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A critical evaluation and research agenda for the study of psychological dispositions and political attitudes

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Abstract

Political psychologists often examine the influence of psychological dispositions on political attitudes. Central to this field is the ideological asymmetry hypothesis (IAH), which asserts significant psychological differences between conservatives and liberals. According to the IAH, conservatives tend to exhibit greater resistance to change, a stronger inclination to uphold existing social systems, and heightened sensitivity to threats and uncertainty compared with their liberal counterparts. Our review and reanalysis, however, question the empirical strength of the IAH. We expose major concerns regarding the construct validity of the psychological dispositions and political attitudes traditionally measured. Furthermore, our research reveals that the internal validity of these studies is often compromised by endogeneity and selection biases. External and statistical validity issues are also evident, with many findings relying on small effect sizes derived from nonrepresentative student populations. Collectively, these data offer scant support for the IAH, indicating that simply amassing similar data is unlikely to clarify the validity of the hypothesis. We suggest a more intricate causal model that addresses the intricate dynamics between psychological dispositions and political attitudes. This model considers the bidirectional nature of these relationships and the moderating roles of individual and situational variables. In conclusion, we call for developing more sophisticated theories and rigorous research methodologies to enhance our comprehension of the psychological underpinnings of political ideology.

KEYWORDS

ideological asymmetry, political attitudes, political ideology, psychological dispositions, validity

INTRODUCTION

A long tradition in political psychology seeks to understand the extent to which psychological dispositions underlie political attitudes.[1] In this article, we reflect on recent evidence that calls into question the ideological asymmetry hypothesis, which holds that conservatives have markedly different psychological dispositions than liberals. While the number of studies documenting correlations between psychological dispositions and ideology is large, the empirical basis for the claim that these are underpinnings is quite narrow. The vast majority of the evidence supporting this claim comes from cross-sectional research with adult subjects in which self-reported measures of psychological needs and personality traits are correlated with self-reported measures of political attitudes (for a discussion, see Federico & Malka, 2018). What's more, the size of the effects and the direction of the effects vary considerably.

The goal of this article is to offer our thoughts and suggestions for how the field should move forward to better understand how psychological dispositions shape political attitudes. To be clear, in reflecting on the weakness of the empirical evidence as well as the shortcomings of the theoretical foundations for the ideological asymmetry hypothesis, we are not challenging the general claim that individual differences in psychology influence political attitudes. After all, approximately a third of the variance in political attitudes is explained by additive genetics (Alford et al., 2005), offering strong evidence that political attitudes are influenced to some degree by deep-seated and inherited factors. Nonetheless, while personality traits may be the causal mechanism that links genes to political attitudes, the heritability of political attitudes neither offers evidence for the hypothesis that conservatives have different psychological needs or personality traits than liberals, nor does it offer evidence for the thesis that personality traits are definitively the particular causal mechanism through which genetic differences influence attitude formation (Funk et al., 2013; Ksiazkiewicz & Friesen, 2021)—for a recent review see McDermott (2022). Or, as Dawes and Weinschenk (2020) put it, "additional research is needed in order to develop a better understanding of the pathways that connect genes to ideology" (p. 175), which is beyond the scope of this article. Moreover, we are also not asserting that the ideological asymmetry hypothesis is definitively wrong. It may indeed be accurate on the whole or at least in certain domains. Our overarching argument is simply that the evidence for the ideological asymmetry hypothesis is weak, narrow, and perhaps even contextually bound.

Before we begin, it is crucial to clarify the two concepts at the center of our article: *psychological dispositions* and *political attitudes*. We conceptualize psychological dispositions, like others in this literature (e.g., Hibbing et al., 2013; Hibbing, Smith, & Alford, 2014; Jost, 2021; Jost et al., 2017), very broadly: It contains self-reported measures of personality (e.g., Big Five traits), psychological needs (e.g., need for structure), self-reported threats, moral foundations, but also responses in behavioral tasks (such as BeansFest), and neurobiological responses (e.g., threat sensitivity captured with skin conductance, brain regions of interest in fMRI studies, etc.). Political attitudes are also broadly conceived. We follow classical and more recent work in political science and psychology where policy attitudes are mapped onto (or are clustered with) dimensions (Converse, 1964; Feldman & Johnston, 2014; Malka et al., 2019), which—together with vote choice, party evaluations, etc.—make up a belief system (Brandt & Sleegers, 2021; Fishman & Davis, 2022). As is common in much of the literature, we use the U.S.-focused terminology "liberal" to mean political attitudes on the left (support for government intervention into the economy as well as more permissive views on social/cultural issues) and "conservative" to mean political attitudes on the right (opposition to government intervention in the economy as well as less permissive views on social/cultural issues).

[1]The data (where possible) and code to reproduce the results reported in this paper can be found on our OSF page: https://osf.io/y4sxk/.

We begin by discussing the accumulating evidence undermining the theoretical model that underlies the ideological asymmetry hypothesis. Then, following McDermott (2011), we assess its overall validity, specifically focusing on external validity, construct validity of the predictors, and construct validity of the outcomes. Next, we turn to internal validity and consider alternative causal models with the help of directed acyclic graphs (DAG), which clarify the limitations in the empirical foundation of this hypothesis. We then offer a more complex but, hopefully, more useful theoretical model for understanding the relationship between psychological dispositions and political attitudes. Our model explicitly considers the role of the social environment and allows for reciprocal relationships among psychological traits, political attitudes, and the environment. We conclude with some recommendations for future research.

THE STATE OF THE IDEOLOGICAL ASYMMETRY HYPOTHESIS

By definition, liberals and conservatives[2] differ in their political beliefs and, generally, in their political behavior. The ideological asymmetry hypothesis (IAH), a dominant explanation in political psychology for why individuals gravitate to the right or left, contends that psychological needs motivate people to adopt specific political attitudes. In particular, the IAH anticipates that individuals with a psychological need for structure and order and who are more sensitive to negative stimuli find solace and comfort in conservative approaches to politics (Carney et al., 2008; Hibbing et al., 2013; Hibbing, Smith, & Alford, 2014; Jost et al., 2009). As a theoretical model, the IAH differs from standard political science explanations of political ideology, which (1) focus on the role that political discourse plays in shaping the political attitudes that individuals adopt (Zaller, 1992) and (2) tend to conclude that most individuals (at least in the United States) lack coherent ideological belief systems that consistently correspond to the left or right (Converse, 1964; Kinder & Kalmoe, 2017). In sidestepping this difference in conceptual focus and definition, we note that the IAH would still be an accurate description of political attitude organization if psychological needs and personality traits could lead individuals to gravitate to more liberal or conservative political attitudes on average, even if they do not lead individuals to create tightly constrained political belief systems across every political issue (Baldassarri & Goldberg, 2014).

The primary source of evidence for the IAH comes from observational (primarily cross-sectional) studies that show various self-reported measures of individual differences in psychological dispositions (e.g., personality traits, psychological needs, moral foundations, etc.) correlate with political attitudes (for instance, Ackermann & Ackermann, 2015; Ackermann & Eckardt, 2023; Choma & Hanoch, 2017; Graham et al., 2009, 2011; Jost, 2017; Jost et al., 2003; Onraet et al., 2011, 2013, 2015; Osborne et al., 2022; Sibley et al., 2012; Thorisdottir et al., 2007; Van Hiel et al., 2016; Wronski et al., 2018; Zmigrod, Ebert, et al., 2021).[3] It is beyond the scope of this article to review this literature in detail, but we refer to a relatively recent article in *Advances in Political Psychology* by Federico and Malka (2018) for a review—and for the most recent reviews, see Bakker (2022); Federico and Malka (2023); Jost (2021), and Osborne et al. (2022). By and large, this research shows that individuals who espouse conservative attitudes tend to be more fearful, rigid, conventional, self-controlling, orderly, resistant to change, and score higher on the binding (moral) foundations. In contrast, those who espouse liberal attitudes are more open-minded, imaginative, impulsive, and less resistant to change.

Recent meta-analyses, however, suggest that the correlation between self-reported measures of psychological differences and political attitudes is quite variable. A review of 313 independent samples (and 704 effect sizes), collected in 35 nations and with over 180,000 unique

[2]Here, we are referring to operational rather than symbolic ideologues (Ellis & Stimson, 2012).

[3]But see, Blais et al. (2021) for an argument that this literature is still in its early stages.

observations, concluded that the correlation between measures of rigidity and conservatism is small (Fisher's $Z = .133$, 95% CI = [.12, .15]) and highly variable, such that any given study is equally likely to find a strong positive effect, which is in line with the IAH, as it is to find a weak negative relationship, which runs counter to IAH (Costello et al., 2022). Similarly, a review of 232 independent samples with over 575,691 unique observations finds a small correlation between personality traits and conservatism: Openness to experience ($r = -.145$, 95% CI = [−.158, −.133]) and Conscientiousness ($r = .076$, 95% CI = [.068, .084]), with a great deal of variability across studies (Osborne et al., 2022). Moreover, the meta-analytic evidence shows that, to the extent to which there is a relationship, it is between measures of psychological traits central to the IAH and measures of social conservatism (e.g., people's attitudes on cultural controversies) more so than measures of economic conservatism (see also, Johnston et al., 2017; Malka et al., 2014). Relatedly, a meta-analysis by Kivikangas et al. (2021) on the link between moral foundations and conservatism finds weak negative correlations between conservatism and the foundations Care ($r = -.146$, 95% CI = [−.168, −.123]) and Fairness ($r = -.215$, 95% CI = [−.239, −.191]), while conservatism correlates positively with the foundations Loyalty ($r = .288$, 95% CI = [.261, .315]), Authority ($r = .367$, 95% CI = [.345, .390]), and Sanctity ($r = .372$, 95% CI = [.347, .397]). Similarly, for the moral foundations, there is substantive variation in the strength of the association with ideology depending on the moral foundation.

The external validity of the extant evidence

What accounts for this variability across studies? One possibility is that social, institutional, and/or cultural differences across countries explain the connection between psychological needs and political attitudes (e.g., Fatke, 2017; Malka et al., 2014, 2019). Yet, while the meta-analytic evidence suggests that support for IAH is stronger in WEIRD (Western, Educated, Industrialized, Rich, and Democratic) countries than it is in non-WEIRD ones (Costello et al., 2022; Osborne et al., 2022), it is difficult to explain why: Education, democratization, and industrialization do not account for systematic variation in the fully specified meta-analyses.

Another possibility is that sample characteristics explain the variance in effect sizes. The recent meta-analyses show that student samples, which make up a large share of the samples from WEIRD countries, yield larger effect sizes and more supportive evidence for IAH than population-based samples (Costello et al., 2022; Osborne et al., 2022). This may be because the correlation between psychological dispositions and ideology is uniquely large in these more homogeneous student samples. Yeager et al. (2019), for instance, replicated canonical social psychology experiments among a general population and reported that effect sizes in student samples are 25% to 80% larger than population-based samples. Further, many of these samples are underpowered, which would yield effect sizes that both overestimate and underestimate the true effect. However, due to publication bias, only the overestimates appear in the literature.

To interrogate this possibility, we reanalyze the meta-analytic data from Costello et al. (2022). We follow Quintana (2023) and create a Firepower plot, "which visualizes the median statistical power for a range of hypothetical effect sizes across all studies included in a meta-analysis" (p. 6). As such, the Firepower plot in Figure 1 provides the median statistical power across all studies included in the meta-analysis for a range of hypothetical effect sizes. In this case, Fisher's Z from .05 to .3. On the left-hand side, our Firepower plot provides the statistical power for the observed summary effect size of the meta-analysis. The bottom panel of Figure 1 provides the median statistical power across all studies for the whole meta-analysis and visualizes the point made by Costello et al. (2022) that most individual studies testing the IAH are not capable of reliably estimating the effect of interest ($r = .10$). This conclusion aligns with Kivikangas et al. (2021) who argue that "with the relatively small effect sizes found for"

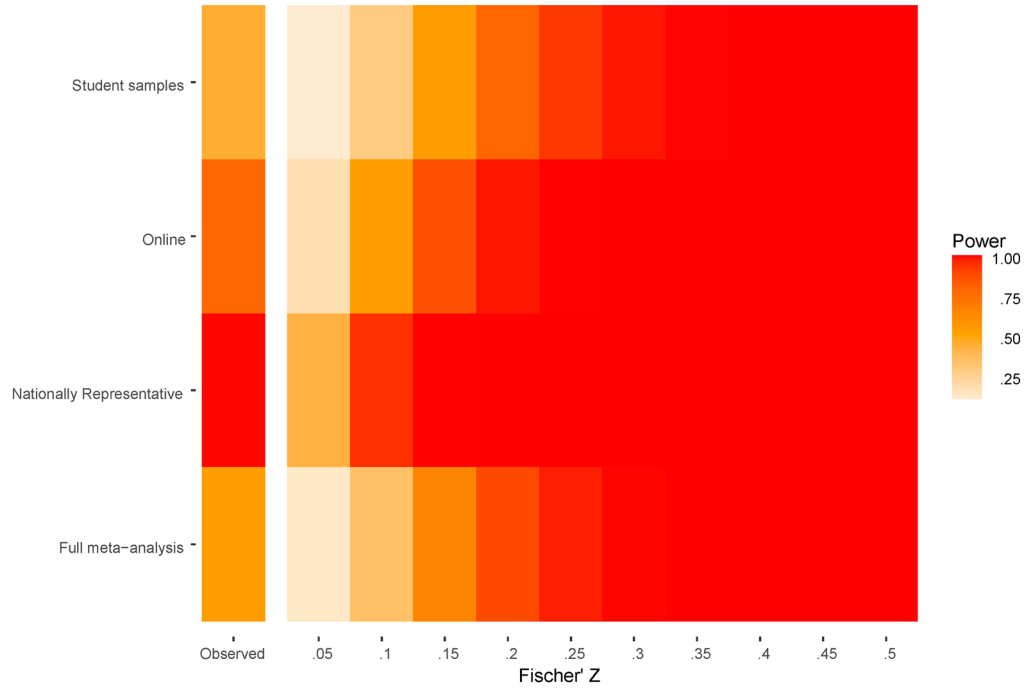

FIGURE 1 Firepower plot for the meta-analysis of Costello et al. (2022). Firepower plot based upon the meta-analysis of Costello et al. (2022). The Firepower plot provides the median statistical power across all studies included in the meta-analysis for a range of hypothetical effect sizes. In this case, Fisher's *Z* from .05 to .3. On the left-hand side, the Firepower plot provides the statistical power for the observed summary effect size of the meta-analysis. In the different panels, we provide median statistical power across all studies for the whole meta-analysis (bottom panel) and split for different study types, namely: student samples (top-panel, $k = 320$), online samples (panel 2, $k = 143$), and nationally representative samples (panel 3, $k = 56$).

the moral foundations (MFQ) and political attitudes "associations, the sample sizes of studies should be increased considerably to reliably detect them for all MFQ factors" (p. 72).

The statistical power of studies also varies systematically across sample types. In Figure 1 we also provide the median statistical power for a range of hypothetical effect sizes across studies that relied upon student samples (top row, $k = 320$), online samples (panel 2, $k = 143$), and nationally representative samples (panel 3, $k = 56$) that were included in the meta-analysis of Costello et al. (2022). The differences are striking. Studies conducted on nationally representative samples were, on average, capable of reliably capturing smaller effect sizes compared to studies that relied upon student samples and, to some extent, online samples. Additionally, the observed power, as indicated by the darker red color in the left-hand panel, was bigger in the nationally representative samples compared to the student samples—which make up the largest group ($k = 320$) in the meta-analysis—and online samples (the third largest group, $k = 143$). The Firepower plot in Figure 1 shows that studies that relied on student samples and online samples, which on average have smaller sample sizes, are too underpowered to detect the relatively weak correlation between psychological dispositions and political attitudes. Similar heterogeneity was not found in the meta-analysis of moral foundations and political attitudes (Kivikangas et al., 2021), suggesting that this problem might be particular to the specific IAH samples.

Is there also publication bias in the IAH literature? The evidence is mixed. One recent meta-analysis finds evidence that there is substantial publication bias among these small-sample studies, wherein studies that do not support the IAH are less likely to be published (Jost et al., 2017). At the same time, Costello et al. (2022), Ditto et al. (2019), Osborne et al. (2022),

and Kivikangas et al. (2021) do not find clear evidence of publication bias across all studies, although they do conclude that effect sizes were slightly larger in published studies.

The construct validity of the predictors

One possible alternative explanation for the association between self-reported measures of psychological traits and ideology is that the content of the two measures overlap. For instance, measures of personality traits sometimes include questions that also tap political attitudes (Malka et al., 2017). To the extent that self-reported measures of psychological traits include measures of political attitudes, it should not be surprising that these measures merely correlate with other indicators of political attitudes. Moreover, the problem is not easily addressed with experimental evidence. Malka et al. (2017) points out that studies supporting the IAH have manipulated terrorism threat and concluded that this threat causes conservatism (e.g., Thórisdóttir & Jost, 2011). However, at the time of the experiment, terrorism was politicized and linked to the right. Experimental studies like these confound psychological traits and political attitudes in the experimental manipulation, vitiating the causal interpretation of treatment effects. Conversely, studies that test the IAH often include political measures that contain nonpolitical content (Malka et al., 2017). The Wilson and Patterson's conservatism scale, for instance, contains "nonpolitical stimuli that are meant to elicit general attitudes concerning uncertainty avoidance (e.g., modern art, jazz music, horoscopes) and stimuli that have explicitly political referents (e.g., death penalty, legalized abortion, socialism, religion)." As Malka et al. (2017) argue, it becomes "tautological" to correlate a measure of conservatism (like Wilson and Patterson) with other measures of uncertainty avoidance or threat sensitivity and would "inflate estimated associations between psychological and political variables" (p. 120).

Another common practice in the IAH literature is the use of highly abbreviated measures of psychological dispositions. The use of short measures on our instruments is understandable: Space is scarce in population-based studies, respondents may get fatigued, and various scholars have introduced ostensibly reliable abbreviated measures of personality that contain two or even one item per trait. However, the widespread use of these abbreviated measures may yield incorrect conclusions about the relationship between personality and politics (Bakker & Lelkes, 2018; Engelhardt et al., 2023). Bakker and Lelkes (2018) and Engelhardt et al. (2023) conclude that studies that rely upon brief measures of psychological dispositions tend to underestimate their association with ideology. Osborne et al. (2022) find similar meta-analytic results for studies relying on short forms of conscientiousness. However, the effect of scale length on the relationship between Openness and ideology was reversed: Studies that relied upon the two-item TIPI measure of openness to experience showed a larger correlation with ideology compared to studies that relied upon other measures (Osborne et al., 2022). In sum, the reliance on short and potentially tautological measures of self-reported psychological traits indicate that the extant literature provides a distorted picture of the magnitude and statistical significance of the IAH estimates (Gelman & Carlin, 2014).

These criticisms of self-reported psychological traits have led some researchers to turn to behavioral measures of the negativity bias, and initial research offered evidence that these behavioral measures correlate with political attitudes. For instance, Shook and Fazio (2009) let participants play BeanFest, a behavioral game where participants explored novel stimuli that could potentially be beneficial or harmful. According to their study on 58 undergraduate students, politically conservative individuals were less likely to approach unfamiliar objects that had the potential to either benefit or harm them compared to more liberal individuals, leading the authors to conclude that one's willingness to explore novel situations influenced people's political ideology. Similarly, McLean et al. (2014) found that political ideology correlated with performance on the Flanker tasks, which asks participants to categorize target images as positive or negative in the presence of a positive or negative distractor image. In their sample of 119

undergraduate students, conservatives were more likely to attend to angry targets, which they interpreted to be consistent with the IAH.

Recent work, however, calls into question the conclusions drawn from these small convenience samples (for discussions and assessments of the consequences of these samples, see Krupnikov & Levine, 2014; Krupnikov et al., 2021). A series of well-powered replications, using four large and diverse online samples (N=4689 in total), tested whether conservatives, compared to liberals, had a "tendency to pay more attention and give more weight to negative and threatening stimuli relative to positive and rewarding stimuli" (Johnston & Madson, 2022, p. 666). The researchers directly replicated the work by Shook and Fazio (2009) and McLean et al. (2014) and found strong evidence for the null hypothesis of no differences between liberals and conservatives in their behavior during BeanFest and their behavior in Flanker Task (see also Fiagbenu et al., 2021). In addition to these replications, Johnston and Madson (2022) find no evidence for ideological differences in behavioral responses when relying on a lexical decision task as well as two different measures of loss aversion. The null findings using behavioral indicators broadly align with analyses by Costello et al. (2022, p. 12) who coded the extent to which measures of rigidity were based upon self-reports (like the Need for Structure) or test-based measures (like the Cognitive Reflection Task). They find that associations between test-based measures of rigidity and self-reported ideology were much weaker than associations between self-reported rigidity and self-reported ideology. In fact, the association using test-based measures was "trivial" (e.g., β=.065), while the self-reports resulted in small associations (e.g., β=.159).

Going beyond behavioral indicators, initial research also suggested that physiological measures of negativity bias correlate with political ideology. Oxley et al. (2008) found that conservatives had stronger physiological reactions to threatening stimuli compared to liberals, which the research team interpreted as evidence that ideology has a "built-in, almost 'automated' … response" (p. 1667, see also Aarøe et al., 2017; Arceneaux et al., 2018; Balzer & Jacobs, 2011; Coe et al., 2017; Friesen et al., 2017; Smith et al., 2011; Wagner et al., 2015). These findings were, therefore, interpreted as evidence for a biological basis for the robust, positive correlation between political conservatism and self-reported measures of sensitivity to uncertainty and threat and, thus, as evidence for the IAH in general (Hibbing, Smith, & Alford, 2014)—but the negativity bias perspective also received substantial criticisms from the start (for instance, Brandt, Wetherell, & Reyna, 2014; Cacioppo et al., 2014; Lilienfeld & Latzman, 2014). Regardless of the criticism, Hibbing, Smith, Peterson, and Feher (2014) conclude that "those on the political right and those on the political left appear to differ not just in their political preferences, but in their personality traits and moral value preferences" as well as "their physiological responses and brain-activation patterns" (p. 113). However, a preregistered replication by Bakker et al. (2020) using the same stimuli and procedures found no evidence for a positive association between physiological threat sensitivity and conservative ideology. Other replications (e.g., Arceneaux et al., 2024; Fournier et al., 2020; Knoll et al., 2015; Osmundsen et al., 2022) have also failed to support the positive association between physiological threat sensitivity and conservatism. These inconsistencies challenge the idea of a biological basis for the correlation between conservatism and sensitivity to uncertainty and threat. Or as Hibbing (2023) describes it: "this inconsistent replication" (pointing to the failed replications of the threat sensitivity ideology link) … "raises questions about the broad generalization that people on the political right are more fearful of the negative aspects of life" (p. 172).

Evidence from brain scans has also been used in support of the IAH (e.g., Haas et al., 2020; Hibbing, Smith, & Alford, 2014; Jost et al., 2014). Kanai et al. (2011) find that conservatives, compared to liberals, have smaller gray matter volume in the anterior cingulate cortex (ACC). At the same time, Kanai et al. (2011) find conservatives have a larger volume for the right amygdala. Other studies have also documented associations between conservatism and specific "Regions Of Interest" in the brain (Knutson et al., 2006; Nam et al., 2018; Schreiber et al., 2013) as well as correlations between ideology and brain activity during specific tasks

like the Go/No-Go task (Amodio et al., 2007; Krosch et al., 2021; Yang et al., 2022)—for more causal evidence for this relationship, using lesion patients, see Nam et al. (2021).

While the political neuroscience studies are potentially informative for the IAH literature (Jost et al., 2014; Van Bavel & Pereira, 2018), they have a number of serious limitations. First, the sample sizes of the political neuroscience studies are small, even for neuroscience standards. For instance, Cremers et al. (2017) explain that "common sample sizes ($n = 20$–30)" in neuroscience research "display extremely low statistical power, poorly represent the actual effects in the full sample, and show large variation on subsequent replications" (p. 1). Second, and equally problematic, studies have little variation in ideology. The paper from Kanai et al. (2011), for instance, measures conservatism on a scale from 1 to 5 where 5 is the most conservative. Yet not a single participant scores a 5 on the conservatism scale. Third, replications have been scarce in the political neuroscience literature. Boekel et al. (2015) attempted to replicate Kanai et al. (2011) in a small ($n = 36$) Dutch sample, but did not have "enough variance [on the ideology dimension] in order to perform a replication attempt" (p. 130). Petropoulos Petalas et al. (2023) did find a weak positive correlation between conservatism and amygdala size in a large, ideologically diverse Dutch sample with a lot of ideological diversity, but find no evidence for associations between conservatism and other brain "Regions Of Interest" that were defined Kanai et al. (2011) and other political neuroscience studies. (We point to Zmigrod and Tsakiris, 2021, for a discussion of the future of this literature.)

The construct validity of the outcomes

Early formulations of the ideological asymmetry hypothesis suggested that closed psychological traits explain why people hold a general left–right ideological orientation (Jost et al., 2003); more recent literature demonstrates that the relationship between these traits is robustly related to cultural conservatism but not to economic conservatism (Costello et al., 2022; Johnston et al., 2017; Malka et al., 2014). This work offers important scope conditions to the asymmetry hypothesis as it pertains to the effect of psychological predispositions on ideology.

At the same time, this work also highlights the importance of broadly sampling across outcome measures to test the ideological asymmetry hypothesis in domains beyond ideology. Researchers have found ideological asymmetries in the sharing of misinformation (Jost et al., 2018) and moralized content (Brady et al., 2019), conspiratorial thinking (Van der Linden et al., 2021), expressions of prejudice (Badaan & Jost, 2020; Haas & Cunningham, 2014), and partisan bias (Jost et al., 2003; Morisi et al., 2019). The assumption underpinning this work is that the psychological predispositions that drive people to conservative political positions also drive them to believe conspiracy theories, share misinformation, express prejudice, and so on.

However, a limitation of much of this work is that the conspiracy theories, pieces of misinformation, and targets of prejudice are not sampled from the universe of possible targets (Brandt & Crawford, 2019). Instead, these stimuli are typically ones that threaten the worldview of conservatives or, in the case of prejudice, identify with the left (Brandt, Reyna, et al., 2014). When a larger set of targets are used, recent research suggests that both the left and right are equally biased (Baron & Jost, 2019; Brandt & Crawford, 2019; Crawford et al., 2017; Ditto et al., 2019). Similarly, no asymmetries appear when researchers randomize whether the information is congenial or uncongenial (Enders et al., 2022; Guay et al., 2022; Guay & Johnston, 2022). Taken together, this work suggests that the apparent asymmetries found in, for instance, sharing misinformation may have less to do with the psychological differences between the right and left and more to do with the extant supply of misinformation.

The threat-politics link has, traditionally, been a pillar of the IAH literature. Developments in the threat-politics literature also question the support for the IAH (e.g., Brandt et al., 2021; Onraet et al., 2014; Onraet & Van Hiel, 2013). Indeed, threat of terrorism correlates with conservatism

(Brandt et al., 2021; Godefroidt, 2023). Yet, in response to the 2017 Manchester terrorist attacks, people *reduced* their support for the Conservative Prime Minister Theresa May (Holman et al., 2022). (For more work on the interplay between threat and leadership evaluations, see Holman et al. [2011, 2016]; Merolla and Zechmeister [2019].) During the Covid pandemic, people were less likely to support extreme right and left candidates but more likely to support governing parties (Bisbee & Honig, 2022; De Vries et al., 2021; Kritzinger et al., 2021). Anghel and Schulte-Cloos (2023), successfully manipulated the COVID-19-related anxieties (e.g., the negative emotions fear, anxiety, and worry) but found no evidence that these negative emotions influence right-wing ideology. Indeed, when a broader range of threats are used, both liberals and conservatives can be found to be threatened by certain societal threats: Conservatives are threatened by manipulated threats to immigration (Godefroidt, 2023), but liberals are threatened by pollution, lack of health care, as well as corporate misconduct (Eadeh & Chang, 2020).

Others argue that the type of threat might matter for liberals and conservatives (e.g., Brandt et al., 2021; Choma et al., 2013; Kahn et al., 2022). Cross-national research, using the World Values Survey, indicates that the association between conservatism and threat depends on the type of threat, the outcome variable, and the context (Brandt et al., 2021). Another cross-cultural study found that conservatives were more threatened by local threats with a clear "direct, intentional action with malicious intent (e.g., terrorism, war, extremism)," while those on the left were threatened by more global threats which were the "result of indirect, unintentional passivity without malicious intent (e.g., disease, overpopulation, climate change)" (Kahn et al., 2022, p. 1186). This, according to Kahn et al. (2022), implies that "threat is a multidimensional construct and that political leftists and rightists do not necessarily differ in the extent to which they perceive threats, but rather in the way they prioritize different threats facing society" (p. 1178).

The field of threat-politics research, like any other, has its challenges. Among them are the need for clearer definitions and measures of threats, debates about the equivalence of threats from different sources (such as whether the threats of climate change and immigration are of equal strength), and prominent studies in this literature are in need of replication (e.g., Brandt et al., 2021; Eadeh & Chang, 2020). Additionally, Onraet et al. (2014) discovered a reciprocal connection: While threats can shape political attitudes, these attitudes can in turn influence perceptions of threat. This underscores recent findings in the threat-politics domain, indicating that the dynamics between threat and political ideology are more intricate than previously suggested by the IAH literature (Brandt & Bakker, 2022).

The internal validity of the extant evidence

Taken together, the discussion in the previous section shows that the empirical support for the IAH is thin. Within Western countries, there appears to be a robust small cross-sectional association between self-reported psychological dispositions that tap negativity bias and conservative political attitudes, particularly with respect to social/cultural controversies. However, accumulating evidence calls into question a simple causal interpretation of these correlations. Longitudinal data, behavioral measures, and physiological indicators fail to support the simple unidirectional relationship between psychological dispositions and conservative political attitudes.

In this section, we turn our attention to the assumption that psychological dispositions are highly stable and exogenous to political attitudes, and, therefore, the correlation between these measures is tantamount to a causal effect (e.g., Gerber et al., 2010; Mondak & Halperin, 2008). Proponents of IAH treat this assumption as self-evident, but recent work calls it into question. We consider two possible ways in which psychological dispositions—or at least our operationalizations of them—may be a function of political attitude attitudes: endogeneity and selection (or collider) bias.

Endogeneity

While long-range panel studies in the United States show that childhood measures of psychological traits (e.g., anxiety, rigidity) correlate with self-reported political attitudes of young adults (Block & Block, 2006; Fraley et al., 2012; Wegemer & Vandell, 2020), childhood measures of personality traits do not explain the political attitudes of both young adults and middle-aged adults in the United Kingdom (Fasching et al., 2023). This raises the question of whether personality traits are truly exogenous, or whether both personality traits and political attitudes are a product of other outcomes. In addition to the inconsistent and variable cross-sectional correlations between self-reported psychological differences and political ideology, panel studies find little evidence that shifts in personality traits correspond to shifts in ideology (Hatemi & Verhulst, 2015; Osborne & Sibley, 2020)m and some even find evidence of a reciprocal relationship, suggesting that political ideology may affect how people self-report their psychological dispositions (Bakker et al., 2021; Hatemi et al., 2019; Luttig, 2021; Sidanius et al., 2013; Smith et al., 2017—but also see Engelhardt et al., 2023). In the studies that find a reciprocal relationship, the effects of ideology on personality are roughly as large as the effects of personality on ideology.[4] Furthermore, at least one experiment demonstrates that when (self-reported) personality is manipulated, its correlation with political attitudes also changes (Bakker et al., 2021). This latter set of findings suggests that endogeneity bias is a concern for researchers that test the IAH using self-reported measures of personality traits using cross-sectional data.

To illustrate the problem that endogeneity bias poses to the IAH, consider a simple model where personality in time 1 (X1) affects political preferences in time 1 (Y1). X1 also impacts personality in time 2 (X2). In addition, and consistent with recent evidence, political preferences in time 1 (Y1) also affect personality in time 2 (X2), and ultimately influence political preferences in time 2 (Y2). Other factors outside of personality, call these Z1, also affect political attitudes. We use personality traits as a motivating example here, but our analysis has the same implications for other measures of psychological dispositions.

When researchers try to estimate the effect of personality traits on political preferences, they often regress Y2 on X2. As shown in Figure 2, not controlling for Y1 leaves a backdoor path open between X1 and Y2, which can introduce bias into the estimated causal effect of X2 on Y2. However, because Y1 is a collider (between Z1 and X1) controlling for lagged personality (X1) opens a pathway that now introduces bias from Z1.[5] To overcome this issue, at minimum, researchers should use panel data that simultaneously controls for X1 and Y1. Although panel data will solve the issues related to biased estimates caused by endogeneity (when correctly specified), it does not identify the direction of causality. Researchers must still make the assumption that psychological predispositions affect political attitudes and not the other way around.

Selection bias

Selection bias occurs when the participants in a study do not accurately represent the target population, leading to a distortion in the estimated relationship between the variables. For instance, Sackett (1979) found a strong correlation between locomotor disease and respiratory disease among hospitalized patients, initially suggesting that reduced mobility might lead to

[4]A number of studies that use longitudinal data do not account for within-person change. The random-intercept cross-lagged panel model (RI-CLPM) is often suggested as a more appropriate test of the relationship between personality and politics (Osborne & Sibley, 2020). Evidence from RI-CLPM models suggest that there is no relationship (in either direction) between psychological predispositions and political attitudes (Bakker et al., 2021, see Online Supporting Information). However, simulations suggest that these models may also provide incorrect estimates (Bakker et al., 2021; Lüdtke & Robitzsch, 2021).

[5]It is important to note here that a collider refers to a variable that is caused by another set of variables. Adjusting for the collider leads to a relationship between two variables that are otherwise independent.

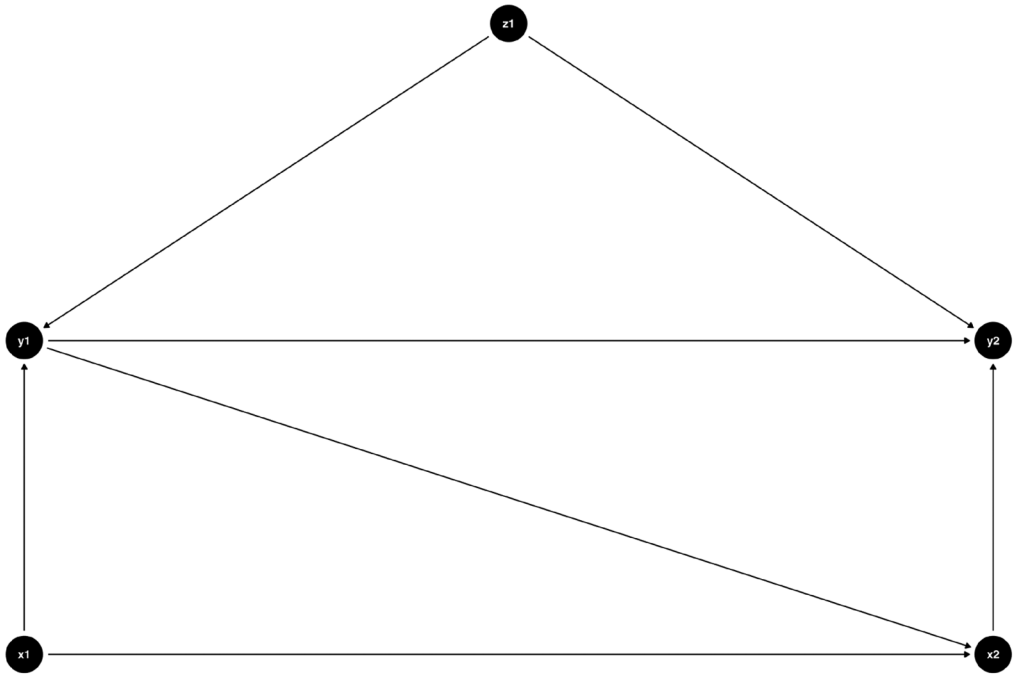

FIGURE 2 DAG illustrating the endogeneity bias in the IAH literature.

heart disease. However, no such correlation was found in the general population, indicating that the observed link was specific to hospital patients. This suggests that hospital admission acts as a collider, where both diseases are more likely to co-occur, not due to causation but because individuals with either condition are more likely to be hospitalized.

A similar issue may lead to a spurious association between personality and politics if both directly (Figure 3, Panel A) or even indirectly (Figure 3, Panel B) cause people to participate in survey research. Recent evidence suggests that both political attitudes and personality predict who participates in survey research.

One pathway through which personality may impact survey responses is through self-selection bias, as those who choose to participate in surveys may differ from those who do not. Studies have found that individuals higher in conscientiousness and lower in openness are more likely to complete multiple waves in longitudinal surveys (Cheng et al., 2020), while those completing online surveys tend to be lower in extraversion and openness compared to those completing face-to-face surveys (Valentino et al., 2020). Since openness to experience is linked to political ideology, this personality trait can impact both direct and indirect effects on political preferences, including differences in participation rates across survey modes. Valentino et al. (2020) explain that their "results suggest that discrepancies in public opinion estimates driven by personality-related differences between fresh cross-sections and professionalized survey panels may be significant" (p. 465).

Additionally, differential nonresponse by political preferences is a major problem in survey research, with some blaming polling inaccuracies in recent elections on a lack of conservative voters in surveys (Gelman, 2021). However, it's difficult to predict the direction of this bias, as who participates or not in surveys varies over time, with swings in participation seemingly linked to the popularity of the president–voters are more likely to participate in surveys when their favored candidate is more popular (Gelman et al., 2016).

To better understand the implications that selection bias have for the IAH, we simulate data (1000 samples of 1000 respondents) from the DAG presented in Figure 3 to demonstrate how

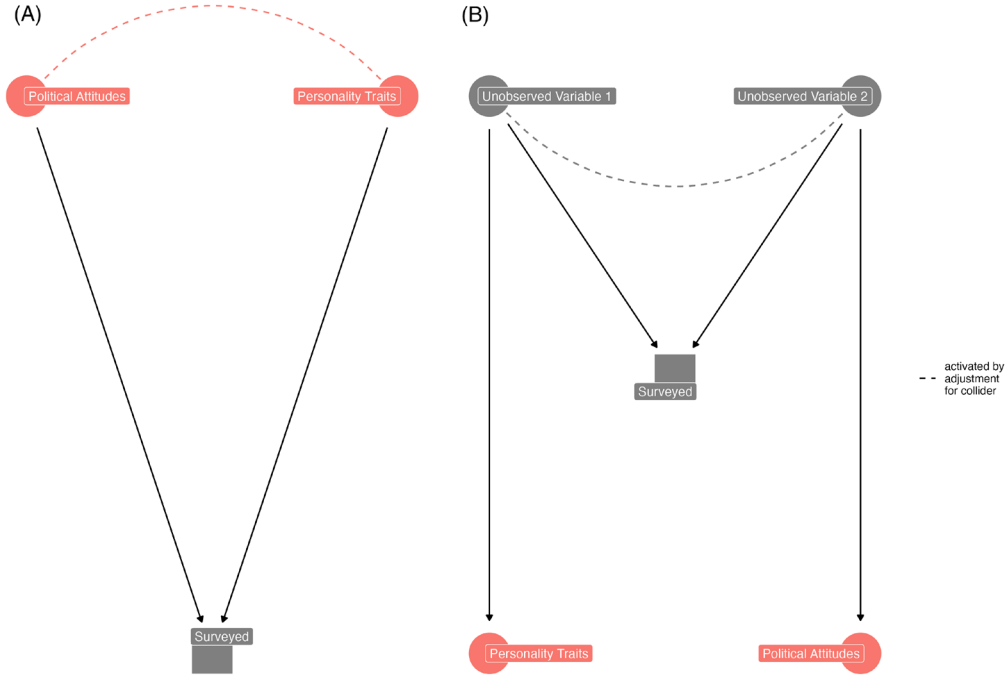

FIGURE 3 DAG illustrating how collider bias affects the IAH literature. DAG illustrating the spurious association between personality and politics if both directly (Panel A) or even indirectly (Panel B) cause people to participate in survey research.

collider bias may lead to erroneous conclusions. Because the direction of the bias is not clear, we allow the pathways between personality and survey participation and politics and survey participation to vary randomly between simulations. In each simulation, personality and politics are not actually correlated.

The results of these simulations appear in Figure 4. In the panel on the left, we plot the distribution of the regression coefficients from model regression politics on personality, with and without including the collider in the model. As we would expect, when no collider is included in the model, the correlation is centered around zero ($m = 0$) with a small standard deviation ($SD = .03$). Subsetting only on observations where the probability of participation was greater than .50, which is equivalent to controlling for a collider, the correlation is still centered around zero, but the standard deviation is five times as large ($SD = .16$), meaning that much of the time, the researcher would infer a relationship between personality and politics when one does not exist. In fact, plotting the p-values from these models (right panel, Figure 4) suggests that in the correctly specified model, which does not control for a collider, significance ($p < .05$) could only be erroneously claimed .05% of the time. Controlling for the collider (in this case, subsetting on participants who have a greater than even chance on participating) would lead to p-values less than .05 almost nearly 40% of the time.

On effect sizes

So far, we have discussed the IAH literature and, implicitly as well as explicitly, assumed that the associations are substantively meaningful. Yet, how meaningful is the evidence for the IAH? Given the size of this literature (in terms of number of publications), the centrality of this

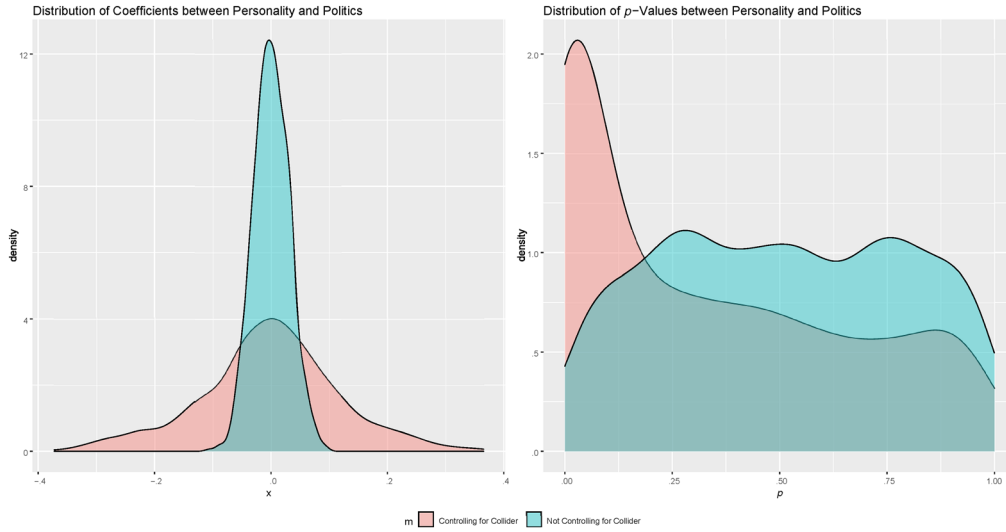

FIGURE 4 Results from simulation illustrating the effects of collider bias for the IAH. Panel on the left plots the distribution of the regression coefficients from model regression politics on personality, with (in red) and without (in blue) including the collider in the model. Panel on the right plots the distribution of p-values from the model results presented in the left-hand panel with (in red) and without (in blue) including the collider in the model.

literature in political psychology, and the practical implications often given to this literature, it is important to answer this question.

Earlier in this article, we have discussed the extent to which meta-analyses—and subgroups of studies—are sufficiently powered to detect an effect. Yet, Lakens (2022) raises the question of whether it is actually the correct question to ask whether studies are sufficiently powered to detect any effect. So, is any effect that is in the expected direction meaningful evidence in support of the theory. Here, we follow Primbs et al. (2022) and adopt a "a relative framework to effect-size interpretation" (p. 510) where we compare the effects in the IAH literature to (1) other meta-analytic evidence in the individual differences literature and (2) other well-known correlates of ideology.

A first approach Is to conceptualize the effects in the meta-analyses against a broader literature (Funder & Ozer, 2019)—see also Costello et al. (2022). Gignac and Szodorai (2016) collected 708 meta-analyses where individual differences (e.g., personality traits) were correlated with outcomes of interest. Based on the correlations derived from these 708 meta-analyses, Gignac and Szodorai (2016) conclude that the 25th percentile corresponds to a correlation of .11, the 50th percentile corresponds to a correlation of .19, and the 75th percentile corresponds to a correlation of .29. Gignac and Szodorai (2016) and conclude that "individual differences researchers are recommended to consider correlations of .10, .20, and .30 as relatively small, typical, and relatively large, in the context of … the interpretation of statistical results from a normative perspective" (p. 74). Benchmarking the recent meta-analytic correlations in the IAH literature (Costello et al., 2022; Osborne et al., 2022) to Gignac and Szodorai (2016) findings, we conclude that the effects in the IAH literature are *small* compared to the broader individual difference literature as they circle around the value of the 25th percentile.

A second approach is to compare the effect size of the evidence for the IAH to other well-established effects in the literature. We follow the approach by Roberts et al. (2007) who compared the effect of personality on mortality, divorce, and occupational success to that of well-established predictors of these outcomes (in their case: socioeconomic status and intelligence). For instance, the meta-analytic effect of education on attitudes toward refugees—a

core indicator of (social) conservatism (Van der Brug & Van Spanje, 2009)—is Fisher's $Z = -.16$, while men reported more negative attitudes refugees compared to woman (Fisher's $Z = .11$) (Cowling et al., 2019). We have to be careful to compare the effects of personality to these effects as, especially for education, the effect of personality could be both the cause or consequence of ideology. Yet, if we were to compare the meta-analytic effects of education and gender to that of personality, then we would conclude the effects are roughly of comparable size.

While the two approaches discussed above are useful insofar as they allow us to interpret the effect sizes in the IAH literature relative to other effect sizes, they "do not quantify which effect sizes are meaningful in specific research lines and, furthermore, there will never be a single answer to the question of which effect size should be considered meaningful" (Anvari & Lakens, 2021, p. 2). Or as Lakens (2022) suggests: Researchers need to examine whether observed effects are too small to be theoretically or practically interesting. A cost–benefit analysis is one way to do this. In health research, scholars calculate whether the costs of an intervention justify the benefits (Anvari & Lakens, 2021). This seems unrealistic for the IAH literature. But also for more basic research, like the IAH literature, the goal should be "to determine the smallest increase in a relevant outcome measure that is subjectively deemed to be large enough to matter" (Anvari & Lakens, 2021, p. 2). Weston et al. (2019), for instance, argue that association between personality and holiday spending is small ($r = .09$), but across millions of people, this could accumulate to a lot of money. Here we try to determine whether the evidence in the IAH literature matters.

Using the 2016 American National Election Study (ANES, 2016) data and the 2019–20 Dutch Longitudinal Internet studies for the Social Sciences (LISS) panel, we simulated the influence of factors like age, race (United States only), education level, religiosity, and regional alignment (United States only), along with open/closed personality traits, on political outcomes such as policy views and voting preferences. Both datasets have been used frequently in the IAH literature—also by some of us (e.g., Bakker, 2017; Bakker et al., 2021; Bakker & Lelkes, 2018). The open/closed personality distinction, rooted in past studies (Bakker et al., 2021; Johnston et al., 2017), derives from the Ten Item Personality Measure (TIPI) in the United States (four items for the open/closed dimension) and the 50-item IPIP battery (20 items for the open/closed dimension), encompassing measurements of openness and conscientiousness. Our regression analyses focused on these personality traits, party allegiance, age, and education against policy attitudes or voting choices. To alleviate concerns about endogeneity, we regressed the political outcomes on each predictor variable in a separate model in each context. Finally, we are the first to acknowledge that the results of the ANES and LISS are not directly comparable as the measures of personality and political attitudes differ, as well as context, survey mode, sampling scheme, etc. Yet, we believe that triangulating the evidence from these two often-used samples in two well-studied Western contexts gives us meaningful information about the effect size of open/closed personality in the domain of politics.

First, the results of the ANES analysis—visualized in Figure 5—show that a standard deviation change in the open/closed personality measure is associated with a change of roughly .06 (out of 1) in support of the different policy measures (see panel A-E of Figure 5), representing less than of .2 standard-deviation change on the outcome measures. Second, the results of the LISS analysis—visualized in Figure 6—show that a standard-deviation change in the open/closed personality measure is associated with an average change of roughly .12 (out of 1) in support of the different policy measures, which again represents less than of .2 standard-deviation change on the outcome measures.

To be clear, a one-standard-deviation change in open/closed personality represents a significant change. In fact, this is a change in personality that is unlikely to happen over one's lifetime (Roberts & Mroczek, 2008) and is unlikely to happen in response to (clinical) interventions (Roberts et al., 2017). The one-standard-deviation change in personality is on par with the effect of age, and often much less than the effect of education, ideology, religiosity, race, and region. Likewise, in terms of voter preference in the ANES data, a one-standard-deviation shift in open/

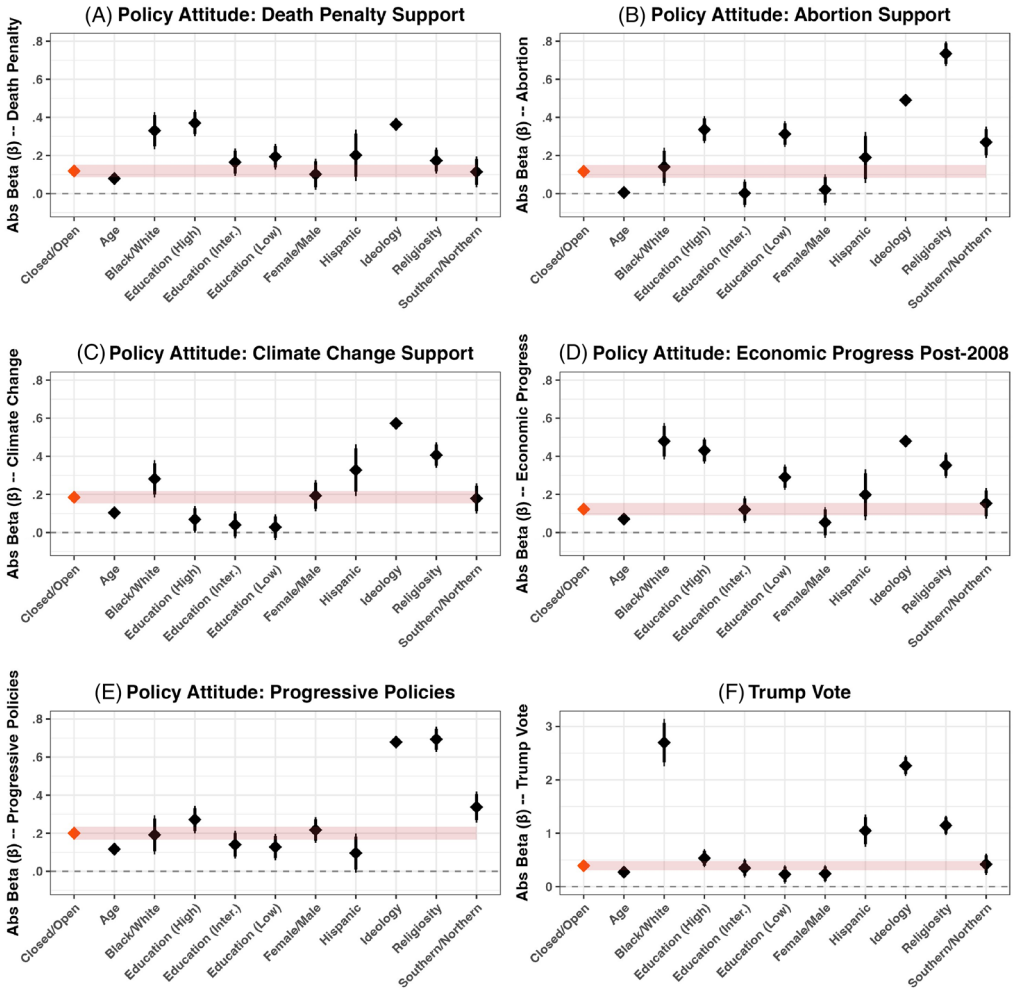

FIGURE 5 ANES 2016: Absolute Effect of Personality and Other Predictors on Political Outcomes. Predicted values based on OLS regression (policy attitudes) and logistic regression (vote preference). (A–D) Single-item measure of support for the policy that was rescaled to be between 0 and 1 with 1 being more (or full) support of the policy: so more conservative with the exception of the economy (full support is more liberal). (E) Six-item measure of support for progressive policies that was scaled and centered. (F) Binary vote measure (0 = Clinton, 1 = Trump). Model specifications and regression outputs, with all frequentist inferential statistics and the sample size per model, are provided in Online Supporting Information.

closed personality represents a change in vote share for Donald Trump of roughly 9 percentage points. While this represents a larger effect relative to policy attitudes, it still amounts to less than a quarter of a standard-deviation shift in voter preferences. Further, this impact is likely to be inflated since it was voting preference for Trump, a highly divisive and polarizing politician, as the effect was less pronounced in terms of voting preference for Hillary Clinton. Taken together, we caution against being too optimistic about these effects as they are modest. Further, when we compare them to the effects of other variables at our disposal in these datasets—in both the United States (ANES) and the Netherlands (LISS)—personality often had equal if not smaller effects compared to the other variables that we regressed on the political attitudes. If anything, we believe the figures provided may overemphasize the effect of personality, as it depicts a one-standard-deviation change in open/closed personality, which is twice the change observed between the most liberal Democrat and the most conservative Republican.

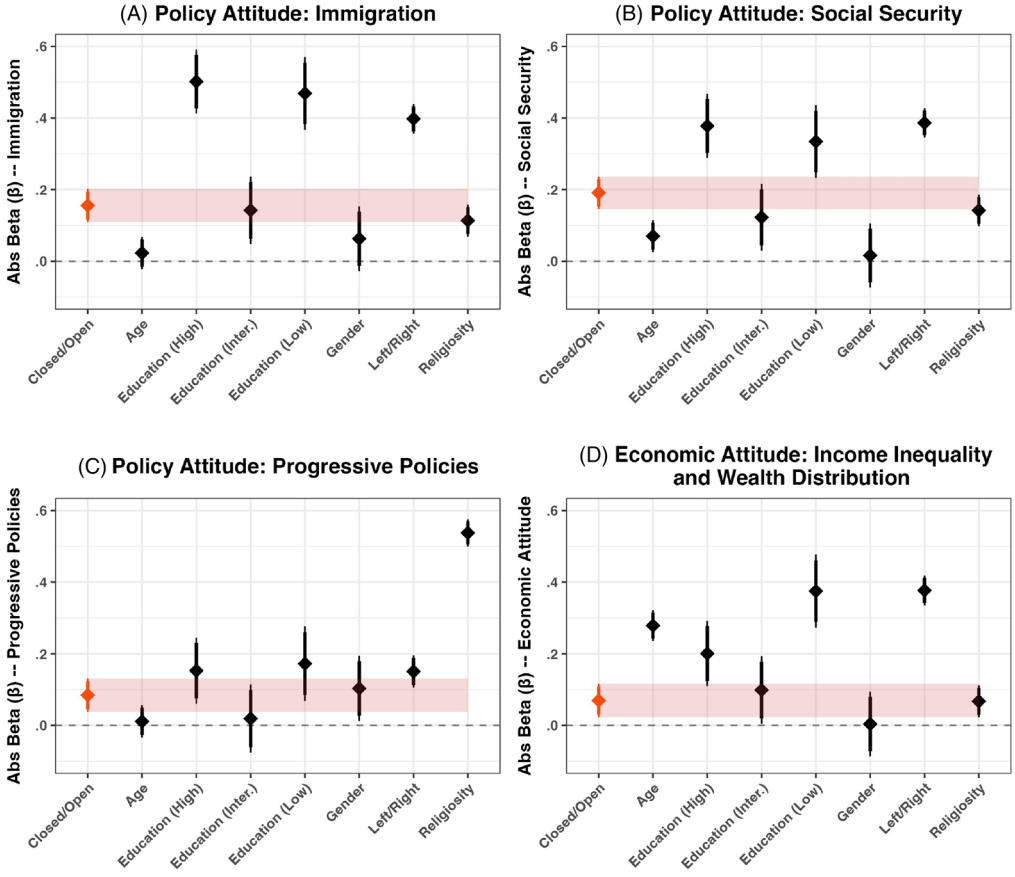

FIGURE 6 Dutch LISS panel: Absolute Effect of Personality and Other Predictors on Political Outcomes (LISS). Predicted values based on OLS regression. All outcome variables were rescaled to be between 0 and 1 with 1 being more (or full) support of the policy. (A) Four-item measures of support for proimmigration policies. (B) Four-item measures of support for pro-social security policies. (C) Four-item measures of support for progressive policies. (D) Four-item measures of support for economic policies. Model specifications and regression outputs, with all frequentist inferential statistics and the sample size per model, are provided in Online Supporting Information.

To conclude, the effects in the IAH literature are small when comparing to other broader literature on personality and when comparing it to other correlates of political attitudes. Going forward, we suggest that scholars define the smallest effect size of interest (Lakens, 2022) in the IAH literature, sufficiently power their studies to reliably detect this effect size, and evaluate their empirical evidence against this benchmark. Moreover, in communicating their findings in research papers and to the broader public, scholars should emphasize the relative importance of personality in "explaining" variation in political attitudes (on the complexities of doing this, see McDermott, 2015).

DISCUSSION

In sum, although some of the meta-analytic evidence supports the "classical" ideological asymmetry hypothesis, meta-analyses are only as good as their inputs. On the grounds of internal,

external, and construct validity as well as substantive importance—the key markers of social scientific research—these studies have significant weaknesses.

What about more complicated causal models?

Up to this point, we have focused on exploring the direct associations between personality and ideology. However, a long line of research recognizes that personality traits interact with other factors that shape attitudes and behaviors (e.g., Mischel & Shoda, 1995). For instance, Mondak and Halperin (2008) argued that a "full attention to the possible political significance in [personality] traits will require expanded exploration of possible indirect effects" (p. 339). In particular, researchers have suggested that the association between personality and an outcome variable is moderated by some third variable.

One popular model, known as the "threat-constrained model," proposes that personality traits are more likely to predict behavior when situational factors do not inhibit individual tendencies, such as extreme social norms or chronic perceptions of the social world (Sibley et al., 2012). Sibley and colleagues found support for this model in their study, which showed that the relationship between openness to experience and political orientation weakened as the level of systemic danger in a nation increased. When the threat level was low, the association between openness and conservatism was negative, but when the threat level was high, the association became insignificant (Sibley et al., 2012). Malka et al. (2014) also provided evidence for the "threat-constrained model," reporting a stronger association between the need for structure and right-wing political preferences in countries with higher levels of human development.[6]

The threat-constrained model and other studies examining the interaction between personality and environment implicitly assume that personality and environment are independent of one another, allowing the environment to be used as an exogenous moderator of the personality-ideology relationship. However, these models overlook the possibility that personality may influence the environment we find ourselves in or that the environment may shape our personality. A reading of the personality literature led us to conclude that this assumption is likely not met.

Personality, for instance, varies meaningfully and substantially between and within countries. Data from 56 countries showed that people on from East Asia and South America had a statistically significant different level of openness to experience compared to those that live in other parts of the world (Schmitt et al., 2007). There is also significant variation within countries, and even within cities (for a recent discussion of this literature, see Rentfrow, 2020). For instance, people who live in rural areas tend to have lower levels of openness to experience (Atherton et al., 2023).

The "personality-environment-fit hypothesis," which suggests that individuals are likely to select environments that match their personality traits is one possible explanation for these regional and country-level differences (Holland, 1997; Snyder, 1983). As Rentfrow (2020) explains: It is "reasonable to expect individuals with similar profiles to share the same preferences and selectively migrate to particular types of environments" (p. 166). There is empirical work that supports this claim. Those open to experience have a higher intention to migrate within (Campbell, 2019) and emigrate (Canache et al., 2013). In fact, it seems that those higher on openness and extraversion live in urban areas that are culturally diverse (Jokela, 2009; Jokela et al., 2008) because these "areas provide the stimulation that curious and sociable people crave" (Rentfrow, 2020, p. 166). At the same time, those higher on agreeableness are less likely to move and live near their family (Jokela, 2009; Jokela et al., 2008). An experience sampling study also shows that those higher in extroversion prefer recreational environments more than introverts (Diener et al., 1984). Along these lines, Oishi et al. (2015) found that those higher in extraversion

[6]Other studies condition personality-politics associations on other contextual factors (Ackermann, 2017; Ackermann & Ackermann, 2015; Armendáriz Miranda, 2022; Fatke, 2017).

preferred places that offered opportunities for social interaction such as a beach compared to introverts who preferred the (social) isolation of mountains. Hence, psychological dispositions may influence the geographical area where someone lives, and different regions vary, systematically, in various objective indicators of threat. For instance, people living in rural areas may experience higher levels of economic insecurity due to a lack of job opportunities and lower wages.

Another line of research demonstrates that the association between disgust sensitivity and political attitudes depends on the issue. Individuals who more easily feel disgust are more likely to support tough immigration policies, but they are also more likely to support policies that increase public health measures (Aarøe et al., 2017; Kam & Estes, 2016). Consequently, disgust sensitivity does not appear to push people in a uniformly conservative direction, but rather toward supporting protectionist policies from both the left and right.

A parallel line of research (including much of our own) theorizes that the relationship between psychological traits and economic ideology is conditioned by political engagement (Malka et al., 2014) or other variables (Bakker, 2017).[7] For instance, Malka et al. (2014) and Johnston et al. (2017) theorized that those higher on the needs for security and certainty hold more left-wing economic ideology for the security it offers. But this association is weaker (or flips direction) as political engagement increases and people rely on cues from elites (who, in many countries, tie together right-wing economic conservatism with right-wing cultural conservatism).

Like the literature on personality × environment, this literature implicitly assumes that engagement is unrelated to personality. However, Bromme et al. (2022) showed that the meta-analytic correlation between openness to experience and political interest (a key indicator of engagement) is $r = .17$ (95% CI: .14, 20). This correlation is as large as the meta-analytic correlation between openness and conservatism (Osborne et al., 2022; Sibley et al., 2012). Also, the correlation between conscientiousness and political interest was of similar size ($r = .07$; 95% CI: .05, .09) as the correlation between conscientiousness and ideology (Sibley et al., 2012). The evidence is not limited to the Big Five. Other indicators that have been central in the IAH literature have been positively correlated with political interest and political knowledge, such as (but not limited too) authoritarianism (Federico et al., 2011; Guidetti et al., 2017), need for closure (Federico & Ekstrom, 2018), and conservation values (Malka et al., 2014). Further adding to the evidence that personality and engagement are not independent from each other comes from twin studies. Using two samples of twins from the United States, Weinschenk and Dawes (2017) conclude that "most of the relationship between personality and political interest can be explained by the same set of genes" (p. 475) To summarize, the size of the association between personality and indicators of engagement seems as large as the size of the association between personality and ideology. As such, it seems a strong assumption to treat engagement as an independent moderator of the personality-ideology relationship.

Causal mechanisms

In trying to explain the link between psychological dispositions and ideology, scholars often turn to mediators. Core values, for instance, have been proposed to mediate the association between personality and ideology (Caprara et al., 2006). It is tempting to conceptualize a mediation effect, but it requires a strict causal ordering of the concepts of interest. Recent studies question whether psychological dispositions are causally prior to ideology (Bakker et al., 2021; Hatemi et al., 2019; Luttig, 2021; Sidanius et al., 2013; Smith et al., 2017, but see Engelhardt

[7]Other studies condition the association of personality with other political variables on both observed factors and suffer from the same problem (Mayer & Nguyen, 2021).

et al., 2023). Moreover, and equally important, it is extremely challenging to identify valid estimates of mediation (Bullock et al., 2010).

Experiments in the IAH literature that would like to study causal mechanisms can also lead to biased estimates. For instance, one could study which mediator M mediates the effect of treatment (experimentally manipulated) on ideology. Such a study will lead to biased estimates as controlling for the mediator leads to posttreatment bias (Montgomery et al., 2018): Any effect between the mediator and the outcome variable (ideology) could be explained by unobserved variables Z. By controlling for the mediator, scholars also remove the unbiasedness of the randomization of the experimental factor (in this example threat) leading to biased treatment effects (Montgomery et al., 2018). Imai et al. (2010) have proposed relying upon sensitivity analyses to assess to what extent the mediation analysis biased for unobserved confounders. While this gives scholars an idea about the extent to which their estimates are biased, researchers must continue to make strong assumptions about the causal order of the mediator and the outcome variables. A design-based approach where a mediator is manipulated is, however, the solution to avoid bias (Bullock & Green, 2021).

Toward a new theoretical model of the IAH

In the original model, which we graph in Figure 7, individual differences in psychological dispositions lead people to gravitate toward certain political preferences because these preferences match their psychological needs. We think it is time to update the classical model in light of the discussion in this article up to this point. We introduce the updated model in Figure 8.

Our updated model takes up recent calls for more research across more contexts that can assess when and for whom under which conditions the association between psychological indicators and ideology would align with the IAH (Acosta & Kemmelmeier, 2022; Costello et al., 2022; Federico & Malka, 2023; Haas, 2020). As a consequence, the association between individual differences and political preferences is moderated by both individual (e.g., sophistication, income, etc.) as well as contextual moderators (e.g., geography, political communication, etc.). We, however, extend this model in a few important ways.

First, building on recent research, our model allows causal effects to go in both directions (Bakker et al., 2021; Hatemi et al., 2019; Luttig, 2021; Sidanius et al., 2013; Smith et al., 2017); the reciprocal effects are small, but in these preliminary studies the effect of ideology on personality is roughly of the same effect size as the effect of personality on ideology. People's political preferences can shape their individual differences because people want to justify their group membership or reduce cognitive dissonance (Ludeke et al., 2016). Again, the path from political preferences to individual differences could be moderated by individual (e.g., group identity, sophistication) as well as contextual (e.g., the amount of polarization in a country) moderators. Second, we allow individual differences to influence both individual-level and contextual moderators.

We acknowledge that this updated model does not result in a "simple" model. Yet we think the model is more in line with the findings that have started to populate the IAH literature and

FIGURE 7 Stylistic model of the classical IAH model.

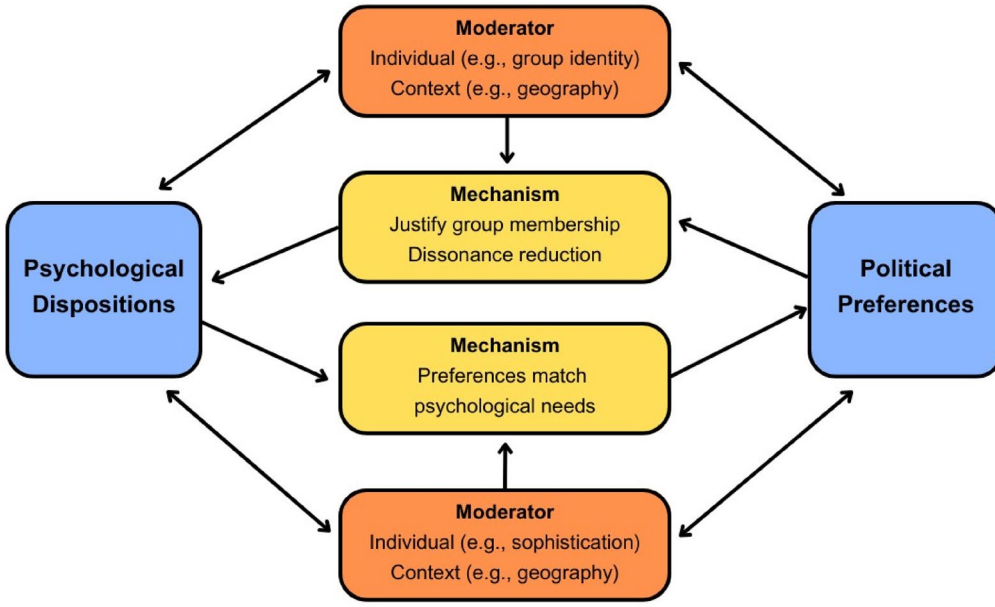

FIGURE 8 Stylistic model of the updated IAH model.

are supported by our DAGs and simulations. Studying our updated model won't be easy but it will get us closer to the understanding of the dynamic and complex interplay between individual differences and ideology. In the next section, we outline a few steps scholars can take to study the updated IAH-model.

In addition to specifying these various causal pathways, we also believe that it is important for future research to consider whether the association between psychological dispositions and ideology is curvilinear as opposed to linear. The "ideological extremity hypothesis" stands as an important alternative to the IAH (Brandt, Reyna, et al., 2014; Zmigrod, 2020, 2021, 2022), arguing that negative psychological predispositions, such as rigidity and threat sensitivity, lead people to adopt extreme and dogmatic political attitudes on either the left or the right. This alternative hypothesis is not new. Tetlock (1984), for instance, found that members of the British House of Commons who were at the ideological extremes were more rigid (as measured with low levels of cognitive complexity) compared to moderate politicians. Recent work also offers some evidence for the ideology extremity hypothesis. Costello and Bowes (2023) found in six online samples in the United States that those on the ideological extremes scored higher on absolute certainty—a measure capturing the degree to which people think their own political beliefs are correct. A series of studies by Zmigrod add further evidence to the ideological extremity hypothesis. Specifically, Zmigrod, Rentfrow, and Robbins (2019) find that cognitive inflexibility is positively associated with extremist attitudes and general dogmatism (Zmigrod, Zmigrod, et al., 2019). In another study, Zmigrod et al. (2020) use three different behavioral measures of rigidity and find that those with the most extreme partisan positions, both on the left and right, showed the highest levels of rigidity when comparing them to more moderate partisans on political independents. Of course, this research needs to be replicated in different samples and in different locations before we accept the ideological extremity hypothesis. Our point here is that researchers should actively consider this possibility in future research.

Recommendations to study the updated IAH model

The IAH may or may not be correct, but the underlying data is limited. Collecting more of the same type of data will not get us closer—we need new models, measures, and methods. Implementing the following recommendations may get us closer to the answer.

Adopt design-based and machine-learning approaches

The majority of the studies in the IAH literature continues to rely upon cross-sectional evidence (see Federico & Malka, 2018; Remmel & Mondak, 2022). We are not convinced that more research using similar research designs will advance our understanding of the nature of ideology and the role of psychological dispositions. As we explain above, endogeneity and spuriousness are serious threats to the IAH literature. To study our updated IAH model, we need more design-based studies with an emphasis on identifying causation (McDermott, 2002). We hope to see more diverse study designs utilizing (survey) experiments that manipulate contextual inputs or natural experiments, and so forth. For example, Bakker et al. (2021) are able to get respondents to change their self-reported personality based on different experimental primes. However, it's not clear from that design whether personality changed or merely someone's reported personality. In another design-based example, (Kam & Estes, 2016) activated disgust sensitivity by exposing people to more or less disgust-evoking language. Smelling ginger also reduced disgust sensitivity (Tracy et al., 2019). Researchers have also successfully manipulated reported personality traits, such as openness, extraversion, and neuroticism, in the lab (Hotchin & West, 2022; McNiel & Fleeson, 2006; Tracy et al., 2019). While it's not clear that we can actually change psychological predispositions in the lab, experimental designs can prime different predispositions, change, and weaken or strength their effects on outcomes or influence the correlations central to the IAH.

Obviously, panel studies could be useful here as well, but scholars need to be mindful about the limits of this design (Vaisey & Miles, 2017) and the ongoing discussions about the different specifications of panel models (Zyphur et al., 2020). Another way forward is to adopt a lifespan approach where repeated measures of personality and political attitudes are measured from adolescence until adulthood. Such an approach better takes into account the fact that personality and political attitudes are malleable, especially in puberty and early adulthood. Moreover, such an approach could be used to study how situational triggers might affect the interplay between psychological dispositions and political attitudes (e.g., De Neve, 2015) and more broadly try to disentangle the effects between the environment and deeper laying dispositions (and even genes) (McDermott & Hatemi, 2014).

Additionally, researchers should explore the potential of machine learning (ML) in enhancing psychological research, particularly by shifting the focus from purely explanatory models to predictive accuracy (Yarkoni & Westfall, 2017). First, researchers should aim not only to explain the correlation between certain personality traits and political inclinations but also to predict an individual's political stance based on their personality. Regularization and cross-validation become essential in this context, acting as a safeguard against overfitting and ensuring the model's validity across diverse datasets. Second, the comparative capabilities of ML also allow for an analysis of which personality elements are most predictive of political beliefs. Given the intricate nature of personality and politics, advanced ML models, including deep learning (i.e., neural networks), might be apt for capturing subtle patterns in vast datasets due to their ability to model intricate patterns. They also often do not make strong assumptions about the underlying data distribution or the relationship between variables. And finally, while certain ML models have a "black box" reputation (Elhai & Montag, 2020), methods like decision trees can offer more interpretable results, highlighting how particular personality

dispositions influence political attitudes. In essence, by intertwining machine learning with a predictive focus, research that links psychological dispositions to political attitudes can achieve heightened accuracy, efficiency, and resilience. We would like to point readers to the work by Zmigrod and colleagues (2021) as an example of how to use more advanced computational models in this literature.

Carefully consider model specification

It is very difficult to correctly specify a regression models based on cross-sectional survey data. For instance, some have claimed a causal relationship between openness and political engagement (Mondak, 2010). While the interaction between the two variables is central to various models of the IAH (Malka et al., 2014), including both in a regression model may introduce posttreatment bias into the estimates if the outcome is also downstream from political engagement. Scholars could use multiverse techniques (Steegen et al., 2016), wherein random subsets of covariates are included in the model in order to test whether the correlations in the basic model are sensitive to the selection of controls (see Pipal et al., 2024, for an application of the multiverse approach on the [lack of an] association between ideology and the tone of politicians' speech).

At the same time, any cross-sectional correlation may be spurious. One way of gauging the sensitivity of results is evaluating how strong a potential confounder needs to be to explain the relationship between psychological predispositions and political outcomes (Cinelli et al., 2020; Cinelli & Hazlett, 2020).

Ultimately, cross-sectional regressions are limited, and a design-based approach allows researchers to, for example, gain causal control over moderators of interest is needed, such as survey experiments in which a moderator is activated or suppressed, or a natural experiment (e.g., Larsen, 2022).

Define and justify the effect size of interest

We have shown that the statistical power of existing studies might be too low for some specific subsets of studies in the IAH literature. A first, obvious, suggestion is to urge scholars to design studies that are sufficiently powered using a priori power analyses to reliably detect an effect of interest. However, an additional step is needed: Scholars should define the smallest effect size of interest (SESOI), design studies to be sufficiently powered to test the SESOI and evaluate the evidence based upon the SESOI.

Design better theories

We are the first to acknowledge that our updated theoretical model in Figure 8 is only a starting point. It tries to grapple with the complexities that we outlined. Yet, we encourage political psychologists to take the theory further. We see multiple avenues.

First, the literature needs to empirically grapple with the fact that people function in a context. This is already happening (Brandt et al., 2021; Haas, 2020; Malka et al., 2014; Mondak, 2010; Sibley et al., 2012). Yet, at the same time, our DAGs show that the interaction between personality and the environment could potentially be complex, both theoretically and empirically. But if we want to get closer to understanding how psychological dispositions matter for politics, we need more theoretical development in how psychological dispositions cause people to select into politically relevant social environments, how psychological dispositions

interact with the social environment, and the reciprocal effect of the environment on these psychological dispositions.

Second, it could potentially be fruitful for scholars to acknowledge that there are also other (and perhaps more efficient) avenues for people to meet psychological needs that do not require holding particular political beliefs. The IAH model seems like it may only apply to a relatively small subset of politically active people living in a particular context: people living in western, diverse, individualistic cultures and in a context with rapidly evolving social mores. Yet, this is only a subset of the world (Henrich et al., 2010). Studies in other contexts are highly needed (e.g., Beattie et al., 2022; Fatke, 2017).

Third, we should consider how political institutions may upregulate or downregulate the link between psychological dispositions and political attitudes. The modern nation state, for instance, creates situations that are relatively novel in the course of human history. Governments regulate many aspects of people's lives—the food that people eat, the education that people's children receive, and so on—making political ideology as we define and measure it today a modern construct. Consequently, it seems unlikely (although not impossible) that deep-seated psychological dispositions that developed during human evolution in the distant past would have a self-evident influence on people's attitudes toward the kinds of macroeconomic and macrosocial policies that modern governments create. Political institutions, such as party systems, may play a crucial role in how politics and psychological predispositions interact.

The study of personality and politics is one of the oldest and, at least in terms of scholarly attention, central questions for political psychology. This essay should not be read as an argument that this attention has been misplaced. Instead, we urge scholars in this field to stop and reconsider whether existing methods get us closer to understanding the interplay between psychological dispositions and political attitudes.

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