

RESEARCH NOTE

The Relationship Between Personality and Response Patterns on Public Opinion Surveys: The Big Five, Extreme Response Style, and Acquiescence Response Style

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Public opinion surveys often use scales marked with terms such as “strongly agree,” “agree,” “disagree,” and “strongly disagree.” Two sets of systematic factors may influence answers to such items. First, responses may reflect the substantive concept of interest. It is hoped that if we ask for opinion on a new education proposal, answers will tell us something meaningful about assessments of that policy. Second, answers may reflect a respondent’s general approach to survey questions. This article focuses on two such response tendencies: extreme response style (ERS) and acquiescence response style (ARS). The first refers to the extent to which individuals gravitate toward the most extreme response options on a polychotomous scale, and the second denotes a tendency to approve of ideas presented during a survey. Response styles such as these mean that survey data often capture something extraneous to the substantive concept of interest.

Scholars have long recognized that response tendencies threaten the validity of inferences derived from survey data (Cronbach, 1946, 1950). Considerable effort has been devoted to identify response sets and understand their correlates. This research note focuses on the latter task by examining links between personality traits and response tendencies. Psychologists measure personality with various trait

taxonomies. We focus on the “Big Five” dimensions of openness to experience, conscientiousness, extraversion, agreeableness, and emotional stability. Numerous scholars have identified relationships between the Big Five and social and political attitudes and behaviors (Booth-Kewley & Vickers, 1994; Mondak, 2010), and research on ERS and ARS is beginning to use the five-factor framework (Austin, Deary, & Egan, 2006; He & van de Vijver, 2013). We expand on this research.

We offer three contributions to research on personality and response styles. First, the cross-national generalizability of findings in previous studies has been limited because of the use of data from a small number of nations (Austin et al., 2006; Blau & Katerberg, 1982; Lewis & Taylor, 1955; Naemi, Beal, & Payne, 2009).¹ In contrast, we examine two U.S. surveys, and then replicate analyses with data from nearly two dozen other countries in the western hemisphere. Second, researchers often use convenience samples in individual-level studies of personality and response styles (Austin et al., 2006; Tsang, 2013),² whereas our surveys are nationally representative. Third, existing ERS and ARS indicators are largely apolitical in content (Cabooter, 2010; He & van de Vijver, 2013),³ so it is an empirical question whether previous findings will be consistent with those derived from political surveys, such as those we examine.

In the remainder of this note, we first review ERS and ARS to underscore their threats to valid inference. The next section turns to the Big Five and offers hypotheses regarding traits, ERS, and ARS. We then discuss our data and variable operationalization, report empirical results, discuss the implications of our findings, and conclude with a brief summary.

Response Patterns and Threats to Validity

ERS refers to the tendency to select the endpoints of a scale irrespective of a person’s true attitude, whereas ARS denotes a blanket tendency to agree with the idea presented in a survey question (Cronbach, 1946; Bachman & O’Malley, 1984). If two respondents hold identical attitudes, their observed scores preferably would be the same. Short of that, any variance ideally would result from random rather than systematic forces. But with ERS, extreme responders would choose the polar options on multipoint scales, while midpoint responders would select the middle options. Acquiescent responders would give different answers on agree–disagree items than

¹For exceptions, see Brengelmann (1959), McCrae et al. (2005), and Wetzel and Carstensen (2015). Brengelmann’s analysis predates the Big Five, and data are drawn from four small convenience samples in England and Germany. McCrae et al.’s study also makes use of convenience samples, albeit from 79 nations. All analyses are at the aggregate level, including investigation of whether country-level personality and acquiescence are correlated. Wetzel and Carstensen examine data from a disparate collection of convenience samples drawn from German-speaking psychology undergraduates and their friends at universities in Austria, Germany, and Switzerland. Wetzel and Carstensen note the need for replications and extensions beyond German-speaking populations.

²See He et al. (2014) for an exception. This study makes use of cross-national data from the International Social Survey Program to measure response sets, but the primary focus is on work-related personality traits, not on the Big Five, and personality is measured at the aggregate level with data from other surveys, and not at the individual level; that is, the study seeks to gauge whether individual- and aggregate-level response styles on one survey are associated with aggregate-level personality as recorded on other surveys.

³The response style literature has considered political surveys but in works focused on antecedents other than personality (Billiet & Davidov, 2008; Meisenberg & Williams, 2008).

their less acquiescent counterparts. Differences attributable to ERS and ARS reduce *logical* validity because factors other than the substantive concept of interest produce variance in responses to the items under consideration (Cronbach, 1946).

The impact of response styles on *empirical* validity depends on the relationship between a response style and the item in question (Cronbach, 1946). Suppose, we were examining the connection between a nonopinion item, such as education, and an opinion item, such as political ideology, and assume that either ERS or ARS is positively associated with education. A negative correlation between the response style and ideology would reduce empirical validity by weakening the relationship between education and ideology, but a positive correlation would unduly increase empirical validity by causing one to overestimate the relationship between education and ideology.⁴

Because ERS and ARS threaten valid inference, it is important for scholars to determine the correlates of these biases. This article focuses on personality, as measured with the Big Five traits. As a prelude to our empirical tests, a discussion of the Big Five and its possible associations with ERS and ARS is required.

The Big Five

The five-factor personality framework has achieved vast prominence in recent decades. Psychology journals since the mid-1990s have published more applications of the Big Five than of other major models (John, Naumann, & Soto, 2008), and social scientists have used the Big Five to study such concepts as interpersonal trust (Dinesen, Nørgaard, & Klemmensen, 2014; Dohmen et al., 2008), political ideology (Gerber, Huber, Doherty, Dowling, & Ha, 2010; Mondak, 2010), and extreme and acquiescent responding (Austin et al., 2006; He & van de Vijver, 2013). Following this trend, we focus on the Big Five but also incorporate insights from other work on personality and response styles (Couch & Keniston, 1960; Naemi et al., 2009).

A five-factor approach offers three advantages. First, the prominence of the Big Five enables researchers to link our findings with a common set of trait variables in the psychological literature. Scholars will understand that the same trait dimensions pertinent for political ideology also may matter for ERS and ARS. Second, the Big Five succinctly covers a wide range of personality. Too many additional traits would hamper tractability in empirical work and could thwart cumulative theory building by prompting scholars to focus on their preferred personality variables (e.g., talkativeness) and overlook previous findings generated with alternative trait measures (e.g., boldness).⁵ Combining items into five common factors minimizes such concerns. Third, Big Five scholars have devoted attention to the manifestations of these trait

⁴Scholars also have studied the implications of ARS and ERS for cross-group inquiry (Cheung & Rensvold, 2000; Clarke, 2000, 2001; Dolnicar & Grün 2007; He, Bartram, Inceoglu, & van de Vijver, 2014; Hui & Triandis 1989; Smith & Fischer 2008; Weijters, Schillewaert, & Geuens, 2008). In contrast, we focus on individual-level correlates of response styles, especially personality.

⁵Although a wealth of applied research on personality in the past few decades has focused on the Big Five, there also can be value in digging deeper, such as by exploring the impact of particular facets of the Big Five. A key benefit of that approach is that it retains a connection to the Big Five while simultaneously exploring nuances that representations of the broader trait dimensions may miss. In the response style literature, see Wetzel and Carstensen (2015) for facet-level research.

dimensions in the social and political domains, and we draw on these insights to understand how personality relates to response styles on surveys.

Our goal is to offer well-grounded hypotheses about personality and response tendencies. Such explanations are not always present in the response style literature. In their study of ERS, Naemi et al. (2009) lamented that “previous studies examining personality predictors may have been equivocal because of the lack of a theoretical basis for their predictions” (p. 263). Indeed, many past studies linking the Big Five to response styles have been descriptive and exploratory. We address these limitations to foster cumulative theory development and encourage future researchers to build on our explanations.

We draw on three bodies of research. First, we consult work on the properties of each of the Big Five traits except agreeableness, for which we have no strong hypotheses.⁶ Second, we consider literature on the social and political correlates of the Big Five. Finally, we refer to research on links between personality and response style.

Openness to Experience

Openness to experience is associated with creativity, information seeking, and an interest in ideas (John et al., 2008). Research has linked openness to risky behavior (Booth-Kewley & Vickers, 1994), efficacy (Mak & Tran, 2001), and being politically informed (Mondak, 2010). We expect openness to be positively related to ERS (*H1*). He and van de Vijver (2013) observed this relationship, and Wetzel and Carstensen (2015) have reported strong negative correlations between two openness facets and midpoint responding.⁷ In addition, confidence, efficacy, and risk acceptance all may encourage the highly open to avoid shelter in an item’s center categories. Openness and ERS also could be positively related for substantive reasons, as individuals high in this trait tend to possess sufficient levels of knowledge to offer definitive opinions. To adjudicate between these explanations, we control for political knowledge. If openness is strongly associated with extreme responding after accounting for knowledge, then we would have a stronger basis to favor the confidence and risk-acceptance mechanism.

Expectations with respect to openness and ARS are uncertain. Confidence and risk acceptance may prompt open individuals to avoid acquiescence because they are not fearful of conflict (*H2a*). Research (Couch & Keniston, 1960; Knowles & Nathan, 1997) indicates that acquiescent respondents possess characteristics exhibited by individuals low in openness (John et al., 2008), including cognitive simplicity and low levels of originality. Consistent with this account, He and van de Vijver (2013) report

⁶We are aware of only one study (He & van de Vijver, 2013) that has uncovered a significant relationship between agreeableness and ERS, but the positive effect is puzzling. Why would individuals high in agreeableness provide extreme—and thus potentially contentious—responses on survey questions? Findings have been inconclusive for the relationship between agreeableness and ARS (Couch & Keniston, 1960; He & van de Vijver, 2013).

⁷Other previous research provides mixed support for Hypothesis 1. Hamilton (1968) notes that early works found ERS to be inversely related to education and intelligence, but these, in turn, are only weakly related to openness. Naemi et al. (2009) reported a positive effect of simplistic thinking on ERS, but their measure of simplistic thinking draws on items more typical of dogmatism scales than of items used to measure openness.

a negative correlation between openness and ARS. That said, surveys present individuals with opportunities to agree with ideas, and the interest of highly open individuals in ideas could encourage acquiescence, regardless of item content (*H2b*). McCrae et al. (2005) observe this relationship.⁸

Conscientiousness

Individuals high in conscientiousness are organized, dependable, and hard-working, leading to success in the workplace (Barrick & Mount, 1991; Tett, Jackson, & Rothstein, 1991). Of past work on personality and response styles, Austin et al. (2006) and He and van de Vijver (2013) study conscientiousness at the individual level. A positive association with ERS is identified in both, whereas the latter study reports mixed findings for ARS.

A positive link between conscientiousness and ERS strikes us as sensible (*H3*). Past research has shown rigidity of thought (Hamilton, 1968) and intolerance of ambiguity (Naemi et al., 2009) to be positively related to ERS; hence, the sense of certainty associated with conscientiousness may motivate extreme responding. Thus, we expect conscientiousness to be positively related to ARS (*H4*). A defining characteristic of conscientiousness is sensitivity to hierarchy and order (Carney, Jost, Gosling, & Potter, 2008), and individuals high on this trait exhibit greater right-wing authoritarianism (Ekehammar, Akrami, Gylje, & Zakrisson, 2004; Heaven & Bucci, 2001). Sensitivity to hierarchy and authority may prompt high levels of ARS, as conscientious individuals seek to please the interviewer and possibly the survey sponsor.

Extraversion

Extraversion relates to how individuals interact with their environment. Extraverts exhibit activity, positivity, and sociability (John et al., 2008), and this trait dimension has been linked to greater self-confidence (Pulford & Sohal, 2006), risk-taking (Markey, Markey, Ericksen, & Tinsley, 2006; Malouff, Thorsteinsson, & Schutte, 2006), and social forms of political engagement such as attending rallies (Mondak, Hibbing, Canache, Seligson, & Anderson, 2010).

We expect extraverts to exhibit greater ERS (*H5*) because of their confidence, action, and risk-taking (Austin et al., 2006; He & van de Vijver, 2013). In contrast, we are more uncertain about the relationship between extraversion and ARS. Extraverts tend to be proactive and confident and therefore may be less likely to acquiesce (*H6a*). This argument is consistent with He and van de Vijver's results for ARS. However, Tsang (2013) observed that introverts exhibit greater disacquiescence possibly because of their tendencies to avoid flattery and exhibit negative emotion. The higher levels of warmth and sociability associated with extraversion also may facilitate ARS (Couch & Keniston, 1960). Therefore, extraversion could be positively related to ARS (*H6b*).

⁸Wetzel and Carstensen (2015) report strong, positive relationships between three openness facets and ARS.

Emotional Stability

Characteristics of emotional stability include low anxiety and emotional control. Low levels of emotional stability are associated with feelings of stress and depression (Matthews & Deary, 1998), and high levels are linked to risky behavior (Nicholson, 2005). With regard to ERS, researchers have obtained diverse results. Hamilton (1968) reported that studies have identified positive, null, and conditional relationships between anxiety and ERS. More recently, He and van de Vijver (2013) found a negative relationship between neuroticism and ERS, and Tsang (2013) reported greater extreme responding among decisive individuals, who may be lower in anxiety and insecurity. We thus expect a positive relationship between emotional stability and ERS (*H7*) because individuals high in this trait should be less concerned about what others think of their views. Weighed against this argument and evidence, however, is more dated research that links anxiety with greater ERS.

The literature points toward a negative relationship between emotional stability and ARS (*H8*). Couch and Keniston (1960) found that acquiescence is common among the emotionally unstable, and studies have shown that neuroticism is positively associated with ARS (He & van de Vijver, 2013; McCrae et al., 2005).⁹ These results are sensible: as risk-takers, emotionally stable individuals should be less anxious about expressing their true feelings, even if they must disagree with the idea in the survey question.

Data and Methods

Data are from the 2012 American National Election Study (ANES), 2012 Cooperative Congressional Election Survey (CCES), and 2010 AmericasBarometer. The first two surveys use panels before and after the 2012 American elections; survey weights are used to achieve nationally representative samples.¹⁰ The AmericasBarometer was fielded in 26 countries in the western hemisphere in 2010.¹¹ We again use a weight variable to obtain nationally representative samples.¹² We omit data from Haiti and Honduras because these surveys did not include the personality battery, and we exclude Canada and the United States from ARS tests because many of the items for this dependent variable were not asked of all respondents there.¹³

⁹An exception is the negative link between neuroticism facets and ARS observed by Wetzel and Carstensen (2015).

¹⁰Only one weight variable is available for the CCES, but for the ANES, we specified “weight_full” to include Web and face-to-face respondents. In addition, the ANES recommends using the Taylor series method to conduct significance tests (DeBell, 2010), and this approach also entailed specifying “strata_full” for the stratum variable and “psu_full” for the primary sampling unit variable. Information on the number of strata and Primary Sampling Units (PSU) for our main results is available in Online Appendix A.

¹¹The sample sizes are Argentina, 1,410; Belize, 1,504; Bolivia, 3,018; Brazil, 2,482; Chile, 1,965; Colombia, 1,506; Ecuador, 3,000; El Salvador, 1,550; Guatemala, 1,504; Guyana, 1,540; Jamaica, 1,504; Mexico, 1,562; Nicaragua, 1,540; Panama, 1,536; Paraguay, 1,502; Suriname, 1,516; Trinidad and Tobago, 1,503; and 1,500 for Canada, Costa Rica, the Dominican Republic, Peru, the United States, Uruguay, and Venezuela.

¹²This weight also enables us to ensure that each country contributes the equivalent of 1,500 respondents.

¹³Focusing on fewer countries helps with the balance of item content, but ARS results are similar if we focus on 15 items asked of everyone in all 24 countries. For details, see Online Appendix B.

Our data sources are notable for three reasons. First, the AmericasBarometer permits cross-national replication. The personality and response style literature typically uses single-country data, or data from two or three nations, limiting the ability to generalize findings. Second, our data are nationally representative, whereas convenience samples often have been used in personality and response style research. Third, we have the opportunity to design ERS and ARS indicators with questions on public affairs and examine whether extant results from nonpolitical surveys are consistent with our findings from political surveys.^{14,15}

To construct the dependent variable for ERS, we identified opinion items with more than two response options and then created a separate indicator per item, coded to range from 0 (midpoint or middle two response options) to 1 (lowest or highest response options).^{16,17} We next averaged the folded item measures for which the respondent offered a valid substantive response; scores for this variable range from a minimum possible score of 0 to a maximum of 1.^{18,19} We focused on nonpersonality opinion items to distinguish ERS from the Big Five.²⁰

We also used a two-step procedure to design the ARS measure. First, we identified nonpersonality items given to all respondents that solicited expressions of agreement or approval,²¹ and then we created an indicator for each item, coded 1 if the answer fell within the agreeable portion of the response options and 0 otherwise. Second, we

¹⁴Past evidence is mixed as to whether associations between the Big Five and response style should vary for different types of surveys. ERS and ARS appear to be stable tendencies, with high test-retest levels and high internal consistency (Billiet & Davidov, 2008; Hamilton, 1968; Naemi et al., 2009; Van Vaerenbergh & Thomas, 2013; Weijters, Geuens, & Schillewaert, 2010a, 2010b). Subject matter thus may be irrelevant. However, the expression of ERS and ARS could vary as a function of context, which may produce personality-response style relationships that vary with subject matter, variation that would not be detected in test-retest analyses. Political surveys often engage respondents' core values and beliefs, and many substantive relationships exist between these and the Big Five. Hence, it is possible that links between personality and ARS/ERS are muted on political surveys as compared with on surveys regarding other subjects.

¹⁵In addition to using mostly political items to measure ERS, we examined whether our results apply to brief ERS-dependent variables that are balanced in terms of political and nonpolitical content. For ARS, we were more concerned about balance in terms of item valence (i.e., a battery including an even number of negatively and positively worded items) and conducted a robustness check on that issue as well. We found similar results for both the ERS and ARS robustness checks. See Online Appendices C and D.

¹⁶Use of folded measures (Smith & Fischer, 2008) and a simple count of extreme answers (Hui & Triandis, 1989) are the most common approaches to operationalizing response extremity. For alternates that account for item content, see Greenleaf (1992) and Naemi et al. (2009).

¹⁷Our main results remain substantively the same if the ERS-dependent variable is coded such that 1 refers to the endpoints and 0 to all other response options. See Online Appendix E.

¹⁸In all surveys, we included individuals who answered at least 75% of the items in our measure of ERS.

¹⁹We observed high reliability levels for our ERS indicators, with unstandardized Cronbach's alphas of .95 for the ANES (204 items), .77 for the CCES (54 items), and .93 for the AmericasBarometer (83 items). For complete listings of the constituent items in the ERS-dependent variables, see Online Appendix C.

²⁰We omitted opinion items in which the response options were presented out of order (e.g., favor, oppose, and neither favor nor oppose). In the ANES, we also excluded items that were not asked to all respondents in a particular wave.

²¹We identified 23 such questions in the ANES, 29 in the CCES, and 28 in the AmericasBarometer. For details about the content of the full ARS-dependent variables, see Online Appendix D.

averaged these indicators to form an outcome that ranges from a theoretical minimum of 0 to a theoretical maximum of 1.^{22,23}

The chief independent variables are the Big Five. We measured personality with the Ten-item Personality Inventory (TIPI) scale (Gosling, Rentfrow, & Swann, 2003) in the 2012 ANES and a modified version of the TIPI in the 2010 AmericasBarometer. Twenty items drawn from the Big Five Inventory (BFI) (John & Srivastava, 1999) are used on the CCES. The original and revised TIPI scales presented respondents with two pairs of words per trait, and the CCES asked four statements for each trait.²⁴ Personality items, particularly those pertaining to conscientiousness and agreeableness, are prone toward skewness possibly because of social desirability effects (Mondak, 2010). Of the 10 items on the AmericasBarometer, for example, 6 produce skewness statistics with absolute values >1. To reduce the impact of this skewness in the multivariate models reported below, we subjected all items to a logarithmic transformation,²⁵ combined the items for each trait,²⁶ and recoded the indices to range from 0 to 1. Higher values refer to greater openness, conscientiousness, extraversion, agreeableness, and emotional stability.²⁷

The Big Five indicators draw on self-reports, which means extreme or midpoint responding may be present (Hamilton, 1968; Wetzel & Carstensen, 2015). Because ERS should cause respondents to vary mostly within segments of a scale, we attempted to minimize the impact of this response style with alternate personality

²²Scores of 0 on the ARS items consisted of disagreeable responses, any midpoint responses, and nonsubstantive responses. We included missing cases because failing to offer a substantive response is a way of not acquiescing. We were concerned that the concept of acquiescence bias could be stretched too far if we include observations with excessive nonresponse rates. Therefore, our ARS-dependent variables omit respondents who provided more than one nonsubstantive response to the constituent indicators.

²³The ARS indicators are at least modestly reliable, with Cronbach's alphas of .86 for the ANES, .66 for the CCES, and .75 for the AmericasBarometer.

²⁴For additional information regarding the personality items on each survey, see Online Appendix F.

²⁵On 32 of the 40 personality items, the majority of respondents answered on the side of the scale favoring high levels of openness, conscientiousness, extraversion, agreeableness, and emotional stability, suggesting that skewness in these data may be the consequence of social desirability effects. Regardless of the cause, the use of logged measures reduces this skewness. For readers interested in effects using the raw (skewed) personality variables, we replicate Table 1 and Table 2 below in Online Appendix O using the original unlogged scales.

²⁶Reliabilities for the four-item logged CCES personality scales all exceed Cronbach's alphas of .69. Although the Cronbach's alphas for the two-item ANES and AmericasBarometer personality indices were .57 or lower, in all cases, the constituent personality items correlated positively and significantly with each other at the .001 level, with correlations ranging from .16 to .41. For more on the reliability and validity of short personality scales, see Mondak (2010). Credé and his colleagues (2012) find that short personality batteries often underestimate the importance of personality, although some instances of overestimation also were observed. Credé et al. indicate that one-item measures are the most problematic, and that measures composed with even a few items perform demonstrably better than do measures formed with only one or two items. Because our CCES personality scales are formed with four items per trait, they offer a useful complement to our two (ANES and AmericasBarometer) two-item measures.

²⁷One might be concerned that the conscientiousness variable would exhibit less variation because a disproportionate number of individuals high in this trait might participate in political surveys out of duty. However, this expectation is not supported by a review of SDs for the Big Five; see Online Appendix G.

variables that collapsed each scale to a three-category measure (2 = highest one third of respondents, 1 = middle third, and 0 = lowest third). ERS models will be estimated with the baseline and three-category personality scales.^{28,29}

Meanwhile, ARS is a comparatively minor concern given the tendency of our personality batteries to focus on characteristics at both ends of the spectrum for each trait dimension. This balance should neutralize any tendency to agree (Couch & Keniston, 1960).³⁰

In addition to personality, we include measures of political knowledge, gender, education, and age.³¹ Our knowledge variable is a count of the number of correct responses to factual questions about politics. The number of questions ranges from two in the CCES and AmericasBarometer to eight in the ANES. Meanwhile, gender is coded so that women receive a score of 1 and men a score of 0, education is coded to range from 0 (the lowest observed score) to 1 (the highest observed score), and age is measured in years.³²

Results

As discussed above, we expected ERS to be positively associated with openness ($H1$), conscientiousness ($H3$), extraversion ($H5$), and emotional stability ($H7$). Table 1 depicts our ERS findings with the baseline and trichotomous personality scales.

In both U.S. surveys, openness, conscientiousness, and extraversion are positively associated with ERS, findings replicated on the AmericasBarometer. Emotional stability relates positively to ERS in both the ANES and AmericasBarometer. The strongest effects are for openness and conscientiousness in the CCES. Moving from one SD below the mean to one SD above the mean on openness increases predicted ERS scores by 0.06 on a scale that ranges from a theoretical minimum of 0 to a theoretical maximum of 1; an identical 0.06-point shift occurs for conscientiousness.³³

²⁸Other correctives for extremity bias in the personality measures are not available. For instance, Naemi et al. (2009) measured personality with peer reports in their study of 132 undergraduates, an approach that is not feasible when working with tens of thousands of respondents from U.S. and cross-national opinion surveys.

²⁹Our main results use the trichotomous personality scales, but we obtain similar findings if these variables are entered as two separate indicators with an omitted reference category. See Online Appendix H for results.

³⁰Consistent with this argument, Wetzel and Carstensen (2015) have found that ERS, compared with ARS, exerts a greater impact on responses to a balanced Big Five battery. For contrary evidence on this point, see Rammstedt and Farmer (2013).

³¹We control for these factors to reduce the risk of omitted variable bias with other correlates of response style in the literature (Meisenberg & Williams, 2008; Weijters et al., 2010a). These demographic characteristics are also included as controls in other Big Five studies (Gerber et al., 2010, 2011).

³²Links between these controls and personality have been assessed in the Big Five literature, so including these variables affords the opportunity to examine the convergent and discriminant validity of our personality indicators. For this, we focus on openness and extraversion. Across three surveys, Mondak (2010) mostly found positive and significant relationships between openness and education but consistently insignificant relationships between extraversion and education. We examined these for our surveys by regressing education on the Big Five. In three of three surveys, openness was positively and significantly related to education, and extraversion was insignificant in two of three surveys. We thus find evidence for both convergent and discriminant validity for our Big Five variables.

³³Means for the personality scales are located in Online Appendix G.

Two other aspects of [Table 1](#) warrant note. First, we observed positive coefficients for openness with political knowledge included in the models.³⁴ This supports our argument about confidence and risk-taking. Second, results are broadly consistent across the baseline and trichotomous personality variables, indicating that ERS is not driving the positive personality results in the baseline models.

Moving to ARS, we expected positive coefficients for conscientiousness (*H4*) and negative coefficients for emotional stability (*H8*). Hypotheses for openness and extraversion were more uncertain, with negative (*H2a* and *H6a*) and positive (*H2b* and *H6b*) relationships seen as plausible.

Results for ARS appear in [Table 2](#).^{35,36} Consistent with *H2b* on interest in ideas, the openness coefficient is positive and significant in both U.S. surveys and in the AmericasBarometer. The positive conscientiousness coefficients on the CCES and AmericasBarometer support *H4*.^{37,38} Substantive effects are especially large on the CCES, as moving from one SD below to one SD above the mean on openness increases the level of ARS by .05. Results are mixed for extraversion and emotional stability and do not lend consistent support to our hypotheses.³⁹

Discussion and Conclusion

We have explored whether differences in personality are linked to ERS and ARS on three political surveys, two from the United States (the 2012 ANES and the 2012 CCES) and one a major cross-national survey (the 2010 AmericasBarometer). All surveys include nationally representative samples. We also compared past results from nonpolitical surveys with present results from political surveys, and findings suggest that connections between personality and response styles are not highly dependent on survey content.

Our most consistent results concern openness and conscientiousness. One or both U.S. surveys indicate positive relationships between these trait dimensions and both

³⁴Omitting political knowledge produces similar results. See Online Appendix I for details.

³⁵We omit political knowledge because neither of our hypotheses for openness refers to a person's base of political information. However, results are similar if political knowledge is included; see Online Appendix J.

³⁶As noted above, we replicate all tests in [Table 1](#) and [Table 2](#) using raw, unlogged versions of the personality variables (again coded to range from 0 to 1), with those results reported in Online Appendix O. Overall, the personality variables produce 33 statistically significant effects in [Table 1](#) and [Table 2](#). In Appendix O, 27 of these same effects again reach statistical significance. For openness and conscientiousness, the traits for which we see the strongest and most consistent effects in [Table 1](#) and [Table 2](#), 17 of 17 significant effects are replicated using the unlogged variables. Unsurprisingly, coefficients for the unlogged (i.e., skewed) personality measures are slightly smaller in substantive terms—about 8%—than are the coefficients in [Table 1](#) and [Table 2](#).

³⁷The coefficient for conscientiousness becomes significant in the ANES if the dependent variable is limited to 14 questions with balance in item valence. For more details, see Online Appendix D.

³⁸In [Table 2](#), surveys were conducted in person for the AmericasBarometer and online for the CCES, so the significant conscientiousness results for both suggest that individuals high in this trait perceive survey administrators as authority figures, regardless of the interview mode. For ANES results differentiated by Web versus in-person modes, see Online Appendix K.

³⁹Additional tests pertaining to extraversion and response modality are reported in Online Appendix D. We also conducted a series of additional robustness checks that incorporated item difficulty for ERS and ARS, binary coding of personality items for ERS, and regression diagnostics of the main results. Results were similar in most cases. For details, see Online Appendices L, M, and N.

Table 1
Big Five Personality Traits and Extreme Response Style

Independent variables	2012 ANES		2012 CCES		2010 AmericasBarometer	
	Model I: Baseline personality	Model II: Trichotomous personality	Model III: Baseline personality	Model IV: Trichotomous personality	Model V: Baseline personality	Model VI: Trichotomous personality
Constant	0.31*** (0.01)	0.36*** (0.01)	0.22*** (0.03)	0.36*** (0.03)	0.36*** (0.01)	0.45*** (0.01)
Openness	0.09*** (0.01)	0.02*** (0.00)	0.16*** (0.04)	0.04*** (0.01)	0.06*** (0.01)	0.03*** (0.00)
Conscientiousness	0.04*** (0.01)	0.01*** (0.00)	0.15*** (0.03)	0.04*** (0.01)	0.07*** (0.00)	0.02*** (0.00)
Extraversion	0.04*** (0.01)	0.01*** (0.00)	0.06 + (0.03)	0.01 + (0.01)	0.08*** (0.01)	0.02*** (0.00)
Agreeableness	0.04*** (0.01)	0.01** (0.00)	0.05 (0.05)	0.01 (0.01)	0.07*** (0.01)	0.02*** (0.00)
Emotional stability	0.02* (0.01)	0.01** (0.00)	-0.01 (0.06)	0.00 (0.01)	0.04*** (0.01)	0.01*** (0.00)
Political knowledge	0.01*** (0.00)	0.01*** (0.00)	0.03*** (0.01)	0.03*** (0.01)	-0.01** (0.00)	-0.01*** (0.00)
Female	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.01)	0.00 (0.01)	-0.01** (0.00)	-0.01** (0.00)
Education	-0.04*** (0.01)	-0.04*** (0.01)	0.03 (0.03)	0.02 (0.03)	-0.04*** (0.01)	-0.05*** (0.01)
Age	0.00*** (0.00)	0.00*** (0.00)	0.00* (0.00)	0.00* (0.00)	0.00*** (0.00)	0.00*** (0.00)
Number of cases	5,323	5,323	768	768	35,541	35,541
Number of countries	1	1	1	1	24	24
Adjusted R^2	0.13	0.11	0.33	0.31	0.28	0.27

Note: Cell entries are ordinary least squares regression coefficients, with standard errors in parentheses. The dependent variable is extreme response style, coded to range from a minimum possible score of 0 to a maximum possible score of 1. The first four models incorporate survey weights. Models I and II use the Taylor series method for estimating standard errors (see endnote 10 for details), and Models III and IV cluster standard errors by state and include state fixed effects (see Online Appendix A). For Models V and VI, country fixed effects are included but not shown (see Online Appendix A), standard errors are clustered by country, and data are weighted so that each nation's sample contributes a value of $N=1,500$.

*** $p < 0.001$.

** $p < 0.01$.

* $p < .05 + p < 0.10$.

Table 2
Big Five Personality Traits and Acquiescence Response Style

Independent variables	Model I: 2012 ANES	Model II: 2012 CCES	Model III: 2010 AmericasBarometer
Constant	0.41*** (0.02)	0.41*** (0.03)	0.45*** (0.01)
Openness	0.12*** (0.01)	0.13*** (0.03)	0.03*** (0.00)
Conscientiousness	-0.01 (0.01)	0.07* (0.03)	0.03** (0.01)
Extraversion	-0.01 (0.01)	0.03 (0.03)	0.02** (0.01)
Agreeableness	0.06*** (0.02)	0.03 (0.04)	0.01 (0.01)
Emotional stability	-0.02 (0.01)	-0.02 (0.04)	0.00 (0.01)
Female	-0.00 (0.01)	0.00 (0.01)	-0.01*** (0.00)
Education	-0.05*** (0.01)	-0.02 (0.02)	-0.00 (0.01)
Age	0.00 (0.00)	0.00 (0.00)	-0.00*** (0.00)
Number of cases	4,874	761	30,184
Number of countries	1	1	22
<i>Adjusted R</i> ²	0.04	0.18	0.05

Note: Cell entries are ordinary least squares regression coefficients, with standard errors in parentheses. The dependent variable is acquiescence bias, coded to range from a minimum possible score of 0 to a maximum possible score of 1. Models I and II incorporate survey weights. Model I uses the Taylor series method for estimating standard errors (see endnote 10 for details), and Model II clusters the standard errors by state and includes state fixed effects (see Online Appendix A). For Model III, country fixed effects are included but not shown (see Online Appendix A), standard errors are clustered by country, and data are weighted so that each nation’s sample contributes a value of $N = 1,500$.

*** $p < 0.001$.
 ** $p < 0.01$.
 * $p < .05 + p < 0.10$.

ERS and ARS, and we replicate these findings in the AmericasBarometer. We also obtain some evidence that extraversion and emotional stability are positively associated with ERS.⁴⁰

These findings have implications for applied personality research. As Cronbach (1946) emphasized, it is vital that response sets be understood, identified, and not permitted to skew interpretation of substantive results. Scholars interested in personality could control for response style to properly understand the substantive relationship between personality and the outcome of interest. Our results, for instance, indicate that openness is positively associated with ERS and ARS, so omitting these response styles from the regression would distort the observed relationship between openness and policy attitudes.

⁴⁰These final results, the ones for extraversion and emotional stability, are partly contingent on the use of logged variants of the personality measures. For extraversion, the four ERS effects found using ANES and AmericasBarometer data reach statistical significance ($p < .05$) using a logged measure, but one of these slips to the $p < .10$ level using an unlogged variable. A larger discrepancy is seen for emotional stability, with four variables producing significant effects using the logged measure versus only one with the unlogged alternate. Thus, especially for emotional stability, findings with respect to ERS are contingent on the construction of the personality scale. As mentioned previously in notes 25 and 36, tests using unlogged personality measures are reported in Online Appendix O.

Alternatives to controlling for ERS and ARS exist. As with our trichotomous personality scales, researchers can respond to possible ERS by constructing shorter versions of multipoint indicators and checking for similarity in results. Strong substantive relationships will withstand such robustness checks. Meanwhile, for ARS, scholars should design surveys with item valence alternated for questions that will be used in an index to represent the same concept. That way, any acquiescence on one item will be offset by the companion reverse-coded item.

Supplementary Data

Supplementary Data are available at *IJPOR* online.

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