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REVIEW ARTICLE

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Clarifying the Content of Intellectual Humility: A Systematic Review and Integrative Framework

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ABSTRACT

During the last decade, intellectual humility has gone from a topic of philosophical inquiry to one of serious scientific investigation. It has been variously described as a remedy for political polarization, a tool for advancing scientific credibility, and a disposition that promotes learning. However, less attention has been paid to how intellectual humility has been defined and measured or how well psychologists' definitions and measures align with one another or with philosophers' accounts. Through a systematic review of empirical intellectual humility research, we identified 18 separate definitions and 20 measures including16 unique questionnaires. We then synthesized this research to advance a new framework of intellectual humility. Implications of this framework for measurement and future research on intellectual humility are discussed.

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All humans are intellectually fallible, but not all responses to fallibility are productive. Intellectual or epistemic humility describes a constellation of thoughts and behaviors related to productively handling one's intellectual fallibility and ignorance. Recent psychological investigations of intellectual humility have heralded it as a way to increase credibility within social science (Davis et al., 2018; Hoekstra & Vazire, 2020; Nosek et al., 2019), decrease polarization and extremism (Bowes et al., 2020; Mellers et al., 2019) and increase learning and discovery (Krumrei-Mancuso et al., 2020; Porter et al., 2020). Indeed, in the last decade psychologists from many subdisciplines have taken an interest in the topic resulting in new research across social/personality (Leary et al., 2017; Zachry et al., 2018), developmental (Danovitch et al., 2019), health (Senger & Huynh, 2020), clinical (Higgins, 2019), educational (Lapsley & Chaloner, 2020), and cognitive psychology (Zmigrod et al., 2019).

As interest and research on intellectual humility have expanded, so have the ways it has been defined and measured. Multiple accounts have been introduced in a burst of empirical research during the last decade, driven in part by grant programs from the John Templeton Foundation,[1] but these definitions and measures have largely developed independently of one another. One result is that we do not know the extent to which researchers use "intellectual humility" to refer to the same or different phenomena. Moreover, we do not know how well the content assessed in different measures is the same or different, or how well measures align with philosophical accounts.

Our interdisciplinary team of psychologists and philosophers conducted a comprehensive review of philosophical accounts and psychologists' definitions and measures of intellectual humility. Although ours is not the first review of humility research, generally speaking (Hill et al., 2017; McElroy-Heltzel et al., 2019; Van Tongeren et al., 2019), it has three distinctive features that advance understanding of *intellectual* humility research. First, we review all definitions and measures of intellectual humility that have been used by psychologists in published empirical work. Our exhaustive and systematic search gives confidence that we are capturing a complete picture of the current field. Second, we are the first to offer a content analysis of intellectual humility questionnaires, revealing which features of intellectual humility have been assessed and with what frequency; thus, beyond observing that conceptualizations and questionnaires differ, we can identify how they differ and where the largest areas of consensus and divergence are. Third, ours is the first to review eight philosophical accounts of intellectual humility and compare those accounts to psychologists' definitions and measures of intellectual humility. Finally, we advance a

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[1]For more information, see https://www.templeton.org/project/intellectual-humility.

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Table 1. Accounts of intellectual humility in philosophy.

Authors	Account of intellectual humility	Name
Church and Barrett (2016)[a]	Valuing one's own beliefs as he or she ought	Doxastic account
Hazlett (2012)	A disposition not to adopt epistemically improper higher-order epistemic attitudes, and to adopt (in the right way, in the right situations) epistemically proper higher-order attitudes	Proper beliefs
Kidd (2016)	The disposition to recognize the fulfillment of relevant confidence conditions … [and to] use the recognition of the relevance and fulfillment of confidence conditions to regulate the [one's] intellectual conduct.	Confidence management
Priest (2017)	[The intellectually humble person] respects the intellect of others as his own, and so rarely feels immune to their complaints and criticisms [and] systematically declines intellectual advantages in interpersonal relations because he feels no sense of entitlement	Interpersonal account
Roberts and Wood (2007)	[As the opposite of intellectual vanity,] it is an unusually low dispositional concern for the kind of self-importance that accrues to persons who are viewed by their intellectual communities as talented, accomplished, and skilled, especially where such concern is muted or sidelined by intrinsic intellectual concerns … It is also a very low concern for intellectual domination in the form of leaving the stamp of one's mind on disciples, one's field, and future intellectual generations. As the opposite of intellectual arrogance, [intellectual] humility is a disposition not to make unwarranted intellectual entitlement claims on the basis of one's (supposed) superiority or excellence, out of a concern for self-exaltation, or some other vicious concern, or no vicious concern at all	Low concern for intellectual status
Spiegel (2012)	Recognizing one's fallibility as a knower	Higher-order epistemic stance
Tanesini (2018)	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	Attitudes cluster
Whitcomb et al. (2017)	Proper attentiveness to, and owning of, one's intellectual limitations	Limitations owning

Note. Snow (2018) also reviewed Christen et al., 2014 which is an empirically generated account included in Table 2.
[a]Originally advanced by Samuelson et al. (2013).

new classification framework of intellectual humility that synthesizes and integrates the entirety of the research literature, clarifying what intellectual humility is and organizing its most agreed-upon features.

We begin by reviewing philosophical work on intellectual humility followed by a review of psychologists' definitions and measures. We then compare philosophical accounts to psychological research and introduce the new classification framework of intellectual humility. We conclude by offering recommendations for future research.

Philosophical accounts of intellectual humility

What does it mean to be intellectually humble? How does an intellectually humble person think and act? What should count as intellectual humility vs. something else? Philosophers' research on these questions can enrich psychologists' understanding of how intellectual humility should be conceptualized (Ballantyne, 2021; Miller, 2021). As seen in Table 1, several philosophical accounts of intellectual humility have been advanced in the last twenty years, each with a unique understanding of the construct. We have identified four major themes across these accounts.

First, most philosophers have argued that intellectual humility is an orientation toward one's own intellectual limitations – that is, fallibility and ignorance. Spiegel (2012) has described it as "recognition of one's fallibility as a knower" (p. 27). Similarly, Hazlett (2016) has described it as "attributing ignorance to yourself, withholding attributing knowledge to yourself, and questioning whether you know" (p. 76; see also Hazlett, 2012). Church and Barrett (2016) have claimed that intellectually humble people do not put too much value in beliefs that they should not (see also Samuelson et al., 2013; Samuelson & Church, 2015), and Kidd (2016) has described intellectually humble people as those who do not place too much confidence in beliefs that they should not have confidence in. Whitcomb and colleagues (2017) have gone further, describing intellectually humble people as those who not only recognize their intellectual limitations but "own" them as well, with owning consisting of cognitive, emotional, and behavioral manifestations. These accounts share a recognition that recognizing one's intellectual limitations is a central feature of intellectual humility.

Yet, several of these theorists have also argued that it is not enough for intellectually humble individuals to simply recognize their intellectual limitations. Rather, truly intellectually humble people recognize their limitations in the right amount and for the right reasons, the second major theme from the philosophical literature (Church & Barrett, 2016; Hazlett, 2012; Kidd, 2016; Roberts & Wood, 2007; Tanesini, 2018; Whitcomb et al., 2017). According to these conceptualizations, intellectually humble people are not *excessively* concerned about their intellectual limitations but rather are optimally calibrated - they hold beliefs with an appropriate degree of certainty. Moreover, their intellectual humility is motivated not by a desire to *appear* humble but rather by

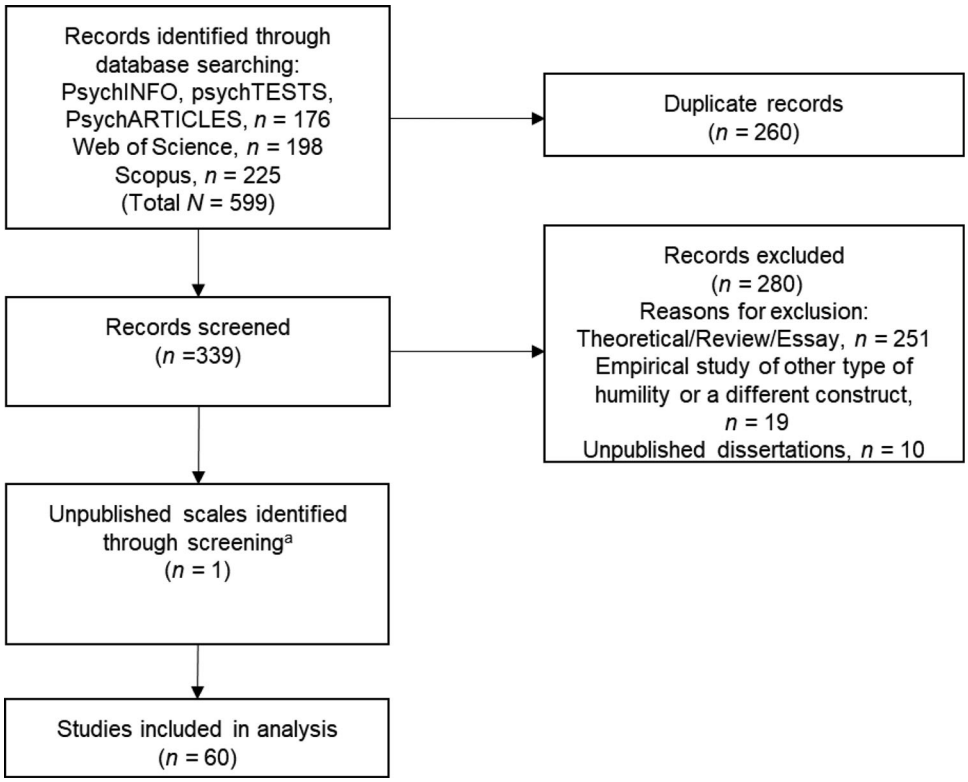


Figure 1. Systematic review search results. *Note*. [a]Hill et al., 2014.

an intrinsic concern with epistemic goods. The emphasis on optimal calibration and motivation is typical in philosophical accounts of character virtues and is tied to the neo-Aristotelian understanding of *phronēsis* – having the practical wisdom to enact a virtue in the right amount and in the appropriate circumstances (Wright et al., 2021; for psychological perspectives see Fowers et al., 2021; Ng & Tay, 2020).

Third, two philosophical accounts consider intellectual humility to be interpersonal. Priest (2017) has described intellectual humility as "[treating] other intellects with as much respect as [one] treats [one's] own" (p. 479). This appreciation for others' intellect, in turn, allows people to recognize and acknowledge their own intellectual limitations. Likewise, Kidd (2016) has written that regulating "collective confidence," or trust in other individuals and communities, is constitutive of intellectual humility.

Finally, Roberts and Wood (2007) have argued that intellectual humility at its core is "an unusually low concern for one's own intellectual status and entitlements" (p. 514). From this view, intellectually humble people do not care about looking smart or earning accolades for their intellectual accomplishments. Instead, they are exclusively focused on pursuing knowledge, understanding, and truth, regardless of how this pursuit might reflect on or influence their intellectual rank or standing.

In summary, although there is no consensus philosophical account of intellectual humility, most philosophers suggest that intellectual humility involves how people handle their intellectual limitations. By contrast, at least two philosophers (Priest and Kidd) argue that valuing the ideas and insights of other people belongs within the core of intellectual humility and Roberts and Wood suggest that intellectual humility is fundamentally not being concerned about one's own intellectual status.

Reviewing definitions and measures of intellectual humility in psychology

Our next goal was to understand how psychologists have defined and measured intellectual humility. We searched all records available by July 29, 2020 in PsycINFO, PsychTESTS, PsychARTICLES, Web of Science, and Scopus for keywords "intellectual humility" OR "epistemic humility." As seen in Figure 1, the search yielded 339 unique results. A screening based on a priori inclusion and exclusion criteria resulted in 59 published studies and one unpublished questionnaire that were included in analyses. See the supplementary materials for detailed methods and inclusion and exclusion criteria, and https://osf.io/dc2rk/ for studies screened and detailed reasons for study exclusions.

From these studies, we compiled all unique definitions of intellectual humility. We also recorded how intellectual humility was measured including the type of instrument used (e.g., questionnaire, behavioral task), the level of assessment (e.g., domain-general, domain-specific, or situated), the number of factors if a questionnaire was used, and whether the instrument was ad hoc (developed and used for a particular study) or intentionally validated (developed for wider use beyond one study). We then extracted items from intellectual humility questionnaires and coded them according to content themes. If items were not provided, we contacted the authors up to two times via email to request them.

Table 2. Definitions and measures of intellectual humility in empirical research.

Authors	Definition of intellectual humility	Measure type
Alfano et al. (2017)	Multi-dimensional trait of self- and other-oriented facets, characteristic way of responding to new ideas, seeking out new information, being mindful of others' feelings, and reactions in intellectual engagements	Self-report questionnaire
Christen et al. (2014)	High sensible, discreet, and inquisitive self; low underrated other; low under- or overrated self	No measure
Danovitch et al. (2019)	Acknowledging the limitations of one's knowledge; accurately representing one's knowledge to other people, and being open to others' input	Behavioral task
Gregg et al. (2017)	Absence of self-enhancement motive and egotistical bias. Ability to be objective with respect to one's beliefs	Self-report questionnaire
Hagá and Olson (2017)	Placing an adequate level of confidence in one's beliefs, revising beliefs when needed, and being willing to consider other people's beliefs	No measure (perceptions of IH in others)
Haggard et al. (2018)	Owning one's intellectual limitations (affectively, motivationally, behaviorally and cognitively) while being appropriately attentive to them	Self-report questionnaire
Zachry et al. (2018)	Same as above	Complementary state and trait questionnaire
Hill et al. (2014)[a]	Not available	Self-report questionnaire[a]
Hook et al. (2015)	Having an accurate view of one's intellectual strengths and weaknesses and being respectful of others' ideas	Self-report questionnaire, specific
Hopkin et al. (2014)	The mindset and actions associated with treating one's own views (i.e., beliefs, opinions, positions) as fallible	Self-report questionnaire, specific
Hoyle et al. (2016)	Recognizing that a particular personal view/belief may be fallible, accompanied by an appropriate attentiveness to limitations in the evidentiary basis of that view/belief and to one's own limitations in obtaining and evaluating information relevant to it	Self-report questionnaire, specific
Leary et al. (2017)	Same as above but domain-general	Self-report questionnaire
Jarvinen and Paulus (2017)	The capacity to remain cognitively open to counterarguments particularly when the counterargument poses some threat	Reported attitude change
Kross and Grossmann (2012)	Recognizing the limits of one's knowledge	Qualitative coding
Brienza et al. (2018)[b]	Same as above	Self-report questionnaire, situated[b]
Grossmann and Kross (2014)[b]	Same as above	Self-report questionnaire, situated[b]
Krumrei-Mancuso and Rouse (2016)	A non-threatening awareness of one's intellectual fallibility	Self-report questionnaire
Krumrei-Mancuso et al. (2020)[c]	Same as above	Self-report questionnaire[c]
McElroy et al. (2014)	Having insights about the limits of one's knowledge and regulating intellectual arrogance in relationships	Informant-report questionnaire
Meagher et al. (2015)	Low self-focus and little concern for status, caring most about the intrinsic value of knowledge and truth	Complementary self- and informant-report questionnaire
Porter and Schumann (2018)	Willingness to recognize the limits of one's knowledge and appreciate others' intellectual strengths	Self-report questionnaire
Reis et al. (2018)	Openness to information that may conflict with one's personal views and relatively weak needs to enhance one's ego	Reported self-serving bias and openness to new information
Samuelson et al. (2015) (theoretical)	A virtuous mean lying somewhere between the vices of intellectual arrogance (claiming to know more than is merited) and intellectual diffidence (claiming to know less than is merited)	No measure
Samuelson et al. (2015) (folk)	One who is modest, intelligent, loves learning, and is respectful and considerate of others	No measure

Note. Questionnaires are domain general unless specified otherwise.
[a]Unpublished questionnaire, definition not found.
[b]Subscale of wise reasoning questionnaire.
[c]Studies 1 and 2.

Psychological accounts of intellectual humility

Our search revealed 18 distinct definitions of intellectual humility (Table 2). Multiple research teams were working to define intellectual humility independently but simultaneously leading to an average of roughly two new definitions introduced per year in the last decade.

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). Although we have presented brief definitions in Table 2, we encourage interested readers to consult the articles for more background and theoretical information about each definition.

The definitions touched on several themes from philosophical accounts of intellectual humility and overlapped with one another. 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

Table 3. Description of content in intellectual humility questionnaires.

Content themes	Description	Sample item
Awareness of Personal Intellectual Limitations	Recognition of ignorance, errors, or potential ignorance and errors; willingness to revise flawed views	"My views about ___ today may someday turn out to be wrong." Hoyle et al., 2016
Attitudes, Beliefs, and Behaviors focused on Other People's Intellect	Openness/interest in others' views, even in context of disagreement; willingness to consider (not automatically dismiss) others' ideas/feedback; appreciation/value for others' intellect and ideas, regardless of their status	"I compliment the good ideas of those who disagree with me" Zachry et al., 2018
Beliefs and Feelings about Disagreements	Personal beliefs about the nature of disagreements; feelings brought on by disagreements	"A disagreement is like a war," reverse-scored; Alfano et al., 2017
Drive to Learn	Being interested in learning; liking new information	"I love learning." Haggard et al., 2018
Concerns about Personal Intellectual Status	Wanting to achieve a high level of intellectual status for one's self; wanting other people to know how intelligent one is	"It is important to me that I am smarter than the average person" Hill et al., 2014
Appropriate Concern with Intellectual Limitations	Not wallowing in intellectual weaknesses or limitations; feeling appropriately (vs. extremely/overly) upset by intellectual limitations	"I focus on my intellectual weaknesses too much," reverse-scored; Haggard et al., 2018

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.

Psychological assessments of intellectual humility

Mirroring the assortment of definitions, 20 different measures of intellectual humility were identified in our search including 16 questionnaires. Eight of the measures were self-report questionnaires that assessed domain-general intellectual humility; five were self-report questionnaires that assessed domain-specific, situated, or state intellectual humility; one was a complementary state-trait questionnaire; one was a complementary self- and informant-report questionnaire; one was an informant-report questionnaire; one was an assessment through qualitative coding; one was an assessment of self-serving bias and openness to new information; the rest were ad hoc behavioral measures.

What do intellectual humility questionnaires assess?

We found items for 15 of the 16 intellectual humility questionnaires (Gregg et al., 2017 was the exception). To better understand what the 188 items assessed, two coders classified each one according to content themes defined in Table 3. Five of the themes were developed a priori based on the philosophical literature and a sixth (beliefs and feelings about and during disagreements) was identified in the process of coding. Notably, there is some overlap between these themes and the eight themes found in McElroy-Heltzel and colleagues' (2019) review of humility measures that included five measures of intellectual humility. Inter-rater reliability in the current study was calculated during three rounds of coding (kappa = .80, .82, and .90; SE = .04, .07, and .07, respectively). Disagreements were resolved through discussion. See the supplementary online materials for detailed coding procedures and analysis code, and https://osf.io/dc2rk/ for the raw data, original, and final codes for each item.

Awareness of personal intellectual limitations

As seen in Table 4, 100% of questionnaires assessed awareness of one's intellectual limitations in some way; these accounted for 31% of all items. Some of the items tapped a private awareness of one's intellectual fallibility ("I accept that my beliefs and attitudes may be wrong") whereas others assessed external manifestations of this awareness exhibited individually ("I search actively for reasons why my beliefs might be wrong") or during social interactions ("When someone points out a mistake in my thinking, I am quick to admit that I was wrong"). Items also tapped awareness and expression of one's ignorance ("I am willing to admit it if I don't know something").

Attitudes, beliefs, and behaviors focused on other people's intellect

Eighty percent of questionnaires had items focused on others; these accounted for 38% of all items. Some of these items tapped beliefs or attitudes about other people's intellect ("I sometimes marvel at the intellectual abilities of other people") including beliefs about one's intellectual superiority or lack of superiority relative to other people ("For the most part, others have more to learn from me than I have to learn from them," reverse coded). Other items tapped expressed manifestations of these beliefs and attitudes ("When solving a problem, I prefer to seek a second opinion from someone who has a different point of view from my own").

Table 4. Content assessed in intellectual humility questionnaires.

Authors	Questionnaire name	Factors	Personal limitations	Others' intellect	Disagreement	Drive to learn	Personal status	Appropriate concern	Other
Alfano et al. (2017)	Multidimensional Intellectual Humility Scale	4	x	x	x	x	x	x	
Brienza et al. (2018)[a]	Situated Wise Reasoning Scale	1	x	x					x
Grossmann and Kross (2014)[a,b]		1	x						
Haggard et al. (2018)	Limitations Owning Intellectual Humility Scale	3	x			x		x	
Hill et al. (2014)	Intellectual Humility Scale	3	x	x			x		
Hook et al. (2015)	Cultural Humility Scale, adapted	2	x	x		x			
Hopkin et al. (2014)[b]		4	x	x	x				x
Hoyle et al. (2016)	Specific Intellectual Humility Scale	1	x						
Krumrei-Mancuso and Rouse (2016)	Comprehensive Intellectual Humility Scale	4	x	x	x				
Krumrei-Mancuso et al. (2020)[b]		2	x	x			x		x
Leary et al. (2017)	General Intellectual Humility Scale	1	x	x		x			
McElroy et al. (2014)	Intellectual Humility Scale	2	x	x	x				x
Meagher et al. (2015)[b]		2	x	x					x
Porter and Schumann (2018)	Intellectual Humility Scale	1	x	x				x	
Zachry et al. (2018)	State-Trait Intellectual Humility Scale	1[c]	x	x					x

Note. "Other" refers to items that fell outside of the content themes.
[a]Items coded are only from intellectual humility subscale in wise reasoning questionnaire.
[b]Ad hoc questionnaires developed for particular studies.
[c]One for state, one for trait.

Beliefs and feelings about disagreements

Twenty-seven percent of questionnaires assessed beliefs and feelings about disagreements; these accounted for 5% of all items. These items were distinguished from attitudes and beliefs about other people because they were directed at the self – that is, they tapped one's own feelings and beliefs about the nature of disagreements. Items tapped affective reactions to arguments ("I feel small when others disagree with me on topics that are close to my heart," reverse scored), implicit theories about disagreements ("A disagreement is like a war," reverse scored), and external manifestations of these theories ("Always has to have the last word in an argument," reverse scored).

Drive to learn

Twenty-seven percent of questionnaires assessed motivation to learn; these accounted for 4% of all items. Items tapped how much people enjoyed learning new things ("I like finding out new information that differs from what I already think is true"; "I love learning") and were occasionally targeted at interest in specific topics ("I enjoy reading about the ideas of different cultures").

Concerns about personal intellectual status

Twenty percent of questionnaires assessed concerns about personal intellectual status; these accounted for 7% of all items. These items were distinguished from the others because they focused on intrapersonal desires for intellectual entitlements ("When I come up with an original idea, I think I deserve special recognition," reverse scored) and status ("I want to be famous for an intellectual contribution," reverse scored).

Appropriate concern with intellectual limitations

Finally, twenty percent of questionnaires assessed the extent to which individuals were not maladaptively concerned with their intellectual limitations; these accounted for 5% of all items. These items tapped ruminating on intellectual limitations ("I focus on my intellectual weaknesses too much," reverse scored) and feelings or reactions triggered by social exposure of one's intellectual limitations ("When someone corrects a mistake that I've made, I do not feel embarrassed").

Psychometric properties of measures

Although our primary goal was to capture differences in content, we note that intellectual humility questionnaires also differed in psychometric properties. As seen in Table 4, some questionnaires were multidimensional whereas others were unidimensional, and some were tested for validity whereas four were developed ad hoc. Tests of validity varied in how extensive they were. Some authors tested for convergent and discriminant validity (Leary et al., 2017) and

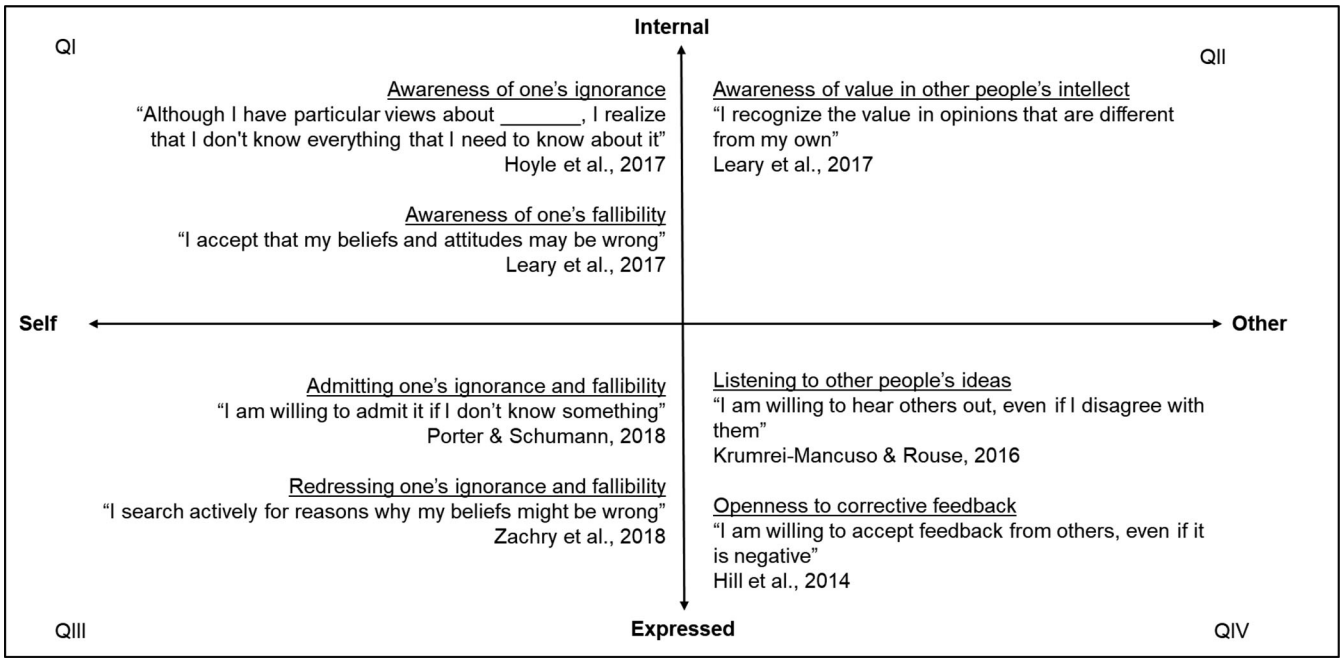


Figure 2. Intellectual humility classification framework. *Note.* Example manifestations and questionnaire items are provided for each quadrant.

incremental validity (Krumrei-Mancuso & Rouse, 2016), whereas others only tested for factor structure (Krumrei-Mancuso et al., 2020, questionnaire used in Studies 1 and 2). The number of items per questionnaire also ranged from 1 to 23 and some unidimensional questionnaires were highly internally consistent whereas others were less so. On the whole, the usability and amount of data supporting each questionnaire varied.

Limitations of coding

Like any attempt at coding, our classification of questionnaire items is imperfect. Items in one category could be considered instantiations of a different category. For instance, recognizing the value of others' intellect could be considered the result of recognizing that your own intellect is fallible. Our six codes also required us to gloss over nuances that if probed would likely unlock additional codes. Indeed, as seen in Table 4, some questionnaires contained items classified as "other" that did not fall under any of our codes. Despite these imperfections, our coding system was able to reliably identify conceptual commonalities and distinctions among the items, shedding light on the different kinds of content assessed in intellectual humility questionnaires. We provide information in the supplementary materials about how we distinguished between the different codes, why we classified specific items the way that we did, and how coding disagreements were resolved.

Comparison of psychological and philosophical research

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.

Toward a clearer understanding of intellectual humility

In this third and final section we address how intellectual humility researchers should proceed. The flurry of research in the last decade has produced multiple definitions and measures resulting in lack of clarity in psychology and philosophy about what exactly intellectual humility is. The lack of clarity may work against the establishment of a viable field and prevent the coherent accumulation of evidence about intellectual humility's nature and development.

A new framework of intellectual humility

With the goal of working toward greater clarity, we advance a new classification framework of intellectual humility that aims to synthesize and integrate the research literature. As seen in Figure 2, the framework distinguishes between features of intellectual humility that are *self-focused* versus *other-focused*, depending on whether they target one's own knowledge, beliefs, and ideas or those of other people. The

framework further differentiates between features of intellectual humility that are *internal*, including cognitive components such as thoughts and attitudes, and those that are *expressed*, comprising observable behavioral manifestations (Owens et al., 2013). Combining these two axis results in quadrants that we number from left to right. Example manifestations and intellectual humility questionnaire items for each quadrant are provided in Figure 2.

This framework encompasses the features of intellectual humility that were most frequently assessed by psychologists and supported by philosophical accounts. In our view, recognition of one's intellectual fallibility and ignorance are necessary but not sufficient for intellectual humility because it would not be intellectually humble to realize that you are incorrect or ignorant but act as though you were correct or knowledgeable. Yet, expressed awareness of one's intellectual limitations is insufficient because it would not be intellectually humble to realize that you are incorrect or ignorant, express the fact that you are incorrect or ignorant, but dismiss other people's knowledge or feedback that could redress your ignorance. To draw from Priest (2017, p. 469), excluding the other-focused side from our framework would allow an intellectually humble person to be pretentious, haughty, and dismissive of other people's opinions and views.

Our framework excludes four features of intellectual humility that appeared in philosophical accounts and psychologists' measures. We offer additional considerations about why we did not incorporate these features. We then offer a few thoughts on future directions for research, including ways to refine our framework and measure intellectual humility. We end by making a few essential (in our view) recommendations for all intellectual humility researchers.

Elements excluded from the framework

Beliefs and feelings about disagreement. Beliefs and feelings about disagreements are not included in our framework. Intellectual humility may be associated with beliefs and feelings about disagreements, but the key question is whether these beliefs and feelings are defining characteristics of intellectual humility. Philosophically, none of the accounts that we reviewed considered them to be constitutive of intellectual humility. Psychologically, researchers have alternately considered them indicators of independence of intellect and ego (Krumrei-Mancuso & Rouse, 2016), motivation to engage with positions that are different from one's own (Alfano et al., 2017), and ability to regulate arrogance in social situations (McElroy et al., 2014). Yet, we were unable to find a rationale for why these beliefs and feelings are *necessary features* of intellectual humility. Without a reason to view them as constitutive, we believe beliefs and feelings about disagreements are best assessed as distinct correlates rather than features of intellectual humility itself.

Drive to learn. Our classification does not include motivation to learn. Motivation to learn is positively correlated with intellectual humility (Leary et al., 2017; Krumrei-Mancuso et al., 2020), but the key question is whether it should be considered constitutive of intellectual humility. There are circumstances in which other adaptive motivators may be responsible for intellectually humble thoughts and actions – for example, intellectual humility could be motivated by a desire to promote harmonious relationships. As Whitcomb and colleagues (2017) point out, "being motivated by a high intrinsic concern with epistemic goods is … not necessary for one to have the character trait of IH. IH can have other motivational sources" (p. 514). Accordingly, in our view motivation to learn is best conceptualized as distinct from intellectual humility itself.

Concerns with personal intellectual status. Lack of concern with intellectual status is excluded from our classification. Philosophers have argued that it is possible to be both concerned with intellectual status *and* intellectually humble (e.g., Church & Barrett, 2016; Priest, 2017; Whitcomb et al., 2017; though see Snow, 2018 for a defense). We add to these conceptual points a few empirical considerations. Namely, lack of concern with intellectual status does not correlate in expected ways with learning outcomes, which intellectual humility should theoretically predict. For example, Krumrei-Mancuso et al. (2020) found that students with higher intellectual humility, measured as a lack of concern with intellectual status (e.g., "I want to be famous for an intellectual contribution," reverse scored), underestimated their cognitive ability, had lower grade point averages, and were not more intellectually open than other students. Of course, it may be that researchers have so far failed to assess lack of concern with intellectual status appropriately. Nevertheless, combining conceptual concerns and the empirical results available, lack of concern with intellectual status is better treated as a distinct construct than a component of intellectual humility.

Appropriate concern with intellectual limitations. Finally, lack of intellectual servility, by which many authors seem to mean absence of an excessive preoccupation with one's intellectual limitations, is not included in our framework. Conceptually, it is exceedingly important that intellectual humility not be confused with undue wallowing in or consumption with one's intellectual limitations. Yet, we believe the best way to satisfy this criterion is to consider preoccupation with intellectual limitations a construct in its own right and to separate it from intellectual humility in the same way that, for example, gratitude can be distinguished from ingratiation and courage from recklessness.

Refining the framework

Our framework is one attempt to describe what intellectual humility is and organize its features. However, like any model, the framework is imperfect. Here, we consider a few limitations.

Although it contains fewer features than intellectual humility questionnaires as a whole, the classification framework continues to pack a lot of content into one construct. Perhaps a better approach would be to identify the single core feature of intellectual humility and distinguish that

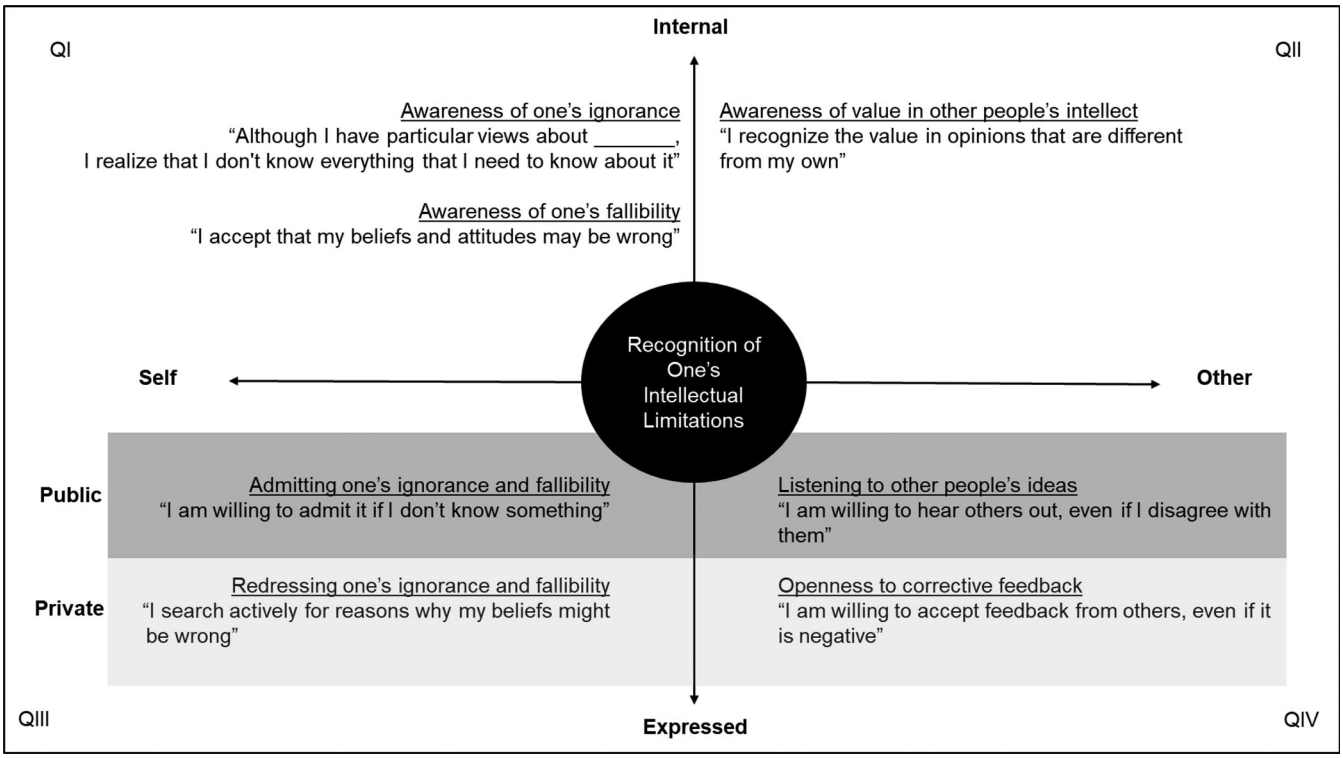


Figure 3. Expanded intellectual humility classification framework. *Note.* The expanded framework specifies recognition of one's intellectual limitations as the core of intellectual humility and distinguishes between public and private expressions of intellectual humility.

from peripheral features (Banker & Leary, 2020; Leary & Banker, 2019). Indeed, Leary (2018) has persuasively argued that recognition of one's intellectual limitations (i.e., fallibility and ignorance) is the core of intellectual humility and this was the most common feature across the philosophical and psychological research literatures. Therefore, our classification framework might be improved if it incorporated recognition of one's intellectual limitations as the core of intellectual humility (see Figure 3 for a visual depiction). Doing so could help refine quadrants 2 through 4 by making recognition of one's intellectual limitations a necessary precursor to the expressed and interpersonal quadrants. This would conceptually disallow self-presentational or inauthentic expressions from quadrant 3 (i.e., genuinely realizing your own limitations would have to precede expressing them to others) and distinguish intellectual humility from an overall warm heartedness or generosity toward other people's ideas in quadrants 2 and 4 (i.e., valuing others' intellect would only count as intellectual humility following an instance where your own intellectual limitations were brought to bear, for example, when receiving corrections or confronting perspectives that are different than your own).

Second, the framework might benefit from making additional distinctions. For example, it could be useful to differentiate expressed features of intellectual humility that are public and social from those that are private. Acting to redress one's ignorance or incorrectness publicly (e.g., speaking up in a class or a meeting) is more psychologically risky than doing so alone (e.g., looking up information while at home on the computer). Private vs. public expressions may therefore have different correlates, developmental precursors and trajectories, and situational constraints. Figure 3 visually depicts this distinction.

Third, the framework may need further refinement to distinguish intellectual humility from other intellectual characteristics like curiosity and open-mindedness. One way that the framework could help differentiate between these constructs is by providing a set of axes on which to map the features of the other characteristics. That is, features of curiosity and open-mindedness could also be mapped onto internal vs. expressed and self vs. other axes revealing areas of overlap and distinctions between these constructs and intellectual humility. Finally, the framework does not specify that any of the quadrants be appropriately calibrated to a particular situation. We expound on to this issue later when discussing how to measure the virtue of intellectual humility, but we offer that adding "appropriate" or "appropriately" to each of our quadrants would help distinguish intellectual humility from excessive levels of any of the features.

Measurement considerations

Current measures of intellectual humility. Our framework of intellectual humility has implications for measurement. To explore how available questionnaires mapped onto the framework, we scanned questionnaires for items that fell into each quadrant. We interpreted *expressed* intellectual humility items to *also* be tapping internal awareness of one's intellectual limitations or others' intellectual strengths. As seen in Table 5, most questionnaires had at least one item that fell into a quadrant. Many questionnaires also had at least one item that fell outside of the quadrants. Some questionnaires cleanly tapped only one of the quadrants. Overall,

Table 5. Intellectual humility questionnaires according to the classification framework.

Authors	Questionnaire name	Q1	Q2	Q3	Q4	Other
Alfano et al. (2017)	Multidimensional Intellectual Humility Scale	x	x	x	x	x
Brienza et al. (2018)[a]	Situated Wise Reasoning Scale	x	x	x		
Grossmann and Kross (2014)[a]		x				
Haggard et al. (2018)	Limitations Owning Intellectual Humility Scale	x	x	x	x	x
Hill et al. (2014)	Intellectual Humility Scale	x	x	x	x	x
Hook et al. (2015)	Cultural Humility Scale, adapted	x	x	x	x	x
Hopkin et al. (2014)		x	x	x	x	x
Hoyle et al. (2016)	Specific Intellectual Humility Scale	x				
Krumrei-Mancuso and Rouse (2016)	Comprehensive Intellectual Humility Scale	x	x	x	x	x
Krumrei-Mancuso et al. (2020)			x	x		x
Leary et al. (2017)	General Intellectual Humility Scale	x	x			x
McElroy et al. (2014)	Intellectual Humility Scale	x	x	x	x	x
Meagher et al. (2015)		x	x	x	x	x
Porter and Schumann (2018)	Intellectual Humility Scale	x	x	x	x	x
Zachry et al. (2018)	State-Trait Intellectual Humility Scale	x	x	x	x	x

Note. Q1 through Q4 refers to quadrants one through four in the classification framework (Figure 2); "Other" refers to items that fell outside of the framework. x indicates that a questionnaire had at least one item falling into that quadrant.
[a]Items are only from intellectual humility subscale in wise reasoning questionnaire; other items in wise reasoning questionnaire tap Q4.

none of the available questionnaires perfectly captured our framework, but there were available *items* that fell into each of the quadrants.

Development of new measures. New measures could be developed to assess the framework. One way to develop such measures would be to compile the available items that fall within each quadrant. Alternatively, new items could be written to clearly capture each of the quadrants. Empirically, the four conceptual quadrants may yield distinct yet intercorrelated facets of a higher order construct (see Grossmann, 2017 for a similar structure obtained for wise reasoning and Krumrei-Mancuso and Rouse, 2016 for a similar structure obtained for intellectual humility). Alternatively, the quadrants may load onto fewer than four factors or load onto a single broad factor.

Because measuring the entire framework could result in a multidimensional measure, we are compelled to 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 intellectual humility 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). This problem is compounded when adding the internal and expressed dimensions of intellectual humility. For these reasons, the utility of a global score from a multidimensional scale will be limited. Alternatively, intellectual humility could be studied one or two quadrants at a time as long as the feature of intellectual humility being studied is clearly described and cleanly measured (the framework is useful in this regard because it provides language for describing different features of intellectual humility). 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. Finally, when assessing intellectual humility as a multifaceted construct, it may also help to draw from the measurement journeys of other constructs. For example, empathy comprises multiple components that have been assessed together and separately (Zaki, 2014).

Measuring the virtue of intellectual humility

We have proposed a classification framework for intellectual humility as a characteristic. However, many scholars are interested in studying intellectual humility 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. Here, we describe what measuring the virtue of intellectual humility would require.

Virtues must be exercised in the right amount given a particular situation (Ng & Tay, 2020; Wright et al., 2021). *Phronēsis* – or practical wisdom – helps determine what the situationally optimal virtue expression is. 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).

Second, virtues must be exercised for the right reasons (Fowers et al., 2021). Thus, in addition to capturing intellectual humility across multiple situations, an assessment of the virtue would need to measure motivation for intellectual humility in each situation. To be an *intellectual* virtue, intellectual humility should be motivated by an intrinsic concern with epistemic goods (Whitcomb et al., 2017). To be a *moral* virtue, intellectual humility would need to be motivated by moral concerns. Either way, assessing the virtue of intellectual humility would require measuring motives for being intellectually humble across situations not just intellectual humility itself (Fleeson & Jayawickreme, 2021).

Essential recommendations

Not everyone will agree with our framework or suggestions for measuring intellectual humility. However, we believe there are a few points on which all intellectual humility

researchers can and should agree. First, it is critical that researchers a) decide what they mean by intellectual humility before trying to study it, guided by the available research; b) choose or develop a measure that clearly fits their definition; and c) make these decisions explicit in all published work. Second, researchers should attend to the psychometric properties of the intellectual humility measure(s) they use. Third, researchers should be cautious when interpreting global scores from multidimensional measures because such interpretations may mischaracterize individuals as being more psychologically similar or dissimilar than they are. Fourth, researchers should be absolutely certain that their measure(s) of intellectual humility is conceptually and empirically distinct from the correlates and dependent variables they are studying – failing to do so produces uninformative results. Finally, simply because a measure is named intellectual humility does not mean that it measures intellectual humility – before using an intellectual humility measure, researchers should carefully examine what the instrument actually assesses.

Conclusion

Intellectual humility has the potential to benefit individuals and society by increasing civility, fruitful collaboration, learning, and discovery. Yet, understanding how to foster intellectual humility depends on a shared vision of what intellectual humility is. This review is the first to systematically document the extent to which psychologists and philosophers differ in their definitions and measures of intellectual humility. We have then presented a new integrative framework of intellectual humility, described how this framework can be used to advance measurement and understanding of intellectual humility, and offered five essential recommendations for future research. We hope our work can invigorate research on this vital construct and contribute to the coherent accumulation of evidence about its nature and development.

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