

HOW THE “TRUTH” SELF RELATES TO ALTRUISM: WHEN YOUR PROBLEM IS MINE

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It has been argued that the phenomenal self sees the world from an “ego-centric” perspective. But then how do we explain why people give up their own time and resources on behalf of others? We propose that one answer to this question can be found in people’s subjective experience of motivation to establishing what’s real—the phenomenal “truth” self. In seeking the truth, people want to establish not only what is correct and real but also what is right, including morally right. We propose that the experience of being effective in figuring things out and solving problems relates positively to *solving others’ problems* as well; that is, altruistic behaviors that help others. In support of this proposal, we touch upon ethical theories in philosophy and religion that have drawn the connection between seeking the truth and being moral, and we review research in comparative and social psychology suggesting how experiencing a “truth” self would support helping others. We also report two empirical studies demonstrating the unique relation between the subjective experience of effectiveness in pursuing the truth, particularly an affinity for solving puzzles or problems, and behaving altruistically by helping others to solve their problems. In contrast, being effective in value and control motivation—two other forms of self agency—did not predict altruism.

Keywords: truth motivation, altruism, effectiveness

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This above all: To thine own self be true, and it must follow, as the night the day,
thou canst not then be false to any man.

—William Shakespeare

What is it like to be a self? One answer is that individual selves see the world from an “egocentric” perspective. Lee Ross has described a human worldview called “*naïve realism*.” Naïve realism refers to people’s tendency to assume that their thoughts and feelings are a dispassionate and unmediated apprehension of what is real, and thus what they perceive, believe, or prefer directly reflects objective reality (see Griffin & Ross, 1991; Ross & Ward, 1995). According to this theory, people privilege their own experiences as reality, creating an “egocentric” worldview. Serving this egocentric worldview leads people to make “selfish” choices rather than choices in the interests of others. Indeed, a classic economic perspective on what motivates people’s choices is that people tend to act in their own self-interest and that it is rational for them to do so. How then can we explain why people take action on behalf of others’ interests even at the expense of their own (“altruism”)? The purpose of this article is to propose an answer to this classic question by considering how individuals’ subjective experience of being effective at establishing the truth can translate into behaving altruistically. We begin by briefly describing truth motivation in the context of distinguishing among different kinds of motivation.

WHAT MOTIVATES PEOPLE?

In a recent review of past theories and studies of motivation (Higgins, 2012), three fundamental kinds of motivation were identified: *value* motivation (wanting to have desired outcomes), *control* motivation (wanting to manage what happens), and *truth* motivation (wanting to establish what is real). Virtually every form of motivated thinking or behavior can be understood in terms of these three fundamental categories, and research in human and nonhuman animals shows that the fulfillment of each form of motivation is tied to the experience of well-being (Franks & Higgins, 2012). Thus, these three kinds of motives can serve as a template for trying to understand why “egocentric” selves would behave altruistically toward others.

The first general kind of motive that some have used to explain altruistic behavior is value motivation. In this context, this motivation typically operates at the unconscious level, but it generally involves the betterment of oneself. Two frequently cited theories for altruism are kin selection (e.g., Smith, 1964) and reciprocal altruism (e.g., Trivers, 1971). The first depends upon a belief that one’s “self” is, in a sense, tied up with one’s genetic material. Therefore, helping those with similar genetic material ultimately helps oneself (at least in an evolutionary sense). Similarly, reciprocal altruism postulates that those

who help others do so because it will increase the likelihood that others will help them in the future. There are also explanations for altruism in terms of societal norms that demand helping others to avoid punishment from norm violation (for a review, see Kitcher, 2011). All of these approaches propose that the motivation for altruistic behaviors is essentially a desire for better results for oneself in the long run—value motivation.

Other theories of altruism assume that the motivation to cooperate with others is based on a desire to gain greater control over one's environment; that is, control motivation (Higgins, 2012). According to these accounts, altruistic behavior is not about optimizing outcomes (i.e., maximizing fitness and avoiding punishment). Rather, people behave altruistically and enforce such norms to enhance efficiency, consistency, and cooperation—what researchers have referred to as “strong reciprocity” (Fehr, Fishbacher, & Gächter, 2002). For example, individuals behave differently when they are attempting to manage their reputations compared to when they are simply trying to maximize their own payoff (Gächter & Falk, 2002). They will even give up portions of their own resources in order to punish offenders in order to deter deviation from cooperative behavior (“altruistic punishment”; see Fehr & Gächter, 2002). Following and enforcing norms of cooperation provide opportunities to manage what happens in one's environment, in this case, one's social environment.

While there is evidence from the literature to support the connection between altruistic (or altruistic-appearing) behaviors and both value motivation and control motivation, the relation between altruism and truth motivation has received relatively little scientific attention even though the philosophical literature suggests that this connection may be even more crucial. Truth motivation is the motive to establish what is real or correct (Higgins, 2012). This motivation involves the desire to understand and comprehend the world. Truth motivation can be seen in the need for cognitive consistency as described in cognitive dissonance theory (Festinger, 1957) and balance theory (Heider, 1958), and in our use of categories (e.g., Brown, 1958), attributions (e.g., Jones, 1979), and descriptive (*vs.* prescriptive) norms (Cialdini, Reno, & Kallgren, 1990) to understand the world.

Although truth motivation has a wide range of applicability and is at least as fundamental as the other two forms of motivation (see Cornwell, Franks, & Higgins, 2014; Higgins, 2012), it has received less attention in the field of motivation science (Higgins, 2013) and little, if any, attention as a motive underlying prosocial behavior (for a notable exception, see Cavallo, Zee, & Higgins, 2016). We propose that the subjective experience of being effective in truth motivation, that is, the phenomenal “truth” self, is a significant contributor to humans helping others. Before describing two empirical tests of our proposal, we review evidence from philosophy and psychology suggesting that our ten-

gency to act on behalf of others' interests is strongly related to the phenomenal self experience of being effective at establishing the truth.

PHILOSOPHICAL PERSPECTIVES

The idea that effectiveness in establishing the truth relates to morality has a long history in ethical philosophy. In ancient Greek thought, the virtue of *phronesis*, typically translated as “practical wisdom,” was generally thought to be at the very foundation of ethics, and this practical wisdom requires the ability and desire to know the truth about things. Interestingly, Aristotle (2009) notes that Socrates considered having *phronesis* to be the same as being a virtuous person. Aristotle himself, though he elevated other moral virtues such as courage, justice, and temperance as also being important, still maintained that the intellectual virtue of *phronesis* was a necessary condition for the functioning of the other virtues: “it is not possible to be good in the strict sense without practical wisdom, nor practically wise without moral virtue” (Aristotle, 2009, p. 194).

This perceived connection between having wisdom and being moral was not restricted to Western philosophy. In the *Sonadanda Sutta*, the Buddha asked Sonadanda, an influential Brahmin, by what qualities do Brahmins recognize a Brahmin. Sonadanda replied that there are five such qualities: being well-born for seven generations, being versed in the mantras, being handsome, being virtuous, and being wise. During a subsequent exchange, the Buddha manages to get Sonadanda to state that the former three are not truly necessary for a Brahmin. However, when asked whether more qualities may be omitted, Sonadanda replies: “No, Gotama. For wisdom is purified by morality, and morality is purified by wisdom: where one is, the other is, the moral man has wisdom and the wise man has morality” (Walshe, 1995, p. 131).

Thus, ancient thinkers in the East and the West have considered the effective pursuit of truth to be inherently related to the effective pursuit of moral goodness. According to this ancient logic, we should expect to see that the experience of having the truth should be uniquely related to the motivation to do what is morally good or right. It is important to note that in none of the examples above was effectiveness in the truth domain treated as being the same thing as being effective in the moral domain, but was instead treated as something that functioned as a necessary condition for moral effectiveness. Thus, if these ancient thinkers are correct, we should see that even though the phenomenal experience of being effective in truth remains conceptually distinct from being altruistic, they should reliably co-occur within individuals.

COMPARATIVE AND PSYCHOLOGICAL PERSPECTIVES

Our understanding of the nature of the relation between truth and morality can also be enhanced by considering it in the context of nonhuman animals. Some researchers, most prominently Frans de Waal (1996), have argued that the precursors to human morality exist in non-human animals. Specifically, de Waal argues that non-human primates have analogous moral sentiments in that they act to benefit others from a sense of empathy and fairness and have some aspects of socially pressured cooperation (de Waal, 2009). Also, though many of the attempts to justify these forms of cooperation involve recourse to some of the value- and control-based motivations highlighted above, it has been noted that in ecologically valid contexts, nonhuman animals address many problems that may be considered to have a truth-based motivation at their root, such as determining “when to cooperate, with whom to cooperate, what to do in cooperative interactions, and how much to contribute to cooperation” (McAuliffe & Thornton, 2015, p. 23). This perspective on nonhuman morality points to a fundamental connection between prosocial cooperation and truth motivation. Thus, even if nonhuman truth motivation does not include certain capacities that are unique to humans, nonhuman animals do show evidence of a desire to know or understand the social milieu and their place in the group’s dynamic—truth motivation.

It should be noted that although de Waal places human morality in a continuum with nonhuman morality, he does not claim that nonhuman animals have the same ethical capacities that humans have. But if that’s the case, how do humans differ? Herrmann, Hernández Lloreda, Hare, and Tomasello (2007) compared the performance of chimpanzees, orangutans, and human two-year-old children, and found no differences in skills dealing with problems concerning space, quantities, and causality. Where differences *did* emerge was in the social realm: problems of learning through imitation and communicating with gestures. Moreover, even 12-month-old human children created forms of shared reality, such as sharing feelings with a parent when jointly attending some object or event of interest, that were not exhibited by other primates (see Tomasello, 2014; for a recent review of human children’s distinctive forms of shared reality, see Higgins, 2016b).

This finding is in line with recent theory noting the importance of complex social interaction for the dramatically increased intelligence of the human species throughout our evolutionary history. With an artificial neural network model, McNally, Brown, and Jackson (2012) have recently shown that cooperative interactions can give rise to pressures for the development of more extensive cognitive abilities. Thus, evolutionarily speaking, it is conceivable that our tendency to act with one another and on one another’s behalf may be tied up with our motivation to reason and understand the world effectively, with one increasing as the other increases. Notably, this all suggests is that

what makes us *human* is not a greater intelligence but our motivation to create shared reality with others, with the latter driving the former (Higgins, 2016a).

These comparative studies have led to advances in psychological theory in other domains. Higgins (2005) has noted that there are two forms of psychological processes that are uniquely human: our understanding of ourselves as subjects undergoing a process of “becoming,” and our motivation to share inner states with other humans (see also Tomasello, 2014). The former process involves the sense of understanding of oneself as a coherent narrative whole, moving from the past to the present to the future, and the other is to share others’ experiences about the world (having in common feelings, beliefs, and concerns about things).

Both of these processes are rooted in truth motivation. And both are central to individuals’ sense of *who they truly are*. The true self is not only the person you know you are in the present but also the person you expect to *become* in the future. In addition, as has been recognized for over a century (Cooley, 1964/1902; James, 2007/1890), the true self is the person you know you are *and* who others also know you are—the *shared reality* about who you are. Learning about one’s true self is not the only truth that people need to know, but it is an important part of effective truth motivation. Importantly, it is an ongoing motivational process, continually seeking a greater approximation of what’s real, or a reintegration of disorder into a coherent sense of reality.

Thus, the uniquely human condition of having a true self and having altruistic concern for others may arise from the same factor—the uniquely human version of truth motivation. Truth motivation is wanting to be effective in establishing what is real, true, or correct. This includes establishing who you truly are with your own unique narrative, your own unique relationships with others in the world, and your own sense of the way the world is. It is, in that sense as well, an egocentric narrative. However, effective truth motivation also includes knowing what’s real about others and, importantly, *knowing what is right*—in both the sense of correct *and* in the sense of morally right (Higgins, 2012), and therefore being able to discern when things are *wrong* and being motivated to address those situations appropriately.

One major element of effectiveness in the truth domain is being able to figure out or find solutions to problems. It is worth noting in this regard that altruistic behaviors themselves could be understood as being actions that function to *solve* the problems of others. That is, the fact that someone is in need means that there is something *wrong*—there is a problem that needs to be solved. The solution to this problem must be figured out. The truth challenge is to find a way to make it *right*. Thus, helping someone else with their problem constitutes a truth motivation success—being effective in figuring out a solution. This also suggests that individuals who feel a strong sense of effectiveness in the truth domain would feel more motivated to seek out that solution, and then confirm their understanding of the way things *really* are by taking action to apply that solution. If the solution is *really* the *right* solution, it must be

enacted to prove that it is correct. In practice, this would mean they would be more likely to act on behalf of others in order to solve their problems, seeking out and enacting the *right* solution.

Interestingly, there is already some evidence that supports this proposal. Research on social support has shown that individuals with a strong assessment motivation (high truth motivation to critically evaluate and weigh different options) are more likely to be effective at providing the correct type of support in a given situation—tailoring their support to fit the need of the individual receiving support (Cavallo, Zee, & Higgins, 2016). This result contrasts with the pattern for individuals with a strong locomotion motivation (high control motivation to move on from the current state to a new state) who used all types of support rather than appropriately tailoring the support. This contrast is important because the tailored support from those with strong assessment was found to be more effective in improving the well-being of the person receiving it. Though this research examined an orientation toward assessment rather than a sense of being effective at establishing the truth, it is relevant because it demonstrates how helping can be tied to the desire to figure things out in order to find the right solution for the problem at hand.

The question of the present research is whether the subjective sense of being effective at figuring things out—truth effectiveness—would act as a motivator to provide help across different contexts. Specifically, we were interested in determining whether truth effectiveness predicts a greater frequency of altruistic behavior, and whether this effect might be primarily related to an affinity for problem solving. For the reasons described above, we hypothesized a positive relation between individuals' subjective experience of being effective at establishing the truth and acting on behalf of others. We therefore predicted that individuals who report a greater level of effectiveness in truth motivation would also report a higher frequency of altruistic behaviors. Study 1 was designed to test this prediction.

STUDY 1

In this study we sought to measure the three different forms of motivational effectiveness and determine whether truth effectiveness was uniquely associated with altruism.

METHOD

Participants. Two hundred five participants were recruited from the Columbia Business School's Behavioral Research Lab subject pool. No demographic data was collected from participants. All participants completed all parts of the study. Participants were paid \$5.00 for their participation, with the opportunity for making more money if selected for a subsequent group investment

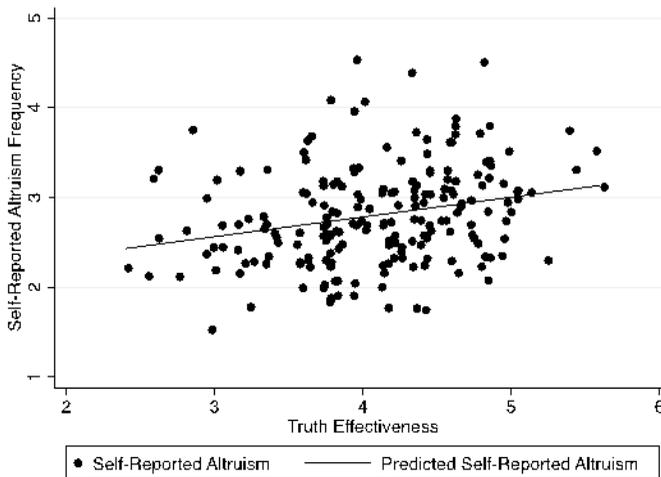


FIGURE 1. Self-reported altruism frequency as a function of truth effectiveness (Study 1; observations have been “jittered” to avoid overlap).

decision-making task. The subsequent task was unrelated to the questions of this study and will not be discussed further.

Procedure. Participants each filled out the Effectiveness Questionnaire (EQ; Franks, 2012) and the Self-Reported Altruism scale (SRA; Rushton, Chrisjohn, & Fekken, 1981). The Effectiveness Questionnaire measures the degree to which an individual feels effective in each of the three fundamental motivational domains (for more detailed descriptions of these domains, see Cornwell, Franks, & Higgins, 2014; Franks & Higgins, 2012; Higgins, 2012): truth effectiveness (subjective effectiveness at establishing what is real), control effectiveness (subjective effectiveness at managing what happens), and value effectiveness (subjective effectiveness at having desired results). Items measuring truth effectiveness include, “I am exceptional at figuring things out,” and “I have a hard time establishing what is real” (reverse-coded). Items measuring control effectiveness include, “Organizing has proven to be one of my strengths,” and “I have difficulty keeping my projects going” (reverse-coded). Items measuring value effectiveness include, “I think I have all that I desire,” and “I find myself in bad situations” (reverse-coded). There are 17 total items (5 for truth effectiveness, 6 for control effectiveness, and 6 for value effectiveness), and each is rated on a scale from 1 (“strongly disagree”) to 7 (“strongly agree”). All 17 of the items used in the scale are available in Appendix A.

The Self-Reported Altruism scale consists of a set of 20 helping behaviors across a variety of content domains (e.g., helping a stranger dig his or her car out of the snow, giving directions to a stranger, donating blood, etc.). Each of these behaviors is rated from a first-person perspective, asking participants how frequently they engage in these behaviors on behalf of others. The scale for each item ranges from 1 (“Never”) to 5 (“Very often”). Though this survey is self-report, it has been shown to correlate with objective measures of altru-

TABLE 1. Zero-order Correlations between Truth Effectiveness and Frequencies of the Different Kinds of Altruistic Behaviors. Correlations that partial out the contribution of the other two forms of effectiveness are listed in parentheses

Altruistic Behavior	Truth Effectiveness
Helped push a stranger's car from the snow.	0.13† (0.15*)
Gave directions to a stranger.	0.23** (0.17*)
Made change for a stranger.	0.11 (0.12†)
Gave money to a charity.	0.06 (0.07)
Gave money to a stranger who needed it.	0.15* (0.23**)
Donated goods or clothes to charity.	0.18* (0.15*)
Done volunteer work for a charity.	0.05 (0.06)
Donated blood.	0.03 (0.05)
Helped carry a stranger's belongings.	0.16* (0.14*)
Delayed an elevator and held door for a stranger.	0.14* (0.09)
Allowed someone to cut in line.	0.16* (0.16*)
Given a stranger a lift in his/her car.	0.08 (0.12†)
Pointed out a clerk's error in undercharging for an item.	0.21** (0.26***)
Allowed a neighbor to borrow something of value.	0.16* (0.18**)
Bought "charity" Christmas cards for a good cause.	0.10 (0.08)
Helped a classmate not known well with an assignment or homework.	0.14* (0.05)
Voluntarily looked after a neighbor's pets without being asked for free.	0.18** (0.15*)
Offered to help an elderly or handicapped person cross the street.	0.11† (0.09)
Offered his/her seat to someone standing on a bus or train.	0.15* (0.13†)
Helped an acquaintance move households.	0.12† (0.09)

Note. † = $p < 0.10$; * = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$.

ism, such as peer assessments of altruistic tendencies and a willingness to fill out an organ donor card (Rushton, Chrisjohn, & Fekken, 1981).

RESULTS

All three forms of effectiveness had high or moderately high internal reliability (value: $\alpha = 0.79$; control: $\alpha = 0.77$; truth: $\alpha = 0.68$). The three forms of effectiveness were generally correlated with one another, though value effectiveness and truth effectiveness were only marginally significantly associated (value and truth: $r = 0.13$, $p = 0.07$; truth and control: $r = 0.41$, $p < 0.001$; value and control: $r = 0.50$, $p < 0.001$). Thus, in addition to examining each construct individually, we also examined the relation between truth effectiveness and other measures including control and value effectiveness as covariates to ensure that we were measuring a specific truth pattern and not simply reporting a relation with a general perception of overall effectiveness.

The 20 different forms of altruism in the self-reported altruism scale were reliably interrelated such that being more altruistic in one domain predicted being more altruistic in other domains ($\alpha = 0.85$). Given this, for the purposes of our main analyses we treated them as a single construct by averaging altruism across the different domains. As expected, we found that truth effectiveness was significantly associated with overall altruism ($r = 0.25, p < 0.001$). This relationship is shown in Figure 1. In contrast, neither value effectiveness ($r < 0.01, p = 1.00$) nor control effectiveness ($r = 0.07, p = 0.30$) was significantly associated with altruism. This association between altruism and truth effectiveness held true even when controlling for the effects of value and control effectiveness in a partial correlation ($pr = 0.24, p < 0.001$). Thus, we see a unique association between the subjective sense of being effective in the domain of truth and the self-reported frequency of engaging in altruistic activities. The associations between truth effectiveness and the different kinds of altruism are available in Table 1.

In order to better understand what aspect of truth effectiveness was driving this association, we also ran zero-order correlations between each item of the truth effectiveness scale and the altruism construct. Interestingly, only two items had a significant association. The strongest association was "I am exceptional at figuring things out" ($r = 0.20, p = 0.003$). "I am bad at figuring out what is 'really' going on" (reverse coded) had a significant, though weaker, correlation with altruism (reverse coded, $r = 0.15, p = 0.03$). Therefore, it appears that the effect between truth effectiveness and altruism is not so much a product of an overall confidence on knowing the truth, as it is an association with a confidence in one's ability to *figure out* what the truth is in times of uncertainty. This will be discussed in more detail below.

DISCUSSION

We found a unique relation between being high in truth effectiveness and having a tendency to engage in altruistic behaviors. This result is intriguing given that the items on the truth effectiveness questionnaire have little to no content overlap with altruism. Why exactly is there this positive relation between being high in truth effectiveness and having a tendency to engage in altruistic behaviors? On the one hand, this finding is consistent with our hypothesis that those with high truth effectiveness would see the intellectual challenge of solving the problems of others to be personally rewarding, and would therefore be more likely to engage in behaviors to help solve those problems. But it should also be noted that our findings also resonate with research on helping behavior conducted in the latter half of the 20th century, in particular, the bystander effect (Darley, Teger, & Lewis, 1973; Latane & Darley, 1968). Research on the bystander effect has shown that when individuals come across a situation in which their help is "needed," they face a great deal

of ambiguity. Each opportunity to help poses questions such as: "What is going on?" "Is this an emergency?" "What is being done to help?" "What can I do to help?" When facing such questions without definitive answers, people often resort to imitating the behavior of others who are present and who, typically, are doing nothing. Having confidence in one's own ability to discern the facts of a situation, that is, experiencing truth effectiveness, could thus be an important component to overcoming barriers that typically face and impede would-be helpers.

From the results of Study 1 alone, it is unclear whether the relation we found derives from feeling of effectiveness in establishing the truth, or from a more general affinity for solving problems, or both. The correlation strengths among the different truth effectiveness items and altruism does not completely resolve this ambiguity: are those with high truth effectiveness confident in their ability to figure out whether there *is* a problem, or are they confident in their ability to figure out how to *solve* the problem? To address this issue in our second study, we also included a measure of a general affinity for problem solving, the Need for Cognition scale (NFC; Cacioppo, Petty, & Kao, 1984), to help clarify whether the effect is driven by a sense of confidence in dealing with ambiguity, or from a more general affinity toward intellectual puzzles and problem solving.

We also wanted to replicate the effect in a more representative sample. The first sample was drawn from a lab on a college campus, and thus "truth effectiveness" for these participants may have a more academic-achievement-centered association. In our second study, our sample was more representative of the general population in terms of age and education level than Study 1's sample. Finally, there is some research showing an association between intelligence and altruism (Blasi, 1980). While it is certainly possible that an affinity for solving problems and effectiveness in establishing the truth could be correlated with intelligence, we predict that their associations would be independent. Therefore, we took measured demographic variables that may be indicators of overall intellectual ability (i.e., education) and of crystallized intelligence (i.e., age).

STUDY 2

In order to test the robustness of our effect and distinguish between the subjective sense of effectiveness in pursuit of the truth and general affinity for pursuing the truth and problem solving, we (a) used a more representative sample and (b) included the Need for Cognition scale (Cacioppo et al., 1984) in addition to the measures used in Study 1.

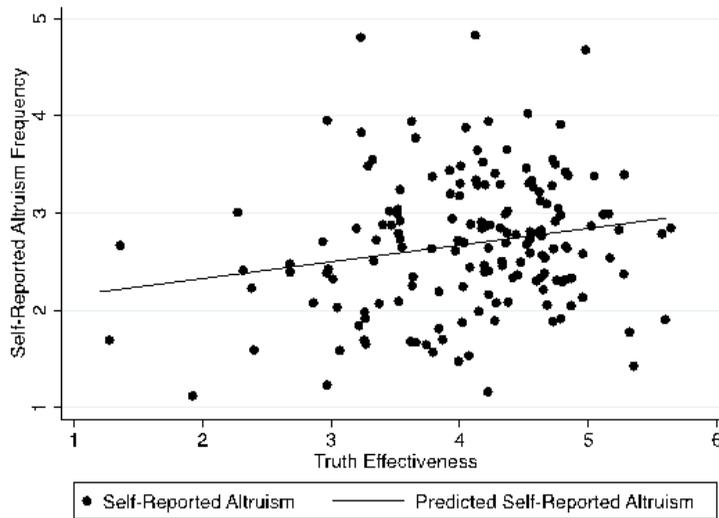


FIGURE 2. Self-reported altruism frequency as a function of truth effectiveness (Study 2; observations have been “jittered” to avoid overlap).

METHOD

Participants. One hundred sixty-three individuals participated in our study via Mechanical Turk for the sum of \$1.50. The participants consisted of 68 males and 95 females. There were no significant sex differences for any of the variables considered in this study. The mean age for participants was 35.21. Of the 163 participants, 101 reported having a college degree, whereas 62 reported education levels without a college degree. All participants completed all parts of the study.

Procedure. Participants each filled out the Effectiveness Questionnaire (Franks, 2012), the Need for Cognition Questionnaire (Cacioppo et al., 1984), and the Self-Reported Altruism scale (Rushton et al., 1981). Participants also filled out three well-being questionnaires for exploratory purposes, but since they did not moderate or mediate any of the relationships reported here, nor were their results centrally related to the hypotheses of the study, we will not be reporting them. All of the questionnaires were presented in random order, except for the self-reported altruism scale that was presented last. After responding to the questionnaires, participants were invited to provide their demographic data.

The Need for Cognition scale used in this study was the “efficient” (i.e., 18-item) version of the scale (Cacioppo, Petty, & Kao, 1984). The items of this scale are designed to test the degree to which individuals are motivated toward intellectual exploration, curiosity, and integration of the world in meaningful ways (Cohen, Stotland, & Wolfe, 1955). Scale items include, “I prefer my life to be filled with puzzles I must solve,” and, “It’s enough for me that something

TABLE 2. Zero-order Correlations between Frequencies of the Different Kinds of Altruistic Behaviors and Each Item in the Truth Effectiveness Scale for Studies 1 and 2

Truth Effectiveness Item	Study 1 Correlation	Study 2 Correlation
I am exceptional at figuring things out.	0.20**	0.21**
I am bad at figuring out what is “really” going on.	-0.15*	0.02
I have a hard time establishing what is real.	0.05	0.07
I always know what questions to ask in order to figure out what is really going on.	0.11	0.25**
I find things difficult to understand.	-0.09	-0.04

Note. † = $p < 0.10$; * = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$.

gets the job done; I don’t care how or why it works” (reverse-coded). Each item was assessed on a scale from 1 (“strongly disagree”) to 6 (“strongly agree”).

RESULTS

The three forms of effectiveness each had high internal reliability (value: $\alpha = 0.84$; control: $\alpha = 0.79$; truth: $\alpha = 0.74$). The three forms of effectiveness were also all correlated with one another, including value and truth in this study (value and truth: $r = 0.42$, $p < 0.001$; truth and control: $r = 0.62$, $p < 0.001$; value and control: $r = 0.61$, $p < 0.001$). Therefore, in addition to describing individual relations among variables, whenever we examined the relation between truth effectiveness and other measures, we included control and value effectiveness as covariates.

As expected, of the three forms of effectiveness, truth bore the strongest relation to Need for Cognition. Partial correlations (controlling for the other forms of effectiveness) revealed significant associations between Need for Cognition and truth effectiveness ($pr = 0.22$, $p = 0.006$) and between Need for Cognition and control effectiveness ($pr = 0.19$, $p = 0.02$). There was no evidence of an independent positive association between Need for Cognition and value effectiveness. Indeed, there was some evidence for a marginally significant negative association ($pr = -0.14$, $p = 0.08$).

The positive relation between truth effectiveness and need for cognition was expected given the latter’s association with curiosity and the search for truth for its own sake. The positive relation between control effectiveness and need for cognition was more surprising, but may derive from the fact that several Need for Cognition items are relevant for task management and planning (e.g., “I prefer to think about small, daily projects to long-term ones” [reverse-coded]), which is highly relevant to control effectiveness. Items that only reference thinking apart from working on concrete tasks tended to show more of the expected pattern. For example, the item, “The notion of thinking abstractly is appealing to me,” was uniquely associated with truth effectiveness ($pr =$

TABLE 3. Zero-order Correlations of Truth Effectiveness and Need for Cognition with Frequencies of the Different Kinds of Altruistic Behaviors. Correlations that partial out the contribution of the other two forms of effectiveness are listed in parentheses beside the zero-order truth effectiveness correlations

Altruistic Behavior	Truth Effectiveness	Need for Cognition
Helped push a stranger's car from the snow.	0.16* (0.09)	0.25**
Gave directions to a stranger.	0.22** (0.24**)	0.21**
Made change for a stranger.	0.21** (0.25**)	0.25**
Gave money to a charity.	0.11 (0.08)	0.18*
Gave money to a stranger who needed it.	0.19* (0.24**)	0.25**
Donated goods or clothes to charity.	0.15† (0.04)	0.16*
Done volunteer work for a charity.	0.06 (0.08)	0.28***
Donated blood.	-0.02 (0.04)	0.17*
Helped carry a stranger's belongings.	0.14† (0.12)	0.23**
Delayed an elevator and held door for a stranger.	0.24** (0.20**)	0.26***
Allowed someone to cut in line.	0.22** (0.19*)	0.21**
Given a stranger a lift in his/her car.	-0.01 (0.09)	0.12
Pointed out a clerk's error in undercharging for an item.	0.14† (0.19*)	0.19*
Allowed a neighbor to borrow something of value.	0.14† (0.13†)	0.23**
Bought "charity" Christmas cards for a good cause.	0.08 (0.04)	0.20*
Helped a classmate not known well with an assignment or homework.	0.14† (0.10)	0.31***
Voluntarily looked after a neighbor's pets without being asked for free.	0.07 (0.11)	0.08
Offered to help an elderly or handicapped person cross the street.	0.08 (0.02)	0.23**
Offered his/her seat to someone standing on a bus or train.	0.07 (0.05)	0.22**
Helped an acquaintance move households.	0.10 (-0.05)	0.14†

Note. † = $p < 0.10$; * = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$.

0.16, $p = 0.05$); it was not related to value effectiveness ($pr = -0.12$, $p = 0.12$) or control effectiveness ($pr = 0.09$, $p = 0.24$).

The different forms of altruism were, once again, highly internally reliable, such that each kind of altruism was predictive of each other form of altruistic behavior ($\alpha = 0.91$). Therefore, we combined all of the altruistic behaviors into a general altruism tendency by averaging across the 20 behaviors. As expected, we again found that, among the different effectiveness domains, only truth effectiveness had a significant association with altruism ($r = 0.20$, $p = 0.01$). This effect is illustrated in Figure 2. Neither control effectiveness ($r = 0.10$, $p = 0.23$) nor value effectiveness ($r = 0.05$, $p = 0.51$) showed a significant relation to altruism.

The relation between truth effectiveness and altruism remained significant even when controlling for value and control effectiveness, further demonstrating that this effect is due to the particular nature of truth motivation and not an

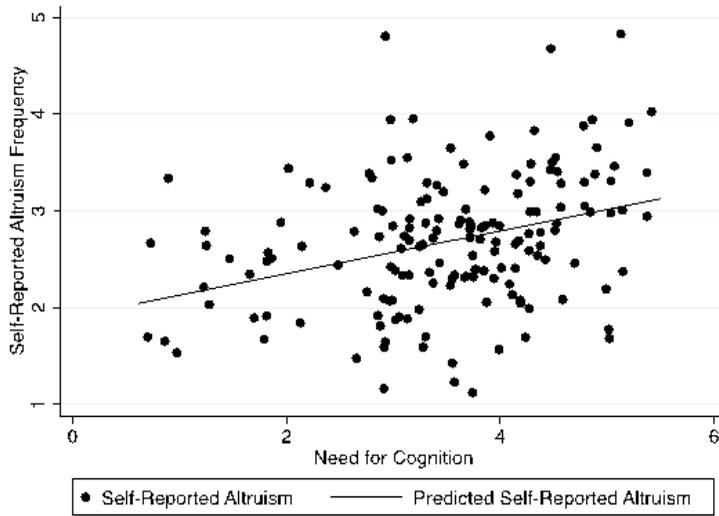


FIGURE 3. Self-reported altruism frequency as a function of Need for Cognition (Study 2; observations have been “jittered” to avoid overlap).

overall feeling of effectiveness on the part of participants ($pr = 0.18, p = 0.02$). Once again, as well, by looking at each of the individual items in the truth effectiveness scale, it appears that the strongest correlations are between altruism and the two items concerning a capacity to figure things out (“I am good at figuring things out,” $r = 0.21, p = 0.007$; “I always know what questions to ask to figure out what is really going on,” $r = 0.25, p = 0.001$). The correlations between altruism and the different truth effectiveness items are in Table 2. The correlations between truth effectiveness and the different kinds of altruism are available in Table 3.

Also consistent with the truth-and-morality connection, Need for Cognition had a moderately strong correlation with a greater frequency of altruistic behavior ($r = 0.34, p < 0.001$). This effect is shown in Figure 3. When controlling for Need for Cognition, the association between truth effectiveness and altruism dropped to nonsignificance ($pr = 0.12, p = 0.15$), whereas the effect of Need for Cognition remained significant ($pr = 0.30, p < 0.001$). Given the meaning of

1. One final analysis that may be of interest to readers, though not central to our hypothesis, concerns whether the relation between Need for Cognition and altruism is always stronger than that between truth effectiveness and altruism. Interestingly, among those with education levels that have resulted in a post-secondary (post-high school) degree ($N = 101$), partial correlations show a significant association between Need for Cognition and altruism controlling for the three forms of effectiveness ($pr = 0.39, p < 0.001$), but no relation between truth effectiveness and altruism when controlling for need for cognition ($pr = 0.01, p = 0.90$) or the other forms of effectiveness (value: $pr = 0.03, p = 0.81$; control: $pr = -0.05, p = 0.65$). However, when looking at those without a college degree ($N = 62$), the pattern reverses. Among those without a college degree, when controlling for the three kinds of effectiveness, there is no significant association between Need for Cognition and altruism ($pr = 0.15, p = 0.15$), but truth effectiveness *is* significantly associated with altruism when controlling for the other kinds of effectiveness and Need for Cognition ($pr = 0.27, p = 0.04$).

TABLE 4. Zero-order Correlations Between Frequencies of the Different Kinds of Altruistic Behaviors and Each Item in the Need for Cognition Scale for Study 2. Correlations in parentheses partial out the contribution of truth effectiveness

Need for Cognition Scale Item	Correlation with Altruism
I would prefer complex to simple problems.	0.30*** (0.27***)
I like to have the responsibility of handling a situation that requires a lot of thinking.	0.29*** (0.24**)
Thinking is not my idea of fun.	-0.27*** (-0.21**)
I would rather do something that requires little thought than something that is sure to challenge my thinking abilities.	-0.22** (-0.22**)
I try to anticipate and avoid situations where there is likely a chance I will have to think in depth about something.	-0.22** (-0.17*)
I find satisfaction in deliberating hard and for long hours.	0.23** (0.21**)
I only think as hard as I have to.	-0.24** (-0.21**)
I prefer to think about small, daily projects to long-term ones.	-0.27*** (-0.25**)
I like tasks that require little thought once I've learned them.	-0.36*** (-0.33***)
The idea of relying on thought to make my way to the top appeals to me.	0.17* (0.11)
I really enjoy a task that involves coming up with new solutions to problems.	0.27*** (0.21**)
Learning new ways to think doesn't excite me very much.	-0.19* (-0.13†)
I prefer my life to be filled with puzzles that I must solve.	0.37*** (0.36***)
The notion of thinking abstractly is appealing to me.	0.19* (0.16*)
I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought.	0.27*** (0.22**)
I feel relief rather than satisfaction after completing a task that required a lot of mental effort.	-0.19* (-0.16*)
It's enough for me that something gets the job done; I don't care how or why it works.	0.24** (-0.19*)
I usually end up deliberating about issues even when they do not affect me personally.	0.18* (0.17*)

Note. † = $p < 0.10$; * = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$.

the construct of Need for Cognition, this pattern of results suggests that the relation between truth effectiveness and altruism is driven more by the desire to solve the puzzles presented by the problems of others than it is by an individual's sense of their capacity to resolve the ambiguities of a situation.

To better understand this connection, we conducted zero-order correlations between altruism and each of the Need for Cognition items to determine which items were most strongly associated with it (see Table 4). The three items that correlated the most strongly were, “I prefer complex to simple problems” ($r = 0.30$, $p < 0.001$), “I like tasks that require little thought once I've learned them” (reverse coded), (after reverse coded, $r = 0.36$, $p < 0.001$), and “I prefer my life to be filled with puzzles that I must solve” ($r = 0.37$, $p < 0.001$). These findings provide additional evidence for our hypothesis that the connection between altruism and truth involves problem solving, where the problems in

this case are moral ones (*doing* right is connected to *being* right). Moreover, they suggest that the connection is not based in a sense of being effective at recognizing problems in ambiguous situations, but rather the motivation to engage in problem-solving activities. In other words, altruism appears to be, in part, related to a phenomenal truth-self—a self experienced as figuring out and solving problems in the world, even when the problems being figured out and solved are the problems that others have.

What about the other hypotheses tied to the demographic variables? Are the results explained by education level or crystallized intelligence? There was no correlation between education level and altruism ($r = 0.02, p = 0.75$) suggesting a lack of an effect for education, and there was only a marginally significant correlation between age and altruism ($r = 0.08, p = 0.08$), suggesting only a potentially weak link for crystallized intelligence (which correlates with age; see Horn & Cattell, 1967). Furthermore, controlling for age and education level in partial correlations did not disrupt the significant association between altruism and truth effectiveness ($pr = 0.20, p = 0.01$) or that between altruism and Need for Cognition ($pr = 0.36, p < 0.001$). However, it is perhaps worth noting that when controlling for Need for Cognition, the relation between age and altruism becomes significant ($pr = 0.18, p = 0.03$), suggesting that perhaps crystallized intelligence plays an independent role.¹

DISCUSSION

These results provide empirical evidence of the connection between the experience of truth motivation and the domain of moral behavior. They suggest that those with a strong affinity and effectiveness in the pursuit of truth may also perform the highest levels of altruistic behavior. Based on the individual item correlations, this effect appears to be driven by an affinity for a life full of intellectual puzzles and problems that demand solutions. Our results suggest that for people high in truth motivation, these problems can be moral as well as intellectual. Most importantly, they can be the problems of other people. We thus present evidence that helping others can be motivated by wanting to solve a problem, wanting to succeed at truth. And if the solution to another person's problem is *really* the *right* solution, it must be acted upon, leading to altruistic behavior.

GENERAL DISCUSSION

Our studies provide support for the idea that the phenomenal "truth" self—individuals' experience of being effective in establishing what's real and affinity for problem solving—is positively related to altruistic behavior, whereas subjective value effectiveness and control effectiveness is not associated with altruism. When it comes to phenomenal selves and people's sense of agency,

it is individuals' experience of having desired outcomes (value) and their experience of managing to make things happen (control) that has received the most attention by psychologists (Higgins, 2013). The ancient thinkers, with their emphasis on seeking truth, may have had it right all along. Not only do individuals' subjective experience of truth effectiveness have distinct relations to well-being (Franks & Higgins, 2012), it is also positively related to helping others as well.

Human beings and many other animals are fundamentally social animals, and as such, our survival and our flourishing depend on a willingness to act on one another's behalf: to cooperate. According to our current findings, the motivation for cooperation, to help others, does not have its roots in motivations based on self-interested outcomes (value) or even in a desire for greater management of one's social environment (control). Instead, it appears that the motivation to act on behalf of others is bound up with a motivation to understand the way the world really is and solve the problems that the world presents to us. Perhaps this happens because our understandings of the world are confirmed as objectively correct through social verification (Hardin & Higgins, 1996) and we therefore value cooperative relationships that provide social verification. Perhaps the truth-altruism relation also derives from our desire for an orderly and integrated reality (just as we have a tendency to resist disorder, see Friston, 2010) and the problems and sufferings of others represent disorder that needs correction. And perhaps, as suggested by the present findings, our truth motivation makes us want to solve problems, which includes solving the problems of others, even at the potential expense of our own valued outcomes, namely, altruism. The answer could be some combination of all of these possibilities. Whatever the final explanation, what is clear is that future altruism research should explore the relation between the phenomenal “truth” self and morality more deeply, exploring how our ongoing experience of the world as a puzzle that demands a solution leads to a greater tendency to work to solve the problems of others.

The relation between a motivation to understand what is real and the motivation to do what is right is also reflected in early psychological work investigating the association between cognitive capacities and stages of moral reasoning presented in cognitive-developmental schools of moral psychology (e.g., Kohlberg & Kramer, 1969). It should be noted, however, that our proposed motivational perspective on moral behavior diverges in some ways from this cognitive-developmental perspective. Past research has shown that the relation between levels of moral reasoning and moral behavior, while present, can sometimes be explained by a third variable of IQ, with those having a higher IQ behaving in more prosocial (or, primarily, less antisocial) ways than those with a lower IQ (Blasi, 1980). Our results go beyond this association, because truth effectiveness is the subjective sense of being able to establish what is real rather than a tendency to process ethical situations at a higher level of conceptual abstraction. Individuals lacking higher formal education may

operate at less abstract levels of moral reasoning, but, nevertheless, they can have a sense of truth effectiveness or affinity for problem solving that increases moral behavior.

Our research leaves some important questions unanswered that will need to be addressed in future research. Specifically, what are the boundary conditions for this effect? Some have argued (see, for example, de Waal, 2009) that prosocial behavior is the entirety of morality and that any other kinds of regulatory strictures that we call “ethical” are just trumped up social convention. Others argue that there are, indeed, other domains of ethics as well (e.g., Graham et al., 2011). Aristotle (2009) highlighted the importance of courage and temperance, which are only tangentially related to our actions on behalf of others. Nevertheless, these thinkers tend to argue that these kinds of moral virtues are related to a person’s capacity for self-control in the face of temptation or fear. If so, this would involve control effectiveness. It is entirely possible that a consideration of a fuller range of ethical domains will discover that phenomenal selves other than “truth,” such as the phenomenal “value” and “control” selves, predict other kinds of ethical behaviors. We have also recently proposed that the interrelationship among these three phenomenal selves—their integrated whole—contributes in yet another way to moral behavior that is reflected in the notion of “*moral integrity*” (see Cornwell, Franks, & Higgins, 2014; Higgins, Cornwell, & Franks, 2014).

Another open question is what precisely drives some to find solving others’ problems appealing and others not. It is unclear from this research whether the affinity for problem solving is working in conjunction with other processes or whether it is working in parallel with these processes. Would this link between truth motivation and altruism, for example, be moderated by other processes such as compassion (Goetz, Keltner, & Simon-Thomas, 2010) or empathy (Davis, 1983)? Or, as theories such as shared reality would suggest (and perhaps also those philosophers noted in the introduction), is there an inherent connection between our draw toward others, including sharing their concerns, and our draw toward establishing truth by creating shared realities with others (Hardin & Higgins, 1996; Higgins, 2016a)? That is, when one becomes more attuned not only to the experience of problem solving in general but also to the experience of helping others to solve their problems, does that make someone more prosocial, empathetic, compassionate, and cooperative?

The latter, intriguing possibility would point more to the “phenomenal” quality of truth motivation. Rather than being just a subjective assessment of one’s overall effectiveness in this motivational domain, truth motivation could be an experience of the world becoming more real and coherent, and thus more valuable (see Higgins, Franks, Pavarini, Sehnert, & Manley, 2012, for some evidence of this), as well as, more specifically, an experience of a stronger motivation for solving puzzles and problems that disrupt that coher-

ence (whether your own or others' problems). The present research suggests that this experience is relevant not only in that it gradually brings focus to one's personal goals, but also because it embeds the experiencer in a world that places demands on one's actions and character to right wrongs they encounter. This would be analogous to cognitive dissonance (Festinger, 1957) as an experienced need to respond to inconsistencies within oneself; to "right" another kind of "wrong" in the search to establish coherence. This could also connect to ongoing work showing, for example, that having a sense that one's life is meaningful is positively correlated with being more willing to give to others (Baumeister, Vohs, Aaker, & Garbinsky, 2013). Such possibilities need to be examined in the future.

Another issue that needs to be addressed in future research is that our measure of altruism consisted entirely of self-report. It is true that this particular self-report measure has been found to correlate with objective measures of altruistic behavior (Rushton, Chrisjohn, & Fekken, 1981), but these correlations are themselves moderate in strength. Therefore, more research will need to be conducted before hard conclusions can be drawn concerning the utility of our truth-related constructs in predicting observable altruistic behavior, and how strong those connections will prove to be.

Another limitation is that the causal pathways of our correlational effects are still unclear. With the current data, there is no way to know whether truth effectiveness leads to altruism or whether altruism leads to truth effectiveness or whether both directions occur. For the present model, the direction of the effect is less important than the presence of the positive association. Indeed, the philosophical work discussed in the introduction suggests that though the two are mutually interdependent, one doesn't necessarily "lead" to the other. Rather, each is contingent on the other. It will be interesting to investigate whether individuals can achieve a greater subjective sense of truth effectiveness as a result of engaging in altruistic behaviors for others, and/or whether inducing a greater sense of truth effectiveness can increase the likelihood of individuals engaging in altruistic behaviors. It is possible that truth effectiveness and morality create a kind of "virtuous cycle" where both rise together. The present work suggests the importance of future research investigating such pathways to elucidating this connection. We hope that the relation we have established both theoretically and empirically between the experience of *being* right and the motivation to *do* right will serve as a foundation for more extensive research on this important topic within the phenomenal self literature.

APPENDIX A: EFFECTIVENESS QUESTIONNAIRE

ITEMS MEASURING VALUE EFFECTIVENESS:

- There are a lot of things going wrong in my life. (reverse-coded)
- I find myself in bad situations. (reverse-coded)
- I think that I have all I desire.
- I think about the things in my life that are lacking. (reverse-coded)
- There are a lot of things I want that I do not have. (reverse-coded)
- I want more than I have. (reverse-coded)

ITEMS MEASURING CONTROL EFFECTIVENESS:

- I don't put a lot of effort into my life. (reverse-coded)
- Organizing has proven to be one of my strengths.
- I am excellent at managing what happens.
- I have difficulty keeping my projects going. (reverse-coded)
- I am failing to manage the basic activities of my life. (reverse-coded)
- In certain situations, I have little willpower and have trouble controlling myself. (reverse-coded)

ITEMS MEASURING TRUTH EFFECTIVENESS:

- I am exceptional at figuring things out.
- I am bad at figuring out what is "really" going on. (reverse-coded)
- I have a hard time establishing what is real. (reverse-coded)
- I always know what to ask in order to figure out what is really going on.
- I find things difficult to understand. (reverse-coded)

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