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The Science of Intellectual Humility White Paper

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Abstract

The goal of this white paper is to introduce some issues in the philosophical and psychological literature that might be of interest to someone doing empirical research on intellectual humility: to identify areas and debates that might help us build a robust understanding of what intellectual humility is or might be. There are a number of issues that are quite pertinent; however, drawing heavily from the Science of Intellectual Humility Project's description, we think we have chosen those topics that are nevertheless particularly germane: (a) the philosophy of intellectual virtue, (b) the psychology of the virtuous knower, (c) the philosophical import of disagreement, and (d) the psychology of virtuous belief.

Regarding the philosophy of intellectual virtue, we elucidate the broad contours of two dominant accounts—two possible models for conceptually understanding intellectual humility—found within the philosophical literature surrounding virtue epistemology: virtue reliabilism and Neo-Aristotelianism (responsibilism). Drawing from these two models, we examine related issues regarding the psychology of the virtuous knower by exploring topics in heuristics and biases, motivation and cognition, intellectual humility as a trait, and the emotional components of intellectual humility. We then introduce some of the main philosophical issues surrounding epistemic disagreement—a subject that is arguably of critical importance for any viable, conceptual understanding of intellectual humility— proposing a methodology for systematically understanding when and why intractable disagreements occur. Finally, we explore the psychology of virtuous belief and related issues in the scientific literature: explicating the empirical prospects for intellectual humility in the psychological research on epistemic cognition, argumentative reasoning, epistemic beliefs and learning, and epistemic vigilance and trust.

§1. Introduction

It ain't the heat, it's the humility – Yogi Berra

The nature of our public discourse with its propensity toward intellectual arrogance often generates more heat than light. We would do well to follow Mr. Berra's advice and look toward intellectual humility as a more promising way forward through the many disagreements and issues that plague our society. But the significance of intellectual humility is not merely practical; it has important theoretic and scientific implications and is central to various projects in both philosophy and psychology.[1]

What are some ways intellectual humility will be important to philosophy? Recent work in philosophy has highlighted the theoretical importance of intellectual humility in the context of the broader subject of "virtue epistemology." Virtue epistemology focuses on the process by which beliefs are formed, looking specifically at whether or not the belief was formed by an *intellectually virtuous knower*. Some have claimed that intellectual humility is among these core intellectual virtues. In this way, intellectual humility can be seen as foundational to knowledge itself. What is more, intellectual humility seems incompatible with the notion that one might fairly stick to his or her guns (intellectually speaking) when faced with others who are equally intelligent and well informed, but who hold opposing, even incompatible views. And yet, while sticking to your guns and being intellectually humble seem incompatible, even paradigmatically intellectually humble individuals sometimes (quite justifiably) maintain their positions in the face of such disagreement. The epistemic import

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[1] No doubt, the subject of intellectual humility will be extremely important for other subjects as well – theology, for example, is one that was noted repeatedly in the Intellectual Humility Project Description. However, given our current purposes, philosophy and psychology will be our primary focus for this white paper.

of peer disagreement is a hot topic in contemporary epistemology and directly relevant to intellectual humility (and vice versa).[2]

What are some ways intellectual humility will be important to psychology? Well, we could begin our investigation into intellectual humility by recognizing it as the opposite of intellectual arrogance for we have evidence that this vice is deeply rooted in human psychology. First, human beings are notoriously (and apparently naturally) disposed to over-estimate their intellectual strengths and under-estimate their weaknesses; indeed, the evidence is clear that there is a strong tendency even to under-estimate our liability to such biases! Do these biases show a natural tendency away from intellectual humility? Furthermore, we are susceptible to all sorts of biases that make intellectual humility difficult. For example, we tend to favor evidence or data received early in our inquiries (primacy bias) and we tend to discount the weight of evidence that counts against hypotheses we endorse (confirmation bias). Second, evolutionary psychologists have offered some intriguing arguments that these dispositions are embedded within our cognitive architecture in ways that can systematically lead us to biased thinking, in some cases for adaptive reasons. Does this mean that intellectual arrogance is both an epistemic vice and a "biological virtue?" Third, some clinicians have argued that intellectual arrogance is necessary for maintaining mental health. The intellectual humble, who see themselves and their condition with unmitigated clarity, are more susceptible to forms of depression, for example. Presumably, however, viewing intellectual humility merely as the opposite of intellectual arrogance gives us an incomplete picture. For example, evidence indicates correlations between intellectual humility and important morally salient traits such as a willingness to forgive others, a lack of aggression,

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[2] To be sure, the epistemic import of peer disagreement will also be of central importance to various theological debates surrounding "religious pluralism" (the view that, roughly, that all religions approximate the ultimate truth) and the problem of divine hiddenness.

and helpfulness. Moreover, psychologists have discovered traits and behaviors associated with intellectual humility that facilitate learning, personal growth, and social interaction. What other positive, or negative, correlations exist between intellectual humility and other aspects of human flourishing?

No doubt then, intellectual humility is going to be an important subject for academic work in psychology and philosophy. The problem, however, is that a robust conceptual, theoretical, and empirical understanding of intellectual humility—the sort of understanding that is going to be most valuable for projects like those noted above—is surprisingly difficult to come by. Intellectual humility has sometimes been explicitly delineated as a subset of concepts such as humility and wisdom. For example, research into folk conceptions of wisdom reveals components such as open-mindedness, not being afraid to admit and correct a mistake, and listening to all sides of an issue (what Sternberg (1985) calls "sagacity") that resonate with intellectual humility,[3] but there have been no such investigations to date that deal with intellectual humility as a stand-alone concept. There are, no doubt, an enormous number of projects that intellectual humility can speak to; however, if we do not understand precisely what intellectual humility *is*, we will be unable to explore the full significance of intellectual humility (both practical and academic) with much precision.

In their landmark work, "Humility and Epistemic Goods," Robert C. Roberts and W. J. Wood (2003) give us what is perhaps the best account of intellectual humility in the literature; however, even it is incomplete. In developing their account of intellectual

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[3] Similar factor-analytic studies find these traits coalesce to form a consistent factor in folk concepts of wisdom (Clayton & Birren, 1980; Holliday & Chandler, 1986). Meacham (1990) defines wisdom exclusively in terms that reflect intellectual humility (knowing that one does not know and that knowledge is fallible). Grossmann et al. (2010) have devised a wise reasoning measure that codes for intellectual humility (defined as recognizing the limits of one's knowledge).

humility, Roberts and Wood begin by defining humility *simpliciter* by contrasting it with

vices like arrogance and vanity. As they explain:

> Like many other epistemic virtues, humility has a wider than merely
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> intellectual sphere. So our strategy will be first to explore it in its broader
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> moral application, and then to carry what we have learned into a discussion of
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> the intellectual life… Often, virtues are best described in connection with their
>
> vice-counterparts, and this is especially important with humility…Humility is
>
> opposite a number of vices, including arrogance, vanity, conceit, egotism,
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> grandiosity, pretentiousness, snobbishness, impertinence (presumption),
>
> haughtiness, self-righteousness, domination, selfish ambition, and self-
>
> complacency. (pp. 257-258)

And so, Roberts and Wood explicate intellectual humility by working from an understanding

of humility in general, generated by contrasting it with vices approximately summarized as

"improper pride" (p. 258).[4] And in this way, Roberts and Wood go on to define intellectual

humility as:

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[4] One area in the psychological literature that could address these issues is research into narcissism. Citing

Wallace and Baumeister (2002), Peterson and Seligman (2004) have pointed out that a key tendency of persons

with subclinical narcissistic personality traits (which happen to be generally distributed in the population) is the

tendency to "seek esteem by... publicly outperforming others and winning admiration" (p. 467). That is, people

who score high in measures of subclinical narcissism work harder to achieve when they know people will

notice. Meanwhile, those who score low in subclinical narcissistic personality traits perform just as well in

situations where they are likely not to gain recognition. Thus IH might be a virtue that holds special promise in

an age when vanity in the form of narcissism seems to be an ever increasing phenomenon (Twenge, Konrath,

Foster, Keith Campbell, & Bushman, 2008).

…an unusually low dispositional concern for the kind of status that accrues to persons who are viewed by their intellectual communities as intellectually talented, accomplished, and skilled, especially where such concern is muted or sidelined by intrinsic intellectual concerns – in particular, the concern for knowledge with its various attributes of truth, justification, warrant, coherence, precision, and significance. (p. 271)

According to Roberts and Wood, intellectual humility is a virtue that can be negatively defined by its opposition to intellectual variants of vices such as arrogance, vanity, snobbishness, and domination. One way of understanding many of these kinds of vices is that they are often focused on the social well-being of the possessor. Thus according to Roberts and Wood (2007), intellectual humility must be something quite the opposite: as they put it more recently, "a striking or unusual unconcern for social importance, and thus a kind of emotional *insensitivity* to the issues of status" (p. 239). The important nuance here being that the possessor of intellectual humility is not unaware or his or her status, excellence, or importance, but that he or she is largely unconcerned with the issue and is motivated to pursue epistemic goods by something beyond social status.

No doubt, this understanding of intellectual humility has a great deal to commend it. It seems to rightly capture an important social aspect of intellectual humility, and it is surely right that one can get valuable insights into intellectual humility by contrasting it with vices like intellectual arrogance, and in many ways it is intuitive and elegantly prescriptive. To be sure, Roberts and Wood are traditional (non-experimental) philosophers, and as such there is a tremendous amount of work still to be done explicating the empirical dimensions of intellectual humility. That said, Roberts and Wood have done a great deal to further our conceptual and theoretical understanding of intellectual humility.

But even so, there is still an enormous amount of theoretical work to be done; there are many worries one may level against the Roberts and Wood conception of intellectual humility. First of all, it is not at all clear that intellectual humility is really just the opposite of intellectual arrogance. Arguably, intellectual humility is best conceived as a *virtuous mean* in between the vices of *intellectual arrogance* on the one side and *intellectual diffidence* on the other. This latter dimension, however, is completely underdeveloped in the Roberts and Wood account. Second, it is not obvious that intellectual humility is really a subset of humility. No doubt, this is a reasonable assumption to make (i.e. it is easy to assume that if we are talking about *intellectual* humility, we are talking about a specific type of *humility*); however, it could easily be the case that humility is a subset of intellectual humility. Perhaps humility is just being intellectually humble about how one conceives of himself/herself.[5] And third and finally, the Roberts and Wood conception of intellectual humility does not seem to allow for someone to be intellectually humble or intellectually arrogant in non-social scenarios, in scenarios where *status* within one's intellectual community is not at issue. Presumably someone can be intellectually humble or intellectually arrogant about a given topic even if they never communicate their views to their peers; however, it's not clear that this is possible on the Roberts and Wood view.

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[5] And if this is correct, then perhaps the most parsimonious way to understand humility is by way of intellectual humility. Indeed, in a seminal theoretical piece in the psychology literature, Tangney (2000) grounds the definition of humility in two realms: a proper *understanding* of the self (accurate assessment, keeping one's abilities/accomplishments in proper perspective, low self-focus) and a certain intellectual disposition (acknowledging mistakes, intellectual openness). Various measures of humility have also reflected these dimensions (Davis et al., 2011; Landrum, 2011; Rowatt et al., 2006). The Honesty-humility dimension in the HEXACO assesses only accurate self-understanding (modesty, Ashton & Lee, 2008). Perhaps some of the problems that have been encountered in the measurement of humility could find resolution if humility was seen as a component of intellectual humility.

Work still needs to be done. Roberts generated a tremendous amount of discussion when he wrote "What is it to be Intellectually Humble?" for the John Templeton Foundation's online publication *Big Questions Online* (see Roberts, 2012b). However, as Roberts summarized in his follow-up discussion summary, "One of the most striking things to emerge from our discussion of intellectual humility is the lack of consensus on what 'humility' and 'intellectual humility' mean" (Roberts, 2012a). And this is the setting—the state of play—for the current Project. As we move forward, as we research the *Science of Intellectual Humility*, it is important that we try our level best to build a robust conceptual, theoretical, empirical understanding of just what intellectual humility *is*.

The goal of this white paper is to introduce some issues in the philosophical and psychological literature that might be of interest to someone doing empirical research on intellectual humility: to identify areas and debates that might help us build a robust understanding of what intellectual humility is or might be.

There are two important points worth stressing here. First, given constraints on time, space, and expertise, this white paper simply cannot introduce every philosophical and psychological issue that might bear some relevance to the Intellectual Humility project. There are a number of issues concerning skepticism, moral philosophy, philosophical theology, cooperative decision making, the relationship of intellectual humility to wisdom, curiosity and learning, the negative relationship to such personality traits as aggression and narcissism, etc. that are quite pertinent. Drawing heavily from the Project's description, however, we think we have chosen those topics that are nevertheless particularly germane: (a) the philosophy of intellectual virtue, (b) the psychology of the virtuous knower, (c) the philosophical import of disagreement, and (d) the psychology of virtuous belief. Secondly, in introducing these topics, the thought is merely that someone doing empirical research on intellectual humility *might* find such information useful. Indeed, applicants positively should

not bend or contort their full proposals to make them seem more virtue-theoretic, say, or more applicable to the relevant debates in developmental psychology, to name a few.

Straightforwardly, this paper is broken into two broad sections, dovetailing philosophical and psychological considerations regarding intellectual humility. Section 1 focuses on the philosophy of intellectual virtues and the psychology of the virtuous knower. Section 2 focuses on the philosophical import of disagreement and the psychology of virtuous beliefs. Both of these sections are divided into sub-sections exploring the philosophical and psychological components in turn. In the philosophy portion of Section 1, we will elucidate the broad contours of two dominant accounts of intellectual virtue—two possible models for conceptually understanding intellectual humility—found within the philosophical literature surrounding virtue epistemology. Drawing from these two models, the psychology portion of Section 1 explores related issues in heuristics and biases, motivation and cognition, the possibility of explicating intellectual humility as a trait, and the emotional components of intellectual humility. Next, in the philosophy portion of Section 2, we will introduce some of the main issues surrounding epistemic disagreement—a subject that is arguably of critical importance for any viable, conceptual understanding of intellectual humility—proposing a methodology for systematically understanding when and why intractable disagreements occur. In the psychology portion of Section 2, we will explore related issues in the scientific literature: explicating the empirical prospects for intellectual humility in the psychological research on epistemic cognition, argumentative reasoning, epistemic beliefs and learning, and epistemic vigilance and trust.

§2. The Nature of Intellectual Virtue and the Virtuous Knower

In this section, we explore some philosophical and psychological issues regarding the epistemic agent as they relate broadly to intellectual humility, exploring the philosophy of intellectual virtues and the psychology of the virtuous knower. In the first subsection, our focus is on virtue epistemology: to consider some of the most robust and flourishing accounts of intellectual virtue in the philosophical literature. The hope being that these accounts of intellectual virtue might serve as a model for our conceptual understanding of the specific intellectual virtue of intellectual humility. In the subsection on psychology, we will look to the extant literature for areas of possible interest that could inform a scientific investigation of intellectual humility. While the review is by no means exhaustive, we believe these areas of ongoing research would, in particular, lend themselves to fruitful results.

§2.1 Virtue Epistemology

Intellectual humility is an intellectual virtue. And one promising way to understand intellectual virtues is by exploring recent work in virtue epistemology, by exploring virtue-theoretic accounts of knowledge. Distinctively, virtue epistemology places intellectual virtue at the heart of knowledge. In this section, we will first note the defining characteristics of virtue epistemology, and then briefly elucidate the two dominant account of intellectual virtue found within the relevant literature.[6]

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[6]To be sure, one need not be committed to virtue epistemology *per se* to account for intellectual virtues—someone can account for intellectual virtues without any special loyalty to virtue epistemology—nevertheless, virtue epistemology, naturally enough, offers the most robust and flourishing accounts of intellectual virtue in the philosophical literature.

§2.1.1 Defining characteristics.

Over the past 30 years, virtue epistemology has developed into a multitude of positions; nevertheless, every variant of virtue epistemology holds to two basic resolutions: (1) that epistemology is a normative discipline and (2) that "intellectual agents and communities are the primary source of epistemic value and the primary focus of epistemic evaluation" (Greco & Turri, 2011, ¶ 1). The former amounts to (a) a rejection of Quine's proposal in "Epistemology Naturalized" (1969) that epistemologists should give up on attempts to discern what is reasonable to believe in favor of projects within cognitive psychology and (b) a call for epistemologists to "focus their efforts on understanding epistemic norms, value, and evaluation" (Greco & Turri, 2011, § 1).[7] And to better understand the second resolution think of virtue *ethics'* niche within moral philosophy. For the two titans of moral philosophy, Kantian deontology and utilitarianism, the starting place for moral evaluation is *action.* For Kantians and for utilitarians, the question to ask when doing ethics is "What should I do?" (Kantians answering "act in accord with what you can will to be a universal maxim;" utilitarians answering "act in accord with what brings about the greatest happiness for the greatest number.") For virtue ethicists, however, the starting place for moral evaluation, where the rubber meets the road, so to speak, is the *agent*—his or her character—and subsequently the virtue ethicist asks a different question, "How should I live?"[8] To put it roughly, then, instead of focusing on the beliefs of agents (whether or not they are justified, rational, etc.), virtue epistemologists predominantly focus on the agent himself or herself: on whether he or she has the right sort of epistemic character, the right sort of cognitive faculties, whether he or she is epistemically virtuous or not. To be sure, other theories of

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[7] See Quine (1969). Also see McDowell (1994), p. 133; Sosa (1991), pp. 100-105; Zagzebski, (1996), pp. 334-338.

[8] For more on virtue ethics and its distinctiveness, see Anscombe (1958).

knowledge will give some account of epistemic virtues, norms, and values—good memory, intellectual courage, etc.—but usually ancillary to other epistemic terms or concepts. The radical claim that virtue-theoretic accounts of knowledge make, however, is that epistemic virtues, norms, and values should be the primary focus of epistemology.[9]

Virtue epistemology, so defined, has developed by and large into two distinct schools: agent-reliabilism and responsibilism or neo-Aristotelianism. The primary difference between the schools is their application of "virtue" terminology. Agent-reliabilism, being modeled along reliabilist lines, applies virtue terminology in regard to faculties, in the same way we might talk about a virtuous knife. In other words, just as we might call a knife virtuous if it does what it is supposed to do (be sharp, cut things, etc.), agent-reliabilism calls various cognitive faculties such as memory, perception, etc., virtuous insofar as they are reliably functioning the way they are supposed to. That is, agent-reliabilism focuses on the reliable functioning (virtuous functioning) of a given agent's cognitive faculties. Neo-Aristotelianism, on the other hand, applies virtue terminology in a way with which we are perhaps more familiar: in terms of specific character traits such as open-mindedness, intellectual courage, intellectual perseverance, etc.

§2.1.2 Agent-reliabilism.

Agent-reliabilism virtue epistemologies developed out of a dissatisfaction with what is called process-reliabilism: the view that, to put it roughly, S knows a true proposition p if and only if p was formed by a reliable process. There are some serious concerns for such a view (e.g., the "generality problem")[10]; however, the agent-reliabilists' primary concern was that

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[9] See Pritchard (2005), p. 186; Greco (2010), pp. 17-46.

[10] As Earl Conee and Richard Feldman noted in "The Generality Problem for Reliabilism" (1998), "A fully articulated [process] reliabilist theory must identify with sufficient clarity the nature of the processes it invokes. In doing so, the theory confronts what has come to be known as 'the generality problem'" (1998, p. 1).

knowledge ascriptions based on reliable processes do not always appropriately involve a given agent: that process-reliabilism seems to allow agents to "possess knowledge even though the reliability in question in no way reflects a cognitive achievement on their part" (Pritchard, 2005, p. 187). One way this occurs is when a given reliable process does not appropriately relate to facts. For example, consider the following case by John Greco:

> **René and the Gambler's Fallacy:** René thinks he can beat the roulette tables
> with a system he has devised. Reasoning according to the Gambler's Fallacy,
> he believes that numbers which have not come up for long strings are more
> likely to come up next. However, unlike Descartes' demon victim, our René
> has a demon helper. Acting as a kind of epistemic guardian, the demon
> arranges reality so as to make the belief come out as true. Given the ever
> present interventions of the helpful demon, René's belief forming process is
> highly reliable. But this is because the world is made to conform to René's
> beliefs, rather than because René's beliefs conform to the world. (Greco, 1999,
> p. 286)[11]

Though René's beliefs happen to be based on a reliable process, it is completely accidental; it is certainly no thanks to any effort of René's. Even though René's beliefs are formed by a reliable process—reasoning according to the Gambler's Fallacy with the aid of a helper demon—intuitively he does not have knowledge.[12]

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[11] Also quoted in Pritchard (2005), p. 187.

[12] And to be sure, we don't need anything so fanciful as demon helpers to create such a case. Say that Philip is playing a game with his son, where his son needs to try to guess what number Philip is thinking of, anywhere from 1 to 100. To do this, Philip's son closes his eyes and waits for the first number that pops into his head, and he subsequently assumes that such a number is a premonition regarding the number in Philip's head. While such a process would normally be incredibly unreliable, whenever Philip's son hazards a guess Philip is sure to think

Another way that knowledge ascriptions based on reliable processes do not always appropriately involve a given agent is in the case of reliable cognitive malfunctions. Consider a case originally developed by Alvin Plantinga in which our protagonist has a brain lesion that causes him to believe he has a brain lesion:

> **Brain Lesion:** Suppose . . . that S suffers from this sort of disorder and accordingly believes that he suffers from a brain lesion. Add that he has no evidence at all for this belief: no symptoms of which he is aware, no testimony on the part of physicians or other expert witnesses, nothing. (Add, if you like, that he has much evidence against it, but then add also that the malfunction induced by the lesion makes it impossible for him to take appropriate account of this evidence.) Then the relevant [process] will certainly be reliable but the resulting belief—that he has a brain lesion—will have little by way of warrant for S. (Plantinga, 1993, p. 199)[13]

Again, though S's belief that he has a brain lesion is formed via a reliable process we would not ascribe knowledge to it since it is only formed out of a glitch in S's cognitive equipment. It is simply accidental that the brain lesion causes S to form the said belief, and as such S had nothing to do with its formation. Though there may be some worries as to what constitutes a given person's cognitive equipment (Why is S's brain lesion not a part of his cognitive equipment? What if he had the lesion since birth?), we nevertheless have strong intuitions that beliefs formed as a direct result of a cognitive malfunction cannot be knowledge.[14] S's

about that number so that his son's guesses are always true. In such a case, even though the son's beliefs are seemingly based on a reliable process, he intuitively lacks knowledge. The truth and reliability of the son's belief has nothing to do with the epistemic efforts of the son.

[13] Also quoted in Pritchard (2005), p. 188.

[14] See Pritchard (2005), p. 188; Greco (2003), pp. 356-357.

belief that he has a brain lesion cannot be knowledge simply because, though formed via reliable process, the agent, S, was not appropriately involved in its formation.

§2.1.3 Neo-Aristotelianism (responsibilism).

Neo-Aristotelianism virtue epistemologies, in contrast, are not modeled after reliabilism. Instead of focusing on whether or not a given agent's epistemic faculties are reliable and functioning properly, neo-Aristotelian virtue epistemologists tend to focus more on the agent's epistemic character and epistemic responsibilities. Consider the following case:

> **Chicken Sexer:** Naïve and Reflective are both chicken sexers. Their job is to look at baby chickens, determine their genders, and then segregate the chickens accordingly, putting male chicks in one box and female chicks in another. Both Naïve and Reflective are equally good at their job; both are highly reliable at determining the gender of the baby chickens. There is, however, one important difference between them: Naïve has no idea how he is able to correctly determine the gender of the chicks; he "just does it." Reflective, on the other hand, is very much aware of how he makes such a judgment, by looking for a certain pattern in the chick's feathers. Does Naïve's ignorance affect his ability to know "that's a male chick," "that's a female chick," etc.?

Whereas agent-reliabilism virtue epistemologists would generally deny that Naïve's ignorance affects his ability to know (after all, his cognitive equipment is highly reliable), neo-Aristotelianism virtue epistemologists would cry foul (or fowl). In focusing on epistemic character traits instead of epistemic faculties, neo-Aristotelianism tends to "stress that agents should not only exhibit reliable cognitive traits but that they should also be in a position to take… reflective responsibility for their true beliefs" (Pritchard, 2005, pp. 194-195). Naïve

may very well have reliable cognitive faculties, but, for the neo-Aristotelianism virtue epistemologist that is not enough; in order to be properly said to *know* the gender of the chicks, Naïve needs to exhibit more conscientiousness and take more epistemic responsibility.

This focus on epistemic responsibility ties into another common hallmark of neo-Aristotelianism, namely, a closer correspondence between epistemology and moral philosophy. As we noted earlier, the primary objects of interest for the neo-Aristotelian virtue epistemologist are not cognitive faculties (as it was with the agent-reliabilist) but rather intellectual character traits (intellectual courageousness, open-mindedness, etc.): whether or not a given agent is of the right sort of epistemic character. And being of the right sort of epistemic character often means (at the very least) not only reliably reaching virtuous ends/*teloi* but also being virtuously motivated. In other words, in order to be of the right sort of epistemic character, not only do you need to be the sort of person who regularly hits upon the truth, but you need to hit upon the truth for the right reasons (e.g. because you were intellectually courageous as opposed to simply lucky). Not only is neo-Aristotelianism interested in your veritic reliability, neo-Aristotelianism is interested in what sort of person— what sort of epistemic character—you should be. And all of this gives epistemology a distinctive moral dimension. Indeed, some neo-Aristotelian virtue epistemologists (e.g. Linda Zagzebski) have even gone so far as to elucidate epistemic virtues as a subset of moral virtues.[15]

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[15] The primary difference between agent-reliabilism virtue epistemology and neo-Aristotelian virtue epistemology that we want to focus on is their divergent accounts of intellectual virtue: agent reliabilists roughly explicating intellectual virtue in terms of cognitive faculties or cognitive competencies (faculty virtues) and neo-Aristotelians roughly explicating intellectual virtues in terms of character traits and motivation (character-virtues). Most often, neo-Aristotelianism can be seen as requiring something more than the agent-reliabilist: requiring not only that a given agent have reliable cognitive faculties (like Naïve in Chicken Sexer), but that

While it may seem as though the subject of intellectual humility might be best explicated in terms neo-Aristotelianism virtue epistemology's character traits, there is no obvious reason why our concepts of intellectual humility cannot be explicated the terms of agent-reliabilism virtue epistemology as well. Presumably, any robust, full account of intellectual virtue will have to account for both cognitive faculty-virtues as well as character trait-virtues; whether one does this along agent-reliabilism lines or neo-Aristotelianism lines could be, to some extent, a matter of emphasis.

§2.1.4 Conclusion.

To reiterate, the goal of the philosophy portion of this white paper is to highlight some relevant issues in contemporary philosophy that might be of interest to people doing empirical work on intellectual humility. In this section, we briefly elucidated two dominant accounts of intellectual virtue found in the work of contemporary virtue epistemology: agent-reliabilism accounts of intellectual virtue and neo-Aristotelian accounts of intellectual virtue. And both accounts can be used to model specific conceptual understandings of intellectual humility. Straightforwardly, those of us interested explicating intellectual humility in light of the mechanistic function (or malfunction) of our cognitive faculties might take special interest in the model of intellectual virtue afforded by agent-reliabilism.   Conversely, those of us interested in explicating intellectual humility as something more like a character trait might take special interest in the model of intellectual virtue afforded by neo-Aristotelianism. Over the past 30 years, virtue-theoretic accounts of knowledge have produced a flourishing

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they also be of the right sort of epistemic character. However, this isn't necessary the case; neo-Aristotelianism (as we are currently conceiving of it) could be seen as simply requiring something else, not something more. For example, a neo-Aristotelian could conceivably understand an intellectually virtue—character virtues such as intellectual courage, intellectual steadfastness, etc.—in such a way that it did not necessary require reliability; such a neo-Aristotelian might ascribe knowledge to an agent who manifests such a virtue even when the faculties or competencies at play are unreliable.

and increasingly popular body of literature: a literature with excellent resources for cultivating a robust conceptual understanding of intellectual virtues in general and intellectual humility in particular.

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Seminal works in agent-reliabilism virtue epistemology:

- Greco, J. (2010). *Achieving Knowledge: A Virtue-Theoretic Account of Epistemic Normativity*. New York, NY: Cambridge University Press.

- Plantinga, A. (1993b). *Warrant and Proper Function*. New York, NY: Oxford University Press.

- Plantinga, A. (2000). *Warranted Christian Belief*. New York, NY: Oxford University Press.

- Sosa, E. (2007). *A Virtue Epistemology: Apt Belief and Reflective Knowledge* (Vol. 1). Oxford, UK: Oxford University Press.

- Sosa, E. (2009). *Reflective Knowledge: Apt Belief and Reflective Knowledge* (Vol. 2). Oxford, UK: Oxford University Press.

Seminal works in neo-Aristotelianism virtue epistemology:

- Code. (1987). *Epistemic Responsibility*. Hanover, NH: Published for Brown University Press by University Press of New England.

- Montmarquet, J. A. (1993). *Epistemic Virtue and Doxastic Responsibility*. Lanham, MD: Rowman & Littlefield Publishers.

- Zagzebski, L. (1996). *Virtues of the Mind: An Inquiry into the Nature of Virtue and the Ethical Foundations of Knowledge*. Cambridge: Cambridge University Press.

Major collections on virtue epistemology:

- Axtell, G. (Ed.). (2000). *Knowledge, Belief, and Character: Readings in Contemporary Virtue Epistemology*. London UK: Rowman & Littlefield Publishers.

- Brady, M., & Pritchard, D. (Eds.). (2003). *Moral and Epistemic Virtues*. Oxford, UK: Blackwell Publishing.

- DePaul, M., & Zagzebski, L. (Eds.). (2003). *Intellectual Virtue: Perspectives from Ethics and Epistemology*. Oxford UK: Oxford University Press.

- Fairweather, A., & Zagzebski, L. T. (Eds.). (2001). *Virtue Epistemology: Essays on Epistemic Virtue and Responsibility*. Oxford, UK: Oxford University Press.

- Greco, J. (Ed.). (2004). *Ernest Sosa and His Critics*. Philosophers and their critics. Oxford, UK: Blackwell Publishing.

- Greco, J. & Turri, J. (Eds.). (2012). *Virtue Epistemology: Contemporary Readings*. Cambridge, MA: MIT Press.

- Kvanvig, J. L. (Ed.). (1996). *Warrant in Contemporary Epistemology: Essays in Honor of Plantinga's Epistemology*. London, UK: Rowman & Littlefield Publishers.

- Steup, M. (Ed.). (2001). *Knowledge, Truth, and Duty: Essays on Epistemic Justification, Responsibility, and Virtue*. Oxford UK: Oxford University Press.

Journal issues on virtue epistemology:

- *Noûs*, 27 (1), (1993).

- *Philosophical Issues*, 5 (1994).

- *Philosophical Studies*, 78 (1995).

- *Philosophy and Phenomenological Research*, 60 (1), (2000).

- *Philosophy and Phenomenological Research*, 66 (2), (2003).

- *Philosophical Studies*, 130 (1), (2006).

- *Philosophical Papers*, 37 (3), (2008).

- *Teorema*, 27 (1), (2009) (in Spanish).

- *Philosophical Studies*, 143 (3), (2009).

- *Philosophical Studies*, 143 (4), (2009).

- *Metaphilosophy*, 41 (1–2), (2010).

§2.2 The Virtuous Knower

In this section, our concern is with the epistemic agent, the thinking person. In order to understand how a thinking person might display the virtue of intellectual humility, we must first understand certain aspects of how our cognitive systems work: how our thinking is over reliant on the self, what is easily available to us and favors us. Then we examine ways we might overcome the self-reliant nature of our thought and what might motivate us to think in more inclusive ways. Finally, we examine what kind of personality and motivational traits, along with optimal emotional regulation, would assist in the practice of intellectual humility.

The distinction in virtue epistemology between agent-reliabilism and responsibilism (or neo-Aristotelianism) is useful for beginning the review of the psychological literature relevant to intellectual humility. On the one hand, we see a concern for the reliability (or lack thereof) of our cognitive systems, especially in the literature that deals with dual-process theories of cognition, heuristics, and biases (Epstein, Lipson, Holstein, & Huh, 1992; Evans, 2007; Gilovich, 1991; Gilovich, Griffin, & Kahneman, 2002; Kahneman, 2011; Sloman, 2002; Stanovich, 1999). On the other hand, there is a concern for responsibilism reflected in a focus on the role of motivation in cognition and cognitive bias (Chaiken, Wood, & Eagly, 1996; Dunning, Leuenberger, & Sherman, 1995; Kunda, 1990; Pronin, Berger, & Molouki, 2007; Wegener & Petty, 1997). It is not as if those concerned with heuristics and biases ignore the role of motivation (Evans, 2007; Stanovich & West, 1997) nor do those primarily interested in the role of motivation ignore cognitive mechanisms and capacity (Chaiken et al., 1996). It is rather a matter of emphasis. Nevertheless, these distinctions give us a useful framework to analyze the research that might shed light on an understanding of intellectual humility.

§2.2.1 Reliabilism: heuristics and biases.

Dual process theories.

From a cognitive science perspective, it could be said that if one really knew about the systematic heuristics and resulting biases that appear to be a part of our shared cognitive mechanisms, one could not help but be intellectually humble (or at least humbled). Research into these cognitive heuristics that speed processing, and the resulting chronic and systematic biases, is extensive, not only in the various fields of psychology, but in other disciplines as well (see Kahneman (2011) for one of the latest summaries). Out of research into heuristics and biases has grown a number of what are called "dual-process" theories of human cognition.[16] While each theory has different names for each process and different categories assigned to them, these theories broadly share a distinction between fast, automatic, and intuitive processes, often called System 1 processes, and slow, deliberative, and analytic processes known as System 2 processes (Kahneman, 2011; Kahneman & Frederick, 2002; Stanovich, 1999). System 1 is generally thought to be outside of conscious thought while System 2 is mostly conscious. In general, heuristics (mental shortcuts that speed processing) and biases are the result of System 1 thinking (though System 2 can have biases). System 2 is in place to confirm, correct and/or extend the intuitions and insights of System 1. Dual-processing theory asserts that the human cognitive system is working virtuously when System 2 is doing its job (Stanovich & West, 2002). The "job" of System 2 is to work in concert with System 1, confirm its intuitions when correct, and modify or override when biased or distorted (Evans, 2007; Kahneman & Frederick, 2002; Stanovich, 1999). If it is lazy, negligent, distracted, or focused on the self, biases will go unnoticed (Kahneman, 2011). Indeed, there is broad consensus that biases are effectively reduced through slow, deliberate,

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[16] See chapter 7 of Evans (2007) for a comparative analysis.

analytic, System 2 processes (Evans, 2007; Kahneman, 2011; Sloman, 2002; Stanovich & West, 1997; T. D. Wilson, Centerbar, & Brekke, 2002).

The heuristics of System 1 thinking favor ideas that are readily accessible, easily discerned, and conform to prior experience. System 1 thinking is self-reliant in the sense that it favors what most readily accessible and most easily discerned which is most often what one already believes, knows, and intuits (Pronin et al., 2007). While in many instances this self-reliant thinking is adequate, problems and biases arise when reliance on what one knows and intuits does not provide enough information (or the right kind of information) for the task, which, in turn, produces biased judgments. Many of these biases are well known and well documented. There are (among others):

- The confirmation bias: The tendency to seek confirmation for opinions and beliefs already held and to ignore disconfirming evidence (Nickerson, 1998). Even academic psychologists are not immune. They rate studies with findings consistent with their prior beliefs more favorably than studies with conclusions inconsistent with their beliefs (Hergovich, Schott, & Burger, 2010).

- The better-than-average effect (sometimes known as the Lake Wobegon effect, Kruger, 1999): In any given sample, the majority of the subjects rate themselves above the 50th percentile in most dimensions of personality and behavior. A well known example is a survey done at a large university system in which 95% of the professors rated themselves above average as teachers (Alicke & Govorun, 2005).

- The hindsight bias: People's predictions of events are remembered as more accurate after the fact than they really were. In predicting the outcome of the German Bundestag elections of 1998, subjects remembered—after the election—their predictions 4 months earlier as 25% closer to the actual results than they had originally predicted (Blank, Fischer, & Erdfelder, 2003).

- The anchoring and adjustment heuristic: Cognitive anchors affect people's judgments under conditions of uncertainty. When asked to estimate when George Washington was elected president, participants began with a known date (the Declaration of Independence, 1776) and adjusted from there to the unknown date (Epley & Gilovich, 2002).

Heuristics and biases as intellectual arrogance.

It would be tempting to label such heuristics and biases as "intellectual arrogance" (IA) in part because, in system 1 thinking, we automatically place ourselves—our thoughts, beliefs, perspectives and attitudes—at the center of the universe, cognitively speaking. This is not mere egoism, for while we tend to think of ourselves as "better than average," we can also think of ourselves as below average in comparison to others (Kruger, 1999). The self-centeredness is found in the general human tendency to use the self as an anchor against which the other is compared and the world is known (Dunning, Krueger, & Alicke, 2005; Guenther & Alicke, 2010). Evidence of the self-centered nature of our thinking is abundant in the psychological literature. We are biased toward that which comes fastest and most easily to mind, (availability or representative heuristic, Kahneman & Frederick, 2002), which is often thoughts about the self (Dunning, Meyerowitz, & Holzberg, 2002; Kruger, 1999). We prefer thoughts that make us feel good, (i.e. positive vs. negative thoughts, Deldin, Keller, Gergen, & Miller, 2001). We over-rely on our introspections, considering the more objective, behavioral facts as secondary (Pronin & Kugler, 2007). We are biased toward self-enhancement and justify our beliefs and actions—even altruistic action—in terms of self-interest, (Miller, 1999). Even beyond the "better-than-average" effect, our thinking is biased toward the self in comparison to others (Sedikides & Gregg, 2008). We consider our thoughts as representative of a reality that is shared by others (Gilbert & Malone, 1995; Ross

& Ward, 1996). Moreover, we tend to assume too early that our memories, judgments, intuitions, and beliefs are sufficient for the epistemic task at hand (Evans, 2007).

Self-centered thinking is not, in-and-of-itself, IA. Indeed, it is only natural that our own experiences are going to be more readily available to us as evidence. It can only be characterized as arrogance when our own experiences are not sufficient to hold a belief in accordance with the evidence, if we count on what we know more than we ought.[17] Normally, System 1 provides the information needed to make the decisions and judgments necessary to successfully navigate life. It does so with great efficiency. As both Evans (2007) and Stanovich (1999) maintain, System 1 processes are often sufficient for the situation. The problem comes when System 1 processes are not sufficient: when it is necessary to move beyond what one immediately knows, believes, and/or remembers to incorporate other information. That is when System 2 intervenes and, in a slower, deliberative, and sequential manner, brings more information to bear until the mind is satisfied that it knows what it needs to know. That information can come from within the self, by accessing memories which broaden the data or evidence at hand, it can come from others who offer a different perspective, and it can come from the application of rules of analysis that help determine what is sufficient to make a judgment. System 2, however, is also prone to bias because of the sequential nature of its processing, taking up one mental model at a time until a sufficient one is found (Evans, 2007).

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[17] Since much of System 1 processes are unconscious, we are not accusing the agent of being willfully arrogant. Instead arrogance means to preference the self as a source of information, when what the self knows, by itself, does not provide enough for believing in accordance with the facts, whether the agent is conscious of this preference or not.

Epstein et al. (1992) found evidence that what they call the experiential system (akin to System 1) can influence rational processing (akin to System 2).[18] In the experiential condition, subjects evaluated how upset or foolish the protagonist (or they themselves) would feel in a scenario with an outcome of minor significance (a person who was late to leave the house gets into a minor accident with minimal damage to the car) compared to the same scenario with an outcome of major significance (the same exact sequence results in a major accident in which the car is totaled). In the rational condition subjects were instructed to make the same comparison but to "give a strictly logical response" and to "put all emotions aside" (p. 332). When considering a vignette from an experiential (self) orientation prior to a rational orientation, subjects made less rational assessments (in the rational condition) than if the rational orientation was considered first.

System 2 asks: "is what I know from System 1 sufficient?" Biases occur when the answer is too quickly "yes." Intellectual humility in this context might be the habit of saying: "No! What I know from the self-centered System 1 is not sufficient. I must dig deeper, consider evidence from other sources or look for help (from others or from analytical rules)." Therefore intellectual humility (IH), may mostly reside in System 2 processes. From a virtue reliability point of view, our cognitive systems are working virtuously, that is, as truly and fully reliable, when both systems are working in concert.

Attenuating Biases.

One avenue of exploration into intellectual humility (IH) would be to investigate processes and actions that attenuate the biases that result from System 1 heuristics. In line with the observation that the IA of these biases is a result of a cognitive system that is inappropriately over-reliant or self-centered, System 1 processes, reducing or eliminating

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[18] See Evans (2007), chapter 7 or Stanovich (1999) chapter 5, for comparisons of the differing nomenclature of dual system theories.

these biases might involve some kind of engagement with an "other;" someone or something that "de-centers" the cognitive system, engages System 2, and entertains different ways of thinking and other points of view. Indeed a review of the literature reveals several types of "other-centered" thinking as effective techniques for reducing biases: a search for accuracy (representing reality that is shared by others), a need to be accountable for one's judgments (to defend one's thoughts to another), the use of rules of analysis (a process used by many others to arrive at a more consensual judgment), and exposure to differing perspectives (seeing things from another's point of view). The presence or absence of these factors often hinges on motivation and the epistemic goals and values of thinking agents.

§2.2.2 Responsibilism: Motivation, goals, and values in cognition.

As noted above, responsibilism (neo-Aristotelian virtue epistemology) is not as interested in the reliability of our cognitive mechanism (as are the reliabilists) as they are in whether or not a given agent has of the right sort of epistemic character. A person with the right sort of epistemic character will not only reliably reach virtuous ends but must also be virtuously motivated. Psychologists, too, are interested in epistemic motivation and the goals and values of cognition. Many of them use dual system theories of cognition as their framework. There is some disagreement, however, about whether these are character traits in the sense that they are an enduring part of one's personality, or whether these traits are largely situational, i.e. dependent on the agent's state.

Accuracy and accountability.

Situations that call for accuracy in judgment promote slower, more deliberative thinking. Kunda (1990), in analysis of the work on accuracy-driven reasoning, concluded that when "people are motivated to be accurate, they expend more cognitive effort on issue-related reasoning, attend to relevant information more carefully, and process it more deeply, often using more complex rules" (p. 481). For example, when people know they will be judged on

accuracy, they are more accurate in evaluating their own abilities (Armor & Taylor, 2002).

However, Petty, Wegener, and White (1998) caution that motivation for accuracy may not be

enough to attenuate bias, but that bias can also occur in the correction process. Nevertheless,

Kruglanski and Mayseless (1987) report that a high need for accuracy (what they call a

heightened fear of invalidity) motivates people to seek comparison with those who disagree

with them. The focus on accuracy, then, invites the thinking agent into a posture of

intellectual humility because (a) that agent may realize that he or she has a less than complete

understanding and needs to seek more information, (b) it helps the agent to focus on what

others might think of the same phenomenon, and (c) it will focus the agent on objective

criteria about the phenomenon. The focus on accuracy and accountability emphasizes the

situational factors that attenuate a generalized human tendency toward biased thinking.

     Having to defend one's thoughts and judgments to others might include the need to be

accurate, but also injects the notion of accountability, which promotes a more careful analysis

of one's thoughts and arguments. Mercier and Sperber (2011), in a thorough examination of

the many abstract reasoning tasks that are used to measure heuristics and biases, demonstrate

that when the same reasoning tasks are set in the context of making an argument or defending

a position, the reasoning of the participants is less biased and more complete. Moreover, they

make the case that the confirmation bias, in the context of producing arguments to convince

others of the rightness of one's beliefs, can produce a "cognitive division of labor." Because

participants in a disagreement want to bring the best evidence they have found to support

their beliefs, the confirmation bias serves them well collectively: together two disagreeing

parties will tend to marshal relevant evidence in favor of their favoring positions. However,

in the context of a discussion with others over the best evidence, or the best argument (the

process of evaluating an argument, not its production), the confirmation bias no longer serves

them well. Therefore, this "cognitive division of labor" works in the context of disagreement

provided (and this is an important caveat) people have "a common interest in the truth" and go through the hard work of evaluating and selecting the best argument with the best evidence. Most people are quite good at the task of evaluating the best argument, both at the individual and group level, when motivated to do so. When held accountable under a time pressure, however, people exhibit the primacy effect, giving more weight to information they received first (Kruglanski, Dechesne, Orehek, & Pierro, 2009).

The key to mitigating bias may be having what could be called the intellectually humble position of "a common interest in the truth." A study by Stanovich and West (1997) on the capacity of the individual to evaluate an argument fairly in light of previously held beliefs is informative in this regard. 349 college students completed a measurement called the Argument Evaluation Test (AET) in which they first indicated the strength of their beliefs regarding certain social and political issues and then (later in the testing process) evaluated the quality of the arguments of a fictitious individual on these same issues. Their analysis resulted in two groups, one with a high reliance on argument quality and a low reliance on prior belief and another with a low reliance on argument quality and a high reliance on prior belief. They compared the mean scores of the two groups on various measures including a composite score that measured "Actively Open-minded Thinking" (AOT) that indicated openness to belief change and cognitive flexibility. Those who showed a high reliance on argument quality by relying less on prior beliefs scored significantly higher on the AOT composite scale. This open and flexible thinking disposition held even when they controlled for cognitive ability.[19] Stanovich and West (1997) believe these thinking dispositions can provide information about an individual's epistemic goals and values. For example, a disposition such as the willingness to change beliefs reflects the goal of getting as close to the

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[19] As measured by SAT scores and a test of verbal ability, though cognitive ability was also a unique and independent predictor of argument evaluation performance.

truth as possible, or the disposition to carefully evaluate arguments indicates a value for accuracy. It might be fair to infer that those with a high reliance on argument quality had the epistemic goal of "a common interest in the truth." Thinking dispositions function more like enduring traits that are less influenced by varying circumstances, though they are seen as "malleable" and therefore teachable skills (Baron, 1994).

Rule-based thinking.

Directing one's attention to processes, objective criteria, and rules of analysis also can aid in reducing systematic bias. For example, when personal traits are ambiguous (e.g., whether or not one is intelligent or a good driver), people draw on idiosyncratic definitions of traits and abilities to assess themselves as better than average at a certain task or trait. Once given criteria of judgment, however, they are more accurate in their assessment relative to their peers (Dunning et al., 2002). Evans (2007) demonstrates that when questions are asked in a way that engages analytic reasoning processes, biases are reduced. For example, his research has shown that the usual matching bias evident in the original form of the Wason card selection task is eliminated when the rule is highlighted over the surface features, making the need to falsify in order to rightly complete the task explicit. Stanovich (1999) has noted that many of the tasks involved in heuristics and biases depend on an understanding and mastery of normative rules of thought (logic and statistics) which is the purview of System 2. Those attuned to rule-based, System 2 thinking perform better on these tasks. Stanovich recalls Slovic and Tversky's understanding/acceptance principle, which states that "the greater the understanding of a normative rule the greater will be the willingness to accept it" (p. 92), which results in reduced biases. Understanding can come through training (as the research reported in Stanovich (1999) demonstrates), through the framing and presentation of the problem (Evans, 2007), through cognitive ability (high analytic reasoning capability) and

through the possession of certain open and flexible thinking dispositions that "serve the ends of epistemic rationality" (Stanovich & West, 1998, p. 180).

Perspective taking.

One aspect of an open and flexible thinking disposition that marks intellectual humility is the capacity to weigh evidence for and against a strongly held belief, including the opinions and beliefs of others who hold a position different from one's own. This requires a certain capacity for perspective taking: a movement from the focus on one's own thoughts to include the perceptions, thoughts and ideas of others. This adjustment can be as simple as considering alternative points of view and as complex as trying to assess another person's thoughts. Studies have found that asking people to consider the possibility that competing hypotheses are true is sufficient to undo the bias of one-sided thinking (Sedikides, Horton, & Gregg, 2007; T. D. Wilson et al., 2002). The issue can be complicated, however, by the primacy effect. Jonas, Schulz-Hardt, Frey, and Thelen (2001) demonstrated that the order of the presentation of other points of view can impact de-biasing. The confirmation bias was stronger in a situation in which subjects were exposed to other points of view sequentially and lessened when subjects had access to all the points of view simultaneously. The sequential presentation encouraged the subjects to remain focused on their prior commitments, whereas those who had the information presented simultaneously were able to compare their beliefs to many points of view. This might lead to the conclusion that entertaining more alternatives would help attenuate bias, but Sanna, Schwarz, and Stocker (2002) have shown that in the case of hindsight bias more is not better. Subjects who were asked to produce 12 reasons why the British-Gurka war could have come out differently were more susceptible to hindsight bias than those who produced only 2 reasons. They surmise that the difficultly of coming up with 12 counterfactual reasons makes alternative outcomes seem less likely and the actual outcome more so and puts the availability heuristic into play.

However, those who came up with only two reasons performed as well as the control group who did not know the outcome of the war. Thus, in moderation, considering a counterfactual perspective helped attenuate hindsight bias.

Often bias is the result of a lack of perspective taking. Birch and Bernstein (2007) propose that children who are unable to successfully complete Theory of Mind (ToM) tasks demonstrate a similar inability to take the perspective of naïve others as adults who exhibit hindsight bias. In both cases the "knower" and naïve other do not share the same information because the knower is biased by the primacy of current knowledge and belief. Perspective taking itself also is prone to bias. When assessing the behavior of others, people exhibit what is known as the correspondence bias, which is the tendency to make dispositional inferences from behaviors that can be mostly explained by the situations in which they are found. For example, you observe a person at a party that does not talk very much and you assume she is shy. Later you find out she is from another country and not very confident in her English speaking ability. A few months later you meet her again at a party and she is very talkative, even extroverted. It was being in foreign country without speaking the language that made her look shy at first, when, in fact, she has a disposition toward extroversion. This comes about, in part, because of what Gilbert and Malone (1995) call an "egocentric assumption" which includes an inability to "put themselves in someone else's epistemic shoes" (p. 26, i.e. construe the situation as the actor does). However, when specifically prompted to see a situation as another sees it, egocentric biases can be attenuated. For example, Todd, Bodenhausen, Richeson, and Galinsky (2011) found that subjects who performed a perspective taking task showed less implicit or automatic racial bias (as measured by the personalized evaluative race IAT) than a control group that did not engage in perspective taking. One possible explanation the researchers offered was that since the self is the anchor in evaluating others, lessening the distance between the self and the person of another race

through perspective taking allowed for more positive evaluations of the person of another race.

These are but a few examples of behaviors and techniques that help to reduce the "intellectual arrogance" (IA) that results from an inappropriate over-reliance on the self-centered nature of System 1 heuristics and the consequent biases. They share the common aspect of "de-centering" thought to include and consider the "other" through a concern for accuracy, a need for accountability, the use of rules of reasoning, and taking the perspective of others. One common theme in the literature is the role of motivation in de-biasing thought (Chaiken et al., 1996; Dunning et al., 1995; Kunda, 1990; T. D. Wilson et al., 2002), pointing to the conclusion that IH, insofar as it serves to correct IA, is an effortful process that requires some kind of motivation to overcome the self-centered tendencies of the dominant System 1 thinking. In this way, it reflects the neo-Aristotelian notion of epistemic virtue: that it must be consciously practiced to overcome our more arrogant cognitive tendencies.

We have seen evidence that epistemic characteristics and behaviors that might contribute to IH (open-mindedness, gathering all available evidence, concern for accuracy and accountability, among others) are both influenced by situations (inducing IH as a state) and part of an individual's thinking dispositions (which makes IH look more trait-like). If IH requires the effortful control of System 2 thinking processes, it may be hard to defend IH as a trait that is held with any stability, making IH appear more state than trait. Never-the-less, there are individual differences in the capacity for effortful control and the characteristics that lend themselves to IH that are more stable and trait-like. Either way, responsibilist virtue epistemology would recognize that IH *can* be developed, enhanced, and trained. On the one hand, those low in the trait could cultivate the habits of IH through practice (while those high in the trait could grow in expertise through the same means). On the other, creating the right

pressures and circumstances (accountability, etc.) could induce IH (or attenuate IA).[20] Like the state/trait debate in personality and social psychology, IH is neither simply state or trait but result of the complex interaction of person and environment that is a part of all personality development (Fleeson, 2004).

From a dual-process point of view, another empirical question worthy of investigation is whether or not "other-centered" thinking could become a part of System 1 cognition, i.e., whether or not it could become a habit of thought which is automatic, effortless, and intuitive. Some indications in the literature suggest that it can. For example, the short intervention in perspective taking outlined above resulted in implicit and unconscious correction of racial bias (Todd et al., 2011). Another indication may come from the work of Jonathan Haidt (2001) on moral intuitions, which are part of the effortless, intuitive cognitive system (System 1). According to Haidt, moral intuitions are trained through participation in the "custom complexes" of culture, through the acquisition of implicit knowledge by way of a child's interactions with peers (and adult), and through the association of body states with moral concepts, in other words, cultural training. Perhaps intellectual humility could become more automatic, intuitive and habitual through similar pathways.

The literature on moral expertise could also yield clues about the development of habitual, "other-centered" thinking. Using insights from dual process theory, Narvaez (2008) sees both systems at work in the development of moral expertise noting that expertise is trained by immersing novices in environments that build up their intuitions and by giving explicit guidance on how to solve problems in the given domain. The training of moral intuitions begins even in the early experiences of attachment and continues through novice-to-expert

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[20] Insofar as research into heuristics and biases helps us understand IH, it is useful to think of IH as the absence or the opposite of IA. As we state above in the introduction, we hold the view that IH is not simply the opposite, or absence of something (like IA) but that a robust definition should include positive attributes.

instruction. Drawing on expertise training in other fields, Narvaez notes that in such training "perceptions are fine-tuned and developed into chronically accessed constructs, applied automatically; action schemas are honed to high levels of automaticity" (p. 313). Like developing any virtuous habit, intentionality on the part of parents, teachers, and mentors to train habits such as open-mindedness, accurate representation of reality, and the search for the best evidence in a systematic and sustained manner would contribute to the "chronic accessibility" of IH.

§2.2.3 Intellectual humility as a trait.

Recognizing that IH develops out of the interaction of a person with his or her environment, psychologists have found persistent and enduring individual differences in traits related to IH. In this section we highlight a few: the need for cognition, (Cacioppo & Petty, 1982), the need for closure (Kruglanski, 1990), and those traits from factor models of personality that relate to IH (Ashton & Lee, 2005; McCrae & Costa, 1997).

Need for cognition.

One of the individual differences that lends itself to the kind of open-minded thinking characteristic of intellectual humility is the "need for cognition," which is defined as "a stable individual difference in people's tendency to engage in and enjoy effortful cognitive activity" (Cacioppo, Petty, Feinstein, & Jarvis, 1996, p. 198). People high in need for cognition expend more effort analyzing content and quality of arguments (Haugtvedt, Petty, & Cacioppo, 1992), consider arguments central to the issue rather than peripheral features (Petty, Cacioppo, & Goldman, 1981), enjoy complex cognitive tasks (Cacioppo & Petty, 1982), and are more attracted to messages that appeal to rational argument than emotion (Haddock, Maio, Arnold, & Huskinson, 2008). Those with a high need for cognition use what Petty et al. (1981) call the "central" route of analysis which employs deliberative, rational processes (System 2) whereas those with a low need for cognition take the

"peripheral" route which relies on heuristics and attends to surface features (Haugtvedt et al., 1992). It is important to note that those high in need for cognition are more susceptible to context bias demonstrated in mood priming and primacy-recent effects. Cacioppo et al. (1996) aver that this is because those high in need for cognition form stronger initial attitudes compared to those low in need for cognition. When perceived biases are obvious or detectable, however, individuals high in need for cognition are more likely to make the cognitive effort necessary to correct their judgments and consider all the evidence.

Since those high in need for cognition are more curious, open-minded and enjoy the search for knowledge, it may be one of the important characteristics that makes up IH (Cacioppo et al., 1996; Stanovich & West, 1997). It reflects an intrinsic motivation for effortful cognition that is more process than results oriented, which can be developed and can change over time (Cacioppo et al., 1996). However, little research has been done on the development of the need for cognition. Although there may be a heritable component, some of the antecedent experiences that would contribute to its development would be those that reinforce a love of learning, experiences of mastery over subjects, a sense of control over one's learning, and experiences of coping with interpersonal problems through reason and verbal competence. Need for cognition is correlated with many important skills for optimal development. For example, Njus and Johnson (2008) found that the college students they surveyed showing high levels of Eriksonian psychosocial identity achievement also were high in need for cognition. Exploring the factors that go into the development of the many correlates of the need for cognition such as high self-esteem, problem-solving effectiveness, openness to experience, and intrinsic motivation might also shed light on cultivating this important trait (Cacioppo et al., 1996) and may be informative in the cultivation of IH.

Need for closure.

Another extensively studied motivational characteristic that could have bearing on the

science of intellectual humility is the need for closure (Kruglanski, 1990; Kruglanski et al., 2009; Webster & Kruglanski, 1994).[21] The concept is part of a general framework for the formation of all kinds of knowledge called lay epistemic theory (Kruglanski et al., 2009). This theory has as a fundamental assumption that knowledge is derived from evidence. Evidence can come from all sources, but a special category of evidence in lay epistemic theory comes from the testimony of other people (other people's opinions). Lay epistemic theory has noted individual differences in the process of hypothesis testing and evidence gathering. Individuals high in need for closure will take in and process less information before making a judgment and give preference to information met early in the decision-making process. Because of the early closure in the epistemic process they also have higher confidence in their judgments than those with a high need to avoid or postpone closure. They tend to be influenced in their judgment of people and their actions by preexisting stereotypes and prejudices, paying less attention to situational or individuating information. People high in need for closure will, for the most part, look to compare to those of similar mind and to reject or devalue others who do not share their perspectives and judgments (Kruglanski, 1990). These attributes hold for what lay epistemic theory calls "non-specific" closure, which is a need for a firm answer to any question in order to avoid confusion and ambiguity. Such cognitive behaviors are motivated by a need to "seize and freeze" early in the judgment process on information that is easily accessible and affords closure. A search for "specific" closure, by contrast means a person is looking for a particular answer to a specific question. A person high in this need (for specific closure) may actually postpone closure until a desirable answer that might bolster self-esteem or be more positive or optimistic can be found (Kruglanski et al., 2009). By closing off the gathering of evidence too early (non-specific closure) or by searching only for evidence that yields a desirable answer (specific closure)

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[21] By "closure" we mean the need to make a decision, to have an issue *closed*.

those who are high in need for closure are more susceptible to the numerous cognitive biases outlined above (such as the availability heuristic or the confirmation bias). Using virtue language, they may be more susceptible to IA (and therefore less intellectually humble).

Lay epistemic theory affords a unique look at the issue of the self-centered nature of heuristics and biases. While both the need for closure and the use of heuristic rules that preference easy to process evidence favor the self as a source of knowledge, the theory introduces another influence on the judgment process: epistemic authority. Kruglanski et al. (2009) define the concept of epistemic authority as "encompassing a combination of perceived expertise and trustworthiness….it addresses the extent to which an individual is prepared to rely on a source's information and to accept it as evidence for the veracity of the source's pronouncements" (p. 175). The key to the function of epistemic authority is in the comparison of the self to another. The decision to rely on the authority of another may depend in part on the perceived gap in epistemic authority between the other and the self. In combination with a need for closure, this could either lead to an over-reliance on the self as epistemic authority (IA) or a denigration of the self as an epistemic authority and an over-reliance on others (gullibility or "group think"). The "virtuous mean" of IH in the context of lay epistemic theory may lie in a proper balance of a need for closure with an openness to new information and a tolerance for ambiguity, along with a capacity to discern when the self is enough of an epistemic authority or when others need to be sought out and relied upon.

Intellectual humility and personality.

Considering IH within the framework of conceptions of personality such as the Five-Factor Model (The Big Five, McCrae & Costa, 1987, 1997) and the HEXACO (Lee & Ashton, 2004) leads in a promising direction. It seems intuitive enough that IH could map well onto certain personality traits described by these models. We can imagine that high levels of the Openness to Experience factor might correlate with high intellectual humility,

especially when we look at specific facets of the Openness construct. The facet "openness to ideas," for example, seems to capture an element of curiosity we would expect to find in the intellectually humble; the "values" facet might figure into whether someone is willing to really consider an opposing political or religious view with charity. Similar corollaries of IH might exist within some facets of Agreeableness, Conscientiousness, and even Emotional Stability.

Along these lines, special attention might be given to the well supported HEXACO model of personality which adds the dimension of Honesty-Humility (H) to the factors mentioned above (Ashton & Lee, 2005). A connection between the H dimension and socially important criteria has already been demonstrated (Ashton & Lee, 2008). Additionally, the H factor has been negatively correlated with particularly vicious personality traits (e.g.: narcissism, psychopathy, machiavellianism, materialism, and power-seeking) we would expect to find somewhere opposite of IH (Ashton & Lee, 2005, 2007): a finding which lends some support to the understanding of IH as involving a lack of concern for status one's status (see the discussion of IH and status in the introduction). Not surprisingly, the H factor has also been used to show that trait humility is linked to higher social relationship quality (Peters, Rowatt, & Johnson, 2011).

Despite these helpful leads in the personality literature, it seems important to avoid oversimplified association of IH with certain personality traits. Even traits that seem to track with IH could have their own special hazards. For example, a trait like Openness could easily be an impediment to intellectual virtue if it leads to a kind of non-committal intellectual paralysis. And a person scoring high in Agreeableness might be too compromising, sacrificing intellectual honesty for likability. Additionally, it is worth noting that, as Fleeson (2001, 2004) has persuasively argued, even though personality structure is reliable, it may not be as rigid or static as some have contended. People tend to demonstrate

different traits in different situations, and there is clear within-person variability, with most people exhibiting all traits at all levels at one time or another. Thus, Fleeson's (2004) recommendation that an integration of the person and situation approaches to personality science might be appropriate here.

§2.2.4 Intellectual humility and emotion.

Any robust empirical understanding of a virtue such as intellectual humility can only be achieved through a discussion of the interplay between emotion and cognition. The literature on these subjects is immense, and a full review of these topics is beyond the scope of this paper. However, we will now highlight a few of these main findings that we find pertinent to IH, with the intention of alerting the reader to fruitful areas of continued investigation. We discuss the role of emotion, especially with respect to its influence on motivation and cognition, before describing the influence of emotion on interpersonal interaction, including how emotion regulation may serve as an important subcomponent to IH.

Emotion and cognition.

Emotions play an important role in cognition in general, and in IH in particular. They help focus attention, interrupting other behavioral and cognitive inputs (L. S. Greenberg, 2004). Emotions organize people toward goals, needs, and concerns, and motivate people toward specific adaptive actions designed at addressing them (Oatley & Jenkins, 1992). Emotions can help guide decision making (Damasio, 1995).

Emotions impact cognition in many other ways. Referring to Zajonc's (1980) emotion system, Griffiths (1997) argues that "people often respond with fear or anger to a given stimulus whether they want to or not. The system is largely opaque to our central cognitive processes" (p. 93). It is not that higher cognitive processes cannot exert any influence on emotional processes whatsoever, but that in many cases those cognitive processes are insufficient to alter habitual emotional patterns. To the one who is phobic towards snakes, no

amount of assurance that a particular snake has had its fangs and venom removed will be sufficient to allow a snake to be placed around their shoulders.

Concerning this relation between emotion and cognition, LeDoux (1996) has made a case for a high and low road for the production of emotion. In the low road, the amygdala senses danger and sends a direct emergency response to the brain and body. In the high road, information is sent from the amygdala through the thalamus to the neocortex, allowing for the potential for conscious reflection on the emotional response. The low road is twice as fast as the high road, making it often difficult for the reasoning system to intervene before the experience of emotion. Therefore, people are often moved toward the specific action tendencies of particular emotions without being consciously aware of it. Reflecting on these tendencies, L. S. Greenberg and Pascual-Leone (2001) assert, "We thus see that much cognition is in the service of affective goals, and that emotion informs reasoned action" (p. 174).

That cognition can be in the service of emotion could affect IH. For example, an adamant position asserted on grounds of unbiased, objective, rational claims (e.g., behaviorism is the only true form of psychology) might be constructed in the service of affective goals (e.g., such a position helps one avoid the fear of losing one's academic position and the embarrassment of appearing wishy-washy or unintelligent). Emotional influences may lead someone to maintain a default position, closing themselves off to the ideas of another. Perhaps part of IH is to be aware of how one's emotions can impact cognition, belief formation, and holding on to positions when challenged.

A great deal of research has focused on how emotions factor in cognitive bias. For example, Pyszczynski, Greenberg, Solomon, Sideris, and Stubing (1993) review evidence that people bias or distort their perceptions, concepts, and judgments to protect themselves from negative emotional states, and conclude that "a number of findings suggest that

emotional states do indeed mediate many cognitive distortions and biases" (p. 177). They also find that expressing the emotions toward which the cognitive distortions are presumably directed substantially reduces the need for such distortions and biases. Literature on Terror Management Theory (TMT) provides another interesting avenue of research regarding the way emotion biases cognition. TMT holds that anxiety about one's death is managed, at least in part, by validating one's current cultural worldview, leaving people closed off to alternative worldviews (J. Greenberg, Solomon, & Pyszczynski, 1997; Mikulincer & Florian, 2000). In addition, a deep well of research exists regarding confirmation bias and its affective components. Westen, Blagov, Harenski, Kilts, and Hamann (2006) outlined the neural bases of motivated reasoning, a form of implicit emotion regulation where people naturally adopt judgments that minimize negative and maximize positive emotion states. These researchers state that "processes of approach and avoidance, motivated by affect or anticipated affect, may apply to motivated reasoning, such that people will implicitly approach and avoid judgments based on their emotional associations" (p. 1947).[22]

Based on the foregoing review of the research, it seems as though an appropriate interplay of emotion and reason is essential to the virtuous person. Without emotion, our ability to reason is impaired. Without reason, emotion lacks clear direction. The emotional brain is incapable of analytic thought and its promptings can be imprecise, but when it is paired with reason, it affords a person with the greatest adaptive potential.[23] As L. S. Greenberg (2008)

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[22] Another potentially illuminating area of research regarding IH can be found in Forgas's (2002) *affect infusion model* (AIM) where affect "infuses" judgments differentially based on the levels of openness and effort involved in a particular thinking process. Haidt's (2002) commentary on this article is also insightful regarding moral judgments.

[23] Roberts (2003) also argues for the adaptive benefit of emotion with regard to reason, proposing that emotion offers a kind of experiential acquaintance that aids understanding and perception, resulting in an "improved epistemic condition" (p. 326).

states, "Emotion moves us and reason guides us" (p. 50). A proper convergence of these two primary human capacities is what some researchers have called emotional intelligence (Mayer & Salovey, 2004) a construct critical for health and relationality. Arguably, this kind of integration of head and heart is the mark of a virtuous person.[24]

Emotion regulation.

Emotional regulation, conceived of as an appropriate interaction between emotion and reason (L. S. Greenberg & Pascual-Leone, 2006), might also play a role in IH. As discussed above, embracing the adaptive potential of one's emotional dispositions is certainly an important part of emotion regulation, especially for those who are emotionally overregulated (i.e., those who consistently suppress their emotions). An appropriate harnessing the motivational aspects of emotion, therefore, could aid one's intellectual engagement with another, and fuel critical rational processing and reflection in a way that is less distorted and biased. For example, Panfile and Laible (2012) reviewed evidence that establishes emotion regulation as a critical mechanism in the development of empathy. Furthermore, empathy (understood as "an affective concern for another") is an important precursor of a number of prosocial and moral behaviors (and an inhibitor of aggressive behaviors). Especially in the context of discussion and learning from another, empathy is presumably a factor involved in IH. Shortt and Gottman (1997) conducted a study that hints at empathy's role in disagreement. Siblings low in dispositional empathy (both emotional and cognitive) exhibited more belligerent and domineering behaviors in a disagreement setting than did those high in dispositional empathy. They also found that high emotionality (measured by heart rate) was related to belligerence and domination. We therefore surmise that emotion

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[24] Some researchers separate the mental world into cognition and affect, whereas others, like Haidt (2002), draw from dual-process theories (Chaiken & Trope, 1999), which differentiate based on two kinds of cognition: reasoning (slow) and intuition (fast). This position includes emotion as one part of the intuitive processes.

regulation presumably plays a critical role in IH, particularly in cases of interpersonal interactions and epistemic disagreement. Empathy towards an epistemic peer helps one feel bonded and connected to the other in a way that would encourage understanding and openness.[25]

However, another aspect of emotion regulation might be more apt for those who are emotionally under-regulated (i.e., they feel overwhelmed and incapacitated by the intensity of their emotions). Learning how to appropriately temper one's emotional experience is likely another very important aspect of IH.[26] We have described how emotions like disgust, anger, and fear can be disastrous to cognitive openness and rationality (e.g., disgust by another's morality, anger at their offensiveness, fear of what their own life would look like if their strongly held religious belief turned out to be epistemically suspect, sadness over the loss of a previously held idea, etc.). Emotionally-charged topics such as morality, religion, and politics are prime areas of intellectual bias and arrogance (as we will explore in the next section). In marriage, disagreements are often emotionally-charged; marital success or failure often depends on the couple's ability to handle these discussions. Research on marital conflict could provide useful information on IH, especially in the context of disagreement and help illuminate why emotional regulation is so important.

Emotional and physiological arousal can be toxic to intellectual openness. For example, Gottman (1995) has found that when one's heart beat raises to a certain threshold—about 82

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[25] Fosha (2000) describes a number of adaptive *relational* action tendencies that emotion provides, along with the other more specifically self-focused action tendencies. Similarly, Greenberg and Pascual-Leone (2001) state, "Emotions might, for example, tell one that something is wrong in the domain of interpersonal relations, such as an interpersonal bond that has been ruptured or endangered. Thinking then sets to work to create a solution to this problem" (p. 174).

[26] Roberts (2003) argues that this kind of "emotional self-control," or the ability to alter one's judgment to influence one's emotional states, is a critical aspect of being a rational person.

beats per minute (BPM) for men (up from an average of 72) and 90 BPM for women (up from an average of 82)—a phenomenon called flooding occurs. Flooding is characterized by the activation of the sympathetic nervous system, which releases adrenaline and cortisol into the nervous system. When one's heart rate increases to 100 BPM, the "flood" of adrenaline results in a "fight or flight" response, often accompanied by intense fear or anxiety. While this system has adaptive survival functions, Gottman (1995) argues that emotional flooding severely limits one's ability to "focus on what the other person is saying, which leads to increased defensiveness and hostility" (p. 116). This flooded state takes a toll on one's emotions and cognition, and empathy very difficult. One is limited in the ability to emotionally connect with another in a way that would provide motivation to remain engaged and attentive. In addition, one is similarly impaired at being able to listen and take the cognitive position of another. These impairments to essential components of IH confirm the important role of emotion in disagreement, highlighting the need for emotional regulation. One's ability to appropriately manage emotions (e.g., through breathing, paying attention to emotional states, accepting feelings, and self-soothing) has the potential to play a critical role in the ability to intellectually engage with another, especially in matters of ultimate concern—including religious concerns.[27]

In conclusion, a robust empirical understanding of IH is impossible without serious attention to emotion, including its motivational and adaptive functions, its influence on cognition, its interpersonal influences, and its regulation. Different strategies for facilitating IH in epistemic partners (e.g., either accessing and evoking their emotions or attempting to manage and control them) will depend on a number of factors including the topic of conversation, the context, the emotional history between them, various personality factors,

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[27] The term "ultimate concern" means those things which are deemed to be of greatest psychological importance, see Emmons (1999) for a discussion.

their levels of emotional arousal, the emotional content involved, etc. All of these factors may expand and inform a proper understanding of IH.

§2.2.4 Conclusion.

The distinction in virtue epistemology between agent-reliabilism (which focuses on the reliable (or virtuous) functioning of a given agent's cognitive faculties) and agent-responsibilism (or neo-Aristotelianism, which focuses more on the agent's epistemic responsibilities and epistemic character) has guided our review of the psychological research relevant to intellectual humility. Agent-reliabilist's concerns are reflected in the heuristics and biases literature. We have seen how an understanding of the over-reliance of our cognitive systems on the self as a source of information for judgment and how the attenuation of the biases that result from this over-reliance can impact our understanding of IH. The responsibilist's perspective on virtue epistemology has led us to consider how an epistemic agent can take responsibility for virtuous cognition through motivation, goals, and values. By looking specifically at the roles that accuracy, accountability, rule-based thinking, and perspective taking play in attenuating biases, we have seen how these same behaviors can contribute to IH. We also considered how the responsibilist concern for epistemic character informs IH through the examination of certain personality traits such as openness to experience and conscientiousness (from the big 5) as well as traits such as honesty/humility, the need for cognition, and the need for closure found in other trait theories. Finally, we demonstrated how the interplay of emotion and cognition impacts both epistemic responsibilities and epistemic character as they relate to IH. Thus far the focus has been on the epistemic agent. We now turn to issues that arise when individuals disagree and the psychology involved in arriving at and holding epistemic beliefs, i.e. one's personal epistemology.

§3. Epistemic Disagreement and Virtuous Beliefs

While in the previous section our focus was on epistemic agents, our focus in this section centers on exploring some of the philosophical and psychological issues regarding *beliefs*, in particular as they relate to IH. This section is divided into two sub-sections focusing on the philosophical import of disagreement and the psychology of virtuous belief respectively. Regarding the former, we will introduce some of the main issues surrounding epistemic disagreement—a subject that is arguably of critical importance for any viable, conceptual understanding of IH—proposing a methodology for systematically understanding when and why intractable disagreements occur. Regarding the latter, we focus on how individuals form beliefs especially in regard to their relationship to knowledge, their understanding of the limits and certainty of knowledge, and what criteria they hold for knowing. This will bring us to research into epistemic cognition, epistemic beliefs, argumentative reasoning, and epistemic trust. Finally we consider a developmental path for IH and explore some insights from evolutionary psychology that might speak to the benefits of IH for individuals and groups.

§3.1 The Epistemic Import of Disagreement

Prima facie, humility is the virtuous mean between arrogance and diffidence. The humble person does not think too highly of himself/herself, nor is he/she completely self-deprecating. Likewise, *intellectual* humility is presumably the virtuous mean between intellectual arrogance and intellectual diffidence or skepticism. Correspondingly, the intellectually humble person is presumably someone who (roughly) does not think too highly of his/her beliefs; what is more, however, the intellectually humble person is also presumably someone

who (roughly) does not think too little of his/her beliefs. In short, IH is arguably something like (or minimally) believing as you ought, believing with the firmness the given belief merits.[28] This rough-and-ready understanding of IH faces an immediate challenge, however; we all too often disagree about what one ought to believe.

And it is for this reason that the literature surrounding the epistemic import of disagreement is so very important to our conceptual understanding of IH. This introduction to epistemic disagreement will look different from the introduction to virtue epistemology we saw in the previous section, however. Virtue epistemology is a broad subject, encompassing an extensive and multifaceted collection of approaches to our understanding of knowledge. In the previous section, we were able to briefly and from a bird's-eye view outline the two dominant accounts of intellectual virtue that have developed in the literature over the past 30 years. The subject of epistemic disagreement, however, is a far more narrow and with a much smaller body of literature. And what is more, full-bodied philosophical debate surrounding the epistemology of disagreement has a far more recent history. In short, the disagreement literature does not afford the sort of bird's-eye-view sketch that we saw in the previous section; our approach here will have to be different. In this section, instead of trying to sketch a disinterested outline of the relevant issues surrounding epistemic disagreement, we will propose a (somewhat contentious) methodology for systematically understanding when and why intractable disagreements occur: all the while putting down signposts, drawing from the literature, and raising the fundamental questions of the debate.

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[28]A belief is held firmly when a given agent ascribes to it a high degree of credence; to put it roughly, the firmness of a given belief corresponds to the degree to which a given agent holds to, ascribes to, believes in the given belief. *Nota bene*, this conception of intellectual humility is not committed to any particular theory of epistemic normativity. What one ought to believe or the firmness a given belief merits will be sensitive to this open variable.

§3.1.1 Peer disagreement and the virtuous trajectory

Peer disagreement.

People can disagree on just about any subject: from politics, to religion, to morality, to matters of fact, to matters of taste, etc. No doubt, some disagreements can be dismissed out of hand, being of little epistemic consequence. If we find ourselves disagreeing with a child, an inebriate, or a madman, we are rarely under any obligation to re-consider or re-evaluate our belief at the center of the disagreement; children, inebriates, and madmen are rarely (at least one hopes) even close to being our epistemic peers, rarely do we need to take their divergence in opinion all that seriously. Nevertheless, disagreement *among epistemic peers*—interlocutors who are equally familiar with the relevant data and just as intelligent, clever, rational, etc.—can be found (to at least some degree) in almost every realm of inquiry. As Richard Feldman and Ted A. Warfield note in the introduction to their seminal collection, *Disagreement* (2010):

> Disagreement is common. Two expert weather forecasters disagree about the weekend forecast. Two equally well-informed economists disagree about the most likely movement in interest rates. Two chess players with the same ranking disagree about whether 'white' stands better in a given board position. The available examples are limitless and range widely over nearly all aspects of life. (p. 1)

And this means that often, we find ourselves disagreeing not with children, inebriates, or madmen but with our peers and colleagues, those who are every bit as familiar with the relevant data and just as intelligent, clever, etc., those whose judgments are seemingly no less valuable or legitimate than our own.

And this raises important epistemic questions. When faced with a disagreement with an epistemic peer, should we just compromise, suspending our respective beliefs or meeting somewhere in the middle? This seems right in some cases, but surely there are also cases

where we should stick to our proverbial guns, right? Surely if we always compromised on

our beliefs we would be left a great deal more skeptical about the things our epistemic peers

disagree with us about (which may be a great deal!). Aren't there times when we can simply

agree to disagree? And what if we disagree over whether to compromise?

While disagreements between peers regarding the number of people in the room, say, are

usually quite easy to resolve (e.g. you can simply look again), other disagreements

(disagreements regarding morality, politics, and religion, say) can be quite intractable: rarely

in such cases can you do anything like 'look again' to resolve the debate. In this section, we

will explore the problems posed by epistemic disagreement, propose a tentative methodology

for understanding when and why intractable disagreements occur, and, in so doing, outline

some of the main contours of the disagreement literature. To do this, we will first consider a

series of disagreement cases that are less controversial, cases where we can probably more or

less agree on how the disagreement should be handled.[29] Once we have outlined the "easy"

cases, we will be in a better position to appreciate and assess some more problematic (if not

intractable) forms of disagreement. Second, we will explore these more problematic cases

and develop a better grasp of the relevant philosophical literature, and we will work toward

developing a systematic methodology for at least approaching and understanding even the

most troublesome forms of peer disagreement, arguably the biggest hurdles for IH.

Virtuous Revision.

Most of our day-to-day, ordinary beliefs are epistemically innocuous—we may believe

we have milk in the refrigerator, we may believe that a given orchid is a *Platanthera*

tescamnis, we may believe (based on a foggy memory) that the capital of Maine is Augusta,

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[29] There will, no doubt, still be dissenters regarding such cases; however, given our goal of sketching a map of

the *main* contours of the disagreement literature, we will not need to concern ourselves here over such

mavericks.

not Portland—though we sincerely believe them, we don't hold them all that dearly or firmly, and we certainly wouldn't lose sleep if we discovered that we were mistaken or that an epistemic peer happened to disagree with us. Likewise, most of our day-to-day, run-of-the-mill disagreements with our peers are fairly benign. The vast majority of our ordinary beliefs are such that, if they were challenged, no great epistemic quandary would arise. Most of our ordinary beliefs are such that any disagreements to the contrary can be easily resolved. Consider the following case from Hilary Kornblith's work, "Belief in the Face of Controversy" (2010):

> **Virtuous Revision:** [S]uppose that you and I go out to a restaurant with a number of friends. After a large meal, the check comes and we agree to split the bill evenly. You and I are each quite good at mental arithmetic. I take a look at the bill and figure out what each person owes, and I put my share in the middle of the table. You look at the bill and figure out what each person owes and put your share in the middle of the table, and then we notice that we have put in different amounts. We are each well aware of the other's mathematical abilities, and we are each convinced of each other's honesty. At least one of us has made a mistake. It would be unreasonable for me to conclude that, since, one of us has made a mistake, it must be you. The reasonable thing to do in this situation, and surely what most people in fact do in this situation, is suspend belief. We each go back to the bill and try to recomputed the proper share. (p. 32)

Most of our day-to-day, run-of-the-mill disagreements are like Virtuous Revision. We may disagree with an epistemic peer about whether we have milk in the refrigerator, the capital of

Maine,[30] and whether a given orchid is a *Platanthera tescamnis* or a *Platanthera sparsiflora*.

And in all of these cases the disagreement can be easily resolved. We can look in the

refrigerator. We can look at a map. We can consult an orchid guidebook or perhaps an

expert botanist. The reasonable thing to do in such cases is to revise the belief (or at least

adjust the firmness with which one holds the given belief) until we can look in the

refrigerator, check a map, consult an expert botanist, etc.

Virtuous Dogmatism.

Of course, not all forms of peer disagreement should force revisions onto our beliefs.

There are some beliefs that we hold too dearly, beliefs that are too central or too fundamental

and indeed too important to afford adjustment or suspension. Consider the following case:

> **Virtuous Dogmatism:** Jill is a philosopher, working away in an office, when
>
> one of her colleagues, Jack, stops by to chat. Now, Jill considers Jack to be
>
> her epistemic peer – she has no reason to suspect that Jack is in anyway less
>
> intelligent, educated, or clever than herself. Nevertheless, this day Jack
>
> surprises Jill with a shocking revelation. Jack confides in Jill that he has
>
> recently stopped believing that $2 + 2 = 4$. Now, if Jill knows anything, she
>
> knows that $2 + 2 = 4$. Does Jack's disagreement on this force Jill to reconsider
>
> her beliefs about basic arithmetic? Seemingly not. To all intents and purposes,
>
> Jill simply cannot give up on or significantly modify such beliefs. Such beliefs
>
> are too important and too consequential.

While legitimate peer disagreement in cases like Virtuous Revision reasonably force the

interlocutors to suspend, modify, or revise their respective beliefs, we can presumably agree

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[30]As Hilary Kornblith points out lots of people mistakenly believe the capital of Maine is Portland since that is
the largest city in the state. See Kornblith (2010), p. 29.

that such a result does not seem reasonable in cases like Virtuous Dogmatisms, in cases where the disagreement is over beliefs that are too precious, dear, central, foundational, etc. to revise or give up. In "You Can't Trust a Philosopher," Richard Fumerton (2010) addresses a case just like Virtuous Dogmatism:

> If I am justified in believing anything, I am justified in believing that $2 + 2 = 4$. My hitherto trusted colleague, a person I always respected, assures me today, however, that $2 + 2$ does not equal 4. Does this rather surprising discovery of my colleague's odd assertion defeat my justification for believing that $2 + 2 = 4$? Hardly. But this time we must be careful how we describe the relevant situation. When confronted by my colleague, my first (and probably last) reaction will be that he is not serious, that he does not believe what he says, and thus that there is no real disagreement between him and me. He can swear up and down on a stack of bibles that he is serious, and I will still probably conclude that he is lying. I will think that it is some kind of weird experiment or joke. Alternatively, I might eventually conclude that he does believe what he says, but that there is some sort of verbal dispute interfering with communication… But it will be almost impossible to convince me that he really believes a contrary of what I believe. Almost. To be sure, the more crazily my colleague begins to behave in general, the more likely it is that I will start entertaining the hypothesis that he really was serious in denying that $2 + 2 = 4$ (in the ordinary sense in which people make such claims). But that is just the point. To convince myself that he really is disagreeing with me, I would have to convince myself that he is crazy. And, as soon as I become convinced that he is crazy, I will not and should not pay any attention to what he believes. My justification for believing that he has lost his mind neutralizes

whatever epistemic significance his disagreement with me might otherwise

have had. (pp. 95-96)

In cases like Virtuous Dogmatism, a dogmatic inflexibility seems reasonable. Even though

our interlocutor in such cases is, by hypothesis, an epistemic peer, any claim to peerhood is

lost once it becomes clear that they are sincerely and genuinely at odds with beliefs that are

so central, so foundational, so consequential.[31] Being sincerely and genuinely at odds with

such beliefs is crazy. And when an epistemic peer goes crazy, at least within a certain

domain, they are no longer a genuine peer. In cases like Virtuous Dogmatism, dogmatism—

an uncompromising stance regarding one's beliefs—seems entirely reasonable, seems

virtuous.

Virtuous Skepticism.

So I think we can agree that there are recognizable cases of peer disagreement where the

reasonable thing to do is modify, revise, suspend, or otherwise compromise on our belief

(cases like Virtuous Revision). What is more, I think we can also agree that there are

recognizable cases of peer disagreement where the reasonable thing to do is to be dogmatic,

stick to your proverbial guns, and be uncompromising in your beliefs (cases like Virtuous

Dogmatism). The final "less controversial" cases I want to consider before moving on to the

problematic (if not intractable) forms of peer disagreement are those cases concerning beliefs

that we hold with a healthy dose of skepticism, genuine beliefs held loosely with little

firmness. Consider the following case:

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[31] The tenants of basic arithmetic are presumably hinge propositions, "presupposed in the game of giving and

asking for reasons" (Philie, 2009, p. 461), *methodological necessities* "whose truth is required, in a given

context of inquiry, for the pertinent project of inquiry to proceed" (Brueckner, 2007, p. 285). To compromise

on basic arithmetic could be to compromise on the very framework of reason and rationality.

Virtuous Skepticism: Susan and Ingrid are both accomplished theologians; however, they disagree about the highly theoretical, abstract, and fairly esoteric issues surrounding lapsarianism. Susan is a talented advocate of supralapsarianism, and Ingrid is an equally talented advocate of infralapsarianism. (It is not important what these views actually amount to; all we need to appreciate at this point is that they are theoretical, abstract, and fairly esoteric.) They both deeply appreciate and respect each other's work, and neither one of them has any reason to question the other's intelligence, competence, or understanding of the relevant literature. And while they have engaged with each other's work in depth and for many years, they both remain committed to their respective views on this issue.

The relevant beliefs in Virtuous Skepticism are presumably held much more loosely than, say, the relevant beliefs in Virtuous Revision or Virtuous Dogmatism.[32] An advocate of supralapsarianism or infralapsarianism will presumably recognize the highly theoretical, abstract, and complex nature of the lapsarianism debate and hold his/her belief with a healthy dose of skepticism, skepticism that would presumably be unfounded when divvying up bills or doing basic arithmetic.[33] Indeed, the advocate of supralapsarianism or infralapsarianism will presumably hold their belief with enough skepticism that the disagreement of the peer is going to be of relatively little significance, just a drop in metaphorical bucket. And as such,

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[32] While this seems like a reasonable assumption to make, it is worth noting that sometimes even highly theoretical, abstract, and esoteric topics can be the subject of intractable debates. For example, see Peter van Inwagen's description of his disagreement with David Lewis regarding the compatiblism v. incompatiblism debate in "We're Right, There Wrong" (2010, pp. 23-24).

[33] The radical skeptics among us may think that such skepticism *is* founded across the board; however, I think we can couch the threat of radical skepticism for the time being and assume, like we naturally do, that we are pretty good at knowing quite a few things.

it seems reasonable that peer disagreement does very little to affect the belief of protagonists in cases like Virtuous Skepticism, cases where the belief in question is concerning a topic so abstract, so theoretical, so complex that it is held very loosely.

The virtuous trajectory.

To be sure, even if we can agree on what might be the approximately reasonable response in the above cases, serious and troubling questions are, no doubt, lurking in the neighborhood. Even if we can agree that protagonists in cases like Virtuous Revision should somehow revise their beliefs, we may yet wonder what precisely that revision should amount to. Even if we can agree that protagonists in cases like Virtuous Dogmatism should be dogmatic about their basic beliefs, we may yet wonder what constraints ultimately warrant such epistemic rigidity. Even if we can agree that the protagonists belief in cases like Virtuous Skepticism should be relatively unaffected by peer disagreement (since peer disagreement does little to increase the already high levels of skepticism surrounding the given belief), we may yet wonder if even tenuous belief is actually warranted in such scenarios. Add to this the complexities introduced by scenarios where the peerhood of our interlocutors is not obvious or scenarios where the relevant disagreement is either unknown to either interlocutors or merely possible, and the dizzying complexity surrounding the epistemic significance of disagreement comes plainly into focus.

Nevertheless, if we can indeed agree on what might be the approximately reasonable response to cases like Virtuous Revision, Virtuous Dogmatisms, and Virtuous Skepticism, we can make significant headway toward a systematic understanding of the disagreement literature and the problems posed by the most notorious and intractable forms of peer disagreement. Virtuous Revision, Virtuous Dogmatisms, and Virtuous Skepticism can stand as signposts for the sort of beliefs that seemingly merit revision, dogmatism, and skepticism (respectively) when faced with peer disagreement.   Two factors worth tracking across such

cases: (a) the firmness with which the belief is held and (b) the firmness with which the belief *ought* to be held. In Virtuous Revision, the protagonist holds his belief with a moderate degree of firmness, and the belief in question, while perhaps generally unlikely to be false, merits being held with a moderate degree of firmness. In Virtuous Dogmatism, the protagonist holds her belief with absolute firmness (it's difficult to think of anything she might believe more than 2 + 2 = 4), and the belief in question, let's assume, merits being held with the utmost firmness. In Virtuous Skepticism, the protagonist holds her belief with very little firmness, and, given the theoretical complexities surrounding the belief in question, this is exactly the amount of firmness the belief merits. These results allow us to outline and provisionally map reasonable (or *intellectually virtuous*) responses to peer disagreement. Consider the following graph:
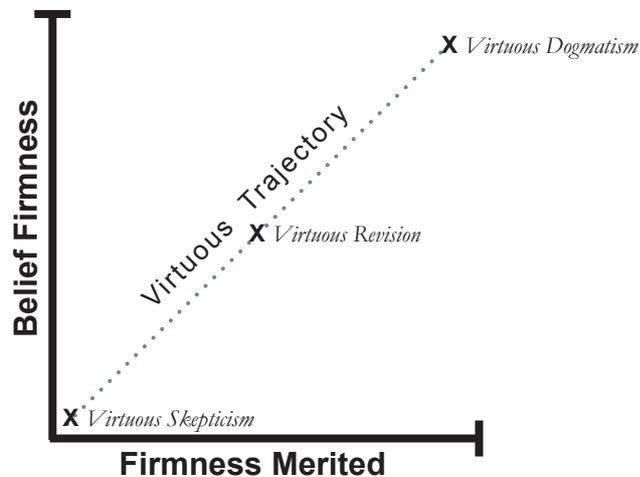
Given that it is held with the high degree of firmness that it deserves, the protagonist's belief in Virtuous Dogmatism is in the upper right-hand corner of the graph. Given that it is held with the moderate degree of firmness that it deserves, the protagonist's belief in Virtuous Revision would presumably be roughly in the center of the graph. Finally, given that they are held with the low degree of firmness that they deserve, the protagonists' beliefs in Virtuous Skepticism are in the lower left-hand corner of the graph. Not only does this pattern of

beliefs seemingly map a trajectory for intellectual virtue (where intellectual virtue is roughly

believing as one ought, call this the *virtuous trajectory*), it seemingly helps us map some of

the more notorious and intractable forms of peer disagreement as well: identifying them as

borderline cases or placing them squarely outside of the trajectory of intellectual virtue, off

the virtuous trajectory.[34]

§3.1.2 Borderline cases and vicious disagreement.
### *Borderline cases.*

Some cases of peer disagreement might be more problematic than any of the cases

considered thus far primarily because they are *borderline cases*, cases where the belief in

question is on the trajectory of intellectual virtue but not plainly an instance that would

require revision, virtuous dogmatism, or virtuous skepticism in the face of peer disagreement.

Consider the following case from "Persistent Disagreement" by Catherine Z. Elgin (2010):

> **Borderline:** Suppose two paleontologists, Jack and Jill, are epistemic peers who
>
> disagree about the fate of the Neanderthals. Jack believes that Neanderthals were an
>
> evolutionary dead end. Unable to compete, they simply died out. Jill believes that
>
> Neanderthals evolved into later hominids whose descendants are alive today.
>
> Because the issue is complex and the evidence is equivocal, they come to different
>
> conclusions about it. What should they (and we) make of their disagreement? In
>
> particular, should the fact that an epistemic peer disagrees with Jack have any effect

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[34] The above graph not only helps us map intellectual virtue, it helps us map what we might call intellectual

vice. For example, vicious skepticism, holding a belief with a low degree of firmness when it merits a high

degree of firmness, would be in the lower right-hand corner of the graph. Alternatively, vicious dogmatism,

holding a belief with a high degree of unmerited firmness, would be in the upper left-hand corner of the graph.

If intellectual humility is rough analogous to believing as one ought (following the trajectory of intellectual

virtue), then this graph nicely and intuitively places intellectual humility between the vices of intellectual

arrogance and vicious skepticism.

on the epistemological status of his belief? Should Jack's knowledge of that fact have any effect? (p. 54)

Allow that the deliverances of paleontology fairly reliably hit the truth and merit being held with a reasonably high degree of firmness. Let's assume that the deliverances of paleontology are such that they deserve to be held with more firmness than a cursory glance at restaurant bill (cf. Virtuous Revision) and less firmness than the average adult's understanding of basic arithmetic (cf. Virtuous Dogmatism). And let's assume Jack and Jill are holding their beliefs with the firmness due the deliverances of paleontology (i.e. they are on the trajectory of intellectual virtue). This would place the relevant beliefs of Borderline here:
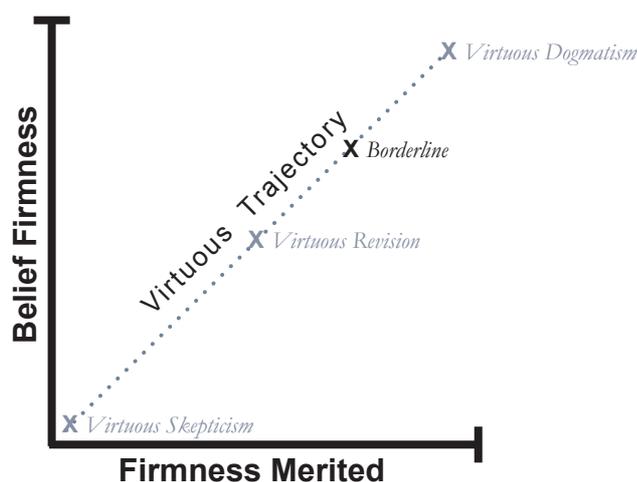
Should Jack and Jill revise their beliefs? Or can they reasonably hold their epistemic ground? As Elgin (2010) notes, opinions diverge:

> Some philosophers, such as Richard Feldman, Hilary Kornblith, and David
>
> Christensen, contend that the existence of peer disagreement undermines one's
>
> grounds for belief.[35] If someone with the same evidence, training, background

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[35] See Christensen (2007); Feldman (2006); Kornblith (2010). Note, we are assuming in this paper that peer

disagreement does not *always* "undermine one's ground for belief." For example, we noted above that Jill in the

knowledge and reasoning abilities came to the opposite conclusion from Jack's, that is evidence that Jack's grounds are inadequate. Such philosophers think that epistemic agents should moderate their views in light of the disagreement. Others, such as Thomas Kelly and Richard Foley, maintain that it is reasonable for a thinker to retain his opinion in the face of disagreement with an epistemic peer.[36] They think that epistemic agents should be resolute. (p. 54)

And given our diagnosis of Borderline as a borderline case, this makes perfect sense. If (a) the deliverances of paleontology merit being held with a fairly high degree of firmness (more firmness than a cursory glance at restaurant bill and less firmness than the average adult with basic arithmetic) and (b) Jack and Jill are holding their beliefs with the firmness due the general deliverances paleontology, then we are pulled in two directions. It is unclear whether Jack and Jill should revise their beliefs (as in Virtuous Revision) or whether they can reasonably hold their epistemic ground (as in Virtuous Dogmatism). Our map of disagreement does not tell us the right answer in these cases; however, it does give us a systematic framework for understanding why they are problematic and puzzling in the first place.

Vicious disagreement.

However, there are problematic and puzzling cases of peer disagreement that are not borderline cases. There are cases of peer disagreement that are intractable *not* so much because we feel pulled to two different directions about them but because they involve beliefs that are extremely personal, consequential, and intimate: beliefs that are all too prone to being held dearly even when they shouldn't be. In cases like Virtuous Revision, Virtuous

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case of Virtuous Dogmatism can reasonably be dogmatic about the fact that $2 + 2 = 4$ even in the face of peer disagreement.

[36] See Foley (2001); Kelly (2005).

Dogmatism, and Virtuous Skepticism, the protagonists roughly proportioned the firmness of their belief to the firmness merited by their belief; they didn't hold the belief dearer than they ought. Some beliefs, however, are all too prone to what we might call intellectual vice, where the belief is held with a firmness that it does not merit.[37]   Consider the following case:

> **Religious Disagreement:** Christy is a committed Christian. Most of her
> friends are Christians. She frequents Christian blogs and websites. And she is
> part of a broader Christian community. Abbey, however, is an atheist. Most of
> her friends are atheists. She frequents pro-atheist blogs and websites. And
> Abbey is part of a broader atheist community. Christy is a theist and believes
> in the authority of the bible on moral topics. Abbey does not; she is quite
> convinced that there is no God, and she believes the bible has no special moral
> authority whatsoever. Christy and Abbey are equally intelligent, clever, and
> discerning. Nevertheless, when Christy and Abbey discuss their differences in
> opinion and review all of the arguments both for and against their respective
> positions, they both remain unmoved.

For beliefs that are extremely personal, consequential, and intimate—beliefs regarding religion, politics, and morality being archetypal—there can be a lot at stake.[38] The respective religious beliefs of Christy and Abbey in Religious Disagreement, for example, deeply affect

---

[37] If we understand IA as those beliefs that are held with greater firmness than the evidence warrants, this point suggests that there are some beliefs with which we are particularly prone to IA.

[38] For example, in the fifteenth chapter of his letter to the Corinthians, the Apostle Paul poignantly stresses that if Jesus Christ was not raised from the dead (i.e., if an essential pillar of the Christian faith is false) "[Christians] are of all people most to be pitied" (I Corinthians 15:19, *English Standard Version*). In other words, Paul seems to be suggesting that Christians should be so affected by their Christianity that their lives should be supremely pitiable if Christianity is not true.

how they each view the world, what they read with the most attentiveness, who their closest

friends are, and perhaps even who they trust the most.[39] Indeed, their religious beliefs are so

near and so dear to them that giving them up could be almost as intellectually cataclysmic as

giving up the belief that $2 + 2 = 4$.

   Christy and Abbey hold their respective beliefs regarding religion with high levels of

firmness. Of course, Christy may very well think that her belief merits her firm commitment

to Christianity, but, then again, Abbey may very well think that her belief merits *her* firm

commitment to atheism. Conversely, given the firmness with which Christy is committed to

Christianity, she presumably thinks that Abby's firm commitment to atheism is unmerited.

Likewise, given the firmness with which Abbey is committed to atheism, she presumably

thinks that Christy's firm commitment to Christianity is unmerited.[40] Given the reasonable

assumption that incompatible views cannot both merit being held with a high degree of

firmness, at least one of the interlocutors in cases like Religious Disagreement is committing

an intellectual vice, believing more than he/she ought.[41] The problem, however, is

determining who is the culprit. Christy may, with regret, think Abbey is somehow

intellectually misguided, perhaps chalking her strong dissent to the noetic affects of sin in the

world. Likewise, Abbey may, with regret, think that Christy is actually the intellectually

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[39] Of course, a belief does not necessarily need to be political, religious, or moral in order to deeply affect us.
Presumably, given the right circumstances, almost any belief (e.g. a belief in the superiority of Apple
computers, a belief in the perils of inorganic food, etc.) can be made surprisingly important for one's view of the
world.

[40] And because of this they are likely to perceive each other as intellectually arrogant.

[41] This assumption does not preclude the possibility of evidence reasonably leading in two different directions.
Rather, this assumption merely precludes the possibility of a given set of evidence reasonably leading to two
different beliefs that are (a) incompatible and (b) held with an extremely high degree of firmness.

misguided one, perhaps chalking up her strong dissent as indicative of an intellectual crutch or reality-distorting indoctrination.

In Virtuous Dogmatism, the interlocutors are at odds about what they ought to believe regarding basic arithmetic. In Virtuous Revision, the interlocutors are at odds about what they ought to believe regarding what everyone owes on a restaurant bill. In Virtuous Skepticism, the interlocutors are at odds about the debate surrounding lapsarianism. In all of these cases, however, we can generally agree on how to handle them. The protagonist in Virtuous Dogmatism should stick to her proverbial guns and continue to believe that $2 + 2 = 4$ with the utmost firmness. The interlocutors in Virtuous Revision should withhold or otherwise revise their beliefs until they can get a second glance at the bill. And given the theoretical, abstract, and esoteric nature of their debate, the interlocutors in Virtuous Skepticism should hold their beliefs with so little firmness that peer disagreement is relatively inconsequential. Cases like Religious Disagreement, however, are far more intractable. And it's not as if we are simply pulled in two different directions about them (as in cases like Borderline). Cases like Religious Disagreement involve beliefs that are so personal, so consequential, and so intimate that *they are particularly and notoriously prone to intellectual vice*, in particular they are prone to being held with almost unmatched firmness even when it is ultimately unmerited. In other words, beliefs like those found in Religious Disagreement, are all too prone to falling outside the virtuous trajectory:
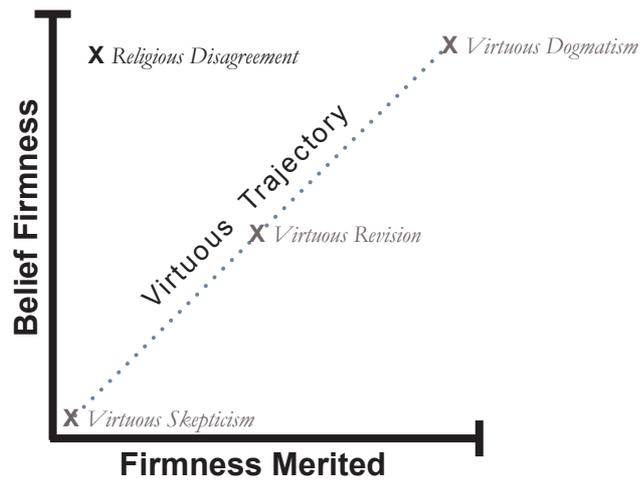
And this makes our disagreement as to what firmness religious, political, moral, etc. beliefs merit vast. All too often, we simply cannot agree on what the relevant data, arguments, evidence, intuitions, etc. merit; and all too often, we attribute any intellectual vice to our interlocutors rather than ourselves. More so than any of the cases considered prior, we cannot agree on what one ought to believe.[42]

Prima facie, IH is something like not thinking too much or too little of one's beliefs, holding one's beliefs with the firmness they merit, believing as one ought. The difficulty, however, is that we all too often disagree about what one ought to believe. And given the prevalence of such disagreements, this poses an immediate hurdle for our rough-and-ready understanding of IH. If IH is believing as one ought, what do we make of all the cases where we can't agree on what one ought to believe? The epistemic import of disagreement, then, is of central importance for our conceptual understanding of IH.

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[42] And presumably, what one ought to believe depend on what is ultimately true. Consider the Religious Disagreement case. If Christianity is true, then perhaps Christy is perceiving God via her *sensus divinitatis*, and Abbey is being intellectually blind as a result of original sin. Conversely, if atheism is true, then Abbey via her enlightened faculties is able to escape the folk appeal of religious beliefs; Christy, however, is being intellectual blinded by her defunct commitments to superstition and myth. As such, it seems as though we cannot agree on what one ought to believe in cases like Religious Disagreement, because, in part, we cannot agree on what is true.

§3.1.3 Conclusion.

In this section, we highlighted some of the main issues surrounding the epistemic disagreement literature, suggesting some signposts for places not only where a virtuous person, might be compromising but also virtuously skeptical and even virtuously dogmatic. Arguably, this offers a partial, possible elucidation of IH by outlining a conceptual map of the relevant concepts. Consider once again our graph for charting epistemic disagreement:
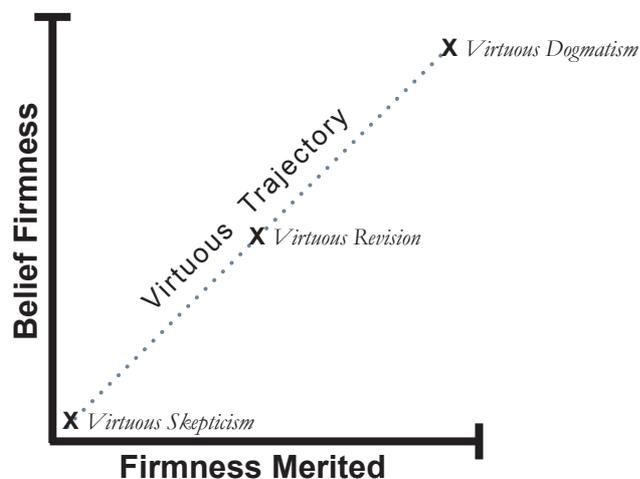
If IH is roughly believing as one ought, believing with the firmness the given belief merits, then the scope of intellectually humble beliefs goes roughly from the lower left-hand corner of the graph (what we might call virtuous skepticism) to the upper right-hand corner of the graph (what we might call virtuous dogmatism), along the virtuous trajectory. And as we might expect, this identifies IH as the virtuous mean in between the vices of vicious skepticism in the lower right-hand corner of the graph (believing less or less firmly than one ought) and vicious dogmatism in the upper left-hand corner of the graph (believing more or more firmly than one ought). And while this does not solve the chief puzzles facing IH in the debates surrounding the epistemic import of peer disagreement, it goes some way toward suggesting when and why intractable disagreements occur: to highlighting the types of

disagreement that pose the greatest challenges to IH, bringing into sharp focus the

significance of epistemic disagreement for our conceptual understanding of IH

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Major collections on epistemic disagreement:

- Feldman, R., & Warfield, T. (Eds.). (2010). *Disagreement*. Oxford, UK: Oxford University Press.

- Lackey, J., & Christensen, D. (Eds.). (Forthcoming). *The Epistemology of Disagreement: New Essays*. Oxford, UK: Oxford University Press.

§3.2 Virtuous Beliefs

In the psychology portion of The Nature of Intellectual Virtue and the Virtuous

Knower, we suggested that intellectual humility is a virtue held by an individual, involving

both cognitive and emotional regulation, that is expressed and most fully developed in

relationship to some "other." In the context of disagreement, the "other" can be a person (or

persons) with (a) a variant opinion or a different set of beliefs or (b) an alternative

perspective on an issue with whom one could engage in disagreement and from whom one

can learn. The "other" can also be the relationship of knowing agents to what ought to be

believed, represented in such abstract concepts as "knowledge" or "truth." And, in the

context of disagreement, what is often in dispute is the "truth" of the matter, that the

interlocutors cannot agree on what ought to be believed. In addition, individuals can view

"truth" differently. In the psychology literature, three views of "truth" that an individual

might hold have been discerned: truth as sure and unchanging, truth as subjective and

tentative, truth as the result of the search for the best information and arguments.[43] These

issues have been addressed in psychology in various fields including personal epistemology,

epistemic cognition, epistemic beliefs, and epistemic vigilance among others.

§3.2.1 Personal epistemology

Epistemic cognition: Reflective judgment.

When people are confronted with problems in which many hold opposing and

contradictory views, facts are often at issue. In the face of these "ill-structured problems,"

King and Kitchener (2002) propose a three-level model to account for the complexity of

older adolescent and adult cognitive monitoring in these situations. The most basic level is

"cognition," which is the simple process of apprehending evidence (listening, reading,

perceiving, computing). The next level is "metacognition," in which agents monitor their

own progress of apprehension (they think about their thinking). At the third level, "epistemic

cognition," individuals contemplate what kind of limits there are to knowledge, the certainty

of knowledge, and the criteria for knowing (they think about knowledge). Having skills in

epistemic cognition allows individuals to keep track of whether or not a problem is solvable

and to consider the "truth value" of proposed solutions.

While IH might be present at any of these three levels, investigation into the third level of

epistemic cognition is valuable because it deals with the limits and uncertainty of knowledge

as well as criteria for knowing: issues central to IH. King and Kitchener (2002) have

constructed a Reflective Judgment Model to trace the development of this skill throughout

the lifespan. This model begins with "Pre-reflective Reasoning," in which individuals

believe that the most trustworthy knowledge comes from authority figures, or through first-

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[43] To put it in the terms of the disagreement section, the focus of this chapter will explore whether or not

individuals hold their beliefs with the firmness they merit – whether they hold them too firmly, not firmly

enough, etc.

hand observation. People in this stage hold that what they know is absolutely correct and that knowledge is certain. They treat problems as well-structured, meaning problems can be clearly defined and solved with certainty. Through the processes of assimilation and accommodation, individuals can then move to the next level of "Quasi-reflective Reasoning." At this level they come to realize that knowledge is uncertain because others hold equally convincing and sometimes contrary positions and evidence can be incomplete or poorly gathered. This causes them to view judgments as subjective and highly idiosyncratic. At the final level of "Reflective Reasoning," individuals accept the uncertainty of knowledge but strive to make the "most reasonable" judgments with as much "reasonable certainty" as possible. Therefore, knowledge must be constructed, evaluated, and defended. Individuals at this level must "readily admit their willingness to reevaluate the adequacy of their judgments as new data or new methodologies become available" (King & Kitchener, 2002, p. 38).

   It could be argued that the move from absolute certainty in one's judgments and in the evidence, to a radical uncertainty about them, to a more "reasonable" stance of constructing justifiable judgments in the face of the uncertainty of knowledge is the very process of developing IH. King and Kitchener (2004), while situating themselves in the constructivist, cognitive-developmental tradition, differ from Piaget and Kohlberg in their view of the developmental progression of reflective judgment compared to other cognitive development. They see it not as developing in invariant, universal stages, but rather as "waves across a mixture of stages, where the peak of the wave is the most commonly held set of assumptions" (p. 10). In addition, King and Kitchener view reflective judgment as a skill that requires abstract thinking. Therefore, research on reflective judgment has focused on the period of adolescence when relevant abstract thinking begins, to its maturing through young

adulthood.[44] The developmental path follows the one first delineated by Perry (1968) in which pre-reflective thinking dominates in late adolescence, quasi-reflective thinking in the early 20's and reflective judgment in the late 20's (Hofer & Pintrich, 1997). Because it is a skill that benefits from education and training, the higher the education level, the higher the proportion of reflective judgment in an individual. King and Kitchener report a high consistency of reflective judgment across domains.

Reflective judgment has been measured through a structured interview (Reflective Judgment Interview, hereafter RJI) and a paper-pencil test (the Reasoning about Current Issues Test). Activities that are thought to develop reflective judgment are: encouraging students to examine assumptions, to take in evidence from multiple sources and perspectives, and to be responsible for their own conclusions. Those college students who appreciated challenging courses, worked hard in class, and were committed to thinking through ideas for themselves scored higher on the RJI than students without these attitudes (King & Kitchener, 2004). IH, insofar as it contains elements of reflective judgment, could be similarly developed through these means, especially in settings of higher education.

Argumentative reasoning.

In her investigation of argumentative reasoning, Deeana Kuhn discerned a similar developmental pattern (Hofer & Pintrich, 1997). Kuhn and her colleagues hold the view that the developmental task that supports epistemic cognition is the ability to coordinate the subjective and objective dimensions of knowledge (Kuhn & Weinstock, 2002). The movement is from the dominance of an objective point of view of knowledge, to the gradual overtaking of a subjective position as the person matures, and finally a coordination of the

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[44]Cognitive developmentalists (contra Piaget) no longer regard adolescents as the beginning of abstract thought (see for example, Simons & Keil, 1995), but reflective reasoning regarding what can and cannot be known with certainty appears to emerge during adolescence.

two in which neither overpowers the other. The stages of epistemological views are described as a shift from an "absolutist" view, which sees knowledge as objective, located externally, and known with certainty, to a "multiplist" view that grows from the experience of the conflicting assertions of others. Now the source of knowledge moves from the object to the knowing subject and the person becomes aware of the uncertain and tentative nature of knowledge. In this view everyone has a right to his or her own opinion and no opinion is "right" (since all are "right"). The "evaluativist" view represents a reintegration of an absolutist notion of objectivity with the tentative, subjectivist, and uncertain nature of knowing that is part of the multiplist view. Evaluativists understand that some positions are better than others due to better evidence and supportive arguments. Kuhn and Weinstock (2002) see the beginning of the movement from absolutist to a more multiplist view in middle to late childhood. Kuhn also uses an analysis of the solutions to ill-structured problems to measure epistemic cognition.

These theories and findings have implications for disagreement. In the face of conflicting claims people with an absolutist view could potentially tend toward vicious dogmatism and intractability. On the other hand, perhaps a multiplist view could tend toward vicious skepticism, with little investment toward seeking a resolution (or even engaging in a search for the truth) since "all views are right." The virtuous mean in the case of personal epistemology and epistemic cognition is found in the evaluativist view. Though a resolution to disagreement may not always be possible (or even the goal), those who take this stance would properly focus on belief justification through evidence and effective argumentation. Further research using Kuhn's categories may help our understanding of the dynamics involved in disagreement.

Epistemic beliefs.

Research into epistemic beliefs has revealed the impact of epistemic cognition on knowledge acquisition and the motivation to learn. If learning is broadly defined as seeking new and better information, one's attitude toward knowledge will make an impact. Carol Dweck and her colleagues have found a clear relationship between the motivation to learn and having either an essentialist theory of the ability to know (intelligence is fixed and cannot improve) or an incrementalist theory (intelligence can change and develop). Those with an incrementalist view are more motivated to persevere after failure and learn from their mistakes (Dweck, Chiu, & Hong, 1995). Schommer (1990) took special interest in the impact student's beliefs about the nature of knowledge had on comprehension. She theorized that epistemic belief impacts comprehension through multiple dimensions that exist on a continuum and downplayed its developmental aspects (Hofer & Pintrich, 1997). According to Schommer (1990), the five dimensions of epistemic belief are: the structure, certainty and source of knowledge, and the control and speed of knowledge acquisition.

The Schommer Epistemological Questionnaire measures beliefs on a continuum along these four dimensions:

- from knowledge organized as isolated facts to organized as integrated conceptions (structure),

- from knowledge as certain to knowledge as tentative (certainty),

- from learning ability as genetically determined to enhanced through education and experience (control),

- from learning as either quick or does not occur to learning as gradual (speed).

Schommer's questionnaire does not effectively measure knowledge source. The relative strength of these beliefs about knowledge impact children's learning. When asked to complete a story, those who believe knowledge is quickly attained overestimated their

comprehension and were less able to integrate knowledge, writing oversimplified conclusions. Those who believed knowledge is certain drew absolute conclusions and distorted information, making it consistent with their beliefs (Schommer, 1990).

In an experiment measuring the impact of epistemological beliefs on attitudes about contemporary controversial issues, Schommer-Aikins and Hutter (2002) found that belief in the complexity of knowledge (structure) increased the likelihood of taking on multiple perspectives on an issue, of acknowledging the multifaceted aspects of an issue, and of taking time to think about controversial issues before drawing conclusions. Those who believed that knowledge was certain were more likely to suggest absolute answers and less likely to look at the many factors that comprised an issue. Phan (2008), in a longitudinal study, found that those who held beliefs that knowledge is complex, tentative, and acquired gradually (through education and experience), had a more sophisticated approach to learning.

In a review of the literature on the impact of epistemic beliefs on self-regulated learning, Muis (2007) concludes that there is sound evidence that epistemic beliefs are one of the main components involved in self-regulated learning. These beliefs serve as inputs into the metacognitive processes of self-regulated learning by influencing the standards that students use to guide their learning. Thus, if students believe in the certainty of knowledge and that it must come from an authority, they will have the goal of finding only one source of information as the standard that guides them. Further, students will less likely engage in evaluation of the source of knowledge once it is found. By contrast, if students believe that knowledge is tentative and attained through the evaluation of evidence, they will search for multiple sources of information. Moreover, they will engage in comparative analysis, evaluate the trustworthiness of the source, and seek to reconcile the information acquired from experts with their own knowledge and experience. We can conclude that beliefs about knowledge have a strong influence on the motivation to learn from mistakes, on curiosity, on

the search for true evidence, and on a love for learning: all aspects of IH.

Epistemic vigilance and trust.

Finally when regarding the self's relationship to knowledge we must consider the relationship of the self to the source of knowledge. It is well established in the social psychology literature on persuasion that individuals will be more influenced by a source they like (or with which they have an established relationship), though calling attention to this bias can lead to its correction (Petty et al., 1998). Beyond simply like and dislike, humans are especially keen to discern whether or not a person is trustworthy, even, and maybe especially, when getting information from that person. Research on face perception has uncovered finely tuned perceptual mechanisms that allow us to quickly judge whether or not a person is trustworthy (Engell, Haxby, & Todorov, 2007). Children are especially tuned to the trustworthiness of informants. They make quick judgments and "profile" people as reliable or unreliable informants, judgments that persist in subsequent encounters. Children also are attuned to group consensus as an indicator of reliable information (Harris, 2012).

The child's experience of trust in the attachment process will also influence his or her epistemic trust. Paul Harris (2012) sees three different strategies emerging from the work he and his colleagues have done in this regard. In research concerning children's trust of mothers for information, children's trust varies depending on the child's attachment style. Securely attached children have a balanced strategy. They trust their mother when perceptual evidence is ambiguous and are skeptical when what they see runs counter to what she says. Children with an avoidant pattern of attachment tend to be self-reliant in their judgments and do not trust the mother in either situation. Those with an ambivalent pattern are dependent, trusting the mother even when the evidence runs counter to her claims.

Mascaro and Sperber (2009) have discerned a developmental pattern in regard to epistemic trust. Children, by the age of three, use their ability to recognize "nice" verses

"mean" people to judge the trustworthiness, preferring the testimony of the "nice" informant. By age 4, children can recognize false testimony and then use this information in their trust of another and in the conclusions they draw from the other's false testimony. By age 6, having acquired a representational Theory of Mind,[45] children can reliably understand that someone may intend to misinform another through false testimony. Sperber et al. (2010) argue that epistemic vigilance is what allows us to trust the testimony of others. They give the compelling analogy between the mutual trust and vigilance required to walk down a busy sidewalk in New York City and epistemic trust. In the situation on the street, we trust that everyone is being (more or less) vigilant—watching where they are and others are going— and we base our actions on that trust until, in our vigilance, we have reason to suspect that someone is not paying attention to where he or she is going and adjusting accordingly. The same holds for trusting testimony. Sperber et al. (2010) conclude:

> So, understanding is not believing, but nor is it adopting a skeptical position.
>
> Comprehension involves adopting a tentative and labile stance of trust; this will lead
>
> to acceptance only if epistemic vigilance, which is triggered by the same
>
> communicative acts that trigger comprehension, does not come up with reasons to
>
> doubt. (pp. 368-369)

We believe that these issues of epistemic trust and their underlying structures are a fruitful area for understanding the development of IH. Fundamental developmental milestones such as attachment and Theory of Mind are at play. How we trust each other as informants and how we infer information from others intentions are critical skills in communication and discussion.

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[45] Theory of Mind (ToM) is the ability to attribute mental states to oneself and others and to understand that others have beliefs, desires, and intentions that are different from one's own. This capacity is in place for most children by age 6.

§3.2.2 The development of intellectual humility.

Life-span development.

The question arises: how does IH develop through the lifespan? One place to look might be research into the development of beliefs about knowledge. Even those most committed to a developmental progression for epistemic cognition and beliefs do not see them as universal stages set in an invariant sequence (Hofer & Pintrich, 1997; King & Kitchener, 2004). Burr and Hofer (2002) offer an intriguing parallel between the development of Theory of Mind (ToM) in children and the development of epistemic beliefs. Both involve issues of the source of knowledge, justification for knowing, and the certainty of knowledge as well as the tension between objectivity and subjectivity. Children, when they acquire ToM, move from an egocentric subjectivity to a more objective understanding that knowledge can have a source outside oneself that is different from the self. Children then develop a preference for knowledge from authoritative sources until late adolescence when a more multiplists perspective on knowledge may arise (a second focus on subjective ways of knowing).

Little research has been done in the years between acquiring ToM and late adolescence to see if there are any significant (or even subtle) changes in epistemic beliefs. Changes could come about because of the mismatch between current beliefs and one's environment leading either to assimilation or accommodation (as Piaget would have it). Another possibility is that an individual must be dissatisfied with existing constructs and find other conceptions more plausible and reasonable. Still another possibility is to examine whether there are other factors related to affect, motivation, and context (Hofer, 2002). Whatever the mechanism of development, one thing is clear; sophisticated epistemic beliefs that acknowledge the complexity and tentativeness of knowledge, that motivate a search for the best evidence to justify beliefs, that create a tolerance for alternative views, and that inspire a curiosity and a love of deep learning, arise from an encounter with knowledge through schooling. One

indication of this influence of schooling is the finding that, in general, the more one knows about a subject the more sophisticated the epistemological beliefs regarding the content of that subject are, although epistemological beliefs in individuals are also found to be relatively consistent across domains (Hofer & Pintrich, 1997; Muis, Bendixen, & Haerle, 2006). In addition, the highest scores on Reflective Judgment Interview are found among the most highly educated (King & Kitchener, 2004). Encounters with beliefs other than one's own creates conditions that lead to a more balanced, which could be called a more virtuous, understanding of knowledge, even in young children.

Research into beliefs about knowledge has been conducted primarily in educational settings, particularly college and graduate schools. The few reported studies measuring non-student adults without college degrees showed a moderate increase in reflective judgment scores over time that reach the same level as 1st year college students (King & Kitchener, 2004). This finding and the limitation of the majority of the research in epistemic beliefs to post-secondary educational settings raise the question of whether or not it can be developed outside of higher education, and whether it would be beneficial to do so. Another unexplored question is the development of epistemic beliefs in other than western cultures. Research has shown that epistemic beliefs are culturally specific (Chan, 2011). Western cultural values, with their emphasis on independence and the need to evaluate for oneself the truth of a judgment, may give rise to the development of those qualities of sophisticated epistemic beliefs we are associating with IH (openness to new ideas, knowledge is contextual, the need for proper evaluation of arguments, judgments and evidence).[46] It would be important to

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[46] Another interesting question arises out of an investigation of the implicit and/or explicit goals of schooling in western nations and whether or not such values as independent thinking drive students toward a subjectivist view of knowledge, and keeps them there, without giving them skills to move on to a more intellectually humble position of an evaluativist (using Kuhn's terms of epistemic beliefs).

recognize that IH may take on various expressions in different cultural contexts.

Evolutionary development.

It is clear from the foregoing discussion that there are important advantages to IH (or the collection of traits and behaviors that comprise IH) in our evolutionary history. Those who have a high need for accuracy will make judgments based on the best information available. Those with a high need for cognition—who enjoy knowing as much as possible about any given subject—will also have better information with which to act, increasing the likelihood that their actions best fit the situation. Those who can take the perspective of others will have more information available than those whose perspective taking is limited. This is adaptive because the one who is not only willing but eager to find out information from others will know where the best food sources are, where the danger lies, how to make the best tools, and what obstacles to avoid. On the other hand, those who close off information gathering too early may be subject to a biased and potentially inaccurate judgment. Narcissistic individuals who prefer to go it alone will not have the benefit of another's point of view to help them make the best decisions. Assuming you know it all, or to wrongly assume that what you know is sufficient for success, may prove to be impoverishing and even dangerous. However, it is possible to rely too much on others for information (that person may have no idea if those berries are poisonous, or, knowing, may want you to eat them) or to rely too little (that person may actually be certain about the safety of the berries and have your best interests in mind). There are fitness pressures, then, for the individual to avoid gullibility or skepticism, as well as pressures to appropriately rely on others for information and knowledge. If accurate information makes for the best decisions and outcomes, IH will help insure the survival of individuals.

But accurate information is not the only pressure on judgment and decision-making, especially in the lives our ancestors, who often had to make quick judgments as well as

accurate ones. If you must judge whether the movement in the bush is due to the wind or a

predator, you do not want to convene a committee to get everyone's perspective. Survival

would favor the fast decision-maker, who could quickly draw an accurate conclusion from

the least evidence. There is a reason our cognitive systems favor the fast System 1

processing, for it provides for the necessary judgments needed for an individual to survive,

especially in dangerous situations.

Moreover, there are psychological advantages to giving preference to one's thoughts and

perceptions, even when they are inaccurate. In a widely cited review of heuristics and biases

in social cognition, Taylor and Brown (1988) conclude: "research evidence indicates that

self-enhancement, exaggerated beliefs in control, and unrealistic optimism can be associated

with higher motivation, greater persistence, more effective performance, and ultimately,

greater success" (p. 199). In other words, IA (as defined as those who are more reliant on

their own knowledge than the they ought to be) may actually provide better fitness for an

individual's success in all the demands of life. There is also evidence that self-enhancing

perceptions that attribute more success to the self than is warranted and the tendency to

ignore past failures and remember past successes induces a more positive mood.[47]

It is clear that both IH and IA (or the individual behaviors and traits that make up these

two human capacities) are adaptive, depending on the domain and the circumstances. Some

of these advantages may accrue on a group level (D. S. Wilson & Sober, 2002). For

example, having a preponderance of members with self-enhanced thinking (marks of IA),

even though such thinking is unrealistic, might contribute to the fitness of the group members

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[47]Fleeson, Staudinger, and Baltes (n.d.) have challenged this finding at least insofar as self-enhancement is

concerned. Their research shows that the positive association between well-being and perceived superiority

found in many studies disappears and may even reverse in direction to become negative when self-standing is

held constant. They find that the real association is between positive self-regard and well-being, not perceived

superiority and well-being.

since there is some evidence that those who are in a positive mood are more likely to be socially generous and helpful (Taylor and Brown, 1988).[48] On the other, the group that has individuals who are willing to learn from others but are appropriately vigilant regarding the veracity of the information that is shared, will have greater success through the resulting increased knowledge base and its potential for cooperation than group with members who are overly self-reliant, overly skeptical or overly gullible.

Christopher Boehm (2012) makes a compelling case that group pressures have exerted influence on the selection of traits in individuals that have become the basis for altruism and virtue. A key event in our history, according to Boehm, was the beginning of big game hunting and the resulting cooperation and sharing that occurred. Since life and livelihood now depended more on the group than ever, reputation mattered. The shame and ostracism that could result from selfish and uncooperative behavior—even to the point of banishment and death—favored cooperative individuals and was the basis for the formation of conscience. The same pressures, it could be argued, would favor the selection of IH. A willingness to listen to others, to be persuaded by their arguments if valid, to yield when necessary for the good of the group, to assert a position when convinced of its propriety are all traits that lend themselves to effective group cooperation and collaboration. Those who exhibited these traits, the group would support and their reputation would make them attractive mates, assuming the capacity to recognize the value of these traits was in place. Those who lacked these traits, especially as this lack contributed to increased selfish behaviors and decreased cooperation, would find resistance in the group and could risk less

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[48] There is also evidence that mildly depressed people and those with low-self esteem are more realistic about their control of the future, about their past performances, and there is more congruence between their self-evaluations and the (more objective) evaluations of others. However their depressed mood renders them less likely to act pro-socially (Taylor & Brown, 1988).

favorable sharing of resources and even death through banishment. Boehm's theory of the development of conscience, virtue, and altruism may be a useful source for theorizing about the development of IH in our evolutionary history.

There may be good evolutionary reasons that our cognitive systems are most reliable when System 1 and System 2 processes work in concert and each system is employed at the most appropriate time (as outlined above). In a similar way, there are circumstances in which self-preferential knowledge is advantageous, just as there are circumstances in which relying on others for information is most adaptive. The secret to survival is knowing when to employ each, avoiding the extremes of arrogance or doubt (too much or too little self-reliance) on the one hand, and skepticism or gullibility (too little or too much other-reliance) on the other. While this might point to a conclusion that the evolutionary pressures are toward the virtuous mean of IH, in the final analysis it may be impossible to make a general statement about the adaptiveness of IH. Determining whether it is optimal for an individual to possess IA on some matters or IH on others will depend upon the domain and its particular selection pressures, costs, and benefits.

§3.2.3 Conclusion.

In this section we focused on the psychological issues regarding knowledge and beliefs, specifically on individuals' relationship to knowledge, their understanding of the limits and certainty of knowledge, and what criteria they hold for knowing. In the review of the research into epistemic cognition, epistemic beliefs, and argumentative reasoning, a common developmental pattern emerged. While disagreeing on terminology, scholars in these three fields agree that, beginning in late adolescence, there is movement from an objectivist/absolutist/pre-reflective reasoning stance to a subjectivist/multiplist/quasi-reflective reasoning stance, culminating (in some) in a coordinated/evaluativist/reflective reasoning stance toward knowledge. These stances along with attitudes toward the

acquisition of knowledge (whether one holds an essentialist theory (intelligence is fixed and cannot improve) or an incrementalist theory (intelligence can change and be develop) of knowledge acquisition) will impact the development of IH: how one searches out new information and learns. Moreover, the development of epistemic trust and vigilance will also influence knowledge acquisition and belief formation. We also considered a developmental path for IH, recognizing the need for more research with young children, with non-college educated adults, and with differing cultures, especially in regard to belief formation and attitudes toward knowledge. Finally we turned to evolutionary psychology to gain insight into the fitness pressures that might go into the shaping of the virtue of IH for individuals and groups.

The subject of intellectual humility is of great importance, both practically and academically; however, robust conceptual, theoretical, and empirical understandings of intellectual humility are surprisingly difficult to come by. The goal of this white paper has been to introduce some issues in the philosophical and psychological literature that might be of interest to someone doing empirical research on intellectual humility: to identify areas and debates that might help us build a robust understanding of what intellectual humility is or might be. No doubt, we did not touch on every issue of relevance. There are a number of issues concerning skepticism, moral philosophy, philosophical theology, cooperative decision making, the relationship of intellectual humility to wisdom, curiosity, and learning, the negative relationship to such personality traits as aggression and narcissism, etc. that are all quite pertinent; however, given constraints on time and space, we had to select those topics which we felt were most germane. In Section 1, we focused on the philosophy of intellectual virtues and the psychology of the virtuous knower. In the philosophy portion of this section, we elucidated the broad contours of two dominant accounts of intellectual virtue—two possible models for conceptually understanding intellectual humility—found in the

philosophical literature surrounding virtue epistemology. Drawing from these two models, the psychology portion of Section 1 explored related issues in heuristics and biases, motivation and cognition, the possibility of explicating intellectual humility as a trait, and the relation between intellectual humility and emotion. In Section 2, we focused on the philosophical import of disagreement and the psychology of virtuous belief. In the philosophy portion of this section, we introduced some of the main issues surrounding epistemic disagreement—a subject that is presumably of critical importance for any viable, conceptual understanding of intellectual humility—proposing a methodology for systematically understanding when and why intractable disagreements occur. Finally, in the psychology portion of Section 2, we explored related issues in the scientific literature: explicating the empirical prospects for intellectual humility in the psychological research on epistemic cognition, argumentative reasoning, epistemic beliefs and learning, and epistemic vigilance and trust. And we concluded this section with an exploration of issues surrounding the development of IH, both in the lifespan and in human evolution.

We hope this has all been helpful as you work towards writing your full proposals for Intellectual Humility funding initiative. If you have any questions or comments after the virtual conference on November 15th, please direct them to intellectualhumility@fuller.edu.

References

Alicke, M. D., & Govorun, O. (2005). The Better-Than-Average Effect. In M. D. Alicke, D. A. Dunning & J. I. Krueger (Eds.), *The Self in Social Judgment.* (pp. 85-106). New York, NY US: Psychology Press.

Anscombe, G. E. M. (1958). Modern moral philosophy. *Philosophy*, 33(124), 1-19.

Armor, D. A., & Taylor, S. E. (2002). When predictions fail: The dilemma of unrealistic optimism. In T. Gilovich, D. Griffin & D. Kahneman (Eds.), *Heuristics and biases: The psychology of intuitive judgment.* (pp. 334-347). New York: Cambridge University Press.

Ashton, M. C., & Lee, K. (2005). Honesty-Humility, the Big Five, and the Five-Factor Model. *Journal of Personality*, 73(5), 1321-1353. doi: 10.1111/j.1467-6494.2005.00351.x

Ashton, M. C., & Lee, K. (2007). Empirical, theoretical, and practical advantages of the HEXACO model of personality structure. *Personality and Social Psychology Review*, 11(2), 150-166. doi: 10.1177/1088868306294907

Ashton, M. C., & Lee, K. (2008). The HEXACO model of personality structure and the importance of the H factor. *Social and Personality Psychology Compass*, 2(5), 1952-1962. doi: 10.1111/j.1751-9004.2008.00134.x

Baron, J. (1994). *Thinking and deciding* (2nd ed.). New York: Cambridge University Press.

Birch, S. A. J., & Bernstein, D. M. (2007). What can children tell us about hindsight bias: A fundamental constraint on perspective-taking? *Social Cognition*, 25(1), 98-113. doi: 10.1521/soco.2007.25.1.98

Blank, H., Fischer, V., & Erdfelder, E. (2003). Hindsight bias in political elections. *Memory,* 11(4-5), 491-504. doi: 10.1080/09658210244000513

Brueckner, A. (2007). Hinge propositions and epistemic justification. *Pacific Philosophical Quarterly*, 88(3), 285-287. doi: 10.1111/j.1468-0114.2007.00292.x

Burr, J. E., & Hofer, B. K. (2002). Personal epistemology and theory of mind: Deciphering young children's beliefs about knowledge and knowing. *New Ideas in Psychology,* 20(2-3), 199-224. doi: 10.1016/s0732-118x(02)00010-7

Cacioppo, J. T., & Petty, R. E. (1982). The need for cognition. *Journal of Personality and Social Psychology*, 42(1), 116-131. doi: 10.1037/0022-3514.42.1.116

Cacioppo, J. T., Petty, R. E., Feinstein, J. A., & Jarvis, W. B. G. (1996). Dispositional differences in cognitive motivation: The life and times of individuals varying in need for cognition. *Psychological Bulletin*, 119(2), 197-253. doi: 10.1037/0033-2909.119.2.197

Chaiken, S., Wood, W., & Eagly, A. (1996). Principles of persuasion. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social Psychology: Handbook of basic principles*. New York: The Guilford Press.

Chan, K. W. (2011). Preservice teacher education students' epistemological beliefs and conceptions about learning. *Instructional Science*, 39(1), 87-108. doi: 10.1007/s11251-009-9101-1

Christensen, D. (2007). Epistemology of disagreement: The good news. *Philosophical Review*, 116(2), 187-217.

Clayton, V. P., & Birren, J. E. (1980). The development of wisdom across the life span: a reexamination of an ancient topic. In P. B. Baltes & O. G. Brim (Eds.), *Life-span development and behavior* (Vol. 3, pp. 104-135). New York: Academic Press.

Conee, E., & Feldman, R. (1998). The generality problem for reliabilism. *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition*, 89(1), 1-29.

Damasio, A. R. (1995). *Descartes' error : Emotion, reason, and the human brain*. New York: Avon Books.

Davis, D. E., Hook, J. N., Worthington, E. L., Van Tongeren, D. R., Gartner, A. L., Jennings, D. J., & Emmons, R. A. (2011). Relational Humility: Conceptualizing and Measuring

Humility as a Personality Judgment. *Journal of Personality Assessment*, 93(3), 225-234. doi: 10.1080/00223891.2011.558871

Deldin, P. J., Keller, J., Gergen, J. A., & Miller, G. A. (2001). Cognitive bias and emotion in neuropsychological models of depression. [Article]. *Cognition & Emotion*, 15(6), 787-802. doi: 10.1080/02699930143000248

Dunning, D., Krueger, J. I., & Alicke, M. D. (2005). The Self in Social Perception: Looking Back, Looking Ahead. In M. D. Alicke, D. A. Dunning & J. I. Krueger (Eds.), *The Self in Social Judgment*. (pp. 269-280). New York: Psychology Press.

Dunning, D., Leuenberger, A., & Sherman, D. A. (1995). A new look at motivated inference: Are self-serving theories of success a product of motivational forces? *Journal of Personality and Social Psychology*, 69(1), 58-68. doi: 10.1037/0022-3514.69.1.58

Dunning, D., Meyerowitz, J. A., & Holzberg, A. D. (2002). Ambiguity and self-evaluation: The role of idiosyncratic trait definition in self-serving assessments of ability. In T. Gilovich, D. Griffin & D. Kahneman (Eds.), *Heuristics and biases: The psychology of intuitive judgment*. (pp. 324-333). New York: Cambridge University Press.

Dweck, C. S., Chiu, C., & Hong, Y. (1995). Implicit theories and their role in judgments and reactions: A world from two perspectives. *Psychological Inquiry*, 6(4), 267-285. doi: 10.1207/s15327965pli0604_1

Elgin, C. Z. (2010). Persistent disagreement *Disagreement* (pp. 53-68). Oxford, UK: Oxford University Press.

Emmons, R. A. (1999). *The psychology of ultimate concerns: Motivation and spirituality in personality*. New York: Guilford Press.

Engell, A. D., Haxby, J. V., & Todorov, A. (2007). Implicit trustworthiness decisions: Automatic coding of face properties in the human amygdala. *Journal of Cognitive Neuroscience*, 19(9), 1508-1519. doi: 10.1162/jocn.2007.19.9.1508

Epley, N., & Gilovich, T. (2002). Putting adjustment back in the anchoring and adjustment heuristic. In T. Gilovich, D. Griffin & D. Kahneman (Eds.), *Heuristics and biases: The psychology of intuitive judgment.* (pp. 139-149). New York: Cambridge University Press.

Epstein, S., Lipson, A., Holstein, C., & Huh, E. (1992). Irrational reactions to negative outcomes: Evidence for two conceptual systems. *Journal of Personality and Social Psychology*, 62(2), 328-339. doi: 10.1037/0022-3514.62.2.328

Evans, J. S. (2007). *Hypothetical thinking: Dual processes in reasoning and judgment.* New York: Psychology Press.

Feldman, R. (2006). Epistemological puzzles about disagreement. In S. Hetherington (Ed.), *Epistemology Futures* (pp. 216-326): Oxford UK: Oxford University Press.

Feldman, R., & Warfield, T. A. (2010). *Disagreement.* Oxford UK: Oxford University Press.

Fleeson, W. (2001). Toward a structure- and process-integrated view of personality: Traits as density distributions of states. *Journal of Personality and Social Psychology*, 80(6), 1011-1027. doi: 10.1037/0022-3514.80.6.1011

Fleeson, W. (2004). Moving personality beyond the person-situation debate: The challenge and the opportunity of within-person variability. *Current Directions in Psychological Science*, 13(2), 83-87. doi: 10.1111/j.0963-7214.2004.00280.x

Fleeson, W., Staudinger, U. M., & Baltes, P. B. (n.d.). *Subjective well-being and perceived superiority over the average other: Being good versus being better than others.* Unpublished Manuscript. Wake Forest University, Winston-Salem, NC.

Foley, R. (2001). *Intellectual Trust in Oneself and Others*. New York: Cambridge University Press.

Fumerton, R. (2010). You Can't Trust a Philosopher. In R. Feldman, & T. A. Warfield (Eds.), *Disagreement.* (pp. 91-110). Oxford, UK: Oxford University Press.

Gilbert, D. T., & Malone, P. S. (1995). The correspondence bias. *Psychological Bulletin*, 117(1), 21-38. doi: 10.1037/0033-2909.117.1.21

Gilovich, T. (1991). *How we know what isn't so: The fallibility of human reason in everyday life.* New York: Free Press.

Gilovich, T., Griffin, D., & Kahneman, D. (Eds.). (2002). *Heuristics and biases: The psychology of intuitive judgment.* New York: Cambridge University Press.

Gottman, J. (1995). *Why marriages succeed of fail: And how you can make yours last.* New York: Simon & Schuster.

Greco, J. (1999). Agent reliabilism. *Philosophical Perspectives*, 13, 273-296.

Greco, J. (2003). Virtue and luck, epistemic and otherwise. *Metaphilosophy*, 34(3), 353-366.

Greco, J. (2010). *Achieving Knowledge: A Virtue-Theoretic Account of Epistemic Normativity.* New York: Cambridge University Press.

Greco, J., & Turri, J. (2011, July 19). Virtue Epistemology, Retrieved from http://plato.stanford.edu/entries/epistemology-virtue/

Greenberg, J., Solomon, S., & Pyszczynski, T. (1997). Terror management theory of self-esteem and cultural worldviews: Empirical assessments and conceptual refinements. In M. P. Zanna (Ed.), *Advances in experimental social psychology*, Vol. 29. (pp. 61-139). San Diego, CA: Academic Press.

Greenberg, L. S. (2004). Evolutionary perspectives on emotion: Making sense of what we feel. In P. Gilbert (Ed.), *Evolutionary theory and cognitive therapy*. (pp. 67-88). New York: Springer Publishing Co.

Greenberg, L. S. (2008). Emotion and cognition in psychotherapy: The transforming power of affect. *Canadian Psychology/Psychologie canadienne*, 49(1), 49-59. doi: 10.1037/0708-5591.49.1.49

Greenberg, L. S., & Pascual-Leone, A. (2006). Emotion in psychotherapy: A practice-friendly research review. *Journal of Clinical Psychology,* 62(5), 611-630. doi: 10.1002/jclp.20252

Greenberg, L. S., & Pascual-Leone, J. (2001). A dialectical constructivist view of the creation of personal meaning. *Journal of Constructivist Psychology*, 14(3), 165-186. doi: 10.1080/10720530151143539

Griffiths, P. E. (1997). *What emotions really are: The problem of psychological categories.* Chicago, IL: University of Chicago Press.

Grossmann, I., Na, J., Varnuma, M. E. W., Park, D. C., Kitayama, S., & Nisbett, R. E. (2010). Reasoning about social conflicts improves into old age. *PNAS Proceedings of the National Academy of Sciences of the United States of America*, 107(16), 7246-7250. doi: 10.1073/pnas.1001715107

Guenther, C. L., & Alicke, M. D. (2010). Deconstructing the better-than-average effect. *Journal of Personality and Social Psychology,* 99(5), 755-770. doi: 10.1037/a0020959

Haddock, G., Maio, G. R., Arnold, K., & Huskinson, T. (2008). Should persuasion be affective or cognitive? The moderating effects of need for affect and need for cognition. *Personality and Social Psychology Bulletin,* 34(6), 769-778. doi: 10.1177/0146167208314871

Haidt, J. (2001). The emotional dog and its rational tail: A social intuitionist approach to moral judgment. *Psychological Review*, 108(4), 814-834. doi: 10.1037/0033-295x.108.4.814

Harris, P. (2012). *Trusting what you're told: how children learn from others*. Cambridge, MA: The Belknap Press of Harvard University Press

Haugtvedt, C. P., Petty, R. E., & Cacioppo, J. T. (1992). Need for cognition and advertising: Understanding the role of personality variables in consumer behavior. *Journal of Consumer Psychology,* 1(3), 239-260. doi: 10.1016/s1057-7408(08)80038-1

Hergovich, A., Schott, R., & Burger, C. (2010). Biased evaluation of abstracts depending on topic and conclusion: Further evidence of a confirmation bias within scientific psychology. *Current Psychology: A Journal for Diverse Perspectives on Diverse Psychological Issues*, 29(3), 188-209. doi: 10.1007/s12144-010-9087-5

Hofer, B. K. (2002). Personal epistemology as a psychological and educational construct: An introduction. In P. R.. Zeidner (Ed.), *Personal epistemology: The psychology of beliefs about knowledge and knowing.* (pp. 3-14). Mahwah, NJ: Lawrence Erlbaum Associates.

Hofer, B. K., & Pintrich, P. R. (1997). The development of epistemological theories: Beliefs about knowledge and knowing and their relation to learning. *Review of Educational Research,* 67(1), 88-140. doi: 10.2307/1170620

Holliday, S. G., & Chandler, M. J. (1986). *Wisdom : explorations in adult competence.* Basel, New York: Karger.

Jonas, E., Schulz-Hardt, S., Frey, D., & Thelen, N. (2001). Confirmation bias in sequential information search after preliminary decisions: An expansion of dissonance theoretical research on selective exposure to information. *Journal of Personality and Social Psychology*, 80(4), 557-571. doi: 10.1037/0022-3514.80.4.557

Kahneman, D. (2011). *Thinking, fast and slow.* New York: Farrar, Straus and Giroux.

Kahneman, D., & Frederick, S. (2002). Representativeness revisited: Attribute substitution in intuitive judgment. In T. Gilovich, D. Griffin & D. Kahneman (Eds.), *Heuristics and biases: The psychology of intuitive judgment.* (pp. 49-81). New York: Cambridge University Press.

Kelly, T. (2005). The epistemic significance of disagreement. In J. Hawthorne & T. Gendler (Eds.), *Oxford Studies in Epistemology,* (Vol. 1, pp. 167-196): Oxford UK: Oxford University Press.

King, P. M., & Kitchener, K. S. (2002). The Reflective Judgment Model: Twenty years of research on epistemic cognition. In P. R. Pintrich & M. Zeidner (Eds.), *Personal epistemology: The psychology of beliefs about knowledge and knowing.* (pp. 37-88). Mahwah, NJ: Lawrence Erlbaum Associates.

King, P. M., & Kitchener, K. S. (2004). Reflective judgment: Theory and research on the development of epistemic assumptions through adulthood. *Educational Psychologist,* 39(1), 5-18. doi: 10.1207/s15326985ep3901_2

Kornblith, H. (2010). *Belief in the face of controversy disagreement*. Oxford, UK: Oxford University Press.

Kruger, J. (1999). Lake Wobegon be gone! The 'below-average effect' and the egocentric nature of comparative ability judgments. *Journal of Personality and Social Psychology*, 77(2), 221-232. doi: 10.1037/0022-3514.77.2.221

Kruglanski, A. W. (1990). Lay epistemic theory in social-cognitive psychology. *Psychological Inquiry*, 1(3), 181-197. doi: 10.1207/s15327965pli0103_1

Kruglanski, A. W., Dechesne, M., Orehek, E., & Pierro, A. (2009). Three decades of lay epistemics: The why, how, and who of knowledge formation. *European Review of Social Psychology,* 20(1), 146-191. doi: 10.1080/10463280902860037

Kruglanski, A. W., & Mayseless, O. (1987). Motivational effects in the social comparison of opinions. *Journal of Personality and Social Psychology*, 53(5), 834-842. doi: 10.1037/0022-3514.53.5.834

Kuhn, D., & Weinstock, M. (2002). What is epistemological thinking and why does it matter? In P. R. Pintrich & M. Zeidner (Eds.), *Personal epistemology: The*

psychology of beliefs about knowledge and knowing. (pp. 121-144). Mahwah, NJ: Lawrence Erlbaum Associates.

Kunda, Z. (1990). The case for motivated reasoning. *Psychological Bulletin*, 108(3), 480-498. doi: 10.1037/0033-2909.108.3.480

Landrum, R. E. (2011). Measuring dispositional humility: A first approximation. *Psychological Reports,* 108(1), 217-228. doi: 10.2466/02.07.09.pr0.108.1.217-228

LeDoux, J. E. (1996). *The emotional brain: The mysterious underpinnings of emotional life*. New York: Simon & Schuster.

Lee, K., & Ashton, M. C. (2004). Psychometric properties of the HEXACO personality inventory. *Multivariate Behavioral Research*, 39(2), 329-358. doi: 10.1207/s15327906mbr3902_8

Mascaro, O., & Sperber, D. (2009). The moral, epistemic, and mindreading components of children's vigilance towards deception. *Cognition*, 112(3), 367-380. doi: 10.1016/j.cognition.2009.05.012

Mayer, J. D., & Salovey, P. (2004). What is emotional intelligence? In P. Salovey, M. A. Brackett & J. D. Mayer (Eds.), *Emotional intelligence: Key readings on the Mayer and Salovey model*. (pp. 29-59). Port Chester, NY: Dude Publishing.

McCrae, R. R., & Costa, P. T. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology*, 52(1), 81-90. doi: 10.1037/0022-3514.52.1.81

McCrae, R. R., & Costa, P. T., Jr. (1997). Personality trait structure as a human universal. *American Psychologist*, 52(5), 509-516. doi: 10.1037/0003-066x.52.5.509

McDowell, J. H. (1994). *Mind and world*. Cambridge, MA: Harvard University Press.

Meacham, J. A. (1990). The loss of wisdom. In R. J. Sternberg (Ed.), *Wisdom : its nature, origins, and development.* Cambridge; New York: Cambridge University Press.

Mercier, H., & Sperber, D. (2011). Why do humans reason? Arguments for an argumentative theory. *Behavioral and Brain Sciences,* 34(2), 57-74. doi: 10.1017/s0140525x10000968

Mikulincer, M., & Florian, V. (2000). Exploring individual differences in reactions to mortality salience: Does attachment style regulate terror management mechanisms? *Journal of Personality and Social Psychology*, 79(2), 260-273. doi: 10.1037/0022-3514.79.2.260

Muis, K. R. (2007). The role of epistemic beliefs in self-regulated learning. *Educational Psychologist,* 42(3), 173-190. doi: 10.1080/00461520701416306

Muis, K. R., Bendixen, L. D., & Haerle, F. C. (2006). Domain-Generality and Domain-Specificity in Personal Epistemology Research: Philosophical and Empirical Reflections in the Development of a Theoretical Framework. *Educational Psychology Review,* 18(1), 3-54. doi: 10.1007/s10648-006-9003-6

Narvaez, D. (2008). Human flourishing and moral development: Cognitive and neurobiological perspectives of virtue development. In L. P. Nucci & D. Narvaez (Eds.), *Handbook of Moral Development* (pp. 310-327). New York: Routledge.

Nickerson, R. S. (1998). Confirmation bias: A ubiquitous phenomenon in many guises. *Review of General Psychology*, 2(2), 175-220. doi: 10.1037/1089-2680.2.2.175

Njus, D., & Johnson, D. R. (2008). Need for cognition as a predictor of psychosocial identity development. *Journal of Psychology: Interdisciplinary and Applied*, 142(6), 645-655. doi: 10.3200/jrlp.142.6.645-655

Oatley, K., & Jenkins, J. M. (1992). Human emotions: Function and dysfunction. *Annual Review of Psychology*, 43, 55-85. doi: 10.1146/annurev.ps.43.020192.000415

Panfile, T. M., & Laible, D. J. (2012). Attachment security and child's empathy: The mediating role of emotion regulation. *Merrill-Palmer Quarterly*, 58(1), 1-21. doi: 10.1353/mpq.2012.0003

Perry, W. G. (1968). *Forms of intellectual and ethical development in the college years: A scheme.* New York: Holt, Rinehart and Winston, Inc.

Peters, A., Rowatt, W., C. , & Johnson, M. K. (2011). Associations between dispositional humility and social relationship quality. *Psychology*, 2(3), 155-161. doi: doi: 10.4236/psych.2011.23025.

Peterson, C., & Seligman, M. E. P. (2004). *Character strengths and virtues: A handbook and classification.* Washington, DC New York: American Psychological Association, Oxford University Press.

Petty, R. E., Cacioppo, J. T., & Goldman, R. (1981). Personal involvement as a determinant of argument-based persuasion. *Journal of Personality and Social Psychology,* 41(5), 847-855. doi: 10.1037/0022-3514.41.5.847

Petty, R. E., Wegener, D. T., & White, P. H. (1998). Flexible correction processes in social judgment: Implications for persuasion. *Social Cognition,* 16(1), 93-113. doi: 10.1521/soco.1998.16.1.93

Phan, H. P. (2008). Predicting change in epistemological beliefs, reflective thinking and learning styles: A longitudinal study. *British Journal of Educational Psychology,* 78(1), 75-93.

Philie, P. (2009). Entitlement as a response to I–II–III scepticism. *Synthese,* 171(3).

Plantinga, A. (1993). *Warrant: The current debate*. New York: Oxford University Press.

Pritchard, D. (2005). *Epistemic luck*. Oxford, UK: Oxford University Press.

Pronin, E., Berger, J., & Molouki, S. (2007). Alone in a crowd of sheep: Asymmetric perceptions of conformity and their roots in an introspection illusion. *Journal of Personality and Social Psychology*, 92(4), 585-595. doi: 10.1037/0022-3514.92.4.585

Pronin, E., & Kugler, M. B. (2007). Valuing thoughts, ignoring behavior: The introspection illusion as a source of the bias blind spot. *Journal of Experimental Social Psychology*, 43(4), 565-578. doi: 10.1016/j.jesp.2006.05.011

Pyszczynski, T., Greenberg, J., Solomon, S., Sideris, J., & Stubing, M. J. (1993). Emotional expression and the reduction of motivated cognitive bias: Evidence from cognitive dissonance and distancing from victims' paradigms. *Journal of Personality and Social Psychology,* 64(2), 177-186. doi: 10.1037/0022-3514.64.2.177

Quine, W. V. (1969). *Epistemology naturalized ontological relativity and other essays (6th ed.)*. New York: Columbia University Press.

Roberts, R. C. (2012a, July 2). What is it to be intellectually humble: Discussion summary. Retrieved from http://www.bigquestionsonline.com/node/135/comment/summary/all

Roberts, R. C. (2012b, June 24). What is it to be intellectually humble? | Big Questions Online. Retrieved from http://www.bigquestionsonline.com/content/what-it-be-intellectually-humble

Roberts, R. C., & Wood, W. J. (2003). Humility and epistemic goods. In M. DePaul & L. Zagzebksi (Eds.) *Intellectual Virtue: Perspectives From Ethics and Epistemology* (pp. 257-279). Oxford, UK: Oxford University Press.

Roberts, R. C., & Wood, W. J. (2007). *Intellectual Virtues: An Essay in Regulative Epistemology.* Oxford, UK: Clarendon Press.

Ross, L., & Ward, A. (1996). Naive realism in everyday life: Implications for social conflict and misunderstanding. In E. S. Reed, E. Turiel & T. Brown (Eds.), *Values and knowledge.* (pp. 103-135). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Rowatt, W. C., Powers, C., Targhetta, V., Comer, J., Kennedy, S., & Labouff, J. (2006).

 Development and initial validation of an implicit measure of humility relative to

 arrogance. *The Journal of Positive Psychology*, 1(4), 198-211. doi:

 10.1080/17439760600885671

Sanna, L. J., Schwarz, N., & Stocker, S. L. (2002). When debiasing backfires: Accessible

 content and accessibility experiences in debiasing hindsight. *Journal of Experimental*

 Psychology: Learning, Memory, and Cognition, 28(3), 497-502. doi: 10.1037/0278-

 7393.28.3.497

Schommer, M. (1990). Effects of beliefs about the nature of knowledge on comprehension.

 Journal of Educational Psychology, 82(3), 498-504. doi: 10.1037/0022-0663.82.3.498

Schommer-Aikins, M., & Hutter, R. (2002). Epistemological beliefs and thinking about

 everyday controversial issues. *Journal of Psychology: Interdisciplinary and Applied*,

 136(1), 5-20. doi: 10.1080/00223980209604134

Sedikides, C., & Gregg, A. P. (2008). Self-enhancement: Food for thought. *Perspectives on*

 Psychological Science, 3(2), 102-116. doi: 10.1111/j.1745-6916.2008.00068.x

Sedikides, C., Horton, R. S., & Gregg, A. P. (2007). The why's the limit: Curtailing self-

 enhancement with explanatory introspection. *Journal of Personality*, 75(4), 783-824.

 doi: 10.1111/j.1467-6494.2007.00457.x

Shortt, J. W., & Gottman, J. M. (1997). Closeness in young adult sibling relationships:

 Affective and physiological processes. *Social Development*, 6(2), 142-164. doi:

 10.1111/j.1467-9507.1997.tb00099.x

Simons, D. J., & Keil, F. C. (1995). An abstract to concrete shift in the development of

 biological thought: The insides story. *Cognition*, 56(2), 129-163. doi: 10.1016/0010-

 0277(94)00660-d

Sloman, S. A. (2002). Two systems of reasoning. In T. Gilovich, D. Griffin & D. Kahneman

    (Eds.), *Heuristics and biases: The psychology of intuitive judgment*. (pp. 379-396).

    New York: Cambridge University Press.

Sosa, E. (1991). *Knowledge in Perspective: Selected Essays in Epistemology*. Cambridge,

    UK: Cambridge University Press.

Sperber, D., Clément, F., Heintz, C., Mascaro, O., Mercier, H., Origgi, G., & Wilson, D.

    (2010). Epistemic vigilance. *Mind & Language,* 25(4), 359-393. doi: 10.1111/j.1468-

    0017.2010.01394.x

Stanovich, K. E. (1999). *Who is rational?: Studies of individual differences in reasoning.*

    Mahwah, NJ: Lawrence Erlbaum Associates Publishers.

Stanovich, K. E., & West, R. F. (1997). Reasoning independently of prior belief and

    individual differences in actively open-minded thinking. *Journal of Educational*

    Psychology, 89(2), 342-357. doi: 10.1037/0022-0663.89.2.342

Stanovich, K. E., & West, R. F. (1998). Individual differences in rational thought. *Journal of*

    Experimental Psychology: General, 127(2), 161-188. doi: 10.1037/0096-

    3445.127.2.161

Stanovich, K. E., & West, R. F. (2002). Individual differences in reasoning: Implications for

    the rationality debate? In T. Gilovich, D. Griffin & D. Kahneman (Eds.), *Heuristics*

    and biases: The psychology of intuitive judgment. (pp. 421-440). New York:

    Cambridge University Press.

Sternberg, R. J. (1985). Implicit theories of intelligence, creativity, and wisdom. *Journal of*

    Personality and Social Psychology, 49(3), 607-627. doi: 10.1037/0022-3514.49.3.607

Tangney, J. P. (2000). Humility: Theoretical perspectives, empirical findings and directions

    for future research. *Journal of Social and Clinical Psychology*, 19(1), 70-82. doi:

    10.1521/jscp.2000.19.1.70

Taylor, S. E., & Brown, J. D. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin*, 103(2), 193-210. doi: 10.1037/0033-2909.103.2.193

Todd, A. R., Bodenhausen, G. V., Richeson, J. A., & Galinsky, A. D. (2011). Perspective taking combats automatic expressions of racial bias. *Journal of Personality and Social Psychology*, 100(6), 1027-1042. doi: 10.1037/a0022308

Twenge, J. M., Konrath, S., Foster, J. D., Keith Campbell, W., & Bushman, B. J. (2008). Egos inflating over time: A cross-temporal meta-analysis of the narcissistic personality inventory. *Journal of Personality*, 76(4), 875-902.

van Inwagen, P. (2010). We're Right, They're Wrong Disagreement (pp. 10-28). Oxford, UK: Oxford University Press.

Wallace, H. M., & Baumeister, R. F. (2002). The performance of narcissists rises and falls with perceived opportunity for glory. *Journal of Personality and Social Psychology*, 82(5), 819.

Webster, D. M., & Kruglanski, A. W. (1994). Individual differences in need for cognitive closure. *Journal of Personality and Social Psychology*, 67(6), 1049-1062. doi: 10.1037/0022-3514.67.6.1049

Wegener, D. T., & Petty, R. E. (1997). The Flexible Correction Model: The role of naive theories of bias in bias correction. In M. P. Zanna (Ed.), *Advances in Experimental Social Psychology* (Vol. 29, pp. 141-208). London, UK: Academic Press.

Westen, D., Blagov, P. S., Harenski, K., Kilts, C., & Hamann, S. (2006). Neural bases of motivated reasoning: An fMRI study of emotional constraints on partisan political judgment in the 2004 U.S. presidential election. *Journal of Cognitive Neuroscience*, 18(11), 1947-1958. doi: 10.1162/jocn.2006.18.11.1947

Wilson, D. S., & Sober, E. (2002). The fall and rise and fall and rise and fall and rise of altruism in evolutionary biology. In S. G. Post, L. G. Underwood, J. P. Schloss & W. B. Hurlbut (Eds.), *Altruism & altruistic love: Science, philosophy, & religion in dialogue.* (pp. 182-191). New York: Oxford University Press.

Wilson, T. D., Centerbar, D. B., & Brekke, N. (2002). Mental contamination and the debiasing problem. In T. Gilovich, D. Griffin & D. Kahneman (Eds.), *Heuristics and biases: The psychology of intuitive judgment.* (pp. 185-200). New York: Cambridge University Press.

Zagzebski, L. (1996). *Virtues of the mind: An inquiry into the nature of virtue and the ethical foundations of knowledge*. Cambridge, UK: Cambridge University Press.

Zajonc, R. B. (1980). Feeling and thinking: Preferences need no inferences. *American Psychologist, 35*(2), 151-175. doi: 10.1037/0003-066x.35.2.151