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# "Obedience to traditional authority:" A heritable factor underlying authoritarianism, conservatism and religiousness

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ABSTRACT

Social attitudes, political attitudes and religiousness are highly inter-correlated. Furthermore, each is substantially influenced by genetic factors. Koenig and Bouchard (2006) hypothesized that these three areas (which they termed the Traditional Moral Values Triad) each derive from an underlying latent trait concerning the tendency to obey traditional authorities. We tested this hypothesis with data from a sample of twins raised in different homes. We assessed social attitudes with Altemeyer's (1988) Right-Wing Authoritarianism scale, political attitudes with Wilson and Patterson's (1968) Conservatism scale, and religiousness with Wiggins' (1966) Religious Fundamentalism scale. The best-fitting model identified the three TMVT domains as different manifestations of a single latent and significantly heritable factor. Further, the genetic and environmental bases for this factor overlapped heavily with those for the Multidimensional Personality Questionnaire Traditionalism scale, supporting the conception of traditionalism as the latent factor represented by the three scales in contemporary Western societies.

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## 1. Introduction

The real-world importance of social, political, and religious attitudes has been amply demonstrated throughout the literatures of both psychology and history. At the same time, the interrelations of these domains remain unsettled, despite notable recent efforts to identify a "structure" of attitudes comparable to those found for intelligence, personality, and mental health. Taking a cue from the dictionary-based lexical studies responsible for kick-starting modern personality research, Saucier (2000) returned to the dictionary to identify any political, philosophical or social attitudes that were sufficiently common and significant to merit being enshrined as "isms." Examples of the several hundred such terms he identified include Fascism, Hedonism, and Pacifism. In an assessment of the attitudes of college students towards this lengthy list of ideas, Saucier identified three factors, roughly characterized as Traditionalism, Materialistic Hedonism, and Spiritual/Liberalism. Each of these factors had a wide scope: Saucier's Traditionalism factor, for example, represented attitudes towards ideas as seemingly divergent as evolutionism, institutionalism, and humanitarianism.

Saucier found that his Traditionalism factor tapped existing constructs of authoritarianism, conservatism and religiousness, and suggested these three represent a "strong mutually correlating cluster" (p. 375). This conclusion has been supported by results from studies using a variety of comparable instruments (Altemeyer, 1988; Bouchard et al., 2003) in which these constructs tended to correlate between .50 and .70. Koenig and Bouchard (2006) suggested that the substantial correlations among these measures indicate that the three traits (which they labeled the Traditional Moral Values Triad, or TMVT) can be interpreted as representing a single factor of Traditionalism. At the heart of this conception of Traditionalism is an individual's orientation towards socially established authorities, with highly traditional individuals responding positively and with obedience to such authorities and their symbols. Traditionalism is thus conceived as a dispositional feature at the foundation of attitudes towards a range of established authorities, whether political, religious, social or familial.

Previous work has also shown substantial genetic influences on each of the TMVT factors (Eaves et al., 1997; McCourt, Bouchard, Lykken, Tellegen, & Keyes, 1999; Waller, Kojetin, Bouchard, Lykken, & Tellegen, 1990), and some of this genetic variance may be shared among the TMVT traits (Truett, Eaves, Meyer, Heath, & Martin, 1992). Based on this evidence, we followed Koenig and Bouchard (2006) in hypothesizing that any general factor underlying the TMVT would itself be strongly heritable.

The search for a latent trait underlying the TMVT is connected to other recent developments in the study of attitudes. In contrast to conceptions in which individuals acquire their political orientations as results of their own abstract reasoning, or by adopting

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packages of ideas as put forth by influential thinkers or media figures, many recent contributions seek to explain ideological differences by exploring how belief systems meet the psychological needs and motives of individuals. A widely cited summary of the literature (Jost, Glaser, Kruglanski, & Sulloway, 2003) highlighted studies showing correlations between a range of attributes and right-wing attitudes, including dogmatism, needs for structure and closure, and intolerance of ambiguity and uncertainty. These associations were interpreted by the authors as indications that a conservative political orientation reflects a need to manage uncertainty and threat. In this conception, conservative political ideas are hypothesized to be adopted not because of their particular logic but instead because they provide comfort for those who are made particularly anxious by change and instability. Explanations of this nature need not be particular to the political and social realms, however, as many of the commonly recognized correlates of political conservatism and authoritarianism (e.g. openness, conscientiousness, and dogmatism) are also associated with conventional religiousness (Hunsberger, Alisat, Pancer, & Pratt, 1996; MacDonald, 2000).

We suggest that the associations of such traits with attitudes on political, social and religious questions are transmitted through a tendency to obey conventional authority. The specific political, social or religious content of a given belief is thus generally secondary to its status as a belief held by those representing conventional authority in a given place and time. This conception is supported by research showing that the relation of attitudes towards conventional authorities with economic egalitarianism varies among cultures as a function of their historical economic arrangements: authoritarian individuals living in formerly communist states tended to favor egalitarian economic ideas, while authoritarian individuals in states with histories of capitalism tended to favor inequality (Duriez, Van Hiel, & Kossowska, 2005). Similarly, individuals high in need for closure support conventional social and political authorities in multiple cultures, but hold views on economics that vary as a function of their culture's economic history (Kossowska & Van Hiel, 2003).

In this framework, individual differences in tendencies to submit to conventional authorities thus represents driving force behind their social, political, and religious attitudes (Bouchard, 2009), though the particular ideas espoused by those high or low in this orientation will vary among cultures and time periods. This presents a difficult sampling and measurement problem in trying to devise tests of the TMVT hypothesis: the instruments measuring these kinds of attitudes reflect the culture and era of their creation, and most samples are drawn from relatively culturally homogeneous populations. We discuss this problem in more detail in Section 4.2.

Using a genetically-informative sample drawn primarily from the Anglophone world, we assessed the interrelations among these domains in recent times. According to the TMVT hypothesis, the tendency to follow conventional authority will be manifest in attitudes towards the structure of family and society, towards religious conventions, and towards conventional attitudes on political issues.

The tendency hypothesized to be at the center of the TMVT may also be captured by other constructs. For example, Bouchard (2009) has previously noted the high degree of overlap between his conception of the common theme running through the TMVT measures and that of the Traditionalism scale of the Multidimensional Personality Questionnaire (MPQ). This overlap suggests a method of assessing the validity of any common factor found behind the TMVT: specifically, the genetic and environmental factors responsible for the TMVT factor should also underlie the MPQ Traditionalism scale.

## 2. Method

### 2.1. Participants

Participants were members of the Minnesota Study of Twins Reared Apart, whose recruitment and assessment are described by Segal (2012). The sample for this study consists of 66 monozygotic (MZA) and 53 dizygotic (DZA) twin pairs separated in infancy and reunited later as adults. The participants (63% female) were predominantly assessed as middle aged adults (Mean age = 45 - years, S.D. = 13 years, range 18–77), with the vast majority of the sample raised in the Anglophone world.

### 2.2. Measures

#### 2.2.1. Right-Wing Authoritarianism

Authoritarianism was assessed with the 1986 30-item version of Altemeyer's Right-Wing Authoritarianism (RWA) measure, a self-report instrument using a 9-category Likert response format. The items capture the three facets of authoritarianism that Altemeyer found to cohere: conventionalism, authoritarian submission, and authoritarian aggression.

#### 2.2.2. Conservatism

We used the 28-item version of Wilson and Patterson's (1968) Conservatism scale as adapted by Eaves et al. (1997). This uses the "catch-phrase" method to assess attitudes on social and political issues, in which respondents indicate their opinions towards items such as Abortion, Capitalism and Segregation using "Yes," "?", or "No" to indicate agreement, uncertainty or disagreement with the topic.

#### 2.2.3. Religious Fundamentalism

The Wiggins Religious Fundamentalism scale (Wiggins, 1966) from the Minnesota Multiphasic Personality Inventory (MMPI; Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989) uses 12 true–false items to assess the presence and importance of conventional Christian beliefs and activities, with high scorers indicating frequent attendance of church and adherence to traditional Christian doctrines such as the second coming and an afterlife.

#### 2.2.4. Traditionalism

Participants completed the Multidimensional Personality Questionnaire (MPQ: Tellegen & Waller, 2008), which contains a scale assessing Traditionalism with a dichotomous scoring format. High scorers on this measure are described as having strict moral standards and child-rearing practices, valuing conventional propriety and reputation, opposing rebelliousness and selfish disregard of others, and valuing religious institutions and practices.

#### 2.2.5. Intelligence

The Wechsler Adult Intelligence Scale (WAIS; Wechsler, 1955) is the most widely used individually-administered test of general intellectual ability, and assesses both verbal and performance aspects of intelligence using 11 subtests.

### 2.3. Analysis

#### 2.3.1. Corrections for age, sex and IQ

We believed the strongest test of the TMVT hypothesis involved demonstrating the associations between the TMVT measures independent of the variance each measure shared with variables such as age, sex, and IQ, which previous work has shown to be associated with the TMVT measures (Eaves et al., 1997; McCourt et al., 1999; Waller et al., 1990). Accordingly, the raw scores of

participants on the RWA, Conservatism, Religiousness and Traditionalism scales were transformed by regressing out the effects of these variables We used the standardized residuals for analysis.

*2.3.2. Biometric modeling*

Standard quantitative genetic, or biometric, modeling decomposes observed phenotypic variance (P) into variance due to genetic and environmental influences. Genetic variance is termed additive (A) when the genes influencing a given trait do so independently of each other. In contrast, nonadditive genetic variance results from genetic influence on the phenotype involving dominance or polygenic interaction effects such as epistasis. These are typically modeled as the result effects of dominant genes on variance (D). Environmental effects are partitioned into effects of the environment that produce similarity within families (shared environmental effects: (C)) and those that produce uniqueness within families (unique environmental effects: (E)). Due to the nature of biometric modeling, all variance due to measurement error is included in this latter category.

We considered the three most plausible biometric variance decompositions (ACE, ADE, and AE), fitting each to three alternative models for the TMVT traits. The first of these was the Cholesky (Fig. 1), which provides estimates of genetic and environmental influence for each of the traits involved, allowing for but not imposing any requirement for significant overlap among traits for any of these influences. This free estimation of separate genetic and environmental influences means the model fits best when clearly distinguishable genetic and environmental influences contribute substantially to each of the phenotypes to rather different degrees. In contrast, the independent pathways model (Fig. 2) estimates genetic and environmental influences that are common to the TMVT traits in addition to genetic and environmental influences specific to each trait. This model provides the best fit when traits are fundamentally unique phenotypes, but subject to many of the same genetic and environmental influences. Finally, the common pathways model (Fig. 3) is based on the assumption that substantial covariation among traits is determined by a single phenotypic latent variable. This model will fit best if the different TMVT traits are best seen as different representations of this underlying latent trait. Estimates for genetic and environmental influences were obtained for this latent trait as well as for each of the TMVT traits. Support for the hypothesis that the TMVT links the three attitudinal measures was indicated if the common pathways model fit best.

We conducted a secondary analysis to assess the validity of the common TMVT factor, using a Cholesky factor model to identify the biometric overlap between this factor and the MPQ Traditionalism scale. This model (Fig. 4) involved decomposing the primary biometric variance components into three separate groups. One group provided the estimates for the MPQ Traditionalism scale's

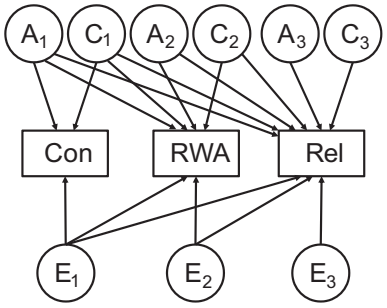



**Fig. 1.** Multivariate ACE Cholesky model for the TMVT scales. Con = Conservatism; RWA = Right-Wing Authoritarianism; Rel = Religious Fundamentalism. "A" refers to genetic influence, "C" to shared environmental influence and "E" to non-shared environmental influence.

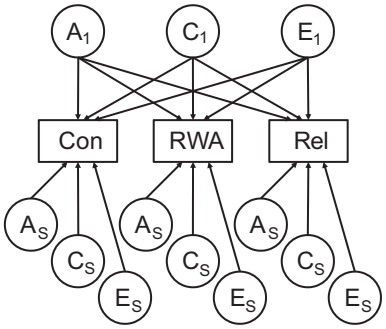



**Fig. 2.** Multivariate ACE independent pathway model. Con = Conservatism; RWA = -Right-Wing Authoritarianism; Rel = Religious Fundamentalism. "A" refers to genetic influence, "C" to shared environmental influence and "E" to non-shared environmental influence.

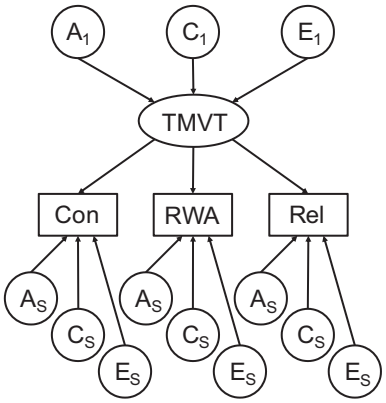



**Fig. 3.** ACE common pathway model. Con = Conservatism; RWA = Right-Wing Authoritarianism; Rel = Religious Fundamentalism. "A" refers to genetic influence, "C" to shared environmental influence and "E" to non-shared environmental influence.

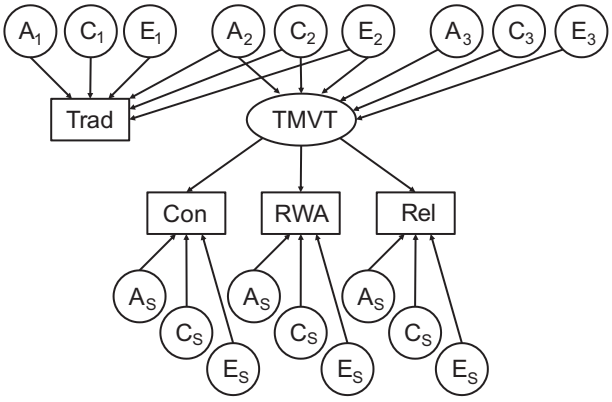



**Fig. 4.** ACE Cholesky factor model. Con = Conservatism; RWA = Right-Wing Authoritarianism; Rel = Religious Fundamentalism; Trad = MPQ Traditionalism. "A" refers to genetic influence, "C" to shared environmental influence and "E" to non-shared environmental influence.

biometric components that were not shared with the TMVT factor. Another provided estimates for those that were shared with the TMVT factor. The third provided estimates for the biometric components that were unique to the TMVT factor. Residual biometric variance components for the TMVT traits were also estimated.

Several assumptions are involved in the use of these modeling techniques, which are given fuller treatment in Johnson (2007). Concerns particular to this study include selective placement: this

could exaggerate the differences between MZ and DZ twins if MZs are placed in homes that were more similar with respect to any environmental characteristics that have substantial influence on the phenotype. Previous work indicates that such effects were trivial for the TMVT measures in this sample (Bouchard, McGue, Lykken, & Tellegen, 1999; Bouchard et al., 2003; McCourt et al., 1999). A second issue concerns the similarity of parents for the TMVT traits, as assortative mating will bias heritability estimates downward. The results presented below were obtained without adjustment for assortative mating, but in supplementary analyses conducted with assortative mating coefficients of .4 and of .6 (see McCourt et al., 1999) the best-fitting models were the same as that reported below.

## 3. Results

### 3.1. Correlations

Table 1 provides the intraclass correlations of MZ and DZ twins on the RWA, Conservatism, Religiousness and MPQ Traditionalism scales. High correlations were observed across all scales in the MZ twins, while only the Conservatism measure showed a significant correlation for DZ twins. The magnitudes of the differences between the MZ and DZ correlations were, excepting Conservatism, extremely high, suggesting genetic influence on these traits: Falconer estimates (Falconer, 1981) for the heritabilities of these features ranged from .34 (for Conservatism) to .96 (for Religiousness). The combination of high MZ correlations and negligible DZ correlations suggested an intriguing way of understanding the genetic influence on these traits which is addressed below.

High phenotypic correlations were observed among the TMVT scales, consistent with the hypothesis that these scales represent a common factor. Religiousness had comparable correlations with both Conservatism ($r = .53$, $p < .001$) and RWA ($r = .50$, $p < .001$), while Conservatism and RWA correlated .70 ($p < .001$). In the Cholesky factor model the phenotypic correlation between the TMVT factor and MPQ Traditionalism was .75, consistent with the interpretation of the TMVT factor as concerned with "traditionalism," broadly construed.

### 3.2. Biometric Modeling

Table 2 provides fit statistics for the alternative models, showing the ADE common pathways model had the lowest AIC value (indicating best fit; Akaike, 1973). In this model, additive genetic influences accounted for 44% of the variance in the latent trait while non-shared environment accounted for the rest ($E = .56$). Trait-specific genetic variance for conservatism was exclusively additive ($A = .12$), while trait-specific variance components for religiousness and RWA were exclusively dominant (Religiousness = .35; RWA = .18). Trait-specific influences of the unique environment were observed for all three traits (Religiousness = .27; Conservatism = .14; RWA = .15).

**Table 1**
Intraclass twin correlations (with 95% confidence intervals) on the TMVT scales and MPQ Traditionalism.

| | Authoritarianism | Conservatism | Religiousness | MPQ Traditionalism |
|---|---|---|---|---|
| MZ | .51 (*.29*,*.68*) | .53 (*.31*,*.69*) | .50 (*.30*,*.65*) | .44 (*.22*,*.61*) |
| DZ | .10 (*−.20*–*.37*) | .36 (*.09*,*.58*) | .02 (*−.25*,*.29*) | .18 (*−.10*,*.44*) |

*Note:* MZ = Monozygotic, DZ = Dizygotic. Correlations were produced from scores that were transformed from the raw participant scores by regressing out age, sex, and IQ.

**Table 2**
Comparisons of Fit Statistics for Cholesky, Independent Pathways and Common Pathways Models.

| | | n2xLL | df | AIC |
|---|---|---|---|---|
| Cholesky | ACE | 1538.325 | 612 | 314.325 |
| | AE | 1539.559 | 618 | 303.560 |
| | ADE | 1535.976 | 612 | 311.976 |
| Independent pathways | ACE | 1550.695 | 621 | 308.695 |
| | AE | 1551.939 | 624 | 303.939 |
| | ADE | 1548.475 | 621 | 306.475 |
| Common pathway | ACE | 1554.591 | 625 | 304.591 |
| | AE | 1554.591 | 626 | 302.591 |
| | ADE | 1551.449 | 625 | **301.449** |

*Note:* −2xLL = -2 times log-likelihood; df = Degrees of Freedom. The best fit (indicated by the lowest AIC) for the TMVT scales was provided by the common pathways ADE model.

An AE Cholesky factor model was then used to examine the relation between this TMVT factor and MPQ Traditionalism. (As all dominant genetic effects were trait-specific rather than part of the TMVT factor, the use of a D parameter in this model would be meaningless.) We observed a very high biometric overlap between Traditionalism and the TMVT factor, with 91% of the additive genetic component and 62% of the unique environmental component shared between the two.

## 4. Discussion

### 4.1. Support for the Traditional Moral Values Triad (TMVT)

Our analyses supported the hypothesis that Right-Wing Authoritarianism, Religiousness, and Conservatism are different measures of a single underlying trait. These are not merely highly related constructs, then, but instead are each a manifestation of the same underlying tendency across the social, political, and religious domains. With genetic influences contributing 44% of the variance in this latent trait, the heritability of the TMVT trait was comparable to that found in studies focusing on single-trait measures in this domain (Eaves et al., 1997; Waller et al., 1990). Supplementary analyses showed that this estimate of the importance of genetic influences was partially suppressed by the removal of genetic variance shared with IQ: an analysis on TMVT scores which did not have IQ variance removed also showed the best fit for an ADE common factor model, but with genetic influences responsible for 53% of the variance in the latent trait.

The second analysis performed in this study provided evidence that the common factor underlying the TMVT was highly similar to what is measured by the Traditionalism factor of the MPQ. MPQ Traditionalism captures conventional orientations towards a range of areas (family, social and religious structure, public reputation and conduct, religious practice, and moral rules). Genetic influences underlying this trait were highly (91%) shared with the TMVT, while 64% of non-shared environmental influences were common between the two phenotypes, despite the presence of measurement error in this component of Traditionalism. We interpret this high level of biometric overlap as supportive of our hypothesis that the latent trait underlying the TMVT concerns obedience to traditional authorities.

Although quantitative genetic studies have provided important contributions to discussions of the structure of domains such as personality and psychopathology, this study design has been under-utilized in the attitudinal domain. This may be due in part to the absence of a dominant conceptualization of attitude structure, or even a widely accepted tool that assesses the full domain. The most promising recent development on this front is Saucier's

(2000) study of –isms, which concluded that three (or possibly four) higher-order factors were sufficient to encompass attitudes towards an exhaustive list of political and philosophical ideas. The first of these factors, only labeled "alphaisms" by Saucier, has been labeled Traditionalism (Bouchard, 2009), and was highly associated with scores on religiousness, political conservatism and Right-Wing Authoritarianism. The present study provides strong support for the existence and coherence of this factor as well as a theoretically reasonable construct – obedience – as conceptualized by Milgram (1974) and embedded into an evolutionary theory of morality by Haidt (2012). Future work from genetically-informative samples which incorporate content representing the other factors proposed by Saucier would allow a fuller test of his framework, as well as testing the divergent validity of the TMVT.

The conceptualization presented by Saucier (2000) and Bouchard (2009) may also help interpret the results of a recent twin study (Funk et al., 2012) which reported that a range of attitude measures (including RWA, conservatism, and an egalitarianism measure, among others) were best explained not as different faces of a common factor, but instead as meaningfully distinct traits. Though all the measures used in that study were related to basic left–right political orientation, egalitarian measures are conceptually and empirically distinct from those measuring orientations towards traditional authority, as illustrated by Saucier's (2000) report of no association between one such measure and his "alphaism" factor. If Saucier's (2000) factor structure provides an effective map of the expected biological structure of attitudes, our results concerning a single coherent trait regarding obedience to traditional authorities is expected, as is the observation of Funk et al. (2012) that no single trait can account for both obedience to traditional authorities and egalitarian beliefs.

### 4.2. Cultural embeddedness and sample characteristics

The natures of the sample and the measures must always be considered in psychological studies, but this is particularly true for social attitude research. An advantage of this study over many in this domain is the fact that the sample consisted of adults and was reasonably representative of its population in terms of IQ and SES (Segal, 2012). This is in contrast to the vast majority of studies of social attitudes that make use of student samples, a long-standing concern in psychological research that is receiving more attention of late (Henrich, Heine, & Norenzayan, 2010). The positive correlation we observed between religiousness and conventional political and social views is consistent with the positive views of a basically Judeo-Christian religious tradition expressed by most social and political leaders in the Anglophone world. In contrast, for example, Soviet leaders were often antagonistic towards religion in general and atheistic in outlook, which may explain why support for the Soviet ideology was negatively associated with religiousness in a Russian sample (White, McAllister, & Kryshtanovskaya, 1994): for that population, obeying earthly authorities may have entailed denying the existence of spiritual authorities (i.e. deities). Further, our measures were developed by researchers living in Anglophone nations during a time period when the dominant political dichotomy prevailing in the world was the tension between the Anglophone cultures and the Soviet Union. Thus, they likely reflect the particular polarities of their patterns of political attitudes than may be the case with measures developed in other cultures and other times and applied in other samples. These considerations suggest limits on the generalizability of our observation of a latent trait underlying scores on RWA, political conservatism and Christian religious fundamentalism.

An intriguing question for future work concerns the identification of measures of this latent trait that replicate across cultural contexts. Each of the measures considered above contains content that may be particular to a given place and time; in this way, they are not particularly direct measures of this tendency, but instead capture its manifestation in a given domain (e.g. religion, politics, social and family structure) for certain groups of people. Two of the measures in this study – RWA and MPQ Traditionalism – might be framed as face-valid assessments of the tendency to obey conventional authorities. However, both measures include items which are particular to the context in which the instruments were developed (i.e. late 20th century North America). For example, items from both scales assess attitudes towards religion that are clearly culture-bound: items from RWA such as "People should pay less attention to the Bible…" showed poor relationships with other RWA items in Soviet samples, and had to be replaced with analogs such as "People should pay less attention to Marxism-Leninism…" (McFarland, Ageyev, & Abalakina-Paap, 1992).

### 4.3. Emergenesis

The superior fit of the ADE model indicated that specific manifestations of the latent TMVT trait may emerge through development among multiple genetically-influenced traits (Lykken, McGue, Tellegen, & Bouchard, 1992) in specific environmental contexts. While recent work argues that attitude differences are predicted by a large range of constructs (e.g. Jost et al., 2003), individual studies on the topic often assess only a subset of these predictors. Future studies should incorporate a range of these constructs to determine whether their contributions to attitudes are independent of each other or whether interaction effects are present – for example, whether individuals high in Conscientiousness and threat-responsiveness are more prone to obey conventional authorities than would be expected based on independent contributions of each trait to this tendency.

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