

Interdisciplinary Suggested Reading List

Applied Research on Intellectual Humility

About the List

The current RFP invites projects that draw from the interdisciplinary literature on IH. Our Philosophical team (Heather Battaly and her graduate assistant, Katie Peters) has provided a sampling of readings that introduce some of the important conceptual issues currently being debated in the field. Our Psychological Team (Don Davis, Joshua Hook, and Daryl Van Tongeren) has listed three scales to be included in empirical projects. We note that philosophers disagree about the best way to define IH, and psychologists disagree about the best way to measure it. Because measurement and conceptual issues are currently being contested, in addition to being aware of the articles below, we encourage teams to advance their own arguments. Our evaluation team includes people with a variety of perspectives on the future of empirical research on IH. At the Full Proposal stage, we will give some additional guidance on key criteria for evaluating methodology for projects, including interdisciplinary alignment of definitions with measurement strategy.

Scale Articles (to include in empirical projects)	
Hoyle, R. H., Davisson, E. K., Diebels, K. J., & Leary, M. R. (2016). Holding specific views with humility: Conceptualization and measurement of specific intellectual humility. <i>Personality and Individual Differences</i> , 97, 165-172. https://doi.org/10.1016/j.paid.2016.03.043	
Leary, M. R., Diebels, K. J., Davisson, E. K., Jongman-Sereno, K. P., Isherwood, J. C., Raimi, K. T., ... & Hoyle, R. H. (2017). Cognitive and interpersonal features of intellectual humility. <i>Personality and Social Psychology Bulletin</i> , 43(6), 793-813. https://doi.org/10.1177/0146167217697695	
Zachry, C. E., Phan, L. V., Blackie, L. E., & Jayawickreme, E. (2018). Situation-based contingencies underlying wisdom-content manifestations: Examining intellectual humility in daily life. <i>The Journals of Gerontology: Series B</i> , 73(8), 1404-1415. https://doi.org/10.1093/geronb/gby016	

Page	Conceptual Articles	Focus
3	Battaly, H., 2020. Closed-mindedness and arrogance. In A. Tanesini and M.P. Lynch (eds.) <i>Polarisation, Arrogance, and Dogmatism</i> (pp. 53-70). Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9780429291395-6/closed-mindedness-arrogance-heather-battaly	Distinguishes Intellectual Humility from Open-mindedness and Closed-mindedness from Arrogance.

4	Lynch, M.P. 2018. "Arrogance, truth and public discourse." <i>Episteme</i> 15, no. 3: 283-296. doi:10.1017/epi.2018.23 https://doi.org/10.1017/epi.2018.23	Distinguishes the virtue of Intellectual Humility from Intellectual Arrogance.
6	McElroy-Heltzel, S.E., Davis, D.E., Hook, J.N. and Battaly, H.D., 2022. Too much of a good thing: Differentiating intellectual humility from servility in higher education. <i>Journal of Moral Education</i> , pp.1-13. DOI: 10.1080/03057240.2022.2126829 https://doi.org/10.1080/03057240.2022.2126829	Distinguishes the virtue of Intellectual Humility from Intellectual Servility.
9	Porter, T., Baldwin, C.R., Warren, M.T., Murray, E.D., Cotton Bronk, K., Forgeard, M.J., Snow, N.E. and Jayawickreme, E., 2022. Clarifying the content of intellectual humility: A systematic review and integrative framework. <i>Journal of personality assessment</i> , Sep-Oct;104(5): 1-13. DOI: 10.1080/00223891.2021.1975725	Provides an overview of current philosophical and psychological accounts of Intellectual Humility.
13	Porter, T., Elnakouri, A., Meyers, E.A., Shibayama, T., Jayawickreme, E. and Grossmann, I., 2022. Predictors and consequences of intellectual humility. <i>Nature Reviews Psychology</i> , 1, 524–536. https://doi.org/10.1038/s44159-022-00081-9 https://www.nature.com/articles/s44159-022-00081-9	Provides an overview of current measures of, threats to, and implications of Intellectual Humility.
18	Snow, N.E., 2018. Intellectual humility. In <i>The Routledge handbook of virtue epistemology</i> , edited by H. Battaly. (pp. 178-195). Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9781315712550-16/intellectual-humility-nancy-snow	Evaluates different philosophical accounts of Intellectual Humility.
20	Van Tongeren, D. R., Davis, D. E., Hook, J. N., & Witvliet, C. V. O. (2019). Humility. <i>Current Directions in Psychological Science</i> , 18, 463-468. https://doi.org/10.1177/0963721419850153	An overview of humility and its different subtypes.
21	Whitcomb, D., Battaly, H., Baehr, J. and Howard-Snyder, D., 2017. Intellectual humility: Owning our limitations. <i>Philosophy and Phenomenological Research</i> , 94(3): 509-539. https://doi.org/10.1111/phpr.12228	Argues that Intellectual Humility is attentiveness to and owning of one's intellectual limitations.

Closed-mindedness and arrogance.

<p>Battaly, H., 2020. Closed-mindedness and arrogance. In A. Tanesini and M.P. Lynch (eds.) <i>Polarisation, Arrogance, and Dogmatism</i> (pp. 53-70). Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9780429291395-6/closed-mindedness-arrogance-heather-battaly</p>	<p>Distinguishes Intellectual Humility from Open-mindedness and Closed-mindedness from Arrogance.</p>
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- In this article, Battaly seeks to distinguish the intellectual vices of closed-mindedness and arrogance and to explain why they are so often found together.
- Closed-mindedness (CM)
 - Battaly is analyzing CM as a *trait* of being unwilling or unable to engage (seriously) with relevant intellectual options.
 - Dogmatism is a kind of CM. Dogmatism consists in being unwilling to engage (seriously) with relevant alternatives to a belief one already holds, or in the case where one is willing to engage seriously with those alternatives, it is a subsequent unwillingness to revise one's belief.
- Arrogance
 - One way to be arrogant is to be oblivious or inattentive to your intellectual limitations—but you can also be aware of them and fail to own them.
 - Another way to be arrogant is by over-estimating your intellectual strengths—we can call this over-owning
 - Thus (AR): Arrogance consists in an unwillingness or inability to be attentive to or own one's (intellectual) limitations, or a disposition to be overly attentive to or over own one's (intellectual) strengths
 - There is also a connection with haughtiness (a kind of disdain for others)—we can think of arrogance as intrapersonal, and haughtiness as interpersonal
 - We can also conceive of CM as a *lack* of Open-mindedness, and Arrogance as a *lack* of IH
- Battaly argues that there are cases of CM without Arrogance
 - Many of us can think of people who are arrogant but not CM—think of Gregory House from *House MD*.
 - Many of us can also think of people who are CM and Dogmatic but not arrogant. Think of the family member who might admit they don't know much about a controversial topic, but nevertheless balk at revising their beliefs.
- But that CM is correlated with Arrogance
 - We can expect arrogance to be accompanied by haughtiness, and haughtiness to be accompanied by CM.
 - CM can also lead to arrogance.

Arrogance, truth and public discourse.

Lynch, M.P. 2018. "Arrogance, truth and public discourse." *Episteme* 15, no. 3: 283-296.
doi:10.1017/epi.2018.23 <https://doi.org/10.1017/epi.2018.23>

Distinguishes the virtue of Intellectual Humility from Intellectual Arrogance.

- Democracy as a common space means disagreements can be navigated without fear of violence or oppression—this requires that public discourse be *reasonable*
 - To achieve this, our attitudes toward each other matter—we must find ways to encourage citizens to display attitudes connected to responsible epistemic agency, and to discourage those that aren't
 - In this paper, Lynch focuses on one attitude we need to discourage—epistemic arrogance, which he sees as flowing from the conviction that one knows it all
- Lynch describes epistemic arrogance as a social attitude that can be defined by its relationship to characteristic behaviors and motivations.
 - Epistemic arrogance encourages: know it all behavior (obnoxious Uncle), dismissiveness (dogmatic listener), and self-deceptive misattributions of credit (mansplainer and gaslighter)
- Epistemic Arrogance
 - The arrogant person thinks that others have nothing to teach them
 - The arrogant are committed to the superiority of their view not because it reflects the world, but because it reflects their self-esteem
 - Their worldview is correct *just because it is their worldview*
 - They take themselves to be correct, justified, even certain in their views because they are in power, or brilliant, or of the right class, gender, race, religion or political party
 - Epistemic arrogance can vary in scope—one can be arrogant about some aspects of your worldview but not others
 - One can also be arrogant towards specific individuals or groups (think political parties)
 - One can also be arrogant *because* of a group and their membership in it—tribal epistemic arrogance
 - The contrasting or opposing attitude to arrogance is epistemic humility (though one can fail to be humble without being arrogant)
- The harms of arrogance
 - Arrogance can encourage us to not engage in discourse at all
 - For people who are arrogant: If you think your views are unimprovable, talking to those who disagree with you seems to be a waste of time
 - For people who are not arrogant but on the receiving end of other people's arrogance: it can discourage those on the receiving end of arrogance from opting in (the marginalized may have no hope of their views being taken seriously)
 - Arrogance undermines mutual accountability

- Lynch argues that the arrogant do not believe they are accountable to those they are arrogant towards—this is a fundamentally anti-democratic attitude
- Arrogance undermines epistemic trust
 - To the extent that we are epistemically arrogant, we will not feel the need to appeal or defer to experts—and if the experts are arrogant, we are less inclined to trust them
- Arrogance undermines the value of truth
 - Because the arrogant are inclined to view their own (or their group's) view as true simply because it is theirs, they manifest a lack of concern for objective truth
 - A well-functioning egalitarian democracy values public inquiry into truth

Too much of a good thing: Differentiating intellectual humility from servility in higher education.

McElroy-Heltzel, S.E., Davis, D.E., Hook, J.N. and Battaly, H.D., 2022. Too much of a good thing: Differentiating intellectual humility from servility in higher education. <i>Journal of Moral Education</i> , pp.1-13. DOI: 10.1080/03057240.2022.2126829 https://doi.org/10.1080/03057240.2022.2126829	Distinguishes the virtue of Intellectual Humility from Intellectual Servility.
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McElroy-Heltzel et al. begin this article from the understanding that intellectual humility (IH) as a virtue might help people adopt a learning orientation (DeWall, 2017). Preliminary studies have found IH to be associated with more fact-checking about COVID-19 misinformation (Koetke et al. 2022) and additional effort to learn after an initial failure (Porter et al. 2020). But the concern has been raised (Battaly 2022, Tanesini 2021) that while some students are at risk for intellectual arrogance, others are at risk for intellectual servility (IS). IS is a vice that involves under-owning one's intellectual strengths and over-owning one's intellectual limitations (Battaly, 2022). As a result, students tend to inappropriately doubt themselves and defer to others. As this research is recent, the authors are not aware of any studies of the diverging roles of IH and IS; further, there is reason for concern that measures of IH might conflate IH with IS (McElroy-Heltzel et al. 2021). Accordingly, the authors suggest some relationships between IS, IH, and personality constructs that might promote (i.e., conscientiousness, openness) or inhibit (i.e., maladaptive perfectionism) learning. The authors also examine the relationships between IS, IH, and one of the goals of moral education – democratic civic engagement.

Relationships between IH, IS, and Personality. Some studies have linked IH to the personality trait of openness, as well as to need for cognition, epistemic curiosity, and open-minded responses to disagreements (Porter & Schumann 2018). In contrast, McElroy-Heltzel et al. expect IS to be negatively related to openness—individuals high in IS might close themselves off to new information because they doubt their ability to learn. Prior studies have reported a positive relationship between conscientiousness and IH (McElroy et al., 2014). On the other hand, people who have IS might be less conscientious because they have decreased motivation to gain knowledge. Adaptive perfectionism (i.e., having high standards for oneself) is positively related to academic achievement, whereas maladaptive perfectionism (i.e., never feeling that your best is good enough) is negatively related to academic achievement (Madigan, 2019). The authors suggest that IH may be linked to adaptive perfectionism, and IS with maladaptive perfectionism. A Davis et al. (2019) study also suggests a potential further link between IS, perfectionism, and discrimination.

Relationships between IH, IS, and democratic civic engagement. IH has been proposed as a virtue that might temper extremism and polarization. Motivations to maintain one's current worldview

result in biased processing of information, such that confronting people with facts or other corrective information is unlikely to be helpful (Lewandowsky et al., 2017). If IH involves an accurate assessment of your knowledge, it might act as a counter to motivated reasoning. On the other hand, IS might cause people to disengage when it comes to complex and heated political matters. IS people also lack confidence in their abilities to gain knowledge, which might inhibit their participation in civic discourse. Alternatively, IS may cause people to engage in ways that are problematic and further drive polarization.

The purpose of this study is to examine how IS and IH are related to personality factors that are linked to learning outcomes in higher education (e.g., openness, conscientiousness, perfectionism). The authors also test whether IH and IS are related to civic engagement (e.g., attending a political rally), activism commitment (e.g., commitment to using one's time and money for activism), and social media intrusion (e.g., degree to which one is preoccupied with accessing social media).

The hypotheses are as follows:

H1: IS will be positively related to maladaptive perfectionism and social media intrusion, and negatively related to openness, conscientiousness, adaptive perfectionism, activism commitment, and civic engagement.

H2: IH will be positively related to conscientiousness, openness, and adaptive perfectionism. IH will be negatively related to maladaptive perfectionism and social media intrusion.

Results of this study provide some initial empirical support for concerns about IS in educational contexts (Battaly, 2022). IS was negatively related to both openness and conscientiousness. This suggests that people with high degrees of IS may close themselves off to new information and experiences due to self-defeating beliefs that they are unable to learn and make use of information. Furthermore, IS was positively correlated with maladaptive perfectionism, suggesting that individuals may feel that their efforts will never match up to their standards. Finally, IS was negatively related to civic engagement and unrelated to activism commitment.

The authors' findings diverge from other studies on IH and personality (McElroy et al., 2014) and political engagement (Krumrei-Mancuso et al., 2020). IH demonstrated no statistically significant relationships with any study variables, with an exception to the relationship with IS.

The authors argue that existing measures of IH assess the trait of IH rather than the virtue of IH. Accordingly, some people who are high in IH would also be high in IS because these IH measures do not capture the contextual and motivational aspects of virtuous IH. Both measures of IH and the measure of IS do capture limitations-owning, which helps to account for the significant positive relationship found between the two measures in this study. A related issue concerns how virtue is defined by philosophers versus how virtue is measured by psychologists (Ng & Tay, 2020). The authors argue that existing measures of IH (and the author's measure of IS) are stripped of their evaluative elements and capture a disposition to be attentive to and own limits. This means that existing measures of IH may be capturing both virtuous IH and vicious servility. Measures of IH may be casting the net too widely in including people who, because of social location, would need to practice greater intellectual pride in order to get to 'appropriate' awareness and ownership of limitations.

These results also have implications for considerations of IH interventions in educational contexts. Discussions of moral development should acknowledge systems of power and oppression to highlight that not everyone is at risk for intellectual arrogance—some students are at risk for IS. Accordingly, different interventions might be needed to help different students gain IH. We might

need interventions of one sort to help servile students rein in over-owning of limitations, and interventions of another sort to help arrogant students take greater ownership of their limitations. Battaly (2022) argues that students who already have high degrees of IS are likely to identify the wrong people as exemplars of virtue to begin with—i.e., to identify servile people, and not virtuously humble people, as role models. As a result, on balance, the method of emulating exemplars might not help students with IS get closer to virtuous IH, and could even exacerbate their IS. Tanesini (2021) points out that since opportunities for students to practice virtuous owning of limitations will simultaneously be opportunities to practice over- or under-owning of limitations (students are asked to decide for themselves what to do), we can expect students with high degrees of IS to practice over-owning. However, none of this entails giving up on educating for IH. It simply means we need more research on both traditional and holistic methods and mixes of the two.

Clarifying the content of intellectual humility: A systematic review and integrative framework.

Porter, T., Baldwin, C.R., Warren, M.T., Murray, E.D., Cotton Bronk, K., Forgeard, M.J., Snow, N.E. and Jayawickreme, E., 2022. Clarifying the content of intellectual humility: A systematic review and integrative framework. <i>Journal of personality assessment</i> , Sep-Oct;104(5): 1-13. DOI: 10.1080/00223891.2021.1975725	Provides an overview of current philosophical and psychological accounts of Intellectual Humility.
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Porter et al. allege that one consequence of the proliferation of new work in the area of intellectual humility (IH) is that we do not know the extent to which researchers are using the term to refer to the same or different phenomena—nor if the content assessed in different measures is the same or different. Their interdisciplinary team of philosophers and psychologists conducted a comprehensive review in three parts: first, definitions and measures of IH used in published empirical psychological work; second, a content analysis of IH questionnaires; third, a review of eight philosophical accounts of IH that is compared to psychologist’s definitions and measures. Based on this tripartite review, Porter et al. advance a new classification framework for IH that synthesizes and integrates all of this literature.

Philosophical accounts: Church and Barrett 2016 (Doxastic account); Hazlett 2012 (Proper beliefs); Kidd 2016 (Confidence management); Priest 2017 (Interpersonal account); Roberts and Wood 2007 (Low concern for intellectual status); Spiegel 2012 (Higher-order epistemic stance); Tanesini 2018 (Attitudes cluster); Whitcomb et al. 2017 (Limitations owning). *See Summary Table 1 for an overview.* The first definitional theme argues that IH is an orientation towards one’s own intellectual limitations (Spiegel 2012; Hazlett 2012, 2016; Church & Barrett 2016; Whitcomb et al. 2017). The second theme is that people with IH recognize their limitations in the right amount and for the right reasons (Church & Barrett 2016; Hazlett 2012; Kidd 2016; Roberts & Wood 2007; Tanesini 2018; Whitcomb et al. 2017). Third, two accounts (Priest 2017; Kidd 2016) consider IH to be interpersonal. Finally, Roberts & Wood argue that IH at its core is “an unusually low concern for one’s own intellectual status and entitlements.”

Psychological definitions: in July 2020, Porter et al. found 59 published studies and one unpublished questionnaire, and compiled all unique definitions of IH. *See Summary Table 2 for an overview.* Their search revealed 18 distinct definitions of IH. Some definitions were offered ad hoc (e.g., Jarvinen & Paulus, 2017) while others were more deliberately generated through empirical research (Christen et al., 2014; Samuelson et al., 2015), adopted from philosophical accounts (Haggard et al., 2018; Zachry et al., 2018), or developed in collaboration with philosophers (Hoyle et al., 2016; Leary et al., 2017 – 576). “Eleven definitions emphasized

recognition of one's intellectual limitations, including recognizing "the limits of one's knowledge," not "claiming to know more

than is merited," and having a "nonthreatening awareness of one's intellectual fallibility." Eight definitions mentioned interpersonal features, such as "willingness to ... appreciate others' intellectual strengths." Six definitions mentioned that intellectual humility requires not being overly concerned about one's intellectual limitations – these definitions specified an "appropriate" attentiveness to limitations, an "accurate" view of one's limitations, a "virtuous mean" between intellectual arrogance and servility. Four definitions mentioned motives stipulating that intellectually humble individuals have a strong drive to learn, and/or a weak drive to self-enhance and pursue intellectual status" (576-577).

Psychological assessments: Porter et al. found 20 different measures of IH, including 16 questionnaires. Eight definitions mentioned interpersonal features, such as "willingness to ... appreciate others' intellectual strengths." Six definitions mentioned that intellectual humility requires not being overly concerned about one's intellectual limitations – these definitions specified an "appropriate" attentiveness to limitations, an "accurate" view of one's limitations, a "virtuous mean" between intellectual arrogance and servility. Four definitions mentioned motives stipulating that intellectually humble individuals have a strong drive to learn, and/or a weak drive to self-enhance and pursue intellectual status (577). 188 items were coded to the existing content themes (Table 3: Awareness of personal intellectual limitations – 100% of questionnaires; Attitudes, beliefs, and behaviors focused on other people's intellect – 80% of questionnaires; Drive to learn – 27% of questionnaires; Concerns about personal intellectual status – 20% of questionnaires; Appropriate concern with intellectual limitations – 20% of questionnaires) and one additional theme that was identified while coding (beliefs and feelings about and during disagreements – 27% of questionnaires).

"A comparison of the psychological and philosophical accounts of intellectual humility reveals three major dissimilarities. First, whereas the majority (though not all) of philosophical accounts do not consider interpersonal features to be constitutive of intellectual humility, the majority of psychological definitions and measures do. Second, whereas the majority of philosophers include optimal calibration and motives when conceptualizing intellectual humility, most psychologists' definitions and measures do not. Third, whereas some psychologists consider beliefs and feelings about disagreements to be an important feature of intellectual humility, this was not mentioned in philosophical accounts. Despite these differences, philosophers and psychologists have largely converged on the idea that intellectual humility involves awareness of one's intellectual fallibility" (579).

Porter et al. make recommendations for proceeding with IH research and propose A new framework of IH. One axis of this framework (Fig 2) distinguishes between features of IH that

are self-focused versus other-focused (depending on whether they target one's own knowledge, beliefs, and ideas, or those of others). The other axis differentiates between features of IH that are internal (thoughts and attitudes) and features of IH that are expressed (observable behaviors), and then gives example IH questionnaire items for each quadrant. Four features of IH that appeared in philosophical and psychological accounts were excluded from this framework: these are beliefs and feelings about disagreement; drive to learn; concerns with personal intellectual status; and appropriate concern with intellectual limitations. To refine the framework, Porter et al. suggest that a better approach might be to identify the single core feature of IH from its peripheral features (Banker & Leary 2020; Leary & Banker 2019). Leary 2018 has persuasively argued that recognition of one's intellectual limitations is the core of IH; the authors suggest conceptualizing this as the core of IH (Fig 3). They also recommend that the framework might benefit from making additional distinctions—such as differentiating publicly expressed features of IH from privately expressed ones. Finally, they suggest that the framework might need further refinement to distinguish IH from other intellectual characteristics like curiosity and open-mindedness.

Recommendations for proceeding with IH research: Measurement considerations. See Table 5 for a map of where existing IH measurement scales fall into the four quadrants of the new framework for IH. The authors suggest that no available questionnaires perfectly capture the framework: however, there are available *items* for each quadrant. Because measuring the entire framework could result in a

multidimensional measure, the authors raise an important consideration: global scores from multidimensional questionnaires are difficult to interpret. For instance, a person who is high in recognition of their limitations but low in valuing others' intellect could receive the same overall IH score as a person who is low in recognition of their own limitations and high in valuing others' intellect even though these people have very different psychological profiles (Leary, 2018). For these reasons, the utility of a multidimensional scale will be limited. Alternatively, IH could be studied one or two quadrants at a time as long as the features of IH being studied are clearly described and cleanly measured. This approach could provide for simple scoring and interpretation and reveal how different features of intellectual humility develop, relate to outcomes, and shape one another.

It is important to note that this framework describes IH as a *characteristic*, while many scholars are interested in studying IH as a *virtue*. Conceptualizations and measures of virtue must clear a higher bar in that virtues should regularly manifest in appropriate ways and be virtuously motivated, as many philosophical accounts of intellectual humility acknowledge. Virtues must be exercised in the right ways given a particular situation (Ng & Tay, 2020; Wright et al., 2021). Therefore, to measure the virtue of intellectual humility, an assessment needs to capture both intellectual humility and the situation in which it is being experienced or exercised (Ng & Tay, 2020; Wright et al., 2021). Moreover, it needs to capture both of these multiple times to assess

the degree of consistent calibration across situations. Others have described how this type of measurement might be accomplished (Fleeson & Jayawickreme, 2015; Jayawickreme & Fleeson, 2017a, 2017b; Ng & Tay, 2020; Wright et al., 2021; Zachry et al., 2018). *The PI's would like to note that the grant is particularly interested in behavioral studies.*

Predictors and consequences of intellectual humility.

Porter, T., Elnakouri, A., Meyers, E.A., Shibayama, T., Jayawickreme, E. and Grossmann, I., 2022. Predictors and consequences of intellectual humility. <i>Nature Reviews Psychology</i> , 1, 524–536. https://doi.org/10.1038/s44159-022-00081-9 https://www.nature.com/articles/s44159-022-00081-9	Provides an overview of current measures of, threats to, and implications of Intellectual Humility.
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Please note that this article utilizes endnotes and no alphabetical bibliography, so citations below include both endnote number and author information.

In this article, Porter et al. provide an overview of empirical intellectual humility (IH) research. First, the authors examine approaches for defining and measuring IH across various subfields in psychology. Next, they look at how individual, interpersonal, and cultural factors can work for or against IH. Finally, they highlight the importance of IH and detail interventions to increase IH.

Defining IH: IH can be conceptually separated from general humility, modesty, and open-mindedness, both definitionally and psychometrically—IH focuses on recognizing one’s ignorance and intellectual fallibility. However, IH has multiple definitions coming from various fields. One of the most frequent philosophical accounts defines IH as a virtuous balance between intellectual arrogance and intellectual diffidence (28-30 - Whitcomb et al. 2017; Church & Barrett 2016; Ng & Tay 2020). A consequence of this Aristotelian approach is that IH is virtuous only as a dynamic, situation-sensitive construct (30-32 – Ng & Tay 2020; Grossman et al. 2020; Grant & Schwartz 2011). Psychologists also define IH in multiple ways, with two major categories of views: one that focuses on metacognition (9- Leary et al. 2017; 29- Church & Barrett 2016; 33-Hoyle et al. 2016; 34-Kross & Grossmann 2012), and one that adds to metacognition such things as valuing others’ beliefs, admitting one’s ignorance, and being motivated to seek the truth (35-37 – Haggard et al. 2018; Priest 2017; Zachry et al. 2018). Porter et al. recognize that the psychological beliefs often differ by subfields; cognitive psychologists tend to prefer the metacognitive account (13- Mellars et al. 2019), developmental and educational psychologists the multidimensional account (38-40 – Danovitch et al. 2019; Krumrei-Mancuso et al. 2020; McElroy 2014). The authors then call for a middle ground: while the metacognitive features of IH (recognizing one’s ignorance and intellectual fallibility) have the most consensus from the broader scholarly community (and thus form the core of IH), consideration of interpersonal contexts where IH manifests is beneficial to study which factors inhibit and promote it.

Measuring IH: (See table 1 for a summary). IH measures differ in whether they aim to capture IH as a trait or as a state. There are two main forms of study used: Questionnaires and Behavioral tasks. Both can be used to estimate both trait and state IH.

- Questionnaires have been popular over the last decade in measuring trait IH – and people seem to be capable of reporting on their trait level of IH with some degree of accuracy (9- Leary et al. 2017; 11- Zmigrod et al. 2019; 19- Porter & Schumann 2018; 43- Meagher et al. 2021). However, this still provides room for lots of potential errors (45- Abrahams et al. 2019; 46- Duckworth & Yeager 2015). Also, it is difficult to assess socially desirable constructs with self-report measures (47- Arendasy et al. 2011; 48- Ziegler et al. 2007) – though questionnaires about IH in specific situations or events (examining state IH) might be less vulnerable to bias (49- Brienza et al. 2018). The authors recommend integrating state and trait approaches by taking repeated situation-specific assessments. The authors recommend reports of IH in the context of specific situations. Ideally, these assessments should be administered multiple times. They suggest using trait-level assessments of IH only for research focused on people’s global attributions of IH to themselves (self-reports) or close others (informant reports). A profile of IH can be further established by modelling responses across multiple situations.
- Behavioral tasks have the advantage of not depending on subjective judgments, which makes them less vulnerable to response biases (45- Abrahams et al. 2019; 47- Arendasy et al. 2011; 48- Ziegler et al. 2007). As they also don’t rely on language, they can be applied to young children or different cultural contexts. However, they can only capture a small segment of behavior in an artificial environment—this can prompt behavior to be motivated by situational pressures (54- Enkavi et al. 2019). But no research has yet developed a valid IH behavior task by performing psychometric testing of theoretically expected associations with other constructs and outcomes, in contrast to the many published studies doing so for questionnaires. *Please note that the PI’s of the grant are particularly interested in the development of behavioral measures of IH.*

Threats to IH: A review of the literature provides a non-exhaustive list of the personal, interpersonal, and cultural factors that often work against IH.

- Personal and Interpersonal factors:
 - Confirmation or myside bias can possibly act as a metacognitive limitation counter to IH (55-60; Koriat et al. 1980; Kuhn et al. 1994; Kahan 2013; Kunda 1990; Mercier 2016; Mercier & Sperber 2011). For instance, when people try to reason through an issue, they often work hard to find evidence that confirms their initial perspective (55-58).
 - People also struggle to recognize the limits of their knowledge and fallibility (61-64; Rozenblit & Keil 2002; Moore & Healy 2008; Meyers et al. 2020; Vitriol & Marsh 2018). For instance, people tend to confidently overestimate how much they know about various phenomena—and become aware of their lack of knowledge only after failing to explain it (61-64).

- Many people also find uncertainty disquieting or threatening, and avoid situations that induce it (and thereby IH – 34, 66-72; Kross & Grossmann 2012; Grupe & Nitschke 2013; Bogdanov et al. 2021; Czernatowicz-Kukuczka et al. 2014; Jonas et al. 2014; Kruglanski et al. 2012; Webber et al. 2018; Thórisdóttir & Jost 2011). For example, to overcome threat, people tend to cling to unambiguous, comforting beliefs, rather than seeking to understand more ambiguous truths (34- Kross & Grossmann 2012; 67- Bogdanov et al. 2021).
- IH can be hard to manifest and sustain when acknowledging the limitations of one's beliefs would risk compromising interpersonal relationships—i.e. group solidarity might trump IH (73-81; Launay & Dunbar 2015; Levitan & Verhulst 2016; Mallinson & Hatemi 2018; Van Bavel & Pereira 2018; Carlson & Settle 2016; Cheadle & Schwadel 2012; Garrett et al. 2020; Levitan & Visser 2008; Visser & Mirabile 2004). For instance, when members of cultural, religious, political or other social groups conform to the group's ideology, they feel closer to one another (73-76). *See the Questions in the RFP.*
- The motive to attain community status might work against IH (57, 82-88; Kahan 2013; Anderson et al. 2015; Anderson et al. 2012; Connors 2020; Drummond & Fischhoff 2017; Schwarzmann & Van der Weele 2019; Smith et al. 2017; Solda et al. 2020). For instance, group members often gain prestige and rank by fervently endorsing the group's ideology (57, 83-85).
- Cultural Factors:
 - Cultures that emphasize interdependence rather than independence are more likely to promote relational goals, pay attention to social cues, define the self as embedded in one's social environment, and display social context vigilance (92-95; Markus & Kitayama 1991; Varnum et al. 2010; Cross et al. 2000; Schwartz 2006; Talhelm et al. 2014). This consideration of contextual information might be conducive to greater recognition of the limits of one's knowledge and awareness of one's fallibility (98-100; Wei & Wang 2020; Grossmann et al. 2012; Wei & Wang 2021). Thus, in cross-cultural comparisons, countries that emphasize social coordination show greater IH than countries that don't (99, 100).

Porter et al. address the Importance of IH: At the societal level, intellectual humility can promote societal cohesion by reducing group polarization and encouraging harmonious intergroup relationships. At the individual level, intellectual humility can have important consequences for wellbeing, decision-making, and academic learning.

- Social Implications: IH is positively associated with greater intergroup tolerance: people with IH are more tolerant of opposing political and religious views (101-104; Hook et al. 2017; Stanley et al. 2020; Bowes et al. 2020; Colombo et al. 2021), they display less myside bias and openness to befriending outgroup members (19- Porter & Schumann 2018; 22- Bowes 2022; 102- Stanley et al. 2020); and they are more willing to let outgroup members speak freely (34- Kross & Grossmann 2012; 105- De keersmaecker et al. 2021). IH is positively associated with forgiveness (40- McElroy

- et al. 2014; 108- Zhang et al. 2015) and with empathy, gratitude, altruism, benevolence, and universalism, suggesting people with IH are more likely to care about the wellbeing of others (111- Krumrei-Mancuso 2017).
- Individual benefits: People with IH seem to be more likely to report higher levels of life satisfaction (41- Grossmann et al. 2020); leaders high in IH have greater emotional intelligence and receive better satisfaction ratings from their followers (113- Hodge et al. 2020; 114-Krumrei-Mancuso & Rowatt 2021)—however, religious leaders who view their religious views as fallible have lower wellbeing than those who don't (115- Jankowski et al. 2019). IH might also help people make well-informed decisions, such as differentiating between strong and weak arguments (9- Leary et al. 2017) and scrutinizing misinformation (109- Senger & Huynh 2021; 117- Koetke et al. 2021). Lastly, IH is positively associated with knowledge acquisition, learning, and educational achievement (14- Wong & Wong 2021; 39- Krumrei-Mancuso 2020; 118- Porter et al. 2020).
 - Improving IH: Some experiments have documented short-term gains in intellectual humility following brief reflection, writing or reading exercises that are carefully designed to shift intellectual humility in the moment (1- Grossmann & Kross 2014; 34- Kross & Grossmann 2012; 120- Grossmann et al. 2019). In a series of studies, people overestimated their self-reported knowledge of a policy less after writing a detailed explanation of how that policy works, thereby recognizing that their knowledge of the policy was less complete than they originally thought (63- Meyers et al. 2020; 121- Fernbach et al. 2013; 122- Johnson et al. 2016)—this and other similar studies suggest IH can be temporarily boosted relatively easily (19- Porter & Schumann 2018; 118- Porter et al. 2020; 123- Walters et al. 2017). It is important to note that these studies were relatively small and have not been subject to replication. In addition, the majority of studies reviewed used self-report questionnaires to measure IH. Behavioral measures and larger, more representative samples would shed more light on the extent to which brief interventions can boost intellectual humility. A few studies support the use of self-distanced diary writing to increase intellectual humility, but critically, two of them were not randomized and are subject to selection bias (125- Grossman et al. 2021; 126- Meagher et al. 2019; 127- Anderson et al. 2021). By contrast, evidence remains limited and inconclusive on whether intellectual humility can be increased through classroom instruction.
 - *Questions on interventions from the Grant team: do these interventions only work for people who already have some level of IH? Would diary writing work for someone with arrogance? Would it cement servility? Are they measuring increases in virtuous IH in people who tend to be arrogant or servile? Do we need different methods to ameliorate vice rather than to increase virtue?*

Caveat in future directions: “This approach to fostering intellectual humility calls for societal change in educational, scientific and business cultures: away from treating intellectual humility as a

weakness and towards treating it as a core value that is celebrated and reinforced. Individual-focused interventions to boost intellectual humility are not likely to be effective in the long term without corresponding societal changes” (533).

Intellectual humility.

Snow, N.E., 2018. Intellectual humility. In <i>The Routledge handbook of virtue epistemology</i> , edited by H. Battaly. (pp. 178-195). Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9781315712550-16/intellectual-humility-nancy-snow	Evaluates different philosophical accounts of Intellectual Humility.
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Nancy Snow begins this review article by identifying seven main conceptions of intellectual humility (IH) from the philosophical literature. (Cited in full, 178-179):

- Whitcomb et al. (2017: 514) identify and critique three conceptions of IH:
 - Proper Beliefs. IH consists in a disposition to form proper beliefs about the epistemic statuses of one's beliefs. (Samuelson et al. 2015 and Hazlett 2012)
 - Underestimation of Strengths. IH consists in a disposition to underestimate one's intellectual strengths, accomplishments, social status, and entitlements. (Taylor 1985, Driver 2001)
 - Low Concern. IH consists in a disposition to an unusually low concern for one's own intellectual status and entitlements. (Roberts and Wood 2007).
- Whitcomb et al. (2017: 520) then introduce their own view:
 - Limitations-Owning. IH consists in proper attentiveness to, and owning of, one's intellectual limitations.
- Other work has yielded three more conceptions:
 - Semantic Clusters. The trait of IH involves three semantic clusters: the sensible self, the discreet self, and the inquisitive self (Christen, Alfano, and Robinson 2014: 1)
 - Cluster of Attitudes. IH is a cluster of strong attitudes toward one's cognitive make-up and its components. It is the complex virtue comprising modesty and self-acceptance (Tanesini 2016: 1).
 - Confidence Management. IH is a virtue for the management of confidence consisting of two pairs of components. The first is the disposition to recognize the relevant confidence conditions for an assertion, belief, or conviction, and the extent of their fulfillment. The second is the disposition to regulate one's intellectual conduct accordingly (Kidd 2016: 59).

Snow evaluates and analyzes each of the above accounts of IH. Here, we mention her evaluations of 3 of these accounts.

Snow on Low Concern accounts (Roberts and Wood 2007). In 2016 Roberts embraced the possibility that there might be different kinds of humility that are associated with lacking specific vices: thus it is a mistake to speak of IH as a single virtue. The IHLO argument suggests that low

concern is neither necessary nor sufficient for IH; Snow thinks it is possible for Roberts and Wood to counter this concern.

Snow on the Limitations Owning View (Whitcomb et al.). IH is having the correct stance toward one's intellectual limitations, which consists in a dispositional profile that includes cognitive, behavioral, motivational, and affective responses to an awareness of one's limitations. Snow notes that the IHLO authors admit their view says nothing about attitudes to intellectual strengths; it is possible for someone to have IH with regards to her limitations and arrogance with regards to her strengths. Whitcomb et al. attempt to solve this problem by mapping the conceptual space among proper pride (appropriate owning of strengths), humility, arrogance (over-owning strengths or under-owning limitations), and servility (under-owning strengths or over-owning limitations). Snow's main concern with the IHLO view is around how to conceive of owning your limitations. For example, should I display regret and dismay if I am characteristically bad at remembering train schedules, if remembering train tables does not count for me as an epistemic good? Is regret and dismay necessary, or is simple acceptance of your limitations sufficient? This concern is about the objective or subjective value of epistemic goods to individual agents and how it affects the characteristic attitudes of limitations owning. *Question from the PI's on the grant: should we expect this to vary depending on the context?*

Snow on the Cluster of Attitudes view. Tanesini (2016) argues that IH "is a cluster of strong attitudes (as these are understood in social psychology) directed toward one's cognitive make-up and its components, together with the cognitive and affective states that constitute their contents or bases, which serve knowledge and value-expressive functions." These attitudes include modesty with respect to one's intellectual strengths and acceptance with respect to one's intellectual limitations. The person with virtuous IH should have evaluative attitudes that express like for strengths and dislike for limitations. For the person with virtuous IH, attitudes that have a knowledge function also express a commitment to epistemic goods such as truth or knowledge. As with Whitcomb et al., Snow believes Tanesini needs to take into account the difference between the objective and subjective value of epistemic goods to individual agents.

Humility.

Van Tongeren, D. R., Davis, D. E., Hook, J. N., & Witvliet, C. V. O. (2019). Humility. <i>Current Directions in Psychological Science</i> , 18, 463-468. https://doi.org/10.1177/0963721419850153	An overview of humility and its different subtypes
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This paper provides a brief review of humility, distinguishing intrapersonal and interpersonal dimensions and clarifying different expressions of humility. The authors describe intellectual humility as humility around ideas, beliefs, and worldviews, and cultural humility as humility around cultural beliefs, values, and attitudes.

The authors posit three hypotheses for why humility is important:

- Social bonds hypothesis: humility improves and maintains relationships
- Social oil hypothesis: humility is helpful for reducing relational wear-and-tear in relationships where conflict is high or there is a power differential
- Well-being hypothesis: humility is beneficial for mental and physical well-being

The authors end with five directions for future research:

1. Consolidate the psychological characteristics that are core to humility
2. Identify whether there is a dark side to humility
3. Examine the cross-cultural experiences and effects of humility
4. Explore the evolutionary advantages or disadvantages of humble relationships
5. Integrate humility in major fields of social and personality psychology

Intellectual humility: Owning our limitations.

Whitcomb, D., Battaly, H., Baehr, J. and Howard-Snyder, D., 2017. Intellectual humility: Owning our limitations. <i>Philosophy and Phenomenological Research</i> , 94(3): 509-539. https://doi.org/10.1111/phpr.12228	Argues that Intellectual Humility is attentiveness to and owning of one's intellectual limitations.
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In this article, Whitcomb et al. propose an analysis of intellectual humility (IH) according to which the virtue of IH consists in appropriate attentiveness to and owning of one's intellectual limitations. Part of their impetus is (i) to distinguish what IH consists in (what it is) from what we rightly expect to accompany or result from IH, and (ii) to distinguish the virtue of IH from nearby but distinct virtues, such as open-mindedness.

Before building their own account of IH, Whitcomb et al. offer some worries about three existing accounts of IH in the philosophical literature: 1) Proper beliefs: IH is a disposition to form proper beliefs about the epistemic status of one's beliefs (Hazlett 2012); 2) Underestimation of strengths: IH is a disposition to underestimate one's intellectual strengths, accomplishments, social status, and entitlements (Driver 2001); and 3) Low concern: IH consists in a disposition to an unusually low concern for one's own intellectual status and entitlements (Roberts and Wood 2007). Whitcomb et al. argue that each of these three views is insufficient for IH and that neither 2) Underestimation of strengths nor 3) Low concern is necessary for IH.

Whitcomb et al. then define their view of IH. An agent has both strengths and limitations: proper pride is having the right stance towards one's strengths, and humility is having the right stance towards one's limitations. IH is then having the right stance towards one's intellectual limitations, e.g., one's gaps in knowledge, one's deficits in cognitive capacities and skills. The right stance means being appropriately attentive to them and to own them. Appropriate attentiveness consists in a disposition to be aware of one's limitations, and for them to come to mind when the occasion calls for it (if they come to mind all the time, an agent can be servile, whereas if they rarely come to mind, an agent can be arrogant—humility is a mean between extremes).

What it means to *own* your limitations is a harder question, and Whitcomb et al. offer cognitive, behavioral, motivational, and affective responses characteristic of an agent who owns their limitations. For cognitive, the person with IH is disposed to believe and accept that she has the limitations that she does, and to believe that the negative outcomes of her limitations are due to her limitations (as opposed to believing they are due to others). For behavioral responses, the

person with IH is disposed to admit them to others, and more generally, to act as the context demands. For motivational responses, the person with IH is disposed to care about their limitations and take them seriously in accordance with contextual demands. And finally in affective responses, the person with IH is disposed to regret, and not be hostile about, her limitations, and more generally to affectively respond to her limitations as the context demands. Characteristically, IH involves dispositions to 1) believe that one has them and to believe that negative outcomes are due to them; 2) to admit or acknowledge them; 3) to care about them and take them seriously; and 4) to feel regret or dismay, but not hostility, about them.

In short: IH consists in proper attentiveness to, and owning of, one's limitations. IH is a *virtue* just when one is appropriately attentive to, and owns, one's intellectual limitations *because* one is appropriately motivated to pursue epistemic goods, e.g. truth, knowledge, and understanding (i.e. someone who acts in ways consistent with IH but does so out of greed would not have the *virtue* but only the *characteristic trait*).

Whitcomb et al. argue that there are a number of pre-theoretic predictions about IH that can be explained by the limitations-owning (IHLO) account. Here, they are distinguishing (a) what IH consists in, namely limitations-owning, from (b) phenomena that we would expect to be correlated with IH as limitations-owning. The first category is predictions related to activities, motivations, and feelings, such as: IH increases a person's propensity to admit his intellectual limitations to himself and others, and to defer to others. The second category relates to predictions related to cognitive biases, such as: IH reduces self-serving bias—the propensity to attribute to oneself more responsibility for intellectual successes than for intellectual failures. The third rubric is predictions related to belief-regulation, such as: IH increases a person's propensity to revise a cherished belief or reduce confidence in it, when she learns of defeaters. The fourth rubric is predictions related to other character traits and virtues such as open-mindedness, such as IH increases a person's propensity to consider alternative ideas, to listen to the views of others, and to spend more time trying to understand someone with whom he disagrees. The IHLO authors likewise argue that their account predicts that IH will be correlated with having proper beliefs about whether one's lower-level beliefs are well-grounded as well as with having low concern about one's intellectual strengths.

Finally, the IHLO authors address three problems for their view: the puzzle of self-attribution, the problem of self-focus, and the problem of arrogance. The Problem of Arrogance points out that IH consists in owning one's limitations, but says nothing about one's intellectual strengths. Thus, the IHLO view can allow someone to simultaneously be humble with regards to their limitations and arrogant with regards to their strengths. In reply, the authors sketch a relation between humility, proper pride, arrogance, and servility. Proper pride (appropriate owning of one's strengths) lies in the mean between excessive and deficient attentiveness to one's strengths, and has a suite of dispositions similar to IH. *Excessive* attentiveness to (or over-owning) one's

strengths is arrogance. *Deficient* attentiveness (or under-owning) one's strengths is servility. Proper pride is the mean between arrogance and servility (see the paper for a diagram of the relationship between humility, proper pride, arrogance, and servility). *Deficient* attentiveness to one's limitations (under-owning limitations) is *also* arrogance. Humility, then, is the mean between arrogance and servility with respect to owning one's limitations.