

ABSTRACT

Are Intellectually Humble People Aware of their Reputation? An Empirical Investigation of the Metaperception and Meta-accuracy of Intellectual Humility

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Scholars conceive of intellectual humility (IH) as an accurate sense of one's limitations and strengths. Presumably, awareness of one's reputation concerning IH would be included in the epistemic domain, meaning those high in IH should realize how they are perceived by others. These studies empirically test this conception of IH by using interpersonal perception paradigms originally designed to examine metaperceptions and meta-accuracy, or the extent to which people are aware of how they are perceived by others. If the current understanding of IH is accurate, then someone with high IH should have a more accurate impression of how intellectually humble other people perceive them to be. Combining IH, metaperception, and meta-accuracy allows a unique examination of the construct validity of self-reported measures of IH. In the reported studies, metaperceptions of IH were correlated with self-report, and moderated the relationship of self-report to other-report, as previously found in the literature. However, no relationship between self-reported IH and meta-accuracy was found- those claiming IH did not have

accurate metaperceptions of how others view them. This finding is unaffected by length of acquaintance. This work extends the literature on meta-accuracy and person-perception more broadly by examining IH as a component of individual differences in interpersonal perception.

Are Intellectually Humble People Aware of their Reputation?
An Empirical Investigation of the Metaperception and Meta-accuracy of Intellectual Humility

by

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DEDICATION

To my supportive and patient wife Lilly, and our darling daughter Caroline

CHAPTER ONE

Literature Review and Rationale

Humility and Intellectual Humility

Personality traits are most often defined by researchers in terms of the big five (OCEAN) (Digman, 1990; Gosling, Rentfrow, & Swann, 2003; John & Srivastava, 1999; McCrae & John, 1992). In languages other than English, Honesty-Humility emerges as a unique sixth factor (Ashton & Lee, 2007; Lee & Ashton, 2004) or is subsumed in the Agreeableness dimensions (Costa & McCrae, 1985; Leman, Haggard, Meagher, & Rowatt, 2016). The measurement of humility has advanced in the past 10 years beyond lexical formulations such as HEXACO (Davis et al., 2010, 2011, 2013; Kruse, Chancellor, Ruberton, & Lyubomirsky, 2014), and there's still room for conceptual and methodological clarification.

Many different conceptions of humility have been proposed (Chancellor & Lyubomirsky, 2013; Davis, Worthington, & Hook, 2010; Exline et al., 2004; Tangney, 2009). The most cited is Tangney's (2000) formulation which lists several components that theoretically underpin this complex, important trait: a willingness to see the self accurately; an accurate perspective of one's place in the world; ability to acknowledge limitations and mistakes; openness; low self-focus; and an appreciation of the value of all things. See Table 1 for a sample of aspects and definitions of humility from several authors.

Table 1.1

Differential Conceptions of Humility

| Self vs. Other | Aspect of Humility | Description | Citation |
|------------------------|-------------------------------------|---|--|
| Intra- Person al | Accurate Self-View | “To be humble is not to have a low opinion of oneself, it is to have an accurate view of oneself. It is the ability to keep one’s talents and accomplishments in perspective, to have a sense of self-acceptance, an understanding of one’s imperfections, and to be free from arrogance and low self-esteem.” | Emmons, 1999, p. 33. |
| | Acknowledgement of Limitations | “Humility is knowing you are smart, but not <i>all knowing</i> . It is accepting that you have personal power but are not omnipotent...Inherent in humility resides an open and receptive mind...leaving us more open to learn from others and refrains from seeing issues and people in only blacks and whites.” | Templeton, 1997, pp. 162-163. |
| | Low Self-Focus | “For humble people, there should be no press toward self-importance and no burning need to see—or present—theirself as being better than they actually are.” | Exline et al., 2004, p. 463. |
| | Owning Limitations | “A person who has gained a sense of humility is no longer phenomenologically at the center of his or her world. His or her focus is on the larger community, of which he or she is a part.” “Humility is having the right stance towards one’s limitations” | Tangney, 2000, p. 72. Whitcomb et al., 2015, p. 8 |
| Inter- Person al | Being Other-oriented | “We define <i>relational humility</i> as a relationship-specific judgment in which an observer attributes a target person with four qualities: (1) other-orientedness in one's relationships with others rather than selfishness; (2) the tendency to express positive other-oriented emotions in one's relationships (e.g., empathy, compassion, sympathy, and love); (3) the ability to regulate self-oriented emotions, such as pride or excitement about one's accomplishments, in socially acceptable ways; and (4) having an accurate view of self. | Davis et al., 2010, p. 248. |
| | | “Interpersonally, cultural humility involves an other-oriented stance (or openness to the other) with regard to aspects of an individual’s or group’s cultural background and identity.” | Hook & Watkins, 2017, p. 661. |
| | Accurate Perspective of One's Place | “Humility is the desire for an accurate view of the world and the self that includes an embrace of limitations and weaknesses. The acceptance of these limits and the desire for accurate assessment enable a posture of openness to the good in all things. | Bollinger & Hill, 2012, p. 34. |

Recent work in philosophy (e.g. Roberts & Wood, 2007) suggests that Humility may be most productively construed as having several subdomains. One subset of Humility garnering increasing attention to researchers is Intellectual Humility (IH hereafter). Although many philosophical formulations of IH have been described (see Whitcomb, Battaly, Baehr, & Howard-Snyder, 2015 for a review and new conception- that IH is an appropriate attentiveness to and owning of one's intellectual limitations), most psychologists interested in IH think of this trait as humility in one's epistemic capacities- having insight into the limits and strengths of one's intellectual domain. (e.g. McElroy, Rice, Davis, Hook, Hill, Worthington, & Van Tongeren, 2014). Davis and colleagues found evidence that IH is empirically distinct from what they call "General Humility" (GH) via confirmatory factor analysis (demonstrating construct validity) and that IH captured unique variance in constructs such as openness to experience and need for cognition over and above GH (demonstrating discriminatory validity) (Davis, Rice, McElroy, DeBlaere, Choe, Van Tongeren, & Hook, 2016).

From a pragmatic perspective, IH has important implications for functionality in an array of settings from education (Barnett, 2009; Colucciello, 2009; Hodges, Meagher, Norton, McBain, & Kimball, 2014) to job performance (Owens, Johnson, & Mitchell, 2013; Owens, Wallace, & Waldman 2015). Regarding the latter, hiring managers at large, cutting edge firms have described IH as one of the most important traits they look for in a job candidate because of the importance of realizing when one does not know the answer to a problem and will seek out more information (Friedman, 2014). Despite wide agreement on the importance of IH (McElroy et al., 2014; Samuelson, Jarvinen, Paulus,

Church, Hardy, & Barrett, 2015), little has been done to understand the interpersonal underpinnings of this aspect of personality.

Importantly, IH is distinct from modesty (Gregg, Hart, Sedikides, & Kumashiro, 2008; Tagney, 2009). Merely playing down one's ideas or skills is not the same as having an accurate sense of one's limitations. For example, if one is good at math, then it is appropriate from an IH perspective to be forthcoming about this, and not be self-effacing. Similarly, if someone is fluent in a foreign language but when asked about this talent demurs, implying less skill than is accurate, then that person is not being intellectually humble- rather, such behavior would be consistent with intellectual diffidence or servility. Of course, the opposite is also true- claiming to be fluent in another language when one is not is more typical of arrogance and not IH.

Philosophers have a distinct understanding of IH that is based in virtue theory. Aristotle maintained that virtues are a "golden mean" between two vices- courage, for example, is situated between the vices of cowardice and recklessness (Joachim & Rees, 1952). If someone possesses too much courage, they are likely to imprudently rush into danger and thus be reckless, while someone who does not possess enough courage will often struggle to act in the face of danger, and thus suffer from cowardice. Whitcomb and colleagues (2015) suggest that applying virtue theory to intellectual humility results in a formulation placing IH as a virtue that is situated between arrogance and servility. Having an overconfidence in one's self-assessment would lead one to be arrogant, while an under confidence might cause someone to discount their own intellectual abilities and default to the opinions or suggestions of others.

One critical aspect of this conception of IH is that an individual with IH must possess an accurate sense of his or her intellectual limitations (McElroy et al., 2014). IH is about being aware of one's intellectual strengths and weaknesses, knowing when one knows something, and when one does not. A self-assessment that overestimates or underestimates one's intellectual landscape is not in keeping with IH. Thus, one might expect a healthy sense of self-awareness to accompany IH.

Importance of Other-Report

Despite the importance of IH, widespread utilization of this trait is hampered due to validity of measurement concerns (Meagher, Leman, Bias, Latendresse, & Rowatt, 2015). Researchers typically measure traits by asking participants to complete a questionnaire with items developed to indicate properties of the trait in question, a method known as self-report. However, self-report may be especially problematic for IH. People are already likely to overestimate the scope of positive traits they report, and IH is easily recognized as a desirable trait (Van Tongeren, Davis, & Hook, 2014). Furthermore, IH is a broadly construed concept (Davis, Rice, McElroy, DeBlaere, Choe, Van Tongeren, & Hook, 2016), making positive inflation on self-report more likely. Finally, interpretation of self-reported IH is somewhat more difficult than other traits, as someone who reports themselves to be "very humble" is often not seen by others as humble (Tangney, 2000).

One solution researchers use to overcome issues with self-report is by comparing self-reported answers to what other people say about the person responding in the self-report. Known as other-report, this involves obtaining answers to the same items that were filled out by the original person who responded to the items with a self-report (the

target), but now answered by one or more other people (observers). A common finding in personality research is that other people are often more accurate at describing an individual's traits than the individual indicates on a self-report (Funder, 1980; Connelly & Ones, 2010; Kolar, Funder, & Colvin, 1996; Watson, Hubbard, & Wiese, 2000). Often this is because an individual may be motivated (subconsciously or otherwise) to inflate their own abilities in order to appeal to others or be consistent with an overly positive self-image (Baumeister, Tice, & Hutton, 1989). Because others do not have the egocentric biases of the target, they are often more accurate at describing another individual's traits. This is especially true for traits that describe an individual's ability to perform in a workplace (Connelly, & Hülshager, 2012), and more easily observed "external" traits, such as extroversion or agreeableness (Vazire, & Carlson, 2010).

Another important consideration for other-reports is the degree to which the target and observer are familiar with each other (Funder & Colvin, 1988; Letzring, Wells, & Funder, 2006; Paunonen, 1989). Colvin & Funder (1991) found that trait observability was a moderator of accuracy only for people who did not previously know each other, suggesting that the type of trait in question plays a role. While it makes sense that people who have known each other longer will have more accurate insight into each other, this simple linear relationship does not fully capture the role of acquaintance (Vazire, 2010). Specifically, although well-acquainted others are more likely than strangers to understand more about someone's internal traits, the evaluativeness of the trait matters as well-people are likely to intuitively grasp the emotional and motivationally influenced components of their friends' self-concept and may therefore suffer from the same sorts of that individuals do in self-reports (Hayes & Dunning, 1997; John & Robbins, 1993).

Accuracy in Personality Judgments

Two important issues in the accuracy of personality judgments are when and how much judgments- both self and of others- are accurate. This accuracy has a great deal of consequence to individuals in a social environment who need to be seen correctly by others and to reliably determine traits in others. This next section will examine models developed in the personality literature to understand how accuracy in personality judgments works, to predict when accuracy will be high, and when judgments might not be accurate.

Realistic Accuracy Model

Funder (1980; 2012) notes that “accuracy” in personality judgments may ultimately be difficult or impossible to achieve, but that incremental accuracy is possible. Specifically, he lists three criteria often used to establish accuracy. First, and most commonly used, is *self-other* agreement, or when one’s self-judgment matches others’ judgments. Second, *other-other* agreement, or when two or more judges agree in their evaluation of a target’s personality. This is often called *consensus* (e.g. Kenny, 1994). While neither criterion is perfect, ruling out disagreement between the self and others or amongst others allows for an increase of confidence in accuracy. A third criterion is behavioral prediction. This is typically seen as the “gold standard”, but research utilizing this criterion is difficult to conduct as the establishment and measurement of valid behaviors frequently takes more time than *self-other* and *other-other* studies (Funder & West, 1993). Nevertheless, as research on accuracy in personality judgments accumulates, evidence from all three criteria should converge into a reasonable conclusion (Funder, 2012).

Funder (1995) developed the Realistic Accuracy Model (RAM) to specify the conditions under which accurate judgments of personality occur (see Figure 1).

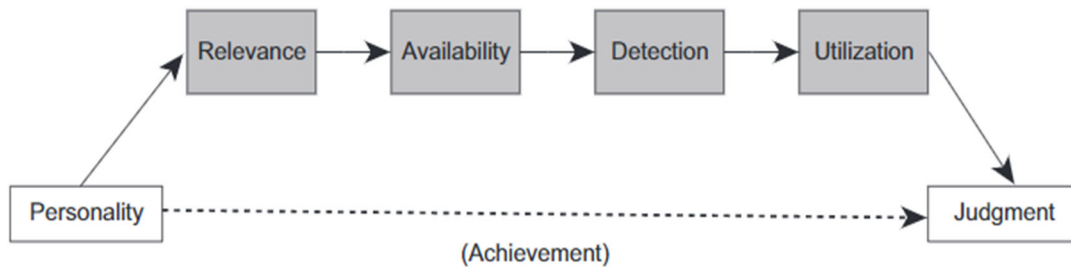


Figure 1.1 Funder's Realistic Accuracy Model (Funder, 2012, Figure 1, p. 178)

Importantly, this model does not purport to describe what typically happens in personality judgments, but rather the conditions for which accuracy in judgments is achieved. Namely, the target must be doing something *relevant* to the trait being judged, this behavior must be *available* to the judge, the judge must actually *detect* and not miss the behavior, and finally the behavior must be *utilized*, or interpreted correctly. Any conditions which increases one or more of these parts of the model will lead to higher accuracy, and vice versa.

Self-Other Knowledge Asymmetry

Accurate judgments of personality traits may not be uniform. Vazire (2010) developed the Self-Other Knowledge Asymmetry Model (SOKA) which posits that traits low in observability, like Neuroticism, will be more accurately perceived by the self than others, but that traits with more evaluative components will be more accurately judged by others than the self (John & Robins, 1993). This approach expands on Funder's RAM model by further clarifying when accuracy of personality judgments should be expected.

The foundation of the SOKA model is that the difference between self-perception and other-perception stems from informational salience and motivational significance (Vazire, 2010; Andersen et al., 1998). Information, in the form of behavioral cues or access to mental events, is differentially available depending on perspective. If the pertinent information is knowledge of emotions, then the self would be expected to be more accurate simply by nature of the magnitude of available data. However, if the information has an ego-relevance motivation, then others would be more likely to evaluate that information free from a self-serving bias. Vazire (2010) relates the SOKA model to Funder’s RAM model by theorizing that informational differences are likely to occur during the availability and detection portions of RAM, while motivational differences would more often occur during the detection and utilization parts.

Vazire (2010) conducted a full empirical test of SOKA and found partial to full support for predictions derived from the model (see Table 1.2).

Table 1.2

SOKA Model Predictions and Findings

| Domain and Traits | Observability | Evaluativeness | Prediction | Result |
|--|---------------|----------------|---|----------------------------------|
| Neuroticism Self-esteem Anxiety | Low | Low | Self-ratings should be more accurate than other ratings Friend ratings should be more accurate than strangers’ | Supported Partially supported |
| Extraversion Talkativeness Dominance Leadership | High | Low | Self and other ratings should be equally accurate | Supported |
| Intellect Creativity Intelligence | Low | High | Other ratings should be more accurate than self-ratings Friend ratings should be more accurate than stranger | Partially supported Supported |

(Vazire, 2010, p. 287)

Specifically, participants rated themselves and others, including friends and strangers, and also performed activities designed to provide a criterion for each prediction. For example, the criterion for Neuroticism was observer and experimenter rated anxiety assessed via the Trier Social Stress Test (Kirschbaum, Pirke, & Hellhammer; 1993) and intelligence was assessed via the Wonderlic IQ test (Wonderlic, 1983). Because null-hypothesis testing is often not appropriate for correlations in accuracy research (Judd & McClelland; 1989), Vazire tested differences in accuracy between groups by comparing the relevant correlations to a threshold value (.15), in a similar matter to how effect sizes are compared.

Dual Lens Model

Hirschmüller and colleagues (2013) developed the Dual Lens Model for understanding personality judgments at zero-acquaintance. This model is an extension of Brunswik's (1956) lens model of self-other agreement, which posits that the correlation of self and other rating is a function of behavioral cues presented by a target and properly utilized by a perceiver to form a judgment. For example, if someone is extraverted, then this part of their self-concept will produce cues such as speaking more loudly or using more expressive body movements. The stronger the relation between the perceivable cues and the target's personality, the higher the validity of the cue. Similarly, the more a perceiver relies on valid cues, the more sensitive the judgments of that trait will be. The ideas behind Brunswik's lens model provide the foundation for Funder's (1999) RAM model. The Dual Lens Model (see Figure 1.2) adds to the conceptual nature of target-cue-perceiver in the lens model by incorporating the duality of three aspects: implicit vs.

explicit self-concepts; controlled vs. automatic cues; and deliberate vs. intuitive judgments.

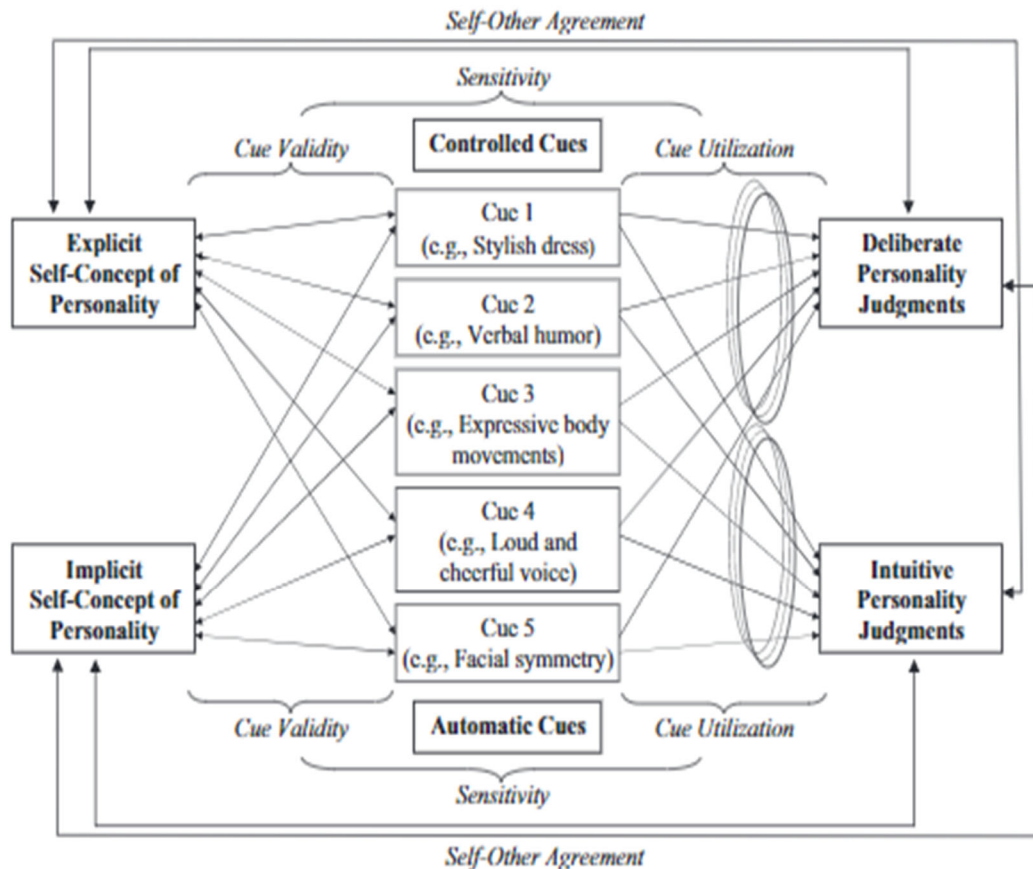


Figure 1.2 The Dual Lens Model (Hirsh Muller et al., 2013, p. 337)

Explicit self-concepts are those typically measured by self-report (e.g. “I enjoy being around lots of people”), whereas implicit self-concepts refer to the associative representations of the self, usually measured by an implicit association test (IAT; (Greenwald, Poehlman, Uhlmann, & Banaji, 2009). These two dimensions of self-concept have only a modest correlation (Back & Vazire, 2012). Next, cues exist on a continuum of highly controlled (e.g. choice of clothing) to moderate control (e.g. voice volume) to uncontrolled (e.g. facial symmetry). Finally, the duality of judgments refers to

the widespread findings in social psychology that some thought processes are *deliberative* and others *intuitive* (for a review see Evans, 2008). Deliberative judgments refer to highly conscious, slower, effortful, linear processing of information (e.g. solving a math problem). Intuitive judgments are relatively unconscious, quick, easy, and use parallel processing (e.g. complete the phrase “war and ... “).

The Social Relations Model

David Kenny developed the Social Relations Model (SRM) to better quantitatively investigate several types of interpersonal processes (Kenny, 1994; Kenny & La Voie, 1984; Albright, Kenny & Malloy, 1988). The foundation of the SRM is round-robin data, obtained when each member of a group rates both him or herself plus every other member of the group, ensuring that self and other-ratings are obtained for each participant. From this data, SRM analysis partitions estimates of variance into 3 main categories: perceiver, target, and relationship (sometimes perceiver is referred to as “actor”, and target as “partner”). *Perceiver* variance refers to the ways in which an observer of others may typically see others- some people may be biased to rate others higher on positive traits, others lower on negative traits. *Target* variance is about the extent to which observers agree about a target and is often called *consensus*. Finally, some variance is captured in the unique way that some perceivers and targets see each other, which makes up the *Relationship* category. Relationship variance is computed only after controlling for perceiver and target effects. Thus, the total variance of all ratings in the round-robin dataset can be partialled into the components of target, perceiver, and relationship and compared with each other (e.g. did one component account for the

majority of the variance?) or examined alone (e.g. does the target variance significantly differ from zero?).

The SRM has been used to make important discoveries about inter-personal judgments and the degree to which self and other ratings overlap (Biesanz, 2010; Kenny, Albright, Malloy, and Kashy, 1994; Kwan, John, Kenny, Bond, & Robins, 2004; Levesque, 1997). For example, Kenny and colleagues reported that consensus among targets accounts for 25-30%¹ of the variance for Big Five personality traits (1994) indicating that people typically agree with each other about each other's main personality features. Kwan and collaborators (2004) applied SRM to understand the ways in which people can be seen as self-enhancing or self-effacing based on how they tend to view others (perceiver effect) and how they are perceived by others (target effect). Levesque (1997) used SRM analysis to show that meta-accuracy, or the extent to which an individual's belief about how others perceived them actually matched with what others in fact believe, for Big Five traits is high, but meta-accuracy is much lower for evaluative items such as intelligence and "shallowness".

Biesanz (2010) developed an extension of the SRM, the Social Accuracy Model (SAM), as computational examination of the accuracy of interpersonal perception. Specifically, SAM is a combination of SRM and Cronbach's (1955) computational approach that allows simultaneous estimation of both expressive accuracy- how much people agree about a target's traits- and perceptive accuracy - how much better or worse a particular perceiver's accuracy is across targets and relative to other perceivers. Using SAM, Biesanz, West, and Millevoi (2007) showed that as length of acquaintance increased, so did self-other agreement and consensus, while stereotype accuracy- the

typical or average rating across all judges - decreased. Another study utilizing SAM revealed that when experimentally manipulated to increase focus on accuracy, motivated perceivers demonstrated higher distinctive accuracy but lower normative accuracy (Biesanz & Human, 2010). This indicates that people can increase the accuracy of their judgments of others, but at the cost of seeing others in ways more distinct (usually less positive) from the typical observer.

Metaperceptions and Meta-Accuracy in Personality Judgments

Our beliefs about how others perceive us are called *metaperceptions* (Laing, Phillipson, & Lee, 1966). For example, if Caroline and Teddy are friends, Caroline may have an estimation of how trustworthy Teddy thinks she is- distinct from her own view of her trustworthiness. This is a metaperception. Metaperceptions are important for basic social competence and fluency, because they are foundational to everyday psychological functions such as self-monitoring (Synder, 1974) and impression management (Leary, 1995). For example, if Caroline believes that Ted sees her as disagreeable, she may rely on this metaperception to change her behavior around Ted so that he will come to change his perception of her agreeableness.

Meta-Accuracy is the degree to which metaperceptions are correct. If we think others generally see us as assertive, the correspondence of our belief with the extent to which others actually report seeing us as assertive is meta-accuracy. One type of meta-accuracy is *generalized meta-accuracy (GMA)*, or how aware people are, on average, of how they are perceived or what their reputation is in general (Carlson & Kenny, 2012). This is typically assessed in a round-robin format, where multiple participants interact and then rate themselves and each other on various personality traits. In addition to self

and other ratings, each participant also reports his or her metaperception(s). GMA is then calculated by comparing the value of the metaperception to the average of other reports (Kenny & DePaulo, 1993; Levesque, 1997).

Carlson and Kenny (2012) analyzed findings in the meta-accuracy literature (see table 1.3). For most traits, the agreement between metaperception and other-rating is higher for people more familiar with the target than those just meeting the target for the first time. Importantly, the pattern of findings for meta-accuracy are similar to those predicted and found in the accurate judgments of personality literature- traits that are more externally observable show more meta-accuracy, while traits higher in evaluative components (especially with negative ramifications) show less meta-accuracy (Funder, 1995; Vazire, 2010; Hirschmuller et al., 2013).

Carlson and Kenny (2012) also examined the extent to which people tend to over or under estimate how others see them. *Metaperception enhancement*, or MPE, is the mean difference between metaperceptions and judge's actual perceptions. MPE is similar to self-enhancement, or the overly positive views that people typically have of themselves (John & Robins, 1994). In their meta-analysis, shown in Table 1.3, Carlson and Kenny (2012) found that metaperceptions of affect were less than judge's perceptions, indicating people underestimated how much they were liked by others. However, metaperceptions of traits were more positive than judge's perceptions, suggesting people view themselves more positively than others. Importantly, trait MPE was less than typical self-enhancement, meaning metaperceptions usually fall somewhere between self-enhancement and other's perceptions.

Table 1.3

Summary of GMA findings (Carlson & Kenny, 2012)

| Trait | First Impression* | Acquaintance* | Overall* |
|---------------------------------|-------------------|---------------|----------|
| Extraversion | .51 | .63 | .58 |
| Agreeableness | .17 | .46 | .40 |
| Conscientiousness | .06 | .42 | .29 |
| Emotional Stability | .34 | .42 | .38 |
| Openness | -.02 | .31 | .24 |
| Likes to be center of attention | .31 | .51 | .41 |
| Intelligent | .11 | .23 | .18 |
| Honest | .04 | .33 | .18 |
| Exaggerates skills | .18 | .09 | .14 |
| Arrogant | .13 | .31 | .22 |
| Happy | .11 | .42 | .30 |
| Self-esteem | .09 | .35 | .26 |

* values are the correlation of metaperception and other ratings (adapted from Carlson & Kenny, 2012)

Kenny and DePaulo (1993) discuss potential moderators of meta-accuracy: feedback from others, self-perceptions of traits, and self-observation of behavior. Although feedback would seem to be the best source of information for increased meta-accuracy (Jussim, Soffin, Brown, Ley, & Kohlepp, 1992), informational and motivational barriers prevent feedback from fully impacting meta-accuracy (Kaplan, Santuzzi, & Ruscher, 2009). People often fail to provide accurate feedback (Swann, Stein-Seroussi, &

McNulty, 1992) and even when feedback is accurate, a desire to be seen as positive often prevents correct interpretation (Kwang & Swann, 2010). Most people seem to rely on self-perceptions as the basis of their metaperceptions, as the correlation between the two is very high ($r = .87$; Kenny, 1994), which indicates that meta-accuracy may often simply come down to self-other agreement. However, a reliance on self-perception is often inadequate for evaluative traits such as intelligence or honesty, where people are motivated to positively inflate the value of such traits (Andersen & Chen, 2002; Vazire, 2010; Funder & Colvin, 1997). Finally, self-observation can lead to more meta-accuracy when people attend closely to their self-presentation, such as when actors take on a public role that differs from their private personality (Albright, Forest, & Reiser, 2001). Again, self-observation is likely more effective for traits that have a strong external component, such as extraversion (Funder & Sneed, 1993), but will also be negatively impacted by motivations for self-enhancement (Hall, Murphy, & Mast, 2007).

Before 2009, the prevailing conclusion in the meta-accuracy literature was that people had poor insight into how they were uniquely viewed by others, based on findings that *dyadic meta-accuracy* was low (Kenny & DePaulo, 1993; Levesque, 1997; Shechtman & Kenny, 1994). However, Carlson and Furr (2009) pointed out that the ecological validity of nearly all previous studies was limited due to a constricted social sample- researchers often recruited participants from the same social context, such as college students and their roommates, friends, or unacquainted fellow students. Carlson and Furr (2009) recruited participants who provided access to parents, hometown (non-college) friends, and local (college) friends. The results supported the author's hypothesis that contextual effects play a role in differential meta-accuracy and that people have

greater insight into the unique ways they are perceived by others. Carlson, Vazire, and Furr (2011) extended this work (and coined the term *meta-insight*) by closely examining other long-held assumptions in meta-accuracy; that metaperceptions are not much more than projected self-perceptions, and that when metaperceptions and self-perceptions differ they do not do so in a coherent manner. Carlson and colleagues (2011) showed across a variety of social contexts that people know how others see them, and that self-perceptions do not account for meta-accuracy. Interestingly, results also indicated that certain traits such as openness, agreeableness, and conscientiousness were more associated with meta-accuracy, leading the authors to call for future research that would elaborate the individual differences of meta-accuracy. Bolstering the case for the importance of social context on meta-accuracy, Oltmanns, Gleason, Klonsky, & Turkheimer (2005) showed that after 6 weeks of intense training, military members were able to accurately differentiate between their own views of their personality and how they believed others might view them, even for negative traits such as narcissism.

Intellectual Humility and Meta-Accuracy

One published study to date has compared IH self and other reports (Meagher et al., 2015, using a boot-strapped measure of IH). The authors compared self and other reports using SRM (Kenny, 1994). Meagher and colleagues observed that self-reported IH was associated with self-enhancement: participants were found to rate themselves more positively in general even after accounting for both perceiver and target effects (Kwan et al., 2004). Specifically, after controlling for the patterns in which people typically rated others and were seen by others, participants with high self-reported IH indicated they were also more competent, agreeable, and had higher self-esteem. While it

may be the case that individuals with high IH are more likely to possess these positive traits, research in self-enhancement indicates the more likely explanation is that IH is another trait responders are likely to exaggerate (John, & Robins, 1994). This finding underscores the concern that self-reported IH may not be the most valid measurement of this construct.

Furthermore, Meagher and collaborators (2015) observed that consensus for IH was only observed in groups that participated in a semester long project, and not for those who had just met. Even when consensus was observed, it accounted for 11% of the variance of interpersonal judgments of IH, a modest, yet statistically significant magnitude. Additionally, results indicated a high overlap between other-reported IH and observed agreeableness, suggesting that perceivers may be conflating these traits to some degree. However, other-reported IH did not show the self-enhancement bias found in self-reported IH, meaning that those people group members identified as high in IH tended to report moderate ratings of their own IH.

Overall Rationale

This research expands the previously reviewed literature in two ways- a validation of IH and a deepening of the understanding of individual differences in metaperception. First, the use of metaperceptions and meta-accuracy examines an important aspect of IH's conceptual validity. Specifically, theorists postulate that those with high IH are more willing to see themselves as they truly are (Tagney, 2009), and have an accurate awareness of their strengths and limitations (Samuelson et al., 2015). One way in which people can demonstrate an accurate view of themselves is by correctly understanding how they are perceived by others. Indeed, one potential hurdle to accurate

metaperceptions is ego-related bias (Funder, 2012; Vazire, 2010). Conceptually speaking, people with higher IH should be able to overcome these self-centered biases because they possess a low self-focus, show a lack of concern for status, prioritize truth and accuracy, and remain open to revising their beliefs in light of new information (Krumrei-Mancuso, & Rouse, 2016; Leary et al., 2017; McElroy et al., 2014; Tagney, 2009). If people high in IH are shown to have higher meta-accuracy about how they believe they are perceived by others (compared to those low in IH), that would constitute empirical evidence that IH is associated with accuracy in interpersonal perception.

Second, this research expands the literature on metaperceptions and meta-accuracy by including the trait of IH. This inclusion is important for several reasons. First, there has been a dearth of meta-accuracy research on evaluative traits (Carlson & Kenny, 2012), which precludes a full picture of when and for what people correctly perceive how they are seen. Second, models of how interpersonal judgments work have speculated that some individual differences might underlie the variation of accurate personality perception (Funder 2012). It seems likely that at least some of these individual differences could be explained with IH. If this is so, then future work on accuracy in interpersonal judgment might benefit from including IH to better account for perceiver effects (Wood, Harms, & Vazire, 2010). Research on what counts as a “good judge” (Funder, 2012) would benefit from the addition of IH beyond the typically measured big 5 traits.

CHAPTER TWO

Study 1

Unacquainted Participants

Objective

The purpose of this study was to examine the relationship between IH and survey items that assess metaperceptions, or the impressions people have of how other people see them. (E.g., “Other people see me as a know-it-all”). This study establishes a context to investigate the accuracy of metaperceptions of IH (in Studies 2 and 3).

Aim 1

Explore the relationship between metaperception of others’ ratings and self-reported IH and Intellectual Arrogance (IA).

Hypothesis 1: Self-reported IH will have a significant, moderate, and positive correlation with metaperceptions. Self-reported IA will not have a significant correlation with metaperceptions.

Hypothesis 2: Metaperceptions will alter the relationship between self and other report for IH but not for IA.

Aim 2

Determine if IH metaperceptions vary with how well participants know each other.

Hypothesis 3: The relationship of self-reported IH and IA with metaperception items will be stronger for participants with more acquaintance.

Sample 1: Zero-acquaintance Participants

Power Analysis

Determination of required sample size to detect an effect size is different for group-based studies than for studies involving individual participants only. Following theoretical work done with Social Relations Analyses (Bond & Lashley, 1996; Lashley & Bond, 1997), Lashley and Kenny (1998) showed that 17 groups of 4 participants each were necessary to reach a Power (1- β) of 0.8 to detect a significant difference when examining if an observed variance parameter was statistically different from zero (Lashley & Kenny, 1998, table 6).

Participants

We recruited 135 undergraduate students (36 groups of 3-5 each) who participated in exchange for course credit. Participants were recruited via Baylor's SONA system, a program for administering experimental participation. Data was collected in 2014. Age range from 18-24, with an average age around 19. The sample was 61% White/Caucasian, 13% Asian/Pacific Islander, 12% Black/African American, 11% Hispanic, and 3% other race or ethnicity.

Procedure

Three to five unacquainted participants arrived at each session and were told they will be performing activities as a group. Name tags with a letter (A-E) were given to help each participant identify each other. During the first activity, participants discussed their strengths and weaknesses with the group in an "icebreaker" scenario. The second activity involved a brainstorming session developed by Bouchard and Hare (1970). The

experimenter asked the participants to imagine a world in which everyone suddenly grows a second thumb on each hand next to their pinky finger. Participants were given a couple of minutes to write down as many changes to normal life that might occur, and also were told that they will share their most creative ideas about what might change with the group. The last activity involved all participants working together to solve three GRE problems in five minutes (two quantitative and one qualitative). After five minutes concluded, the experimenter provided the correct answers to the group and discussed their performance.

Measures

As soon as they had completed the final activity, participants were given the experimental survey. This survey consisted of personality judgments of each member of the group, including themselves. Each item asked, on a 6-point Likert scale, how much a stated personality construct applies to the specific person (or oneself) with a “1” being “not at all” and a “6” being “very much”. Ten items from the Ten Item Personality Inventory (Gosling, Rentfrom, & Swann, 2003) were included to assess Big-5 personality traits. For example, an item consisting of “reserved, quiet” was reversed scored to indicate extroversion, and the item “anxious, easily upset” was used to indicate neuroticism.

Of particular relevance to our hypotheses, the construct of intellectual humility was measured by combining four items: “open to criticism of ideas”, “knows what he/she is good at”, “can learn from others”, and “is intellectually humble”. To provide some discriminant validity, intellectual arrogance was also measured by summing the responses to three items: “arrogant”, “is close-minded”, and “believes own ideas superior

to others”. We treated IH and IA as two separate constructs following the previous research (Gregg & Mahadevan, 2014; Samuelson et al., 2014).

After making personality judgments, participants were answered questions created to assess metaperception. These items were “my ratings of others will be accurate”, “other people’s ratings of me will be accurate”, and “other people see me as a know it all”. The tasks took approximately 25 minutes, and the survey took around 15 minutes, for a total time of 40 minutes.

Sample 2: Team-Based Learning Participants

Participants

We recruited 108 undergraduates (24 groups of 3-5) enrolled in 2 psychology courses that utilized a team-based learning pedagogy (TBL; Michaelson et al., 2002). Data was collected in 2014 and 2015. In a TBL course, students are assigned to work together in groups at the beginning of the semester, continue to work together for the entire course, and eventually provide evaluations of each team member's performance that affect each individual’s grade. Of special relevance to the perception of IH, teams engaged in “Readiness Assurance Tasks”, which are assignments completed individually and later retaken collaboratively.

Participants were randomly assigned by their instructor to groups of 4-6 people. At the end of the semester, students were offered extra credit for experimental participation. After obtaining informed consent, participants completed the SRM round-robin rating of personality judgments of themselves and their team members. Age ranged from 18-24, with an average age around 19.

Measures and Procedure

TBL participants completed the same survey as in Study 1, making personality judgments on a 6-point Likert scale. Some relevant items for our hypothesis include “Intellectually humble”, “Arrogant”, “Open to criticism of ideas”, “Knows what he/she is not good at”, “Can learn from others”, and “Is close-minded”. Also included were items about interpersonal impressions such as “Assertive” and several items pertaining to Big-5 personality traits, e.g. “Agreeable”. Once again, items to assess metaperception were included (e.g. “my ratings of others will be accurate”, “other people’s ratings of me will be accurate”, and “other people think I am a know it all”).

Data Preparation and Analysis

The data from the paper surveys was entered in an excel spreadsheet. This de-individuated data was then imported into SPSS for initial analysis. Further analysis were accomplished using the Social Relations Model (SRM; Kenny, 1994). The SRM is a statistical method that allows the variance of interpersonal judgments to be partitioned into 3 main categories. These are: 1; the target effect, or how everyone typically rates a target, 2; the perceiver effect, or how the perceiver typically rates everyone, and 3; the relationship effect, or the unique way a specific perceiver sees a specific target. Dividing the variance in this way makes the relative contributions of each factor more easily known. After variance partitioning, each item was examined for assimilation or consensus. Assimilation occurs when the bulk of the variance comes from the perceivers, meaning the interpersonal judgments are mostly a function of how the individual perceivers tend to rate others. For example, someone may typically rate others as high on positive traits or a perceiver may gravitate toward rating others near the mean of a trait,

regardless of the target. Consensus occurs when the variance is attributable to the target effect. Consensus would reflect agreement amongst the group about the target. For example, a group could concur that an individual is high in IH, rather than not being able to reach consensus about that individual's level of IH. Numerical analysis was done with SOREMO (Kenny, 1998), a software program developed specifically for Social Relations Modeling.

Following variance partitioning, if consensus occurred, correlations were computed between perceiver/target effects and the items pertaining to metaperceptions: "my ratings of others will be accurate" and "other people's ratings of me will be accurate". In addition, correlations between metaperception items and self-ratings of intellectual humility and arrogance will also be examined. Finally, to assess meta-accuracy, correlations between metaperception items and averages of other-ratings were computed.

Specific Analyses:

Hypothesis 1: Self-reported IH will have a significant, moderate, and positive correlation with metaperception items. Self-reported IA will not have a significant correlation with metaperception items.

Analysis: Bi-variate correlations between self-ratings of IH and IA and metaperception of accuracy of others' ratings was computed.

Hypothesis 2: Metaperception of others' ratings will alter the relationship between self and other report for IH but not for IA.

Analysis: A semi-partial correlation was computed between self-report IH, other-report, IH, and the metaperception item "accuracy of others' ratings". This took the form $r_{1(2.3)}$ where X_1 is the unmodified other-report, X_2 is residualized self-

report, and X_3 is the metaperception score (taken away from X_2). The same analysis was performed with IA.

Hypothesis 3: The relationship of self-reported IH and IA with metaperception items will be stronger for participants with more acquaintance.

Analysis: The same analyses (see above) were run on participants with zero acquaintance and those who participated in a team-based learning course. A Fisher r-to-z transformation was used to compare the correlation coefficients.

Results

Missing Data and Descriptive Statistics

For data used in Social Relations Analysis, missing data is typically handled by imputing the modal value. This is because SOREMO, the analysis software, was not built to handle missing data (Kenny, 1998). For previously unacquainted participants (sample 1), modal imputation accounted for <1% of data for the self-rated IH and IA variables, and ~5% of the metaperceptions variables. For the acquainted individuals in the team-based study (sample 2), modal substitution was <1% for self-rated IH and IA, while ~6% of the metaperception variables were missing and filled by modal imputation.

Descriptive statistics for sample 1 (unacquainted participants) and sample 2 (acquainted participants) are reported in Tables 2.1 and 2.2. IH was computed from 4 items ($\alpha = .73$ for part 1; $\alpha = .61$ for part 2), and IA from 3 items ($\alpha = .63$ for part 1; $\alpha = .55$ for part 2). Each total variable represents a sum score of the individual items comprising that measure. Because the response options were from 1-6, the highest possible value for IH total was 24, and the lowest was 4. Similarly, for IA total the

highest possible value was 21 and the lowest was 3. Metaperception variables are single-item measures; MROO = “my ratings of others will be accurate”, OROM = “other’s ratings of me will be accurate”. For study 1, sample 2 an additional metaperception item was available from online data not collected in part 1. This item, “Other people think I am a know-it-all” (OPKIA) is included in part 2 analysis.

Table 2.1

Descriptive Statistics for Unacquainted Individuals in Study 1, Sample 1

| Variable | Mean | SD | Skew | Kurtosis |
|----------|-------|------|-------|----------|
| IH Total | 18.27 | 3.24 | -0.26 | -.33 |
| IA Total | 5.36 | 1.91 | 0.54 | -0.48 |
| MROO | 3.27 | 1.16 | 0.36 | -0.09 |
| OROM | 3.25 | 1.00 | 0.28 | 0.29 |

Note. $N = 135$. MROO = “my ratings of others will be accurate”, OROM = “other’s ratings of me will be accurate”

Table 2.2

Descriptive Statistics for Acquainted Individuals in Study 1, Sample 2

| Variable | Mean | SD | Skew | Kurtosis |
|----------|-------|------|-------|----------|
| IH Total | 19.36 | 2.63 | -0.12 | -.34 |
| IA Total | 5.68 | 2.26 | 1.17 | -.34 |
| MROO | 4.33 | 1.11 | -0.22 | -0.09 |
| OROM | 4.13 | 1.05 | -0.17 | -0.29 |
| OPKIA | 4.94 | 2.21 | -0.13 | -0.94 |

Note. $N = 105$. MROO = “my ratings of others will be accurate”, OROM = “others ratings of me will be accurate”, OPKIA “other people think I am a know-it-all”

Hypothesis 1

Zero-order correlations. Zero-order correlations between self-ratings of IH, IA and metaperception items are reported in Tables 2.3 and 2.4. For both samples 1 and 2, the correlation between IH and IA measures was moderately negative, indicating conceptual differentiation and construct validity. In addition, metaperception items were strongly, positively correlated indicating similarity. Only the additional metaperception item in sample 2 (OPKIA) was uncorrelated with any other measure.

For sample 1 (as reported in table 2.3), small, negative correlations between other-reported IA and metaperceptions emerged, and the divergence between other-reported IA and IH was substantially higher than for self-reported IH and IA. For sample 2, (table 2.4) other-reported IH was not associated with metaperceptions, and other-reported IH was more strongly related to similar variables than was self-reported IH.

Table 2.3

Zero-Order Correlations between Self-reported IH, IA, Other-reported IH, IA and Metaperceptions for Unacquainted Participants in Study 1, Sample 1.

| Variable | 1 | 2 | 3 | 4 | 5 | 6 |
|---------------------------|-------|------|-------|-------|------|---|
| 1 Self-reported IH | - | | | | | |
| 2 Self-reported IA | -.27* | - | | | | |
| 3 Other-reported IH (avg) | -.01 | -.06 | - | | | |
| 4 Other-reported IA (avg) | .04 | .04 | -.47* | - | | |
| 5 MROO | .11 | .08 | .03 | -.18* | - | |
| 6 OROM | -.06 | .06 | .05 | -.22* | .68* | - |

Note. $N = 135$. MROO = “my ratings of others will be accurate”, OROM = “others ratings of me will be accurate”, * $p < .05$

In tentative support of study hypotheses, the magnitude of the relationship between metaperception items and self-rated IH was stronger for IH than for IA, although no correlations reached statistical significance. In sample 2, the correlations between IH total and MROO/OROM were not significant (MROO: $p = .057$; OROM: $p = .064$).

To further explore the relationship between self-reported IH and metaperception, mean comparisons were calculated for $sd \pm 1$ for IH and MROO/OROM. T-tests were performed between high and low values of IH and the metaperceptions items. No significant values were discovered.

Hypothesis 2

Semi-partial Correlations. In order to determine the relationship between other-report and metaperceptions, with the relationship between metaperceptions and self-report controlled, semi-partial correlations were computed. This took the form of $r_{1(2,3)}$ where X_1 was the unmodified other-report, X_2 was residualized self-report, and X_3 was the metaperception score (taken away from X_2). No semi-partial correlations were significant for samples 1 or 2.

Table 2.4

Zero-Order Correlations between Self-reported IH, IA, Other-reported IH, IA and Metaperceptions for Acquainted Participants in Sample 2.

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---------------------------|-------|-------|-------|-------|-----|------|------|-----|---|
| 1 Self-reported IH | - | | | | | | | | |
| 2 Self-reported IA | -.28* | - | | | | | | | |
| 3 Other-reported IH (avg) | .00 | -.17† | - | | | | | | |
| 4 Other-reported IA (avg) | -.03 | .24* | -.69* | - | | | | | |
| 5 Self-reported GIHS | .52* | -.41* | -.03 | .08 | - | | | | |
| 6 Other-reported GIHS | .07 | -.26* | .76* | -.65* | .05 | - | | | |
| 7 MROO | .19† | -.15 | -.07 | -.02 | .15 | -.04 | - | | |
| 8 OROM | .18† | -.08 | -.04 | -.05 | .17 | .06 | .67* | - | |
| 9 OPKIA (n=66) | .18 | .05 | -.06 | .24† | .17 | -.06 | -.04 | .00 | - |

Note. $N = 105$. GIHS = General Intellectual Humility Scale, MROO = “my ratings of others will be accurate”, OROM = “others ratings of me will be accurate”, OPKIA = “Other people think I am a know-it-all”, * $p < .05$, † $p < .10$

Social relations analysis. Social Relations Analysis was used to partial variance of round-robin ratings into Actor (Perceiver), Observer (Target), and Relationship effects (reported in Tables 2.5 & 2.6). For sample 1, although significant actor effects emerged for several IH indicators, indicating some assimilation, construct IH as a whole did not have significant assimilation or consensus. That is, judgments of IH were not a function of the perceiver or the target. However, significant actor variance emerged for IA. This indicates assimilation on the part of the perceiver, where other targets are perceived to be very similar and rated homogenously.

Table 2.5

Relative variance partitioning for constructs in Sample 1 (unacquainted participants)

| Variable | Actor | Partner | Relationship † | Error |
|------------------------------|-------|---------|-------------------|-------|
| IH = (IH1 + IH3 + IH4 + IH5) | .18 | .01 | .30* | .51 |
| IA = (IH2 + Arrg + Clsm) | .17 | .00 | .29* | .54 |

Note: Data is from round-robin ratings from 36 groups; * $p < .05$, (one-tailed).

Table 2.6

Relative variance partitioning for constructs in Sample 2 (acquainted participants)

| Variable | Actor | Partner | Relationship | Error |
|------------------------------|-------|---------|--------------|-------|
| IH = (IH1 + IH3 + IH4 + IH5) | .19* | .16* | .18* | .47 |
| IA = (IH2 + Arrg + Clsm) | .16* | .25* | .16* | .43 |
| GIHS = (GIH1-6) | .22* | .12* | .28* | .38 |

Note: Data is from round-robin ratings from 24 groups; * $p < .05$, (one-tailed).

For sample 2, significant actor and partner variance emerged for IH, IA, and GIHS (General Intellectual Humility Scale). Hence, both assimilation and consensus occurred for these variables. The proportions of variance accounted for by actor and perceiver effects are similar to previously reported data where similar constructs were used (Meagher et al., 2015).

For items that did achieve significant actor or partner variance, semi-partial correlations can be performed with the metaperception items. Actor/metaperception correlations address the relationship between how a participant sees others and how the participant thinks others see her/him. Partner/metaperception correlations concern the

relationship between how a participant is seen by others and how a participant thinks others see her/him. These correlations are reported in tables 2.7-2.9.

Table 2.7

Correlations of Actor effect and metaperceptions Sample 1 (unacquainted participants)

| Variable (variance from actor effect only) | MROO | OROM |
|--|------|------|
| IH1 – “Open to criticism of ideas” | .05 | .07 |
| IH3 – “Knows what s/he is not good at” | .11 | .10 |
| IH4 – “Can learn from others” | .19* | .19* |
| IH5 – “Is intellectually humble” | .13 | .19* |
| Clsm – “Close minded” | .08 | .05 |
| IH2 – “Believes own ideas superior to other’s ideas” | -.03 | -.09 |

Note: Data is from round-robin ratings from 36 groups; * $p < .05$, (one-tailed). MROO: “My ratings of others will be accurate” OROM: “Other’s ratings of me will be accurate”

Table 2.8

Correlations of Actor effects and metaperceptions Study 1, sample 2 (acquainted participants)

| Variable | MROO | OROM | OPKIA |
|--|------|------|-------|
| IH1 – “Open to criticism of ideas” | .13 | .17 | -.17 |
| IH3 – “Knows what s/he is not good at” | .01 | .12 | -.08 |
| IH4 – “Can learn from others” | .08 | .19* | .04 |
| IH5 – “Is intellectually humble” | .09 | .19* | -.22* |
| Arrg – “Arrogant” | .13 | .01 | -.09 |
| Clsm – “Close minded” | -.06 | -.06 | -.06 |
| IH2 – “Believes own ideas superior to other’s ideas” | .20* | .14 | -.06 |
| GIHS-1 – “Questions their opinions, positions, and viewpoints because they could be wrong” | .23* | .12 | -.15 |
| GIHS-2- “Reconsider their opinions when presented with new evidence” | .16 | .22* | -.17 |
| GIHS-3- “Recognizes the value in opinions that are different from their own” | .17 | .18 | -.26* |
| GIHS-4- “Accepts that their beliefs and attitudes may be wrong” | .11 | .11 | -.10 |
| GIHS-5- “In the face of conflicting evidence, are open to changing their opinions” | .20* | .24* | -.12 |
| GIHS-6- “Likes finding out information that differs from what they already think is true” | .35* | .32* | .04 |

Note: Data is from round-robin ratings from 24 groups; * $p < .05$, (one-tailed). MROO: “My ratings of others will be accurate”, OROM: “Others’ ratings of me will be accurate”, OPKIA: “Other people think I am a know-it-all”

Table 2.9

Correlations of Partner effects and metaperceptions Study 1, sample 2 (acquainted participants)

| Variable | MROO | OROM | OPKIA |
|--|-------|-------|-------|
| IH1 – “Open to criticism of ideas” | .11 | .14 | -.04 |
| IH4 – “Can learn from others” | -.16 | -.16 | -.01 |
| IH5 – “Is intellectually humble” | .04 | -.04 | -.01 |
| Arrg – “Arrogant” | .01 | -.05 | .07 |
| Clsm – “Close minded” | -.14 | -.24* | .17 |
| IH2 – “Believes own ideas superior to other’s ideas” | .08 | .02 | .12 |
| GIHS-1 – “Questions their opinions, positions, and viewpoints because they could be wrong” | -.30* | -.20 | -.22* |
| GIHS-3- “Recognizes the value in opinions that are different from their own” | -.09 | -.03 | -.19 |
| GIHS-4- “Accepts that their beliefs and attitudes may be wrong” | -.02 | .07 | .06 |
| GIHS-5- “In the face of conflicting evidence, are open to changing their opinions” | .07 | .15 | -.14 |
| GIHS-6- “Likes finding out information that differs from what they already think is true” | .12 | .23* | -.02 |

Note: Data is from round-robin ratings from 24 groups; * $p < .05$, (one-tailed). MROO: “My ratings of others will be accurate”, OROM: “Others’ ratings of me will be accurate”
OPKIA: “Other people think I am a know-it-all”

For sample 1, two items demonstrated significant correlations between actor variance and metaperception items: IH4 (“Can learn from others”) and IH5 (“Is

intellectually humble”). In sample 2, the same items as in sample 1 had similar correlations with actor variance, and all but one item on the GIHS had significant associations between metaperception items and actor effects. In sample 2, three items demonstrated significant correlations between partner effects and metaperception items: Clsm (“Close minded”), GIHS-1 (“Questions their opinions, positions, and viewpoints because they could be wrong”) and GIHS-6 (“Likes finding out information that differs from what they already think is true”).

Hypothesis 3

Fisher r-to-z transformations. For study 1, no correlations between self or other rating of IH and metaperception items were significant, so correlation coefficients could not be compared.

Discussion

Hypothesis 1, that self-rated IH would have a moderate, positive association with metaperception items while IA would not, was unsupported for sample 1. However, in sample 2, self-reported IH showed a weak, positive association with metaperceptions that trended towards significance, and was larger than the corresponding correlations for IA. Nevertheless, no significant relationship between self-reported IH or IA and metaperceptions emerged in sample 1 or 2. This indicates that those who report high IH are not assuming that others see them similarly.

For Hypothesis 2 sample 1, semi-partial correlations revealed no unique relationships between self and other IH and metaperceptions. Social relations analysis, however, was able to establish that consensus occurs in groups with more acquaintance

(sample 2). Furthermore, variance associated with this consensus, aka the Partner effect, was uniquely associated with metaperceptions and some GIHS items. For example, if people agreed that someone “Questions their opinions, positions, and viewpoints because they could be wrong” (GIHS-1), that person was LESS likely to indicate that his/her ratings of others would be accurate. In addition, consensus for the item “Likes finding out information that differs from what they already think is true” (GIHS-6) was associated with that individual being MORE likely to indicate that other people’s ratings of him/her would be accurate.

For Hypothesis 3, that the relationship between metaperceptions and IH/IA would be stronger as acquaintance increased, mixed support was found. Although correlations between variables did not reach enough significance to be compared via Fisher r-z transformations, the trends in magnitudes were in the hypothesized direction. Furthermore, social relations analysis demonstrated that much more consensus occurred in sample two than sample one.

This study was intended to pilot the relationship between metaperceptions and self/other-reported IH. Studies 2 and 3 use similar methods (groups) but utilize higher quality metaperception items and use IH items from published scales.

CHAPTER THREE

Study 2

Unacquainted Participants

Objective

The purpose of this study was to confirm and expand the findings regarding metaperception of IH in Study 1, and to investigate the accuracy of those metaperceptions. Specifically, if people see someone as high in IH, is that person aware of those perceptions? This builds on work that has found that people do have insight into how others see them regarding some traits. Importantly, previous research has shown general tendencies towards meta-accuracy for well-studied personality traits such as extraversion and neuroticism (Carlson & Furr, 2009; Carlson et al., 2011; Carlson & Kenny 2012), but no previous work has examined if people are meta-accurate about intellectual humility. Finally, this study investigated the accuracy of metaperceptions amongst zero-acquaintance participants.

Aim 4. Expand the exploration of metaperception items and IH self-report with more detailed and validated measures.

Hypothesis 4: Self-reported IH will have a significant, moderate, and positive correlation with metaperception items. Self-reported IA will not have a significant correlation with metaperceptions.

Hypothesis 5: Metaperceptions will alter the relationship between self and other report for IH but not for IA.

Aim 5. Determine whether self-report IH is associated with higher meta-accuracy for unacquainted participants.

Hypothesis 6: Self-reported IH will alter the relationship between metaperceptions of the group average and the average of other-report.

Participants

We recruited 180 (115 females) minimally acquainted undergraduate students (28 groups of 4 each) who participated in exchange for course credit. Participants were recruited via Baylor's SONA system, a program for administering experimental participation. Data was collected in 2018. Age ranged from 18-24, with an average age around 19. Participants were 52% White, 19% Hispanic, 16% Asian, 9% African-American, and 4% Other/No Answer.

Measures and Procedures

Overall procedure. Participants were recruited in groups of four and engaged in several activities designed to assess collective group performance. Prior to attending the session, individuals completed self-report measures of humility (LOIHS: Limitations-Owning Intellectual Humility Scale -Haggard et al., 2018; CIHS: Comprehensive Intellectual Humility Scale - Krumrei-Mancuso & Rouse, 2016).¹

The group activities consisted of several tasks designed to evaluate group performance. The tasks were a generative task, an intellective task, a judgmental task, a negotiation task, and an executing task. The generative task probed creativity by asking participants (first individually, then collectively, how many uses of a brick they could

¹ LOIHS example item: "I am quick to acknowledge my intellectual limitations"; CIHS example item: "I am willing to revise my important beliefs in the face of new information".

imagine (Fink, Benedek, Grabner, Staudt, & Neubauer, 2007). The intellectual task involved participants providing responses to questions with objective answers (e.g. How many miles long is the Nile river; What is the highest recorded temperature in the United States; Henry, 1993), after which they discussed their answers and ranked the probability of correctness for each group member's answer. The judgmental task concerned the ability of group members to arrive at a collective answer for which there is not an objectively correct answer and each member has different information (Stewart & Stasser, 1998). In the negotiating task, participants attempted to resolve conflicts of interest to open an imaginary joint business venture where each participant is assigned a role of a different vendor with different needs, adapted from a similar approach to assessing negotiating ability (Woolley, Chabris, Pentland, Hashmi, & Malone, 2010). The executing task involved group members collaborating to recreate a picture using Google Sheets, a spreadsheet program that allows users to make changes to the same document in real time (adapted from Woolley et al., 2010).

Immediately following the group tasks, each participant completed a round-robin rating of personality of themselves and other group members, along with metaperception items asking each individual their perception of how the rest of the group sees them. Metaperception items asked each participant to estimate how the group members *on average* rated that person. Items included "In the face of conflicting evidence, is open to changing his/her opinion" and "recognizes the value in opinions that are not his/her own" as well as Big 5 and simple observational questions (e.g. "is a good leader"). The online pre-survey took approximately 20 minutes, and the in-lab group tasks and self-other ratings took around 90 minutes more.

Data Preparation and Analysis

Analysis was performed as described in Study 1.

Hypothesis 4: Self-reported IH will have a significant, moderate, and positive correlation with metaperception items. Self-reported IA will not have a significant correlation with metaperceptions.

Analysis: Bivariate correlations between metaperception items and self-reported IH were computed.

Hypothesis 5: Metaperceptions will alter the relationship between self and other report for IH but not for IA.

Analysis: A semi-partial correlation was computed between self-report IH, other-report IH, and the metaperception items. This took the form $r_{1(2.3)}$ where X_1 is the unmodified other-report, X_2 is residualized self-report, and X_3 is the metaperception score (taken away from X_2).

Hypothesis 6: Self-reported IH will predict meta-accuracy, i.e. the relationship between metaperceptions of the group average and the average of other-report.

Analysis: First, a means of establishing accuracy of metaperceptions was established. The scores of other-ratings of IH were summed within groups and then divided by 4 to obtain a group average. Next, the metaperception of group average was subtracted from the actual group average and the absolute value of the difference was recorded. This new value represents an individual's meta-accuracy. Finally, a regression of self-reported IH predicting meta-accuracy was performed.

Results

Missing Data and Descriptive Statistics

Similar to study 1, missing data in Social Relations Analysis is typically handled by imputing the modal value (Meagher et al., 2015). Modal imputation accounted for 1.2% of data for the self-rated IH variables, and <1% of the metaperceptions variables. Three versions of IH were computed based on published scales. The first, the General Intellectual Humility Scale (Leary et al., 2017) is a unidimensional scale with 6 items ($\alpha = .75$). The second, the Comprehensive Intellectual Humility Scale (Krumrei-Mancuso & Ruse, 2016) is a 4 factor, 22 item scale ($\alpha = .87$). The third is the Limitations-Owning Intellectual Humility Scale (Haggard et al., 2018) which has 12 items and 3 factors ($\alpha = .66$). The metaperception variables were six items asked after round-robin personality ratings following the group activity in study 2. The prompt was “Now, please indicate how you believe your fellow group members answered the following questions about you, on average:” with example items “Questions own opinions, positions, and viewpoints because they could be wrong” and “In the face of conflicting evidence, is open to changing his/her opinions”. All variables were summed to create a total score variable. Descriptive statistics for IH variables and metaperceptions are reported in Table 3.1.

Table 3.1

Descriptive Statistics for Study 2 Variables

| Variable | Mean | SD | Skew | Kurtosis |
|----------|--------|-------|-------|----------|
| GIHS | 32.62 | 4.66 | -.44 | .53 |
| CHIS | 109.49 | 15.98 | -.13 | -.27 |
| LOIHS | 59.17 | 7.74 | .09 | -.09 |
| MP Total | 32.92 | 5.01 | -0.57 | .33 |

Note. $N = 170$ for all IH measures. $N = 115$ for metaperception items.

Hypothesis 4

Zero-order correlations. Zero-order correlations between self-ratings of IH scales and metaperception items are reported in Table 3.2. Overall, all three scales had a moderate, significant relationship with metaperception, with the GIHS scale showing the highest correlation (metaperception items were converted from the GIHS directly). Each scale was also strongly related to the other scales, indicating good conceptual overlap.

Table 3.2

Zero-Order Correlations of Self-report IH Scales, and Metaperceptions in Study 2.

| Variable | 1 | 2 | 3 | 4 |
|--------------------------|-------|-------|-------|---|
| 1. Metaperceptions Total | - | | | |
| 2. GIHS | .27** | - | | |
| 3. CIHS | .26** | .66** | - | |
| 4. LOIHS | .22** | .43** | .67** | - |

Note. $N = 180$ for all IH measures. $N = 120$ for metaperception items. ** $p < .01$, (two-tailed).

Zero-order correlations between metaperceptions and individual facets of the CIHS and LOIHS scales are reported in tables 3.3 and 3.4. Overall, the highest correlation between metaperception and all individual scale facets, including GIHS (one facet), was the Respect for Others' Viewpoints dimension of the CIHS. Other significant correlations were with the Openness to Revising Viewpoints (CHIS), and the Owning Limitations factor (LOIHS).

The hypothesis that self-rated IH would have a significant, moderate, and positive correlation with metaperception items was supported. However, this relationship appears to be driven largely by individual facets of each scale, and not each scale as a whole. Furthermore, each measure of self-reported IH was strongly correlated, indicating convergent validity of IH overall.

Table 3.3

Zero-Order Correlations between Metaperceptions and Facets of CIHS in Study 2.

| Variable | 1 | 2 | 3 | 4 | 5 |
|--|-------|-------|-------|-------|---|
| 1. Metaperceptions Total | - | | | | |
| 2. Independence of Intellect and Ego | .13 | - | | | |
| 3. Openness to Revising One's Viewpoints | .21* | .18* | - | | |
| 4. Respect for Others' Viewpoints | .37** | .28** | .61** | - | |
| 5. Lack of Intellectual Overconfidence | .10 | .39** | .31** | .28** | - |

Note. $N = 170$ for all IH measures. $N = 115$ for metaperception items. * $p < .05$, (two-tailed). ** $p < .01$, (two-tailed).

Table 3.4

Zero-Order Correlations between Metaperceptions and Facets of LOIH in Study 2.

| Variable | 1 | 2 | 3 | 4 |
|--|------|------|-------|---|
| 1. Metaperceptions Total | - | | | |
| 2. Love of Learning | .12 | - | | |
| 3. Appropriate Discomfort with Limitations | .07 | .10 | - | |
| 4. Owns Limitations | .23* | .20* | .20** | - |

Note. $N = 170$ for all IH measures. $N = 115$ for metaperception items. * $p < .05$, (two-tailed).
** $p < .01$, (two-tailed).

Hypothesis 5

Semi-partial Correlations. Semi-partial correlations $r_{1(2,3)}$ were computed where X_1 was the unmodified other-report, X_2 was residualized self-report, and X_3 was the metaperception score (taken away from X_2). The correlation between self and other-rated GIHS is not changed when controlling for metaperceptions, but the association between metaperceptions and other-rated GIHS drops below significance when self-rated GIHS is controlled.

Social Relations Analysis

Social Relations Analysis was used to partial variance of round-robin ratings into Actor (Perceiver), Observer (Target), and Relationship effects (reported in Tables 3.5). Although significant actor effects emerged for several GIHS items, indicating some assimilation, construct IH as a whole did not have significant assimilation or consensus. That is, judgments of IH were not a function of the perceiver or the target.

Table 3.5

Relative Variance Partitioning for GIHS Items in Study 2 (unacquainted participants)

| Variable | Actor | Partner | Relationship† |
|--|-------|---------|---------------|
| GIHS-1 – “Questions their opinions, positions, and viewpoints because they could be wrong” | .24* | .04 | .67 |
| GIHS-2- “Reconsider their opinions when presented with new evidence” | .11 | .01 | .63 |
| GIHS-3- “Recognizes the value in opinions that are different from their own” | .16* | .07 | .63 |
| GIHS-4- “Accepts that their beliefs and attitudes may be wrong” | .17* | .15* | .68 |
| GIHS-5- “In the face of conflicting evidence, are open to changing their opinions” | .18* | .14* | .82 |
| GIHS-6- “Likes finding out information that differs from what they already think is true” | .18* | .04 | .63 |

Note: Data is from round-robin ratings from 28 groups; * $p < .05$, (one-tailed).

† Relationship variance is indistinguishable from error variance at the single item level

For items that did achieve significant actor or partner variance, semi-partial correlations can be performed with the metaperception items. Actor/metaperception correlations address the relationship between how a participant sees others and how the participant thinks others see her/him. Partner/metaperception correlations concern the relationship between how a participant is seen by others and how a participant thinks others see her/him. These correlations are reported in table 3.6. Two items had significant actor and partner variance; GIHS items 4 (“Accepts that their beliefs and attitudes may be wrong”) & 5 (“In the face of conflicting evidence, are open to changing their opinions”). Correlations of Partner variance (i.e. how others tend to see the target) and

metaperception items ranged from .28 to .38, indicating a moderate relationship between consensus on some items of the GIHS and metaperception of those items.

Table 3.6

Semi-partial correlations of Actor and Partner effects and metaperceptions, Study 2 (unacquainted participants)

| ACTOR EFFECT | METAPERCEPTION† OF GIHS ITEMS | | | | | |
|--|-------------------------------|------|------|------|------|------|
| | MP1 | MP2 | MP3 | MP4 | MP5 | MP6 |
| GIHS-1 – “Questions their opinions, positions, and viewpoints because they could be wrong” | .32* | .33* | .20* | .35* | .23* | .41* |
| GIHS-3- “Recognizes the value in opinions that are different from their own” | .30* | .37* | .25* | .57* | .44* | .44* |
| GIHS-4- “Accepts that their beliefs and attitudes may be wrong” | .11 | .30* | .15 | .35* | .28* | .18 |
| GIHS-5- “In the face of conflicting evidence, are open to changing their opinions” | .17 | .39* | .04 | .53* | .25* | .49* |
| GIHS-6- “Likes finding out information that differs from what they already think is true” | .20* | .43* | .07 | .61* | .23* | .38* |
| PARTNER EFFECT | | | | | | |
| GIHS-4 | .28* | .19 | .05 | .11 | .36* | .04 |
| GIHS-5 | .31* | .33* | .18 | .30* | .38* | .33* |

Note: Data is from round-robin ratings from 28 groups; * $p < .05$, (one-tailed).

† Metaperception is of “others in general”

Hypothesis 6

Meta-accuracy. Recording metaperceptions in round-robin data allowed a specific test of accuracy- what one group member perceives others think of her can be compared to what others, in fact, indicated. The degree to which one's metaperceptions of others' judgment corresponds to what others actually believe about that person is called generalized meta-accuracy (e.g. Carlson & Kenny, 2012). In this study, meta-accuracy was computed by taking the absolute difference of a participant's average metaperceptions of IH subtracted from the other-ratings average for the IH items. For this calculation, self, other, and metaperceptions items were the six items from the General Intellectual Humility Scale (Leary et al., 2017). Correlations between meta-accuracy, metaperceptions, other-report, and self-report are shown in Table 3.7. A simple linear regression of self-reported IH predicting meta-accuracy was non-significant ($b = -.01$, $t(109) = .11$, $p > .05$).

Table 3.7

Zero-Order Correlations between Meta-accuracy, Metaperceptions, and self and other-reported IH in Study 2.

| Variable | 1 | 2 | 3 | 4 |
|----------------------------|------|-------|-----|---|
| 1. Self-reported GIHS | - | | | |
| 2. Other-reported GIHS | .20* | - | | |
| 3. Metaperceptions of GIHS | .18 | .16 | - | |
| 4. Meta-accuracy | -.01 | .36** | .04 | - |

Note. $N = 112$ for all IH measures. $N = 109$ for metaperception items. All items are from the GIHS. * $p < .05$, (two-tailed). ** $p < .01$, (two-tailed).

Discussion

Hypothesis 4 was supported. This hypothesis was that self-rated IH would have a moderate, positive association with metaperception items. Indeed, this relationship persisted across three different measures of IH, indicating construct validity. This result is consistent with previous literature reporting widespread associations between self-ratings and metaperceptions (Carlson & Kenny, 2012, Kenny, 1994).

For Hypothesis 5, semi-partial correlations revealed a unique relationship between self and other-reported IH and metaperceptions. Specifically, the correlation between self-reported GIHS and other-reported GIHS is not changed when controlling for metaperceptions, but the association between metaperceptions and other-reported GIHS drops below significance when self-reported GIHS was controlled. This indicates that metaperceptions of IH may be more related to self-reported IH than other-reported IH. Indeed, previous literature has demonstrated that some metaperceptions are basically a function of self-report, meaning that people tend to base their perceptions of other's beliefs about them as something very close to what they think about themselves (Kenny & DePaulo, 1993).

Social relations analysis established that consensus occurs for some items in the GIHS. That is, people agree about the IH of others for certain items (GIHS 4 & 5). Furthermore, variance associated with this consensus, aka the Partner effect, was uniquely associated with metaperceptions and some GIHS items. For example, if people agreed that someone "In the face of conflicting evidence, are open to changing their opinions" (GIHS-5), that person was MORE likely to assume other people saw him/her that way. Unfortunately, this was the only instance of a partner effect being significantly

associated with the corresponding metaperception item, so extrapolations to other items or assumptions of generalizability may not be warranted. More assimilation than consensus was demonstrated for GHIS items, indicating that people higher in IH tended to see others in the same way. For each item on the GIHS for which there was significant assimilation, the associated metaperceptions were significant, positive and moderate. That is, people who generally tended to see others as IH were more likely to think others would also think of them as IH.

No support was found for Hypothesis 6- that self-reported IH would be associated with higher meta-accuracy. In fact, there appears to be no evidence of a relationship between meta-accuracy and self-reported IH or metaperceptions and meta-accuracy. However, there is a moderate positive relationship between other-related IH and meta-accuracy. These results indicate that people are unable to judge how other people see them in that metaperceptions are uncorrelated with meta-accuracy. In addition, how high one is on IH has no bearing on how accurate one is at perceiving how one is seen by others. Interestingly, if other people see you as having high IH, then you are more likely to be correct in understanding how others see you- but you will apparently be unaware of this!

Although previous research indicates we should expect less meta-accuracy for traits that are evaluative (Vazire, 2010), internal (Funder, 2012), and when meeting someone for the first time (Levesque, 1997), these results are still lower than anticipated. IH may be especially evaluative and internal (Funder & West, 1993), or perhaps people have less insight in this trait than others (Vazire & Carlson, 2010). Alternatively, IH may be subject to a degree of self-enhancement (Kwan et al., 2004; John & Robins, 1994;

Meagher et al., 2015) which would lower the reliability of self-report IH measures and weaken links to accurate perception. Finally, IH may suffer from construal effects (Griffin, Dunning & Ross, 1990) which would further attenuate any links between self-report and meta-accuracy.

Study 2 was intended to be an expansion of Study 1, Sample 1. Like the latter, Study 2 asked people meeting in groups for the first time to provide round-robin ratings of their own personality and others in their group. Study 2 expanded on Study, Sample 1 by using specific metaperceptions items and IH items from validated scales.

CHAPTER FOUR

Study 3

Well-Acquainted Participants

Objective

The purpose of this study was to determine the relationship between IH, metaperception, and meta-accuracy with well-acquainted participants. This expands on previous work that shows more consensus for other-ratings of IH amongst classmates (Meagher et al., 2015), and provides a fuller picture of the relationship between IH and meta-accuracy. The examination of meta-accuracy and intellectual humility within previously acquainted participants is important because previous research shows traits that are more internal and evaluative are difficult for perceivers to accurately evaluate (Funder, 2012; Vazire, 2010; Hirschmüller et al., 2013) and reach consensus about (Carlson & Kenny, 2012; Kenny, 1994) unless they have some history of prior interactions (Carlson & Furr, 2009).

Aim 5

Investigate if the relationships between metaperception items and IH self/other reports seen in study 1 and 2 extends to well-acquainted individuals.

Hypothesis 7: Self-reported IH will have a significant, moderate, and positive correlation with metaperceptions.

Aim 6

Determine if IH metaperceptions vary with how well participants know each other.

Hypothesis 8: For groups in which consensus regarding IH is reached, the relationship of self-reported IH with metaperception items will be stronger for participants with more acquaintance.

Aim 7

Determine whether self-report IH is associated with higher meta-accuracy for well acquainted participants.

Hypothesis 9: Self-reported IH will alter the relationship between metaperceptions of the group average and the average of other-report.

Aim 8

Determine if the relationship of IH and meta-accuracy changes with level of acquaintance.

Hypothesis 10: The association between metaperceptions, self-reported IH, and other-report will be stronger for well-acquainted relative to unacquainted people.

Participants

We recruited 74 (60 females) undergraduate students (28 groups of 4 each) from courses in the business school where students are randomly assigned into groups that collaborate on projects throughout the semester. Data was collected in 2018. Participants were given a \$10 gift card in exchange for participating. Age ranged from 20-23, with an average age around 20. Participants were 80% White, 9% Asian, 8% Hispanic and 4% African-American.

Measures and Procedures

Participants completed an anonymous online survey of the items taken in Study 2. This included self-report measures of humility (LOIH; CIHS) along with items designed to assess metaperception and meta-accuracy. Items included: “Other people think I focus on my intellectual weaknesses too much” and “Other people understand that I am open to revising my views in the face of new information” and 5 metaperception items about Big 5 personality items. Meta-accuracy items involved guessing how each individual group members rated that person. Items included “In the face of conflicting evidence, is open to changing his/her opinion” and “recognizes the value in opinions that are not his/her own” as well as Big 5 and simple observational questions (e.g. “is a good leader”). The online survey took approximately 15 minutes.

Data preparation and analysis

Analysis was performed as described in Study 1.

Hypothesis 7: Self-reported IH will have a significant, moderate, and positive correlation with metaperceptions. Self-reported IA will not have a significant correlation with metaperceptions.

Analysis: Bivariate correlations were computed.

Hypothesis 8: Metaperceptions will be more highly correlated with other-report for self-reported IH than IA.

Analysis: A semi-partial correlation was computed between self-report IH, other-report IH, and the metaperception items. This took the form $r_{1(2.3)}$ where X_1 is the unmodified other-report, X_2 is residualized self-report, and X_3 is the metaperception score (taken away from X_2).

Hypothesis 9: Self-reported IH will alter the relationship between metaperceptions of the group average and the average of other-report.

Analysis: First, a means of establishing accuracy of metaperceptions was established. The scores of other-ratings of IH were summed and then divided by 4 to obtain a group average. Next, the metaperception of group average was subtracted from the actual group average and the absolute value of the difference will be recorded. This new value represents an individual's meta-accuracy.

Finally, a regression of self-reported IH predicting meta-accuracy was performed.

Hypothesis 10: The association between metaperceptions, self-reported IH, and other-report will be stronger for well-acquainted relative to unacquainted people. Analysis: A Fisher r-to-z transformation was used to compare the correlation coefficients.

Results

Missing Data and Descriptive Statistics

As in studies 1 and 2, missing data in Social Relations Analysis were handled by imputing the modal value (Kenny, 1998). Modal imputation accounted for <1% of data for the self-rated IH variables, and 5.2% of the metaperceptions variables. The three IH scales used in study 2 were again computed for analysis. For an N of 70, alpha for GIHS was .66, for CIHS was .62, and for LOIH was .62. The metaperception variables were six items (again based on the GIHS items) asked after round-robin personality ratings following a semester of working on a group project. The prompt was "Now, think about this person's impression of you- please indicate how you believe this same person answered the following questions about you:" with example items "Questions own opinions, positions, and viewpoints because they could be wrong" and "In the face of

conflicting evidence, is open to changing his/her opinions”. All IH variables were summed to create a total score variable. For metaperceptions, the average metaperception for the 3 non-self group members was calculated. Descriptive statistics for IH variables and metaperceptions are reported in Table 4.1.

Table 4.1

Descriptive Statistics for Study 3 Variables

| Variable | Mean | SD | Skew | Kurtosis |
|------------------------|-------|------|------|----------|
| Metaperception Average | 31.01 | 4.33 | .23 | -.26 |
| GHIS | 32.16 | 4.12 | -.14 | -.03 |
| CIHS | 97.35 | 9.58 | .17 | -.10 |
| LOIHS | 60.36 | 7.44 | -.19 | .14 |

Note. N = 70

Hypothesis 7

Zero-order correlations. Zero-order correlations between self-ratings of IH scales and metaperception items are reported in Table 4.2. Overall, only LOIH had a significant relationship with metaperception. Aside from statistical significance, all three IH scales showed a moderate, positive relationship with metaperception, confirming the original hypothesis for the third time.

The correlations between IH measures changed from study 2. The GIHS had a similar but smaller magnitude of relationship to the other scales. LOIHS and CIHS were negatively correlated, a sharp departure from study 2.

Table 4.2

Zero-Order Correlations between IH Scales and Metaperceptions in Study 3.

| Variable | 1 | 2 | 3 | 4 |
|----------------------------|------|-------|------|---|
| 1. Metaperceptions Average | - | | | |
| 2. GIHS | .28* | - | | |
| 3. CIHS | .14 | .36** | - | |
| 4. LOIHS | .28* | .28* | -.20 | - |

Note. $N = 70$, * $p < .05$, (two-tailed), ** $p < .01$, (two-tailed).

As in study 2, correlations between individual facets of the LOIHS and CIHS and metaperceptions were calculated (see tables 4.3 and 4.4). For LOIHS, only the Love of Learning facet had a significant relationship with metaperception. For CIHS, only the Openness to Revising One's Viewpoint factor was significant.

Table 4.3

Zero-Order Correlations between Metaperceptions and Facets of CIHS in Study 3.

| Variable | 1 | 2 | 3 | 4 | 5 |
|--|------|-------|-------|-------|---|
| 1. Metaperceptions Average | - | | | | |
| 2. Independence of Intellect and Ego | -.03 | - | | | |
| 3. Openness to Revising One's Viewpoints | .26* | -.19 | - | | |
| 4. Respect for Others' Viewpoints | .16 | -.16 | .37** | - | |
| 5. Lack of Intellectual Overconfidence | -.07 | .36** | -.24* | -.25† | - |

Note. $N = 70$, * $p < .05$, (two-tailed), ** $p < .01$, (two-tailed), † $p = .066$

Table 4.4

Zero-Order Correlations between Metaperceptions and Facets of LOIH in Study 3.

| Variable | 1 | 2 | 3 | 4 |
|--|------|------|-----|---|
| 1. Metaperceptions Total | - | | | |
| 2. Love of Learning | .26* | - | | |
| 3. Appropriate Discomfort with Limitations | .10 | -.03 | - | |
| 4. Owns Limitations | .23† | .07 | .19 | - |

Note. $N = 72$ for all IH measures. $N = 64$ for metaperception items, * $p < .05$, (two-tailed).

** $p < .01$, (two-tailed), † $p = .060$

Hypothesis 8

Semi-partial correlations. Semi-partial correlations $r_{1(2,3)}$ were computed where X_1 was the unmodified other-report, X_2 was residualized self-report, and X_3 was the metaperception score (taken away from X_2). The correlation between self-reported GIHS and other-reported GIHS drops below significance when controlling for metaperceptions, but the association between metaperceptions and other-reported GIHS remains significant ($r = .24$) when self-reported GIHS is controlled.

Social Relations Analysis

Social Relations Analysis was used to partial variance of round-robin ratings into Actor (Perceiver), Observer (Target), and Relationship effects (reported in Table 4.5). Other than GIHS item 1 (“Questions their opinions, positions, and viewpoints because they could be wrong”), construct IH as a whole did not have significant assimilation or consensus. That is, judgments of IH were not a function of the perceiver or the target.

Table 4.5

Relative Variance Partitioning for Items and Constructs (well-acquainted participants)

| Variable | Actor | Partner | Relationship† |
|--|-------|---------|---------------|
| GIHS-1 – “Questions their opinions, positions, and viewpoints because they could be wrong” | .36* | .18* | .45 |
| GIHS-2- “Reconsider their opinions when presented with new evidence” | .00 | .07 | .93 |
| GIHS-3- “Recognizes the value in opinions that are different from their own” | .09 | .22 | .69 |
| GIHS-4- “Accepts that their beliefs and attitudes may be wrong” | .17 | .18 | .65 |
| GIHS-5- “In the face of conflicting evidence, are open to changing their opinions” | .46 | .14 | .39 |
| GIHS-6- “Likes finding out information that differs from what they already think is true” | .09 | .34 | .57 |

Note: Data is from round-robin ratings from 19 groups; * $p < .05$, (one-tailed).

† Relationship variance is indistinguishable from error variance at the single item level

GIHS item 1 did have significant Actor and Partner variance, so semi-partial correlations were calculated with the metaperception items (Table 4.6). Actor/metaperception correlations address the relationship between how a participant sees others and how the participant thinks others see her/him. Partner/metaperception correlations concern the relationship between how a participant is seen by others and how a participant thinks others see her/him. Only item 1 had significant actor and/or partner variance; and the correlations of this metaperception item with partner and actor variance revealed only a significant correlation with the Actor variance ($r(64) = .52, p < .05$). No significant association between Partner effects and metaperception scores were discovered.

Table 4.6

*Correlations of Actor and Partner Effects and Metaperceptions
(well-acquainted participants)*

| ACTOR EFFECT | METAPERCEPTION AVERAGE† |
|--|----------------------------|
| GIHS-1 – “Questions their opinions, positions, and viewpoints because they could be wrong” | .52* |
| PARTNER EFFECT | |
| GIHS-1 – “Questions their opinions, positions, and viewpoints because they could be wrong” | .09 |

Note: Data is from round-robin ratings from 19 groups; * $p < .05$, (one-tailed).

† Metaperception is specific to individual group members

Hypothesis 9

Meta-accuracy. Recording metaperceptions in round-robin data allowed a specific test of accuracy- what one group member perceives others think of her can be compared to what others indicated. The degree to which one’s metaperceptions of others’ judgment corresponds to what others actually believe about that person is called meta-accuracy (e.g. Carlson & Kenny, 2012). In this study, meta-accuracy was computed by taking the absolute difference of a participant’s average metaperceptions of IH subtracted from the other-ratings average for the IH items. For this calculation, self, other, and metaperceptions items were the six items from the Duke General Intellectual Humility Scale (Leary et al., 2017). Correlations between meta-accuracy, metaperceptions, other-report, and self-report are shown in Table 4.7. A simple linear regression of self-reported IH predicting meta-accuracy was non-significant ($b = -.05, t(64) = -.39, p > .05$).

Table 4.7

*Zero-Order Correlations between Meta-Accuracy,
Metaperceptions, and Self and Other-reported IH in Study 3*

| Variable | 1 | 2 | 3 | 4 |
|--------------------------|------|------|-----|---|
| 1. Self-reported IH | - | | | |
| 2. Other-reported IH | .25* | - | | |
| 3. Metaperceptions of IH | .28* | .31* | - | |
| 4. Meta-accuracy | -.05 | -.01 | .03 | - |

Note. $N = 72$ for all IH measures. $N = 64$ for metaperception items. All items are from the GIHS.
* $p < .05$, (two-tailed).

Hypothesis 10

Comparison of unacquainted and well-acquainted IH ratings and metaperceptions.

To test the hypothesis that the association between metaperceptions and self-reported IH would be stronger for well-acquainted relative to unacquainted people, Fisher r -to- z transformations were calculated so the correlation coefficients could be compared. For study 1, no correlations between self-rated IH and metaperception items were significant, so correlation coefficients could not be compared. However, for Studies 2 and 3, significant correlations between IH scales and metaperception items were found. No difference between correlations of self-reported IH, other-reported IH scale and metaperception items was significant between unacquainted and well-acquainted participants (all z scores < 1.03). For meta-accuracy, there was a significant difference ($z(182) = -2.36, p < .01$) between the correlation of other-reported IH and meta-accuracy at zero acquaintance ($r(112) = .36, p < .01$) and well-acquainted ($r(70) =$

-.01, $p > .10$). Level of familiarity does not appear to significantly impact the relationship between self-rated IH, other-rated IH, and metaperception.

Discussion

Study 3 was intended to be an expansion of Study 1, Sample 2. Like the latter, Study 3 asked Business School students who had worked in groups throughout a semester to provide round-robin ratings of their own personality and others in their group. Study 3 expanded on Study 1, Sample 2 by using specific metaperception items and IH items from validated scales.

Hypothesis 7, that well-acquainted individuals would demonstrate positive, moderate relationships between self-reported IH and metaperceptions, was partially supported. The correlation of self-reported GIHS with metaperceptions was not significant, but the relationship between LOIHS and metaperceptions was significant. However, no scale showed more than a small association (Cohen, 1988). These associations are less than in study 2, contrary to widely reported results that these associations tend to increase with acquaintance (Carlson & Kenny, 2012; Kenny, 1994, Biesanz et al., 2007). In addition, the correlations between scales is different from Study 2. E.g., in study 2 the association between LOIHS and CIHS is .68, while in study 3 that relationship is -.20(ns). This may indicate that these 2 populations are reacting to the scales in different ways, or that some difference in experimental administration between studies introduced error.

For Hypothesis 8, semi-partial correlations revealed a unique relationship between self and other-reported IH and metaperceptions. Specifically, the correlation between self-reported GIHS and other-reported GIHS drops below significance when controlling

for metaperceptions, but the association between metaperceptions and other-reported GIHS remains significant ($r=.24$) when self-reported GIHS is controlled. These results are the opposite of Study 2 findings. Following the logic applied to the results in Study 2, this may indicate that metaperceptions are shifting from being more related to self-report and are now more related to other-report. This new relationship is consistent with people having more information about the other to draw on, such that there is more interaction, experience, and memories associated with increasing acquaintance (Biesanz et al., 2007). Such a shift is in keeping with the literature on well-acquainted individuals (Carlson & Kenny, 2012; Funder, 2012; Vazire, 2010).

Additionally, Social relations analysis partially supported Hypothesis 8 in that consensus occurred for one item in the GIHS. That is, people agree about the IH of others for the statement “Questions their opinions, positions, and viewpoints because they could be wrong” (GIHS 1). However, this partner effect was not significantly associated with metaperceptions, so extrapolations to other items or assumptions of generalizability may not be warranted. More assimilation than consensus was demonstrated for GHIS items, indicating that people higher in IH tended to see others in the same way. Item 1 on the GIHS had significant assimilation, and the associated metaperception was significant, positive and strong. That is, people who generally tended to see others as IH were more likely to think others would also think of them as IH.

Hypothesis 9, that self-reported IH would be associated with higher meta-accuracy, was not supported. Indeed, no relationship between meta-accuracy and any other variable was detected. The relationship discovered in Study 2 between other-reported IH and meta-accuracy was not replicated. This is somewhat surprising given that

well-acquainted others should have even more information to make evaluations of their targets (Biesanz et al., 2007; Funder, 2012; Vazire, 2010). However, associations between self-report, other-report, and metaperceptions were all markedly higher than in Study 2, indicating some effect of acquaintance garnered over the course of working in a group for a semester. One small methodological difference between study 2 and 3 is worth mentioning: the prompt to collect metaperceptions varied between the studies. In study 2, participants were asked “Now, please indicate how you believe your fellow group members answered the following questions about you, on average:”, while in Study 3 the prompt was “Now, think about this person's impression of you- please indicate how you believe this same person answered the following questions about you:”. In both studies, the items were the same- all six items from the GIHS. Perhaps thinking about other’s perceptions “on average” elicited a different response than thinking about a specific relationship. Furthermore, being well-acquainted with someone might introduce bias on the basis of attitude- separating a judgment of intellectual humility from how much one likes another may be difficult (Carlson & Kenny, 2012; Kwan et al., 2004; Meagher et al, 2015).

Finally, Hypothesis 10 was not supported. There appears to be little support in these studies that relationships between self/other reported IH and metaperceptions change based on level of acquaintance. In fact, the only significant difference between zero-acquaintance and well-acquainted samples, the association between other-report and meta-accuracy, was not in the predicted direction. This finding is strange, given many other studies with results to the contrary (Carlson & Kenny 2012; Biesanz et al., 2007; Funder, 2012; John & Robbins, 1993; Kenny, 1994; Vazire, 2010).

CHAPTER FIVE

General Discussion

Summary of Results

The main prediction of this project was that self-reported IH would be associated with higher generalized meta-accuracy. This prediction was not supported by the results. The reported findings indicate that those who claim to have IH do not have any special insight into how their IH is perceived by others *on average*, regardless of whether those others know the target or just met for the first time. Self-reported IH was positively associated with metaperceptions, as predicted. In addition, the hypothesis that metaperceptions altered the relationship between self and other-report was supported. The results of each hypothesis from Studies 1-3 are summarized in Table 5.1.

Table 5.1

Summary of Results by Specific Hypothesis

| Specific Hypothesis | Supported? |
|---|------------|
| Study 1 | |
| 1. <i>Self-reported IH will have a significant, moderate, and positive correlation with metaperceptions</i> | Partially |
| 2. <i>Hypothesis 2: Metaperceptions will alter the relationship between self and other report for IH</i> | Partially |
| 3. <i>The relationship of self-reported IH with metaperception items will be stronger for participants with more acquaintance</i> | No |
| Study 2 | |
| 4. <i>Self-reported IH will have a significant, moderate, and positive correlation with metaperception items</i> | Yes |
| 5. <i>Metaperceptions will alter the relationship between self and other report for IH</i> | Yes |
| 6. <i>Self-reported IH will predict meta-accuracy, i.e. the relationship between metaperceptions of the group average and the average of other-report</i> | No |
| Study 3 | |
| 7. <i>Self-reported IH will have a significant, moderate, and positive correlation with metaperceptions</i> | Partially |
| 8. <i>Self-reported IH will alter the relationship between metaperceptions of the group average and the average of other-report</i> | Yes |
| 9. <i>Self-reported IH will predict meta-accuracy, i.e. the relationship between metaperceptions of the group average and the average of other-report</i> | No |
| 10. <i>The association between metaperceptions, self-reported IH, and other-report will be stronger for well-acquainted relative to unacquainted people</i> | Partially |

Theoretical Considerations

Nisbett and Wilson (1977) famously pointed out that people tend not to be very good at introspection, especially about higher-order cognitive processes. Nevertheless, they argue that accuracy is possible, and specifically accuracy about judgments of personality are higher when there is widespread cultural agreement about factors that clearly indicate the trait, e.g., intelligence. This insight is especially relevant to our examination of the relationship between IH, metaperception, and meta-accuracy- no such agreement about IH exists, even among experts (Church & Barrett, 2016; Lynch, Johnson, Sheff, & Gunn, 2016; Tanesini, 2018; Whitcomb et al., 2015).

One primary source of disagreement within the philosophical and theoretical literature concerning IH is whether accurate beliefs about one's knowledge is fundamental. For example, Tagney (2009) states that a key element of humility includes "...an accurate assessment of one's abilities...". Church and Barrett (2016) propose a definition of intellectual humility is "...accurately tracking what one could non-culpably take to be the positive epistemic status of one's own beliefs". Hazlett (2012) maintains that IH involves "accurate" epistemic beliefs. However, other theorists argue that a focus on accuracy is misleading. Whitcomb and colleagues (2015) argue that accurate estimation of one's capabilities is neither necessary nor sufficient for IH, rather, the proper conception of IH is grounded in the owning of one's intellectual limitations- having proper motivations and emotions about gaps or flaws in one's knowledge or beliefs. Tanesini (2018) contends that IH is not a trait but rather a cluster of attitudes and motivations about one's intellectual capacities and that a focus on the accuracy of beliefs

has several flaws. However, the reported work assumed IH operates like a typical trait commonly studied in personality psychology.

This study empirically addresses this debate by asking if IH people accurately understand how they are perceived by others. By asking people to infer what other's think (form a metaperception), and then comparing that estimation with what other group members actually reported, a degree of meta-accuracy can be calculated. The studies reported here do not show any relationship between IH and meta-accuracy, lending support to theoretical accounts of IH that do not rely on accuracy (Whitcomb et al., 2015; Tanesini, 2018). Furthermore, the finding that IH is not empirically linked with meta-accuracy bolsters empirical work grounded in such theoretical accounts, e.g., the LOIHS (Haggard et al., 2018). Finally, this work strongly indicates that “owning one’s intellectual limitations” (Whitcomb et al., 2015) does not extend to accurate perceptions about how the individual is seen by others. Awareness of one’s IH reputation is unrelated to self-reported IH in these studies.

Implications for the Psychology of IH

Previous work has demonstrated that people can reach consensus on who is IH and who is intellectually arrogant (Meagher et al, 2015, Meagher et al., in press). Reaching consensus is important because it indicates that people can perceive IH in others and is not plagued by the flaws that degrade the validity of self-report such as self-enhancement bias (Kenny 1994; Kwan et al., 2004). Indeed, other-report is sometimes more accurate than self-report, especially for evaluative traits such as creativity, intelligence and humor (Vazire & Carlson, 2011).

However, traits that contain evaluative and internal components typically take more time to achieve consensus (Biesanz et al., 2006; Carlson & Kenny, 2012; Funder, 1995), and IH is no exception- Meagher and collaborators (2015) found that consensus occurred for well-acquainted individuals but not people meeting for the first time. The reported results are an extension of this work (study 1 uses the same data with metaperception items added). Studies 2 and 3 run somewhat contrary to previous findings that level of acquaintance affects meta-accuracy: individuals who worked in groups throughout a semester seemed to have no more accurate metaperceptions than those who just met. Moreover, the only study variable moderately linked with meta-accuracy was other-reports, indicating that people seem not to be able to tell that they have accurate metaperceptions, and that meta-accuracy isn't related to self-reported IH.

One potential reason for the discrepancy between IH self-reports and other-reports (and the concomitant lack of meta-accuracy) is that different aspects of personality may be salient depending on perspective. Meagher and collaborators (2019), found that self-reported IH is related to self and peer-reported openness to experience, while other-reported IH is more associated with self and peer-observed agreeableness. This is likely due to the cues available to each perceiver; self-perceivers simply have more access to internal states while others must rely on physical manifestations of (in this case) relatively hidden traits (c.f. Funder, 1995; Hirschmüller et al., 2013).

It is important to note that the findings discussed herein are only relevant in terms of generalized meta-accuracy, and not dyadic meta-accuracy. Individuals may have some insight in how they are *uniquely* viewed by others- further research should test this. Indeed, finding support for high IH individuals having dyadic meta-accuracy may be

consistent with these findings in that generalized meta-accuracy conflates all unique relationships and thus may be “masking” some significant dyadic-relationship variance with an average of all relationships.

Other research also indicates that IH and accuracy of knowledge do not necessarily go hand in hand. Kurinec, Leman, and Rowatt (2019) recorded self-reported IH prior to administering a generalized knowledge test and the Wonderlic™ intelligence test. Participants also rated how well they thought they would perform on these tests relative to others, which was compared with actual performance. Overclaiming one’s abilities was not related to established measures of IH (e.g. LOIHS). Those results indicate that IH does not mitigate the Dunning-Kruger effect (Dunning, 2011), potentially corroborating the reported results that IH is not necessarily related to accurate beliefs about one’s intellectual abilities.

Research on other, related traits further adds to the view that IH need not be associated with meta-accuracy. Carlson, Vazire, and Oltmanns (2011) showed that people who scored higher on the Narcissistic Personality Inventory (NPI; Raskin & Hall, 1979) demonstrated meta-accuracy about first impressions, and then were able to change their metaperceptions of well-acquainted others to remain meta-accurate. Furthermore, they reported that narcissists were willing to self-report being high in arrogance and knew that others eventually also saw them as arrogant. It may not be fair to say that narcissists are aware of their limitations per se, as they may believe that they only seem arrogant and just happen to be smarter than most people (Vazire & Funder, 2006). However, evidence that narcissists can be meta-accurate in their perceptions of others is a conceptual concern for the link between IH and meta-accuracy, because the presence of trait Narcissism is

often used to establish divergent validity with IH (e.g. Haggard et al., 2018). Thus, if both narcissists and those high in IH were able to have accurate metaperceptions, then that would not be particularly informing about the nature of IH.

Another potential avenue to explore IH and meta-accuracy might be in specific domains of knowledge. Hoyle, Davisson, Diebels, and Leary (2016) developed a scale designed to measure IH in particular beliefs, thoughts, and categories- the Specific Intellectual Humility Scale. The researchers found that for certain opinions, measured IH is a function of dispositional IH, evidence for the particular viewpoint, and how extreme the idea is. Certain areas of thought may be more susceptible to displaying IH, and potentially people provide more cues of IH during interactions regarding some topics, but not others.

The reported findings further support the philosophical position that IH is best thought of as a constellation of attitudes towards one's knowledge (Tanesini, 2018), rather than a dispositional attribute that is more or less fixed for each individual. In other words, the conceptual trait-based approach may be less valid as compared with a virtue-based approach. Kurenic and collaborators (2019) findings lend credence to this line of thought by demonstrating that self-reported IH is not associated with universal errors of cognition (e.g. the Dunning-Kruger effect), precisely because IH doesn't provide it's possessor with special insight into cognitive limitations. Perhaps, in this scenario, higher IH would result in more attention paid to cognitive limitations AFTER the individual was informed of his or her performance on an intelligence measure. This would be more in keeping with IH's conception as a virtue rather than a trait- a virtue is tied to motivations and may be developed over time (Roberts & Wood, 2007; Whitcomb et al., 2015).

The inability of self-reported IH to be associated with meta-accuracy over time may be explained by other findings in the meta-accuracy research. For example, Shectman and Kenny (1994) found that meta-accuracy didn't improve even after direct and extensive feedback after discussion on controversial topics, even in a culture where such feedback is likely to be common and valued. Furthermore, Oltmanns et al., (2005) demonstrated that meta-accuracy is possible for traits with high evaluativeness and low visibility, but the context of group interaction- during basic military training- is much richer with opportunities and cues for person perception than most psychology labs are able to create. In addition, Carlson, Full, and Vazire (2010) showed that people can "calibrate" their meta-accuracy depending on the specific type of relationship with their perceiver (e.g. college friends vs. parents), and that confidence in metaperceptions is related to meta-accuracy. Finally, Carlson and Furr (2013) showed that the quality of the relationship moderated meta-accuracy much more than did simple length of acquaintance.

Perhaps IH is truly unassociated with meta-accuracy, or IH may be highly sensitive to the specific manipulation being used- perhaps the methods used in Study 2 are simply more effective at eliciting IH cues than those in Studies 1 or 3. Alternatively, the type of relationship between participants in these studies may not generalize to other relationships. Researchers interested in developing IH or other virtues may wish to be discerning in the procedures that they develop.

Meta-accuracy and Person Perception

Overall, this finding that IH is not associated with meta-accuracy can influence the person-perception literature in a number of ways. Carlson and Kenny's (2012) review

of meta-accuracy notes that meta-accuracy is typically lower for evaluative, internal traits and at first acquaintance. For these results, that meta-accuracy only had a relationship with another variable of interest (other-reports) at zero-acquaintance, is indeed surprising. However, in Carlson and Kenny's meta-analysis, one variable also demonstrated a substantial drop in meta-accuracy as acquaintance increased: "exaggerates skills", although this variable was included in many fewer studies than other more commonly examined variables. One potential area for future examinations of meta-accuracy to explore would be to add more variables outside the typical Big Five.

Researchers interested in meta-accuracy have often wondered who a good judge of personality might be, and specifically if there were any individual differences underlying this process. Indeed, Funder includes this in his RAM model (1995). According to work done by Elsaadawy and Carlson (2018), consistent meta-accuracy occurs for some perceivers across targets and traits, lending support to what they term "the Good Judge" model. However, judges did not demonstrate consistency across situations, indicating that context still plays a large role.

Apart from who is a good judge, characteristics of who makes a good target for person perception has been found. Namely, targets for which high consensus occurred typically are well-adjusted, have higher social status, and are well socialized (Human & Biesanz, 2011). This seems to be because well-adjusted individuals provide new acquaintances with greater information regarding their less observable traits, enhancing others' knowledge and thus distinctive self-other agreement (Human & Biesanz, 2013). Interestingly, these same (well-adjusted) targets seem less aware of how they are perceived by others, potentially because they expect others to perceive them as they

perceive themselves (Mosch & Borkenau, 2016), or because they engage in higher stereotypicality in their metaperceptions (Biesanz, 2010). Other research has indicated individuals who are especially eager to learn how others perceive them often display an optimistic bias that those judgments will be positive (Duan & Xie, 2018). Future work on IH and meta-accuracy should carefully monitor variables that may also be affecting person perception.

Because good judgment of personality depends on good cues (Funder, 1995; Hirschmüller et al., 2013), research is continuing to discover more potential sources of information that leads to higher meta-accuracy. For instance, Borkenau, Mosch and Tandler (2016) were able to find high meta-accuracy for traits evaluated solely through text, demonstrating that more internal traits such as openness to experience can also exhibit high meta-accuracy given helpful corresponding information. As more is discovered about which particular cues IH people provide (e.g. Meagher et al., 2019), more understanding of the ways in which IH affects metaperceptual processes will be possible.

APPENDICES

APPENDIX A

Table A.1

*Relative Variance Partitioning for Items and Constructs in Study 1, Part 1
(unacquainted participants)*

| Variable | Actor | Partner | Relationship† |
|--|-------|---------|---------------|
| IH1 – “Open to criticism of ideas” | .32* | .01 | .67 |
| IH3 – “Knows what s/he is not good at” | .31* | .07 | .63 |
| IH4 – “Can learn from others” | .32* | .06 | .63 |
| IH5 – “Is intellectually humble” | .32* | .00 | .68 |
| Arrg – “Arrogant” | .18 | .00 | .82 |
| Clsm – “Close minded” | .37* | .00 | .63 |
| IH2 – “Believes own ideas superior to other’s ideas” | .37* | .00 | .63 |

Note: Data is from round-robin ratings from 36 groups; * $p < .05$, (one-tailed).

† Relationship variance is indistinguishable from error variance at the single item level

Table A.2

*Relative Variance Partitioning for Items and Constructs in Study2, Part 1
(acquainted participants)*

| Variable | Actor | Partner | Relationship† |
|--|-------|---------|---------------|
| IH1 – “Open to criticism of ideas” | .19* | .23* | .58 |
| IH3 – “Knows what s/he is not good at” | .34* | .01 | .66 |
| IH4 – “Can learn from others” | .31* | .16* | .53 |
| IH5 – “Is intellectually humble” | .26* | .32* | .43 |
| Arrg – “Arrogant” | .23* | .33* | .44 |
| Clsm – “Close minded” | .26* | .20* | .55 |
| IH2 – “Believes own ideas superior to other’s ideas” | .17* | .31* | .52 |
| GIHS-1 – “Questions their opinions, positions, and viewpoints because they could be wrong” | .28* | .10* | .62 |
| GIHS-2- “Reconsider their opinions when presented with new evidence” | .27* | .12 | .61 |
| GIHS-3- “Recognizes the value in opinions that are different from their own” | .26* | .11* | .64 |
| GIHS-4- “Accepts that their beliefs and attitudes may be wrong” | .29* | .15* | .56 |
| GIHS-5- “In the face of conflicting evidence, are open to changing their opinions” | .33* | .11* | .56 |
| GIHS-6- “Likes finding out information that differs from what they already think is true” | .45* | .13* | .43 |

Note: Data is from round-robin ratings from 24 groups; * $p < .05$, (one-tailed).

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