

How intellectual humility relates to political and religious polarization

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ABSTRACT

Intellectual humility (IH) is related to less political and religious polarization, so IH may help shed light on polarization broadly. That said, IH-polarization relations may differ depending on the belief domain or identity in question, which in turn raises important implications for applied work aimed at reducing polarization. Here we simultaneously examined political and religious affective polarization in relation to IH. Across belief domains (politics and religion) and identities (Republicans, Democrats, atheists, Christians), IH was consistently related to less affective polarization. These relations tended to remain significant even when controlling for belief strength. There was limited evidence, however, that IH statistically protected against variables that predict more polarization (e.g. moralization of beliefs). Altogether, these findings highlight pressing directions for future research that can uncover the constellation of variables that might mitigate polarization in those most likely to be polarized.

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Introduction

When it comes to politics and religion, polarization—which refers to entrenchment across ideological lines, resulting in two groups who disagree with, and are distanced from, each other (Abramowitz, 2021)—is alive and well in the United States (Perry, 2022; Pew Research Center, 2022b). Affective polarization – the tendency to both disagree with and dislike the outgroup (Iyengar et al., 2019) – has become especially problematic (Pew Research Center, 2022b). In 2019, for example, approximately 50% of surveyed Republicans and Democrats reported that they perceive the opposing side as ‘evil’ (Kalmoe & Mason, 2019). And in 2022, nearly 17% of hate crimes were religiously motivated (Federal Bureau of Investigation, 2022). Not only are political and religious polarization widespread, but they also tend to go together, with political polarization increasing religious polarization and vice-versa (see Perry, 2022). Religious identity and commitment are intertwined with political stances on cultural issues (e.g. abortion, same-sex marriage) and the level of political polarization on these issues (J. Castle, 2019; J. J. Castle & Stepp, 2021). For example, the strongest opponents of legalized abortion are those who are politically conservative *and* religiously committed (Pew Research Center, 2022a).

Perhaps it may come as no surprise that research has become increasingly dedicated to identifying ways to reduce polarization (e.g. Voelkel et al., 2023). A broad theme has emerged from this literature: effective depolarization strategies tend to center on processes such as identifying and correcting misperceptions about the outgroup and engaging in positive intergroup contact (e.g. Hartman et al., 2022). These strategies may be most effective when addressing both political and religious polarization rather than just one belief domain in isolation. For example, appealing to shared political *and* religious identities across social groups may be most effective for reducing polarization compared with appealing to just one shared identity (see Hartman et al., 2022).

One construct that directly mirrors successful depolarization strategies and, as such, may be a particularly effective vehicle for understanding polarization is intellectual humility (henceforth, IH). IH refers to the tendency to recognize one’s intellectual limitations (see Porter et al., 2022). Although there are multiple conceptualizations of IH (Porter et al., 2022), one perspective suggests that IH is multidimensional, including a blend of metacognitive, relational, and emotional features (Krumrei-Mancuso & Rouse, 2016). IH comprises features such as acknowledging that others may have more

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knowledge than oneself, being willing to revise one's beliefs, respecting others' who hold different viewpoints, and being able to separate one's ego and identity from one's beliefs (Krumrei-Mancuso & Rouse, 2016). When considering these features of IH in conjunction with successful polarization interventions, it seems that IH would be related to less polarization. That is, IH may allow people to recognize that they are wrong in their views about the outgroup, be willing to listen to opposing views, and ultimately interact with the outgroup in a respectful manner.

IH is indeed related to less political and religious polarization. IH is related to more openness toward and tolerance for opposing political (Porter & Schumann, 2018; Stanley et al., 2020) and religious views (Hook et al., 2017; Hopkin et al., 2014), less ideological polarization for politics (Bowes et al., 2020) and religion (Hodge et al., 2019; Leary et al., 2017), less overconfidence about one's political knowledge (Bowes et al., 2024), and more forgiveness of potential political (Bowes et al., 2021; Hodge et al., 2020) and religious offenses (Hook et al., 2015; McElroy et al., 2014; Zhang et al., 2015). IH is also related to less political affective polarization (Bowes et al., 2020; Knöchelmann & Cohrs, 2024; Krumrei-Mancuso & Newman, 2020; Smith, 2023; Stanley et al., 2020) and religious aggression (Van Tongeren et al., 2016).

To our knowledge, existing research has examined *either* political polarization *or* religious polarization in relation to IH. As a result, it is not possible to establish whether IH is related to less polarization across the board or whether IH-polarization relations differ across belief domains (politics and religion) and identities (Republicans, Democrats, Christians, atheists). Clarifying this issue will set the stage for understanding *who* an IH intervention might work for and *what* can be reduced by an IH intervention. If IH is equally related to less political and religious polarization, then it may be an especially promising candidate for understanding polarization susceptibility in general and reducing polarization across belief domains and identities.

As previously noted, political and religious polarization often go together. That said, political and religious beliefs do not always overlap. Unlike cultural political issues, religious worldviews do not tend to influence political stances on non-cultural issues (e.g. military size, distribution of welfare benefits; J. J. Castle & Stepp, 2021). In addition to these issue-level differences, there may also be important differences between politics and religion in terms of their moral and existential weight. Indeed, one can imagine that it may be more challenging to exhibit IH about religious beliefs than about political beliefs (Dormandy, 2018).

After all, religion pertains directly to a host of existential and moral issues including the nature of reality, the meaning of life, what happens after death, how to live a good life, and so on (Hall et al., 2022). As a result, it may be especially challenging to revise one's existential beliefs, as there are serious stakes if one is wrong about their existential worldviews. For a religious individual, their unyielding belief in God may be incompatible with key elements of IH, such as holding one's beliefs tentatively and abandoning one's beliefs if evidence calls to do so (Hill, 2021). Altogether, it may be harder to express IH, in the form of remaining open-minded, engaging in belief revision, and tolerating disagreements (all of which are captured in comprehensive IH measures; Krumrei-Mancuso & Rouse, 2016) about one's religious beliefs compared to one's political beliefs (Hall et al., 2022).

At the same time, individuals can strongly moralize their political beliefs, meaning people view their political beliefs as stemming from core convictions about right and wrong (e.g. Garrett, 2016; Skitka & Morgan, 2014). For instance, people may support their political views by maintaining that they are 'objectively right' or 'the only decent way to think'. This propensity to moralize political beliefs in general contributes to partisan bias, affective polarization, and moral conflict (Garrett & Bankert, 2020; Simonsen & Bonikowski, 2022). Thus, IH might be equally related to less political and religious polarization when comparing politics and religion side-by-side.

It is not only important to examine differences across belief domains but also whether there are differences across belief identities (e.g. between Republicans and Democrats). Looking at political identity, there are psychological differences across party lines, with political conservatives, especially social political conservatives, being more psychologically rigid than political liberals (e.g. Costello, Bowes, et al., 2023; Costello, Zmigrod, et al., 2023). What is more, IH tends to be correlated with identifying as politically liberal (e.g. Bowes et al., 2020). Taking these findings into consideration, it may be that the relations between IH and polarization vary across political identities. There is, however, little evidence for differences in the relations between IH and political polarization across party lines. If anything, IH seems to be equally related to less political polarization and myside bias in Republicans and Democrats (e.g. Bowes et al., 2020, 2021).

Whereas there is evidence pointing to political symmetry in the relations between IH and political polarization, it is unclear whether there are potential differences across belief identities in the relations between IH and religious polarization. Most research on religious

polarization and IH has been conducted on religious individuals, and specifically Christian individuals, examining whether IH helps religious individuals, for instance, to be more forgiving of potential religious offenses (e.g. Hook et al., 2015). In addition, some of this work assesses how Christian individuals perceive other religious individuals, with IH in Christian individuals predicting more tolerance for other religious beliefs (e.g. Hook et al., 2017). Based on the extant literature, it is only possible to conclude that IH predicts less religious polarization in predominately religious samples and when evaluating other religious beliefs. What is unclear is whether IH would predict less religious polarization in religious individuals for the *opposite* belief system, that is, the absence of religion and the belief that God does not exist. Understanding whether IH predicts less polarization against atheists is important, as atheists tend to be the most disliked and distrusted people across cultures (Gervais, 2013).

Along these lines, no research, to our knowledge, has directly examined affective polarization toward religious individuals in atheist individuals (c.f., Van Cappellen & LaBouff, 2022). Because the religiously unaffiliated is a rapidly growing identity in the United States (Pew Research Center, 2024), it is important to ascertain whether and to what extent these individuals are polarized and dislike those who are committed to their religious beliefs. It remains an open question as to whether IH is related to less polarization when believing in God versus not believing in God. Because there are psychological differences between those who believe in God and those who do not believe in God (e.g. thinking styles; Ritter et al., 2014), the relations between IH and religious polarization may vary based on these identities.

Present investigation

Here we aimed to form a clearer understanding of whether IH's relations with less affective polarization are generalizable across belief domains (politics and religion) and belief identities (Republicans, Democrats, Christians, atheists). Because political and religious/irreligious affiliations are becoming increasingly aligned (see Newport, 2023), measuring polarization across these beliefs and identities will provide a rich test of the generality of IH-polarization relations. We used a comprehensive measure of IH (Krumrei-Mancuso & Rouse, 2016) to clarify whether it is equally difficult to tolerate disagreement, remain open-minded, respect different perspectives, and separate one's ego from one's political and religious beliefs.

In line with existing research (e.g. Bowes et al., 2020; Hook et al., 2017), we hypothesized that IH would be related to less political and religious affective polarization. Moreover, consistent with research advancing that belief in God places unique constraints on the expression of IH (Hall et al., 2022), we hypothesized that IH would be more strongly related to less affective political polarization than religious polarization. Although relations may vary across belief domains, there is scant evidence that the relations between IH and polarization vary across belief identities, specifically political identities (e.g. Bowes et al., 2020, 2021). As such, we hypothesized that findings would be consistent across belief identities.

In addition to examining the zero-order relations between IH and polarization, we examined whether IH predicted less affective polarization even when accounting for belief strength. Including belief strength as a covariate allowed us to clarify whether the main effects are robust to controlling for belief strength and whether the relations are driven by low belief strength. IH has been found to be a unique predictor of less political myside bias after accounting for political belief strength, indicating that low conviction is not driving the relations between IH and political polarization (e.g. Bowes et al., 2021). As such, we hypothesized that results from the present investigation would remain significant when accounting for belief strength.

Finally, to further probe into potential differences in the relations between IH and polarization across belief domains, we examined whether IH would statistically protect against variables that predict more polarization. Specifically, we assessed intolerance of uncertainty (e.g. Howell et al., 2019; van Baar et al., 2021), distress intolerance (e.g. Van Prooijen & Krouwel, 2019), and the extent to which participants perceive that their beliefs are central to their identities (e.g. Westfall et al., 2015); these constructs tend to be related to more political polarization, ideological extremity, and religiosity. In addition, IH is strongly related to less intolerance of uncertainty (Leary et al., 2017), and both distress tolerance and an ability to separate one's identity from one's beliefs are baked into definitions and measures of IH (Krumrei-Mancuso & Rouse, 2016). Thus, we hypothesized that IH would statistically interact with these variables such that the relations would be attenuated at higher levels of IH.

Methods

This study was approved by the Emory University Institutional Review Board, and all subjects agreed,

Table 1. Percentage of political and religious/irreligious identities in the sample.

	Christian	Atheist
Republican	93%	7%
Democratic	63%	37%

based on informed consent, to voluntarily participate in the study.

Participants

Participants were recruited via CloudResearch. First, participants completed a screener survey that included demographic questions ($N = 1,000$). To be included in the study, participants had to (a) identify as a Christian or atheist and (b) identify as a Republican or Democrat ($N = 513$). We focused on the contrast between Christians and atheists because Christianity is the predominate religion in America, and we aimed to compare religious belief to irreligious belief. Eligible participants were then sent the survey link to complete ($N = 505$, 98% completion rate). We included two checks for invalid and aberrant responding (see Kennedy et al., 2020).

After removing data from participants who provided invalid or aberrant responses to the data quality checks (6.3% of the data removed), the final sample ($N = 473$; $M_{\text{age}} = 45.18$, $SD_{\text{age}} = 13.13$) was predominately White (85.8%) and female (50.7%).¹ Data from participants who did not identify as Republican or Democratic (selected 'could not choose either party') were not included (2% of the sample). In terms of political identification, 44% of participants identified as Republican,

and 56% of participants identified as Democratic. In terms of religious/irreligious identity, 76% of participants identified as Christian, and 24% of participants identified as atheist. The percentages of combinations of political and religious/irreligious identities represented in the sample are reported in Table 1. Both Republicans and Democrats tended to identify as Christian (93% and 63%, respectively), although there were far more Democratic atheists (37%) than Republican atheists (7%). The percentages of Christian denominations represented in the sample are reported in Table S1.

Procedure

All affective polarization measures were completed twice: once for the political outgroup and once for the religious/irreligious outgroup.² The order of the affective polarization measures was randomized across participants. The order of the other self-report measures (intellectual humility, predictors of polarization) was also randomized across participants.

Measures

Descriptive statistics and internal consistency statistics are in Table 2. Variable distributions can be found on the OSF repository. Intercorrelations amongst measures are reported in Tables S9-S12.

Intellectual humility. Participants completed the CIHS (Krumrei-Mancuso & Rouse, 2016). The CIHS has 22 items on a 1 (*strongly disagree*) to 5 (*strongly agree*) scale. In addition to a total score, there are four dimensional

Table 2. Internal consistency statistics and descriptive statistics for study variables.

	Mean (SD)	α	Skew	Kurtosis
Intellectual Humility				
CIHS	81.95 (12.69)	.91	-.63	1.34
CIHS Ind. Int. and Ego	18.85 (4.91)	.92	-.70	-.04
CIHS Open	20.17 (3.73)	.92	-1.19	2.27
CIHS Respect	24.41 (4.23)	.90	1-.26	2.93
CIHS Lack of Int. Overconf.	18.52 (4.75)	.84	-.09	-.15
Self-reported affective polarization				
Opposing party	.00 (.88)	-	-.37	-.36
Opposing religious group	.00 (.88)	-	.21	-.53
Tangram affective polarization				
Political outgroup	.00 (.96)	-	.30	-1.44
Religious outgroup	-.00 (.92)	-	1.37	1.18
Predictors of polarization				
Distress intolerance	31.69 (13.74)	.96	.69	-.32
Intolerance of uncertainty	35.91 (10.90)	.93	.20	-.38
Centrality of religious identity	51.89 (38.85)	-	-.17	-1.58
Centrality of political identity	61.79 (28.27)	-	-.61	-.60
Moralization of politics	3.62 (.98)	-	-.27	-.65
Covariates				
Political belief strength	77.22 (19.43)	-	-1.26	2.01
Religious belief strength	77.63 (25.72)	-	-1.34	1.06
Atheistic belief strength	88.11 (24.35)	-	-2.62	6.33

CIHS = Comprehensive Intellectual Humility Scale.

scores: *Independence of Intellect and Ego* (e.g. 'When someone disagrees with ideas that are important to me, it feels as though I'm being attacked' [reverse coded]), *Openness to Revising One's Viewpoint* (e.g. 'I have at times changed opinions that were important to me, when someone showed me I was wrong'), *Respect for Others' Viewpoints* (e.g. 'I respect that there are ways of making important decisions that are different from the way I make decisions'), and *Lack of Intellectual Overconfidence* (e.g. 'My ideas are usually better than other people's ideas' [reverse coded]). We examined the correlations between the CIHS dimensions and affective polarization to assess whether relations between IH and polarization varied across metacognitive, relational, and emotional features of IH (Independence of Intellect and Ego [blend of metacognitive, relational, and emotional], Openness to Revising One's Viewpoint [metacognitive], Respect for Others' Viewpoints [relational], and Lack of Intellectual Overconfidence [blend of metacognitive, relational, and emotional]).

Self-reported affective polarization. For all measures of affective polarization, participants were sorted into a condition based on their belief identities. Atheists provided ratings for their perceptions of Christians (and vice-versa), and Democrats provided ratings for their perceptions of Republicans (and vice-versa). Participants completed four self-report measures of affective polarization: (1) willingness to have social contact with the outgroup (see Iyengar & Westwood, 2015), (2) favorable perceptions of the outgroup (see Bowes et al., 2020), (3) feelings toward the outgroup (see Iyengar & Westwood, 2015), and (4) prejudice toward the outgroup (Crawford, 2014). Scores on the self-reported polarization measures were coded such that higher scores indicated more polarization and lower scores indicated less polarization. Items were summed within each measure to generate total scores. These scores were strongly and positively interrelated (r s ranged from .59 to .78). Thus, scores were standardized (because the items on each measure were on different response scales) and averaged to create a composite of political affective polarization and religious affective polarization. A detailed description of the individual polarization measures is in supplemental materials (Supplemental Materials 3) alongside the zero-order correlations between IH and the individual affective polarization measures (Table S3).³

Tangram help/hurt task. Participants completed a validated measure of aggression toward the outgroup: the Tangram Help/Hurt Task (Saleem et al., 2015). Participants were told that they would be asked about



Figure 1. Example tangram help/hurt task participant Tweet. Christian participants were assigned to view this target.

tangram puzzles, with some puzzles being easier to solve than others. Participants were informed that they would assign tangram puzzles to another person participating in the study, and the other participant could win \$35 if they completed 11 tangrams in 10 minutes; if they did not complete all 11, then they would not be compensated.

Participants were then shown either a Tweet or a Facebook profile of an outgroup member who was the supposed other participant (see Figure 1). For the Facebook profiles, a Republican or Democratic individual was depicted and no picture or name was shown, which is consistent with previous research (see Costello et al., 2022). For the Twitter profiles, the same picture (White, male, neutral expression) and name (Sam Townsend) was used for both outgroup individuals, and they depicted a Christian or atheist individual (see Stanley et al., 2020).

Our analyses focused on two variables: the ratio of hard tangrams assigned to the outgroup participant and motives to hurt the participant. Regarding motives to hurt the participant, there were four items on a 1 (*strongly disagree*) to 5 (*strongly agree*) scale; these items were strongly, positively interrelated (r s ranged from .63 to .90) and were summed to create a 'hurt composite'. The ratio of hard tangrams assigned was strongly and positively related to the hurt composite (r s were .71 [religion] and .83 [politics]). As such, we standardized and averaged the composites to generate two affective polarization scores, one for religion and one for politics. The dataset including the other measures from the tangram task (e.g. the ratio of easy tangrams assigned to the outgroup participant) is available on the OSF repository.

Predictors of polarization. Participants completed a 16-item self-report measure of distress intolerance (Simons & Gaher, 2005) and a 12-item self-report

measure of intolerance of uncertainty (Carleton et al., 2007). Regarding identity, participants indicated the extent to which their religious and political beliefs were important to their sense of personal identity on a 0 (*not at all important*) to 100 (*very important*) scale. Participants also completed a 2-item self-report measure of moralization of political beliefs (Garrett, 2016); the average of these two items, which were on a 1 (*not at all*) to 5 (*a great deal*) scale, was computed.

Covariates. Participants provided ratings on a 0 (*not at all*) to 100 (*extremely*) scale for the strength of their political beliefs and how certain they are that their political beliefs are correct; these two items were highly, positively interrelated ($r = .72$), and the average of these two items was computed to form a political belief strength score. Similarly, Christian participants provided ratings on a 0 (*not at all*) to 100 (*extremely*) scale for the strength of their religious beliefs and how certain they are that God exists; these two items were highly, positively interrelated ($r = .71$), and the average of these two items was computed to form a religious belief strength score. Finally, atheists indicated how certain they were that God does not exist on a 0 (*not at all*) to 100 (*extremely*) scale, and this item reflected the irreligious belief strength score.

Results

All analyses were pre-registered (https://osf.io/xrm85/?view_only=84c2fd5229684bf990290863b7c59a8d).⁴

Main effects

The zero-order correlations between IH and affective polarization are presented in Table 3.

Self-reported polarization

Overall, IH was moderately-to-strongly related to less affective polarization. The *Comprehensive Intellectual Humility Scale* (CIHS) total score was strongly related to less affective political and religious polarization. Regarding IH dimensions, Respect for Others' Viewpoints and Lack of Intellectual Overconfidence tended to mirror the CIHS total score in their relations with self-report measures of affective polarization. In contrast, Independence of Intellect and Ego and Openness to Revising One's Viewpoint were relatively weaker correlates and results were not invariably significant.

Tangram help/hurt task

IH was broadly related to less aggression on the tangram help/hurt task. The CIHS total score was weakly to moderately related to less affective polarization for the political and religious outgroups. Relations were generally similar to the CIHS total score and consistent across the CIHS dimensions of Independence of Intellect and Ego, Respect for Others' Viewpoints, and Lack of Intellectual Overconfidence. Openness to Revising One's Viewpoint, however, tended to be the weakest correlate of polarization on the tangram help/hurt task relative to other CIHS dimensions.

Do relations differ across belief domains and identities?

Belief domain

We conducted tests of the difference between dependent correlations to examine whether the correlations between IH and affective polarization were stronger for political or religious polarization. There were 10 comparisons, as we compared the correlations between the political and religious outcomes (self-reported and

Table 3. Correlations between intellectual humility and affective polarization.

	CIHS			CIHS Independence of Intellect and Ego			CIHS Openness to Revising One's Viewpoint			CIHS Respect for Others' Viewpoints			CIHS Lack of Intellectual Overconfidence		
	<i>r</i>	<i>p</i>	95% CI	<i>r</i>	<i>p</i>	95% CI	<i>r</i>	<i>p</i>	95% CI	<i>r</i>	<i>p</i>	95% CI	<i>r</i>	<i>p</i>	95% CI
Self-reported polarization															
Political outgroup	-.27	<.001	-.35, -.18	-.14	.002	-.23, -.05	-.09	.061	-.18, .00	-.30	<.001	-.38, -.21	-.24	<.001	-.32, -.15
Religious outgroup	-.31	<.001	-.39, -.23	-.17	<.001	-.26, -.09	-.23	<.001	-.32, -.15	-.29	<.001	-.37, -.20	-.21	<.001	-.29, -.12
Tangram polarization															
Political outgroup	-.18	<.001	-.27, -.09	-.17	<.001	-.25, -.08	-.04	.403	-.13, .05	-.15	.001	-.24, -.06	-.15	.002	-.23, -.06
Religious outgroup	-.23	<.001	-.34, -.17	-.16	<.001	-.25, -.07	-.11*	.020	-.20, -.02	-.20	<.001	-.28, -.11	-.19	<.001	-.27, -.10

Bold is $p < .001$, italicized is $p < .01$, and * is $p < .05$. CIHS = Comprehensive Intellectual Humility Scale.

tangram) for the IH total score and each IH dimension. The correlations between religious and political polarization tended to be strong and positive (self-report $r = .41$, tangram $r = .43$; see also Table S9). According to two-tailed tests of the difference between dependent correlations (Fisher's r -to- z transformation; Lee & Preacher, 2013), only one result was statistically significant. The relationship between CIHS Openness to Revising One's Viewpoint and self-reported affective polarization ($Z = 2.74$, $p = .006$) was significantly stronger for the religious outgroup ($r = -.23$) than for the political outgroup ($r = -.09$).

Belief identity

We conducted bootstrapped moderation analyses (based on 5,000 samples and with heteroscedasticity-consistent standard errors) using the PROCESS macro in SPSS (Hayes, 2017) to examine whether the relations between IH and affective polarization varied across (1) Christians and atheists and (2) Republicans and Democrats.⁵ There were 40 moderation models, as we compared Christians and atheists to each other (IH total score and dimensions, four affective polarization composites; 20 models), and we compared Republicans and Democrats to each other (20 models). The full output is available on the OSF repository.

There was scant evidence for differences across belief identities. Specifically, just one result was significant ($\Delta R^2 = .01$, $p = .014$): the relationship between CIHS Lack of Intellectual Overconfidence and self-reported affective political polarization was significantly stronger in Republicans ($b = -.07$, $p < .001$, 95% CI = $-.09$, $-.04$) than in Democrats ($b = -.03$, $p = .024$, 95% CI = $-.05$, $-.00$).

Does IH moderate the relations between variables that predict polarization and affective polarization?

We again used the PROCESS macro in SPSS to assess the moderation models. IH was the moderator variable and affective polarization was the outcome variable. Predictors included distress intolerance, intolerance of uncertainty, importance of religion, importance of politics, and moralization of politics. There were 100 moderation models, as we examined each predictor, the CIHS total score and dimensions, and each affective polarization composite separately. These results are available on the OSF repository.

There was little evidence that IH was a significant moderator.⁶ Of 100 moderation analyses, only four were significant ($ps < .05$). All significant results indicated that IH was protective (see Table S4). Simple-

slopes analyses revealed that at higher levels of Independence of Intellect and Ego, the relations between identity salience (politics and religion) and polarization (on the tangram task) decreased or became negative. Further, at higher levels of Lack of Intellectual Overconfidence, the relationship between religious identity salience and self-reported political polarization became negative. Altogether, the relations between identity salience and polarization were attenuated at higher levels of IH (Independence of Intellect and Ego and Lack of Intellectual Overconfidence).

Are the relations between IH and affective polarization robust to covarying for belief strength?

The correlations between belief strength, IH, and polarization are reported in Table S12. IH tended to be weakly related to less belief strength, whereas belief strength tended to be weakly to strongly related to more polarization. We covaried for religious belief strength, irreligious belief strength, and political belief strength (in separate regression models) in the relations between IH and the polarization composites (self-report and tangram). We aimed to clarify whether the main effects were robust to covarying for belief strength. We tested 60 regression models wherein the mean-centered belief strength score was entered into Step 1 of the regression, and the mean-centered IH score was entered into Step 2 of the regression (see Table S5).

Most of the relations between IH and affective polarization were significant even when including belief strength in the model (43 of 60 results). When controlling for religious or irreligious belief strength, IH accounted for an average additional 3% of the variance in polarization, and, when controlling for political belief strength, IH accounted for an average additional 5% of the variance in polarization. Of the relations that were not significant, the majority of the effects were still negative (16 of the 17 non-significant results). Most of the results that were not significant included irreligious belief strength as a covariate (15 of the 17 non-significant results).

Discussion

We found that IH was related to less political *and* religious affective polarization. Most of our results (90%) indicated that there were no differences between political and religious polarization in their relations with IH, and most effects were robust to covarying for belief strength (72%). Moreover, relations were generally

consistent across IH dimensions, suggesting that relations did not differ across metacognitive, relational, and emotional IH features. Although we hypothesized that IH would be more strongly related to less political polarization than religious polarization, there was no evidence for this pattern.

When considering that there were few differences across belief domains (across measures of political and religious polarization), our findings raise the possibility that political polarization and religious polarization may be less separable than originally presumed, at least within the context of IH. That is, people may find it similarly challenging (versus non-threatening) to be intellectually humble about their political and religious convictions. These results are in line with research indicating that people moralize both their religious (e.g. Pew Research Center, 2020) and political views (e.g. Garrett, 2016) and find challenges to their religious and political views to be existentially threatening (e.g. Jost et al., 2003; Van Tongeren et al., 2023).

Most of the relations (98%) between IH and polarization were also consistent across (1) Republicans and Democrats and (2) Christians and atheists. The consistency in relations across Christians and atheists is particularly notable, as comparing belief that God exists to belief that God does not exist is a strong test of polarization. After all, there is no middle ground for these two different worldviews. Because of this lack of middle ground between Christians and atheists, comparing them to each other is different than comparing Republicans to Democrats (who both hold political beliefs). It might be fruitful for future work to compare political and apolitical individuals to clarify the generality of our findings.

Although IH was consistently related to less affective polarization, there was little evidence that IH statistically protected against variables that predict more polarization (4% of the results were significant), including uncertainty intolerance, distress intolerance, identification with one's beliefs, and the tendency to moralize politics. Interestingly, all of the significant results were for identification with one's beliefs and most (75%) were for Independence of Intellect and Ego, raising the possibility that the tendency to separate one's ego from one's beliefs buffers against polarization even if individuals strongly identify with their political and religious views. Still, the overall pattern of results raises the possibility that IH in isolation – and in a cross-sectional context – is not sufficient for mitigating polarization. This finding may not be surprising given that changing peoples' beliefs is a notoriously arduous task, and that attitude

polarization tends to remain stable over time (e.g. Sgambati & Ayduk, 2023).

Limitations and future directions

While this study was the first to assess religious and political polarization side-by-side in relation to IH using a multi-method approach, two broad limitations are worth highlighting: our measurement and sample. With respect to measurement, we only used one measure of IH, the *Comprehensive Intellectual Humility Scale* (CIHS; Krumrei-Mancuso & Rouse, 2016). We used this scale because it assesses a blend of metacognitive, relational, and emotional IH features and afforded the opportunity to examine different IH dimensions in relation to religious and political affective polarization. That said, this IH measure is domain-general, meaning it assesses one's beliefs, attitudes, and opinions broadly. As such, participants can reflect on different beliefs when completing the CIHS, potentially creating variability in how participants respond. In addition, people are unlikely to be invariably intellectually humble across all of their beliefs, so a domain-general IH score can mask important differences between beliefs and issues.

To overcome this limitation, a domain-specific measure of IH can be used (Hoyle et al., 2016). Instead of asking how open one is to changing their beliefs, for instance, these measures ask how open one is to changing their *political* or *religious* beliefs specifically. Similarly, there is a theistic measure of IH designed to assess IH in religious people (Hill et al., 2021). There may be important differences across measures of domain-general and domain-specific/theistic IH, as they encompass overlapping but separable psychological characteristics (Hill et al., 2021; Hoyle et al., 2016). Indeed, politics-specific IH is a stronger predictor of less affective polarization than domain-general IH (Bowes et al., 2021; Knöchelmann & Cohrs, 2024; Smith, 2023). Thus, the relations between IH and affective polarization may be stronger for domain-specific IH, and/or domain-specific IH may mitigate against affective polarization in the presence of variables known to predict it.

There may also be differences in the relations between IH and political and religious polarization when assessing politics-specific and religion-specific IH. For instance, at the within-person level, IH predicts less political hostility only for issues that participants are humble (as opposed to arrogant) about (Smith, 2023). As such, if an individual is humble about their political views but not about their religious views, we would expect to see differences across the two belief domains in the relations

between IH and polarization (see also Stanovich & Toplak, 2019). Altogether, the strength of the relations between affective polarization and IH may vary based on whether the IH measure is contextualized to one's political, religious, or irreligious views and even for specific issues within these domains (e.g. cultural vs. non-cultural political issues; J. J. Castle & Stepp, 2021; Hartman et al., 2022).

As for our sample, we can only make conclusions about affective polarization and IH in the context of (1) Republicans and Democrats and (2) Christians and atheists. It will be important to examine the generalizability of our findings when including other religious and irreligious identities. For instance, Christian fundamentalism is not only related to prejudice against atheists but also prejudice against other religious groups (Altemeyer, 2003). Thus, to fully understand religious polarization in the context of IH, attitudes and feelings toward other religious identities (e.g. Jewish individuals, Muslim individuals), in both Christians and irreligious individuals, should be examined. Other irreligious identities should also be included in future research, given that atheism represents the smallest irreligious group in the U.S. (17% of irreligious individuals); most people who are not religious identify as believing in 'nothing in particular' (63%) followed by agnostic (20%; Pew Research Center, 2024). Because IH is related to certain motives for being religiously unaffiliated (John Marriott et al., 2019), it would be fruitful to investigate IH-polarization relations in other irreligious identities.

In the future, it will also be important to conduct more targeted sampling. We intentionally did not set quotas for recruitment, as we did not aim to compare IH-polarization relations across combinations of belief identities, and we wanted to allow group sizes to reflect what they might be in the real world. In fact, the percentage of atheists in the study was close to what was found in a recent national survey (24% in our study compared to 20% in Pew Research Center, 2024). Nevertheless, we were underpowered to examine differences between atheists and Christians, so future research should ensure balanced sampling across belief identities.

Similarly, political and religious/irreligious identities were confounded in the present investigation, as the vast majority of Republicans identified as Christian (93%). This overlap between belief identities does not necessarily give rise to IH equally predicting less polarization for political and religious beliefs nor does it limit our ability to draw conclusions about the differences between Republicans and Democrats and Christians and atheists. But this overlap limits our abilities to make conclusions about the generality of IH-polarization relations across all possible combinations

of belief identities. Future research aiming to examine IH-polarization relations within combinations of belief identities should ensure adequate recruitment of harder to reach and smaller populations, specifically Republican atheists.

Altogether, our findings point to the possibility that some people are more prone to affective polarization *in general* than others. To establish that there may be a general tendency to be polarized, however, psychological constructs beyond IH should be examined as correlates and causes of polarization. By adopting a comprehensive approach, it may be possible to uncover a 'polarized personality' as has been done for uncovering a 'prejudiced personality' (e.g. Allport, 1954) and general tendencies to be extreme (e.g. Kruglanski et al., 2021). For instance, need for closure, a cognitive style that reflects motives to identify certainty and structure, is theorized to be a foundation for prejudice (see Roets & Van Hiel, 2011) and an antecedent of extremism (e.g. Webber et al., 2018). Need for closure is also theorized to underly political polarization (see Luttig, 2018). Thus, it is possible that IH *in concert with other variables*, such as low need for closure, statistically protects against polarization. Through examining a constellation of individual differences variables, spanning cognitive styles, motivations, emotions, and personality traits, it will be possible to identify and intervene on general tendencies to be polarized.

Building off this possibility, the current results indicate that inculcating the features of respect for others' viewpoints may be a productive path for reducing affective polarization across belief domains. This possibility aligns with research on social contact theory, which advances that interpersonal engagement across social divisions (under certain conditions) can foster effective dialogue (e.g. Pettigrew & Tropp, 2006) and reduce polarization (see Hartman et al., 2022; Wojcieszak & Warner, 2020). Intergroup contact may be a particularly effective way to boost IH. Although the directionality is unclear, correlational research indicates that IH is related to having more politically diverse social groups and regularly communicating with people who hold different political views (Sgambati & Ayduk, 2023). IH is also related to a willingness to engage in political intergroup contact (Knöchelmann & Cohrs, 2024). There could be a cyclical process wherein IH contributes to more diversity of contact and diversity of contact reinforces IH. This mutual reinforcement over time may lead to enduring and generalizable reductions in polarization across beliefs and identities.

In addition, IH interventions may help reduce polarization even for those who strongly identify with their

beliefs, given that we found some evidence that IH statistically protected against polarization in those who strongly identify with their beliefs. Intergroup contact interventions may primarily work for those who do *not* strongly identify with their beliefs (e.g. Thomsen & Thomsen, 2023), so IH could be a key, and (as of yet) unexplored, way to reduce polarization in those with strong epistemic and social commitments to their beliefs. By helping people learn to practice listening to others respectfully and with an open mind, it may be possible to take advantage of social contact theory processes to increase IH and reduce affective polarization across belief domains and levels of belief commitment (see Rodriguez et al., 2019). Indeed, IH interventions promise to provide people with a set of tools to engage with outgroup members in productive and respectful ways and simultaneously capture multiple elements of successful polarization interventions (e.g. hold accurate perceptions of outgroup members, build positive relationships with outgroup members; Hartman et al., 2022).

Conclusion

IH may be a possible antidote for the embittered, emotional battles occurring across ideological groups in contemporary American society, whether the divides are political or religious in nature. At the same time, it is important to consider decades of research indicating that it is difficult to move the needle on peoples' beliefs, especially for important beliefs. Future research should leverage our findings to identify how and why IH predicts less affective polarization and whether IH can be boosted to reduce polarization in those who are already committed to their views.

Notes

1. We used Gignac and Szodorai's (2016) effect size benchmarks for an *a priori* power analysis. We used a two-tailed test with an H1 correlation of .30 (large correlation), an H0 correlation of .10 (small correlation), an error probability of .05, and power of .95. This power analysis indicated that we would need approximately 300 participants. Thus, our sample was sufficiently powered.
2. We also included secondary measures of ideological polarization. These measures are described in Supplemental Materials 2, and their relations with IH are in Table S2.
3. The correlations between the IH total score and affective polarization within different combinations of political and religious/irreligious identities (e.g. Democratic and Christian) are in supplemental materials (Tables S6-S8).
4. Deviations from the pre-registration are noted in supplemental materials (Supplemental Materials 1).

5. In line with the pre-registration, we also provide the output for mean-level differences in study variables across belief identities on the OSF repository.
6. IH was negatively related to all predictor variables (*rs* ranged from $-.02$ [CIHS Openness and moralization of politics] to $-.51$ [CIHS Independence of Intellect and Ego and uncertainty intolerance]). Most predictor variables were positively and significantly related to polarization (*rs* ranged from $.02$ [Importance of religion and tangram religion] to $.44$ [Moralization of politics and self-reported political polarization]). These correlations are in Table S12.

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