

Increases in Intellectual Humility From Guided Conversations Are Greater When People Perceive Affiliation With Conversation Partners

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Abstract

Intellectual humility involves awareness that one's knowledge has limitations and that one's beliefs might be incorrect. Despite documented benefits of intellectual humility, few studies have examined factors associated with long-term changes in intellectual humility. This study investigated whether an intervention focused on guided conversations was associated with increases in intellectual humility and whether these changes were stronger when people perceived greater affiliation with their conversation partner. Participants ($N = 937$) completed an intervention with four guided conversations and reported on their relationship with their partner after each conversation. Intellectual humility was measured before the first conversation, immediately after the last conversation, and 1 month following the last conversation. As hypothesized, intellectual humility increased over time, especially when people perceived greater affiliation with their conversation partner. These findings suggest that intellectual humility interventions with social components may have stronger effects when people perceive greater affiliation with their partners.

Keywords

intellectual humility, conversation, affiliation, interpersonal perception, interpersonal processes

Socrates, one of the wisest figures in Western history, famously claimed that he knew nothing (Plato, 1871). While not everyone is so skeptical, there is merit in understanding the limits of our knowledge. Embracing this merit is the hallmark of intellectual humility, which involves awareness of the limitations of one's knowledge, openness to new information, and willingness to learn from others (Porter & Schumann, 2018).

Intellectual humility has several personal, relational, and societal benefits. Intellectual humility is positively related to prosocial values and tolerance for others' perspectives (Krumrei-Mancuso, 2017; Krumrei-Mancuso & Rouse, 2016; McElroy et al., 2014; Porter et al., 2022; Porter & Schumann, 2018). Those higher in intellectual humility show less aggression when their beliefs are criticized and increased willingness to cooperate with outgroup members (Kross & Grossmann, 2012; Van Tongeren et al., 2016). In addition, peer-rated intellectual humility is linked to responsiveness during conversations about a contentious topic (Meagher et al., 2020).

Psychological Interventions Promoting Intellectual Humility

Given the benefits of intellectual humility, scholars have been interested in psychological strategies that might promote its various aspects. For instance, imagining oneself as a distant observer increases wise reasoning or considering others' perspectives (Kross & Grossmann, 2012). Promoting

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a growth mind-set about intelligence, or the idea that intelligence is not a fixed trait, has also been linked to increases in intellectual humility and openness to others' perspectives (Porter & Schumann, 2018). In addition, recent research indicates that self-affirmation increases intellectual humility during what is typically a heated conversation—a university debate (Hanel et al., 2023).

Interpersonal processes are also associated with increases in intellectual humility and related constructs. In experimental studies, increasing perceptions of responsiveness from one's partner reduced self-serving bias and increased open-mindedness and openness to new information—factors closely related to intellectual humility (Itzhakov & Reis, 2021; Reis et al., 2018). This work aligns with field experiments showing that open dialogue with others, characterized by nonjudgmental behaviors and active listening, may lead people to revise exclusionary sociopolitical beliefs and attitudes (Kalla & Broockman, 2020). Such interpersonal processes—including perceived partner responsiveness, nonjudgmental behaviors, and high-quality listening—have also been associated with willingness to revise beliefs in response to new information across longer periods of time, such as 4 months postconversation (Kalla & Broockman, 2020).

The Present Study

In this study, we extend prior research by exploring whether a psychological intervention involving guided conversations with a peer predicts positive changes in intellectual humility over time and, importantly, whether these changes are stronger when people perceive greater affiliation with their peer. We studied people who participated in four dyadic conversations via the Perspectives program of the Constructive Dialogue Institute (Welker et al., 2023). Perspectives is a digital learning program with modules on psychological research, such as Moral Foundations Theory (Graham et al., 2013) and moral outrage (Crockett, 2017). Pairs had four guided conversations, each focused on the goal of practicing difficult conversations and following a specific norm (e.g., treating one another with dignity and respect, allowing for clumsy conversations).

This longitudinal design allowed us to explore whether people experienced positive changes in intellectual humility and whether these changes were stronger when people perceived greater affiliation with their partner—specifically, when they perceived greater potential for friendship, greater acceptance from their partner, and greater trust of their partner. Consistent with prior research (Welker et al., 2023), we expected that the intervention would generally predict increases in intellectual humility across three measurement phases: before the intervention, immediately after the intervention, and 1 month after the intervention. However, we further hypothesized that higher levels of affiliative perceptions (i.e., greater perceived potential for friendship, partner acceptance, and trust of one's partner)

would predict *even greater* increases in intellectual humility across these phases. In other words, we expected that the effects of the intervention on positive changes in intellectual humility would be especially strong when people perceived their conversation partner as a potential friend and felt accepted by and trusting of their conversation partner.

This prediction—that changes in intellectual humility following the intervention would be moderated by affiliative perceptions of one's partner—builds on evidence that feeling valued reduces people's need to defensively self-enhance by prioritizing their own views and increases people's open-mindedness and awareness of opposing views (Itzhakov & Reis, 2021; Reis et al., 2018). When people feel threatened, they tend to confirm their own viewpoints and dismiss different opinions (Porter et al., 2022). In contrast, when people feel accepted by and trusting of another person, they may become more open to questioning their own viewpoints and more aware and accepting of different opinions. Therefore, we expected that people would be especially likely to show increased intellectual humility over time when they felt accepted by and trusting of new conversation partners and perceived them as potential friends.

We build on past work in three primary ways. One, we study changes in intellectual humility over time, not just immediately postmanipulation (e.g., right after interacting with another person or thinking about another person; Itzhakov & Reis, 2021; Reis et al., 2018). Two, we study whether interpersonal processes with primarily new acquaintances, instead of close relationship partners (Itzhakov & Reis, 2021; Reis et al., 2018), are related to changes in intellectual humility. Three, we extend past work identifying certain interpersonal processes—notably, perceived partner responsiveness, high-quality listening, and nonjudgmental dialogue—as key elements related to intellectual humility and similar constructs. Here, we examine whether other interpersonal processes, all of which fall within the context of perceiving affiliation with others, strengthen the effects of a psychological intervention on changes in intellectual humility over time.

Method

Participants

Participants were recruited by college professors, high school teachers, organizational leaders, and workplace managers using Perspectives. People participated through a college course (86.6% of analysis sample), a workplace (10.8%), a high school or college student group (1.3%), a nonworkplace, noneducational group (e.g., a religious group or professional organization; 0.9%), or a high school course (0.5%). Participants were included in the research if they were at least 18 years old. Because most Perspectives participants are college students and Perspectives is most frequently completed during times of the year that coincide with the beginning of college semesters, we assume that most participants had limited knowledge of each other prior to the program.

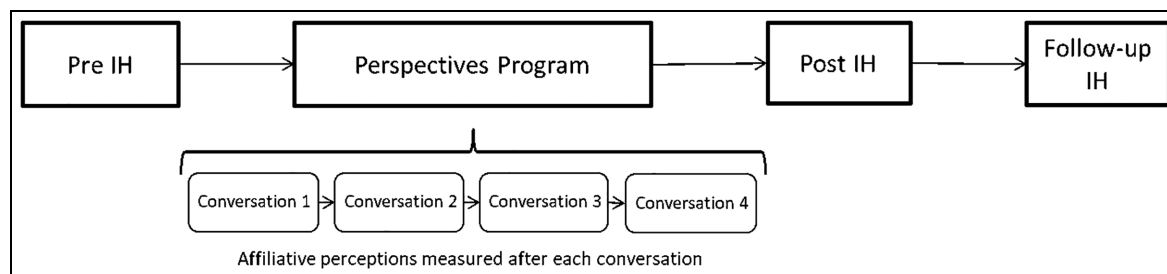


Figure 1. Timeline of Intellectual Humility (IH) Measurements and Conversations in the Perspectives Program

Note. The Perspectives program was composed of lessons in addition to the guided conversations, but we highlight only the conversations here.

At the time of analysis, 6,421 people had completed the component of Perspectives that involved the peer-to-peer conversations examined here. Analysis was limited to pairings that were the same across all four conversations (1,234 participants). Although partners were meant to remain stable, there were logistical reasons for changing partners, such as scheduling. Limiting the analysis to dyads that were the same across all interactions was important given that, analytically, we averaged across the four conversations, creating composite measures of how participants felt about their partner generally. Of these, 937 participants completed at least one measure of intellectual humility and measures of potential for friendship, perceived partner acceptance, and trust of partner after at least one of their conversations (88.7% completed these measures after all four conversations, 8.2% after three conversations, 1.9% after two conversations, and 1.2% after one conversation). We use these 937 participants from 52 different groups (i.e., the same workplace or college course; ranging from 1 to 132 people per group) as our sample.

We did not conduct a formal power analysis for the primary interaction effects prior to conducting our analyses, due to a lack of sufficient information needed to estimate the large number of parameters in a power analysis with a model of this nature (with nonindependent data, nested both within person and within dyad; see Lane & Hennes, 2018). However, because this sample size was adequately powered to detect at least small effect sizes for simple analyses (e.g., to detect small correlations [power = 0.87, $r = 0.10$] and small mean differences using a paired sample t -test [power > 0.99, Cohen's $d = 0.2$], assuming a two-tailed alpha of .05), we pursued our research questions with the sample size available.

For our analysis sample, 62.9% of participants identified as female and 35.4% identified as male; 1.7% of participants identified as neither male nor female. The mean age of participants was 24.0 years old ($SD = 9.3$, $Min = 18.0$, $Max = 73.0$). Participants self-identified their race/ethnicity as White (49.8%), South Asian (13.4%), East or Southeast Asian (10.8%), Multiracial (7.0%), Black (6.9%), Latinx (5.9%), Middle Eastern/North African

(3.1%), or "Other" (1.5%; missing data from an additional 1.5%).

Of these participants, 43.4% identified as progressive (from *slightly* to *very*), 17.7% as conservative (from *slightly* to *very*), 16.8% as moderate, and 2.8% as libertarian. 13.2% of participants did not know or were not political, 4.4% preferred not to say, 1.6% selected *other*, and 0.1% selected *not applicable*. The average political orientation on a scale where 1 is *very progressive* and 7 is *very conservative* was 3.3 ($SD = 1.6$).

Procedure

Participants completed a measure of intellectual humility at three phases: (a) prior to, and usually within 1 day of, starting Perspectives ("pre"; 100%); (b) after, and usually within 1 day of, finishing Perspectives ("post"; 94.4%); and (c) 1 month after finishing Perspectives ("follow-up"; 35.4%; see Figure 1). Additional measures assessed at these phases are reported in Welker et al. (2023). Demographics were assessed prior to Perspectives.

Administrators created random peer pairings using a randomizing application or spreadsheet or paired participants with different backgrounds or viewpoints using knowledge they already had about participants. We did not track which pairing method administrators used.

Regarding conversations, participants were told, "These weekly conversations will provide you with an opportunity to establish relationships with your classmates/colleagues and practice the skills you learned in the online lessons." At scheduled times, participants logged into a web-based platform and completed one of the four guided 30-min conversations. Participants first read expectations, gaining one new expectation for each conversation, while also reviewing the expectations from previous conversations (see Table 1), and selected a specific action for the current conversation's expectation. Then, they were instructed to get to know one another by responding to potential questions (e.g., "What would you love to learn more about, if you had the time?"). Each person was instructed to answer for 3 min. The guided discussion then began, with participants practicing

Table 1. *Expectations and Guided Discussion Procedures for the Four Peer-to-Peer Conversations*

	Conversation 1	Conversation 2	Conversation 3	Conversation 4
Expectations	We will treat each other with dignity and respect, showing that we care about each other's feelings and perspectives even when we don't fully understand or agree.	We will work together to cultivate intellectual humility, a willingness to acknowledge the limits of our knowledge and the possibility of being wrong.	We will welcome clumsy conversations and be forgiving of mistakes.	We'll manage our emotions.
Procedures for Guided Discussion	Partners took turns sharing their values by responding to a series of prompts. Partners paraphrased each other's responses to ensure understanding and asked each other follow-up questions. Finally, partners discussed how their values were similar and how they were different.	Partners selected one of two morally-relevant scenarios to discuss. Partners took turns sharing how they would respond in the scenarios and paraphrasing their partner's responses. Participants then answered questions together about how their backgrounds and values influenced their perspectives.	Partners took turns explaining issues that they felt strongly about. They asked each other guided questions about one another's views and paraphrased each other's responses. Participants then had an open discussion about their views, exploring, for example, what happens when others misunderstand or disagree with those views.	Partners indicated their opinions regarding a variety of morally-relevant issues in order to find one issue on which they disagreed. Partners then took turns explaining their opinions, asking each other guided questions, and paraphrasing each other's views. Finally, partners had an open discussion about their opinions and concluded by discussing similarities and differences in their viewpoints.

concepts they had learned in other parts of the Perspectives program (Welker et al., 2023). Participants took turns describing their own values and perspectives on a variety of situations (see Table 1). On average, conversations took place a week apart.

After each conversation, participants responded to questions assessing potential for friendship, perceived partner acceptance, and trust of partner (see below; Conversation 1: $n = 905$, Conversation 2: $n = 923$, Conversation 3: $n = 908$, Conversation 4: $n = 866$). Although these measures were strongly correlated, we examined them separately because trust, acceptance, and potential for friendship have been treated as distinct theoretical concepts in existing social psychological research (Krueger, Meyer-Lindenberg, 2019; Lehane et al., 2018; Pettigrew, 1997). Additional measures, which did not assess relationship perceptions, were also assessed after each conversation and are listed in the Supplemental Material.

Measures

Intellectual Humility. Participants indicated agreement (1 = *strongly disagree* to 7 = *strongly agree*) with the following two statements selected from the general intellectual humility scale (Leary et al., 2017) at three measurement phases (pre, post, and follow-up): “I question my own opinions, positions, and viewpoints because they could be wrong,” and “I accept that my beliefs may be wrong.” Responses to these statements were correlated: $r(935) = 0.43$ for pre, $r(883) = 0.51$ for post, and $r(330) = 0.38$ for follow-up.

Potential for Friendship. Participants indicated agreement (1 = *strongly agree* to 7 = *strongly disagree*) with the following statement after each of four conversations with their partner: “My conversation partner seemed like someone I could be friends with.” We reverse-coded this item; higher numbers indicate greater perceived potential for friendship. Responses were highly consistent across all four conversations ($\alpha = .85$).

Perceived Partner Acceptance. Participants indicated agreement (1 = *strongly agree* to 7 = *strongly disagree*) with the following statement after each of four conversations with their partner: “I felt like my conversation partner accepted me.” We reverse-coded this item; higher numbers indicate greater perceived partner acceptance. Responses were highly consistent across all four conversations ($\alpha = .80$).

Trust of Partner. Participants indicated agreement (1 = *strongly agree* to 7 = *strongly disagree*) with the following statement after each of four conversations with their partner: “I felt like I could trust my conversation partner.” We reverse-coded this item; higher numbers indicate greater

trust of one’s partner. Responses were highly consistent across all four conversations ($\alpha = .83$).

Analytic Strategy

We averaged affiliative perceptions across the four conversations and used those averages as moderators of changes in intellectual humility. These measures represent how participants felt about their conversation partner on average across their four conversations, which all occurred after the pre measurement of intellectual humility and before the post measurement of intellectual humility. We use a composite measure because we were interested in how perceptions of partners in general (rather than after a specific conversation) might strengthen or weaken the intervention’s influence on intellectual humility across the three measurement periods. In addition, because perceptions of the four conversations did not align temporally with the intellectual humility measurements (see Figure 1), analytically, we needed to examine them as one aggregate measure (Gordon & Thorson, in press). Although responses were highly consistent across all four conversations ($\alpha > .80$), there were significant nonlinear changes in these ratings across conversations (see the Supplemental Material).

We present three primary analyses, each of which predicts intellectual humility from measurement phase (pre, post, and follow-up), one of the affiliative perceptions (potential for friendship, perceived partner acceptance, and trust of partner), and the interaction between measurement phase (as a three-level categorical variable) and the relevant affiliative perception. When the interaction between phase and affiliative perception was significant, we conducted follow-up analyses to examine whether the changes in intellectual humility from (a) pre to post and (b) pre to follow-up were significantly moderated by affiliative perceptions. We report effect sizes as partial- R^2 s (Edwards et al., 2008).

We conducted analyses in SAS 9.4 using PROC MIXED. We specified a random intercept for each group. We used the residual error matrix to adjust for nonindependence in outcomes between measurement phases within-person and for nonindependence between dyad members. For each analysis, we estimated three residual variances (one for each phase); three within-person, between-phase covariances; three between-person, within-phase covariances; and three between-person, between-phase covariances. We report these results in the Supplemental Material.

For each of the primary analyses, we conducted three sets of sensitivity analyses, which are outlined in brief here (see the Supplemental Material for more details). First, when aggregating affiliative perceptions across four conversations, we excluded instances in which participants responded with the same answer for five questions in consecutive order with the same answer format. Second, we incorporated both partners’ age, race, and gender into our models as well as the combination of both partners’ characteristics together. We did this to ensure that any

Table 2. Correlations and Descriptives for Intellectual Humility (at Each of Three Phases) and Affiliative Perceptions (Averaged Across Four Conversations)

	Pre IH	Post IH	Follow-up IH	Potential for friendship	Perceived partner acceptance	Trust of partner
Pre IH	1	.44**	.47**	.06*	.11**	.09**
Post IH	.44***	1	.48**	.21***	.26***	.24***
Follow-up IH	.47***	.48***	1	.22***	.17**	.16**
Potential for friendship	.06*	.21***	.22***	1	.66***	.71***
Perceived partner acceptance	.11**	.26***	.17**	.66***	1	.86***
Trust of partner	.09**	.24***	.16**	.71***	.86***	1
<i>M</i>	5.50	5.89	5.88	6.45	6.74	6.68
<i>SD</i>	1.03	0.96	0.79	0.67	0.42	0.49

Note. IH = intellectual humility.

* $p < .05$. ** $p < .01$. *** $p < .001$.

moderation of changes in intellectual humility by affiliative perceptions existed above and beyond any similarity or matches between partners in demographic characteristics. Third, among participants who identified as progressive, conservative, or moderate, we incorporated both partners' ideology as well as the difference between both partners' ideology into our models. We did this to ensure that any moderation of changes in intellectual humility by affiliative perceptions existed above and beyond any differences or matches between partners in ideology. Results are largely consistent with those in the main text and are reported in the Supplemental Material.

Results

All data and analysis syntax can be found on the Open Science Framework: <https://osf.io/5p3jy/>. Table 2 displays descriptive statistics and correlations for intellectual humility at each of the measurement phases and for affiliative perceptions averaged across the conversations.

Potential for Friendship

Here, we examine whether changes in intellectual humility were moderated by people's perceptions of the potential for friendship with their conversation partner. Intellectual humility varied significantly by measurement phase, $F(2, 325) = 63.73, p < .001, R^2 = 28.2%$, perceived potential for friendship, $F(1, 835) = 31.31, p < .001, R^2 = 3.6%$, and an interaction between phase and perceived potential for friendship, $F(2, 593) = 9.01, p < .001, R^2 = 2.9%$. To the extent that people perceived greater potential for friendship with their conversation partner, they also showed greater increases in intellectual humility from pre to post, $b = 0.21, SE = 0.05, t(899) = 3.91, p < .001, 95\% CI: 0.10$ to $0.31, R^2 = 1.7%$, and from pre to follow-up, $b = 0.20, SE = 0.06, t(470) = 3.16, p = .002, 95\% CI: 0.08$ to $0.33, R^2 = 2.0%$; see Figure 2. Follow-up analyses indicated that changes in intellectual humility (from pre to post and from

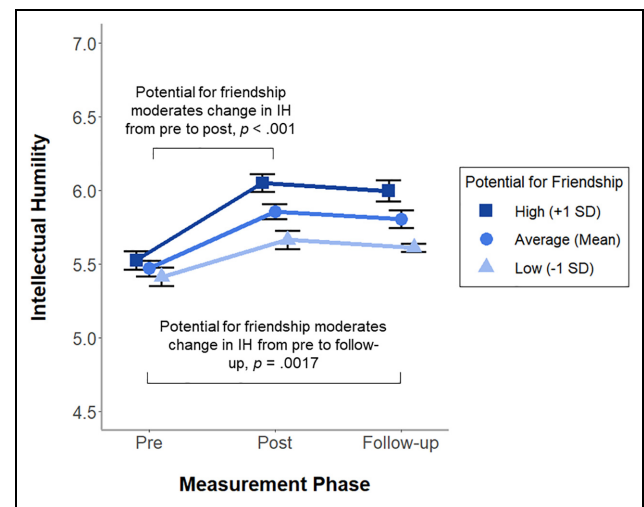


Figure 2. Changes in Intellectual Humility as a Function of the Potential for Friendship With One's Conversation Partner

Note. The figure displays estimated marginal means at varying levels of potential for friendship with one's conversation partner. Bars indicate plus/minus one standard error from each marginal mean. The scale for intellectual humility ranged from 1 to 7.

pre to follow-up) were significantly positive at low ($-1 SD$ below the mean; $b = 0.25, p < .001; b = 0.20, p = .0014$), average ($b = .39, p < .001; b = .33, p < .001$), and high ($+1 SD$ above the mean; $b = .52, p < .001; b = .47, p < .001$) levels of potential for friendship. Thus, although positive changes in intellectual humility were predicted for most participants, these changes were greater when the potential for friendship was higher. Finally, additional tests revealed that perceived potential for friendship predicted intellectual humility at all three measurement phases ($p = .094, R^2 = 0.3%$ for pre, $p < .001, R^2 = 4.1%$ for post, and $p < .001, R^2 = 5.6%$ for follow-up), but it was a stronger predictor of intellectual humility during the post and follow-up phases, relative to the pre phase.

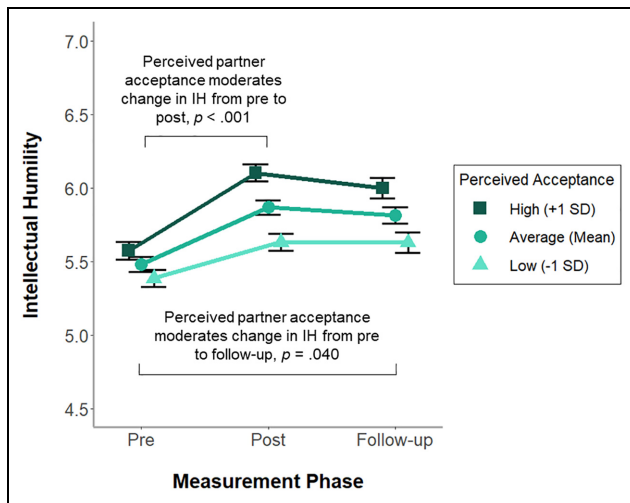


Figure 3. Changes in Intellectual Humility as a Function of Perceived Acceptance by One's Conversation Partner

Note. The figure displays estimated marginal means at varying levels of perceived acceptance by one's conversation partner. Bars indicate plus/minus one standard error from each marginal mean. The scale for intellectual humility ranged from 1 to 7.

Perceived Partner Acceptance

Here, we examine whether changes in intellectual humility were moderated by people's perceptions of how much their conversation partner accepted them. Intellectual humility varied significantly by measurement phase, $F(2, 324) = 63.66, p < .001, R^2 = 28.2\%$, perceived partner acceptance, $F(1, 842) = 41.15, p < .001, R^2 = 4.7\%$, and an interaction between phase and perceived partner acceptance, $F(2, 598) = 8.41, p < .001, R^2 = 2.7\%$. To the extent that people perceived greater acceptance from their conversation partner, they also showed greater increases in intellectual humility from pre to post, $b = 0.34, SE = 0.08, t(898) = 4.08, p < .001, 95\% CI: 0.18$ to $0.50, R^2 = 1.8\%$, and from pre to follow-up, $b = 0.22, SE = 0.11, t(468) = 2.06, p = .040, 95\% CI: 0.01$ to $0.43, R^2 = 0.9\%$; see Figure 3. Follow-up analyses indicated that changes in intellectual humility (from pre to post and from pre to follow-up) were significantly positive at low ($-1SD$ below the mean; $b = 0.25, p < .001; b = 0.24, p < .001$), average ($b = .39, p < .001; b = .33, p < .001$), and high ($+1SD$ above the mean; $b = .53, p < .001; b = .42, p < .001$) levels of perceived partner acceptance. Thus, although positive changes in intellectual humility were predicted for most participants, these changes were greater when perceived partner acceptance was higher. Finally, additional tests revealed that perceived partner acceptance predicted intellectual humility at all three measurement phases ($p = .006, R^2 = 0.8\%$ for pre, $p < .001, R^2 = 6.0\%$ for post, and $p < .001, R^2 = 4.8\%$ for follow-up), but that it was a stronger predictor of intellectual humility during the post and follow-up phases, relative to the pre phase.

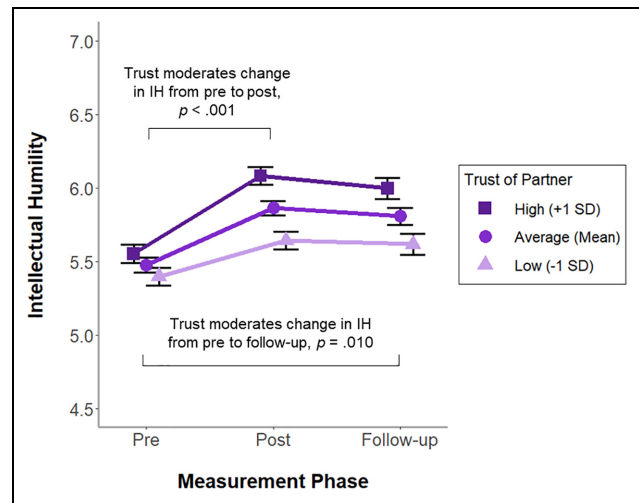


Figure 4. Changes in Intellectual Humility as a Function of Trust of One's Conversation Partner

Note. The figure displays estimated marginal means at varying levels of trust of one's conversation partner. Bars indicate plus/minus one standard error from each marginal mean. The scale for intellectual humility ranged from 1 to 7.

Trust of Partner

Here, we examine whether changes in intellectual humility were moderated by people's trust of their conversation partner. Intellectual humility varied significantly by measurement phase, $F(2, 323) = 64.35, p < .001, R^2 = 28.5\%$, trust of one's partner, $F(1, 821) = 37.30, p < .001, R^2 = 4.3\%$, and an interaction between phase and trust of one's partner, $F(2, 579) = 8.87, p < .001, R^2 = 3.0\%$. To the extent that people perceived greater trust of their conversation partner, they also showed greater increases in intellectual humility from pre to post, $b = 0.29, SE = 0.07, t(880) = 4.11, p < .001, 95\% CI: 0.15$ to $0.43, R^2 = 1.9\%$, and from pre to follow-up, $b = 0.23, SE = 0.09, t(453) = 2.57, p = .010, 95\% CI: 0.05$ to $0.40, R^2 = 1.4\%$; see Figure 4. Follow-up analyses indicated that changes in intellectual humility (from pre to post and from pre to follow-up) were significantly positive at low ($-1SD$ below the mean; $b = 0.24, p < .001; b = 0.22, p < .001$), average ($b = .39, p < .001; b = .33, p < .001$), and high ($+1SD$ above the mean; $b = .53, p < .001; b = .45, p < .001$) levels of trust. Thus, although positive changes in intellectual humility were predicted for most participants, these changes were greater when trust of one's partner was higher. Finally, additional analyses revealed that trust of one's partner predicted intellectual humility at all three measurement phases ($p = .022, R^2 = 0.6\%$ for pre, $p < .001, R^2 = 5.3\%$ for post, and $p < .001, R^2 = 5.4\%$ for follow-up), but that it was a stronger predictor of intellectual humility during the post and follow-up phases, relative to the pre phase.

Discussion

How are interpersonal factors like trust, friendship potential, and acceptance related to intellectual humility? Here, we show that after participating in an intervention with guided dyadic conversations, people experience positive changes in intellectual humility that are especially strong when they perceive greater affiliation with their conversation partner. Specifically, perceiving greater affiliation—the potential for friendship, acceptance by one’s partner, and trust of one’s partner—moderated the extent to which intellectual humility changed over time, from before to immediately after the intervention and from before to 1-month postintervention. As predicted, people showed greater increases in intellectual humility over time when they perceived their conversation partners as potential friends and felt greater acceptance and trust.

The present findings extend evidence that interpersonal processes are tied to intellectual humility and related constructs (Itzchakov & Reis, 2021; Reis et al., 2018). Notably, people’s perceptions of affiliation with a new conversation partner strengthened the effects of an intellectual humility intervention even when people interacted with someone who was not a close other (e.g., a romantic partner or family member). Thus, these results suggest that interpersonal affiliation can help strengthen changes in intellectual humility, even via a new social connection.

Implications and Future Directions

Affiliative perceptions might have strengthened the intervention’s effects on intellectual humility through several processes. One, participants who affiliated with their conversation partner and experienced positive perceptions may have been more engaged and invested in the intervention. This could be a causal relationship, where greater affiliation led to greater engagement. Greater engagement with the expectations and procedures for the conversations might have then strengthened their influence on intellectual humility. If so, psychological interventions may benefit from social components where people create connections with others. Two, it is possible that affiliative perceptions reflect behavioral processes, like responsiveness and high-quality listening, which can increase people’s intentions to behave in an open-minded manner and reduce people’s perceptions that their initial attitudes are valid (Itzchakov et al., 2018; Itzchakov & Kluger, 2017, 2017; Itzchakov & Reis, 2021). If this is the case, then the combination of the intervention plus these behavioral processes may have had an additive effect on changes in intellectual humility. Future work might examine whether these behaviors occurred and whether the structure of the guided conversations had a causal influence on them. For example, did the intervention cause these behaviors to occur more frequently than would otherwise be the case? Or did the behaviors naturally emerge for some dyads more than others

and have a strengthening influence on the intervention overall? Future research might consider these possibilities in an effort to better understand the ways in which interventions and interpersonal processes are tied to intellectual humility.

Future work might also explore additional moderators of the extent to which guided conversations boost intellectual humility. We found some evidence for the extent to which people are ideologically similar to their conversation partner, though it was not consistent across phases: ideological dissimilarity between partners was not associated with changes in intellectual humility from pre to post but it was significantly, positively associated with changes in intellectual humility from pre to follow-up (see the Supplemental Material). This evidence suggests that these guided conversations lead to increases in intellectual humility that may actually be *stronger* when people disagree with one another.¹

One remaining question is whether intellectual humility positively predicts interpersonal processes. Here, we examine whether interpersonal processes strengthen changes in intellectual humility in response to a psychological intervention (which aligns with work examining related constructs; see Jarvinen & Paulus, 2017), but other work has also demonstrated that intellectual humility can influence interpersonal processes. For example, state intellectual humility has been associated with positive feelings and increased closeness toward others following interpersonal conflict (Peez & Grossmann, 2021). In this study, we found no associations between initial levels of intellectual humility and initial affiliative perceptions nor changes in affiliative perceptions (see the Supplemental Material). However, these conversations were generally pleasant, and it may be that intellectual humility is only tied to interpersonal processes during conflict or disagreement.

Another potential direction is to examine whether interventions can promote intellectual humility in ways that improve future conversations with ideologically dissimilar others. Interventions that improve intellectual humility may help fight against misinformation and promote dialogue in political and moral contexts (Koetke et al., 2022). Thus, additional research might examine the potential of these guided conversations to change intellectual humility in ways that benefit conversations with future partners who are politically dissimilar to one another to explicitly test the benefits of this intervention for promoting cross-party dialogue.

Finally, in the current work, we examined whether mean levels of affiliative perceptions strengthened the influence of a psychological intervention on intellectual humility over time. We based this investigation on work tying mean levels of interpersonal processes to intellectual humility and related constructs. However, another interesting question is whether changes in affiliative perceptions from the first to last conversation might moderate changes in intellectual humility over time. In other words, does feeling

more positively about one's partner after the last conversation, relative to the first conversation, strengthen changes in intellectual humility over time? At the suggestion of a reviewer, we explored this question. When adjusting for mean levels of affiliative perceptions and their changes over time (which remain significant predictors of intellectual humility), positive changes in affiliative perceptions from the first to the last conversation significantly moderated changes in intellectual humility from pre to post for all three perceptions (see the Supplemental Material). Given that most social interactions occur within the context of ongoing relationships, future work might continue to assess how changes in perceptions of others strengthen the influence of interventions with social components on intellectual humility.

Limitations

This study has several limitations. Data were only included for participants who had completed all four conversations with the same partner. This limits generalizability, as there may be meaningful differences between partners who remained together versus those who did not. Furthermore, participation in the peer-to-peer discussions was voluntary so there may be a self-selection bias. Our sample also included more than twice as many participants who identified as progressive compared with conservative. Sensitivity analyses revealed that the moderating effects of affiliative perceptions on changes in intellectual humility were largely consistent with those reported here, even when adjusting for the ideology of both partners and the difference between them (see the Supplemental Material). However, generalizability could be strengthened in future studies by selectively recruiting participants with more conservative ideologies, if necessary.

Furthermore, our data show that acceptance, trust, and potential for friendship moderate the effects of a psychological intervention on changes in intellectual humility, but they do not indicate whether these interpersonal processes play a role in changing intellectual humility in the absence of an intervention targeting intellectual humility. Future research could manipulate acceptance, trust, and potential for friendship with a new peer in the absence of an intervention to explore causal relationships with changes in intellectual humility over time outside of the intervention context. In addition, future research may benefit from having a control condition where participants complete a neutral task other than the intervention, which would indicate whether the guided conversations cause improvements in intellectual humility.

Finally, one challenge in the literature is the lack of a standardized measure of intellectual humility. A unifactorial general measure of intellectual humility was used in this study to make the best use of participants' time (Leary et al., 2017). Scholars have recently synthesized and proposed a framework for measuring intellectual humility

going forward (Porter et al., 2022). Further still, multiple terms that relate to but are distinct from intellectual humility exist, such as wise reasoning and cognitive openness, and these terms are sometimes used interchangeably. Continued research to examine and validate measures related to intellectual humility is essential for future research that may compare across studies, such as meta-analyses.

Conclusion

Multiple interpersonal factors hold promise for promoting intellectual humility. This study builds on previous research showing that perceived partner responsiveness is linked with open-mindedness and the ability to hold opposing viewpoints (Itzhakov & Reis, 2021). The data presented here indicate that an intervention with structured dialogue can increase levels of intellectual humility over time, particularly when people perceive the potential for friendship and feel accepted by and trusting of their conversation partner. Fostering positive social interactions through guided dialogue may be a powerful tool for increasing intellectual humility and, therefore, holds implications for building connections and reducing conflict.

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Supplemental Material

The supplemental material is available in the online version of the article.

Note

1. The associations between affiliative perceptions and changes in intellectual humility over time were not moderated by ideological dissimilarity between partners; in other words, it does not appear that affiliative perceptions play a stronger role in influencing intellectual humility for partners who are ideologically dissimilar versus similar (see the Supplemental Material).

References

- Crockett, M. J. (2017). Moral outrage in the digital age. *Nature Human Behaviour*, 1, 769–771. <https://www.nature.com/articles/s41562-017-0213-3>
- Edwards, L. J., Muller, K. E., Wolfinger, R. D., Qaqish, B. F., & Schabenberger, O. (2008). An R^2 statistic for fixed effects in the linear mixed model. *Statistics in Medicine*, 27(29), 6137–6157. <https://doi.org/10.1002/sim.3429>
- Gordon, A. M., & Thorson, K. R. (in press). Dealing with repeated measures: Design decisions and analytic strategies for over-time data. In Reis, H. T., West, T. V., & Judd, C. M. (Eds.), *Handbook of research methods in social and personality psychology*, 3rd edition. Cambridge University Press.
- Graham, J., Haidt, J., Koleva, S., Motyl, M., Iyer, R., Wojcik, S. P., & Ditto, P. H. (2013). Moral foundations theory: The pragmatic validity of moral pluralism. In P. Devine, & A. Plant (Eds.), *Advances in experimental social psychology* (Vol. 47, pp. 55–130). Academic Press. <https://doi.org/10.1016/B978-0-12-407236-7.00002-4>
- Hanel, P. H. P., Roy, D., Taylor, S., Franjeh, M., Heffer Tanesini, A., & Maio, G. R. (2023). Using self-affirmation to increase intellectual humility in debate. *Royal Society Open Science*, 10(2), Article 220958. <https://doi.org/10.1098/rsos.220958>
- Itzchakov, G., DeMarree, K. G., Kluger, A. N., & Turjeman-Levi, Y. (2018). The listener sets the tone: High-quality listening increases attitude clarity and behavior-intention consequences. *Personality and Social Psychology Bulletin*, 44(5), 762–778. <https://doi.org/10.1177/0146167217747874>
- Itzchakov, G., & Kluger, A. N. (2017). Can holding a stick improve listening at work? The effect of listening circles on employees' emotions and cognitions. *European Journal of Work and Organizational Psychology*, 26(5), 663–676. <https://doi.org/10.1080/1359432X.2017.1351429>
- Itzchakov, G., Kluger, A. N., & Castro, D. R. (2017). I am aware of my inconsistencies but can tolerate them: The effect of high quality listening on speakers' attitude ambivalence. *Personality & Social Psychology Bulletin*, 43(1), 105–120. <https://doi.org/10.1177/0146167216675339>
- Itzchakov, G., & Reis, H. T. (2021). Perceived responsiveness increases tolerance of attitude ambivalence and enhances intentions to behave in an open-minded manner. *Personality & Social Psychology Bulletin*, 47(3), 468–485. <https://doi.org/10.1177/0146167220929218>
- Jarvinen, M. J., & Paulus, T. B. (2017). Attachment and cognitive openness: Emotional underpinnings of intellectual humility. *The Journal of Positive Psychology*, 12, 74–86. <https://doi.org/10.1080/17439760.2016.1167944>
- Kalla, J. L., & Broockman, D. E. (2020). Reducing exclusionary attitudes through interpersonal conversation: Evidence from three field experiments. *American Political Science Review*, 114(2), 410–425. <https://doi.org/10.1017/S0003055419000923>
- Koetke, J., Schumann, K., & Porter, T. (2022). Intellectual humility predicts scrutiny of COVID-19 misinformation. *Social Psychological and Personality Science*, 13(1), 277–284. <https://doi.org/10.1177/1948550620988242>
- Kross, E., & Grossmann, I. (2012). Boosting wisdom: Distance from the self enhances wise reasoning, attitudes, and behavior. *Journal of Experimental Psychology: General*, 141, 43–48. <https://doi.org/10.1037/a0024158>
- Krueger, F., & Meyer-Lindenberg, A. (2019). Toward a model of interpersonal trust drawn from neuroscience, psychology, and economics. *Trends in Neurosciences*, 42(2), 92–101. <https://doi.org/10.1016/j.tins.2018.10.004>
- Krumrei-Mancuso, E. J. (2017). Intellectual humility and prosocial values: Direct and mediated effects. *The Journal of Positive Psychology*, 12(1), 13–28. <https://doi.org/10.1080/17439760.2016.1167938>
- Krumrei-Mancuso, E. J., & Rouse, S. V. (2016). The development and validation of the comprehensive intellectual humility scale. *Journal of Personality Assessment*, 98(2), 209–221.
- Lane, S. P., & Hennes, E. P. (2018). Power struggles: Estimating sample size for multilevel relationships research. *Journal of Social and Personal Relationships*, 35(1), 7–31.
- Leary, M. R., Diebels, K. J., Davisson, E. K., Jongman-Sereno, K. P., Isherwood, J. C., Raimi, K. T., Deffler, S. A., & Hoyle, R. H. (2017). Cognitive and interpersonal features of intellectual humility. *Personality and Social Psychology Bulletin*, 43(6), 793–813. <https://doi.org/10.1177/0146167217697695>
- Lehane, C. M., Nielsen, T., Wittich, W., Langer, S., & Dammeyer, J. (2018). Couples coping with sensory loss: A dyadic study of the roles of self- and perceived partner acceptance. *British Journal of Health Psychology*, 23(3), 646–664. <https://doi.org/10.1111/bjhp.12309>
- McElroy, S. E., Rice, K. G., Davis, D. E., Hook, J. N., Hill, P. C., Worthington, E. L., & Van Tongeren, D. R. (2014). Intellectual humility: Scale development and theoretical elaborations in the context of religious leadership. *Journal of Psychology and Theology*, 42(1), 19–30. <https://doi.org/10.1177/009164711404200103>
- Meagher, B., Leman, J., Heidenga, C., Ringquist, M., & Rowatt, W. (2020). Intellectual humility in conversation: Distinct behavioral indicators of self and peer ratings. *The Journal of Positive Psychology*, 16(2), 417–429. <https://doi.org/10.1080/17439760.2020.1738536>
- Peetz, J., & Grossmann, I. (2021). Wise reasoning about the future is associated with adaptive interpersonal feelings after relational challenges. *Social Psychological and Personality Science*, 12(5), 629–637.
- Pettigrew, T. F. (1997). Generalized intergroup contact effects on prejudice. *Personality and Social Psychology Bulletin*, 23(2), 173–185. <https://doi.org/10.1177/0146167297232006>
- Plato. (1871). *Apology* (B. Jowett, Trans.). In *Dialogues of Plato*. C. Scribner's Sons. (Original work published 350 BCE)
- Porter, T., Elnakouri, A., Meyers, E. A., Shibayama, T., Jayawickreme, E., & Grossmann, I. (2022). Predictors and consequences of intellectual humility. *Nature Reviews Psychology*, 1(9), 524–536. <https://doi.org/10.1038/s44159-022-00081-9>
- Porter, T., & Schumann, K. (2018). Intellectual humility and openness to the opposing view. *Self and Identity*, 17(2), 139–162. <https://doi.org/10.1080/15298868.2017.1361861>
- Reis, H. T., Lee, K. Y., O'Keefe, S. D., & Clark, M. S. (2018). Perceived partner responsiveness promotes intellectual

humility. *Journal of Experimental Social Psychology*, 79, 21–33. <https://doi.org/10.1016/j.jesp.2018.05.006>

Van Tongeren, D. R., Stafford, J., Hook, J. N., Green, J. D., Davis, D. E., & Johnson, K. A. (2016). Humility attenuates negative attitudes and behaviors toward religious out-group members. *The Journal of Positive Psychology*, 11(2), 199–208. <https://doi.org/10.1080/17439760.2015.1037861>

Welker, K. M., Duong Rakhshani, A. M., Dieffenbach, M., & Haidt, J. (2023). The online educational program “Perspectives” improves affective polarization, intellectual humility, and conflict management. *Journal of Social and Political Psychology*, 11(2), Article 10651.

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