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2017

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This paper was published as: Krumrei-Mancuso, E. J. (2017). Intellectual humility and prosocial values: Direct and mediated effects. *The Journal of Positive Psychology, 12*, 13-28. <https://doi.org/10.1080/17439760.2016.1167938>

Intellectual humility and prosocial values: Direct and mediated effects

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This research was supported by a grant from the Fuller Theological Seminary/Thrive Center in concert with the John Templeton Foundation (IH 102). The opinions expressed in this publication are those of the author and do not necessarily reflect the views of the Fuller Thrive Center or the John Templeton Foundation.

Intellectual humility and prosocial values: Direct and mediated effects

Research has established links between humility and prosocial outcomes. This study examined, with self-report data, whether humility with regard to one's knowledge would be predictive of prosocial values. Consistent with hypotheses, intellectual humility was associated with higher levels of empathy, gratitude, altruism, benevolence, and universalism, and lower levels of power seeking. Analyses supported empathy and gratitude as mediators between intellectual humility and prosocial values. These findings leave open the possibility that intellectual humility may be a precursor to links previously established between empathy and gratitude and prosocial outcomes. Characteristics of intellectual humility such as recognizing one's cognitive limits, having a non-defensive stance towards one's beliefs, and respecting others' viewpoints may put one in a unique position to experience empathy and gratitude, and by extension, a host of prosocial values. Future research would be required to examine whether intellectual humility is a possible point of intervention for promoting positive social interactions.

Keywords: intellectual humility; open-mindedness; empathy; gratitude; altruism; mediation

Intellectual humility and prosocial values: Direct and mediated effects

An early conceptualization of the field of positive psychology involved a focus on three pillars, being (1) positive experience, encompassing positive emotions and subjective well-being (2) positive traits, encompassing character strengths and virtues, and (3) positive institutions, encompassing civic virtues and good citizenship (Seligman & Csikszentmihalyi, 2000). A critique of the field of positive psychology has been that this third pillar has not received enough focus, and in particular, that not enough emphasis has been placed on the virtues that result in positive societies and communities (Diener, 2009). Thus, the discipline would benefit from additional research that is more socially informed (Becker & Marecek, 2008). The current study offers this by examining people's inclinations to benefit others or society as a whole, known as prosocial tendencies. Prosocial values are relevant to interpersonal functioning and crucial to the health of societies; therefore, it is important to understand the characteristics associated with prosocial values.

There are many situational and individual factors that promote prosociality. These factors include cultural norms, emotional arousal, and individual characteristics or traits. One approach has been to study humility as a determinant of prosociality (Hilbig, Thielmann, Hepp, Klein, & Zettler, 2015). Humility can be conceptualized in a number of ways, including as a virtue, a developmental achievement, or an individual trait. Humility has been defined as acknowledging one's limitations and having an accurate perception of oneself, one's abilities, and one's accomplishments (Tangney, 2000). Definitions have also included having low self-focus (Tangney, 2000) and being other-oriented rather than selfish (e.g., Davis, Worthington, & Hook, 2010). In experimental research, humility has predicted positive, other-oriented behavior that is altruistic, generous, and helpful (Exline & Hill, 2012; LaBouff, Rowatt, Johnson, Tsang, &

Willerton, 2012). In addition, honesty-humility as a personality factor has been associated with making decisions that are non-exploitative of others (Hilbig, Thielmann, Hepp, et al., 2015). This finding is not simply the result of a fairness norm, but rather the result of a benevolence orientation toward others (Hilbig, Thielmann, Wüthrich, & Zettler, 2015).

Overall, there is a robust empirical foundation for the connection between humility and prosocial values and behaviors. This link cannot be explained by other variables such as the big five personality traits, self-esteem, entitlement, religiosity, gratitude, or social desirability (Exline & Hill, 2012). Unfortunately, it is unknown exactly what about humility is associated with prosocial outcomes. Exline and Hill (2012) proposed the theory that humble individuals are able to look past themselves and their own self-interest to recognize the needs and appreciate the value of others, and for these reasons, are more open to giving to others (Exline & Hill, 2012). Thus, it may be that a cognitive component of humility, in the sense of awareness and recognition of oneself in relation to others, is foundational to the humility-prosociality link. The goal of the current study was to examine a particular form of humility pertinent to cognitions: intellectual humility. More specifically, this study examined whether intellectual humility might relate to prosocial values by initiating perspective-taking, empathetic concern, and gratitude for others.

Intellectual humility

Intellectual humility is a particular form of humility that has become of recent interest in the social sciences. The general construct of humility can be conceptualized as having an accurate perception of one's characteristics and limitations and lacking self-focus (Tangney, 2000). Whereas general humility is based on perceptions of self, intellectual humility relates specifically to perceptions of one's knowledge, beliefs, opinions, and ideas. Just as humility

involves being able to accurately see oneself as an imperfect being, intellectual humility involves accepting that one's cognitive faculties and knowledge are limited and imperfect. Many consider humility to be a virtue. The term virtue often brings morality to mind, however, Baehr (2011) has emphasized that virtues can have an intellectual dimension, rather than a moral dimension. As such, intellectual humility has been classified as an intellectual or epistemic virtue that promotes being a good knower (e.g., Elder & Paul, 2012; Stafford, 2010).

A number of descriptions of intellectual humility have been developed, such as an Aristotelian mean between the two vices of grandiosity and diminishment of one's ability (Zagzebski, 1996), the pursuit of knowledge and truth rather than a concern with social status within one's intellectual community (Roberts & Wood, 2007), an awareness of one's epistemic limits and the fallibility of one's knowledge (e.g., Baltes & Smith, 2008; Hopkin, Hoyle, & Toner, 2014; Jones, 2012; Mcelroy et al., 2014; Ryan, 2012), the tendency to form beliefs on the basis of one's epistemic position, rather than on the basis of oneself (Gregg & Mahadevan, 2014; Jones, 2012), and an openness to new ideas (Gruppen, 2014; Mcelroy et al., 2014) and to changing one's viewpoint when warranted (Hopkin, Hoyle, & Toner, 2014).

The current study made use of a definition of intellectual humility developed on the basis of these theories, in which intellectual humility is a non-threatening awareness of one's intellectual fallibility (Krumrei-Mancuso & Rouse, in press). Such a non-threatening awareness of one's intellectual fallibility offers a healthy independence between one's intellect and ego, meaning that a person will not feel threatened by intellectual disagreements, will not be overconfident about his or her knowledge, will respect the viewpoints of others, and will be open to revising his or her viewpoints when warranted.

Intellectual humility and prosocial values

Although intellectual humility has primarily been conceptualized based on individual beliefs and attitudes, the construct is theoretically relevant to social attitudes and values such as altruism, benevolence, universalism, and less power seeking. Altruism can be defined as being motivated to act out of concern for benefiting another person rather than oneself (Bar-Tal, 1985). Similarly, benevolence and universalism involve placing value on the welfare of others, with benevolence being specific to valuing the welfare of those with whom one interacts in daily life and universalism involving a broader focus on the welfare of all people and even nature (Schwartz, 1992). Power seeking poses an antithesis to these prosocial motivations, and involves a desire to have dominance and control over others (Schwartz, 1992). Intellectual humility may be associated with these prosocial values in numerous plausible ways.

First, given that each of the traits and values in question are similar in that they can be considered desirable, if not virtuous, it may be that individuals who possess some of these positive characteristics are more likely to also possess the other positive characteristics. Thus, intellectual humility may relate to prosocial values in a fashion akin the unity of virtue thesis, a tenet of ancient Greek ethics that all virtues are one and the same, or at least so intertwined that a person cannot have one virtue without possessing them all¹ (Penner, 1973). Borrowing this ideology, it may be the case that one cannot be truly intellectually humble without also being altruistic and benevolent toward others. Thus, it may be that these positive characteristics tend to co-exist within individuals, without any causal relation between them.

However, it is also possible that intellectual humility and prosocial variables not only co-exist, but that they mutually influence one another in a fashion akin to Fredrickson's (2001)

¹ However, note that some ancient Greek philosophers, such as Aristotle, did not consider humility itself to be a virtue.

broaden-and-build theory. That is, these positive traits and values may reciprocally influence one another in a positive spiral, with greater intellectual humility resulting in more prosocial values and prosocial values resulting in greater intellectual humility. As each causes increases in the other, the effects accumulate and compound, resulting in benefits that exceed the sum of their parts.

Alternative to a direct causal relationship between intellectual humility and prosociality, is the possibility that there are other underlying mechanisms connecting these variables. That is, intellectual humility may promote prosocial attitudes and values specifically through other related constructs such as empathy and gratitude. Intellectual humility, involving humility regarding one's beliefs and respect for others' beliefs, is essential for understanding previously unconsidered perspectives, including the perspectives of others. Recognizing one's cognitive limits may put one in a greater position to recognize the mental perspective of another person, thereby increasing empathy. Empathy involves both cognitive and affective components (Hoffman, 1981) and can be described as an emotional reaction that results from cognitive perspective taking (Eisenberg, Wentzel, & Harris, 1998). Both emotional and cognitive empathy have been related to awareness of others' experiences and being able to see from the perspective of another (Sheldon, 1996), suggesting that being humble with regard to one's own perspective may be a precursor to being willing and able to understand the perspective of another, thereby promoting empathetic concern.

Similarly, intellectual humility may be a precursor to experiencing gratitude. Gratitude, broadly defined, is a state of appreciation or thankfulness for what is valuable and meaningful to oneself (Sansone & Sansone, 2010), or more narrowly can be defined as a positive emotion resulting from the perception that one has benefitted from the actions of another (McCullough,

Kimeldorf, & Cohen, 2008). Qualities of intellectual humility, such as having a non-defensive stance toward one's beliefs, openness to revising one's viewpoint, and respect for others' viewpoints, are qualities that are likely to promote genuine curiosity about and acceptance of others. Thereby, intellectual humility should result in people not merely tolerating others, but valuing them for their otherness, leading to greater gratitude for them. Thus, the intellectually humble stance of respecting others' viewpoints may put people in a unique position to recognize and be grateful for others and the contributions they offer. In addition, intellectual humility is foundational to being fair-minded and critical in one's thinking (Elder & Paul, 2012), qualities that are likely to promote universalism, recognition of the value and importance of all people and nature.

Theoretically, increased empathy and gratitude should be key to having genuine respect for and acceptance of others, and therefore, lead to greater concern for the wellbeing of others. In this way, empathy and gratitude should be associated with placing greater value on being altruistic and benevolent toward others rather than being domineering. Indeed, a great deal of empirical evidence supports that empathy and gratitude are associated with prosocial behaviors and values such as altruism, benevolence, universalism, and less power seeking. Strong evidence, including behavioral and neurocognitive data, supports that empathetic arousal elicits altruistic decisions and helping behavior, even when it comes at a cost to the helper (FeldmanHall, Dalgleish, Evans, & Mobbs, 2015; Stocks, Lishner, & Decker, 2009).

Correlational data have also shown that both emotional empathy and perspective-taking empathy are associated with valuing benevolence and universalism and with devaluing power, indicating that empathy aligns with motives to promote the welfare of other people and values such as helpfulness, honesty, loyalty, and concern for others (Myyry & Helkama, 2001; Silver,

Helkama, Lönqvist, & Verkasalo, 2008). Similarly, experimental evidence has supported that gratitude also results in altruism, even at cost to the helper (Bartlett & DeSteno, 2006) and increases incidences of offering emotional support to others (Emmons & McCullough, 2003). Furthermore, gratitude elicits not only helping behavior toward one's benefactors to whom one is grateful, but also toward strangers (Bartlett & DeSteno, 2006). Thus, incorporating empirical knowledge about empathy and gratitude into a theoretical mediation model of intellectual humility showcases the possibility that intellectual humility may promote empathy and gratitude, thereby resulting in greater altruism, benevolence, universalism, and less power seeking.

Previous research on intellectual humility and social variables

To date, empirical research on intellectual humility is extremely limited; a recent literature search resulted in only six empirical articles. Of these studies, four examined links between intellectual humility and social variables. Among the earliest studies, Grossmann et al. (2010) developed an interview coding system to assess wisdom in reasoning about social dilemmas and conflicts, and included recognizing the limits of one's knowledge as a key aspect of their definition of wise social reasoning. Subsequently, they found that intellectual humility can be induced by asking individuals to reason about personally meaningful issues from a psychologically distanced perspective, meaning that participants were asked to imagine events unfolding as if they were a distant observer (Kross & Grossmann, 2012). Their results indicated that reasoning from a distanced rather than an immersed perspective about a personally relevant political situation, was not only associated with a greater likelihood of acknowledging the limits of one's knowledge, but also a greater likelihood of signing up to join a bipartisan political discussion group, which the researchers interpreted as a prosocial tendency. In addition, they found that acknowledging the limits of one's knowledge and dialectical reasoning were factors

that mediated the effect of distanced as opposed to immersed reasoning on greater openness to diverse viewpoints.

Building on this theme, in validating a self-report measure of intellectual humility, Krumrei-Mancuso and Rouse (in press) found that intellectual humility predicted open-minded thinking and tolerance toward diverse people and ideas, even after controlling social desirability tendencies and demographic factors. Thus, by promoting open-mindedness and tolerance, intellectual humility is likely to positively influence social interactions, particularly in pluralistic societies.

Hopkin, Hoyle, and Toner (2014) examined intellectual humility specifically within the religious domain. Their study included an examination of how religious intellectual humility related to participants reactions to the authors of op-ed newspaper articles arguing for or against a core religious belief. Although no main effects were discovered, a significant interaction emerged. Specifically, participants with strong religious beliefs who were low in religious IH reacted more strongly than their high humility counterparts to the opinion articles, regardless of whether the opinions supported or contradicted their own beliefs. Their reactions were more positive for arguments they agreed with and more negative for those they disagreed with. Study participants with strong religious beliefs who scored low on the religious intellectual humility domain of respect for others' beliefs provided uniquely low ratings of the intelligence, competence, and knowledge of the article author. This offers an initial indication that levels of intellectual humility might influence the way individuals perceive, and by extension respond to, others.

Contributing further knowledge on the role of intellectual humility in social situations, McElroy et al. (2014) examined intellectual humility from the social oil hypothesis, that a key

function of intellectual humility is to smooth out relational problems, in the same way that oil prevents an engine from overheating. They examined participants' perceptions of relationship partners' intellectual humility, and found that perceiving a relationship partner as being high in intellectual humility was associated with experiencing greater trust in the relationship. In addition, they found that participants who perceived greater intellectual humility in a religious leader who had perpetrated a major betrayal, were less avoidant and more benevolent toward the religious leader after the betrayal, supporting their hypothesis that perceiving others as being high in IH helps repair social bonds.

Although empirical research specific to intellectual humility is very limited, the studies conducted to date are promising in that they suggest that intellectual humility contributes to tolerance for diverse people and perspectives, favorable interpretations of others, and the ability to repair damaged social bonds. Clearly, there is a need for additional research about how intellectual humility relates to social variables.

The present study

On the theoretical and empirical bases discussed, the current study sought to extend previous research about intellectual humility and social variables by examining whether intellectual humility would be predictive of particular prosocial values. It was hypothesized that intellectual humility would be associated with higher levels of altruism, benevolence, and universalism (emphasizing the welfare of all people and nature), and lower levels of power seeking.

In addition, it was hypothesized that empathy and gratitude may be vehicles by which intellectual humility would be associated with the prosocial values of altruism, benevolence, universalism, and lack of power seeking. Specifically, it was hypothesized that intellectual

humility would be associated with perspective-taking empathy, which would result in empathetic concern, which would be associated with greater prosociality. Similarly, it was hypothesized that intellectual humility would be associated with gratitude, which would result in more prosocial values.

Finally, it was hypothesized that connections between the study variables would not simply be an artifact of participants placing themselves in a positive light with regard to the socially desirable constructs being assessed. Rather, it was hypothesized that the study findings would persist even when controlling social desirability tendencies.

Given that the current study is based on cross-sectional data, significant bivariate associations between intellectual humility and prosocial values would be consistent with either the unity of virtue theory, in which intellectual humility and prosocial values co-exist without causal relations between them, or the broaden-and-build theory, in which intellectual humility and prosocial values mutually increase one another. In addition, significant mediation analyses would be consistent with, but not indicative of, causal mediations being present. Thus, this study provides some empirical insight into whether the data are consistent or inconsistent with each of the three theories proposed, thereby offering guidance as to which of these theories it would be fruitful to explore further in future longitudinal or experimental research.

Method

Participants

A U.S. national sample of 314 adults participated via Amazon Mechanical Turk (Mturk). The sample was 54.5% female and 41.4% male and ages ranged from 18 to 74 years ($M = 34.36$, $SD = 11.72$). This indicates a slightly higher proportion of females than the U.S. population as a whole (51.0% female and 49% male, U.S. Census Bureau, 2013). In addition, the median age of

the current sample at 31.0 years was lower than the median age of the U.S. population at 37.3 years (U.S. Census Bureau, 2013). Comparing the current sample to 2013 data of the U.S. Census Bureau, 72.9% identified as Caucasian (compared to 73.7% of U.S. population), 9.2% identified as Asian (compared to 5.1% of U.S. population), 6.4% identified as Black or African American (compared to 12.6% of U.S. population), 3.2% identified as multi-racial (compared to 3.0% of U.S. population), and less than 1% identified as American Indian (compared to .8% of U.S. population). In addition, 6.7% of the sample identified as Hispanic or Latino (compared to 17.1% of U.S. population). Thus, with regard to race and ethnicity, the current sample overrepresented Asian participants and underrepresented Black or African American participants and Hispanic or Latino participants. In addition, the current sample had more college graduates than the U.S. population. Comparing the current sample to 2014 data of the U.S. Census Bureau in terms of highest level of education completed, 30.9% of the sample indicated high school (compared to 29.6% of U.S. population), 54.1% indicated college (compared to 18.9% of U.S. population) and 11.1% indicated graduate school (compared to 10.4% of U.S. population). Average annual income ranged from \$0 to \$150,000. Mean income of \$43,338 ($SD = 27,802$) was slightly lower than national mean personal income of \$45,761 (U.S. Census Bureau, 2014). In terms of relationship status, 46.2% of the sample reported being single, 30.6% reported being married, 13.1% reported cohabiting, 6.4% reported being divorced, and less than 1% reported being widowed. Finally, the current study under-sampled religious individuals. Compared to national data from the Pew Research Center (2015), 43.6% of the sample identified as Christian (compared to 70.6% of U.S. population), 29.0% identified as agnostic or having no religion (compared to 16.1% of U.S. population), 14.6% identified as Atheist (compared to 3.1% of U.S. population), less than 2% identified within each of the following categories: Jewish, Buddhist,

Hindu, or spiritual but not religious (compared to 3.3% of U.S. population), and 2.5% of the sample identified with some other religion (compared to 1.8% of U.S. population).

Measures

Intellectual humility

The 22-item Comprehensive Intellectual Humility Scale (CIHS) was used to assess intellectual humility (Krumrei-Mancuso & Rouse, in press). The items assessed cognitions, emotions, and behaviors. The measure represents a higher-order factor consisting of four subscales of: (1) independence of intellect and ego (e.g.: “When someone contradicts my most important beliefs, it feels like a personal attack”, reverse scored), (2) openness to revising one’s viewpoint (e.g.: “I’m willing to change my mind once it’s made up about an important topic”), (3) respect for others’ viewpoints (e.g.: “I welcome different ways of thinking about important topics”), and (4) lack of intellectual overconfidence (e.g.: “When I am really confident in a belief, there is very little chance that belief is wrong,” reverse scored). The measure has demonstrated divergent validity from general humility, as well as constructs such as self-regard, self-confidence, and social conformity (Krumrei-Mancuso & Rouse, in press). Items were rated on a 5-point Likert scale, ranging from *strongly disagree* to *strongly agree*. Scores can range from 22 to 110, with higher scores indicating greater levels of intellectual humility. Internal consistency in the current sample was .88.

Empathy

Two 7-item subscales of the Interpersonal Reactivity Inventory (Davis, 1983) were used to assess cognitive and emotional aspects of empathy. The perspective taking subscale assessed ability to adopt the perspectives of other people (e.g.: “I try to look at everybody's side of a disagreement before I make a decision.”) and the empathetic concern subscale assessed feelings

of warmth and compassion for others (e.g.: “I often have tender, concerned feelings for people less fortunate than me”). Items were rated on a 5-point scale, ranging from *does not describe me well* to *describes me very well*. Scores can range from 7 to 35 for each scale, with higher scores indicating greater levels of empathy. Internal consistency in the current sample was .84 for perspective taking and .87 for empathetic concern.

Gratitude

The 6-item Grateful Disposition Scale (McCullough, Emmons, & Tsang, 2002) was used to assess thankfulness and appreciation for people and life situations (e.g.: “I am grateful to a wide variety of people”). Items were rated on a 7-point Likert scale, ranging from *strongly disagree* to *strongly agree*. Scores can range from 6 to 42 with higher scores indicating more gratefulness. Internal consistency in the current sample was .89.

Altruism

The 4-item Altruistic Values scale (Smith, 2006) was used to assess altruistic beliefs and importance placed on being altruistic. This includes beliefs that people should help one another (e.g.: “People should be willing to help others who are less fortunate”) and beliefs that personally helping others is important (e.g.: “Personally assisting people in trouble is very important to me”). Items were rated on a 5-point Likert scale, ranging from *strongly disagree* to *strongly agree*. Scores can range from 4 to 20 with higher scores indicating greater importance placed on altruism. Internal consistency in the current sample was .72.

Benevolence, universalism, and power

Three subscales of the Schwartz Value Survey (Schwartz, 1992) were used to assess prosocial/antisocial concerns. The 5-item Benevolence subscale was used to measure concern for the welfare of others in everyday interaction and the extent to which one preserves and enhances

the welfare of people with whom one is in personal contact (e.g. valuing being “loyal”). The 8-item Universalism subscale was used to measure a construct broader than benevolence that involves understanding, appreciating, and protecting the welfare of all people and of nature (e.g. valuing “social justice”). The 4-item Power subscale was used to measure the extent to which one emphasizes attaining or preserving a dominant position within one’s social system, including one’s need for social status, prestige, and dominance and control over people and resources (e.g. valuing “social power”). These scales have been validated among 40 samples in 20 countries. Participants were asked to rate values according to how important each was as a guiding principle in life on a 9-point Likert scale, with anchors representing opposition to one’s values or a range from *not at all important* to *supreme importance*. Scores can range from -5 to 35 for Benevolence, -8 to 56 for Universalism, and -4 to 28 for Power, with higher scale scores indicating greater levels of each construct. Internal consistency in the current sample was .82 for Benevolence, .86 for Universalism, and .80 for Power.

Social desirability

The 13-item Social Desirability Scale, Form C (Crowne & Marlow, 1960), was used to assess the tendency to misrepresent oneself to appear to behave in ways deemed favorably by others. Response options consisted of true or false. Scores can range from 0 to 13, with higher scores indicating a greater desire to appear to behave in socially favorable ways. Internal consistency in the current sample was .80.

Demographic characteristics

Demographic data were gathered to provide descriptive information about the sample and to assess for the need to control demographic characteristics in the analyses. Items included participants’ gender, age, race, education, income, relationship status, and religion.

General humility

The honesty-humility subscale of the HEXACO Personality Inventory (Ashton & Lee, 2008) is one of the most frequently used self-report measures of humility (Davis et al., 2010). The current study employed four items of this subscale to assess general humility (e.g.: “I think that I am entitled to more respect than the average person is”). Internal consistency of the items was .47. Due to the low internal consistency, this four-item index was not used in subsequent analyses.

Procedure

Data were collected via online surveys after receiving institutional review board approval and participants’ informed consent. Data were deleted listwise for four participants who completed the survey unreasonably fast (less than an average of 2.5 seconds per question) or responded incorrectly to a factual question imbedded in the survey, indicating a lack of attention. Prior to analyses, items were reverse coded where necessary, so that higher values indicated greater levels of each construct assessed. Analyses were conducted using SPSS Statistics 22.0. Mediation analyses made use of Process Macro 2.13 for SPSS.

Results

Descriptive information, bivariate associations, and control variables

Table 1 displays descriptive information about the variables of interest and Pearson correlations among them. As expected, intellectual humility was associated with higher levels of empathy, gratitude, altruism, benevolence, and universalism, and lower levels of power.

No significant correlations emerged between intellectual humility and gender, race, education, income, relationship status, or religion. Age and social desirability were both correlated with intellectual humility and many of the outcome variables; therefore, both were

controlled in subsequent analyses.

Data were collected on general humility with the intention of controlling this construct within the analyses. However, due to the low internal consistency of the general humility items within the current sample ($\alpha = .47$), the general humility index was removed from the analyses. It can be noted that controlling for general humility resulted in the same pattern of results as not controlling for general humility. General humility accounted for some of the variance in the links between intellectual humility and prosocial outcomes. However, it did not subsume the role of intellectual humility, as controlling for general humility did not change the significance or the pattern of the results presented.

[Table 1 near here]

Direct effects between intellectual humility and prosocial outcomes

Seven hierarchical regression analyses were conducted to examine whether intellectual humility was predictive of levels of prosocial outcome variables after controlling age and social desirability (See Table 2). The results indicated that intellectual humility was associated with more perspective-taking empathy ($\Delta R^2 = .34, p < .001$), empathetic concern ($\Delta R^2 = .05, p < .001$), gratitude ($\Delta R^2 = .06, p < .001$), altruism ($\Delta R^2 = .06, p < .001$), valuing benevolence ($\Delta R^2 = .05, p < .001$), valuing universalism ($\Delta R^2 = .05, p < .001$), and less valuing of power ($\Delta R^2 = .08, p < .001$). Thus, intellectual humility accounted for between 5% and 34% of the variance in these prosocial variables beyond the variance attributable to age and social desirability.

[Table 2 near here]

Indirect effects between intellectual humility and prosocial outcomes

It was hypothesized that empathy and gratitude may mediate links between intellectual humility and the prosocial outcomes of altruism, benevolence, universalism, and less power

seeking. In addition, it was hypothesized that perspective-taking empathy and empathetic concern may mediate links between intellectual humility and the prosocial outcome variables in serial rather than in parallel, with perspective-taking empathy exerting effects on empathetic concern. All analyses controlled age and social desirability and made use of 1,000 bootstrap samples. Significance testing was conducted with 95% confidence intervals that corrected for biases in the sampling distribution (Hayes, 2013). The index of mediation, or the completely standardized indirect effect, was used as a measure of effect size, indicating the size of the indirect effect relative to variation in prosociality and intellectual humility not accounted for by age and social desirability. Values of 0.14, 0.36, and 0.51 were considered to represent small, medium, and large effects, respectively (Cheung, 2009; Cohen, 1988).

First, four multiple mediator models were examined with perspective-taking empathy and empathetic concern entered as serial mediators of the relationship between intellectual humility and prosocial outcome measures. Figure 1 displays that perspective-taking empathy and empathetic concern partially mediated links between intellectual humility and altruism, with greater intellectual humility being associated with greater perspective-taking empathy; perspective-taking empathy being associated with greater empathetic concern; and empathetic concern being associated with greater altruism. Figure 2 displays that perspective-taking empathy and empathetic concern fully mediated links between intellectual humility and benevolence, with greater intellectual humility being associated with greater perspective-taking empathy; perspective-taking empathy being associated with greater empathetic concern; and both perspective-taking empathy and empathetic concern being associated with greater benevolence. Figure 3 displays that perspective-taking empathy and empathetic concern fully mediated links between intellectual humility and universalism, with greater intellectual humility being

associated with greater perspective-taking empathy; perspective-taking empathy being associated with greater empathetic concern; and both perspective-taking empathy and empathetic concern being associated with greater universalism. Finally, Figure 4 displays that perspective-taking empathy and empathetic concern partially mediated links between intellectual humility and power, with greater intellectual humility being associated with greater perspective-taking empathy; perspective-taking empathy being associated with greater empathetic concern; and empathetic concern being associated with less desire for power over others. The effect sizes for these four models were in the small range.

[Figures 1-4 near here]

Next, four mediator models were examined with gratitude as a mediator of the relationship between intellectual humility and prosocial outcome measures. Figure 5 displays that gratitude partially mediated links between intellectual humility and altruism. Intellectual humility was associated with more gratitude, which was, in turn, associated with more altruism. Figure 6 displays that gratitude fully mediated links between intellectual humility and benevolence. Again, intellectual humility was associated with more gratitude, which was associated with more benevolence. Figure 7 displays that gratitude partially mediated links between intellectual humility and universalism. Again, intellectual humility was associated with more gratitude, which was associated with more universalism. The effect sizes for these three mediation models were small. Finally, gratitude did not significantly mediate links between intellectual humility and power, with an indirect effect of .00 (.01) [-.02, .02].

[Figures 5-7 near here]

Contrasting indirect effects between intellectual humility and prosocial outcomes

The mediation models examined were selected on the basis of theory. However, given the

number of mediators and possible combinations of mediators, pairwise comparisons were conducted to evaluate empirically which models would exhibit the strongest indirect effects (Preacher & Hayes, 2008). The pairwise comparisons must be interpreted with some caution, given that the mediators were correlated with one another. Each of the following models were compared to one another: (1) perspective-taking empathy mediating links between intellectual humility and outcomes, (2) perspective-taking empathy acting on empathetic concern, as serial mediators between intellectual humility and outcomes, (3) perspective-taking empathy acting on gratitude, as serial mediators between intellectual humility and outcomes, (4) perspective-taking empathy, empathetic concern, and gratitude acting as serial mediators in the order listed of links between intellectual humility and outcomes, (5) empathetic concern mediating links between intellectual humility and outcomes, (6) empathetic concern acting on gratitude, as serial mediators between intellectual humility and outcomes, and (7) gratitude mediating links between intellectual humility and outcomes.

For the outcome measure of altruism, the second model of perspective-taking empathy and empathetic concern as serial mediators of links between intellectual humility and altruism, exhibited significantly larger indirect effect ($B = .05$) than all other models (B 's ranging from $-.01$ to $.00$). No other significant differences were observed between the indirect effects. For the outcome measure of benevolence, the second model of perspective-taking empathy and empathetic concern as serial mediators of links between intellectual humility and benevolence, again exhibited significantly larger indirect effects ($B = .05$) than all other models (B 's ranging from $-.01$ to $.02$). In addition, the individual mediation models of perspective-taking empathy and gratitude as mediators (models 1 and 7) exhibited larger effects ($B = .05$ and $.02$ respectively) than empathetic concern individual or in serial with gratitude as mediators (models

5 and 6, $B = -.01$ and $-.00$ respectively). Finally, model 4 of perspective-taking empathy, empathetic concern, and gratitude acting in serial mediation exhibited larger indirect effects ($B = .01$) than model 6 of empathetic concern and gratitude mediating in serial ($B = -.00$). For the outcome measure of universalism, the first and second models of (1) perspective-taking empathy mediating links between intellectual humility and universalism and (2) perspective-taking empathy and empathetic concern as serial mediators of links between intellectual humility and universalism, both exhibited larger indirect effects ($B = .11$ and $.07$, respectively) than all other models (B 's ranging from $-.02$ to $.01$), but were not significantly different from one another in the size of the indirect effect. For the outcome measure of power, the second model of perspective-taking empathy and empathetic concern as serial mediators of links between intellectual humility and power exhibited larger indirect effects ($B = -.04$) than all other models (B 's ranging from $-.00$ to $.01$), except that it was not significantly different from model 1 ($B = .01$). No other significant differences in indirect effects were observed. Thus, across all outcome measures, the multiple mediator model with perspective-taking empathy and empathetic concern as serial mediators (model 2) was consistently strong with regard to the mediated effects compared to the other models.

Discussion

Prosocial tendencies are essential for healthy functioning of societies, yet there are large individual differences in prosociality (Hilbig, Thielmann, Hepp, et al., 2015). Deeper understanding of what accounts for differences in prosocial values and behaviors is needed. Previous research has indicated that humility is associated with prosocial characteristics (e.g., Exline & Hill, 2012). The current study extended this topic to intellectual humility, a relatively new construct in the field of psychology that holds particular promise for the study of positive

social interactions. Thus far, limited research has demonstrated that intellectual humility is associated with greater open-mindedness, tolerance, and reparation of damaged social bonds (Kross & Grossmann, 2012; Krumrei-Mancuso and Rouse, in press; McElroy et al., 2014). The current study expands this to a broader range of prosocial values and attitudes with cognitive, emotional, and behavioral emphases. In the current study, intellectual humility consistently emerged as a predictor of self-reported prosocial outcomes, even after accounting for social desirability and demographic factors. The findings indicated that intellectual humility was predictive of more perspective taking, empathetic concern, gratitude, altruism, benevolence, universalism, and less power seeking. These results are amenable to both a unity of virtue theory, in which intellectual humility and prosocial values co-exist without necessarily having causal relations between them, and a broaden-and-build theory, in which intellectual humility and prosocial values mutually increase one another.

Furthermore, mediation analyses were also significant, offering a third possibility for the processes by which intellectual humility may be related to prosocial outcomes. The results supported the hypothesized mediation models in which perspective-taking empathy acted through empathetic concern to mediate links between intellectual humility and greater altruism, benevolence, and universalism, and less power seeking, as well as mediation models in which gratitude mediated links between intellectual humility and greater altruism, benevolence, and universalism. In a comparison of seven different mediation models, perspective-taking empathy and empathetic concern acting in serial offered the largest indirect effect. Although causality cannot be established, the findings allow for the possibility that intellectual humility could be a precursor to the previously established links of empathy and gratitude to prosocial outcomes. This is consistent with findings that at the core of cognitively advanced forms of empathy lies the

ability of a person to access another's subjective state (Preston & de Waal, 2002). Qualities of intellectual humility, such as avoiding intellectual overconfidence and respecting others' viewpoints, may be crucial components of the cognitive processes involved in mirroring the subjective state of another person. This may lead to understanding of the viewpoints of others, and thereby, perhaps, also lead to having greater concern and compassion for others. Similarly, a nondefensive attitude about one's perspective and openness to other viewpoints may be crucial components in the cognitive processes involved in truly valuing and experiencing gratitude for others. Thus, intellectual humility might provide the cognitive environment required for experiencing both empathy and gratitude toward others.

Although many positive emotions have been associated with prosocial behavior, research has shown that empathy and gratitude may be unique in that they elicit altruism even when costly to the person acting (e.g., Bartlett & DeSteno, 2006; FeldmanHall et al., 2015; Stocks et al., 2009; Tsang, 2006). Furthermore, gratitude is a stronger predictor of altruism than other positive emotions and feelings of obligation or indebtedness (see McCullough et al., 2008 for review). Thus, if intellectual humility indeed promotes empathy and gratitude, this would be an avenue by which intellectual humility would contribute to a broad range of prosocial attitudes and values. However, it is important to note that empathy and gratitude did not account for the complete relationships between intellectual humility and all outcome variables in this study. Some models were consistent with partial mediation, indicating that intellectual humility is directly associated with greater altruism and less power seeking, even beyond the potential mediated effects of empathy and it is directly associated with greater altruism and universalism, even beyond the potential mediated effects of gratitude.

As noted, the current study is not able to confirm theories related to causality among the

variables. However, the findings are consistent with a number of theories, and indicate that it would therefore be worthwhile to study intellectual humility longitudinally and experimentally to confirm whether it is, indeed, a potential point of intervention for promoting positive social interactions. The field of positive psychology has seen the development of many gratitude interventions that result in greater subjective wellbeing and happiness (e.g., Gander, Proyer, Ruch, & Wyss, 2013; Kerr, O'Donovan, & Pepping, 2015; Watkins, Uher, & Pichinevskiy, 2015). In addition, compassion interventions have been shown to increase positive affect, decrease negative affect, and increase empathy (see Hofmann, Grossman, & Hinton, 2011 for review). It would be worthwhile to examine whether intellectual humility interventions may provide an additional avenue for promoting empathy, gratitude, altruism, and other prosocial outcomes, thereby leading to positive social interactions. Existing interventions that target the emotional components of gratitude and empathy must contend with individual differences in emotional arousability and ability to regulate and cope with emotions, which influence participants' responses to the interventions (e.g., Eisenberg et al., 1998). Therefore, intellectual humility interventions that target cognitive rather than emotional experiences may provide a valuable supplement to gratitude and compassion interventions for reaching a greater diversity of individuals. Of course, research is needed to examine the validity of intellectual humility interventions, and their relation to positive individual and social outcomes.

Limitations

A primary limitation of the current study is that it relied strictly on self-report methodology, rather than a combination of assessment procedures, including behavioral, implicit, and other-report methodologies. Scores on most measures employed in this study displayed small associations with social desirability tendencies. Nevertheless, the findings

persisted when controlling for social desirability.

Second, the current sample was not nationally representative with regard to several demographic factors. Most notably, the current Mturk sample consisted of fewer Black or African American participants and Hispanic or Latino participants and more Asian participants and was less religious than the general U.S. population. Although the lack of representativeness is a limitation of the current study, previous research has shown that Mturk samples surpass student samples with regard to diversity and that Mturk samples provide data comparable in quality to student samples (Buhrmester, Kwang, & Gosling, 2011) and display comparable behavior to laboratory participants (Paolacci, Chandler, & Ipeirotis, 2010).

Third, only four items were included to assess general humility, and given the low internal consistency of the items, they were not included as a scale in the results presented. For the sake of comparison, including general humility scores on the basis of the four items accounted for some of the variance in the outcome measures, but did not change the direction or significance of any of the results presented. Fortunately, the scale used to assess intellectual humility has previously demonstrated discriminant validity from general humility (Krumrei-Mancuso & Rouse, in press). Nevertheless, future research would benefit from controlling general humility on the basis of a reliable assessment of the construct.

Finally, none of the analyses presented are able to support causal relations between the variables. Specific consideration should be given to the fact that a mediator is a variable that is in a causal sequence between two other variables (MacKinnon, Fairchild, & Fritz, 2007). However, in the current cross-sectional data, the causal order among intellectual humility, empathy/gratitude, and prosocial values is unknown. The mediation models in this study are consistent with the idea that intellectual humility is relevant in allowing a person to experience

empathy and gratitude, and that empathy and gratitude help explain the process by which intellectual humility leads to positive outcomes such as altruism, benevolence, universalism, and less valuing of power. However, alternative models, such as the unity of virtue theory or the broaden-and-build theory are equally plausible. This is illustrated by previous experimental research in which humility has been shown to predict gratitude, but gratitude has also been shown to elicit humility (Kruse, Chancellor, Ruberton, & Lyubomirsky, 2014). The current data are not able to speak to the accuracy of the assumptions regarding causal order, causal direction, or the potential role of unmeasured variables. These assumptions may be difficult to test or even untestable in most situations, therefore, MacKinnon, Fairchild, and Fritz (2007) have suggested incorporating additional information from theory, randomized experimental studies, and qualitative methods to bolster tentative conclusion that a mediation relation exists. Thus, more work remains to be done, including research in which intellectual humility is randomly manipulated and studies that are longitudinal in nature, to examine whether there is evidence for intellectual humility preceding prosocial values and to examine which effects are stable across time. For the time being, the results of the presented mediation analyses should be considered descriptive in nature, not necessarily reflecting a true underlying causal mediation relation.

Concluding remark

The current data suggest that intellectual humility is associated with a host of positive social outcomes, including greater empathy, gratitude, altruism, benevolence, universalism, and less power seeking. Directionality and causality among these variables remains to be established, yet the data leave open the possibility that intellectual humility may be an explanatory variable in understanding prosociality. If so, this study offers one possible model for *why* individuals high in intellectual humility are inclined towards prosocial attitudes, in that empathy and gratitude may

be driving forces in the links between intellectual humility and prosocial values.

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Table 1.

Descriptive Information and Correlations Among Study Variables

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Intellectual Humility	-									
2. Perspective-Taking Empathy	.66***	-								
3. Empathetic Concern	.30***	.49***	-							
4. Gratitude	.29***	.31***	.29***	-						
5. Altruism	.28***	.33***	.64***	.27***	-					
6. Benevolence	.24***	.39***	.48***	.40***	.26***	-				
7. Universalism	.22***	.32***	.39***	.18**	.39***	.54***	-			
8. Power	-.25***	-.21**	-.31***	-.08	-.35***	.04	-.05	-		
9. Social Desirability	.25***	.35***	.23***	.15**	-.13*	.23***	.01	-.10	-	
10. Age	-.25***	.11*	.22***	.14*	.23***	.09	.10	-.32***	.17**	-
Number of Items	22	7	7	6	4	5	8	4	13	1
Possible Range	22-110	7-35	7-35	6-42	4-20	-5-35	-8-56	-4-28	0-13	> 18
Actual Range	43-108	13-35	8-35	12-42	7-20	7-35	8-56	-4-27	0-13	18-74
Mean	80.70	26.92	27.61	34.10	14.67	26.59	39.36	8.96	6.00	34.36
Standard Deviation	10.63	4.80	5.29	6.46	3.04	5.77	9.64	6.53	3.29	11.72
α	.88	.84	.87	.89	.89	.82	.86	.80	.80	N/A

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

Table 2.

Hierarchical Regression Models of Intellectual Humility as a Predictor of Prosocial Emotions and Values

		Perspective-Taking Empathy		
		<i>B (SE)</i>	β	ΔR^2
Step 1				.127***
	Age	.02 (.02)	.06	
	Social Desirability	.50 (.08)	.34***	
Step 2				.343***
	Intellectual Humility	.27 (.02)	.61***	
Total R²				.470
		Empathetic Concern		
		<i>B (SE)</i>	β	ΔR^2
Step 1				.088***
	Age	.09 (.03)	.19**	
	Social Desirability	.32 (.09)	.20***	
Step 2				.050***
	Intellectual Humility	.12 (.03)	.23***	
Total R²				.137
		Gratitude		
		<i>B (SE)</i>	β	ΔR^2
Step 1				.037**
	Age	.07 (.03)	.12*	
	Social Desirability	.26 (.11)	.13*	
Step 2				.064***
	Intellectual Humility	.16 (.03)	.26***	
Total R²				.101
		Altruism		
		<i>B (SE)</i>	β	ΔR^2
Step 1				.060***
	Age	.06 (.02)	.21***	
	Social Desirability	.08 (.05)	.09	
Step 2				.055**
	Intellectual Humility	.07 (.02)	.24***	
Total R²				.115
		Benevolence		
		<i>B (SE)</i>	β	ΔR^2
Step 1				.077***
	Age	.01 (.00)	.12*	
	Social Desirability	.06 (.02)	.23***	
Step 2				.053***
	Intellectual Humility	.02 (.00)	.24***	
Total R²				.130
		Universalism		
		<i>B (SE)</i>	β	ΔR^2
Step 1				.030*
	Age	.01 (.01)	.17**	
	Social Desirability	-.03 (.19)	-.09	
Step 2				.048***
	Intellectual Humility	.02 (.01)	.22***	
Total R²				.078
		Power		
		<i>B (SE)</i>	β	ΔR^2
Step 1				.129***
	Age	-.04 (.01)	-.33***	
	Social Desirability	-.05 (.03)	-.10	
Step 2				.079***
	Intellectual Humility	-.04 (.01)	-.29***	
Total R²				.208

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

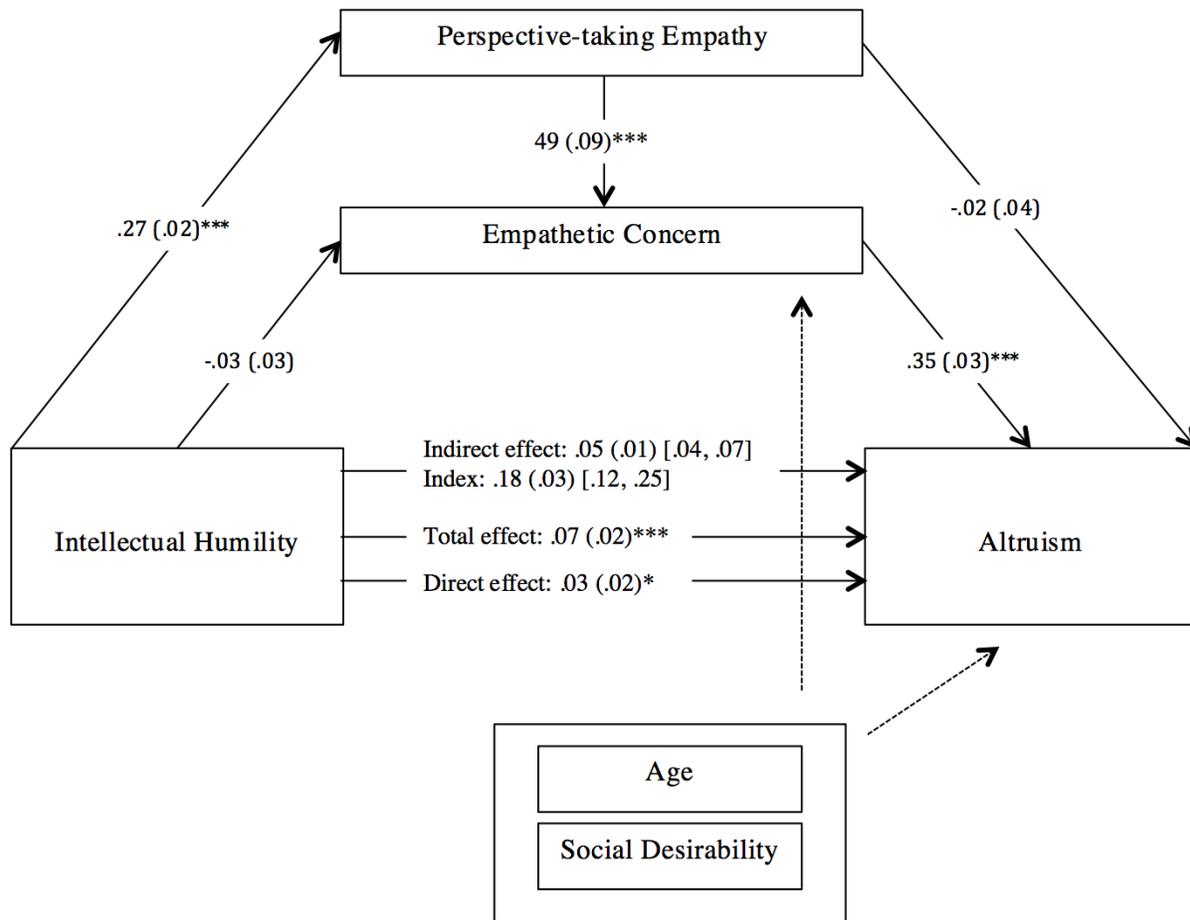


Figure 1. Multiple mediator model of perspective-taking empathy and empathetic concern as serial mediators of links between intellectual humility and altruism, controlling the effects of age and social desirability. Values provided represent unstandardized coefficients followed by standard errors. Statistical significance is indicated by superscripts (* $p < .05$; ** $p < .01$; *** $p < .001$). Confidence intervals are presented in square brackets and represent 95% bias corrected bootstrap confidence intervals. Index refers to the index of mediation, also known as the standardized indirect effect.

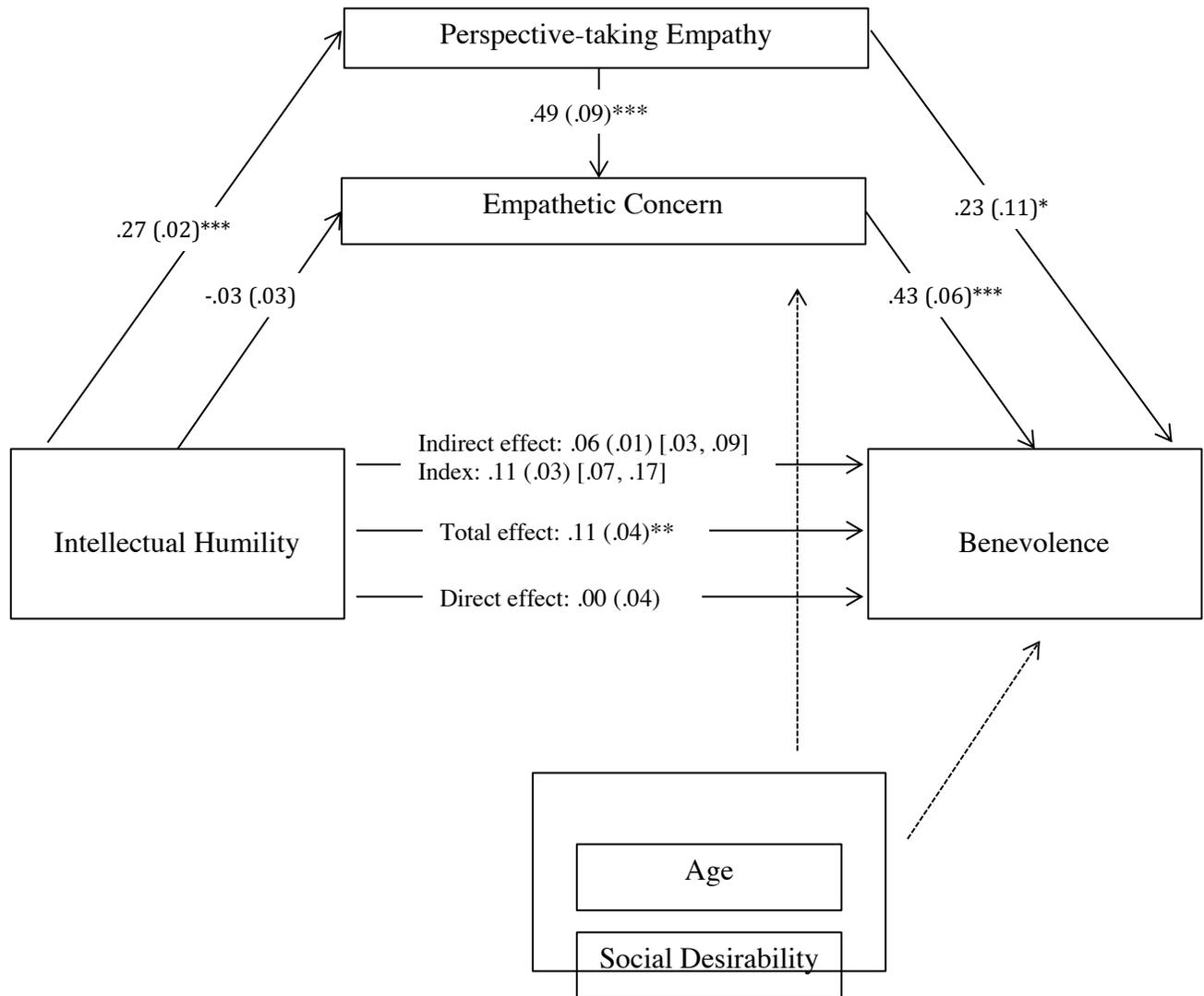


Figure 2. Multiple mediator model of perspective-taking empathy and empathetic concern as serial mediators of links between intellectual humility and benevolence, controlling the effects of age and social desirability. Values provided represent unstandardized coefficients followed by standard errors. Statistical significance is indicated by superscripts (* $p < .05$; ** $p < .01$; *** $p < .001$). Confidence intervals are presented in square brackets and represent 95% bias corrected bootstrap confidence intervals. Index refers to the index of mediation, also known as the standardized indirect effect.

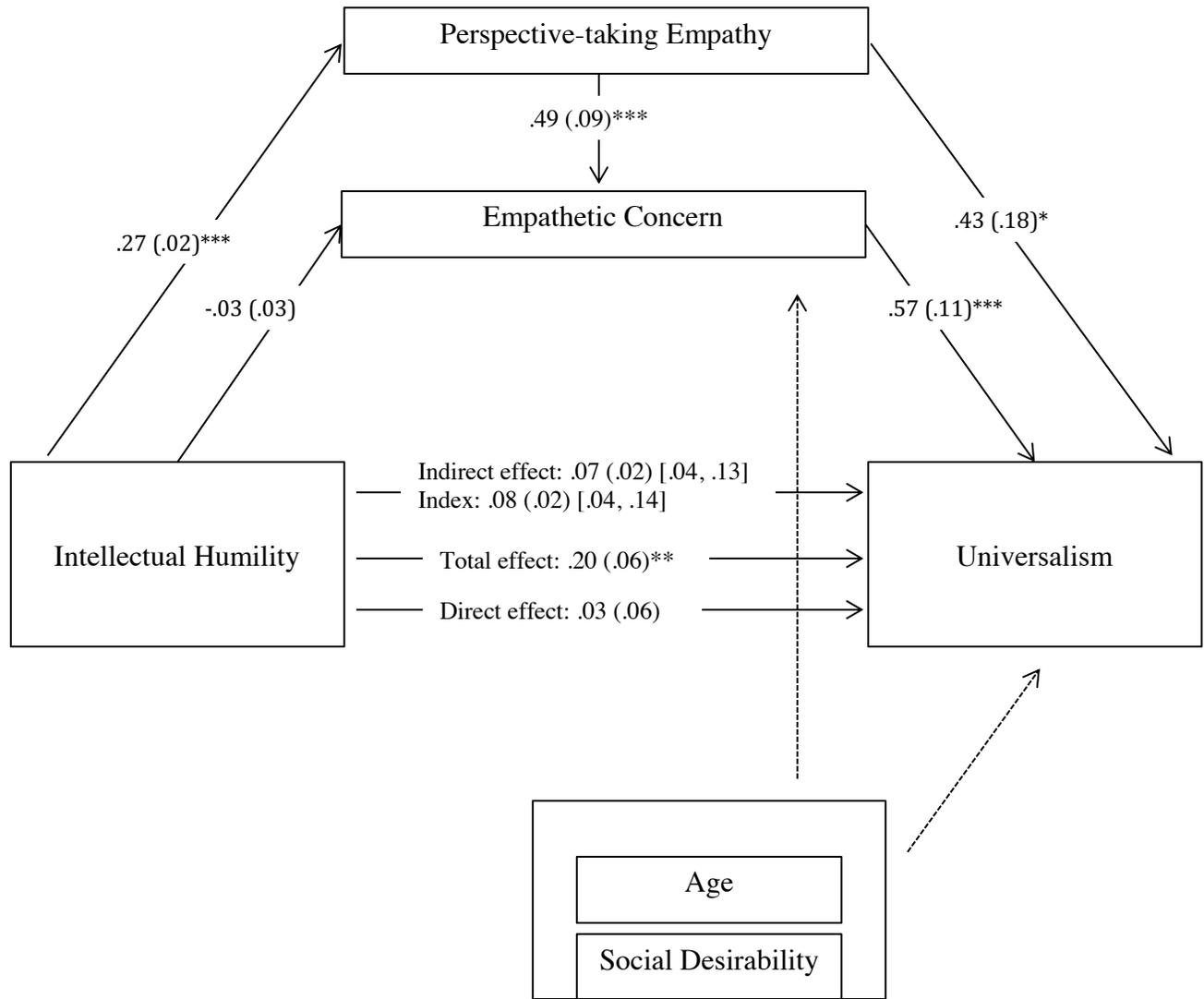


Figure 3. Multiple mediator model of perspective-taking empathy and empathetic concern as serial mediators of links between intellectual humility and universalism, controlling the effects of age and social desirability. Values provided represent unstandardized coefficients followed by standard errors. Statistical significance is indicated by superscripts (* $p < .05$; ** $p < .01$; *** $p < .001$). Confidence intervals are presented in square brackets and represent 95% bias corrected bootstrap confidence intervals. Index refers to the index of mediation, also known as the standardized indirect effect.

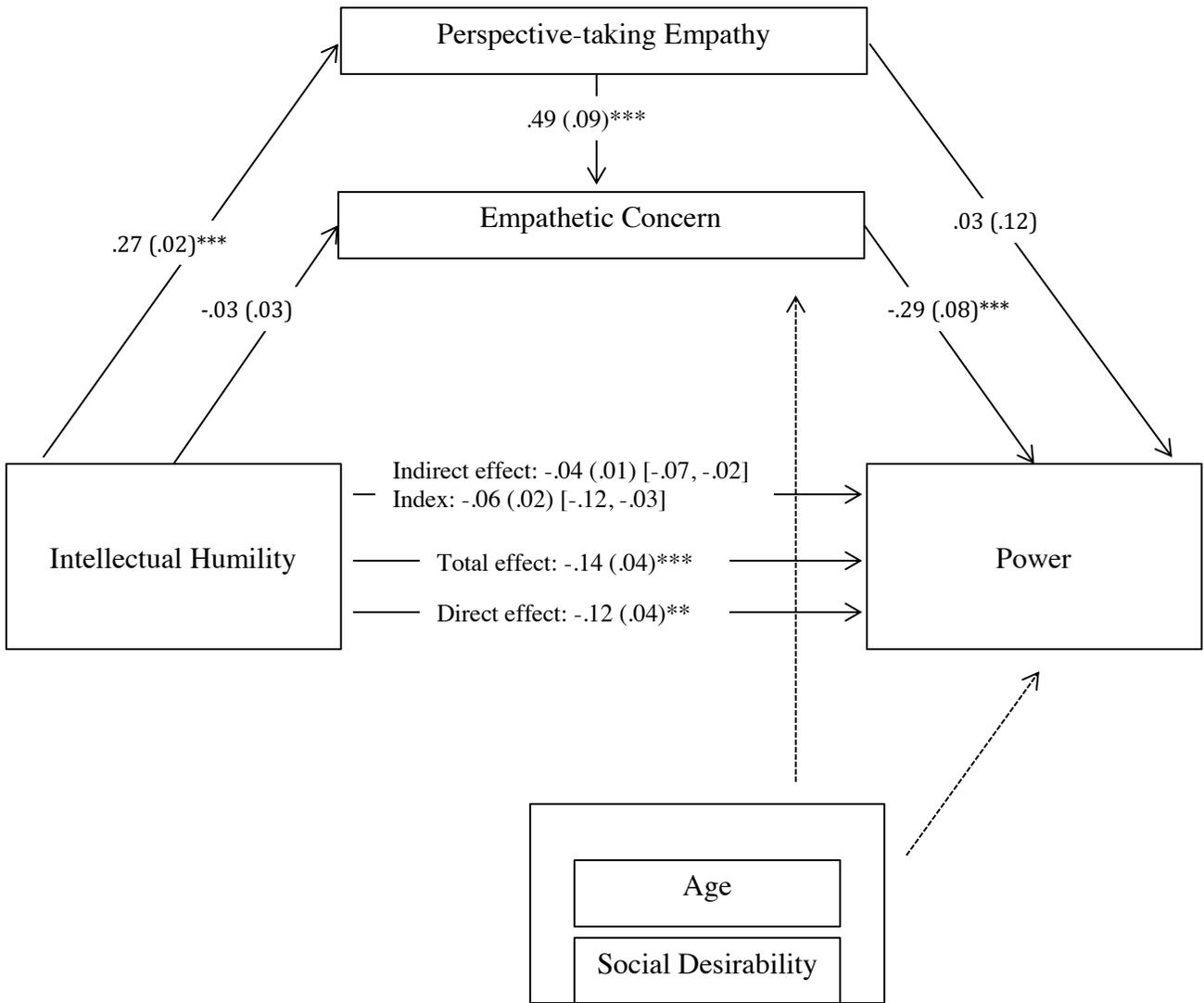


Figure 4. Multiple mediator model of perspective-taking empathy and empathetic concern as serial mediators of links between intellectual humility and valuing of power, controlling the effects of age and social desirability. Values provided represent unstandardized coefficients followed by standard errors. Statistical significance is indicated by superscripts (* $p < .05$; ** $p < .01$; *** $p < .001$). Confidence intervals are presented in square brackets and represent 95% bias corrected bootstrap confidence intervals. Index refers to the index of mediation, also known as the standardized indirect effect.

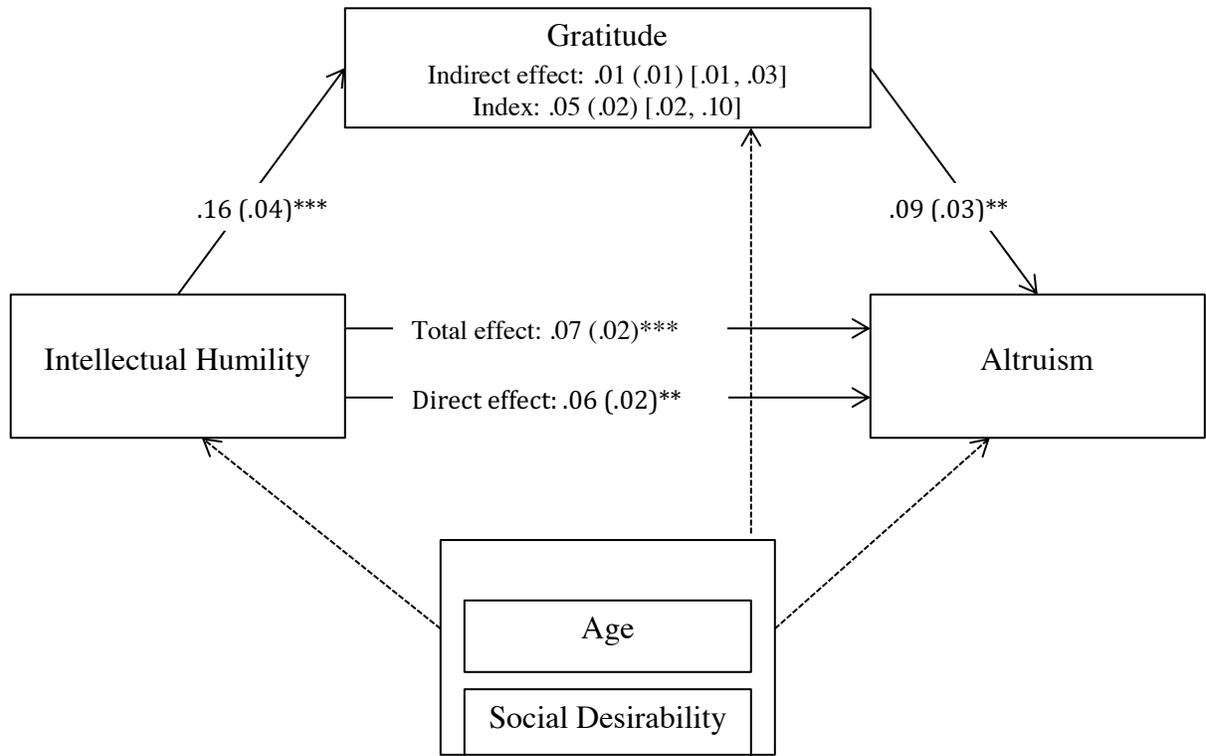


Figure 5. Mediation model of gratitude mediating links between intellectual humility and altruism, controlling the effects of age and social desirability. Values provided represent regression coefficients followed by standard errors. Confidence intervals are presented in square brackets and represent 95% bias corrected bootstrap confidence intervals. Index refers to the index of mediation, also known as the standardized indirect effect.

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

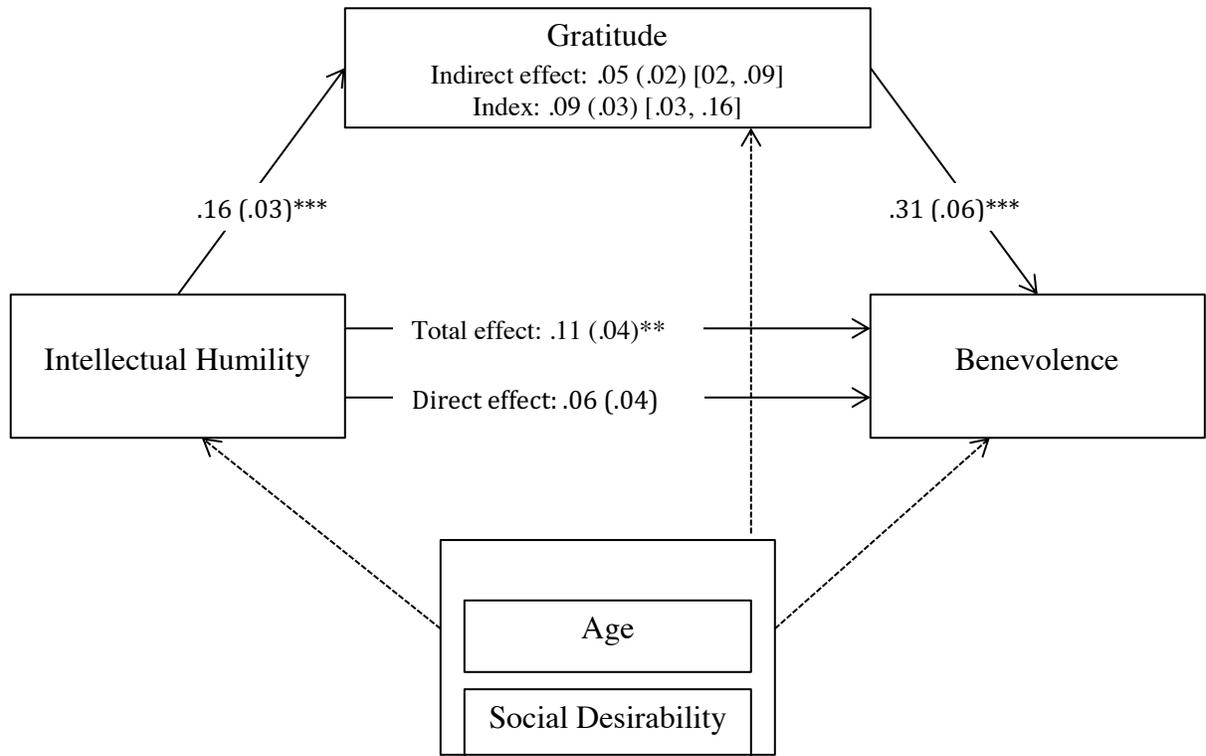


Figure 6. Mediation model of gratitude mediating links between intellectual humility and benevolence, controlling the effects of age and social desirability. Values provided represent regression coefficients followed by standard errors. Confidence intervals are presented in square brackets and represent 95% bias corrected bootstrap confidence intervals. Index refers to the index of mediation, also known as the standardized indirect effect.

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

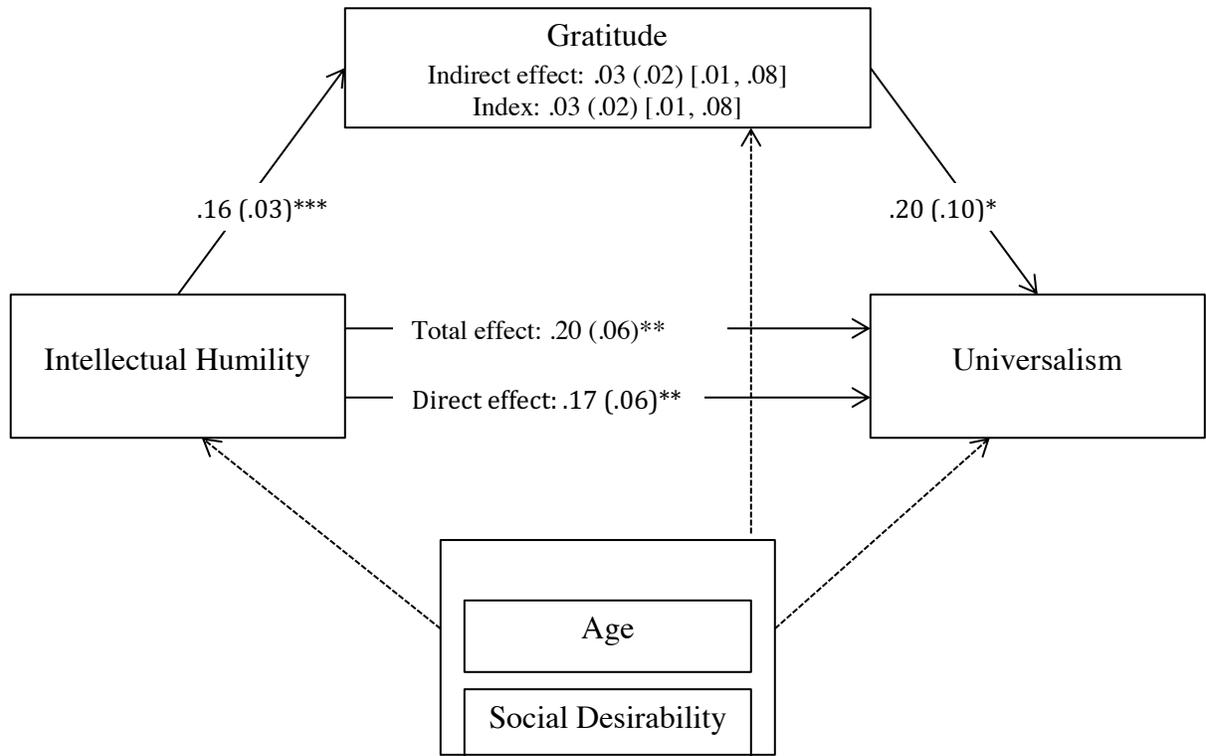


Figure 7. Mediation model of gratitude mediating links between intellectual humility and universalism, controlling the effects of age and social desirability. Values provided represent regression coefficients followed by standard errors. Confidence intervals are presented in square brackets and represent 95% bias corrected bootstrap confidence intervals. Index refers to the index of mediation, also known as the standardized indirect effect.

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