Personality and Political Ideology

Abstract

Psychologists, geneticists, and political scientists have long attempted to identify and explain the associations between personality and political preferences. The vast majority of scholarship has been directed at identifying the predictive relationship between certain personality traits and conservatism, or an overall left-right spectrum (for a review see Jost, Kruglanksi, and Sulloway 2003a&b; for an exception see Carney et al. 2008; Gerber et al, nd). Here, building upon a series of works by Thomas Bouchard , Lindon Eaves, and Hans Eysenck we present strong evidence of a much more nuanced relationship between personality and political attitudes- the relationship is neither predictive, nor confined to an overarching left-right ideological spectrum. Rather, specific attitude dimensions and certain personality traits are related, but this relationship is not simply a predictive one. Specifically, for some relationships between personality traits and political attitudes, the majority of the covariance is to due to a common genetic covariance, while for other relationships, the covariance is a function of common shared environmental covariance.

Personality is understood as some combination of innate disposition and personal experiences. As such, personality traits can be views as stable individual differences that, in a general sense, guide behavior (Cattell 1957; Winter and Barenbaum 1999; Bouchard et al). While there remains little agreement on the best way to measure personality (McAdams 1995; Eysenck, 1991), most theories attempt to measure the internal, affective, cognitive, and motivational processes that provide consistency and continuity in guiding behavior (see Cattell 1957; Conley 1985; Roberts and DelVecchio 2000; Winter and Barenbaum 1999; Pervin and John 1999; Eysenck 1990: Larstone et al. 2002). This is not to say behavior is predetermined by personality; rather, environmental circumstances provide the impetus for behaviors, and personality is considered a predisposition to prefer to act in a given manner only if the given

action is appropriate for a specific condition (Mischel 1968; Bandura 2001; Caprara and Cervone 2000; Mischel and Shoda 1998). For example, social threats activate authoritarian predispositions resulting in more conservative behaviors and preferences in those high in authoritarianism, but only when they are threatened (Duckitt 1988; Feldman and Stenner 1998; Stenner 2005, Lavine, Lodge & Freitas, 2005).

Political attitudes on the other hand, have typically been viewed as much more capricious (Converse, 1964). Although a plethora of research on attitudes suggest that they may be quite stable under certain situation, attitudes are commonly viewed as less stable than personality traits. Rather than being perceived as a disposition, attitudes are perceived as variable preferences. Unlike personality, there is no consentual model or theory of socio-political attitudes. Although there is wide agreement on a general, abstract left-right spectrum, the attitudes that comprise this spectrum remain elusive and insofar as specific attitude facets go, they remain underdeveloped (Bouchard et al 2009).

Until quite recently, the vast majority of most social scientists simply assumed, without any empirical exploration, that the correlation of attitudes between parents and offspring was entirely a function of cultural transmission (for an exception see Martin et al 1986). This view has now been widely discredited as the genetic influence on social attitudes and political positions has been established in the psychological, political science, and genetics literatures (e.g. Alford, Funk and Hibbing 2005; Bouchard et al 2003; Bouchard et al 1999; Eaves and Hatemi 2008; Fowler and Dawes 2008; Hatemi et al 2009). This inherent assumption about the transmission of social attitudes has lead to a second assumption. Specifically, personality traits are assumed to be causally prior to social attitudes, and thus people who are high on one personality trait are thus led to hold specific political preferences.

In this paper, we focus on the connection between specific personality traits and specific dimensions of social attitudes. Specifically, we focus on the genetic and environmental sources of covariation that link personality traits with social attitudes at the phenotypic level. By focusing on these sources of covariation, we can examine the plausibility of the assumptions made in the existing literature regarding the causal connection between personality traits and political attitude.

Personality and Politics

Most attempts to link personality traits with political attitudes have, focused on portraying conservatism as a disease or pathology, and focused on connecting conservatives with normatively negative personality traits (Jost et al, 2003). In essence, these negative personality traits cause people to hold conservative preferences. From our perspective, social attitudes do not have implicit positive or negative connotations: when dealing with social attitudes there no "correct" side of an issue.

Some of the earliest research linking political attitudes with stable individual differences focused on identifying people predisposed to endorse extremist and fascist ideologies in order to explain and prevent a second holocaust (Adorno et al 1950). This vein of research capitalized on the observation that the people who hold negative feelings to one group often hold negative feelings to a wide range of logically unconnected groups. As such, some latent trait must be driving this connection between these prejudicial attitudes.

Adorno et al (1950) constructed a typology outlining which factors would comprise this latent personality trait and how these factors relate with each other and dubbed it "The Authoritarian Personality." The authors claim that people with an authoritarian disposition have

a strong need for structure, hierarchy, and clarity in their personal life which extends into their political preferences. These people rigidly adhere to conventional values, being submissive and uncritical toward moral authorities. They are vigilant against violations of these values and are quick to condemn and punish transgressors. These authoritarians are also, preoccupied with the dominance-submission relationships and strongly identify with and idolize power figures. Interestingly, they are also preoccupied with the sexual behaviors and preferences of others.

McClosky (1958) extended this way of thinking and attributed the "conservative personality" to individual who were "social isolates, of people who think poorly of themselves, who suffer personal disgruntlement and frustration, who are submissive, timid, and wanting in confidence, who lack a clear sense of direction and purpose, who are uncertain about their values, and who are generally bewildered by the alarming task of having to thread their way through a society which seems to them too complex to fathom" (p. 37). Unfortunately, such one-sided views remain until the present day (e.g., Altemeyer 1981; 1996).

Block and Block (2005) argue that as children, adult conservatives tend to be "easily offended, indecisive, fearful, rigid, inhibited, and relatively over-controlled and vulnerable"; while children who go on to become adult liberals are "self-reliant, energetic, somewhat dominating, relatively under-controlled, and resilient" (p. 1). While Jost, et al 2003 claim conservatism is a coping mechanism to reduce fear, anxiety, and uncertainty.

Focusing on the connection between conservatism and these negative qualities has driven most research in this area. Thus, there is ample research demonstrating that the positively valued openness to experience dimension of the Five Factor model is strongly and consistently related to liberalism (see Gosling, Rentfrow, and Swann 2003; Jost et al 2003; Jost, Federico, and Napier 2009; McCrae 1996; Mondak and Halperin 2008; Riemann, et al 1993; Van Hiel, Kossowska,

and Mervielde 2000; van Hiel and Mervielde 2004). Some of the more recent work in this area has also demonstrated that neuroticism is also positively associated with liberalism (Carney et al 2008; Leeson and Heaven 1999; Riemann, et al 1993), though these studies are often dismissed or downplayed this connection in favor or a more positive view of liberalism and negative view of conservatism. Several other studies have found Conscientiousness positively correlated with conservatism as well (Caprara, Barbaranelli, and Zimbardo 1999; Mondak and Halperin 2008).

Meanwhile, a dissenting explanation of the connection between personality traits and social attitudes was receiving continued empirical replication in a separate body of literature. As early as the 1970's (see Eaves and Eysenck 1974), two groups of researchers, Eaves, Eysenck and Martin (1989) and later Bouchard et al ( ) in particular, argued that personality was not simply predictive of political attitudes, nor were those on the right side of the left-right spectrum suffering from clinical illness. Instead, personality traits and political preferences shared some similar underlying components, and in part were manifestations of the same trait. Disentangling the multiple dimensions of personality, and attitudes has not been a simple task.

Among the first to present empirical evidence overturning the general assumption of the predictive nature of the relationship between personality and politics, Eaves and Eysenck (1974) identified a genetic relationship between personality and conservatism. The paper, typical of a *Nature* Letter, was profound and novel, but offered only brief insight on why this relationship existed. Unfortunately, these ground breaking findings went largely unaddressed for several decades, with the exception of a handful of scholars. Among these, Bouchard and colleagues (enter zillion citations) further developed the intertwining nature of attitudes and personality over the next 30 years (). The combined contributions of a wide variety of authors has led to a paradigm shift in the connection between personality and politics.

Combining, religiousness, authoritarian dispositions, and traditional conservatism, into a core attitude system, Bouchard and contemporaries offered the beginning of a synthesis of attitude dimension and personality traits. Among the first to divide conservatism into more discrete units while exploring the relationship with personality, Carney et al (2008) found that Conscientiousness and Extraversion were positively associated with conservative opinions on social issues and Openness negatively associated with conservative opinions on social issues. However, the findings were quite limited in scope. Verhulst, Hatemi and Eaves (2009), extended the argument by identifying three ideological factors from a 28 item attitude index in a very large US sample and found that Psychoticism was positively related to Militaristic and Defense attitudes, while Neuroticism was positively related to more liberal Economic Attitudes. In addition, they found social desirability, was related to a more liberal positions on social issues. However, they took the analyses one step further, by offering replication of Eaves and Eysenck's findings some 35 years earlier. Using a large twin sample (over 6,000 pairs), they identified that the relationship was not predictive one between personality and politics. Rather, most of the covariance between personality and political attitudes were due to a common underlying genetic influence.

Drawing on the empirics conducted by Saucier (2000), Bouchard (2009) has identified three highly related attitude clusters: authoritarianism, religiousness, and conservatism. Bouchard (2009) labels this cluster the traditional moral values triad. Here we extend the argument set forth by Bouchard (2009), and first operationalized by Eaves and Eysenck (1974) by offering an empirical exploration of Bouchard's Moral Triad thesis. We separate the large conservatism-liberalism factor into more meaningful ideological attitude dimensions that specifically include the religious, punishment and sexuality factors. We then explore the magnitude of the

relationship between Eysenck's personality inventory, and the attitude factors by accounting for the source of covariation utilizing a biometric twin design.

Methods and Results

Data were collected from 1988 to 1990 by mailed surveys to two large cohorts of adult Australian twins enrolled on the volunteer Australian Twin Registry. Each participant completed a Health and Lifestyle Questionnaire (HLQ), which contained items on socio-political attitudes, personality traits from the Eysenck Personality Questionnaire (EPQ), and wide variety of health related and sociodemographic measures (Martin 1987; Eaves et al. 1989; Truett et al. 1992). Using only respondents who completed the political and personality measures, the sample consists of 20,559 individuals from 5,402 families; this includes 7,357 individuals twins, comprising 3,251 complete same sex pairs and 526 unlike sex pairs. For more details on the sample, including ascertainment and response rates, see Hatemi et al (2007).

Measures

Personality traits were measured by Eysenck's (1990) Personality Quotient (EPQ). There are three main personality factors in the EPQ. The first trait, *Psychoticism*, is a blend of authoritarianism and low openness to experience. Psychoticism is associated with risk taking, impulsivity, tough-mindedness, practicality, magical ideation, and religiosity. The second trait, *Extraversion,* is comprised of two central components: *affiliation*, which includes valuing interpersonal bonds and being warm and affectionate, highly sociabe and expressiveness, and *agency*, which includes goal oriented behavior, ambition, dogmatism, social dominance, leadership, aggressiveness and assertiveness (Depue and Collins 1999). The third trait, *Neuroticism*,, is related to feelings of inferiority, unhappiness, anxiety, dependence,

hypochondria, guilt, emotional instability, and obsessiveness (Eysenck and Eysenck 1985). The additional sub-factor of social desirability (often dubbed the "lie" scale), was also included in the analyses and is characterized social acquiescence or conformity and lack of self-insight (Francis, Brown, and Pearson 1991).

Political and social attitudes were assessed utilizing a 50-item index of contemporary political and social issues at the time of the survey (see Posner et al. 1996). In a Wilson and Patterson (1968) format, respondents indicated if they agreed (1), disagreed (3), or were uncertain (2) about their attitudes towards a wide range issues across several ideological dimensions (e.g., Death Penalty, Bible Truth, Legalized Prostitution, Immigration, Stiffer Jail Terms, etc.). Of these fifty items, 22 of the most explicitly political items were used to construct four attitude dimensions: religion, sex, outgroups and punishment attitudes.

Preliminary Analysis

A confirmatory factor analysis (CFA) was conducted specifying eight factors: four personality factors from the Eysenck Personality Questionnaire (Psychoticism, extraversion, neuroticism, and social desirability), based upon the established structure (Eysenck and Eysenck 1985), and four political ideology attitude factors (religion, sex, outgroups, and punishment: see Appendices 1 and 2 for the specifics of the CFA). For the personality traits, higher scores indicate higher levels of the trait, and for the ideological dimensions higher scores indicate the liberal position.

Phenotypic Correlations between Personality Traits and Ideological Dimensions

Not all personality and attitude dimensions have a large enough covariance for more complex analyses. Therefore, we limit further analyses of the relationship between personality

traits and ideological dimensions to only those relationships that have a correlation greater than 0.20. (see Cohen 1988). This decision is based on the inherent difficultly in reliably disentangling covariance if the phenotypic relationship between the two traits is small.

The correlations between the personality traits and the ideological dimensions are presented in Table 1 for males and females separately. The size of the correlations between the attitude sub factors and personality traits are much larger than those reported for correlations between overall Conservatism-Liberalism and personality traits. Previous findings rarely reported correlations greater than 0.4 (for a review see Jost et al 2003), while the correlation here exceeded 0.6. Importantly, these correlations are much larger than those that have attempted to separate political ideology into separate subfactors in US samples (Verhulst, Hatemi & Eaves, 2009; Gerber et al, 2009; Carney et al 2008).

First, as can be seen in Table 1, in line with our expectations psychoticism is strongly related religious, sex and punishment attitude dimensions (ranging from 0.50 to 0.65). These relationships are consistent with the fact that these social attitudes are those which would be highly central to authoritarian concerns and that psychoticism is a blend of authoritarianism and low openness to experience.

A similar, but substantially weaker relationship exists between extraversion and attitudes on sex related items (e.g., Birth control, Legalized Prostitution). The greater the extrovert, the more conservative one is regarding these attitudes.

[Insert Table 1 Here]

On the other hand the more neurotic one is, the more “liberal” their attitudes are toward out- groups (e.g. immigration, multiculturalism). In many ways this reinforces the relationship between neuroticism and more liberal attitudes on economic issues in a large US sample as the

Australia out-Group dimension and the US economic dimension share one item in particular – immigration (see Verhulst, Hatemi and Eaves 2009) .

One of the most interestingly personality traits, but least explored in the context of political attitudes is Social Desirability. The higher respondents score on this dimensin, the more likely they were to support liberal positions on religion, sex and punishment attitudes. Overall the relationship between attitudes and Social desirability is the exact opposite of the relationship between Psychoticism and attitudes, though not quite as strong.

Genetic Analyses

Biometric models provide us with a first look at the nature of the relationship between personality and attitudes dimensions. Table 2 provides the co-twin correlations separated by zygosity for the personality traits and sociopolitical attitude dimensions. In both cases, there are substantially greater within-pair differences in same sex DZ twin pairs, versus same sex MZ twin pairs, providing initial support for genetic influences and reason to explore structural models. However, the DZ co-twin differences are much greater for most personality dimensions than for any of the political attitude sub factors leading us to expect significant common environmental influence in the attitude dimensions.

[Insert Table 2 Here]

Univariate variance components modeling, estimated using maximum likelihood in Mx (Neal et al 2003) is presented in Table 3. Typical of such models, variance is estimated into three separate discrete elements, Additive Genetic (A), Common environment (C), and Unique Environment (E) (for a detailed explanation of the methodology and theory, along with limitations and recent criticisms see Neale and Cardon 1992 and Medland and Hatemi 2009). Without extended pedigrees and more complex modeling, gene-environment covariation, gene-

environment interaction, non additive genetic influence, and epistasis are all partially confounded within the additive genetic estimate. Previous variance components models of both personality and political attitudes have found substantial sex differences in the magnitude of genetic and environmental influences. Thus, in order to simplify the model all further analyses are explored separately by sex.

[Insert Table 3 Here]

The results are consistent with the exceptions based on the cotwin correlations and the long standing personality literature. Indeed, the personality dimensions have been explored previously in this sample (Heath et al 1995) and many others, and it has long been established that individual differences in psychoticism, neuroticism, and extraversion are largely an equal function of genes and environment. The only personality trait that deviates from this trend is social desirability, which has a significant, though small common environmental influence for males. A similar finding was reported from a large US study (Eaves et al 1999). Importantly, this common environment component is only statistically significant for males. Although this component is not significant for females, this component is typically small, and thus more difficult to assess. The fact that the sample of males is larger than females also increases the power necessary to identify the common environment component.

The political attitudes in our sample have also been explored previously as individual attitudes (Hatemi et al 2007) and a larger conservatism-liberalism factor (Hatemi et al , in press; Miller and Martin 1995; Posner et al 1996). Similar studies have been conducted with US, UK and other Australia samples (Martin et al 1986; Boucher et al 2003; Eaves et al 1999). All provided similar results as what was found for personality dimensions, roughly half due to genetic influence and half to environmental influences, though in some smaller samples common

environment was also included. However, our ideological sub factors, are somewhat different than the majority of findings on conservative-liberal super factors. That is we identify a large common environmental influence for each of the subfactors. It appears that while a greater conservative-liberal world view is a function of genes and environment, particular groupings of attitudes include a social environmental influence. These results are quite consistent with the notion that attitudes are context and time specific. The groupings are socially influenced while the overall liberal –conservative disposition is not.

Cholesky Decomposition

The preceding steps were necessary to begin to examine the complex relationships between personality traits and political attitude dimensions. Above we have demonstrated that several of the personality dimensions are related with different attitude dimensions at the phenotypic level. Furthermore, we have demonstrated that the variance of the personality traits and attitude dimensions can be decomposed into additive genetic and environmental components. Our interests, however, lay in exploring the nature of the phenotypic relationship. As such, we undertake a Cholesky Decomposition (see Figure 1), a common bivariate genetic model used to account for the source of covariation between two or more traits. The constraints and model specifications are explained in detail in Medland and Hatemi (2009).

For multivariate models the ordering of items is quite important (Loehlin 1996). The structure of the model ensures that all of the additive genetic variance from the first factor (the personality trait) and the additive genetic variance of the second factor (the social attitude) that is accounted for by the first trait loads on A1. The residual additive genetic in the second trait (social attitude) that is not accounted for by the first trait (personality), loads on A2. In the models we present, we rely on the reigning assumption that personality leads to political attitudes

and as such personality traits are entered first and political attitudes are entered second (last). This ordering is less problematic for bivariate analyses presented here, as we are more interested in the relationship between the two elements, and the results of the amount of shared influence in the bivariate model are agnostic to the ordering of items.

Several patterns of variation are possible and could be expected under different theoretical premises. As we know that the phenotypic relationship exists and is relatively large in this sample, there must be some sort of relationship between the personality traits and the social attitudes.

If social attitudes are simply an expression of personality traits in a different context, we would see a large amount of covariation between the personality trait and the social attitude spread across all three variance components. With reference to Figure 1, the paths between A_1, C_1, and E_1 and the social attitude would be very large and the paths between A_2, C_2, and E_2 and the social attitude would be statistically insignificant or substantively or substantively irrelevant.

Alternatively, the covariance between personality traits and political attitudes may be localized in one of the specific variance components for each trait. If so, the phenotypic relationship would be driven by the variance component most highly shared between the personality trait and the social attitude. This would result in one of the paths between A_1, C_1, and E_1 and the social attitude being quite large, while the other paths being relatively small.

[Insert Figure 1 Here]

Tables 4 and 5 display the standardized path coefficients resulting from the Cholesky for males and females respectively. Performing a simple algebraic transformation of the path coefficients note that the vast majority (63%-86%) of the covariation between psychoticism and all three of the attitude dimensions (Punishment, Sex, Religious) are due to genetic covariance. A

similar relationship exists between Extraversion and Sex attitudes as well. At first glance, it appears Bouchard's Traditional Moral Values Triad, is largely a function of a common underlying genetic influence.

[Insert Tables 4 &5 Here]

However, when we examine the relationship between Social Desirability and the attitude dimensions, the nature of the covariation is remarkably different. That is, the shared environment accounts for roughly 85% of the covariation between Social Desirability and Sex and Punishment attitude dimensions for both males and females. There is one deviation; the covariation between religious attitudes and Social Desirability in females is similar to that of Psychoticism- over 90% due to common genetic influence. We can only speculate as to why this is, but is could be the overall social environment remains pervasive and similar in regards to its influence on females religious attitudes.

Overall, the multivariate results show that the relationship between personality traits and political ideology is not simple or uniform. The relationship between Psychoticism and Extraversion on all attitude dimensions is largely a function of shared genetic influence. However, for Social Desirability and attitude dimensions, the vast majority of covariation is due to the similarity in shared environment. Importantly, regardless of the source of covariance between personality and attitude dimensions, the overwhelming portion of individual differences remain unique to each trait, with one exception- Psychoticism and sex attitudes shared some 40% of their covariance.

Discussion

The analysis above brings together, the extensive personality contribution of Hans Eysenck, combined with their attitude literature initiated by Nicholas Martin and Lindon Eaves,

and extensively developed in combination by Tom Bouchard. Bouchard's theoretical combination implies that whatever relationship exits, is not that one predict the others, but that both traits, contain elements that are simply different representations of the same construct. Such a position was borne out by the results we show here.

The finding that the majority of covariation between psychoticism and sex, religious and punishment attitude dimension is due to genetic variance, provide strong evidence that a simple causal theory from personality to politics is not suitable for such a complex relationship. However, the findings that the relationship between social desirability and attitude dimension is due to similarity in shared environmental influence adds a new dimension and requires …..

There may very well be a predictive relationship between the two. More complex direction of causation models gene-environment covariation (rGE)models using extended kinship, and interactive models of Psychoticism and social desirability are required.

References

Carney, Dana R., John T. Jost, Samuel D. Gosling, and Jeff Potter. 2008. "The Secret Lives of Liberals and Conservatives: Personality Profiles, Interaction Styles, and the Things They Leave Behind." *Political Psychology* 29: 807-40.

Eysenck, H. J. 1990. Biological dimensions of personality. In Handbook of personality: Theory and research, ed. L. A. Pervin, 249-276. New York: Guilford

Gosling, Samuel D., Peter J. Rentfrow, and William B. Swann, Jr. 2003. "A Very Brief Measure of the Big-Five Personality Domains." Journal of Research in Personality 37: 504-28.

Heath AC, Madden PAF, Slutske WS, Martin NG: Personality and the inheritance of smoking behavior: a genetic perspective. Behavior Genetics 25(2):103-117, 1995

Jost, John T., Christopher M. Federico, and Jamie L. Napier. 2009. "Political Ideology: Its Structure, Functions, and Elective Affinities." Annual Review of Psychology 60: 339-367.

Leeson, P. & Heaven, P.C.L. (1999). Social Attitudes and Personality. Australian Journal of Psychology, 51, 19-24.

McAdams, Dan P. 1995. "What Do We Know When We Know a Person?" Journal of Personality. 63: 365-396.

Miller EM, Martin NG: Analysis of the effect of hormones on opposite-sex twin attitudes

Riemann, R., Grubich, C., Hempel, S., Mergl, S., & Richter, M. (1993). Personality and Attitudes Towards Current Political Topics. Personality and Individual Differences, 15, 313-321.

Eysenck, H.J. (1991) Dimensions of Personality: 16, 5 or 3? Criteria for a taxonomic paradigm. *Personality and Individual Difference, 12*: 773-790.

Table 1: Phenotypic Correlations between Personality and Attitude Dimensions for Male and Female Twins

		Psychoticism	Extraversion	Neuroticism	Social Desirability
Male Twins	Religion Attitudes	**-0.501**	-0.037	-0.005	**0.231**
	Sex Attitudes	**-0.616**	**-0.224**	-0.038	**0.363**
	Group Attitudes	0.010	-0.005	**0.226**	0.125
	Punishment Attitudes	**-0.530**	-0.027	0.039	**0.319**
Female Twins	Religion Attitudes	**-0.540**	-0.119	-0.022	**0.263**
	Sex Attitudes	**-0.646**	**-0.293**	-0.046	**0.399**
	Group Attitudes	-0.082	-0.063	**0.262**	**0.228**
	Punishment Attitudes	**-0.583**	-0.132	0.086	**0.389**

Table 2: Between Co-Twin Correlations by Zygosity

		MZM	MZF	DZM	DZF
Personality Traits	Psychoticism	0.624	0.539	0.427	0.388
	Extraversion	0.488	0.511	0.209	0.195
	Neuroticism	0.436	0.367	0.218	0.145
	Social Desirability	0.522	0.388	0.396	0.321
Social Attitudes	Religion	0.630	0.590	0.512	0.494
	Sex	0.653	0.5626	0.541	0.461
	Groups	0.570	0.580	0.393	0.444
	Punishment	0.616	0.551	0.401	0.445
	N (Twin Pairs)	1383	645	839	384

Table 3: Univariate Estimates for Personality and Ideology Dimensions

	Males			Females		
	a^2	c^2	e^2	a^2	c^2	e^2
Psychoticism	0.586 (0.55, 0.61)	–	0.414 (0.38, 0.45)	0.532 (0.50, 0.58)	–	0.468 (0.42, 0.52)
Extraversion	0.465 (0.42, 0.50)	–	0.535 (0.50, 0.58)	0.508 (0.51, 0.56)	–	0.492 (0.44, 0.49)
Neuroticism	0.430 (0.39, 0.47)	–	0.570 (0.53, 0.61)	0.353 (0.29, 0.41)	–	0.648 (0.59, 0.71)
Social Desirability	0.318 (0.18, 0.47)	0.165 (0.03, 0.29)	0.517 (0.48, 0.56)	0.256 (0.03, 0.43)	*0.121 (0.00, 0.32)*	0.623 (0.56, 0.69)
Religion Attitudes	0.217 (0.11, 0.33)	0.386 (0.28, 0.43)	0.396 (0.37, 0.43)	0.183 (0.02, 0.36)	0.404 (0.24, 0.54)	0.413 (0.37, 0.46)
Sex Attitudes	0.199 (0.09, 0.31)	0.419 (0.31, 0.51)	0.382 (0.35, 0.41)	0.244 (0.07, 0.44)	0.312 (0.13, 0.47)	0.444 (0.40, 0.50)
Group Attitudes	0.344 (0.22, 0.47)	0.221 (0.10, 0.33)	0.435 (0.40, 0.47)	0.283 (0.12, 0.46)	0.299 (0.14, 0.44)	0.418 (0.37, 0.47)
Punishment Attitudes	0.437 (0.31, 0.57)	0.161 (0.04, 0.27)	0.403 (0.37, 0.44)	0.209 (0.03, 0.40)	0.327 (0.15, 0.48)	0.465 (0.42, 0.52)

Notes: Estimates in italics are not signficnant.

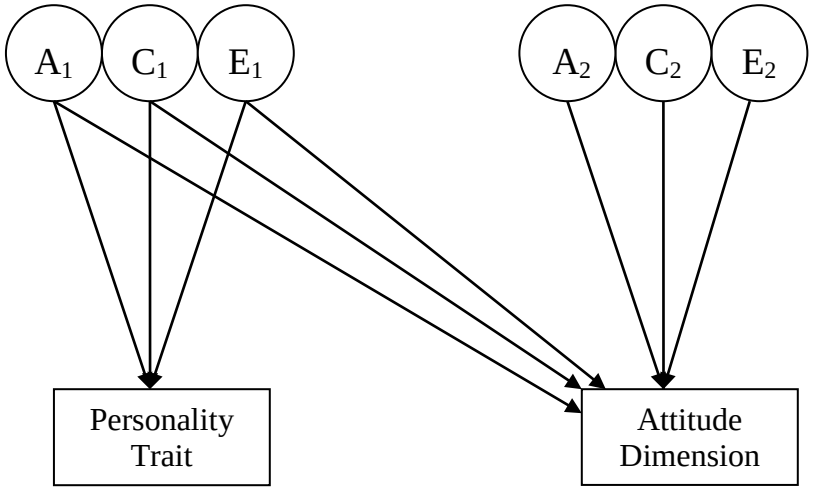
Table 4: Bivariate Cholesky Results for personality traits and social attitudes for males

	a		c		e	
Psychoticism and Religion Attitudes	0.791 (0.77, 0.81)				0.612 (0.59, 0.64)	
	-0.518 (-0.55, -0.49)	0.606 (0.58, 0.63)			-0.211 (-0.24, -0.18)	0.566 (0.55, 0.59)
Psychoticism and Sex Attitudes	0.790 (0.77, 0.81)				0.613 (0.59, 0.64)	
	-0.596 (-0.62, -0.57)	0.549 (0.52, 0.57)			-0.280 (-0.31, -0.25)	0.515 (0.50, 0.53)
Psychoticism and Punishment Attitudes	0.794 (0.78, 0.81)				0.609 (0.59, 0.63)	
	-0.515 (-0.54, -0.48)	0.596 (0.57, 0.62)			-0.292 (-0.32, -0.26)	0.543 (0.52, 0.56)
Neuroticism and Group Attitudes for Males	0.661 (0.63, 0.69)				0.751 (0.72, 0.78)	
	0.245 (0.20, 0.29)	0.720 (0.70, 0.74)			0.130 (0.10, 0.16)	0.637 (0.61, 0.66)
Social Desirability and Religion attitudes	0.499 (0.36, 0.61)		0.524 (0.40, 0.62)		0.690 (0.66, 0.72)	
	0.127 (-0.03, 0.29)	0.433 (0.29, 0.54)	0.330 (0.19, 0.49)	0.554 (0.41, 0.64)	0.041 (0.01, 0.07)	0.615 (0.59, 0.64)
Social Desirability and Sex attitudes	0.503 (0.36, 0.62)		0.522 (0.40, 0.62)		0.689 (0.66, 0.72)	
	0.129 (-0.03, 0.28)	0.404 (0.27, 0.51)	0.469 (0.34, 0.63)	0.493 (0.28, 0.60)	0.127 (0.10, 0.16)	0.584 (0.56, 0.61)
Social Desirability and Punishment attitudes	0.505 (0.37, 0.61)		0.520 (0.41, 0.61)		0.689 (0.66, 0.71)	
	0.138 (-0.01, 0.30)	0.621 (0.53, 0.66)	0.455 (0.32, 0.55)	0.000 (-0.34, 0.34)	0.126 (0.10, 0.16)	0.610 (0.59, 0.63)
Extraversion and Sex Attitudes for Males	0.692 (0.66, 0.72)				0.722 (0.70, 0.75)	
	-0.295 (-0.34, -0.25)	0.755 (0.73, 0.77)			-0.125 (-0.15, -0.10)	0.571 (0.55, 0.59)

Table 4: Bivariate Cholesky Results for personality traits and social attitudes for females

	a		e	
Psychoticism & Religion Attitudes	0.754 (0.72,0.78)		0.657 (0.62, 0.69)	
	-0.489 (-0.54, -0.44)	0.6082 (0.57, 0.64)	-0.207 (-0.25, -0.16)	0.590 (0.56, 0.62)
Psychoticism & Sex attitudes	0.753 (0.72, 0.78)		0.658 (0.62, 0.69)	
	-0.568 (-0.61, -0.52)	0.512 (0.47, 0.55)	-0.292 (-0.34, -0.25)	0.575 (0.54, 0.61)
Psychoticism & Punishment	0.755 (0.72, 0.78)		0.656 (0.62, 0.69)	
	-0.425 (-0.47, -0.37)	0.618 (0.58, 0.65)	-0.322 (-0.37, -0.28)	0.578 (0.55, 0.61)
Neuroticism and Group Attitudes	0.604 (0.55, 0.65)		0.797 (0.76, 0.84)	
	0.236 (0.16, 0.31)	0.736 (0.70, 0.77)	0.101 (0.06, 0.15)	0.626 (0.59, 0.66)
Social Desirability and Religion Attitudes	0.648 (0.60, 0.69)		0.762 (0.73, 0.80)	
	0.290 (0.22, 0.36)	0.725 (0.69, 0.76)	0.048 (0.00, 0.09)	0.623 (0.59, 0.66)
Social Desirability and Sex Attitudes	0.648 (0.60, 0.69)		0.762 (0.73, 0.80)	
	0.382 (0.32, 0.45)	0.663 (0.62, 0.70)	0.139 (0.09, 0.18)	0.628 (0.60, .66)
Social Desirability and Punishment Attitudes	0.649 (0.60, 0.69)		0.761 (0.72, 0.80)	
	0.377 (0.31, 0.44)	0.649 (0.60, 0.69)	0.105 (0.06, 0.15)	0.652 (0.62, 0.69)
Social Desirability and Group Attitudes	0.647 (0.60, 0.69)		0.763 (0.73, 0.80)	
	0.173 (0.10, 0.24)	0.754 (0.72, 0.78)	0.041 (0.00, 0.09)	0.634 (0.60, 0.67)
Extraversion and Sex Attitudes for Females	0.717 (0.68, 0.75)		0.697 (0.66, 0.74)	
	-0.188 (-0.25, -0.12)	0.741 (0.71, 0.77)	-0.127 (-0.17, 0.08)	0.632 (0.600.67)

Figure 1: General Cholesky Model



	a		c		e	
Personality Trait and Social Attitudes	A_1 to the Personality Trait		C_1 to the Personality Trait		E_1 to the Personality Trait	
	A_1 to the Social Attitude	A_2 to the Social Attitude	C_1 to the Social Attitude	C_2 to the Social Attitude	E_1 to the Social Attitude	E_2 to the Social Attitude

Appendix 1: Confirmatory Factor Structure of the EPQ.

	Psychoticism	Extraversion	Neuroticism	Social Desirability
Would you take drugs which may have strange or dangerous effects?	0.768			
Do you prefer to go your own way rather than act by the rules?	0.574			
Is it better to follow society's rules than go your own way?	0.458			
Would you like other people to be afraid of you?	0.419			
Do good manners and cleanliness matter much to you?	0.409			
Do you stop to think things over before doing anything?	0.323			
Do you tend to keep in the background on social occasions?		0.835		
Can you easily put some life into a rather dull party?		0.815		
Do other people think of you as being very lively?		0.814		
Can you get a party going?		0.794		
Can you usually let yourself go and enjoy yourself at a lively party?		0.764		
Are you mostly quiet when you are with other people?		-0.759		
Do you like mixing with people?		0.734		
Are you rather lively?		0.711		
Do you usually take the initiative in making new friends?		0.693		
Are you a talkative person?		0.666		
Do you enjoy meeting new people?		0.601		
Do you like plenty of bustle and excitement around you?		0.597		
Would you call yourself happy-go-lucky?		0.494		
Are you a worrier?			0.769	
Do you often feel 'fed-up'?			0.732	
Does your mood often go up and down?			0.715	
Would you call yourself a nervous person?			0.674	
Do you often feel lonely?			-0.666	
Would you call yourself tense or 'high-strung'?			0.657	
Are you often troubled about feelings of guilt?			0.648	
Do you ever feel 'just miserable' for no reason?			0.641	
Are you an irritable person?			0.633	
Are your feelings easily hurt?			0.615	
Do you suffer from 'nerves'?			0.583	
Have you ever taken advantage of someone?				0.761
Have you ever said anything bad or nasty about anyone?				0.704
Have you ever cheated at a game?				0.700
Have you ever taken anything that belonged to someone else?				0.679
Were you every greedy by helping yourself to more than your share?				0.629
Have you ever blamed someone for what was really your fault?				0.592
Are *all* your habits good and desirable ones?				0.579
Do you always practice what you preach?				0.567
Have you ever broken or lost something belonging to someone else?				0.552
As a child, were you ever 'fresh' towards your parents?				0.505
If you say you will do something, do you always keep your promise?				0.494
Do you sometimes put off until tomorrow what you ought to do today?				0.362

Note: Items were recorded to load positively on the factor. Higher scores on the latent factor denote higher levels of the trait.

Appendix 2: Confirmatory Factor Structure of the Australian Socio-Political Attitude Index

	Religion Attitudes	Sex Attitudes	Group Attitudes	Punishment Attitudes
Bible Truth	0.840			
Euthanasia	0.578			
Church Authority	0.754			
Divine Law	0.760			
Sabbath Observance	0.748			
Evolution Theory	0.531			
Condom Machines		0.884		
Legalized Prostitution		0.668		
Test Tube Babies		0.405		
Surrogate Mothers		0.460		
Birth Control		0.484		
Chastity		0.650		
Casual Sex		0.667		
White Supremacy			0.683	
Apartheid			0.507	
Multiculturalism			0.608	
Asian Immigration			0.646	
Conservationists			0.499	
Strict Rules				0.710
Stiffer Jail Terms				0.569
Caning				0.363
Disarmament				0.421

Note: Items were recorded to load positively on the factor. Higher scores on the latent factor denote more liberal responses for all attitude dimensions.