

---

# Genetic Determinants and Personality Correlates of Sociopolitical Attitudes in a Polish Sample

Włodzimierz Oniszczenko<sup>1</sup> and Urszula Jakubowska<sup>2</sup>

<sup>1</sup> Faculty of Psychology, University of Warsaw, Warsaw, Poland

<sup>2</sup> Institute of Psychology, Polish Academy of Sciences and Warsaw School of Social Psychology, Warsaw, Poland

The aim of the study was to assess the heritability as well as the personality correlates of sociopolitical attitudes in a Polish sample. Attitudes were examined on two separate dimensions: (1) moral conservatism and liberalism; and (2) free market economy and state interventionism. The studied sample comprised three groups of participants: (1) 242 twin pairs aged 18 to 25 years (119 monozygotic [MZ] and 123 dizygotic [DZ] same-sex twins reared together); (2) 358 females and males ('nontwins') of various professions aged 35 to 64 years; and (3) 197 male and female technical university students aged 19 to 25 years ('nontwins'). We detected substantial genetic factor input exclusively in the variability of results on the conservatism-liberalism scale (.28). Results on both scales were explained to a large extent by the impact of shared environment, and to a lesser extent by the nonshared environment. Only in the student group was a significant negative correlation found between attitudes toward economy and neuroticism, extraversion, agreeableness and conscientiousness. Openness to experience correlated negatively with attitudes towards issues of morality in the adult female and male group (the remaining correlations were statistically insignificant).

---

One of the most interesting behavior genetics revelations to date is that genetic factors influence not only personality, but also, to a comparable extent, social attitudes. Although there is a fairly long tradition for research of this kind (one of the first contemporary studies concerning the genetic source of individual differences with regard to attitudes was conducted by Eaves and Eysenck in 1974), it was not until the 1990s that the genetic determination of attitudes phenomenon was examined more extensively.

On the basis of results obtained by other researchers, Tesser (1993) analyzed the heritability of various attitudes, differentiating those genetically determined to the highest extent and those that depend on environmental influences. Eaves et al. (1999) examined attitudes and personality traits in a

sample of almost 30,000 adult twins reared together, their parents, spouses, children and siblings resident in Virginia (USA). The attitude inventory consisted of scales for the assessment of sexual liberalism, economic liberalism (attitude towards taxes), attitudes towards the army, political preferences (republican vs. democratic sympathies), as well as religious fundamentalism. The sixth scale was a scale of general conservatism. The heritability of the particular scales in females fluctuated from .16 (political attitudes scale) to .47 (sexual liberalism scale). The same indexes for males varied from .20 (political attitudes scale) to .47 (general conservatism). In addition, the authors determined that the influence of the family environment, including the cultural transmission from parents to children, is more apparent with regard to attitudes than personality, and that the degree of children-to-parents resemblance is related to gender (children are more similar to the parent of the same sex; see also Posner et al., 1996 regarding relationship between attitude similarity and social contact between twins). The potentially important role of assortative mating was also reported in studies on social attitudes (Bouchard et al., 2004; Martin et al., 1986).

Bouchard et al. (2003) examined adult twins reared apart using the same revised version of the Wilson-Patterson Attitude Inventory (W-PI). They noted a heritability coefficient of .56 for the conservatism scale and a nonshared environment input of .44 in the variability of the same scale. McCourt et al., (1999) achieved similar results indicating the heritability of authoritarian attitudes using the Altemeyer's Right Wing Authoritarianism Scale. This study determined that genetic factors are responsible for 0.50 of the variability of the authoritarianism scale, shared environment factors .16 and nonshared environment factors .34.

---

Received 26 July, 2004; accepted 30 September, 2004.

Address for correspondence: Włodzimierz Oniszczenko, Faculty of Psychology, University of Warsaw, Stawki 5-7, 00-183 Warsaw, Poland. E-mail: wlodek@engram.psych.uw.edu.pl

Olson, Vernon, Harris and Jang (2001) in turn examined the heritability of attitudes towards various social phenomena. It was established that attitudes towards book reading, abortion on demand, organized sport games, roller blading and capital punishment for murder are highly heritable (estimates around and greater than .50). The heritability of attitudes towards the distribution of male and female roles, the access to easy birth control, playing bingo and being assertive was not confirmed.

Various authors also noted the genetic determination of religious attitudes (Bouchard, McGue, Lykken, & Tellegen, 1999; Winter, Kaprio, Viken, Karvonen, & Rose, 1999). A synthetic review of research concerning the heritability of attitudes was drawn up by Altemeyer (1996) and Bouchard et al. (2004; see also Loehlin, 2001). It must be noted that the aforementioned results all relate to participants resident in countries with a deep-rooted tradition of democracy where the generational stability of sociopolitical attitudes is by far more soundly established than in countries with a short democratic history. In the case of a short democratic history, the development of various sociopolitical attitudes is a matter of the last ten to fifteen years. The circumstances of system transformation initiate new, previously unknown problems (e.g., the issue of private property, unemployment, openness in international relations, the acceptability of various lifestyles) which lead to the emergence and crystallization of particular sociopolitical attitudes. Due to the kind of environmental specificity in countries which undergo system transformation, research regarding the heritability of sociopolitical attitudes among their residents is of particular interest. The question arises then whether, in such circumstances, the inheritance mechanism of sociopolitical attitudes is as notable as in countries with rich and long-established traditions. The question relates to the manner of inheriting sociopolitical attitudes, that is, whether it is the outcome of an isolated process or whether it takes place indirectly rather, since persons with specific personality properties tend to adopt particular, nonrandom political orientations. Extra- and introversion are conceptualized as tough- and tender-mindedness respectively in the field of social attitudes, predisposing to radicalism or conservatism (Eysenck, 1954). Results of research conducted by Eaves and Eysenck (1974) demonstrated that the heritability of sociopolitical attitudes (described on the radicalism–conservatism dimension) accounts for 65% of the explained variability, tough- and tender-mindedness for 54% of the explained variance, whereas the inclination to formulate extreme opinions for 37% of the explained variability. Personality traits in the *Big Five* factors group also appeared to be largely genetically determined. Numerous research results have systematically indicated that genetic factors account for 41% to 61% of the variance of these traits (i.e., neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness; Jang, Livesley,

& Vernon, 1996; Riemann, Angleitner, & Strelau, 1997; see also Jang, McCrae, Angleitner, Riemann, & Livesley, 1998). Openness to experience was found to be a predictor of conservative rightist views (see, e.g., Chirumbolo, 2002; Kossowska & Van Hiel, 1999; McAllister & Anderson, 1991) or of conservatism understood as an attachment to the political past which, in the case of postcommunist states, indicates a sentiment for the communist ideology (Golec, 2001). Data concerning interrelations between the remaining personality traits and political preferences have not been reported. The present research is an attempt to fill this gap. Our aim was to determine the degree of heritability of sociopolitical attitudes in the Polish population as well as to define their personality correlatives.

## Method

The sample comprised three groups of participants who were contacted by mail. The first incorporated 242 pairs of twins aged 18 to 25 years ( $M = 21.52$ ;  $SD = 1.93$ ), with 119 monozygotic (MZ) and 123 dizygotic (DZ) same-sex pairs. The second group was composed of 358 randomly chosen ‘nontwin’ males and females of various professions, 179 were male aged 36 to 64 years ( $M = 48.44$ ;  $SD = 5.47$ ) and 179 were female aged 35 to 61 years ( $M = 46.82$ ;  $SD = 5.05$ ). The third group consisted of 197 randomly chosen ‘nontwins’ male and female technical university students aged 19 to 25 years ( $M = 21.03$ ;  $SD = 2.23$ ). The groups were homogeneous with respect to age, sex-proportion and level of primary education. The second and third group only were taken into account in the assessment of the correlations between sociopolitical attitudes and personality traits.

Twin zygosity was diagnosed using the Physical Twin Resemblance Questionnaire (Oniszczenko & Rogucka, 1996). Pairs whose zygosity proved difficult to establish were excluded from the analysis.

Sociopolitical attitudes were assessed using the Political Extremism Scale in rightist, centrist or leftist terms. The scale has a semantic differential structure, and is composed of 16 pairs of semantically opposite statements along with seven-degree scales which allow participants to express their degree of agreement with the presented opinions. The choice of extreme values denoted the acceptance of leftist (1) or rightist (7) views, whereas the indication of medial values implied a centrist attitude.

The Political Extremism Scale is composed of two subscales which are isolated by means of factorial analysis. The first subscale, described on the moral conservatism–liberalism dimension (9 pairs of statements), concerns views regarding the freedom versus normative limits in the choice of a lifestyle (e.g., attitude towards divorce, abortion, the realization of individual goals). The second subscale referred to the economic view. It was described on the free market economy–state interventionism dimension.

The reliability and diagnostic validity of both of the above-mentioned subscales is satisfactory. The subscales differentiated activists of leftist political groups, those associated with rightist groups and the politically uninvolved (see Jakubowska, in press).

Participants' personalities were assessed using the Polish version of the NEO-FFI questionnaire, originally designed by Costa and McCrae (1989).

#### Data Analysis

The statistical procedures employed in the study were based on the maximum-likelihood model-fitting analysis. The parameters of particular components of the general variance were calculated on the basis of LISREL8 (Jöreskog & Sörbom, 1993) using the univariate genetic model. The impact of genetic and environmental sources of variability treated as latent variables was simultaneously assessed: additive (A) genetic factor, as well as shared (C) and nonshared (E) environmental factors. According to the applied procedure, the following hypotheses were tested: (1) the data do not indicate any family resemblance (E model); (2) family resemblance is caused by the additive genetic factor (AE model); (3) family resemblance is caused by environmental factors common for both twins (CE model); and (4) family resemblance is due to the additive genetic effect and shared environment (ACE model). The goodness-of-fit for each model was based on the  $\chi^2$  test as well as the AIC indicator.

#### Results

Resemblance with regard to sociopolitical attitudes within MZ and DZ twin pairs was assessed on the basis of Pearson's correlational analysis. The results are presented in Table 1.

These results indicate a greater resemblance in MZ twin rather than DZ twin pairs regarding the assessment of attitudes described both on the moral conservatism–liberalism dimension and the free market economy–state interventionism dimension. The precise calculation of the impact of genetic and environmental components on the variability of sociopolitical attitudes is presented in Table 2.

These data suggest that heritability conjecturing can be legitimate exclusively with regard to attitudes toward moral issues and international relations (assessed by means of the conservatism–moral liberalism subscale). Genetic factors in this case appeared to be responsible for 28% of the variability of sample data, whereas shared environment accounted for 37% and nonshared environment for 35% of the explained variance. Economic attitudes (identified by means of the free market economy–state interventionism subscale) on the other hand, are determined exclusively by environmental factors; the input of shared environment in the variability of this subscale was found to be 53%, whereas the contribution of nonshared environment was 47%. It is also worth noting that in the analysis of the variance of data regarding both of the

**Table 1**

MZ and DZ Twin Resemblance With Respect to Attitudes Towards Issues of Morality (Moral Conservatism — Liberalism) and Towards the Economy (Free Market Economy — State Interventionism): Pearson's Coefficients

Attitudes/participants	MZ ( <i>N</i> = 119)	DZ ( <i>N</i> = 123)
Moral conservatism – liberalism	.66**	.50**
Free market economy – state interventionism	.60**	.50**

Note: \*\**p* < .01

above-mentioned categories of sociopolitical attitudes, the input of family environment (factor C) proved to be more substantial than the influence of individual experience (factor E).

Table 3 presents correlation coefficients between personality traits and attitudes identified on the dimensions conservatism–moral liberalism and free market economy–state interventionism in three groups of the studied participants (students, adult women and adult men).

The obtained correlation matrix indicates that low scores in openness to experience are associated with conservative attitudes toward moral issues and international relations exclusively in the case of adult males and adult females. Personality traits in students (the youngest group) have no relevance to this attitude dimension. The situation with economic attitudes is somewhat different. In the student group, most of the considered personality traits negatively correlate with attitudes toward the model of economy. Low neuroticism, introversion, agreeableness, and conscientiousness are related to the tendency to favor the free market model. In adult groups, both male and female, attitudes toward economy are associated only with agreeableness. The correlation is positive in the case of females and negative in the case of males.

#### Discussion

The higher degree of MZ twin resemblance compared to DZ twin pairs may confirm the heritability of sociopolitical attitudes hypothesis which has been repeatedly stated since the 1950s (Eysenck, 1954). It must nevertheless be emphasized that more precise statistical procedures imply that such a conclusion is valid exclusively with regard to conservative versus liberal moral attitudes (see Table 2). This data is consistent with findings reported in countries with a developed and stable democratic system (see e.g., Bouchard et al., 2003; Eaves et al., 1999; Eysenck, 1954). Attitudes toward moral issues and international relations seem to be largely independent of environmental circumstances, that is, independent of the current political system and the values on which it is based.

The lack of significant input from the genetic factor in the variability of attitudes described on the dimension free market economy — state intervention-

**Table 2**

Sociopolitical Attitudes: Goodness-of-Fit Parameters and Proportion of Variance Explained by Components of the Best-Fitted Model

Attitudes	Model	$\chi^2$	df	p	AIC	A	C	E
Moral conservatism–liberalism	ACE	1.24	3	.74	–4.76*	.28	.37	.35
	AE	8.55	4	.07	0.55			
	CE	5.27	4	.26	–2.73			
	E	43.76	5	.00	33.76			
Free market economy–state interventionism	ACE	5.15	3	.16	–0.85			
	AE	11.95	4	.02	3.95			
	CE	7.03	4	.13	–0.97*		.53	.47
	E	33.90	5	.00	23.90			

Note: A = additive genetic factor; D = nonadditive genetic factor; C = shared environment; E = nonshared environment

ism may result from the absence of a deep-rooted tradition in cultivating attitudes regarding the role of the state in economy — an absence which is, in turn, an inevitable consequence of system transformation. During the 50-year post-war period in Poland, the state performed a far-reaching welfare function with respect to its citizens. It is only since 1989 that the process of system reorganization has taken place and led to a substantial limitation, and in many fields, a total eradication of state interventionism.

Neuroticism, extraversion, agreeableness and conscientiousness appeared in turn to be associated with the pro-state attitudes in the youngest group (i.e., among students). The higher the level of neuroticism, extraversion, agreeableness, and conscientiousness, the stronger the tendency to favor an extended welfare function of the state toward its citizens manifested in market regulations, concern with public assistance, the leveling of living conditions, and adherence to egalitarian values. These results imply that expectations of the state may be generated by personality traits. A high degree of anxiety (neuroticism), inclination towards friendly relations with the surrounding people (agreeableness and extraversion), together with perseverance in pursuing goals (conscientiousness) all induce the support of systems which provide safe living conditions (extended social welfare) and provide the opportunity to avoid discomfort stemming from social diversification (tendency to level the material standards of living, egalitarianism in social relations). The opposite is also valid: a low degree of anxiety (low neuroticism), reserve in social relations (introversion), competitive attitude (low agreeableness), as well as spontaneity and propensity for a 'comfortable' life (low conscientiousness) are associated with the preference of the free market model, still largely unfamiliar in Poland.

As far as attitudes towards moral issues (assessed by means of the moral conservatism–liberalism subscale) are concerned, their interrelations with personality attributes are rather weak. Contrary to the findings reported by other authors (see, e.g., Eysenck, 1954), environmental conditions as well as the tradi-

tions of past generations are of greater impact than personality traits in the Polish sample. These differences probably stem from the fact that due to the specificity of the Polish system and the transformation it has gone undergone, sociopolitical attitudes in Poland do not form a consistent structure of economic and moral views and opinions characteristic of a particular ideological orientation. Whereas this kind of structure does function in western democratic countries, in Poland some of its culturally universal

**Table 3**Correlation Coefficients (Pearson's *r*) Between Personality Traits Assessed by Means of the NEO–FFI and Scores in Scales Measuring Sociopolitical Attitudes

NEO–FFI	Moral conservatism–liberalism	Free market economy–state interventionism
<b>Neuroticism</b>		
Students	.00	–.16*
Females	–.09	–.12
Males	.07	–.13
<b>Extraversion</b>		
Students	–.01	–.15*
Females	–.01	–.01
Males	–.05	–.11
<b>Openness to experience</b>		
Students	–.05	–.00
Females	–.31**	.23**
Males	–.25**	.03
<b>Agreeableness</b>		
Students	.06	–.33**
Females	–.03	.03
Males	.05	–.15*
<b>Conscientiousness</b>		
Students	.05	–.17*
Females	–.10	–.12
Males	–.03	–.06

Note: \*  $p < .05$  \*\*  $p < .01$ .

elements are inherited, while others — associated with the way of experiencing the system (environmental conditions) — are linked to certain personality traits (openness to experience).

It is also interesting to note the differences in the significance of particular traits between the younger and the older study group. Students, who have experienced the system transformation in Poland for most of their lives, seem to be more oriented towards economic rather than moral issues. Most of the personality traits examined in this group are linked to attitudes toward the market, not toward morals. The situation is quite different, however, in the group of adult participants who were brought up in the 'old' regime. This regime lays particular emphasis — at least in theory — on the significance of social norms. In this group, openness to experience emerged as the only trait significantly related to attitudes towards morality. Those more open to experience are more liberal, those who are less open are, in turn, more conservative. This result confirms earlier observations. Attitudes towards economy appeared to correlate with conscientiousness in this group — positively in the case of females, and negatively in the case of males.

### Acknowledgments

The study described in the present paper had been granted from the BST 986-1-2004 research program directed by Włodzimierz Oniszczenko.

### References

- Altemeyer, B. (1996). *The authoritarian specter*. London: Harvard University Press.
- Bouchard, T., Jr., McGue, M., Lykken, D., & Tellegen, A. (1999). Intrinsic and extrinsic religiousness: Genetic and environmental influences and personality correlates. *Twin Research*, 2, 88–98.
- Bouchard, T., Jr., Segal, N. L., Tellegen, A., McGue, M., Keyes, M., & Krueger, R. (2003). Evidence for the construct validity and heritability of the Wilson-Patterson conservatism scale: A reared-apart twins study of social attitudes. *Personality and Individual Differences*, 34, 959–969.
- Bouchard, T., Jr., Segal, N. L., Tellegen, A., McGue, M., Keyes, M., & Krueger, R. (2004). Genetic influence on social attitudes: Another challenge to psychology from behavior genetics (s. 89–104). In L. F. DiLalla (Ed.), *Behavior genetics principles: Perspectives in development, personality, and development*. Washington, DC: American Psychological Association.
- Chirumbolo, A. (2002). The relationship between need for cognitive closure and political orientation: The mediating role of authoritarianism. *Personality and Individual Differences*, 32, 603–610.
- Costa, P. T., Jr., & McCrae, R. R. (1989). *The NEO-personality inventory manual*. Odessa, FL: Psychological Assessment Resources.
- Eaves, L. J., & Eysenck, H. J. (1974). Genetics and the development of social attitudes. *Nature*, 249, 288–289.
- Eaves, L., Heath, A., Martin, N., Maes, H., Neale, M., Kendler, K., Kirk, K., & Corey, L. (1999). Comparing the biological and cultural inheritance of personality and social attitudes in the Virginia 30,000 study of twins and their relatives. *Twin Research*, 2, 62–80.
- Eysenck, H. J. (1954). *The psychology of politics*. London: Routledge & Kegan Paul.
- Golec, A. (2001). Konserwatyzm polityczny a potrzeba poznawczego domknięcia w badaniach polskich [Conservatism and need for closure in the Polish studies]. *Studia Psychologiczne*, 1, 41–58.
- Jakubowska, U. (in press). *Ekstremizm polityczny: Psychologiczny sens zjawiska i jego wyjaśnienia*. [Political extremism: Psychological nature of the phenomenon]. Warszawa, Poland: IP PAN.
- Jang, K. L., Livesley, W. J., & Vernon, P. A. (1996). Heritability of the big five personality dimensions and their facets: A twin study. *Journal of Personality*, 64, 577–591.
- Jang, K. L., McCrae, R. R., Angleitner, A., Riemann, R., & Livesley, W. J. (1998). Heritability of facet-level traits in a cross-cultural twin sample: Support for a hierarchical model of personality. *Journal of Personality and Social Psychology*, 74, 1556–1565.
- Jöreskog, K. G., & Sörbom, D. (1993). *LISREL 8: User's reference guide*. Chicago, IL: SPSS Inc.
- Kossowska, M., & Van Hiel, A. (1999). Personality and current political beliefs: A comparative study of Polish and Belgian samples. *Polish Psychological Bulletin*, 30, 115–128.
- Loehlin, J. C. (2001, October). *Resemblance in personality and attitudes between parents and their children: Genetic and environmental contribution*. Paper presented at the Workshop on Intergenerational Inequality, Santa Fe Institute, Santa Fe, NM.
- Martin, N. G., Eaves, L. J., Heath, A. C., Jardine, R., Feingold, L. M., & Eysenck, H. J. (1986). Transmission of social attitudes. *Proceedings of the National Academy of Sciences USA*, 83, 4364–4368.
- McAllister, P., & Anderson, A. (1991). Conservatism and the comprehension of implausible text. *European Journal of Social Psychology*, 21, 147–167.
- McCourt, K., Bouchard, Jr., T., Lykken, D. T., Tellegen, A., & Keyes, M. (1999). Authoritarianism revisited: Genetic and environmental influences examined in twins reared apart and together. *Personality and Individual Differences*, 27, 985–1014.
- Olson, J. M., Vernon, P. A., Harris, J. A., & Jang, K. L. (2001). The heritability of attitudes: A study of twins. *Journal of Personality and Social Psychology*, 80, 845–860.
- Oniszczenko, W., & Rogucka, E. (1996). Diagnoza zygocynności bliźniąt na podstawie Kwestionariusza Fizycznego Podobienstwa Bliźniąt [The twins zygosity

- diagnosis by means of the Questionnaire of Twins Physical Resemblance]. *Przegląd Psychologiczny*, 39, 151–160.
- Posner, S. F., Baker, L., Heath, A., & Martin, N. G. (1996). Social contact, social attitudes, and twin similarity. *Behavior Genetics*, 26, 123–133.
- Riemann, R., Angleitner, A., & Strelau, J. (1997). Genetic and environmental influences on personality: A study of twins reared together using the self- and peer-report NEO-FFI scales. *Journal of Personality*, 65, 449–475.
- Tesser, A. (1993). The importance of heritability in psychological research: The case of attitudes. *Psychological Review*, 100, 129–142.
- Winter, T., Kaprio, J., Viken, R.J., Karvonen, S., & Rose, R. J. (1999). Individual differences in adolescent religiosity in Finland: Familial effects are modified by sex and region of residence. *Twin Research*, 2, 108 – 114.
-