2
External efficacy	0.25	0.25	0.24	0.06	0.06	0.06	0.89	0.86	0.85	4
Civic duty	0.15	0.15	0.13	0.02	0.02	0.02	0.61	0.62	0.51	6
Political trust	0.23	0.23	0.23	0.05	0.05	0.05	0.78	0.80	0.78	3
Generalized trust	0.19	0.19	0.18	0.04	0.03	0.03	0.65	0.65	0.71	3
Role of government	0.19	0.20	0.20	0.04	0.04	0.04	0.59	0.62	0.57	4
Political Attitudes and Orientations										
General left–right scale	0.17	0.17	0.17	0.03	0.03	0.03	0.66	0.70	0.71	9
Old/economic left–right scale	0.21	0.23	0.23	0.04	0.05	0.05	0.71	0.77	0.78	5
New/social issues left–right scale	0.19	0.19	0.19	0.04	0.04	0.03	0.72	0.73	0.72	7

between zero and 1 to make comparison of means, standard deviations, and variances across samples easier (Table 1).

The first category of scales measures behaviors concerning political and civic involvement, and includes four different scales. The first, Political Participation, is constructed by questions such as ‘Have you ever contacted a politician?’ and ‘Have you ever participated in a demonstration?’ This scale is commonly used in studies of political participation broadly conceived (see, for example, Verba, Scholzman & Brady, 1995). The second scale, Electoral Participation, captures respondents’ participation in various recent elections. We include measures of electoral participation in both local and national elections, as well as elections to the European Parliament, in order to capture the respondent’s general underlying inclination to turn out to vote, while recognizing that this inclination varies across type of election. The next two scales measure Active and Passive Membership of Voluntary Organizations. These scales are traditionally used in research on social capital as measures of participation in networks and, hence, the vibrancy of civil society (Oorschot & Arts, 2005).

The second group of political traits includes six scales that seek to capture various aspects of how individuals approach politics, including their fellow citizens, political leaders, and the government. The first, Political Interest, measures how closely the respondent follows politics. Political interest is conducive to being politically active, and politically interested individuals also tend to feel more efficacious (Prior, 2010). The second scale, External Efficacy, measures how important respondents believe their actions are in affecting political outcomes. This scale is also a standard tool in political science studies and is strongly associated with political participation and voting (Finkel, 1985; Karp & Banducci, 2007). To capture external efficacy, people were asked whether they agreed with statements, such as ‘People like me have no influence on what the government is doing.’ Civic Duty is intended to capture the extent to which the respondent adheres to various norms of citizenship. The scale captures how important the respondent considers issues like obeying the law and paying taxes, and has been widely used in political science studies that try to link civic duty to the functioning of democracy (Verba et al., 1995). Political Trust measures the extent to which individuals trust politicians and government institutions. It is often seen as an indicator (or cause) of citizen support for the political system and the executive (Craig, 1993; Hetherington, 1998). The Generalized Trust scale measures how trustful the respondents are toward their fellow citizens; an attribute often associated with a well-functioning democracy and a society’s capacity to solve dilemmas of collective action (Putnam, 1993; Knack, 2002). The Role of Government Index measures various aspects of how respondents believe that political leaders should govern society, and

includes questions about how ‘society works best’ (e.g., Should leaders be followed or questioned? Should people take responsibility for their own wellbeing or cooperate and help each other?). The index thus taps into opinions about whether the government should be weak or strong.

The third category of political traits concerns political attitudes and orientations, and includes three partially overlapping scales that measure the left–right placement of respondents and emphasize different aspects of politics. The General Left–Right Scale is intended to capture where the respondent is placed on a left–right political continuum. This scale is among the most used indexes in political science and is, amongst many others, used to analyze the political orientation of the electorate and electoral competition among political parties (Fuchs & Klingeman, 1990; Franklin, Mackie, & Valen, 1992; Deegan-Krause & Enyedi, 2010). We have also created a scale of attitudes towards economic policies and redistribution (or ‘old’ politics), labeled ‘Old/Economic Left–Right’. Focusing on attitudes towards redistribution, the respondents were asked about the extent to which they agreed with statements such as ‘People with high wages are not paying enough taxes’ and ‘The income distribution in this country is too skewed. Consequently, people with low incomes should have higher wage raises’. This scale has been widely used to map the ideological conflict associated with class politics and the political cleavages dominating during industrialism (Lipset & Rokkan, 1967). Our final scale taps into what Ronald Inglehart (1990) labels the ‘new politics’ dimension, which has also been termed the authoritarianism–libertarianism (or tolerance) dimension of political orientations (Kitschelt, 1996; Deegan-Krause & Enyedi, 2010). New politics has become increasingly important in postindustrial societies. Some of the scale items resemble those used to measure social conservatism in American politics; it includes questions on issues such as the severity of punishment of criminals, and the extent to which homosexuals should have the same rights as other citizens.

Comparison and Discussion of Scales in Twin Survey and Representative Survey

We compare the 13 political trait scales in the twin survey with the complete, nationally representative Gallup survey, as well as with a representative subsample consisting of the same age cohort as the twin study (19–39 years). For each scale, we present the mean, standard deviation, and variance, and Cronbach’s alpha.

In general, the twin sample seems to mirror the representative sample quite well, in particular the subsample of 19–39-year-old respondents. However, due to the large sample sizes, even small differences in means and variances tend to be statistically significant.¹ However, there is some variation across the three categories of political traits.

The mean scores for the four behavioral traits on political and civic involvement are a little higher in both representative Gallup samples than in the twin survey, and the variances also tend to be slightly higher in the two Gallup samples (except for the scale on electoral participation). All means are roughly at the same level, however, which suggests that the twin sample — with the appropriate provisos — can be used to make inferences about the general population. In particular, the means and variances for the political participation index are remarkably similar across the samples. In addition, the intercorrelations among the scale items are also at the same level across samples. The internal consistency of the political participation index is high, and the Cronbach's alpha also approaches acceptable levels for the electoral participation index. At least for these behaviors, the scales seem to measure the same latent, unidimensional construct in both samples.

The samples vary a little more on the six approach-to-politics scales. The mean score for the twin sample is higher for three of the scales, the two trust scales and the external efficacy scale, but lower for political interest and the role of government index. For the civic duty index, the mean is very similar across the three samples, and the difference between the twin sample and the Gallup subsample of 19–39-year-old respondents is insignificant. Except for political interest, variance levels are roughly similar across samples for all the approach-to-politics scales. The internal consistency of the scales for political interest, efficacy, and political trust is high across all three samples ($\alpha > .75$), and also in the case of generalized trust ($\alpha \geq .65$) the scale — although less consistent — seems to measure the same underlying construct. The reliability of the civic duty and role of government index is somewhat lower, but similar across samples.

The three scales on political attitudes and orientations that indicate scores on a left–right continuum have similar variance levels, and the construct validity as measured by α -values is good for all three scales in all samples. With $\alpha = .66$, only the general left–right scale in the twin sample has an α -value below $.70$. The mean score is very similar on the general left–right scale across samples, but the twin sample mean is a little higher on the old politics scale and a little lower on the new politics scale.

Because twin samples are never random population samples, the extent to which any particular twin sample is more or less representative of the general population is a question that can only be examined in relation to particular traits. If the twin sample is somehow skewed, it may jeopardize the external validity of findings, and heritability estimates may not be generalizable beyond the sample. By examining the representativeness of a twin study for specific traits, we can assess the extent to which making inferences on heritability estimates is justifiable; we can also discuss the potential biases and make the necessary

provisos when the studied traits in a twin sample are not representative. Means, variances, and scale reliability for most of the political traits surveyed in the Danish 2009–2010 twin study are comparable to those found in a representative sample of the Danish population. Therefore, we can have increased confidence in the external validity of the heritability estimates coming from the Danish twin study on political traits.

Acknowledgments

The Danish twin study was funded by a grant from the Velux Foundation and the Globalization Program at the Department of Political Science, University of Southern Denmark (SDU). The Gallup survey was funded by the Dean of the Faculty of Social Sciences, SDU.

Endnotes

- ¹ Mean differences between the twin survey and the Gallup subsample for the 19–39-year-old respondents are *not* statistically significant (*t*-test) at the $.05$ level in three scales: Active Membership of Organizations, the Civic Duty Index, and the General Left–Right Scale.

References

- Christensen, K., Petersen, I., Skytthe, A., Herskind, A. M., McGue, M., & Bingley, P. (2006). Comparison of academic performance of twins and singletons in adolescence: Follow-up study. *British Medical Journal* 333, 1095–1097.
- Christiansen, L., Frederiksen, H., Schousboe, K., Skytthe, A., von Wurmb-Schwark, N., Christensen, K., & Kyvik, K. (2003). Age and sex-differences in the validity of questionnaire-based zygosity in twins. *Twin Research*, 6, 275–278.
- Craig, S. C. (1993). *The malevolent leaders: Popular discontent in America*. Boulder, CO: Westview Press.
- Deegan-Krause, K., & Enyedi, Z. (Eds.) (2010). *The structure of political competition in Western Europe*. London: Routledge.
- Finkel, S. E. (1985). Reciprocal effects of participation and political efficacy: A panel analysis. *American Journal of Political Science*, 29(4), 891–913.
- Franklin, M., Mackie, T., & Valen, H. (Eds.) (1992). *Electoral change: Responses to evolving social and attitudinal structures in Western countries*. Cambridge: Cambridge University Press.
- Fuchs, D., & Klingemann, H. D. (1990). The left–right schema. In K. M. Jennings & J. W. van Deth (Eds.), *Continuities in political action* (pp. 203–234). Berlin & New York: Walter de Gruyter.
- Hetherington, M. J. (1998). The political relevance of political trust. *American Political Science Review*, 92, 791–808.
- Inglehart, R. (1990). *Cultural shift in advanced industrial society*. Princeton: Princeton University Press.
- Karp, J., & Banducci, S. A. (2007). Political efficacy and participation in twenty-seven democracies: How electoral

- systems shape political behaviour. *British Journal of Political Science* 37, 311–334.
- Kitschelt, H. (1996). *The radical right in Western Europe. A comparative analysis*. Ann Arbor: University of Michigan Press.
- Knack, S. (2002). Social capital and the quality of government: Evidence from the States. *American Journal of Political Science*, 46(4), 772–785.
- Lipset, S. M., & Rokkan, S. (1967). Cleavage structures, party systems and voter alignments: An introduction. In S. M. Lipset & S. Rokkan (Eds.), *Party systems and voter alignments* (pp. 1–64). Glencoe, IL: The Free Press.
- Oorschot, W. V., & Arts, W. (2005). The social capital of European welfare states: The crowding out hypothesis revisited. *Journal of European Social Policy*, 15(1), 5–26.
- Prior, M. (2010). You've either got it or you don't? The stability of political interest over the life cycle. *Journal of Politics*, 72 (3), 747–766.
- Putnam, R. (1993). *Making democracy work. Civic traditions in modern Italy*. Princeton: Princeton University Press.
- Skytthe, A., Kyvik, K., Holm, N. V., Vaupel, J. W., & Christensen, K. (2002). The Danish Twin Registry: 127 birth cohorts of twins. *Twin Research*, 5, 352–357.
- Skytthe, A., Kyvik, K., Bathum, L., Holm, N., Vaupel, J. W., & Christensen, K. (2006). The Danish Twin Registry in the new millennium. *Twin Research and Human Genetics*, 9(6), 763–771.
- Verba, S., Schlozman, K.L., & Brady, H.E. (1995). *Voice and equality: Civic voluntarism in American politics*. Cambridge, MA.: Harvard University Press.
-