Individual differences in good manners rather than compassion predict fair allocations of wealth

in the dictator game

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Abstract

Objective. One of the most common tools for studying prosociality is the dictator game, in which allocations to one's partner are often described in terms of altruism. However, there is less consensus regarding the motivations driving these allocations, which may represent either emotional concern for others (compassion), adherence to social norms regarding fairness (politeness), or both.

Method. In this paper, we apply personality psychology to the study of behavior in the dictator game, in which we examine the discriminant validity of distinct prosocial constructs from the Big Five and HEXACO models in relation to allocations of wealth.

Results. Across four studies (combined $N = 798$) utilizing both hypothetical and incentivized designs, we found that the politeness—but not compassion—aspect of Big Five agreeableness, as well as HEXACO honesty-humility, uniquely predicted dictator allocations within their respective personality models.

Conclusions. These findings contribute to a growing literature indicating that the standard dictator game measures "good manners" or adherence to norms concerning fairness, rather than pure emotional concern or compassionate motives, which have important implications for how this paradigm is used and interpreted in psychological research.

Keywords: dictator game; agreeableness; politeness; compassion; honesty-humility

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Economic decision-making paradigms are useful tools for assessing basic psychological

preferences that shape human behavior, such as time discounting, risk aversion, and prosociality

(Almlund, Duckworth, Heckman, & Kautz, 2011; Becker, Deckers, Dohmen, Falk, & Kosse,

2012; Ferguson, Heckman, & Corr, 2011). Prosociality and social preferences for outcomes that

benefit others are often studied using the *dictator game*, in which one player decides on a

distribution of money that a second player must accept unconditionally (Forsythe, Horowitz,

Savin, & Sefton, 1994; Kahneman, Knetsch, & Thaler, 1986). Although it is a simple unilateral

task, experimental findings from the dictator game have attracted much interest due to their

departure from traditional economic assumptions of pure self-interest. Hundreds of studies have

shown that—amid substantial individual differences in the size of these allocations—most

people will transfer a positive amount of money to their partners, with a mean of 28% of the

initial endowment (Engel, 2011). These non-zero transfers have been interpreted broadly in

terms of altruism and incorporated into several models of social preferences (Bolton &

Ockenfels, 2000; Fehr & Schmidt, 1999), although this interpretation has not gone unchallenged

(Camerer & Thaler, 1995).

In this paper, we examine the aspect level of personality structure to better understand the

motivations driving so-called altruistic behavior in the dictator game, by examining how distinct

prosocial tendencies account for heterogeneity in allocations of wealth. A major theme to emerge

from the vast literature on the dictator game, as well as models of social preferences, is the

substantial heterogeneity in people's allocations (Andreoni & Miller, 2002; Daruvala, 2010;

Engel, 2011). Across four studies, we demonstrate that personality constructs reflecting

politeness, rather than compassion, help explain this heterogeneity. These findings support the view that dictator behavior reflects motivations concerning rules of fairness (Bolton, Katok, & Zwick, 1998; Camerer & Thaler, 1995) and have important implications for how this "index of prosociality" should be interpreted in psychological research.

What do Allocations of Wealth in the Dictator Game Represent?

Allocations in the dictator game are typically described in terms of altruism and altruistic behavior (e.g., Benenson, Pascoe, & Radmore, 2007; Ben-Ner & Kramer, 2011; Israel et al., 2009), as well as generosity (e.g., Haley & Fessler, 2005; Piazza & Bering, 2008). However, these terms have been neither consistently nor precisely defined, and are also sometimes used across different disciplines to refer to separate processes. Within economics, one common behavioral definition of altruism refers to "costly acts that confer economic benefits on other individuals" (Fehr & Fischbacher, 2003, p. 785), which may arise from a number of different motivational states. This can be distinguished from the psychological definition of altruism as "a motivational state with the ultimate goal of increasing another's welfare" (Batson, 1991, p. 6), which is thought to be primarily based on empathic concern around another's wellbeing and involves feelings of compassion and tenderness (Batson, Duncan, Ackerman, Buckley, & Birch, 1981; Batson, 2010). From this psychological perspective, the motivations that underlie altruistic allocations of wealth in the dictator game may be driven by emotional concern for others. For example, Edele, Dziobek, and Keller (2013) found that self-report measures of affective empathy, or the experience of feelings congruent with another's emotional situation, predicted the amount of money offered to a partner in the dictator game, although this has not been the case in other studies (Artinger, Exadaktylos, Koppel, & Sääksvuori, 2014).

In contrast to the empathy–altruism interpretation, other researchers in behavioral economics have highlighted the importance of social norms, arguing that dictator decisions represent adherence to social rules concerning fairness, rather than emotional concern, kindness, or an intrinsic desire to enhance the welfare of others (Bolton et al., 1998; Camerer & Thaler, 1995). Indeed, Camerer and Thaler (1995) discussed the role of "manners" as a manifestation of learned rules of fairness distinct from altruism and argued that etiquette dictated appropriate responses in experimental games and in interdependent behavior more generally. There is a large body of literature on the role of social norms in shaping cooperation, collective action, and prosocial behavior, as well as the development of social sanction systems to enforce these norms (Fehr & Fischbacher, 2004; Ostrom, 2000).

The distinction between empathic concern versus adherence to social norms as drivers of prosocial behaviors has a long history in the economics literature. In *The Theory of Moral Sentiments* (1759/2002), Adam Smith described altruistic impulses arising from benevolent affections of pity and compassion in contrast to the stronger forces of one's sense of duty and conscience, which are governed by self and social censure (see also Batson, 1991, for a discussion). Similarly, Andreoni (1989, 1990) and Dawes and Thaler (1988) distinguish between pure altruism, in which individuals are driven by the motivation to increase the welfare of others without any personal benefit, and impure altruism, which involves "doing the right thing", "a satisfaction of conscience, or of noninstrumental ethical mandates" (Dawes & Thaler, 1988, p. 192).

Personality Traits Underlying Behavioral Heterogeneity in the Dictator Game

The motivations for altruistic behavior in the dictator game may also be reflected in the personality traits underlying behavioral heterogeneity in allocations of wealth. In a recent review,

Zhao and Smillie (2015) reported that variation in dictator allocations could be understood in terms of prosocial traits represented within major models of personality structure. Within the widely-accepted "Big Five" (B5) model, agreeableness is the tendency to be kind-hearted, altruistic, considerate, and cooperative, and is based on the motivation of maintaining positive interpersonal relations (Graziano & Eisenberg, 1997). Several studies have now shown that B5 agreeableness is a consistent positive predictor of dictator offers, as well as prosocial game behaviors more generally (e.g., Baumert, Schlösser, & Schmitt, 2014; Becker et al., 2012; Ben-Ner, Kong, & Putterman, 2004; Ferguson, Gancarczyk, Wood, Delaney, & Corr, 2015; Foschi & Lauriola, 2014; for a review, see Zhao & Smillie, 2015).

As the agreeableness domain is a very broad description of multiple prosocial tendencies, these existing findings cannot distinguish empathic concern from basic "good manners" or politeness. However, recent developments in personality research have demonstrated that B5 agreeableness can be divided into two lower-level "aspects" of this trait domain: *compassion*, which reflects empathy and emotional concern for others, and *politeness*, which reflects the tendency to conform to social norms regarding acts that hurt or exploit others (DeYoung, Quilty, & Peterson, 2007). While the two are closely related, recent research has highlighted their divergence with respect to political ideology and the moral foundations (Hirsh, DeYoung, Xu, & Peterson, 2010; Osborne, Wootton, & Sibley, 2013). They are also thought to be underpinned by distinct biological substrates, with compassion hypothesized to reflect neuroendocrinological processes involved in affiliation, such as oxytocin function (DeYoung, Weisberg, Quilty, & Peterson, 2013; Feldman, Weller, Zagoory-Sharon, & Levine, 2007). In comparison, politeness is associated with tendencies toward (lower) dominance and aggression, which may be underpinned by testosterone function (DeYoung et al., 2013; Zuckerman, 2005). To date, no

studies have contrasted the roles of these two aspects of B5 agreeableness in relation to allocations within the dictator game. This would help tease apart whether individual differences in these allocations are driven by empathic concern, adherence to norms promoting the wellbeing of others, or both.

A major alternative model of personality to the Big Five is the HEXACO (Honesty-Humility, Emotionality, eXtraversion, Agreeableness, Conscientiousness, and Openness to Experience), a six-factor model based on psycholexical studies of European and Asian languages (Lee & Ashton, 2004). In this model, there are two prosocial traits forming complementary aspects of reciprocal altruism (Ashton & Lee, 2001, 2007). HEXACO agreeableness is the tendency to be forgiving and tolerant of the misgivings of others, which is considered a "reactive" form of cooperation. This is theoretically distinct from HEXACO honesty-humility, the tendency to be fair despite opportunities for exploitation, which is considered an "active" form of cooperation (Hilbig, Zettler, Leist, & Heydasch, 2013). In line with this conceptualization, several studies have consistently found that HEXACO honesty-humility, rather than HEXACO agreeableness, is strongly associated with dictator game allocations—and perhaps more so than B5 agreeableness (Hilbig, Thielmann, Hepp, Klein, & Zettler, 2015; Hilbig et al., 2013; Hilbig & Zettler, 2009; Thielmann & Hilbig, 2014; see Zhao & Smillie, 2015). Interestingly, honesty-humility overlaps conceptually with the politeness aspect of B5 agreeableness, as both contain items reflecting respect for others' rights and suppression of aggressive behavior, which may be characterized more generally by adherence to norms concerning appropriate social conduct (DeYoung et al., 2007). In support of this suggestion, it was recently shown that honesty-humility is closely aligned with politeness within a circumplex model of interpersonal traits (Barford, Zhao, & Smillie, 2015).

Aims and Outline of this Paper

Personality psychology can aid our understanding of the psychological processes within economic games by explaining some of the behavioral heterogeneity and by improving the predictive and explanatory validity of these games. Our aim in this paper was to provide a finely-grained analysis of the role that prosocial personality traits play in dictator game allocations, based on two alternative models of personality, the Big Five and the HEXACO. We were particularly interested in the discriminant validity between theoretically distinct prosocial constructs—the aspects of B5 agreeableness as well as the HEXACO traits comprising reciprocal altruism—in predicting game behaviors. These findings would shed new light on the mechanisms and motivations (e.g., empathic concern versus norm adherence or politeness) underlying prosocial allocations of wealth and clarify how the standard dictator game should be interpreted. Examining these major alternative models of personality would also clarify how the Big Five and HEXACO models are related, particularly given recent discussion around the theoretical similarity between HEXACO honesty-humility and aspects or facets of B5 agreeableness (see Ashton, Lee, & de Vries, 2014; DeYoung et al., 2007; McCrae & Costa, 2008; van Kampen, 2012). In line with the literature reviewed above, we hypothesized that politeness, rather than the compassion aspect of B5 agreeableness in the Big Five model, would be associated with prosocial allocations of wealth in the dictator game. Given its conceptual similarity to politeness, we expected that these findings to be closely replicated for honesty-humility, rather than agreeableness, in the HEXACO model.

We also sought to address the limitations of the previous literature that were highlighted in a recent review on personality and economic games (Zhao & Smillie, 2015). This was achieved in four ways: by improving sampling (i.e., including larger and more diverse samples),

measurement (i.e., investigating game behaviors across multiple personality models), design (i.e.,
using both hypothetical and incentivized paradigms, providing comprehension questions and
attention checks, and controlling for social desirability), and analysis (i.e., examining unique trait
effects and divergent validity through regressions controlling for non-focal personality
dimensions). This emphasis on methodological rigor and consistency, as well as the evaluation
of the replicability of our findings across multiple studies, is expected to yield clearer
conclusions about the role of personality in economic games.

The following sections detail four studies contrasting prosocial personality traits of
politeness and compassion with respect to allocations of wealth in the dictator game. These
findings are examined across varying levels of incentivization and demographically-different
samples. Studies 1 and 2 consisted of hypothetical dictator games conducted in an Australian
university student sample and a North American community sample recruited through the online
marketplace Amazon Mechanical Turk (MTurk; www.mturk.com). In Study 3, we attempted to
replicate these findings in a larger MTurk sample, in which we administered an alternative
version of the dictator game embedded within a number of wealth allocation tasks. Given that
Studies 1–3 were based on hypothetical designs, one concern is that they were limited by socially
desirable responding. Indeed, some behavioral economists have challenged the external validity
of decision-making studies with no salient material rewards, arguing that participants may not be
adequately motivated to behave as they would in the field (Ariely & Norton, 2007; Hertwig &
Ortmann, 2001). We addressed this in Study 4 by using an incentivized and double-blind
paradigm, in which participants played with real partners and were paid according to their
decisions.

Method

Participants

Study 1. The final sample consisted of 192 first-year psychology students at an

Australian university (aged 18–46 years, M_{age} = 20.21, SD = 4.52; 75% female), who completed

the study for course credit. While 42% percent of participants identified as being Australian, 37%

identified as being of East, South, or South-Eastern Asian ethnicity, and the remaining 21% were

a combination of European, North American, Middle-Eastern, and mixed ethnicities. Further

details on the proportion of excluded participants and the reasons for these exclusions are

provided in Table 1 and in the Procedure section.

Study 2. The final sample consisted of 212 North American MTurk workers (aged 18–57

years, M_{age} = 29.94, SD = 8.47; 59% female). The majority of participants identified as being

White or Caucasian (79%), with 7.1% identifying as African American, 6.1% as Hispanic, and

4.2% as Asian. Only workers with an approval rating higher than 98% and with fewer than 50

Human Intelligence Tasks completed were recruited. The latter was selected to avoid recruiting

workers experienced with well-known economic game paradigms (see Chandler, Mueller, &

Paolacci, 2014), which was later confirmed by asking participants if they were familiar with the

tasks. All participants were paid US$2.

Study 3. The final sample consisted of 304 North American MTurk workers (aged 18–65

years, M_{age} = 30.90, SD = 9.89; 55% female). The majority of participants identified as being

White or Caucasian (76%), with 8.9% identifying as Hispanic, 6.3% as African American, and

4.9% as Asian. Workers were selected based on the same criteria and paid the same amount as

those in Study 2.

Study 4. The final sample consisted of 90 participants (aged 18–33 years, M_{age} = 22.38, SD = 3.76; 70% female) recruited through advertisements posted around an Australian university. Participants were predominantly students from a mixture of disciplines, as well as those employed full-time or currently unemployed. Approximately half (53%) of participants identified as being of East, South, or South-Eastern Asian ethnicity, while 17% identified as being of Australian ethnicity, and the remainder were a combination of European, North American, Middle-Eastern, and mixed ethnicities. All participants were paid a show-up fee of AU$15 for attending the study, in addition to bonus payments earned from study tasks.

Personality Measures

Big Five Aspect Scales (BFAS; DeYoung et al., 2007). Participants in all four studies completed the BFAS, which measures the five broad domains of personality (neuroticism, agreeableness, conscientiousness, extraversion, and openness/intellect), and is the only measure to divide each domain into two correlated *aspects* (which lie between facets and domains in the trait hierarchy). We were specifically interested in the prosocial domain of agreeableness and its *compassion* (empathic affiliation with others, e.g., "feel other's emotions") and *politeness* (consideration and respect for others, e.g., "avoid imposing my will on others") aspects. However, we included items for all five broad domains and their aspects to examine their divergent validity. Each aspect consists of 10 items to which participants respond using 5-point Likert scales from 1 (*strongly disagree*) to 5 (*strongly agree*). The BFAS has been well validated against other measures of the Big Five, including the Big Five Inventory (John, Donahue, & Kentle, 1991; John, Naumann, & Soto, 2008) and the Revised NEO Personality Inventory (NEO PI-R; Costa & McCrae, 1992), and demonstrates good internal consistency and test–retest reliability (DeYoung et al., 2007).

HEXACO (Honesty-Humility, Emotionality, eXtraversion, Agreeableness,

Conscientiousness, and Openness to Experience) Personality Inventory—Revised

(HEXACO-PI-R; Lee & Ashton, 2004). Participants in all four studies completed the 100-item

HEXACO-PI-R, a major alternative model of personality to the Big Five. Within the HEXACO

model, agreeableness and emotionality are considered rotational variants of their Big Five

counterparts, and a sixth dimension, honesty-humility, is believed to capture additional variance

relating to fair and modest tendencies (Ashton et al., 2014; Lee & Ashton, 2004). The apparent

similarity between honesty-humility and the politeness aspect of B5 agreeableness was of

particular interest given the aims of the present research. Each trait consists of 16 items to which

participants respond using 5-point Likert scales from 1 (*strongly disagree*) to 5 (*strongly agree*).

All HEXACO analyses were performed at the level of broad trait domains, which have good

internal consistencies (Lee & Ashton, 2004).

Procedure

Table 1 presents summary information and major results from each study. Participants in

all four studies completed demographic questions, personality measures, and the dictator game

on a survey programmed using Qualtrics Survey Software (Qualtrics, Provo, UT). Studies 1–3

were conducted online with the latter two administered through the MTurk requester interface. In

Study 4, participants attended a laboratory at an Australian university in small groups of

approximately 4 to 6 people (average group size of 4.86 people) and were seated in front of

personal computers on which they completed all tasks.

In all four studies, participants completed additional questionnaires and economic games

that were not relevant to the aims of the current research. In Studies 1, 2, and 4, all personality

questionnaires were presented in a randomized order, and participants were randomly assigned to

one of four different orders of the economic games based on a Latin squares design. In Study 3, the dictator game was embedded within six different decomposed economic allocation tasks requiring participants to select between different combinations of payoffs with their partner. Participants in Study 3 also completed a well-validated measure of social desirability, the Social Desirability Scale–17 (Stöber, 2001), in which they rated sixteen statements as true or false.

Dictator game. In Studies 1 and 2, participants completed a hypothetical version of the standard dictator game (Forsythe et al., 1994; Kahneman et al., 1986), in which they read about the roles of the two players and were then asked to imagine how they would divide 10 points (corresponding with dollar amounts) if they had been assigned to the role of the dictator. In Study 3, participants completed a simpler version of the hypothetical dictator game in which they selected between different combinations of payoffs for themselves and their partner, all of which summed to $10. In all three studies, the hypothetical recipient was described as a complete stranger that participants would not knowingly meet.

In Study 4, participants completed the same economic games as those from earlier studies, but were informed that their earnings from one of these games would be selected for bonus payment at the end of the session. In the dictator game, all participants were asked to divide $10 between themselves and an anonymous, randomly-selected partner from the same session. When there was an odd number of participants in one session, they were told that two players would be randomly selected and together paired with one player. The allocation of the single player would be simultaneously applied to both players (when they were the recipients) or the single player would receive one of the allocations randomly selected out of the two players (when they were the dictators). Participants were also informed that a "double-blind" design was in place so that they could be not be identified with their decision by other participants or by the

experimenter. This was done by having participants create a code from meaningless fragments of

personal information at the start of the session, which was later sent electronically to the

experimenter along with their decisions. Bonus payments were then provided in envelopes

labelled with the code, which participants retrieved at the end of the session.

In all four studies, the terms "game" and "player", which may have connotations of

competition, were omitted in favor of more neutral terms (i.e., "task", "person"). To check their

understanding of the dictator game, participants completed several comprehension questions

(four in Studies 1 and 2, two in Study 4) requiring them to calculate the amount that each player

would receive in a variety of different scenarios. Studies 3 and 4 also contained two attention

checks embedded in personality measures to ensure that participants were reading instructions

correctly. Based on these, a number of participants (between 5.4% in Study 2 and 13% in Study

4) were excluded based on incorrect answers to game comprehension questions or failed

attention checks.

< Insert Table 1 here >

Results

Preliminary Statistics

Prosocial personality variables. Descriptive statistics and bivariate correlations between

variables are presented in Table 2. We first examined relationships between personality traits

within the Big Five model, where the compassion aspect of agreeableness and the enthusiasm

aspect of extraversion were positively related, and the politeness aspect of agreeableness and the

assertiveness aspect of extraversion were negatively related. These observations are in line with

previous research mapping the relations among the interpersonal aspects of the Big Five

(DeYoung et al., 2013). We next compared relationships between prosocial traits across the Big

Five and HEXACO models. In Studies 1 and 2, B5 agreeableness was equally correlated with

HEXACO honesty-humility and agreeableness, while the relationship with the latter was

relatively weaker in Studies 3 and 4. In all four studies, honesty-humility was more strongly

related to the politeness rather than compassion aspect of B5 agreeableness.

Dictator allocations. Mean allocations to a partner in the dictator game are presented in

Tables 1 and 2. Allocations ranged between 26% (Study 4) to 46% (Study 3) of the total amount,

with 5.9% (Study 3) to 34% (Study 4) of participants keeping all of the money for themselves.

Incentivized allocations in Study 4 were significantly lower than hypothetical allocations in

Studies 1–3 combined, $t(796) = 9.42$, $p < .001$, Cohen's $d = 1.06$.

<center>< Insert Table 2 here ></center>

The Relation between Prosocial Traits and Dictator Allocations

Broad personality domains. We first examined bivariate correlations between broad

personality variables and dictator allocations. Across all four studies, the only Big Five domain

correlated with dictator allocations was agreeableness. In the HEXACO model, honesty-humility

was the only trait consistently associated with allocations, while agreeableness,

conscientiousness, and openness to experience were also related to allocations in Studies 1, 3,

and 4, respectively.

A series of multiple regression models was then run on dictator allocations against broad

traits from the Big Five and HEXACO models. Standardized regression coefficients from these

models are presented in Table 3. These were largely consistent with correlational data, with B5

agreeableness and HEXACO honesty-humility emerging as the only consistent predictors in their

respective models, while HEXACO openness to experience was an additional unique predictor in

Study 4.

< Insert Table 3 here >

Aspects of B5 agreeableness. To probe the results further, we examined the role of the two aspects of agreeableness, politeness and compassion, in dictator allocations. In Studies 1–3, correlational data indicated that politeness and compassion were both significantly associated with dictator allocations, while incentivized dictator allocations in Study 4 showed no zero-order correlations with compassion at all. Because politeness and compassion were intercorrelated, we entered both aspects simultaneously into a regression model for each study, presented in Table 4. This revealed that politeness, but not compassion, was the only significant unique predictor of dictator allocations in each of the four studies.

< Insert Table 4 here >

Discussion

Across four studies, we aimed to identify the specific prosocial traits accounting for variation in allocations of wealth in the standard dictator game, and in doing so, shed light on the motivations underlying such prosocial behaviors. Consistent with previous literature (Baumert et al., 2014; Becker et al., 2012; Ben-Ner et al., 2004; Foschi & Lauriola, 2014; Hilbig, Thielmann, Hepp, et al., 2015; Hilbig et al., 2013; Hilbig & Zettler, 2009; Thielmann & Hilbig, 2014) and our predictions, broad personality traits concerned with promoting interpersonal harmony and cooperation—B5 agreeableness and HEXACO honesty-humility—were associated with prosocial allocations in all four studies. Our findings are also in keeping with other studies of economic games, where B5 agreeableness was related to greater cooperation in the prisoner's dilemma (Kagel & McGee, 2014), contributions in the public goods game (Volk, Thöni, & Ruigrok, 2011), responsible harvesting in a resource dilemma (Koole, Jager, van den Berg, Vlek, & Hofstee, 2001), and amounts transferred and returned to a partner in the trust game (Becker et

al., 2012; Evans & Revelle, 2008). We observed similar effect sizes to those reported in previous findings, which were close to the average correlation in the whole of personality and social psychology ($r = .21$; Richard, Bond, & Stokes-Zoota, 2003; Zhao & Smillie, 2015). Such results have often been interpreted in terms of individual differences for kind-heartedness, warmth, and compassion, but until now have not been contrasted with other motivations that promote positive interpersonal relations.

To address this gap in the literature, we further scrutinized the findings for B5 agreeableness by comparing its aspects of politeness and compassion. This revealed the novel finding that prosocial behavior in the dictator game was driven by traits reflecting good manners and adherence to social norms (i.e., the politeness aspect of B5 agreeableness), rather than compassion. That is, once we controlled for the tendency to uphold norms around fairness and respect for others, we did not see a unique role for individual differences in emotional concern for others. We observed a similar pattern of findings for honesty-humility from the HEXACO model, indicating that the results for politeness could be generalized to conceptually-similar traits.

Our findings revealed consistent patterns of results and effect sizes across four different and relatively large samples using both hypothetical and incentivized paradigms. Furthermore, the divergence between politeness and compassion was most prominent in a financially-incentivized double-blind dictator game, although the difference in significance between these two aspects may not necessarily be significant itself (Gelman & Stern, 2006). We also observed somewhat weaker findings for politeness, as well as HEXACO honesty-humility, in Study 3. This is possibly attributable to the greatly simplified nature of the dictator game in this study, which lacked the detailed descriptions of the task and player roles featured in our other studies.

Overall, our results are founded on a number of methodological merits—including systematic examination of trait effects across major models of personality, as well as analyses of unique trait effects—which have allowed us to draw clearer conclusions against the background of the fledgling literature on personality and economic games. In addition, very few studies in this area have examined the *unique* effects of B5 agreeableness while controlling for theoretically-similar prosocial constructs, while no studies of the dictator game have examined agreeableness at the level of lower-order aspects. These findings will be discussed in detail in the following sections.

Politeness and the Role of Social Norms in the Dictator Game

The most novel finding from the current study is that dictator allocations were predicted primarily by individual differences in politeness, which contrasts with traditional interpretations highlighting altruism and associated prosocial tendencies of kind-heartedness, warmth, and affiliation. Our results contribute to a growing body of literature indicating that dictator game distributions arise from personal and social rules around fairness, and not necessarily around an intrinsic emotional concern for the welfare of others (Bolton et al., 1998; Camerer & Thaler, 1995; Guala & Mittone, 2010; Leiberg, Klimecki, & Singer, 2011). Specifically, they revealed that polite individuals behaved in accordance with fair distributions of wealth in the dictator game, while individuals with greater empathic concern were no more likely than others to allocate greater wealth to a partner after controlling for their good manners. The absence of a role for empathic concern fits with recent findings in which the capacity for empathy did not predict social preferences in neutrally-framed dictator games (Artinger et al., 2014).

Likewise, our results mirror the divergence of two correlates of real-world helping behaviors: *dispositional empathic concern*, the tendency to experience compassionate reactions

to the needs of others, and the *principle of care*, the tendency to endorse a moral position of helping others (Wilhelm & Bekkers, 2010). Specifically, researchers examined these individual differences in relation to 10 types of helping behaviors reported in a nationally-representative survey, where they found that the association between helping and the principle of care was far more consistent and direct than that for dispositional empathic concern.

These findings complement research suggesting that there are two main motivations in social decision making, one that is fairness-based and one that is compassion-based (Singer & Steinbeis, 2009), which correspond closely with individual differences in politeness and compassion. While both motivations can contribute to cooperation, they are driven by different neural mechanisms and predict different behavioral responses when social norms are violated (Singer & Steinbeis, 2009). Adding to this, a recent study showed that compassion training led to increased helping in a task reflecting compassion-based prosocial behavior (the Zurich prosocial game) but not in the dictator game, which was believed to represent norm-based prosocial behavior (Leiberg et al., 2011). Together with these findings, the present research suggests that assuming the dictator game to be a pure measure of altruism, kindness, or compassion, in which players are emotionally invested in the wellbeing of their recipients may be misguided. This problem is likely to be further compounded by the inconsistent, imprecise, and interchangeable use of terms such as "prosocial", "altruistic", "unselfish", and "other-regarding" in the literature, conflating subtly distinct motives for behaviors that promote the welfare of others.

It is important to add that none of these considerations imply that there is no role for compassion and empathic concern in prosocial behavior in general. It may be that the standard, neutrally-framed dictator game is a de-contextualized situation in which the absence of any cues indicating a partner's distress, suffering, or need leads individuals to default to social norms

concerning fairness. Those who adhere most strongly to such norms thus make the most equitable allocations of wealth, and conversely, those who have the most disregard for such norms will behave most selfishly. Indeed, Eckel and Grossman (1996) have argued that the double-blind nature of dictator tasks directly inhibits altruistic tendencies as it prevents any information about recipients from impacting on social decisions, leaving little to motivate compassionate behavior. Future research could examine under what conditions factors such as compassion and emotional concern for others' wellbeing may override social norms to determine prosocial behaviors in economic games. For example, manipulations of empathy—by asking participants to take the perspective of a partner who recently experienced adversity—have led to greater cooperation in the prisoner's dilemma, even after knowledge that a partner has defected (in which case, the norm would arguably be mutual defection; Batson & Ahmad, 2001; Batson & Moran, 1999). In other circumstances, manipulations of empathy can also impede collective interest, such as in the public goods game, where it can divert allocation of resources away from the collective good and towards an individual who is the target of empathy (Batson et al., 1995; see also Ferguson, 2015, for a recent review).

The current findings also attest to the value of examining personality–behavior relationships below the level of broad domains, where divergent patterns of behavior may be observed between more finely-grained personality constructs.[1] Our findings are in tune with recent work showing that the dual aspects of agreeableness diverged in their associations with political ideology. While politeness, largely driven by traditionalism and normative cooperative behavior, was linked with political conservatism, compassion was closely tied to liberalism (Hirsh et al., 2010; Osborne et al., 2013). Furthermore, politeness was most associated with the moral foundation of authority/respect and positively linked to right-wing authoritarianism, while

compassion was positively associated with the moral foundations of harm/care and fairness/reciprocity (Hirsh et al., 2010; Osborne et al., 2013).[2] Our findings support these distinctions by providing novel evidence for the discriminant validity between politeness and compassion in a behavioral paradigm.

Predictors of Dictator Allocations within the HEXACO Model of Personality

In comparing two different personality models, our results highlighted the theoretical and empirical convergence between the politeness aspect of B5 agreeableness and HEXACO honesty-humility.[3] The patterns of findings were near-identical for the two traits across our four studies, in line with similarities previously noted between these two trait constructs (DeYoung et al., 2007; cf. Ashton et al., 2014), as well as the observation that politeness and honesty-humility occupy the same space on the Interpersonal Circumplex (Barford et al., 2015).

On the other hand, some findings hint at divergences between the two traits in relation to political orientation and norm adherence. For example, honesty-humility has been related to voting for left-wing political parties (Chirumbolo & Leone, 2010), while politeness has been associated with conservative ideology (Hirsh et al., 2010). Furthermore, individuals high on honesty-humility were recently found to behave consistently in favor of their partner in a redistribution paradigm, even when this violated fairness norms (Hilbig, Thielmann, Wührl, & Zettler, 2015). Further investigations may help characterize honesty-humility in relation to politeness by clarifying whether it captures adherence to social norms, internalized values about how one ought to behave, deference towards others, or other forms of benevolence.

Importantly, however, while the HEXACO model captures substantial variance in dictator game behavior, it does not divide the prosocial domain in a way that allows us to examine whether such allocations are driven by politeness or compassion, unlike the BFAS. The

association between HEXACO honesty-humility and B5 politeness was just as strong as that

between HEXACO agreeableness and politeness in Studies 1 (rs = .50) and 4 (rs = .48–.49). This

suggests that the construct of reciprocal altruism in the HEXACO model—comprising both

honesty-humility and agreeableness—may be characterized more generally by adherence to

norms concerning cooperation, which has different evolutionary antecedents to other prosocial

tendencies. In contrast, compassion was also consistently and moderately associated with other

HEXACO domains of openness to experience and emotionality, of which the latter may share its

origins in kin altruism and parental nurturance (Ashton & Lee, 2007; Batson, 2011).

Interestingly, despite its association with politeness, HEXACO agreeableness played

virtually no unique role in the dictator game. This could be explained by the rotated structure of

the HEXACO interpersonal traits and its resultant strong association with the volatility aspect of

B5 neuroticism (r = -.59 in Study 2 to r = -.73 in Study 4). Both traits share common variance

capturing tendencies relating to irritability, spite, and difficulty controlling emotional impulses,

which are somewhat less relevant given the unilateral allocation exercise of the dictator game.

Consistent with previous research, the finding that honesty-humility—but not agreeableness—

uniquely predicted dictator allocations provides further support for the theoretical distinction

between active and reactive cooperation within the HEXACO model (Hilbig et al., 2013;

Thielmann, Hilbig, & Niedtfeld, 2014; Thielmann & Hilbig, 2014).[4]

Effects of Incentivization on Dictator Allocations and Relations with Personality

Our studies provide a useful comparison of hypothetical versus incentivized paradigms,

which have divided psychologists and economists over how such games should be conducted

(Camerer & Hogarth, 1999). Several recent studies of economic paradigms—some of which

have investigated the role of personality traits—have shown that hypothetical scenarios produce

similar patterns of results as incentivized games (Engel, 2011; Ferguson & Starmer, 2013; Hilbig, Thielmann, Hepp, et al., 2015). Other studies have reported varying effects of reward-related aspects of personality (i.e., extraversion) when results were compared between incentivized and hypothetical game paradigms (Ben-Ner, Kramer, & Levy, 2008; Lönnqvist, Verkasalo, & Walkowitz, 2011).

We found that using hypothetical versions of the dictator game did not necessarily compromise the validity of dictator game findings when examining relations with personality, though they may yield smaller effect sizes. In Studies 1–3, hypothetical allocations were on par with results from hypothetical versions of the dictator game (around 40%; e.g., Amir, Rand, & Gal, 2012; Hilbig et al., 2013; Thielmann & Hilbig, 2014). Consistent with previous studies indicating a shift in social preferences and a decrease in dictator transfers when individuals played with real stakes compared with hypothetical ones (Amir et al., 2012; Bühren & Kundt, 2015), incentivized allocations fell to 26% in Study 4. Despite this substantial drop, correlations with the prosocial personality constructs of politeness and honesty-humility were strongest in the incentivized condition, while the effect of compassion disappeared altogether.

Furthermore, the positive relationship between these prosocial traits and hypothetical allocations of money does not appear to be accounted for by socially desirable responding. Specifically, the number of endorsed items on the Social Desirability Scale–17 (Stöber, 2001) was not correlated with dictator allocations ($\rho = .06$, $p = .34$) in Study 3. An additional factor that may have encouraged socially desirable responding in Study 4 was the small group size in which participants completed the games. However, this is unlikely to have impacted on the findings, given the double-blind design and the average allocation in this study, which was lower than

those for all three hypothetical studies and on par with average dictator allocations in the

economics literature (around 28%; Engel, 2011).

Interestingly, the incentivized game in Study 4 revealed an additional unique effect of

traits reflecting tendencies toward cognitive exploration and novelty, captured by HEXACO

openness to experience, as well as the openness aspect of B5 openness/intellect. While not an

interpersonal trait per se, these constructs have sometimes been associated with prosocial game

behaviors, including greater contributions in the public goods game (Hilbig, Zettler, & Heydasch,

2012) and higher investment in the trust game (Becker et al., 2012). As these findings were not

replicated in our earlier studies, they are treated with some caution here. However, future

investigations may shed light on the mechanisms underlying openness and whether they

represent an additional pathway to prosocial behavior beyond traits traditionally concerned with

interpersonal harmony.

Conclusions

The dictator game has been used in hundreds of studies in the social, psychological, and

biological sciences as an index of prosociality. However, there is a lack of consensus regarding

the specific motivations that these allocations of wealth represent. Across four studies using both

hypothetical and incentivized games, we showed that prosocial allocations were driven by

personality traits reflecting compliance with norms concerning fairness, cooperation, and social

conduct—the politeness aspect of B5 agreeableness—rather than traits reflecting compassion and

empathic concern. This pattern of findings was closely mirrored by honesty-humility from the

HEXACO model, a conceptually-similar trait capturing fair and non-exploitative behavior.

This is the first study within an emerging literature at the interface of personality and

economic games to support the role of fairness norms as the main driver of prosocial behavior in

the standard dictator game. Future investigations could build on these results by testing the

motivations underlying emotional concern and good manners, as well as examining the

situational features activating compassion- and politeness-based prosocial processes using both

laboratory paradigms and their real-world analogs. Together, such investigations would have

major implications for how economic games are designed and interpreted in psychological

research, underscoring the need to revise assumptions about standard dictator allocations as a

direct index of altruism, kindness, and compassion.

Declaration of Conflicting Interests

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Footnotes

[1] Previous studies have also examined the links between the *facets* of agreeableness and dictator allocations, finding positive effects for the trust, morality, and sympathy facets of the NEO PI-R from the International Personality Item Pool (Foschi & Lauriola, 2014). However, the facet structure of the Big Five and its divergent validity are somewhat arbitrary and are not as clearly understood as the empirically-derived and biologically-based mid-level aspects of the Big Five (Costa, McCrae, & Dye, 1991; DeYoung et al., 2007).

[2] Interestingly, compassion has been found to be linked to endorsement of moral systems concerning equality (Hirsh et al., 2010), which is at odds with our finding that politeness is uniquely associated with preferences for fairness within the dictator game. This highlights the complexities and pitfalls of interpreting dictator game allocations—which may reflect compliance with fairness norms—as a direct and inherent measure of egalitarianism.

[3] Given similar findings for the politeness aspect of B5 agreeableness and HEXACO honesty-humility, and debate regarding the degree to which honesty-humility is independent of B5 agreeableness (Ashton et al., 2014; DeYoung et al., 2007; McCrae & Costa, 2008; van Kampen, 2012), we ran a series of hierarchical regressions to examine whether honesty-humility explained incremental variance in dictator allocations beyond politeness. In Studies 1, 3, and 4, adding honesty-humility led to a significant increase in explained variance in dictator allocations after controlling for politeness; however, honesty-humility was not a significant incremental predictor after controlling for politeness in Study 2.

[4] At the facet level of HEXACO honesty-humility, previous research has identified the fairness and greed avoidance facets as unique predictors of prosocial allocations of wealth (Hilbig, Glöckner, & Zettler, 2014). In our research, we observed less consistency, with all four

facets of sincerity, greed avoidance, modesty, and fairness differentially correlating with

allocations depending on the study.

Table 1

Summary of Study Design and Major Results across Studies

	Study 1	Study 2	Study 3	Study 4
Participant details				
Final *N*	192	212	304	90
Sample	Psychology students	US MTurk workers	US MTurk workers	Students, members of the community
Mean age (*SD*)	20.21 (4.52)	29.94 (8.47)	30.90 (9.89)	22.38 (3.76)
% female	75%	59%	55%	70%
N (%) removed after validation	14 (6.8%)	12 (5.4%)	36 (11%)	13 (13%)
Dictator game details				
Incentivization	Hypothetical	Hypothetical	Hypothetical	Incentivized
Format	Standard	Standard	Decomposed	Standard
Mean allocation (*SD*)[a]	4.03 (1.80)	4.32 (1.72)	4.57 (1.30)	2.59 (2.20)
% keeping all	13%	9.9%	5.9%	34%
Personality traits correlated with dictator allocations				
B5 traits	B5A[b]	B5A[b]	B5A[b]	B5A[b]
Aspects of B5 agreeableness	B5Comp, B5Pol[c]	B5Comp, B5Pol[c]	B5Comp, B5Pol[c]	B5Pol[c]
HEX traits	HEXH[b], HEXA	HEXH[b]	HEXH[b], HEXC	HEXH[b], HEXO[b]

Note. B5 = Big Five Model, measured using the Big Five Aspect Scales (BFAS; DeYoung et al., 2007). B5A = B5 Agreeableness. B5Comp = B5 Compassion. B5Pol = B5 Politeness. HEX = HEXACO Model, measured using the HEXACO Personality Inventory—Revised (HEXACO-PI-R; Lee & Ashton, 2004). HEXA = HEXACO Agreeableness. HEXC = HEXACO

Conscientiousness. HEXH = HEXACO Honesty-Humility. HEXO = HEXACO Openness to experience.

[a]Dictator allocations indicate amount allocated to partner out of 10 points (corresponding with dollar amounts) or $10.

[b]Significant unique predictor when all broad domains from the same personality model were entered in a regression on dictator allocations.

[c]Significant unique predictor when both aspects of B5 agreeableness were entered in a regression on dictator allocations.

Table 2

Descriptive Statistics and Bivariate Correlations between Personality Variables and Dictator

Allocations

Variable	M (SD)	Correlations				
		1	2	3	4	5
Study 1 (N = 192)						
1. B5 Agreeableness	3.85 (0.47)	.88				
2. B5 Compassion	3.96 (0.55)	.87**	.89			
3. B5 Politeness	3.74 (0.53)	.86**	.50**	.77		
4. HEX Honesty-Humility	3.23 (0.53)	.49**	.35**	.50**	.81	
5. HEX Agreeableness	3.03 (0.54)	.48**	.33**	.50**	.31**	.84
6. DG allocation[a]	4.03 (1.80)	.21**	.14*	.20**	.30**	.19**
Study 2 (N = 212)						
1. B5 Agreeableness	3.76 (0.52)	.88				
2. B5 Compassion	3.81 (0.58)	.88**	.86			
3. B5 Politeness	3.70 (0.60)	.89**	.58**	.77		
4. HEX Honesty-Humility	3.44 (0.61)	.46**	.27**	.55**	.83	
5. HEX Agreeableness	2.98 (0.54)	.41**	.31**	.41**	.31**	.82
6. DG allocation[a]	4.32 (1.72)	.19**	.15*	.20**	.25**	.09
Study 3 (N = 304)						
1. B5 Agreeableness	3.85 (0.45)	.86				
2. B5 Compassion	3.88 (0.57)	.87**	.88			
3. B5 Politeness	3.81 (0.50)	.83**	.43**	.74		

4. HEX Honesty-Humility	3.47 (0.57)	.42**	.23**	.51**	.82	
5. HEX Agreeableness	3.02 (0.55)	.28**	.17**	.32**	.21**	.84
6. DG allocation[a]	4.57 (1.30)	.20**	.19**	.17**	.20**	.10

Study 4 (N = 90)

1. B5 Agreeableness	3.78 (0.44)	.84				
2. B5 Compassion	3.88 (0.55)	.87**	.86			
3. B5 Politeness	3.68 (0.48)	.82**	.42**	.70		
4. HEX Honesty-Humility	3.28 (0.60)	.45**	.29**	.48**	.84	
5. HEX Agreeableness	2.96 (0.59)	.33**	.09	.49**	.25*	.87
6. DG allocation[a]	2.59 (2.20)	.23*	.13	.26*	.32**	.12

Note. Cronbach's αs are shown in the diagonal. For correlations between all personality and game variables, see supplemental material available on request from the authors. B5 = Big Five Model, measured using the Big Five Aspect Scales (BFAS; DeYoung et al., 2007). DG = Dictator game. HEX = HEXACO Model, measured using the HEXACO Personality Inventory— Revised (HEXACO-PI-R; Lee & Ashton, 2004).

[a]Bivariate correlations calculated using Spearman's rho. Dictator allocations indicate amount allocated to partner out of 10 points (corresponding to dollar amounts) or $10.

*p < .05. **p < .01.

Table 3

Standardized Regression Coefficients Predicting Amount Allocated to Partner in the Dictator Game

	Study 1		Study 2		Study 3		Study 4	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
B5 Agreeableness	0.15*		0.25**		0.19**		0.21^	
B5 Extraversion	-0.03		-0.05		0.01		-0.05	
B5 Neuroticism	-0.05		0.00		-0.05		0.04	
B5 Openness/Intellect	-0.01		-0.09		-0.06		0.18	
B5 Conscientiousness	0.11		0.06		0.05		-0.05	
HEX Honesty-Humility		0.26**		0.20**		0.20**		0.31**
HEX Emotionality		0.10		0.13^		0.09		0.12
HEX Extraversion		0.02		0.03		0.05		-0.01
HEX Agreeableness		0.10		0.04		0.04		0.09
HEX Conscientiousness		0.08		0.05		0.08		0.03
HEX Openness to Experience		0.01		-0.06		-0.03		0.22*
R^2	.04	.11	.06	.06	.04	.07	.09	.20
Adjusted R^2	.02	.08	.04	.04	.03	.05	.03	.14

Note. B5 = Big Five Model, measured using the Big Five Aspect Scales (BFAS; DeYoung et al., 2007). HEX = HEXACO Model, measured using the HEXACO Personality Inventory—Revised (HEXACO-PI-R; Lee & Ashton, 2004).

^$p < .10$. *$p < .05$. **$p < .01$.

Table 4

Regression Analysis of the Aspects of Big Five Agreeableness on Amount Allocated to Partner in

the Dictator Game

Variable	R^2	Adjusted R^2	β	t	p
Study 1 (N = 192)	.04	.03			
Intercept				1.62	.11
Politeness			0.20	2.36	.02
Compassion			-0.01	-0.15	.88
Study 2 (N = 212)	.06	.05			
Intercept				1.93	.06
Politeness			0.25	3.00	.003
Compassion			0.01	0.11	.91
Study 3 (N = 304)	.04	.03			
Intercept				3.94	< .001
Politeness			0.13	2.09	.04
Compassion			0.09	1.41	.16
Study 4 (N = 90)	.07	.05			
Intercept				-1.09	.28
Politeness			0.22	1.96	.05
Compassion			0.06	0.56	.58