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Mechanisms of Humility's Influence on Prosociality

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MECHANISMS OF HUMILITY'S INFLUENCE ON PROSOCIALITY

By

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An Abstract of the Thesis/Dissertation Presented
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Prosocial behavior is valuable for the people it is meant to help, the people engaging in the behavior, and society in general. However, we do not always behave prosocially. Through three studies (N = 535) this work examined the possibility that resource scarcity might reduce prosocial behavior and that humility might promote prosocial behavior by both reducing the negative effect of scarcity on prosocial behavior, and by its own positive relationship with prosociality. This work further examined facets of humility that might promote prosocial behavior, such as other-orientation, and the roles of state and trait humility. Humility was associated with greater prosocial behavior across three studies, and though the other-oriented nature of the construct is at least partially responsible for this relationship, these studies suggest that other aspects of humility explain unique variance in prosocial giving. A path model that fits the data well suggests that trait humility promotes prosocial behavior by promoting state humility and other-orientation, which themselves are associated with greater degrees of prosocial giving. The effects of scarcity, and any moderating role humility might have, are somewhat unclear as the manipulations used failed to effectively manipulate feelings of resource scarcity.

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CHAPTER 1

EXECUTIVE SUMMARY

This dissertation examines the relationship between resource scarcity and prosocial behavior, and the relationship between humility and prosocial behavior. It begins with a review of the theoretical and empirical literature on prosocial behavior and its relationship to resource scarcity. Having found a general tendency for resource scarcity to inhibit prosocial behavior I review the literature that suggests empathy might be important to prosociality. The literature suggests that other-orientation is the key element of empathy that relates it to prosocial behavior. This leads to a review of humility, which also involves a high degree of other-orientation, but also includes two other mechanisms through which it may increase prosocial behavior in the face of scarcity.

I then discuss the studies I conducted to examine the role of humility in prosocial behavior under scarcity. Specifically I investigate (1) whether or not humility will be positively associated with helping behavior, (2) whether or not scarcity will reduce helping behavior, (3) whether individuals who are more humble will respond less selfishly to resource scarcity than people who are more humble, (4) whether resource scarcity produces a decrease in other-orientation that leads to decreased giving to others, and (5) whether other-orientation explains the relationship of humility to prosocial behavior or not. In addition, I explore whether a lack of self-focus explains the relationship of humility to procsocial behavior or not, and what aspects of humility might be especially important for future investigations of the relationship between humility and prosocial behavior.

Ultimately, these findings suggest humility predicts prosocial behavior. Although the other-oriented aspect of humility accounts for part of this effect, it seems other aspects of humility explain unique variance in giving behavior.

CHAPTER 2

LITERATURE REVIEW

Social Relationships & Social Functioning

Social relationships are integral to human well-being. Ingroups are characterized by cooperative or otherwise positive social relationships that promote trust, social support, helping, and cooperation; these groups facilitate the development of stable communities and societies (Graham & Haidt, 2010; Herzenstein & Small, 2012; Norenzayan & Shariff, 2008; Tajfel & Turner, 1979). On an intrapersonal level, positive social relationships can also help protect one's self-esteem, which is integral to personal well-being (Heider, 1958; Kelley, 1973; Swann & Bosson, 2010). However, social relationships can also facilitate prejudice and exploitation. Antagonistic or otherwise toxic social relationships can lead to outgroup denigration and exploitation for the good of oneself and one's ingroups (Dovidio & Gaertner, 2010; Tajfel & Turner, 1979; Yzerbyt & Demoulin, 2010). What then, determines whether we form positive social relationships? Evidence suggests that prosocial behavior, particularly instances of helping, facilitates the development of positive social relationships (Denham, McKinley, Couchoud, & Holt, 1990; Layous, Nelson, Oberle, Schonert-Reichl, & Lyubomirsky, 2012; Norenzayan & Shariff, 2008).

What is Prosocial Behavior?

Prosocial behaviors contribute to the creation and maintenance of positive relationships. These are voluntary behaviors intended to increase the welfare of other individuals (Batson, 1983; Eisenberg & Miller, 1987; Norenzayan & Shariff, 2008; Trivers, 1971). Prosocial behavior is usually studied as helping and giving behaviors that elevate one beyond their current state, such as charitable giving or helping strangers struggling with some instance of misfortune

(LaBouff et al., 2012; Korndörfer et al., 2015; Piff et al., 2010; Shariff & Norenzayan, 2007; Shariff, Willard, Andersen, & Norenzayan, 2016; Roux, Goldsmith, & Bonezzi, 2015).

The history of research in prosociality has been long and complex. Researchers have been careful to try and disentangle prosocial behaviors, like giving, from prosocial motives, like altruism. Though early research on prosocial behavior focused heavily on behaviors born from prosocial motives (Barasch, Levine, Berman, & Small, 2014; Eisenberg & Miller, 1987; Trivers, 1971), the benefits and functions of prosocial behaviors do not seem dependent on motivations (Barasch et al., 2014; Batson, 1983; Eisenberg & Miller, 1987; Graham & Haidt, 2010; Irons, 1991; Layous, et al., 2012; Shariff & Norenzayan, 2007). As a result, and given that behaviors are more empirically accessible, researchers have increasingly begun to investigate prosociality through those behaviors that facilitate healthy social relationships.

Prosocial Behavior Has Interpersonal and Intrapersonal Benefits

Prosocial behavior promotes social functioning, regardless of its motivation, via several mechanisms. The simplest is by making individuals more likeable, as people who engage in more prosocial behavior are more accepted and well-liked by their peers (Denham et al., 1990; Layous et al., 2012; Liu & Chen, 2003; Nelson et al., 2015; Rys & Bear, 1997). For instance, children age 9 to 11 were found to be more likable and more accepted by their peers after just four weeks of performing an additional three acts of kindness per week, even when those acts of kindness were not all necessarily directed at their peers.

Prosocial behavior can also create an environment where cooperation yields better outcomes than parties behaving in their best individual interests (Ashton & Lee, 2007; Eisenberg & Miller, 1987; Galen, 2012; Graham & Haidt, 2010; Irons, 1991; Korndörfer et al., 2015; Norenzayan & Shariff, 2008; Shariff & Norenzayan, 2007; Trivers, 1971). One classic example

of this is the prisoner's dilemma (Tucker, 1983). In this scenario, no matter if your partner decides to act in your interest or their interest, you will always achieve a better outcome if you betray your partner. However, if both actors betray one another, they will both be worse off than if they both cooperated. This makes cooperation the rational option, even when acting in self-interest.

Prosocial behaviors can also create a notion of a shared fate and can form superordinate groups that bind smaller groups together into larger groups (Dovidio & Gaertner, 2010; Yzerbyt & Demoulin, 2010). In this way smaller groups that might previously have derogated one another as part of the outgroup may dissolve that barrier and coalesce around the new shared group identity, further promoting cooperation and social health (Kuchenbrandt, Eyssel, & Seidel, 2013; Miles & Crisp, 2014; Tajfel & Turner, 1979). This is precisely what happened in the Robbers' Cave study (Sherif, Harvey, White, Hood, & Sherif, 1961); antagonistic groups were made to participate in neutral activities and saw no reduction in hostility until they were made to participate in cooperative activities where neither group could succeed without the other (Gaertner et al., 2000). Another instance of shared fate activating forming superordinate identities and binding groups together could be observed after September 11th, 2001. After the attacks on the World Trade Center, most New Yorkers, across many races, felt race relations were generally good (Murphy & Halbfinger, 2002) despite only 16% of African Americans having identified race relations as good a year before. More recently, a diverse band of people, many of whom hate one another (Novogrod, 2015; Tehran Bureau, 2015), came together to defeat and destroy the terrorist organization Daesh, which sought to destroy everything and everyone but itself (Dabiq, 2016). If not for the superordinate identity as enemies of Daesh, cooperation among these entities at such scale would likely not have been possible.

Finally, intentions are often inferred through behaviors, their outcomes, and their surrounding contexts (Heider, 1958, Kelley, 1973; Weiner, 2008). Selfish behaviors are typically conceptualized as exploitive or indifferent to the outcomes of others (Ashton & Lee, 2007), while behaviors resulting in another's benefit are more likely to be perceived as altruistic (Arsena, Silvera, & Pandelaere, 2014; Barasch et al., 2014; Heider, 1958; Ross & Nisbett, 1991). As such the actual motivations driving actors' prosocial behaviors do not necessarily have to be altruistic or otherwise prosocial for those same actors to be perceived as having prosocial motivations. Moreover, as mentioned above, we consider the likely behaviors and intentions of others when we act. When combined, these mechanisms create a cycle of prosociality: prosocial behavior from one person can cause another to perceive that actor as prosocially motivated, which can lead them to expect future opportunities for cooperation. Those expectations can lead to further cooperation which further propagates the cycle.

On a larger scale, prosocial behavior may similarly strengthen entire communities through its ability to signal cooperative opportunities, expectations, and intentions. Chancellor and his colleagues (2018) found that those who were socially closer to more prosocial individuals behaved more prosocially towards others. This suggests that just the transmission of prosocial behavior as a norm within a group increases prosociality. Furthermore, investigations of when and who we choose to help suggest that helping can serve as a signal of one's moral virtue or value as a potential partner in cooperative endeavors to others (Guinote, Cotzia, Sandhu, & Siwa, 2015; Korndörfer et al., 2015; Roux et al., 2015). In these studies, helping behavior is often based on the target's and agent's status. Often, lower status individuals will engage in helping to indicate their potential value to higher-status individuals, whereas higher-status individuals use prosocial behavior to manage impressions of their moral character to avoid

reprisal (Guinote et al., 2015; Korndörfer et al., 2015; Roux et al., 2015). Together with the tendency for people to describe prosocial behaviors driven by empathic and emotional reactions as laudable and altruistic, rather than perceiving them as selfish appeals to others (Barasch et al., 2014), this further suggests that prosocial behaviors may in fact serve as social signals that strengthen a community by promoting reciprocity.

The promotion of prosocial behavior goes even beyond reciprocity and rational exchange, and can strengthen the very health and longevity of one's community. If individuals perceive helping behavior as generally altruistic then the teaching and learning of that behavior, particularly in environments where prosocial behavior is common, is likely to result in the moralization – the process by which ideals and behaviors outside of one's moral schema take on moral qualities – of prosocial behavior (Bandura, 1986; Rosen, 1999). In such cases engaging in prosocial behavior becomes a source of goodness in its own right and individuals may engage in it regardless of its direct benefit to them. This in turn may create a cycle by which community members come to learn to associate moral value with prosocial behavior and further transmit and reinforce that message within the community. To some degree we can see this reflected in the moral values observed within various communities. Religious communities, which often teach their members to help one another, tend to value group binding norms such as ingroup loyalty more than irreligious communities (Graham & Haidt, 2010; Graham, Haidt & Nosek, 2009; LaBouff, Humphreys, & Shen, 2017). Similarly, conservatives endorse the group binding moral foundations more and tend to value ingroup helping more, as well as display and endorse more strict boundaries between groups, than liberals do (Graham et al., 2009; Luguri, Napier, & Dovidio, 2012; McAdams et al., 2008; Niemi & Young, 2013). The tendency for communities

who place greater emphasis on prosocial behavior to live longer (Gintis, 2003) serves as compelling evidence for this moralization to be a community strengthening force.

But prosocial behavior does not just have interpersonal and group-level benefits, it benefits the prosocial actor in intrapersonal ways too. One of the most replicated findings is that behaving in prosocial ways makes people happier (Aknin, Broesch, Hamlin, & Van de Vondervoort, 2015; Aknin, Dunn, Whillans, Grant, & Norton, 2013; Pilch, 2008). Not only do these individuals feel better, but those who engage in prosocial giving report greater degrees of happiness, life satisfaction, feelings of purpose in life, feelings of social wellness, feelings of social contribution, and superior physical health (Klein, 2016; Nelson, Layous, Cole, & Lyubomirsky, 2016; Poulin & Holman, 2013). Beyond these benefits, prosocial giving earlier in life has been shown to be related to the development of greater conscientiousness and greater degrees of openness later in life (Kanacri et al., 2014; Sahdra, Ciarrochi, Parker, Marshall, & Heaven, 2015). As conscientiousness, a sense of being purposeful and vigilant, is related to better physical health (O'Connor, Conner, Jones, McMillan, & Ferguson, 2009) and success (Duckworth, Weir, Tsukayama, & Kwok, 2012), prosocial behavior may also be associated with positive health outcomes and personal success. As such, the benefits of prosociality can extend to wellness across the social sphere by promoting cooperation and positive relationships, the mental sphere through the development of positive character traits, the emotional sphere through greater feelings of meaning and happiness, and even through better physical health.

Prosocial Giving & Resource Scarcity

If prosociality is so valuable, why is it that people do not always behave in prosocial ways? While it would be nice for everyone in the world to have the resources to be able to give to others and still meet their own needs for the rest of their lives, that is not a reality for most

individuals. Could it be that the reason we do not engage in prosocial behavior consistently is because we do not have the resources to do so? This lack of sufficient resources to satisfy all parties is what is known as "resource scarcity," and many early researchers and theories – such as Strain Theory and Social Exchange Theory – suggest that under these conditions, individuals will work to fulfill their own needs before engaging in any prosocial behavior (Allport, 1954; Cook, Cheshire, Rice, & Nakagawa 2013; Homans, 1961; Husnu & Crisp, 2010; Kelley & Thibaut, 1978; Lawler & Yoon, 1993; Lynn, 1991; Thibaut & Kelley, 1959; Van Vugt & Van Lange, 2006). This suggests that when resources are more scarce, prosocial behavior is more costly, and becomes less likely as a result.

This idea is supported by several empirical studies. More high income households donate to charity than low income households (Korndörfer et al., 2015), and among both adults and children, there generally exists a preference for distributing resources in a way that is equal, except when resources become scarce (Bian, Sloane, & Baillargeon, 2018; Dejesus, Rhodes, & Kinzler, 2014; Kenward & Dahl, 2011; Olson & Spelke, 2008; Skitka & Tetlock, 1992). At which point, individuals with the opportunity to distribute resources tend to allocate more towards themselves than towards others. For instance, infants faced with scarce resources spend more time attending to those who allocate resources evenly or to the outgroup under scarcity, presumably because this violates their expectations (Olson & Spelke, 2008), expectations that persist well into childhood (Dejesus, et al., 2014). This preference and tendency for groups with more resources to behave more prosocially (Darley & Batson, 1973; Korndörfer et al., 2015; Skitka & Tetlock, 1992) would seem to support the notion that those with greater opportunity to help do engage in prosocial behavior more, as it does not preclude them from fulfilling their own

needs. While this evidence suggests that people who experience scarcity are less likely to behave prosocially, it does not specify the mechanism by which scarcity may reduce prosocial behavior.

Scarcity reduces attention to others.

Experiencing resource scarcity may shift one's attention from others and the future onto the immediate needs of the self (Driskell, Salas, & Johnston, 1999; Goldsmith, Roux, & Ma, 2018; Levontin, Ein-Gar, & Lee, 2015; Vohs, Mead, & Goode, 2006). In this way the effect of resource scarcity on prosocial behavior is driven not exclusively by whether one is capable of helping but whether one notices others' need of assistance and one's capacity to help them. Indeed, this is the primary explanation for the findings of Darley and Batson (1973). When studying theological seminary students primed with the parable of The Good Samaritan, those in a hurry – and thus lacking the resource of time – failed to even notice confederates who could use their help. Further work demonstrates that individuals attempting to make decisions in highly stressful environments, partially created through time scarcity, performed worse than control participants (Driskell et al., 1999). However, those who maintained a fairly integrated team perspective as opposed to a self-focused one did not demonstrate such a drastic difference from control participants, suggesting that the behavioral differences were driven by time scarcity causing an increase in self-focus (Driskell et al., 1999).

However, it is not just time scarcity that captures attention; financial scarcity also captures attention, causing individuals' thoughts to more easily be invaded by financial worry (Shah, Zhao, Mullainathan, & Shafir, 2018). This leads individuals experiencing scarcity to more readily see associations between tasks, events, or ideas with money, even when such associations are not inherent or obvious (Shah et al., 2018). Financial scarcity can also affect the attention we give to others by creating cognitive load that taxes mental faculties (Jasper & Ansted, 2008;

Shah, Mullainathan & Shafir, 2012) or causing people to seek distance from and attend less to the needs of others (Vohs et al., 2006). Such distance is especially problematic for those experiencing financial scarcity because financial scarcity motivates financial behaviors that focus on more proximal needs and gratification at long-term detriment (Shah, et al., 2012). Given these effects of resource scarcity, be it financial or temporal, we would expect individuals experiencing scarcity to be more focused on their own immediate needs than they might be outside of scarcity. As such, it is similarly likely increased self-focus might prevent individuals from helping due to reduced attentional capacity for others as it is that they scarcity may render them unable to help another person in another's time of need.

Scarcity alters perceptions of others.

Scarcity may also reduce prosocial behavior by causing us to expect others to behave competitively rather than cooperatively (Brucks & Van Lange, 2007; Roux et al., 2015). Since reciprocity is an important predictor of prosociality, (Brucks & Van Lange, 2007; Cohen & Bernard, 2013; Korndörfer, 2015; Kuhlmeier, Dunfield, & O'Neill, 2014; Liu & Hao, 2017; Todd & Galinsky, 2014) those with partners who are not expected to reciprocate – and for whom helping does not signal to third parties one's value as a cooperative partner – generally behave less prosocially (Brucks & Van Lange, 2007; Kenward & Dahl, 2011; Kuhlmeier et al., 2014; Todd & Galinsky, 2014). In fact, when resources are scarce, this lack of reciprocity leads to generally prosocial individuals behaving in ways that are more selfish than would be expected in order to compensate for the expected selfish actions of others (Brucks & Van Lange, 2007; Todd & Galinsky, 2014). For instance, Pierce and his colleagues (2013) found people are more likely to deceive others for their own self-interest when they expect others to behave competitively, instead of cooperatively (Pierce, Kilduff, Galinsky, & Sivanathan, 2013). Such competitive

orientations have been shown to partially explain the decreased giving observed on the part of participants under scarcity in economic games, as compared to participants not faced with scarcity (Roux et al., 2015). In this way scarcity may start a cycle that reduces prosocial behavior by altering one's expectations of others' behavior. When one expects others to behave competitively, one behaves competitively, giving others further cause to behave more competitively towards us, all while increasing expectations of future competitive behavior between parties.

While resource scarcity does lead individuals to adopt more competitive orientations, it does not seem to eliminate expectations for reciprocity of prosocial behavior altogether. Instead when resources are scarce - across infants, children, and adults – there is a preference for allocation of resources to the ingroup (Bian et al., 2018; Cohen & Bernard, 2013; Esses, Dovidio, Jackson, & Armstrong, 2005; Krosch, Tyler, & Amodio, 2017; Kuhlmeier et al., 2014; Neuberg & Schaller, 2016), as well as to outgroup partners considered promising as cooperative partners (Kenward & Dahl, 2011; Kuhlmeier et al., 2014), and to those who are deemed as not having personal responsibility for their need (Skitka & Tetlock, 1992; Skitka & Tetlock, 1993). Furthermore, by examining those highly-motivated to distribute resources equally, researchers have observed that the processes that allow individuals to resist the urge to selectively allocate resources in such ways are highly deliberative and break down under sufficient stress and cognitive load (Jasper & Ansted, 2008; Krosch et al., 2017; Skitka & Tetlock, 1993). Individuals who are highly motivated to distribute resources equally across race continued to do so in the face of resource scarcity, while those low in such motivation favored their own race, but this difference between motivations was diminished when those with high motivation experienced heightened degrees of cognitive load (Krosch et al., 2017). Similarly, liberals, who tend to

distribute resources more evenly – regardless of recipients' personal responsibility for their resource needs – behaved more like conservatives, allocating more resources to those who were less personally responsible for creating their resource needs, when faced with resource scarcity (Jasper & Anstead, 2008; Skitka & Tetlock, 1993). This selectivity towards prosociality bolsters the argument that however the adoption of a competitive orientation might generally affect one's tendency towards prosociality, resource scarcity also reduces prosociality by increasing selectivity in who people treat prosocially.

Scarcity promotes aggression.

Finally, the stress that comes with competing for resources may reduce prosocial behavior by promoting aggressive behavior. Resource scarcity, particularly at its most extreme, is stressful and hinders the ability to fulfill one's needs (Cohen & Bernard, 2013; De sousa, Peterman, & Reeve, 2018; Shah et al., 2018). This can produce frustration, which tends to lead to aggressive behavior (Berkowitz, 1989; Dollard, Miller, Doob, Mowrer, & Sears, 1939). This is even more likely when other individuals can be identified as the cause of that frustration. Concordantly, resource scarcity has been shown to increase a wide variety of aggressive behaviors. Marketing promotions that emphasize scarcity to signal an opportunity's value have been shown to cause shoppers to behave more aggressively: assaulting rigged, faulty vending machines; engaging in more aggressive behaviors in video games; and perpetrating greater amounts of violence upon other shoppers (Kristofferson, McFerran, Morales, & Dahl, 2016). Populations experiencing extreme poverty commit more criminal activity and show decreased concern for the welfare of their communities (Agnew, 2015). Such populations also engage in aggressive behaviors at a greater rate, even when aggressive behavior is not rationally maximizing (Prediger, Vollan, & Herrmann, 2014). Although prior mechanisms for the effect of

resource scarcity on prosocial behavior focused on the shifting advantages of prosocial and selfish behaviors, these findings demonstrate that, to at least some degree, resource scarcity simply tends to increase aggressive behavior.

An atypical response - scarcity can promote giving.

Despite the clear benefits of prosocial behavior to those who engage in it and those they engage with, scarcity in its various forms makes prosocial behavior difficult, causing people to instead behave in more selfish ways that favor their ingroup and satisfy their immediate needs. However, there are some instances where resource scarcity actually seems to increase prosocial behavior. For instance, although a greater percentage of high income households donate to charity than low income households, low income households (below $25,000) who do donate tend to donate a greater percentage of their income than almost any other income bracket (Korndörfer et al., 2015; Vohs & Fennis, 2012). Additionally, though scarcity often reduces prosocial behavior in economic games, sometimes scarcity increases it instead (Kraus, Piff, Mendoza-Denton, Rheinschmidt, & Keltner, 2012; Piff et al., 2010). Piff and colleagues (2010) found that when participants were provided money to distribute, individuals of a lower socioeconomic status (SES) – which they suggest functions as long-term resource scarcity – gave less than those of higher (SES). They replicated this conceptually when they experimentally induced feelings of being lower-class and higher-class, finding that those who were manipulated to feel as though they were of lower social class relative to other participants expressed a greater proportion of salary should be given to charity than those manipulated to feel as though they were of a higher social class.

In the face of all the mechanisms and processes by which scarcity might drive people away from prosocial behavior, why do some people respond to scarcity by behaving more

prosocially? Perhaps there are personality traits or other psychological mechanisms that determine the nature of the relationship between scarcity and prosocial behavior. One such potential moderator is social value orientation (SVO), an individual's general preference towards resource allocation as: Prosocial – distributing resources equally or in favor of others; Pro-self – acting to maximize one's own resources without care for those of others; or Competitive – acting to maximize the difference between oneself and others while ensuring one has more than others (Murphy, Ackermann, & Handgraaf, 2011; Roux et al., 2015; Van Lange, De Cremer, Van Dijk, & Van Vugt, 2007). Roux and colleagues compared control participants to participants primed with feelings of resource scarcity through episodic recall of instances where they felt as though things were lacking in their lives (2015). As seen in Figure 1, participants primed with feelings of scarcity donated less in an anonymous dictator game than participants in their control condition (Roux et al., 2015). However, this pattern of behavior was moderated by SVO, as those with a prosocial orientation gave more to others when primed with scarcity, while those with more competitive and pro-self orientations gave less when primed with scarcity (Roux et al., 2015). These findings suggest that scarcity impacts prosocial behavior mainly by amplifying the effects of self-focus. Those with self-focused orientations respond to scarcity by keeping more for themselves, whereas those with more prosocial orientations respond to scarcity by giving even more to others.

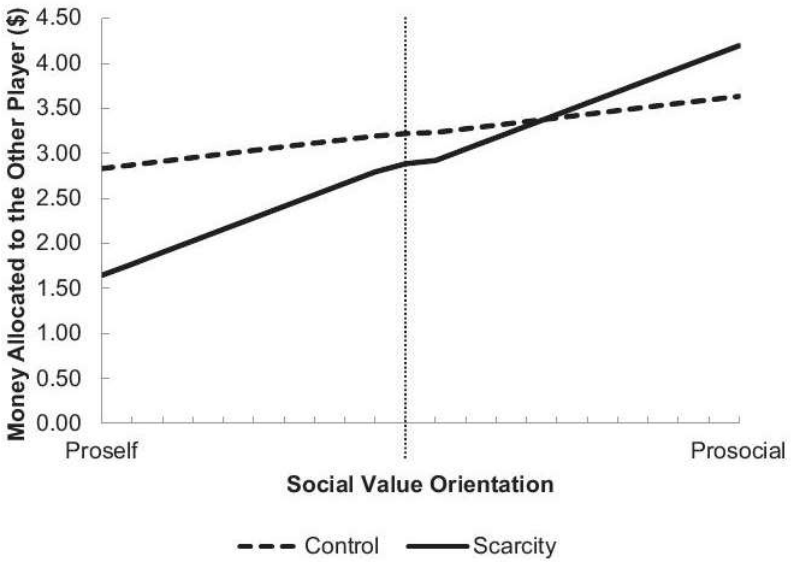

Figure 1. SVO Moderates the effect of Scarcity on Giving reprinted from "On the Psychology of Scarcity: When Reminders of Resource Scarcity Promote Selfish (and Generous) Behavior," by C. Roux, K. Goldsmith, and A. Bonezzi, 2015, *Journal of Consumer Research, 42*, 624. Copyright 2015 by "Oxford University Press"

In addition, Vohs and Fennis (2012) found that when primed with scarcity, reminders of others yielded higher donations than reminders of one's self; the opposite was observed when participants were primed with feelings of having money. This supports the assertion by Kraus and his colleagues (2012), that individuals lacking in resources develop a more communal orientation, whereas those with more resources develop a more self-focused, agentic orientation. Their work, in concordance with the work of Liu and Hao (2017) suggests that those without resources are susceptible to different motivating emotions than those with financial resources. Specifically, gratitude and empathy may motivate those without to donate while shame and high belief in reciprocity may be most likely to motivate those with resources to give to others. This further reinforces the notion that scarcity affects prosocial behavior in part through amplifying one's susceptibility to various concerns and emotions focused on others and oneself.

Many of the mechanisms that have been proposed for how scarcity affects prosocial behavior involve a social-cognitive component envoking perceptions of others' minds, and many

of these mechanisms may very well affect one another. In order to understand when people respond to scarcity selfishly or prosocially, it is important for us to investigate psychological constructs that might determine which mechanisms are activated by scarcity and how they interact with one another.

Explaining the Effect of Scarcity

Empathy.

Empathy – the experience of another's thoughts, feelings, and condition from their perspective – is one of the most often hypothesized, and well-studied, predictors of prosocial behavior, and might help explain differing reactions to resource scarcity (Allport, 1954; Batson et al., 1991; Cialdini, Baumann, & Kenrick, 1981; Darley & Batson, 1973; Davis, 1980; Piliavin, 1981; Batson, 1987; Tajfel & Turner 1979). Greater empathic concern is associated with greater giving and helping, (Batson et al., 1991; Eisenberg, Eggum, & Giunta, 2010; Eisenberg & Fabes, 1990; Eisenberg & Miller, 1987; Masten, Marelli, & Eisenberger, 2011). For instance, Batson found that those induced to feel empathy for a suffering child tended to help her even when it came at the expense of individuals with greater need for or better claim to the same assistance (1991). Empathic concern is also associated with fewer instances of aggression and other anti-social behaviors (Eisenberg et al., 2010; Kaukiainen et al., 1999; Miller & Eisenberg, 1988). Kaukiainen and his colleagues (1999) found that children higher in empathic concern were less likely to engage in both verbal and physical aggression against their peers. The theoretical associations and these empirical findings indicate a lot of overlap between how empathy and resource scarcity might affect prosocial behavior: by altering attention to others, reducing the tendency towards aggression, and affecting expectations of others.

Empathy as a cause of prosocial behavior.

Existing evidence supports the notion that empathy may not just relate to prosocial behavior through such mechanisms, but may have a causal role in determining when we behave prosocially. Empathy has been shown to mediate the relationship between parental disciplinary styles and prosocial behavior; parenting styles associated with more prosocial children also produced more empathetic children (Krevans & Gibbs, 1996). Moreover, the effect of perspective taking interventions on prosocial behavior seem to function by promoting a state of heightened empathy (Eisenberg et al., 2010). Furthermore, evidence suggests neural activity involved in empathic reactions mediates the relationship between measures of trait empathy and prosocial behavior (Masten, et al., 2011). Taken together this literature demonstrates the potential importance of earlier levels of empathy in predicting subsequent prosocial behavior.

Social exchange theory and empathy-altruism.

Empathy is not just an important predictor of prosocial behavior in general, it specifically explains some reactions to scarcity that early exchange theories – some of the first to posit a role of scarcity in determining prosocial behavior – have trouble accounting for. For instance, empathic concern might predict fatal, self-sacrificing behaviors for the benefit of group members, which social exchange theory would not (Allport, 1954; Batson, 1987; Batson et al., 1991, Batson & Powell, 2003; Eisenberg & Miller, 1987; Schroeder, Dovidio, Sibicky, Matthews, & Allen, 1988; Tajfel & Turner, 1979; Toi & Batson, 1982). After all, death is the ultimate cost and precludes any future reward, so any reward maximizing decision making, like that behind Social Exchange Theory, would not predict such sacrificial prosociality. And yet there are times when one's concern for others becomes powerful enough to outweigh one's desire to live. Though helping behavior usually does not come with such an extreme cost,

helping often does carry costs that outweigh the benefits, like charitable giving for the impoverished, which would not be predicted by basic social exchange theories.

Such findings led Batson to describe the empathy-altruism hypothesis – high empathy individuals will behave prosocially even when costs are high, whereas low empathy individuals will make more rational choices (Batson, 1987; Batson et al., 1991; Dovidio, 1991). Notably, this theory suggests that empathic concern may overcome the pressures induced by resource scarcity and allow people to behave prosocially in those contexts, despite some evidence suggesting a more powerful role for scarcity (Batson, O'Quin, Fultz, Vanderplas & Isen, 1983, Batson & Powell, 2003; Darley & Batson, 1973; Harel & Kogut, 2015). For instance, scarcity reduces the probability of noticing and thereby helping individuals in need (Darley & Batson, 1973) and can also cause helping to be more selfishly motivated (Batson et al., 1983; Harel & Kogut, 2015). Batson and his colleagues found that when helping became especially costly and individuals could abandon an individual in need, those who predominantly exhibited empathy did abandon the individual in need while those who exhibited personal distress at the suffering helped the other individual. As prosocial behavior under scarcity is inherently costlier the scarcer one's resources are, this study suggests that scarcity may reduce prosocial behavior in a way empathic concern may not compensate for. Additional evidence suggests that scarcity may actually reduce prosocial motivations born from compassion and increase the prosocial motivations born from reputational concerns (Lawler, 2001). In which case, empathy and scarcity would both affect prosocial behavior by operating on an individual's compassion. However, where empathy feeds compassion and the prosocial behavior born from it, scarcity reduces prosocial motives born from compassion. In this way, it is possible that where scarcity and empathy share mechanisms

for altering the degree of one's prosociality, that they may sometimes suppress each other's influence.

Still, some evidence exists to support the empathy-altruism linkage. For instance, those who experience empathic concern tend to help more than those experiencing personal distress of another kind, even when it is easy to avoid helping, so long as helping is not extremely costly (Schroeder et al., 1988; Toi & Batson, 1982). Further focus on empathic concern demonstrates that it is a better predictor of helping behavior than empathic joy – the idea that one will partake in reward through the experience of another's happiness (Batson, 1991). Although, more recent work suggests that empathic joy predicts more mundane, smaller-scale, prosocial behavior while empathic concern is especially important for crisis response and helping in response to adversity (Andreychik & Migliaccio, 2015).

Integrating empathy and social exchange theory.

As Batson rightly recognized, Social Exchange Theory was not perfect for describing human prosociality, but neither was empathic concern alone. Whereas Batson gave preeminence to empathic concern, some social exchange theorists simply see empathic reactions and other emotional costs and benefits as another part of the social exchange process (Cook et al., 2013; Izuma, Saito, & Sadato, 2008; Izuma, Saito, & Sadato, 2010; Lawler, 2001; Lawler & Yoon, 1993). These theorists suggest that the interpretation of social exchange theory has focused too much on tangible gains and costs, or on gains and costs that are diametrically opposed to their impact on another person (De Vos, Smaniotto, & Elsas, 2001; Izuma et al., 2010; Lawler, 2001; Lawler & Yoon, 1993; Neuberg et al., 1997). This interpretation of Social Exchange Theory allows concern for others and the social consequences for the self to play a similar role in

prosocial behavior as it does in the Empathy-Altruism hypothesis and bridges these two perspectives together.

Effect of empathic concern may be driven by other-orientation.

Emotional benefits and costs must be considered.

Indeed, evidence suggests we should think about the less tangible emotional benefits and costs associated with behavior when evaluating it using social exchange theory. Neural imaging work suggests that people react similarly when rating the desirability of reputational traits and monetary offers (Izuma et al., 2008). Similarly, the patterns of neural activation observed when individuals were given the opportunity to engage in activities that are considered highly praiseworthy and respectable were similar to those seen when given the opportunity to partake in financially rewarding behavior with no social costs (Izuma et al., 2010). Further, evidence suggests that one's social class and the scarcity in one's life may cause different reputational concerns (Kreps & Wilson, 1982; Milinski, Semman, Bakker, & Krambeck, 2001) and emotions (Lawler, 2001) to drive prosocial behavior - further supporting the notion of treating emotional states as rewards or costs associated with behavior. In which case, orientation to the needs of others might also explain differences in prosocial behavior, even for those who subscribe to prosocial behavior as primarily explained by this broader version of social exchange theory. Those who are more oriented towards the needs of others may associate greater value and costs with helping or not helping others, which may mitigate the costs of behaving prosocially under scarcity.

Less distinction between needs of others and the self.

Empathy might also be important to prosocial behavior under conditions of scarcity because individuals who experience a high degree of empathic concern may be considering the

needs of others as their own (Cialdini, Brown, Lewis, Luce, & Neuberg, 1997; Neuberg et al., 1997.) This might mean that individuals experiencing a great deal of empathy are actually adopting the needs of those others, representing an incorporation of others into the self. Consequently, resource scarcity would not reduce the desire to behave in ways that fulfill the needs of others, since they are construed as the individuals own needs. In support of this explanation Cialdini and colleagues (1997) find that inclusion of oneness – the degree to which others are included in the self – into regression analyses that include empathic concern and prosocial behavior cause empathic concern to no longer predict prosocial behavior, while oneness remains a significant predictor. These findings were replicated (Neuberg et al., 1997) and demonstrate that the breakdown of self-other need distinctions may contribute to the link between empathy and prosocial behavior. Perhaps then, the truly critical driver of prosocial behavior in this relationship is the degree to which we are generally oriented to perceiving the needs of others as one perceive their own.

All of these perspectives suggest that other-orientation is a vital component of empathy, and possibly the driving force behind the link between empathy and prosocial behavior (Batson & Powell, 2003; Cialdini et al., 1997; Eisenberg & Fabes, 1990; Hegtvedt, 1987; Torstveit, Sutterlin, Lugo, 2016). In which case, perhaps it is other-orientation, or some variable that incorporates it, that may determine when and how resource scarcity affects the tendency to behave in prosocial ways. However, as previous research has demonstrated, though empathic concern predicts prosocial behavior it is unlikely to be the variable to explain the effect of scarcity on prosocial behavior, given how costliness and scarcity tend to suppress its effect on prosociality. Could other-orientation be the underlying psychological construct that is key to understanding when we behave prosocially under scarcity? Having high other-orientation may

help mitigate the effect of scarcity on prosocial behavior through its effect on one's attention to others; although scarcity might still reduce attention to others, enough may remain to behave prosocially. A high other-orientation may also cause individuals experiencing scarcity to adopt the needs of others as their own, so even if scarcity causes one to focus only on their needs, they may still find themselves concerned for those whose needs they've adopted. However, other-orientation likely will not explain the effect of scarcity on prosocial behavior through its effect on perceptions of others as competitive. So there are still mechanisms by which scarcity may affect prosocial behavior that other-orientation likely wo not explain. Furthermore, some of the results discussed above should not have appeared if other orientation alone determined the response to scarcity. For instance, personal distress inducing more helping than empathic concern, but only under conditions of costly helping, would be odd if other-orientation alone controlled the response to scarcity. As such, there must be some other construct related to other-orientation that explains the effect of scarcity on prosocial behavior.

Introducing Humility

One such construct that involves other orientation is humility (Ashton & Lee, 2007; Davis et al., 2011; Kruse, Chancellor, & Lyubomirsky, 2017; Van Lange, De Bruin, Otten, & Joireman, 1997; Van Tongeren & Myers, 2016). Humility is not just important as a variable that incorporates other-orientation, it is an emergent construct whose other components represent additional pathways through which resource scarcity may affect prosocial behavior. As such, this section will first describe the components of humility in detail before distinguishing humility from other constructs that have been suggested to subsume it. This will allow for a more focused discussion on the humility-helping hypothesis and the pathways by which trait and state humility may affect prosociality under resource scarcity.

What is Humility?

Humility is an emergent construct that has been defined a number of ways by researchers throughout its investigation. Ashton and Lee (2005) define humility as the product of greed avoidance, a propensity for fairness, sincerity, and modesty (Ashton & Lee, 2008; Ashton, Lee, & de Vries, 2014; Lee & Ashton, 2005). Whereas Davis and colleagues (2011) suggest that humility is largely a function of the accuracy of one's self-perceptions and the degree to which one feels superior to others (2011). Similarly, LaBouff and colleagues (2012) define humility largely in opposition to conceit and arrogance while suggesting a role for the accuracy of one's self concept and other-orientation as well. Chancellor and Lyubomirsky describe the construct most broadly, suggesting that humility involves five components: a secure and accepting identity, accurate perceptions of the self, openness to new information, a social orientation towards the needs of others, and belief that people should be afforded equal opportunities (2013). Barring the final conceptualization, which may have defined general humility by its intrinsic qualities and the outcomes associated with it – the components of each of these perspectives can be expanded or condensed to fit with the perspective offered by Van Tongeren and Myers (2016), which has been reflected in later measures (Kruse et al., 2017). Under this view, humility can be defined as having an accurate self-concept, a lower propensity for self-promotion, and a lower degree of self-focus as opposed to other-orientation (Kruse et al., 2017; Van Tongeren & Myers, 2016).

Humility and other-orientation.

Other orientation is thought of as the tendency to think of and be concerned for others (Batson et al, 1991; De Dreu, 2006; De Dreu & Nauta, 2009; Eisenberg, 2014; Meglino & Korsgaard, 2004). Although other-orientation is sometimes conceptualized as merely the

opposite of self-focus (Exner Jr., 1973; Ickes, Reidhead, Patterson, 1986; Lombardo, Barnes, Wheelwright, & Baron-Cohen, 2007; Meglino & Korsgaard, 2004), potentially due to conceptualizations of attention and care as limited resources (Dijksterhuis & Aarts, 2010; Duncan et al., 2007), many researchers recognize that other-orientation and self-focus are independent (De Dreu, 2006; De Dreu & Nauta, 2009; Seeley & Gardner, 2003). Evidence supports this distinction, showing that greater self-focus allows individual opportunities for reward to affect one's motivation and prosociality, while greater other-orientation allows the values of one's group to affect one's motivation and prosociality (De Dreu, 2006; De Dreu & Nauta, 2009; Eisenberg et al., 1999; Eisenberg, Hofer, Sulik, & Liew; 2014). Importantly, individuals can be high in both self-focus and other-orientation, allowing them to be highly affected by both their individual opportunities for reward and the values of their group. In keeping with the prevailing theories of humility (Ashton & Lee, 2005, Davis et al., 2011; Kruse et al., 2017; Van Tongeren & Myers, 2016), other-orientation should be viewed as an independent construct from self-focus. In this way, other-orientation focuses explicitly upon helping others without requiring the sacrifice of one's own needs, whereas self-focus specifically relates to achieving one's own needs without implying a discounting of others'. Examining these separately will illuminate which of these variables are important mechanisms that explain the relationship between scarcity and prosocial behavior.

Humility involves an accurate self-concept.

An accurate self-concept – another important aspect of humility – implies having an accurate idea of one's own abilities and characteristics and demonstrating a resistance to perceptual biases and motivated self-enhancement (Ashton et al., 2014; Chancellor & Lyubomirsky, 2013; Davis et al., 2011; LaBouff et al., 2012; Van Tongeren & Myers, 2016). An

accurate self-concept should also include an accurate assessment of one's goals and needs (Davis et al., 2011; Van Tongeren & Myers, 2016). This should help individuals rein in consumption and engage in more prosocial behavior, because those with an accurate self-concept should be able to better recognize when their needs have been fulfilled. This is particularly important because people tend to anticipate future needs, overestimate their own needs in the present, and overestimate the impact of negative events in their lives (Gilbert, Driver-Linn, & Wilson, 2002). A better understanding of one's needs should guard against these faulty estimations, avoiding the inefficient attempts at consumption that would be expected of one perceiving inflated or limitless need (Lynn, 1991). An accurate self-concept might further guard against excessive consumption though a more accurate understanding of what we deserve. After all, people do not exclusively seek to procure only what will fulfill their needs; sometimes they desire more than they need out of a feeling of deservingness (Van Tongeren & Myers, 2016). Insofar that an accurate self-concept can also help us to resist self-enhancing biases, it may help us to better understand what is equitable, and this improved understanding of both needs and equity may allow individuals to better regulate their desires (Davis et al., 2011; Kruse et al., 2017; Van Tongeren & Myers, 2016).

Self-Promotion as a link between other-orientation and self concept.

Some have defined self-promotion as including any tendencies to improve one's outcome – through acquisition of materials, denigration of others, or praise and attention seeking behaviors – regardless of whether or not that outcome is deserved (Van Lange et al., 1997). Most researchers interested in humility, however, describe self-promotion as the tendency to improve one's outcome beyond what is equitable (Ashton & Lee, 2005; Davis et al., 2011; Van Tongeren & Myers, 2016). Perhaps self-promotion is the behavior that links other-orientation and an

accurate self concept. Without being aware of and concerned for others, people have no reason not to always maximize their outcomes (Van Lange et al., 1997). But other-orientation is not enough, only when combined with an idea of what one needs and deserves can one determine a cutoff point for maximizing one's own outcomes over the group's outcome. The more accurate those notions are, the greater one's chance of avoiding the natural bias to perceive themself more positively than they are (Van Tongeren & Myers, 2016). Concordantly, only when one is highly oriented towards others and has an accurate self-concept, can an individual be expected to engage in minimal self-promotion and turn their attention and resources towards helping others.

What Humility Is Not

Differentiating humility from modesty.

Perhaps because of the behavioral component of humility – reduced self-promotion – some researchers have raised the concern that humility and modesty are so similar that they might be indistinguishable (Tangney, 2000). However, there are a number of theoretical and empirical differences between these two constructs. First, modesty is an external presentation towards others that depicts one's deservingness as diminished (Ashton & Lee, 2008; Kruse et al., 2017; LaBouff et al., 2012; Van Tongeren & Myers, 2016). As such, it is only related to the self-promotion aspect of humility – neither an accurate self-concept nor other-orientation is necessary for one to be modest. Further, the level of self-promotion predicted by each trait is different; while humility encourages people to seek what is needed and equitable, modesty should promote seeking less than equitable outcomes (Ashton & Lee, 2008; Kruse et al., 2017). In these ways modesty predicts even lower levels of self-promotion than humility, may involve a deceptive component as opposed to the sincerity reflected in humility's accurate self-concept, and differs from humility by being an external presentation as opposed to an internal characteristic.

Empirical evidence demonstrates that humility and modesty, while very strongly related, do not perfectly overlap (Ashton & Lee, 2008; Kruse et al., 2017; Van Tongeren & Myers, 2016). Eliciting humility leads to a greater likelihood of violating norms to benefit the group, while modesty leads to greater conformity despite the group benefits of deviance (Kruse et al., 2017). These differences provide some support for thinking of modesty as distinct from, if sometimes related to, humility.

Humility goes beyond the big five.

Humility's role as a personality trait is a relatively new position in psychology compared to some of the older personality theories (Ashton & Lee, 2005). Theorists who subscribe to the classic Big Five theory of personality (Digman, 1990) have posited that humility may be a manifestation of the traits known as Agreeableness – encompassing traits like kindness, timidity, cooperation, and straightforwardness (Ashton & Lee, 2005; Ashton & Lee, 2008) – and Openness to Experience, which captures a preference for novelty and a broader range of interests (Ashton & Lee, 2005). However, studies of humility routinely measure the Big Five personality traits to address this criticism and demonstrate increased incremental validity from including humility in predicting outcomes from ethical decision making (Ashton & Lee, 2005; Ashton & Lee, 2008) to social adroitness (Ashton & Lee, 2005; Ashton & Lee, 2008; Davis et al., 2011). Specifically, Ashton and Lee (2005; 2008) found greater humility predicted less willingness to make unethical business decisions. Furthermore, greater humility was related to less willingness to engage in deceit to further one's social standing (Ashton & Lee, 2005; Ashton & Lee, 2008; Davis et al., 2011).

Importantly, humility predicts material concern over and above the Big Five as well, with less humble people being more concerned about personal wealth (Ashton & Lee, 2005; Ashton

& Lee, 2008). Similarly, Kruse and colleagues (2017) found greater humility predicted lower concern over one's status. Finally, humility is unique in its ability to negatively predict the personality traits of the Dark Triad – Machiavellianism, Narcissism, and Psychopathy – which are not well accounted for by the Big Five (Ashton, 2005; Ashton & Lee, 2008; Davis et al., 2011; Kruse et al., 2017).

Humility as a State and a Trait

Like most personality constructs, humility has been defined as both a trait – a relatively stable personality characteristic – (Ashton, 2005; Kruse et al., 2017; Van Tongeren & Myers, 2016) and a state – a transient way of being – (Davis et al., 2011; Kruse et al., 2017; Van Tongeren & Myers, 2016). Given the evidence for both trait and state humility, I conceptualize it as both a trait and a state, and propose its investigation as such. This is important, largely because this research has different applications based on which forms of humility have significant influence on the relationship between resource scarcity and prosocial behavior. If trait humility is especially important, then, if one wishes to promote prosocial behavior in scarce conditions, it may be imperative to ensure individuals in such conditions are high in trait humility before they are exposed to such conditions. If state humility is especially important, then it may be possible to increase prosocial behavior by developing interventions that temporarily boost humility, regardless of an individual's general humility.

Associations with Prosocial Behavior & Resource Scarcity

Although humility seems likely to promote prosocial behavior, particularly under conditions of scarcity, very little work has examined the relationship between humility and prosociality, especially under conditions of scarcity. Similarly, although humility has been theoretically associated with prosocial behavior and traits that relate to, and are important in

promoting, prosocial behavior (Aghababaei, Mohammadtabar, & Saffarinia, 2014; Ashton & Lee, 2005; Ashton & Lee, 2008; Chancellor & Lyubomirsky, 2013; Davis et al., 2011; Kruse et al., 2017; Kruse et al., 2014; LaBouff et al., 2012; Lee & Ashton, 2005; Van Tongeren & Myers, 2016), there remain few empirical tests of the role of humility in prosociality (Exline & Hill, 2012; LaBouff et al., 2012).

LaBouff and colleagues (2012) investigated the relationship between humility and prosocial behavior across three studies. In the first study, participants completed a self-report measure of humility and a self-report measure of helping behavior; those who were more humble reported greater frequencies of engaging in helping behaviors. In the second study, participants completed an implicit association test (IAT) contrasting humility and arrogance, and were given the opportunity to help their peers. Those above the median in implicit humility were more willing to donate time than their less-humble peers. Finally, in the third study, participants completed both self-report measures of humility and the humility IAT before being given an opportunity to help one of their peers. Participants were also presented with normative data indicating that people typically volunteered their time to help the distressed peer or typically did not. Results demonstrated that those higher in self-reported humility donated more time than their less humble counterparts regardless of social norms, although those exposed to the helping norm donated more time than others. Taken together these three studies provide support for the initial hypothesized link between humility and helpfulness.

Exline and Hill (2012) demonstrated in their own series of studies further support for the positive association between humility and prosocial behavior. As opposed to the donation of time and helping behaviors in the work of LaBouff and colleagues (2012), Exline and Hill looked specifically at monetary giving behaviors. In their first study, participants a self-report measureof

humility, designed by Hill and his colleagues, before being given the opportunity donate to charity. Greater humility was associated with larger charitable donations. In a second study, when participants were allowed to donate part of a $5 payout they received for participation to a future participant, greater humility was associated with larger gifts. Finally, Exline and Hill investigated the role of compassionate motivation. Their findings suggest that those higher in humility hold greater desires to behave compassionately towards others, regardless of their personal closeness to the target of that compassion. Notably, all three studies included the Big Five personality traits as covariates, but none explained the effects of humility on prosocial behavior. This suggests the role of humility in promoting prosocial behavior may very well be unique.

Though the empirical investigation of the relationship between humility and prosocial behavior is nascent, it demonstrates consistently that greater levels of humility relate to greater degrees of prosocial behavior (Exline & Hill, 2012; LaBouff et al., 2012). Beyond further replicating this association and the finding that resource scarcity leads generally leads to less prosocial behavior, this research further addresses five gaps that the literature has yet to investigate. The most important of these gaps are the two that help us to understand why humility seems to promote prosociality; whether humility promotes prosociality because of its other-oriented component and what different roles trait humility and state humility serve in promoting prosocial behavior. This research also addresses two gaps in the applied literature as well. First, it represents the first look at whether humility controls or otherwise explains the relationship between resource scarcity and prosocial behavior. It also investigates whether manipulations previously used to increase state humility could be used as interventions to mitigate any negative effects of resource scarcity on prosocial giving. Finally, this research

explores issues of defining and measuring the other-oriented nature of humility, for which the literature does not demonstrate a clear consensus.

Study 1 examines the relationships between scarcity and trait humility in predicting prosocial behavior. Also, Study 1 includes measures of other-orientation and self-focus to determine the degree to which the effect of trait humility on prosocial behavior could be explained by other-orientation. The inclusion of measures for both other-orientation and self-focus facilitate the exploratory investigation of whether the other-oriented component of humility is strictly a high degree of other-orientation or if it also involves a lack of self-focus.

Study 2 seeks to replicate the findings speaking to the three gaps addressed in Study 1. However, by adding state humility as a mediator and a manipulation to increase state humility, Study 2 also attempts to address the remaining two gaps unexamined in Study 1. The first additional gap addressed by Study 2 is understanding the different roles of trait humility and state humility in predicting prosociality. The final gap addressed by Study 2 is investigating the viability of increasing state humility – through a gratitude induction – as an intervention for mitigating negative effects of scarcity on prosocial behavior. If individuals experiencing the gratitude induction demonstrate greater state humility and increased prosocial giving, it would offer support for a causal relationship between humility and prosocial behavior that could be used in interventions to maintain and increase prosociality.

Hypotheses

Hypothesis 1 - Resource Scarcity Reduces Prosocial Behavior.

I expect that those experiencing resource scarcity will give less to others than those who do not experience resource scarcity.

Hypothesis 2 – Trait Humility Will Be Positively Associated with Prosocial Behavior.

I expect that those who are higher in trait humility will give more to others.

Hypothesis 3 - Trait Humility Moderates the Effect of Resource Scarcity on Prosocial Behavior.

I hypothesize that those who are generally less humble will respond to resource scarcity by giving less than those low in humility who do not experience feelings of resource scarcity. I hypothesize that those who are more humble will exhibit a lower reduction in giving behavior, if any, as a response to resource scarcity.

Hypotheses 4a & 4b - State Humility Mediates the Effects of Resource Scarcity and Trait Humility on Prosocial Behavior.

I hypothesize that those who experience feelings of resource scarcity will display less state humility than those who do not experience feelings of resource scarcity. I also expect that those who experience feelings of resource scarcity will behave less prosocially, and that this will be explained in some part by the effect of scarcity on prosociality through state humility. Furthermore, I expect that exposure to a gratitude induction – a manipulation that has been shown to increase state humility (Kruse et al., 2017) – will boost state humility and prosocial behavior as a result. Finally, I expect those who exhibit higher trait humility will also exhibit higher state humility. As such, I expect that the effect of trait humility on prosocial behavior will – in part – be explained by the effect of trait humility on prosocial behavior through state humility.

Hypotheses 5a & 5b - Other Orientation Explains the Effects of Humility and Resource Scarcity on Prosocial Behavior.

Given the potential importance of other orientation, I expect that other orientation will demonstrate a positive association with prosocial behavior and humility, but a negative association with resource scarcity. I also expect that it will mediate the relationship between resource scarcity and prosocial behavior as well as the relationship between state humility and prosocial behavior.

CHAPTER 3

STUDIES

Pilot

Overview.

I first conducted a pilot study to examine the relationships between humility, other-orientation, and prosocial behavior. Furthermore, I wanted to estimate the effect size we should expect for the effect of resource scarcity on prosocial behavior (H1). My pilot study sought to test a scarcity manipulation (Roux et al., 2015) and its effects on giving in an anonymous dictator game (Roux et al., 2015; Shariff & Norenzayan, 2007) in a student population. I also adapted the experimental procedure for use online and wished to compare the effectiveness of the paradigm experienced in the lab and online. Finally, my pilot study was meant to screen for any problems in my measures, such as lack of variability or tolerance issues between my measures.

Methods.

Participants.

The sample was comprised of 121 participants across two samples, 42 were recruited online from Facebook and 79 were recruited from the University of Maine's human participant pool. Originally, I attempted to recruit participants through Facebook using Facebook advertising, but the advertisement did not motivate anyone to participate in the study. The 42 participants that comprised our Facebook sample instead came from a convenience snowball sample of my contacts and completed the study entirely online. Within both samples, half of those participants were randomly assigned to experience a scarcity prime – described below - and half were assigned to a control manipulation. All participants were at least 18 years old. One participant from the online sample and one from the undergraduate sample were randomly

selected to win a $25 Amazon Gift Card at the completion of the study. Participants in the UMaine sample completed their session in the LaBouff lab space and were also awarded one research credit for participating in the study.

Measures.

HEXACO Honesty-Humility (HEXACO-100 HH) - This 16-item scale is designed to assess the Honesty-Humility dimension of the HEXACO personality inventory (Lee & Ashton, 2005). Participants are asked to rate each of 16 statements for how much they agree the statements describe themselves on a 5-point likert scale (1 = Strongly Disagree, 5 = Strongly Agree; α = .81). This Honesty-Humility dimension is actually composed of four different constructs: Fairness, Sincerity, Greed Avoidance, and Modesty (Lee & Ashton, 2005). Example statements include: I think I'm entitled to more respect than the average person is.

Brief State Humility Scale - This 6-item scale was designed to assess state humility (Kruse et al., 2017). It has been empirically validated against a number of humility measurements, including: the HEXACO-100-HH scale, Narcissistic Personality Inventory, State Authentic/Hubristic Pride Scale, and lay observers' judgments of humility (Kruse et al., 2017). Each statement is rated on a 7-point likert scale (1 = Strongly Disagree, 5 = Strongly Agree; α = .66) for how well the statement describes the participant. Importantly, Kruse and colleagues integrate the reasoning and theoretical predictions of Davis et al. (2011), a critic of self-report measures of humility, to strengthen their measure by focusing on markers of humility that are not exclusively positive (Kruse et al., 2017). Example statements include: I feel that, overall, I am no better or worse than the average person.

Other-Directedness Self-Monitoring (ODSM) - This 11-item scale was designed to assess the degree to which one feels their perceptions and behaviors are focused on other people rather

than themselves (Seeley & Gardner, 2003). In this study, it was used as a measure of other-orientation. Items are rated on a 5-point likert scale for how well the statement describes the participant (1 = entirely uncharacteristic, 5 = entirely characteristic; α = .69). Example statements include: When I am uncertain how to act in social situations, I look to the behavior of others for cues.

Procedure.

In–Lab Sample

Participants were randomly assigned to one of two conditions, a control condition and a scarcity condition. Participants were assigned a lab space with a lab computer, with which they completed an online survey containing the HEXACO Honesty-Humility subscale, the Brief State Humility Scale, and the Other-Directedness Self-Monitoring subscale, presented in a randomized order.

Next, following the procedures of Roux, Goldsmith, and Bonezzi (2015), those in the scarcity condition were asked to recall and describe in one sentence three or four episodes where they "did not have enough of something or felt resources were scarce." After listing them, they were instructed to "pick two of those episodes and describe in detail what was lacking and what you experienced." Participants in the control condition were asked to recall and describe in one sentence three or four things they did in the past week. After listing them, they were instructed to "pick two of those things and describe them in detail."

Finally, participants played a dictator game, meant to assess prosocial giving, where they were instructed to allocate 10 tokens between themselves and another participant in an adjacent room (Piff et al, 2010); there was not actually another participant in the other room. Participants were informed that they would not encounter the other participant during the experiment and

would be allowed to leave 10 minutes before the other participant to protect their anonymity. They were also informed that each token represented the number of times a participant would be entered into a lottery for a $25 Amazon gift card and that the other participant would have no ability to influence how many times either participant would be entered into the lottery. Participants were also informed that the other participant, not the experimenter, would be recording the tokens allocated to reduce the impact of social desirability. After the participant made their allocation, they were left alone to complete demographic questions for two minutes while the experimenter recorded the amount of tokens given – unbeknownst to the actual participant –and pretended to provide the fictitious other participant with the envelope from the real participant. After the two minutes passed, the experimenter returned and participants were thanked and debriefed.

Online Sample

The procedure for the online sample was identical to that of the in-lab sample save for a few exceptions. First, participants were not informed that another participant was taking part in the study simultaneously; instead participants were told their lottery slot allocation would be randomly matched to another participant who had been assigned to a different condition where they lacked influence. Participants also did not have to physically handle tokens that represented lottery slots, instead they clicked on the option they desired. Finally, the lack of an experimenter's presence meant they did not have the ability to ask questions during the lottery allocation task and completed their funneled debriefing through the survey instead of with a person.

Results.

Out of the 79 participants in the in-person sample: three were excluded from analyses for failing to complete the scarcity manipulation, four were excluded from analyses because they did not report feeling incentivized by the Amazon gift card, two were excluded from analyses for voicing concerns about responding to items consistently, two were excluded because they did not believe their decisions would affect another person, and eight were excluded for reporting that they felt the HEXACO HH-100 affected how they allocated their tokens[1]. In addition, because of a high degree of data loss in the online sample due to participants reporting a desire to assist their friends during allocation, correctly guessing the purpose of the study, reporting concerns about social desirability, or believing their decisions would not affect other participants, participants from the online sample were not analyzed. As a result this left 60 participants in the sample, all from the in-person sample. Of the remaining 60 participants, 57 identified as Caucasian; 29 identified as male and 31 identified as female. After screening for outliers, analyses were performed to check for potential failures of random assignment of demographic characteristics, none of those analyses suggested a failure of random assignment.

Group means and standard deviations for predictor variables and tokens given across the scarcity and control conditions can be seen in Table 1. There were no significant differences between conditions for any of the predictor variables, all *p's* > .250. Although those who experienced the scarcity manipulation (n = 28) gave less tokens than those who experienced the control manipulation (n = 32), see Figure 2, this difference was not statistically significant but represented a small-to-medium effect ($t(58)$ = 1.69, p = .096, d = .44).

[1] The magnitude, direction, and significance of our effects do not differ in meaningful ways whether our analyses include the participants who expressed concern over being primed by the HEXACO HH-100 or not.

Table 1 - Descriptive Statistics (Pilot Study)

Variable	Mean (SD)	Control Mean (SD)	Scarcity Mean (SD)	Reliability
Trait Humility	3.26 (.56)	3.23 (.55)	3.39 (.59)	.81
State Humility	5.31 (.83)	5.30 (.79)	5.32 (.89)	.66
ODSM	2.88 (.59)	2.96 (.57)	2.79 (.62)	.78
Tokens Given	4.75 (1.86)	5.13 (1.88)	4.32 (1.79)	

The item "I feel a bit awkward in company and do not show up quite as well as I should" was removed from ODSM to increase reliability[2]. Conditions did not differ based on any of the predictor variables, all p's > .29.

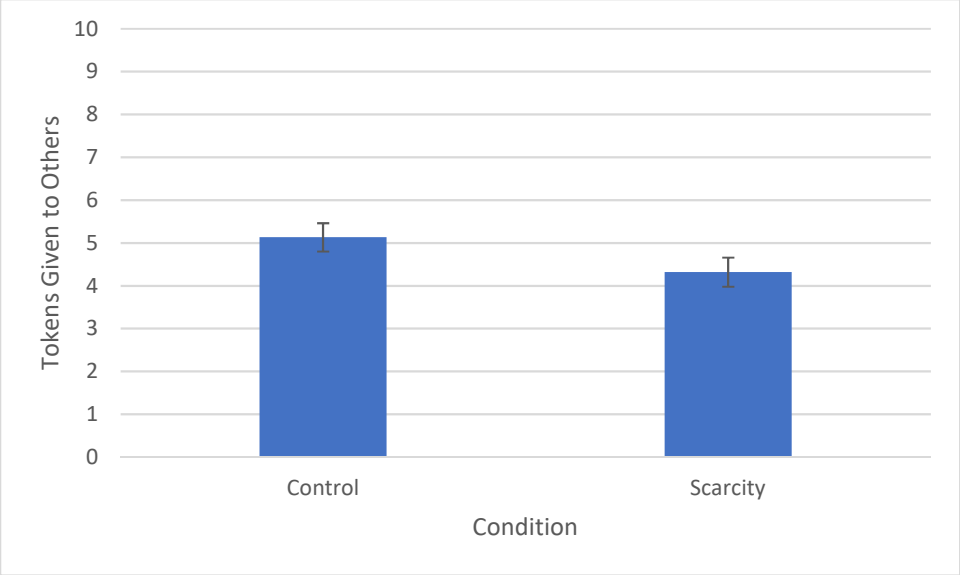

Figure 2. Tokens Given to Others After Priming (Pilot Study)
Error bars represent +/- 1 SE from the mean

As seen in Table 2, both measures of humility relate positively with one another and show the expected, positive association with giving. However, only trait humility was a statistically significant predictor of the number of tokens given to others. Contrary to expectations, ODSM demonstrated negative relationships with prosocial giving and both measures of humility.

[2] Scale reliability for ODSM was about .69 with all items included. Removing this item increased Cronbach's alpha to .78. Our reliability analysis did not suggest any other candidates for removal for the purposes of increasing the scale's validity.

Table 2 – Correlation Matrix (Pilot Study)

Variable	Trait Humility	State Humility	ODSM	Tokens Given
Trait Humility	-			
State Humility	**.51**	-		
ODSM	**-.53**	-.11	-	
Tokens Given	**.35**	.15	-.11	-

Correlations in bold denote $p < .05$

Although tolerance was within acceptable limits, because state humility and trait humility assess the same theoretical construct, they were in separate hierarchical linear regression analyses. Analyses including trait humility, ODSM, and condition (scarcity manipulation or control manipulation), as predictors of giving behavior revealed that scarcity priming and humility significantly predicted giving behavior, but suggested ODSM did not contribute significantly to the model ($F(3, 56) = 5.86$, $p = .001$, $R^2_{Adj.} = .20$). The inclusion of interaction terms did not improve the model's ability to account for variance in giving behaviors, nor did any of the interaction terms serve as statistically significant predictors of giving behavior.[3] As such, I report the model with only condition, trait humility, and their interaction as predictors of the number of tokens given by participants ($F(3, 56) = 5.86$, $p = .001$, $R^2_{Adj.} = .20$). Greater trait humility predicted greater giving behavior ($b = 1.27$, $t(56) = 2.31$, $p = .025$). Moreover, when controlling for the effect of trait humility, the reduction in giving as a result of the scarcity prime was statistically significant ($b = -.91$, $t(56) = -2.09$, $p = .041$). These effects can be observed in Figure 3.

[3] The analyses reported reflect hierarchical linear regressions. I tested the effect of all three independent predictors in the first step, testing the effect of all three independent predictors and all two-way interactions in the second step, testing all independent predictors and all interaction terms in the final step. These approaches did not produce different substantive conclusions.

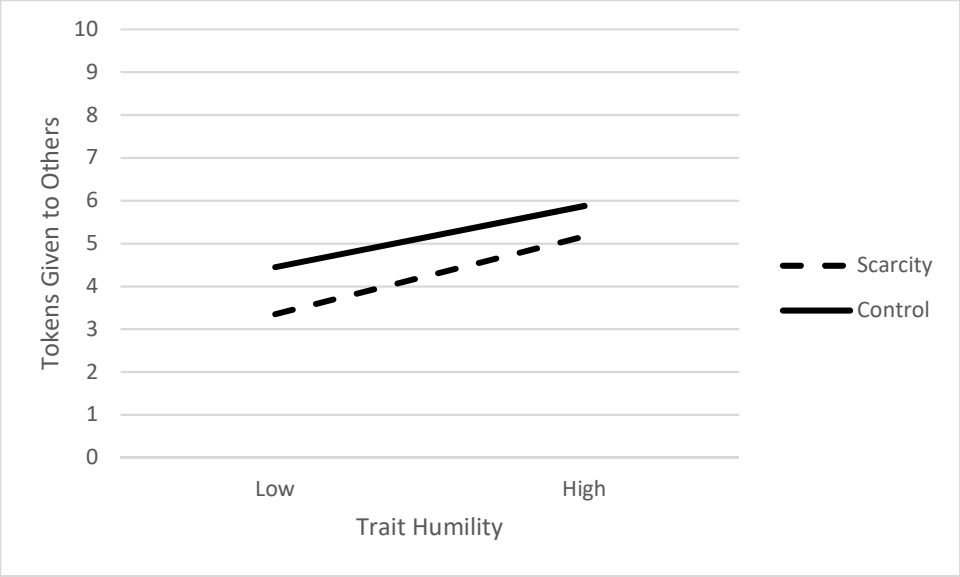

Figure 3. Main Effects of Scarcity and Trait Humility (Pilot Study)
Low and high levels of trait humility represent one standard deviation below the mean and one standard deviation above the mean, respectively.

Models including state humility, ODSM, and condition were also able to predict prosocial behavior ($F(6, 53) = 2.66$, $p = .025$, $R^2_{Adj.} = .14$). However, these analyses did not suggest a significant effect of scarcity priming and instead revealed an interaction between state humility and ODSM ($t(53) = 2.19$, $p = .033$, $b = 1.18$). Follow-up analyses including only state humility, ODSM, and their interaction accounted for 13% of the variance in giving behavior ($F(3,56) = 3.81$, $p = .015$). Simple slopes analysis, observed in Figure 4, demonstrates that for those lower in humility, greater degrees of ODSM lead to significant reductions in giving.

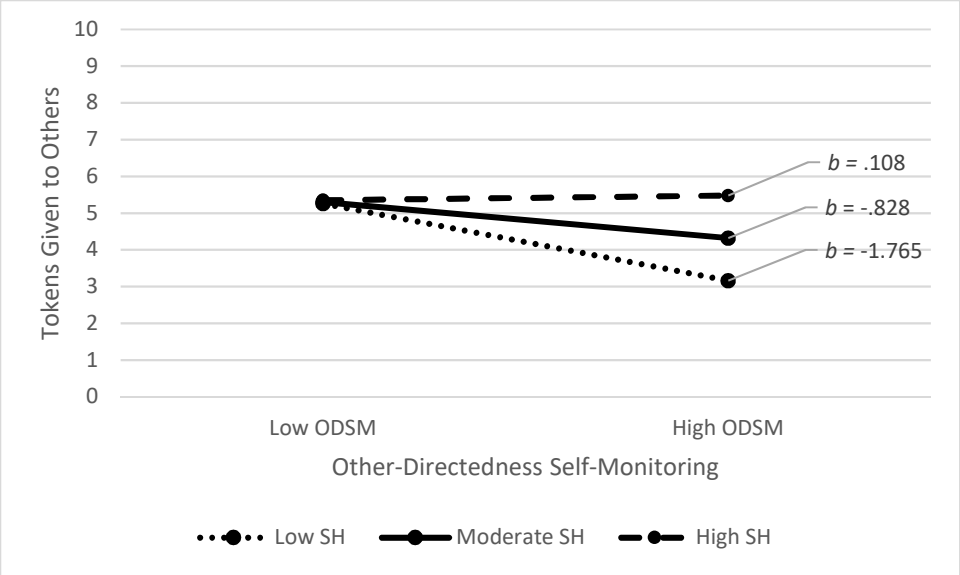

Figure 4. Simple Slopes Analysis of Interaction between State Humility and ODSM
Low ODSM and High ODSM represent one standard deviation below and above the mean respectively. Low, moderate, and high levels of state humility represent one standard deviation below the mean, the mean, and one standard deviation above the mean, respectively.

In order to better understand which elements of trait humility were most important, the HH-100 subscale was divided into its traditional four factor structure, and each subscale was entered as a predictor of giving behavior. The results suggest that the Fairness component of this measure is responsible for much of the predictive validity of this measure ($t(55) = 2.27$, $p = .027$, $b = .70$, semi-partial $r^2 = .073$). For the other three subscales, all other p's were not statistically significant, all semi partial correlations were below .026.

Discussion.

These pilot data suggest that feelings of scarcity and humility have important roles to play in people's giving behavior. The more one perceives their resources as scarce, the less they give to others. Conversely, the more humble one is, the more they give to others. These effects replicate relationships found in and suggested by the literature, however the expected moderation is not statistically significant. Though the lack of a statistically significant interaction does not support the moderation hypothesis, it does not necessarily contradict it; the interaction trends

towards the predicted direction and a post-hoc power analysis suggests the analyses were under-powered (B = .37). Furthermore, ODSM may really be measuring motivation to present well to others rather than a concern for their needs. This might explain its negative relationship with humility and prosocial giving. If ODSM is indeed capturing the motivation to behave prosocially for social gain, we might expect those high in ODSM to not be motivated to behave prosocially, given that they were assured there could be no social repercussions for their behavior. Perhaps then, the interaction demonstrates a greater genuine concern for fairness on the part of those who are high in humility, preventing the anonymity and lack of accountability conferred by the study from promoting selfish behaviors. These concerns about ODSM as a poor measure of other-orientation led me to consider alternative measurement in subsequent studies.

Study 1

Overview.

The main purpose of Study 1 was to replicate the finding that resource scarcity reduces prosocial behavior and to test the moderating role of humility in this relationship. To mitigate the possibility of the HEXACO Honesty-Humility measure priming prosocial behavior for those who are humble or who view humility as a socially desirable construct, and because Honesty-Humility is conceptualized as a trait variable that should be relatively insensitive to priming, participants completed it prior to the in-lab session in our departmental pre-screen survey. It was expected that those primed with feelings of resource scarcity would give fewer tokens compared to those receiving the control prime. However, it was expected that the difference in giving between those who received the scarcity prime and the control prime would be less for those who were high in Honesty-Humility.

Study 1 also used measures of other-orientation and self-focus developed by De Dreu & Nauta (2009) in place of ODSM. The advantage of this measure of other-orientation as opposed to the ODSM is that the language used by some of the items in the ODSM measure suggest that other-directed self-monitoring harbors a dishonest component. As such, the scale may capture impression management motives as much as the tendency to show concern for others (Ashton & Lee, 2008; Seeley & Gardner, 2003). Unlike ODSM, the items used by De Dreu and Nauta (2009) were not developed for clinical assessment and lack language implying any dishonest, impression managing component to other-orientation (Seeley & Gardner, 2003). Furthermore, this conceptualization of other-orientation has been associated with empathy (Eisenberg et al., 1999; Eisenberg et al., 2014) and prosocial behavior (De Dreu, 2006; De Dreu & Nauta, 2009; Eisenberg et al., 1999). Its relationships with empathy and prosocial behavior, along with its theoretical relation to a prosocial value orientation, provide compelling support for this measurement strategy in ascertaining the other-oriented facet of humility.

This not only provided a different measure of other-orientation that better captures concern for others but allowed for the empirical investigation of the other-oriented component of humility that may affect prosocial behavior by differentiating between high other-orientation (OO) and low self-focus (SF). If examining other-orientation as a surplus of OO against SF (other-orientation – self-focus) better predicts helping behavior, that would suggest that the other-oriented aspect of humility would best be conceptualized as a surplus relative to one's self-focus. If examining other-orientation and self-focus separately better predicts helping, it might suggest that the other-oriented aspect of humility is solely based in other-orientation, or is actually a lack of self-focus.

Finally, Study 1 added a measure of empathic concern, administered prior to the in-lab session. This measure was added halfway through Study 1 and completed by about half of the participants based on feedback from the committee to demonstrate evidence that the effect of humility is not an artifact of the relationship between empathy and prosociality. As it was only collected in half the participants and did not demonstrate a statistically significant impact in a regression analysis where it was included as a covariate, empathic concern was removed from subsequent analyses and its effects were not independently tested in subsequent models.

Methods.

Participants.

The sample was comprised of 214 participants recruited from the University of Maine's human participant pool. All participants were at least 18 years old. 26 participants were excluded from analyses for various reasons: 12 due to a failure to complete the scarcity prompt or follow other crucial instructions, 7 for demonstrating an awareness of all the variables involved in the hypothesis prior to debriefing, 5 for voicing disbelief that their allocations would affect another participant, and 2 who expressed that the gift card was entirely unwanted. Of the remaining 188 participants, 110 participants (58.5%) identified as female and 75 (39.9%) identified as male; 3 identified as "Other". The sample was mostly Caucasian (n = 168) with a mean age of 18.88 years (SD = 1.89). 90 participants were randomly assigned to experience the scarcity prime; 98 were assigned to the control condition. At the end of the study, one participant was randomly selected to win a $50 Amazon Gift Card. Participants were also awarded one research credit for participating in the study.

Measures.

The same measure used in the pilot study to measure humility was used to measure humility in Study 1.

Other-Orientation & Self-Concern items from De Dreu & Nauta (2009) – Other-Orientation was assessed with three items designed to examine how much one cares about the needs and desires of others. These items were rated on a 5-point likert scale for how well each statement describes the participant (1 = not at all, 5 = very much; α's range from .79 to .87). The three items that measured other-orientation were: (1) In general, I am concerned about the needs and interests of others, such as my colleagues. (2) In general, the goals and aspirations of colleagues are important to me. (3) In general, I consider others' wishes and desires to be relevant.

Self-concern was assessed with three items assessing the degree to which one cares about their own needs. These items were assessed on the same 1 to 5 likert scale as other-orientation (α's range from .81 to .82).

Empathic concern – The degree to which one experiences concern for the well-being of suffering others was measured using the empathic concern subscale of Davis' (1980) Interpersonal Reactivity Index (IRI). The empathic concern subscale includes 7 items rated on a 5 point likert scale (0 = "Does not describe me very well," 4 = "Describes me very well"; α = .73).

Procedure.

Prior to arriving in the lab, participants completed an online version of the HEXACO Honesty-Humility subscale and empathic concern subscale. Later, in an in-lab session, they were randomly assigned to either the control condition or the scarcity condition. In either condition

participants were assigned a lab space with a computer and experienced the scarcity or control manipulations used in the pilot study. Next, participants completed the three other-orientation items and three self-focus items. Finally, participants played the dictator game from the pilot study. Participants then completed the funneled debriefing procedure before being thanked for their participation and dismissed.

Results.

Descriptives.

Of 188 participants, 10 individuals displayed scores on measures that qualified as statistical outliers[4]. Rather than exclude these participants, extreme scores were winsorized. Means and standard deviations can be found in Table 3. I hypothesized that scarcity would lead to less giving behavior. Although this hypothesis could traditionally be tested with a one-tailed independent samples t-test, the distribution of tokens given is non-normal and very tightly clustered around the mean, violating the assumptions of such a test. As such, to test the hypothesis that priming feelings of scarcity would lead to reduced giving, a one-tailed Mann-Whitney *U*-test was performed (Mann & Whitney, 1947). Those who experienced feelings of scarcity gave .60 fewer lottery slots, on average, to others than the participants in the control condition. The results of the Mann-Whitney *U*-test suggest that the difference between the scarcity group and control group is not statistically significant ($U = 3862.50$, $p = .056$, $d = -.23$).

[4] Individuals whose scores on the HEXACO HH subscale were more than 3.29 standard deviations away from the mean (Tabachnick & Fidell, 2013) were considered univariate outliers. For analyses conceptualizing other-orientation as independent of self-focus individuals whose degree of other-orientation measured below 2.17, 1.5 interquartile ranges (IQR) below the 25th percentile (Tukey, 1997), were considered outliers and their score was changed to 2.17. The maximum value fell below the outlier cutoff, so nobody was excluded for being too high on other orientation. Interquartile range was used to detect outliers on other-orientation because the variable was not normally distributed. No outliers on self-focus were detected.

Futhermore, my predictor variables do not vary as a function of scarcity, all p values > .750, providing evidence that random assignment created relatively similar groups.

Table 3 – Descriptive Statistics (Study 1)

Variable	Overall Mean (SD)	Control Mean (SD)	Scarcity Mean (SD)	Cronbach's Alpha
Tokens Given to Others	4.93 (1.91)	5.17 (1.95)	4.66 (1.83)	-
Honesty-Humility (HH)	3.37 (.55)	3.40 (.50)	3.34 (.61)	.80
Other-orientation (OO)	4.01 (.74)	3.98 (.75)	4.03 (.72)	.88
Self-focus (SF)	4.27 (.64)	4.25 (.62)	4.29 (.66)	.77
OO – SF	-.26 (.82)	-.27 (.79)	-.25 (.86)	-
Empathic Concern (EC)	2.92 (.77)	2.91 (.85)	2.93 (.68)	.85

As a whole, the sample demonstrated a moderate degree of humility. Participants demonstrated a good deal of concern for others (OO) and a good deal of concern for themselves (SF) [5]. Participants generally displayed a fairly high level of empathic concern as well. Overall participants tended to give 4.93 lottery slots on average, the modal response was to give five.

Inferential analyses.

As seen in Table 4, both humility and self-focus displayed significant associations with the amount of lottery slots participants allocate to others. Those who were more humble gave more to others, and those who displayed greater degrees of self-focus gave less to others. Interestingly, neither empathic concern nor other-orientation demonstrated significant associations with tokens given, although they did demonstrate a strong association with each

[5] Analyses using the difference score (OO – SF) in place of OO and SF as individual predictors can be found in Appendix A. The model using OO – SF predicts 2% less of the overall variance in giving behavior (Adj. R^2 = .09; $F(3, 184)$ = 7.47, p < .001) than the model using OO & SF separately. In addition, OO – SF accounts for 3% of the variance in giving behavior while SF separately accounts for 4.7% of the variance OO accounts for .6% of the variance. This suggests that not only is the model inferior, but it is specifically because OO – SF performs worse than its separate components while giving nothing back to the other predictors.

other. This suggests that humility may uniquely contribute to prosociality beyond its relationship with other-orientation. This was further supported by the results of a linear regression (Adj. R^2= .11; $F(4,183)$ = 6.65, p < .001), where humility and self-focus remained the only significant predictors when including scarcity and other-orientation, as seen in Table 5. Because the addition of interactions did not significantly improve the predictive validity of the model, only the first order model is displayed[6].

Table 4 – Correlation Matrix (Study 1)

Variable	1	2	3	4	5	6
1) Tokens Given to Others	-					
2) Scarcity	-.14	-				
3) HH	**.25**	-.05	-			
4) OO	.10	.04	**.29**	-		
5) SF	**-.24**	.03	**-.21**	**.16**	-	
6) EC	.16	.01	**.29**	**.50**	.00	-

Statistically significant correlations – at p <= .05 – are denoted in bold.

Table 5 – Regression Table (Study 1)

Component	B	std. error	*B*	*t*	*p*	Semi-partial r^2
Constant	5.16	.18		28.33	.000	
Scarcity	-.48	.26	-.13	-1.81	.071	.016
HH	**.58**	**.26**	**.17**	**2.25**	**.025**	**.024**
OO	.22	.19	.09	1.15	.254	.006
SF	**-.63**	**.20**	**-.23**	**-3.13**	**.002**	**.047**

Statistically significant predictors – at p <= .05 – are denoted in bold.

These results suggest support for the hypothesized positive association between humility and prosocial behavior. These results also demonstrate a negative relationship between self-focus and prosocial behavior. However, they do not support the moderation and mediation hypotheses, tested using Model 8 of Hayes' PROCESS macro in SPSS (2018). These results can be observed in Figure 5. In this model, prime condition was entered as the independent variable, tokens given

[6] A regression including empathic concern as a potential covariate was computed. That model, nor empathic concern as a predictor was statistically significant. In addition, because the measure was added in midway into data collection, the inclusion of empathic concern excludes half my sample from the analysis. For these reasons, empathic concern was dropped as a potential covariate.

to others was entered as the dependent variable, trait humility was entered as a moderator, and other-orientation was entered as a mediator.

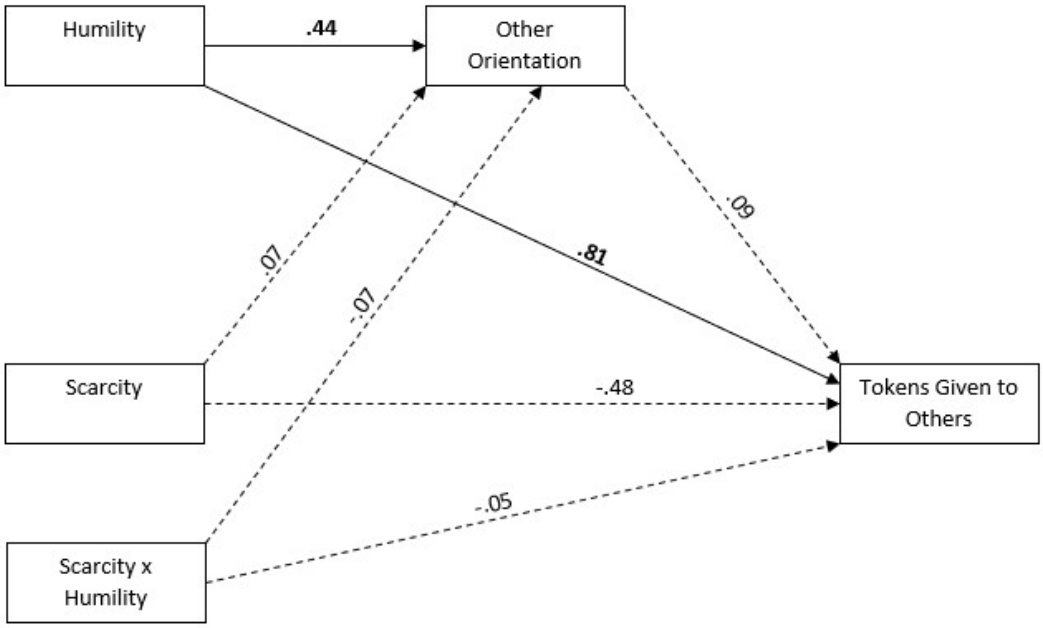

Figure 5. Moderated Mediation (Scarcity, Humility, & Other-Orientation) (Study 1)
Relationships significant at p <= .05 are denoted in bold and with solid paths

However, having previously demonstrated the important relationships self-focus displays with both humility and helping behavior, and the lack of an association between helping behavior and other orientation, it seems important to analyze the role of self-focus in explaining the relationships of humility and scarcity to prosocial behavior. The results of these analyses can be observed in Figure 6.

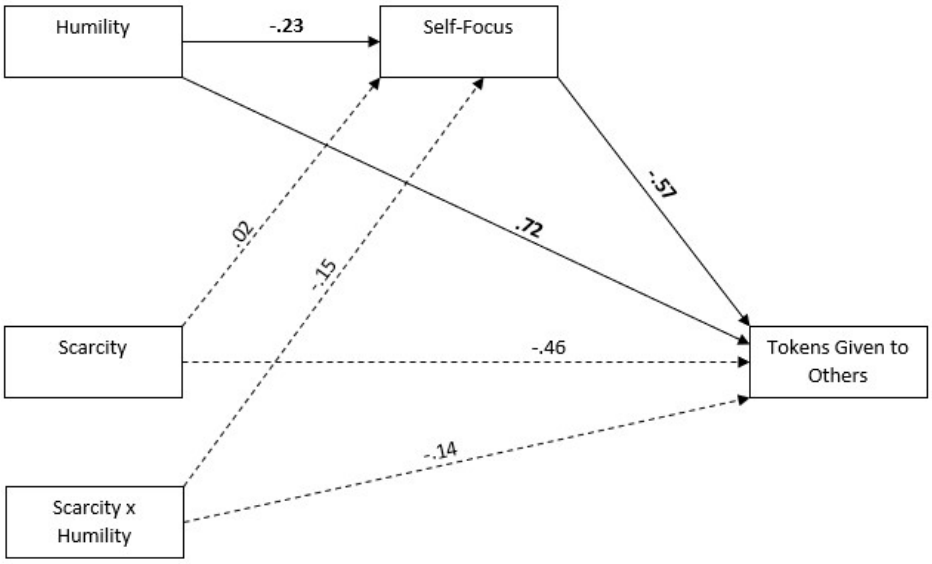

Figure 6. Moderated Mediation (Scarcity, Humility, Self-Focus) (Study 1)
Relationships significant at p <= .05 are denoted in bold and with solid paths.

As one might have expected – having not seen an interaction between any of the predictors – I did not detect any mediation of the effect of scarcity, nor did I observe any evidence of moderation; all confidence intervals estimating such effects included zero. Overall, the moderated-mediation model predicts about 11% of the variance in giving behavior, largely due to the direct effect of humility on giving behavior and its indirect effect through self-focus (R^2 =.11; $F(4,183)$ = 6.13, p < .001.). Ultimately these analyses provide support for the notion that humility has a unique, positive effect on giving behavior that cannot be explained by other-orientation and can only partly be explained by self-focus.

What is it about humility that drives giving behavior.

To better understand how humility affects giving behavior, I conducted a regression looking at the different subscales that comprise the HEXACO HH measure (Sincerity, Fairness, Greed Avoidance, and Modesty), along with self-focus. The results (Adj. R^2 = .12; $F(5,182)$ = 6.22, p = .002), as seen in Table 6, suggest that of the components of humility, only the Fairness

subscale has a significant relationship to giving behavior, as does self-focus. It is worth noting that the relationship between Greed Avoidance and giving behavior becomes significant when not controlling for self-focus, suggesting important overlap between the effect of self-focus and a disinterest in lavish wealth and high status.

Table 6 – Regression Table (HH Subscales & Self-Focus) (Study 1)

Component	B	std. error	*B*	*t*	*p*	Semi-partial r^2
Constant	4.93	.13		37.84	.000	
HH_Sincerity	-.28	.20	-.11	-1.44	.151	.010
HH_Fairness	**.55**	**.18**	**.24**	**3.12**	**.002**	**.045**
HH_Modesty	.02	.23	.01	.01	.923	.000
HH_GA	.33	.18	.15	1.88	.062	.017
Self-Focus	**-.61**	**.20**	**-.22**	**-3.07**	**.002**	**.044**

Statistically significant predictors – at p <= .05 – are denoted in bold.

Discussion.

Consistent with previous research on humility and the pilot study (Exline & Hill, 2012; LaBouff et al., 2012), I found a significant relationship between humility and giving behavior. Furthermore, when attempting to investigate the importance of other-orientation to that relationship, other-orientation – which was positively associated with giving behavior and humility – did not significantly predict giving behavior when controlling for the influence of other predictors, and did not mediate the effect of humility on giving behavior. Self-focus, on the other hand, demonstrated the expected negative association with giving behavior and did explain a statistically significant portion of the total effect of humility on giving behavior, though the direct effect of humility remained statistically significant. This offers some evidence that what researchers refer to as the "other-oriented component" of humility might actually be a lack of self-focus or a high degree of other-orientation in tandem with a lack of self-focus. It also suggests that while the other-oriented component of humility may be important to prosocial behavior, it is not the only driver of that relationship. As such, these results suggest that

cultivating humility is a promising avenue to increase prosocial behavior. These results also should encourage researchers to investigate other mechanisms inherent to humility – such as the accuracy of self-concept or reduced self-promoting tendencies – that may promote prosocial behavior.

My further investigation regarding which aspects of the Honesty-Humility measure predicted prosociality suggested that the Fairness subscale was the only predictor uniquely associated with giving behavior when controlling for self-focus and the other subscales. It makes sense that concern for fairness might have driven these allocations, participants gave others half their tokens more often than any other allocation. From a theoretical perspective, exactly which aspects of humility that represents are unclear, if any. It is possible that those who are highly accurate in their own assessment of themselves will resist self-enhancement, leading to more equitable outcomes (Van Tongeren & Myers, 2016). However, it is just as possible that individuals who seek fewer resources overall will generally favor more fair outcomes regardless of whether or not they self-enhance. Further research extending this work might seek to study the importance of having an accurate self-concept and a lack of self-promoting tendencies to understand how they affect prosocial behavior as well.

But what of scarcity, the theoretical driver for people to not behave prosocially? The scarcity manipulation did not significantly reduce overall giving behavior in this study. One possible explanation is that the manipulation was not sufficiently powerful enough to produce feelings of scarcity that might measurably alter one's behavior. Typically, the effects of money priming – which is suggested to prime cognitions related to scarcity (Tong, Zheng, & Zhou, 2013; Vohs et al, 2006) – on generosity range from Cohen's *d* of -.36 to -1.05 (Vohs, 2015). The manipulation also produced a weaker effect than was typically observed by Roux and her

colleagues (2015), who found an effect of d = -.57. It may be important to note that this manipulation was used twice by Roux and colleagues (2015) to measure an effect on whether or not participants would donate a fixed portion of their given resources to another, and to measure preference for selfish vs prosocial resource allocation, but was not used when they examined the effect of scarcity using a dictator game. As such, while the effects and validation of scarcity manipulation demonstrated by these researchers seemed promising, the magnitude of the effects of this manipulation may not be replicable in a dictator game paradigm. Furthermore, Tong, Zheng, & Zhou (2013) make specific note of how the form of money priming can be important to effectively priming scarcity; specifically, cash is the ideal form of money to prime scarcity where forms of credit do not achieve the same scarcity priming effects. As such, priming with tokens with monetary value in the form of an Amazon gift card may not be as powerful as priming with cash as Roux and her colleagues (2015) did. As a result, Study 2 used a different manipulation of scarcity – creating relative scarcity among participants – to experimentally induce scarcity in a way that may produce more powerful effects (Krosch et al., 2017).

Study 2

Overview.

Study 1 demonstrated that humility predicts prosocial behavior, offering evidence that cultivating humility may foster prosociality, but should those efforts be focused on developing a generally humble character or fostering states of humility where we wish for people to be prosocial? To investigate this, I included measures of both trait humility and state humility for analysis to investigate the roles of both forms of humility. Furthermore I included a gratitude induction, which has been shown to be able to manipulate state humility by Kruse and colleagues (2017), to more rigorously investigate the potential of state humility as an avenue for increasing

prosocial behavior. Whereas fostering humble character, as a personality trait, may require prolonged and complex interventions that most could not employ, interventions fostering state humility may be more viable for deployment by a wider array of people. If a gratitude induction can increase state humility, and prosocial behavior as a result, it would provide some evidence for the utility of state humility to promoting prosocial behavior.

Study 1 also did not demonstrate an effect of resource scarcity. It is possible that our scarcity manipulation was not powerful enough to produce a difference in giving behavior. As such, Study 2 used a different manipulation of resource scarcity, which involved giving participants differing sets of instructions so they thought they were receiving the minimum amount of resources they could have been given to distribute (scarcity) or the maximum amount of resources to distribute (control). In contrast to Study 1, where individuals in the scarcity condition were reminded of instances of scarcity in their lives, but were given no reason to see their resources as any more or less scarce than other individuals, this manipulation imposed relative scarcity by making clear to those in the scarcity condition that all their peers were given an amount of resources that equaled or exceeded their own (Krosch et al., 2017). It was expected that those who received what they were told was the maximum they could receive (control condition) would give more than those who received what they were told was the minimum they could receive (Scarcity condition). However, it was expected that the difference in giving between those who received the scarcity condition and the control condition would be less for those who were high in Honesty-Humility.

These inclusions allowed for all my previously stated hypotheses (see page 36) to be tested simultaneously. In addition to the hypotheses investigated in Study 1, these inclusions made it possible to examine the hypotheses that state humility may have a positive association to

giving behavior that accounts for the effect of having a generally humble character. It is possible that scarcity reduces giving behavior by decreasing state humility, and that those with a more generally humble character would see a less negative impact on state humility as a result of scarcity. This hypothesis allows us to examine not only the degree to which other-orientation explains the effect of trait humility on prosocility, but to what degree it explains the effect of state humility as well. Finally, with the inclusion of state humility and the gratitude induction, this study also sought to replicate the finding that state humility could be manipulated through gratitude, and extend that work by investigating its utility as in intervention to promote prosocial behavior. For a conceptual model of all the hypotheses tested in this study, see Figure 7:

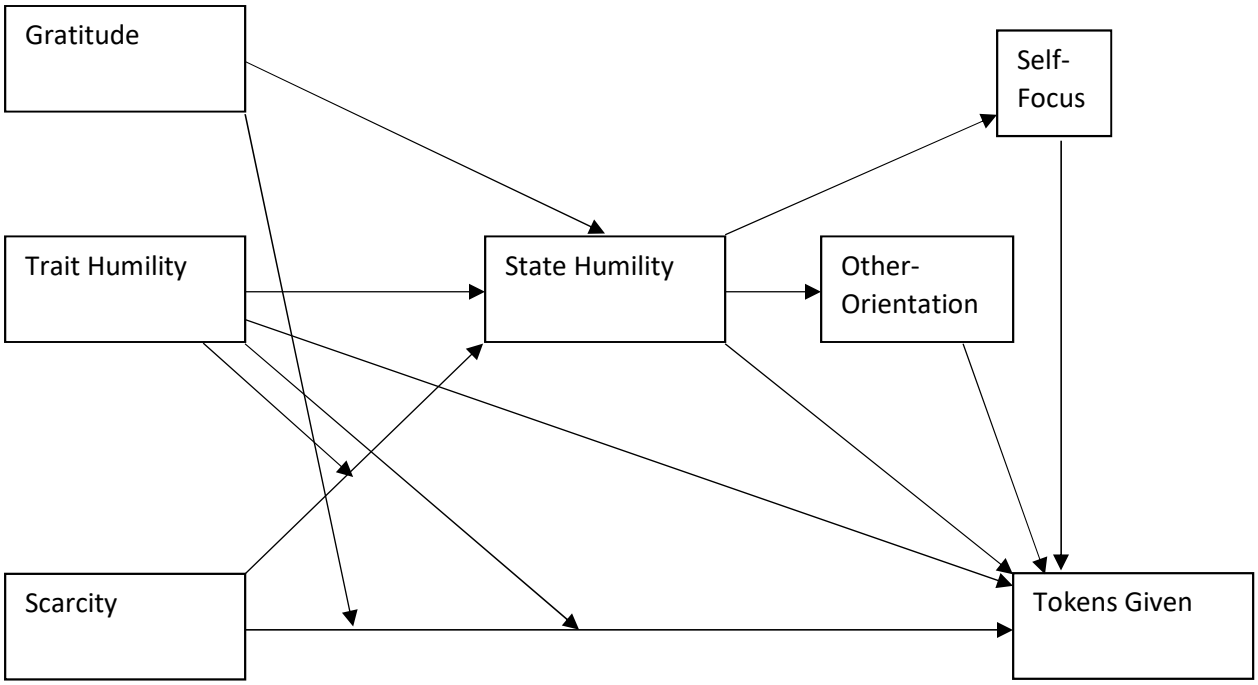

Figure 7. Conceptual Model (Study 2)

Methods.

Participants.

The sample was comprised of 214 participants recruited from the University of Maine's human participant pool. All participants were at least 18 years old (M = 18.64 SD = 1.19). 30 participants were excluded from analyses for various reasons: 8 due to failing the understanding check about how many slots they were allotted, 5 who failed to follow the instructions, 6 who - after the study - expressed confusion about the instructions that made their understanding of the dependent variable unclear, 5 who reported allocating resources based on lucky numbers or other patterned responding instead of making a reasoned choice, 3 who expressed having known the purpose and hypotheses of the study before debriefing, and 3 who reported being unmotivated by the incentive used to prime scarcity. Of the remaining 184 participants, 82 participants (44.6%) identified as female and 102 (55.4%) identified as male. The sample was mostly Caucasian (n = 166), all other ethnicities were represented by less than 7 individuals. In a simple 2x2 design, forty-five participants were randomly assigned to experience the scarcity manipulation but not a gratitude induction, instead experiencing a control writing exercise. Forty-six participants were randomly assigned to experience the scarcity manipulation and a gratitude induction. Forty-eight participants experienced a control condition – as opposed to the scarcity manipulation – and a gratitude induction. Forty-five participants were randomly assigned to experience the control condition/task instead of the scarcity manipulation and gratitude induction. At the end of the study, one participant was randomly selected to win a $50 Amazon Gift Card. Participants were also awarded one research credit for participating in the study.

Measures.

The measures remain largely the same as those measures used in Study 1, with the addition of a state humility measure. The Brief State Humility Scale (Kruse et al., 2017) assessed state humility with six items designed to capture one's humility in the moment. These items were rated on a 7-point likert scale for how well each statement describes the participant (1 = Strongly Disagree, 7 = Strongly Agree; $\alpha = .59$). Items include: (1) I feel that, overall, I am no better or worse than the average person. (2) I feel that I have both many strengths and flaws. (3) I feel that I do not deserve more respect than other people (4) To be completely honest, I feel that I am better than most people. (5) I feel that I deserve more respect than everyone else. (6) I feel like I do not have very many weaknesses.

Procedure.

Prior to arriving in the lab, participants completed an online version of the HEXACO Honesty-Humility subscale (Ashton & Lee, 2005). Later, in an in-lab session, they were randomly assigned to experience either the scarcity manipulation or a control condition and to experience the gratitude induction or a control reflection task. Regardless of condition, participants were assigned a lab space with a computer where they read instructions about the Amazon gift card lottery associated with this study.

Participants were informed that half the participants in this study would be given lottery slots and have the chance to distribute those lottery slots between themselves and another matched participant who had received no lottery slots. In order to manipulate scarcity, participants were told participants could receive 10 to 100 lottery slots in the scarcity condition (ten pennies worth one slot each and anywhere from zero to nine dimes worth ten slots each). In the control condition, participants were told participants could receive anywhere from zero to ten

slots (one to ten pennies worth one slot each. Participants were then asked to get an envelope from the experimenter containing their lottery slots. After procuring the envelope, participants were asked to count how many lottery slots they received to distribute. Regardless of the condition, participants received an envelope with 10 pennies representing ten lottery slots. As such, those in the scarcity condition should have felt they received the minimum amount of resources available, whereas those in the control condition received the maximum resources available.

Afterwards, in order to manipulate gratitude, participants either completed the gratitude induction or a control reflection task. Participants who completed the gratitude induction were asked to think about a time in their life when someone impacted them in a positive and meaningful way (Lyubomirsky, Dickerhoof, Boehm, & Sheldon, 2011). They were asked to take ten minutes to think about this experience and write a letter to that person thanking them for their impact on the participant's life and describing what they are doing with their life now. Participants who completed the control reflection task were asked to write in detail for ten minutes about the things they had done over the last 24 hours. Since gratitude involves an appreciation for the positive impact of others (Emmons & McCullough, 2003; McCullough, Kilpatrick, Emmons, & Larson, 2001) or a general appreciation for aspects of life beyond oneself (Wood, Froh, & Geraghty, 2010), reflecting on the positive impact of another was expected to evoke greater levels of gratitude than reflecting on the self-focused activities of the preceding 24 hours.

Participants then completed the measure of state humility before completing the same measures of other-orientation and self-focus from Study 1. Finally, participants played the

dictator game from the previous study. Participants then completed the funneled debriefing procedure before being thanked for their participation and dismissed.

Results.

Descriptives.

Of 184 participants, six individuals displayed scores on measures that qualified as statistical outliers using the same procedures for detection as in Study 1. As in Study 1, extreme scores were winsorized. Means and standard deviations can be found in Table 7. I hypothesized that scarcity would lead to less giving behavior. Although this hypothesis could traditionally be tested with a one-tailed independent samples t-test, the distribution of tokens given is non-normal and very tightly clustered around the mean, violating the assumptions of such a test. As such, to test the hypothesis that priming feelings of scarcity would lead to reduced giving, a one-tailed Mann-Whitney *U*-test was performed (Mann & Whitney, 1947). Those who experienced the scarcity manipulation gave .27 more lottery slots, on average, to others than the participants in the control condition. The results of the Mann-Whitney *U*-test suggest that the difference between the scarcity group and control group is not statistically significant ($U = 3932.00$, $p = .192$, $d = .12$). Futhermore, my predictor variables do not vary as a function of scarcity, all p values > .265; the only variable that varies as a function of the gratitude manipulation is self-focus ($t(182) = -2.06$, $p = .041$), all other p values > .463.

Table 7 – Descriptive Statistics (Study 2)

Variable	Overall Mean (SD)	Control Mean (SD)	Scarcity Mean (SD)	Cronbach's Alpha
Tokens Given to Others	5.63 (2.23)	5.49 (2.00)	5.76 (2.45)	-
Honesty-Humility (HH)	3.24 (.50)	3.28 (.50)	3.20 (.51)	.74
State Humility (BSHS)	5.27 (.78)	5.24 (.83)	5.31 (.72)	.59
Other-orientation (OO)	3.93 (.70)	3.87 (.72)	3.99 (.69)	.76
Self-focus (SF)	4.08 (.64)	4.11 (.63)	4.05 (.64)	.71

As a whole, the sample demonstrated a moderate degree of humility. Participants demonstrated a good deal of concern for others (OO) and a good deal of concern for themselves (SF). Overall participants tended to give 5.63 lottery slots on average, the modal response was to give five.

Inferential analyses.

As seen in Table 8, humility and self-focus displayed similar associations with the amount of lottery slots participants allocate to others as they did in Study 1. Those who demonstrated greater state humility gave more to others, and those who displayed greater degrees of self-focus gave less to others. Other-Orientation was also positively associated with giving behavior, trait humility, and state humility. Notably, neither manipulation affected the amount of tokens given – a 2x2 ANOVA showed no statistically significant main effects or interaction ($F(3,180) = .33$, $p = .802$).

Table 8 – Correlation Matrix (Study 2)

Variable	1	2	3	4	5	6	7
1) Tokens Given to Others	-						
2) Scarcity	.06	-					
3) Trait Humility	**.19**	-.08	-				
4) State Humility	**.25**	.05	**.33**	-			
5) OO	**.20**	.08	**.24**	**.29**	-		
6) SF	**-.18**	.13	-.04	-.03	.11	-	
7 Gratitude	.00	-.01	-.05	-.07	-.04	**.15**	-

Statistically significant correlations – at p <= .05 – are denoted in bold.

As seen in Table 9, even when controlling for the influence of other predictors, state – but not trait humility – predicts giving behavior alongside other-orientation and self-focus (Adj. R^2 = .10; $F(6,177)$ = 4.30, p < .001). These results can be seen in Table 9. This further suggests that while other-orientation and self-focus are powerful predictors of prosocial behavior, and may capture the other-oriented component of humility, humility may have other aspects that foster prosociality through different mechanisms.

Table 9 – Regression Table (Study 2)

Component	B	std. error	*B*	*t*	*p*	Semi-partial r^2
Constant	5.43	.27		19.80	.000	
Scarcity	.17	.32	.04	0.53	.599	.001
HH	.42	.34	.09	1.24	.217	.008
Gratitude	.22	.32	.05	0.69	.492	.002
BSHS	**.48**	**.22**	**.17**	**2.16**	**.032**	**.023**
OO	**.48**	**.24**	**.15**	**2.03**	**.044**	**.020**
SF	**-.69**	**.25**	**-.20**	**-2.75**	**.007**	**.037**

Statistically significant predictors – at p <= .05 – are denoted in bold.

However, in order to examine how the predictors predict giving behavior, as diagramed conceptually in Figure 7, I conducted a path analysis using SPSS AMOS version 25. The model demonstrated good fit – described as having a CFI $\geq$ .95 and RMSEA with an upper limit of its confidence interval below .07 (Hooper, Coughlin, & Mullen, 2008) – to the data overall ($\chi^2(18)$ = 15.88, p = .601; CFI = 1.00, RMSEA < .001 (CI_{95}: [0.00, 0.058])). The statistical model and estimates can be viewed in Figure 8.

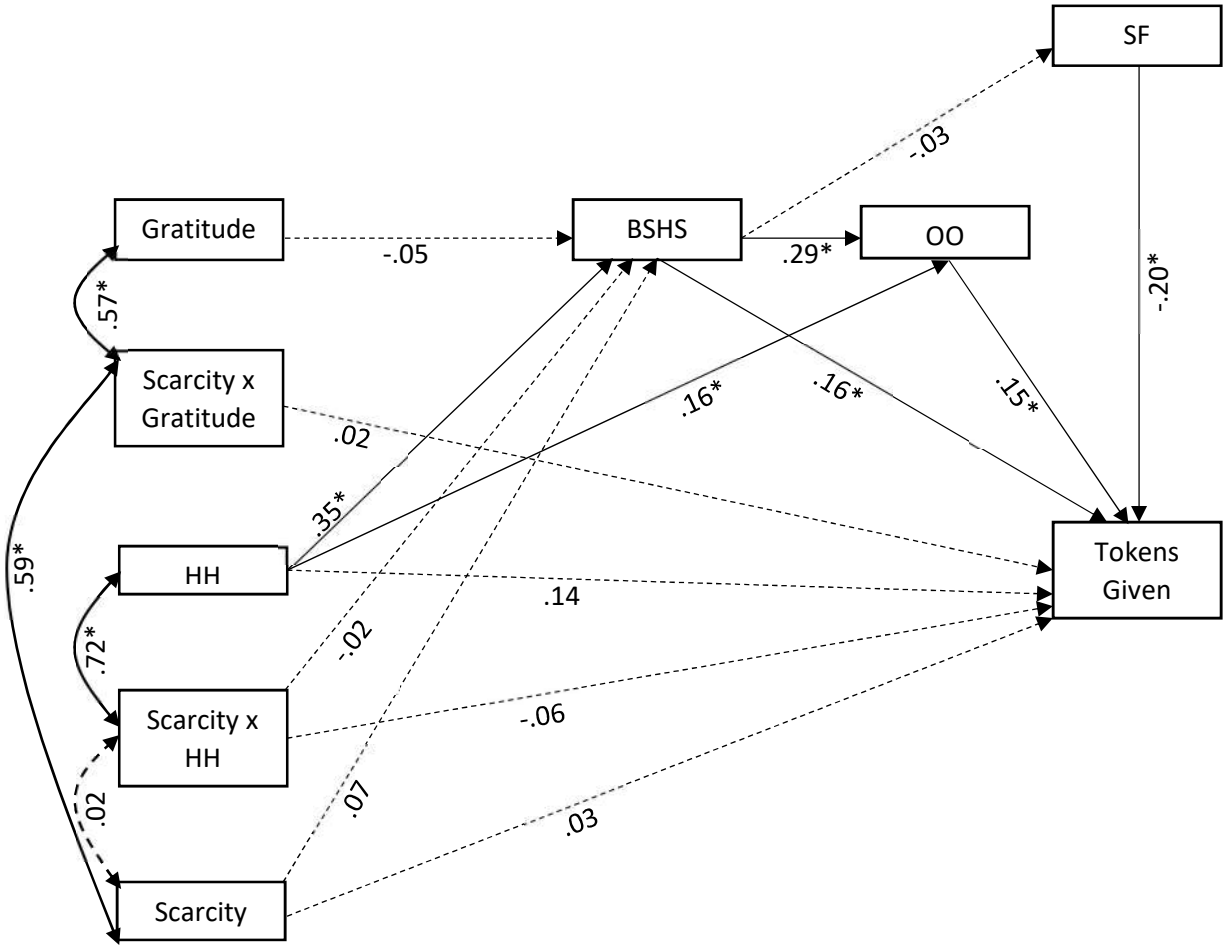

Figure 8. Statistical Model of Giving Behavior (Study 2)
Statistically significant relationships – $p <= .05$ – denoted with an * and solid lines

The path analysis and initial regression model revealed no evidence of main effects, indirect effects, or interactions involving either the scarcity manipulation or gratitude manipulation. Trait humility demonstrated the hypothesized positive association with state humility and a positive association with other-orientation. State humility and other-orientation demonstrated the hypothesized, positive associations with giving behavior, whereas those who were more self-focused gave less, just as in Study 1. Although state humility and other-orientation showed the expected relationship, state humility did not display a significant association with self-focus at all. Analysis of the mediation path involving state humility as a

predictor of tokens given to others – with other-orientation and self-focus as mediators – using Hayes' PROCESS macro confirmed a statistically significant indirect effect, the indirect effect was .16 (CI_{95}: [.007, .370]). The same analysis also confirmed that state humility remained a significant predictor of giving behavior even when accounting for the indirect effect on giving through other-orientation and self-focus, the direct effect of state humility was .55 (CI_{95}: [.105, .994], $p = .016$), suggesting that something about state humility – over and above its other-oriented component – also predicts prosocial behavior. In an additional analysis, using trait humility as a predictor of giving behavior – with state humility, other-orientation, and self-focus as mediators – the direct effect of trait humility on giving behavior was not statistically significant. However, trait humility demonstrated a statistically significant indirect effect through state humility and other-orientation, suggesting that that cultivating humble character could be a promising avenue towards promoting prosociality due to its downstream effects.

Manipulation Check

In order to understand the efficacy of the scarcity manipulation used in Study 2, I conducted a manipulation check. Participants received the same scarcity or control prime in Study 2 and were informed they would eventually have the opportunity to distribute lottery slots among themselves and another participant. After receiving these instructions, participants answered four questions designed to ascertain thoughts, feelings, and beliefs associated with scarcity:

1. "How difficult is it for you to obtain the things you want?"
2. "How much do you agree with the statements:"
    a. "I feel like I do not have enough resources to get all the things I want." (Lack)

b. "To get everything I want, I feel I need to compete with others for resources." (Comp)

c. "I feel like there are enough resources for everyone to get everything they want." (Lose)

    i. This item was reverse coded.

Participants were then informed that they would not be distributing tokens before being debriefed and thanked for participation.

Results.

Our results suggest that the manipulation did not evoke feelings of scarcity in the scarcity condition. As seen in Figure 9, except for the question about difficulty obtaining resources – where the control condition actually reported greater difficulty achieving what they want ($t(73) = 2.01$ $p = .032$), the scarcity and control conditions did not differ from one another in any statistically significant ways (all p values > .05).

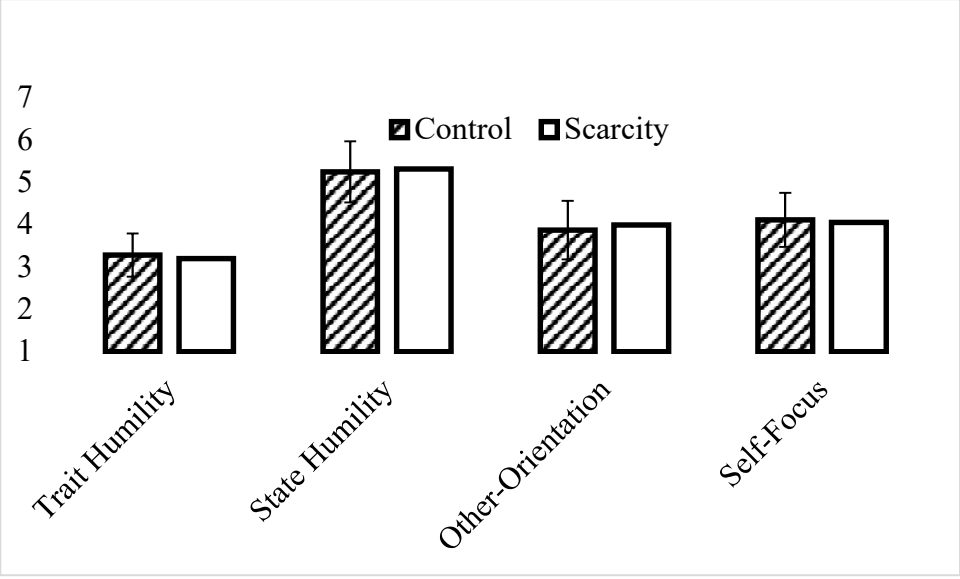

Figure 9. Manipulation Check (Study 2)
Error bars represent 95% confidence intervals

Discussion.

The results of Study 2 largely replicated the most important findings of Study 1: humility promotes giving behavior, and while it can be partially explained by other-orientation, there are other mechanisms at work through which humility promotes giving above and beyond other-orientation. Concordantly, these findings should encourage humility researchers to investigate other mechanisms by which humility may promote prosocial behavior (Van Tongeren & Myers, 2016). The presence of a direct effect of state humility on giving behavior, and a lack of one for trait humility, seems to also suggest that evoking state humility may be more important to promoting prosociality than selecting for or attempting to cultivate the most generally humble individuals. Although, given the indirect effect of trait humility, both are potentially valuable approaches to encouraging prosocial behavior.

Strangely, the gratitude induction, which Kruse used to raise humility (2017) did not influence state humility at all, and actually may have raised self-focus, which we expected to have a negative association with humility. The observed relationship between self-focus and our gratitude manipulation may suggest that the manipulation actually evoked feelings of indebtedness rather than gratitude (Kruse et al., 2014), as indebtedness is potentially linked to more self-focused emotions such as shame (Naito, Wangwan, & Tani, 2005; Tangney & Dearing, 2002; Tracy & Robins, 2006). The relationship may also have failed due to the population I sampled from. Kruse and his colleagues (2014; 2017) sampled from Amazon's Mechanical Turk, but I looked at a student population. Aside from my sample having a lower average age by about 15 years, I am unaware of documented differences between MTurk workers and students that would have caused this measure to fail (Goodman, Cryder, & Cheema,

2012), but the age difference and other systemic differences between the populations might be one reason the gratitude manipulation failed.

In addition to the failure of the gratitude manipulation, it seems our scarcity manipulation failed to produce a difference between groups. This time however, the effect was almost half the effect observed in Study 1 and the p-value associated with the Mann-Whitney U test was much larger as well. Was the manipulation we used to induce scarcity actually worse this time around at eliciting feelings and thoughts associated with resource scarcity? Data collected as part of a manipulation check for the scarcity prime used in Study 2 seems to suggest that the manipulation was ineffective at priming feelings and thoughts associated with resource scarcity.

CHAPTER 4

DISCUSSION

Consistent with previous literature (Exline & Hill, 2012; LaBouff et al., 2012) these studies demonstrated that higher levels of humility consistently predict greater degrees of giving behavior. My first study showed the importance of trait humility as a predictor of giving behavior, and my second study showed that both state humility and trait humility predict greater giving behavior. Furthermore, these results suggest that while other-orientation and self-focus – which may both be considered part of humility's other oriented component (Kruse et al., 2017; Van Tongeren, 2016) – explain some of the association between humility and prosociality, humility seems to predict prosociality through other mechanisms that researchers should look to investigate.

Other Aspects of Humility

Accuracy of the self-concept.

One such promising mechanism through which humility may affect prosociality is through the accuracy of one's self-concept (LaBouff et al., 2012; Kruse et al., 2017; Van Tongeren & Myers, 2016). An accurate self-concept may allow individuals to resist self-enhancement, a common tendency that facilitates acts of selfishness and moral transgression by increasing one's feelings of entitlement and goodness compared to others (Alicke & Sedikides, 2009; Merritt, Effron, & Monin, 2010; Van Tongeren & Myers, 2016). Self-enhancement transforms transgression from moral violation into an act of attaining what one is owed (Alicke, Sedikides, 2009; Merrit, Effron, & Monin, 2010). As a result those who can resist self-enhancing should be less likely to behave selfishly, particularly given the general expectation for and

moralization of prosociality (Denham et al., 1990; Graham & Haidt, 2010; Layous et al., 2012; Liu & Chen, 2003; Nelson et al., 2015; Rys & Bear, 1997).

However, having an accurate self-concept may affect prosociality in more subtle ways as well. Humility is often hypothesized to be antithetical to narcissism, Machiavellianism, and psychopathy (Ashton & Lee, 2007; Kruse et al., 2017; Lee & Ashton, 2005). These three traits are known as "The Dark Triad" and tend to positively associate with one another (Campbell & Foster, 2007; Campbell, Reeder, Sedikides, & Elliot, 2000; Furtner, Rauthmann, & Sachse, 2011; Paulhus & Williams, 2002). Narcissists in particular behave selfishly and display a strong tendency to self enhance (Campbell & Foster, 2007; Campbell et al., 2000; Furtner et al., 2011; Paulhus & Williams, 2002), while those high in Machiavellianism tend to crave power and favor competition over cooperation (Bereczkei, Birkas, & Kerekes, 2010; Martin & Larsen, 1976; Mesko, Lang, Andrea, Szijjarto, & Bereczkei, 2014; Paulhus & Williams, 2002; Stewart & Stewart, 2006; Sutton & Keogh, 2000). In fact, individuals have been shown to become more Machiavellian simply in the presence of rivals (Kilduff & Galinsky, 2017). Together the association between narcissism to self-enhancement and Machiavellianism, along with the relationship between Machiavellianism and preference for competition, illuminate a path where self-enhancement may motivate competitive motivations that promote selfish behavior over prosocial behaviors.

As Roux and her colleagues demonstrated (2015), competitive orientations towards resources seem to account for some of the generally negative effect of resource scarcity on prosocial behavior. This is well in keeping with the theories about resource scarcity that suggest scarcity may lead to conflict over resources (Allport, 1954; Cook et al., 2013; Homans, 1961; Husnu & Crisp, 2010; Kelley & Thibaut, 1978; Lawler & Yoon, 1993; Lynn, 1991; Thibaut &

Kelley, 1959; Van Vugt & Van Lange, 2006). If an accurate self-concept diminishes self-enhancing, it may also diminish competitive orientations that might otherwise have led to more selfish behavior. This establishes another set of structural relationships by which humility may be able to moderate the effect of scarcity on giving behavior.

Low degrees of self-promoting tendencies.

As promising as the accuracy of one's self-concept is for investigation, one should not overlook the lower degree of self-promoting tendencies in the humble as a mechanism by which it facilitates prosociality. When looking at the results for Study 1 using when excluding the Fairness and Sincerity subscales from analysis (LaBouff et al., 2012), the Greed Avoidance subscale of the HEXACO HH measure becomes a significant predictor of giving, such that those higher in greed avoidance give more to others. The Greed Avoidance subscale largely measures how much one desires excessive status, luxury, and resources (Ashton & Lee, 2005; Ashton & Lee, 2008), which suggests that it largely captures self-promoting tendencies. As some researchers argue that Fairness and Sincerity are hypothetical antecedents of humility, but not components of it (Davis et al., 2011; LaBouff et al., 2012), this suggests that self-promoting tendencies may have a role to play in giving behavior.

Furthermore, it is important to consider that although Greed Avoidance was not a statistically significant predictor of giving behavior of giving behavior in the analysis presented, I had been controlling for self-focus. Upon conducting a hierarchical regression, with Greed Avoidance and Modesty in the first step (LaBouff et al., 2012), Fairness and Sincerity added in the second step, self-focus added in the third step, and scarcity added in the last step, Greed Avoidance remained a significant predictor of giving behavior through the first two steps. This suggests that self-focus may have been capturing more than just a facet of other-orientation, but

also some degree of self-promoting tendencies; tendencies that should be investigated further to determine the role they have to play in the relationship between humility and prosociality.

State and trait humility

However, identifying the specific components of humility that promote prosociality is not the only thing this work achieves. My data reveals that both state humility and trait humility have roles to play in predicting prosocial behavior. But how can we use that information to promote prosociality? The gratitude manipulation I used in Study 2 failed to manipulate humility, seemingly because it did not evoke feelings of gratitude given its positive association with self-focus and lack of relationship to other-orientation. Perhaps researchers using a sample of college students should attempt to induce gratitude a different way, like by creating targets for gratitude (Tsang, 2006). Alternatively, researchers could attempt to use awe (Ruberton, Kruse, & Lyubomirsky, 2016) or self-affirmation (Kruse et al., 2017; Ruberton et al., 2016) to boost state humility. The development of quick and reliable interventions to boost state humility, particularly ones accessible outside of a laboratory setting, might be especially helpful in situations where one wishes to promote prosociality.

What of trait humility? Certainly we can attempt to cultivate people of more humble character to promote general prosociality, but can we use trait humility within a situation where we wish to promote prosociality beyond screening and selecting for it? Are there specific circumstances that are likely to activate (Tett & Guterman, 2000; Tett, Simonet, Walser, & Brown, 2013) trait humility to increase state humility? These questions are of particular importance given the apparent downstream effects in my data and remain relatively untouched by current humility research.

How Scarcity Might Matter

Although this work does not offer strong evidence regarding the relationship of scarcity to prosocial behavior, there are several reasons scarcity may yet be important to prosocial giving Each of these reasons may also offer insight into why my manipulations of resource scarcity were largely ineffective. One such reason is that scarcity tends to constitute a threat that promotes a mindset characterized by high degrees of loss aversion (Krosch et al., 2014; Lee & Zietsch, 2011; Tong et al., 2013). Perhaps the tendency to prefer greater social distance (Vohs et al., 2006; Vohs, 2015) is related, as trusting others without cause is not conducive to self-protective motives. This suggests scarcity may promote a more self-focused mindset (Driskell et al., 1999; Vohs et al., 2006) and approach to others in order to cope with the threat inherent to resource scarcity. Given that self-focus was actually the most powerful predictor of prosocial behavior across three studies, the ability for resource scarcity to influence self-focus is particularly important to investigate in future research.

Furthermore, if resource scarcity is indeed threatening it should also be somewhat stressful. After all, threat has been characterized as a response to stressors that are perceived as particularly overwhelming (Blascovich, 2008). Stress has been theorized to be associated with greater degrees of self-focus (Driskell et al., 1999) and is thought to produce frustration that can lead to aggressive behavior (Berkowitz, 1989; Dollard et al., 1939). As such, resource scarcity may inherit yet another mechanism by which it increases self-focus if it is a form of stress. This would also lend credence to the notion that resource scarcity may very well promote outright aggression, which might explain the findings of Kristofferson and his colleagues (2016).

Resource scarcity may not just promote aggressive behavior through its stressful nature however. The presence of rivals seems to activate the trait of Machiavellianism (Kilduff &

Galinsky, 2017). This is associated with greater desires for power and competition (Bereczkei et al., 2010; Martin & Larsen, 1976; Mesko et al., 2014; Paulhus & Williams, 2002; Stewart & Stewart, 2006; Sutton & Keogh, 2000), and is also theoretically and empirically antithetical to humility (Ashton, 2005; Ashton & Lee, 2008; Davis et al., 2011; Kruse et al., 2017), which promoted prosocial behavior across all three studies. Taken together scarcity may ultimately reduce prosocial behavior by creating stress, activating loss aversive protective motives, encouraging competitive and aggressive behavior, and increasing self-focus. Which of these mechanisms scarcity may operate through to affect prosociality is unclear, as is whether trait humility can moderate any of them.

Limitations

Conceptualizing and measuring humility.

The challenges inherent to measuring humility represent a limitation of this project. One of the biggest challenges in this regard is that the field has not reached consensus regarding what exactly constitutes humility; for a review of some dominant conceptualizations of humility, see page 28 (Ashton & Lee, 2005; Ashton & Lee, 2008; Ashton et al., 2014; Chancellor & Lyubomirsky, 2013; Davis et al., 2011; LaBouff et al., 2012). Ultimately, I believe that most conceptualizations of humility, save perhaps that of Chancellor and Lyubomirsky can be embodied by having an accurate self-concept, a highly other-oriented mindset, and engaging in relatively few self-promoting behaviors. That said, current self-report measures of humility do not demonstrate a matching three-factor structure.

A recent review of 22 measures of humility illustrates the problems inherent to using existing measures of humility to map onto its different theoretical components (McElroy-Hetzel, Davis, DeBlaere, Worthington, & Hook, 2019). This review identified eight theoretical

components researchers have used to conceptualize humility, to which they mapped items from each measure where applicable. These eight constructs included: a lack of superiority towards others, high other-orientation, a willingness to acknowledge mistakes and learn from others, interpersonal modesty, accuracy of self-concept, global humility, spiritual humility, and regulation of status needs. This should not be taken to suggest that humility actually involves all eight of these constructs; no measure or single conceptual approach encapsulated all of the components. Further, a number of the measures performed poorly due to low internal reliability or failure to establish evidence for validity. Importantly this review demonstrates how different the measurements are in the conceptualizations they measure, but also how theoretically intertwined some of these constructs can be – such as other-orientation and regulating status needs, or a lack of superiority and an accurate self-concept. Any one self-report measure is likely to measure conceptual approaches to humility somewhat inconsistent with the one adopted here and suggested by the literature.

Another potential problem is that some of these components may not lend themselves well to self-report measurement at all. The self-promotion component is particularly concerning; if higher levels of self-promotion lead individuals to attempt to obtain greater status, along with other resources, it is possible that individuals who are high in self-promoting tendencies will attempt to appear more humble while individuals who are low in self-promoting tendencies will underreport their own humility (Davis et al., 2011). Davis' proposed solution was to have individuals rate the humility of those close to them to assess humility through a relational paradigm (2011). Although this measure was able to add incremental validity in predicting forgiveness over and above the HEXACO HH, relational approaches are complex and provide a different sort of data (other, rather than self-concept). Furthermore, if Davis' measure

sufficiently assesses other-orientation, those items are likely conflated with other aspects of humility as part of the "global humility" subscale of the relational approach (Davis et al., 2011; McElroy-Heltzel et al., 2019). As a result, a relational approach like that suggested by Davis et al. (2010) might be most useful as part of a multi-method approach for assessing humility in future investigations.

Fortunately, recent work has shown that the HEXACO HH subscale demonstrates a good deal of construct validity as a measure of humility (Ashton et al., 2014; McElroy-Hetzelet al., 2019). Moreover, that same work recharacterizes the items of the HEXACO HH as representing other-orientation, regulation of status needs, lack of superiority, and interpersonal modesty (McElroy-Hetzel et al., 2019). Although these categories do not perfectly map onto my conceptualization of humility, they demonstrate a considerable degree of overlap. Regulation of status needs is theoretically antithetical to self-promotion, those who can regulate the desire to demonstrate social status should need to engage in fewer behaviors meant to obtain recognition and social capital. Whereas a lack of superiority may indicate a more accurate self-concept. Interpersonal modesty serves as the only category that falls outside one of the components involved in my conceptualization though it is perhaps a byproduct of all three to some degree. This potentially provides a new way of using the HEXACO HH measure to investigate humility in a way that is more in keeping with my conceptualization of it. This new way of understanding the HEXACO HH measure does not appear to violate the four-factor structure of the measure (Ashton & Lee, 2005; Ashton & Lee, 2008), instead reinterpreting the meaning of the four factors, for instance the Fairness and Sincerity subscales are portrayed in such a way that perhaps they each represent a difference facet of other-orientation. Whether or not this reinterpretation is sound requires a new set of investigations to provide evidence that of the validity of those

claims. In the meantime, the HEXACO HH will likely serve as an adequate measure of trait humility for future investigations.

Should investigations into this new perspective on the HEXACO HH measure fail to provide evidence for its construct validity, future work on this project should replace the HEXACO HH measure with a different measure of trait humility that better aligns with my conceptual definition of humility. Perhaps the closest measure, which also demonstrates good internal reliability and construct validity, is the Expressed Humility Scale (McElroy-Hetzel et al., 2019; Owens, Johnson, & Mitchell, 2013) which has three factors assessing accuracy of self-concept, appreciation for others, and a willingness to learn from others. However, this measure lacks items directly assessing self-promoting tendencies. As such, it may be advisable to instead use measures of other-orientation, self-promoting tendencies, and accuracy of self-concept to create a latent variable representing humility. Measures of the HEXACO HH, Davis' Relational Humility Scale (2011) and the Expressed Humility Scale, and perhaps even implicit measures of humility (LaBouff et al., 2012), could be administered as well in a multi-method approach to establishing convergent validity for the latent construct of humility.

Limits surrounding state humility.

Understanding the role and importance of state humility and trait humility can be complicated. Arguments have been made to suggest that the importance of trait humility comes from the tendency to display greater state humility when humility might be relevant or threatened (Davis et al., 2011; Kruse et al., 2014). In this way trait humility serves as a reasonable moderator when state humility is included in models of prosociality, as it potentially controls the humility one responds with in relevant or threatening situations. Similarly, state humility serves as a reasonable mediator in such a model as well. In light of this perspective, perhaps it is not

especially surprising that state humility, which explained much of the effect of trait humility on prosocial behavior, did not respond to the gratitude induction as I originally expected it to. My sample was not especially high in trait humility, andas Kruse and his colleagues demonstrated, gratitude inductions increase state humility, but only for those who are already somewhat higher in humility (2014). If my sample did not have enough highly humble individuals experiencing the gratitude induction, it would not be surprising that the individuals who experienced the gratitude induction did not display greater state humility when compared to those who experienced a control manipulation.

This requirement for individuals to already be relatively high in humility to experience an increase in state humility as the result of gratitude, potentially makes gratitude inductions less attractive as a vehicle for manipulating state humility, particularly if the average individual is not especially humble. After all, my work shows that those who are already high in humility tend to behave more prosocially anyway. Consequently, humility-based interventions would be most impactful if they could increase state humility, even for those who are not characteristically humble. Perhaps then it would benefit for future work to focus on boosting state humility through self-affirmation or interventions based in awe, as suggested by Ruberton and his colleagues (2016). These are especially intriguing avenues for increasing state humility in times of scarcity as self-affirmation may help to affirm one's value, while awe may provide feelings of connectedness (Ruberton et al., 2016), both of which may reduce feelings of threat and inhibit shifts towards competitive mindsets brought on by scarcity.

The other-oriented nature of humility.

To what degree did my measures of other-orientation capture the other-oriented component of humility? To answer this question, it is first necessary to identify the possible

conceptualizations of the other-oriented component of humility and the differences between them. Typically the literature seems to describe this component in one of two ways: being highly concerned for others (Chancellor & Lyubomirsky, 2013; LaBouff et al., 2012) or being selflessly concerned for others in ways that overpower the concern for oneself (Ashton & Lee, 2005; Davis et al., 2011; McElroy-Heltzel et al., 2019). It is worth noting that for those who describe other-orientation primarily as concern for others, that they often also posit a low degree of self-focus as being part of humility (LaBouff et al., 2012). The former conceptualization is simply a matter of concern for others and should be observable in just about any instance, whereas the latter specifically deals with behavior that puts others ahead of the self and can only be observed under such conditions that force or simulate such a juxtaposition. In either case, other-directed self-monitoring is a poor measure of the other-oriented component of humility, as it actually represents willingness to change one's behavior in order to manipulate others and present well towards others (Seeley & Gardner, 2003). The data support this conclusion, as it displayed a significant, negative association with trait humility and did not display a statistically significant relationship with state humility, which nevertheless trended contrary to expectations for a measure of other-orientation. This represents a self-enhancement motive as opposed to the concern for others that is crucial to the other-oriented aspect of humility (Ashton & Lee, 2005; Ashton & Lee, 2008; Ashton et al., 2014; Chancellor & Lyubomirsky, 2013; Davis et al., 2011; LaBouff et al., 2012; McElroy-Hetzel et al., 2019).

De Dreu & Nauta's other-orientation and self-focus items are far better measurements of other-orientation -concern for others - and self-focus – concern for the self (2009). The other-orientation items not only display better face validity, but evidence of convergent validity through a strong, positive correlation with empathy in Study 1 and a positive relationship with

both trait and state humility in Study 2, as one might expect for a measure of other-orientation. It is from these items that we derive support for conceptualizing the other-oriented component of humility as being selflessly concerned for others in ways that overpower the concern for oneself. The evidence for this conceptualization comes from the lack of consistency in the relationships between humility and other-orientation along with the relationship between humility and self-focus. As mentioned above, although other-orientation displayed the expected relationships with both forms of humility in Study 2, it failed to display a significant association in Study 1. Similarly, although self-focus was consistently a strong predictor of prosocial behavior in both studies, it was only significantly associated with humility in Study 1. As a result future investigations of the mechanisms by which humility influences prosociality should utilize measurements of other-orientation that juxtapose the needs of others against the needs of the self.

Ineffective scarcity manipulations.

Although I was especially interested in understanding the role of humility in relationship between resource scarcity and prosocial behavior, the manipulations used were unable to evoke feelings of resource scarcity. My data demonstrates that the manipulation in Study 2 completely failed to manipulate resource scarcity, and while my pilot work suggests scarcity may reduce prosocial giving, the effect of the manipulation in Study 1 is not statistically significant and weaker than we might have expected based on the scarcity priming literature as a whole, where $|d's|$ are typically > .36 (Vohs, 2015).

A number of factors may have contributed to a weaker effect from the first manipulation. As noted above, the manipulation used by Roux and her colleagues (2015) was not tested in a dictator game paradigm and may simply not produce as strong behavioral effects in that

paradigm, even if it is activating scarcity cognitions. It is also important to acknowledge that priming with cash or money likely would have been more effective at priming feelings of resource scarcity than a form of credit, which is what I used (Engel, 2011; Tong et al., 2013). In addition to these issues, my manipulation made participants feel as though their role as allocator and the associated resources were arbitrarily provided rather than earned. This is one of the strongest predictors of dictator selfishness (Engel, 2011), and my manipulation failed to capitalize on that to prime scarcity. This is particularly important because resources themselves are thought to be valuable insofar as they facilitate procurement and satisfaction of need (Allport, 1954; Homans, 1961; Kelley & Thibaut, 1978; Lynn, 1991; Thibaut & Kelley, 1959). By failing to engage a sense of ownership and possession, the procurement element is arguably reduced. Further, by making participants earn their resources it may have been possible to experimentally evoke scarcity by manipulating the difficulty in procuring resources. Not only might such a manipulation have been more powerful (Engel, 2011) and introduced greater experimental control, it may have been more ecologically valid and has potential to be combined with simple evaluative statements to create feelings of relative scarcity as well.

Sampling from The University of Maine.

Another limitation of the study is that the sample was composed of college students at the University of Maine. Interestingly, students at the University of Maine behave more similarly to older populations, who are more generous than typical student populations (Engel, 2011). Not only was I less likely to find an effect of scarcity in such a sample, but their young age and lack of opportunity to make their mark on the world may have caused the gratitude manipulation to instead provoke indebtedness and shame where it boosted state humility in older participants

who have had more real world experience (Naito et al., 2005; Tangney & Dearing, 2002; Tracy & Robins, 2006).

Furthermore, Maine as a whole is more homogenous in its citizen's income and racial makeup, and the median income is 12% less than the national average (Maine SHNAPP, 2015). As a result it is possible that, having dealt with having relatively lower financial resources for much of their lives, members of my sample may have been less sensitive to my scarcity manipulations participants might have been in a nationally representative sample. It is also possible that the relatively homogenous, white population may also not respond to resource scarcity the way that a more diverse sample would given that race and socioeconomic factors are often intimately intertwined in ways that represent greater threats to minorities than Caucasian individuals (Logan, 2008; Reeves, Rodrigue, & Kneebone, 2016; U.S. Census Bureau, 2014).

Conclusions & Future Directions

Ultimately my work shows that humility is an important predictor of prosocial behavior. If we wish to encourage prosocial behavior, we should work to develop individuals with humble characters, and we should look to elicit humility from others in contexts where we want them to behave prosocially. This will require us to develop a greater understanding of the circumstances that can lead to the activation of trait humility to produce downstream effects facilitating prosocial behavior, and to more fully explore different avenues for manipulating state humility in ecologically valid ways to develop useful interventions that can encourage prosociality.

Furthermore, this work did not effectively manipulate feelings of resource scarcity, but that does not make the questions surrounding prosociality in times of scarcity – and the role of humility in that relationship – any less important. More work needs to be done with more powerful and more reliable manipulations of resource scarcity to really ascertain how humility

might control the response to scarcity, and how effective manipulations of state humility can be at buffering against pressures that compel individuals to eschew prosocial behavior.

Perhaps the most impactful thing about this work is its attempt to isolate specific components of humility as mechanisms for the facilitation of prosocial behavior. As a result of this, one can see that the other-oriented component of humility, while an important piece of the puzzle, does not represent the only mechanism through which humility may promote prosocial behavior. This should serve as a launch point for research regarding the role of self-concept and self-promoting tendencies in promoting prosociality, as well as other theory-driven mechanisms by which humility may drive prosocial behavior.

In the course of investigating theory-driven mechanisms by which humility may drive prosocial behavior, researchers might consider more carefully how to clearly identify components of humility – which have heretofore oft been intertwined. Moreover, this work should inspire humility researchers to empirically explore the components they use to define humility and refine their theoretical approach to the construct accordingly. Perhaps in doing so, the construct itself will become more clear and accessible.

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APPENDIX A: ANALYSES USING OO – SF

Table 10 – Correlation Matrix (Study 1 Using OO-SF)

Variable	1	2	3	4	5
1) Tokens Given to Others	-				
2) Scarcity	-.14	-			
3) HH	**.25**	-.05	-		
4) OO – SF	**.27**	.01	**.41**	-	
5) EC	.16	.01	**.29**	**.42**	-

Statistically significant correlations – at p <= .05 – are denoted in bold.

Table 11 – Regression Table (Study 1 Using OO-SF)

Component	b	std. error	*B*	*T*	*p*	Semi-partial r^2
Constant	5.16	.18		28.33	.000	
Scarcity	-.49	.27	-.13	-1.86	.065	.017
HH	**.56**	**.26**	**.16**	**2.15**	**.033**	**.022**
OO	**.40**	**.15**	**.20**	**2.65**	**.009**	**.034**

Statistically significant predictors – at p <= .05 – are denoted in bold.
(Adj. R^2= .10; $F(3,184)$ = 7.78, p < .001)

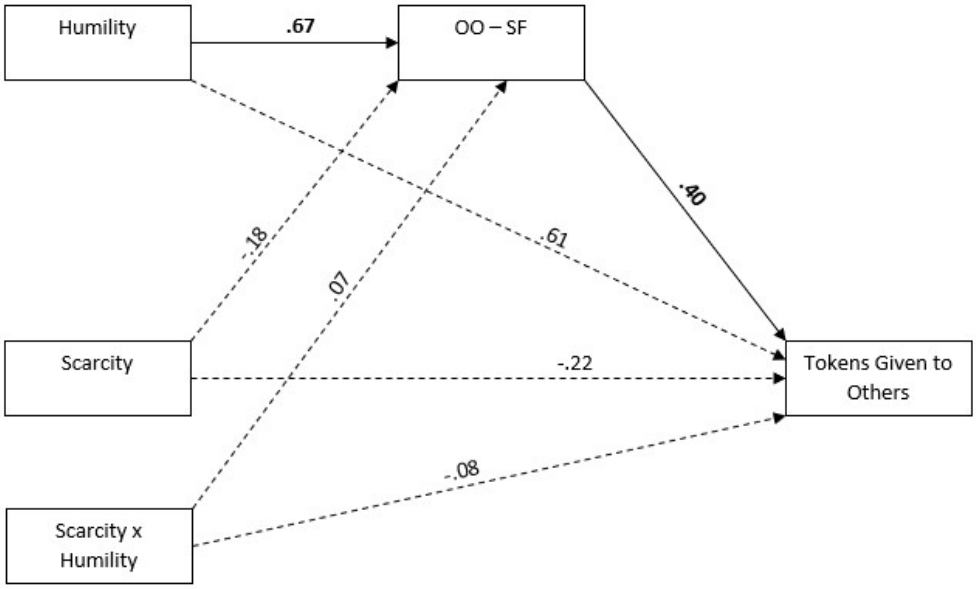

Figure 10 – Moderated Mediation (Study 1 using OO – SF)
Relationships significant at p <= .05 are denoted in bold and with solid paths.

APPENDIX B: MEASURES

HEXACO HH

Sincerity.

1. If I want something from a person I dislike, I will act very nicely toward that person in order to get it. (Reverse Coded)
2. I wouldn't use flattery to get a raise or promotion at work, even if I thought it would succeed.
3. If I want something from someone, I will laugh at that person's worst jokes.
4. I wouldn't pretend to like someone just to get that person to do favors for me. (Reverse Coded)

Fairness.

1. If I knew that I could never get caught, I would be willing to steal a million dollars. (Reverse Coded)
2. I would be tempted to buy stolen property if I were financially tight. (Reverse Coded)
3. I would never accept a bribe, even if it were very large.
4. I'd be tempted to use counterfeit money, if I were sure I could get away with it. (Reverse Coded)

Greed Avoidance.

1. Having a lot of money is not especially important to me.
2. I would like to live in a very expensive, high-class neighborhood. (Reverse Coded)

3. I would like to be seen driving around in a very expensive car. (Reverse Coded)
4. I would get a lot of pleasure from owning expensive luxury goods. (Reverse Coded)

Modesty.

1. I am an ordinary person who is no better than others.
2. I wouldn't want people to treat me as though I were superior to them. (Reverse Coded)
3. I think that I am entitled to more respect than the average person is. (Reverse Coded)
4. I want people to know that I am an important person of high status. (Reverse Coded)

Brief State Humility Scale

1. I feel that, overall, I am no better or worse than the average person.
2. I feel that I have both many strengths and flaws.
3. I feel that I do not deserve more respect than other people.
4. To be completely honest, I feel that I am better than most people. (Reverse Coded)
5. I feel that I deserve more respect than everyone else. (Reverse Coded)
6. I feel that I do not have very many weaknesses. (Reverse Coded)

Other Directed Self-Monitoring

1. In different situations and with different people, I often act like very different persons
2. In order to get along and be liked, I tend to be what people expect me to be rather than anything else.
3. I'm not always the person I appear to be.
4. I guess I put on a show to impress or entertain people.
5. Even if I am not enjoying myself, I often pretend to be having a good time.
6. I may deceive people by being friendly when really I dislike them.
7. I would not change my opinions (or the way I do things) in order to please someone else or win their favor. (Reverse Coded)
8. I feel a bit awkward in company and do not show up quite as well as I should. (Reverse Coded)
9. When I am uncertain how to act in social situations, I look to the behavior of others for cues.
10. My behavior is usually an expression of my true inner feelings, attitudes, and beliefs. (Reverse Coded)
11. At parties and social gatherings, I do not attempt to do or say things that others will like. (Reverse Coded)

De Dreu & Nauta's (2009) Other-Orientation and Self-Monitoring Items

Other-Orientation.

1. I am concerned about the needs and interest of others.
2. The goals and aspirations of others are important to me.
3. I consider others wishes and desires to be relevant.

Self-Focus.

1. I am concerned with my own needs and interests.
2. My personal goals and aspirations are important to me.
3. I consider my own wishes and desires to be relevant.

BIOGRAPHY OF THE AUTHOR

Matthew Humphreys was born in Lakewood, NJ. He graduated in 2009 from Freehold High School before pursuing a Bachelor's of Science in Marketing and Psychology at the Rutgers Business School in New Brunswick, NJ. After receiving his degree in 2013, he then entered into the University of Maine's Ph D. program in the Fall of 2014 to pursue his studies in social psychology. Matthew Humphreys is published as a co-author of the article "Religiosity and Group-Binding Moral Concerns" with Jordan LaBouff and Megan Johnson-Shen. He is also a member of the Society for Personality and Social Psychologists. He is a candidate for the Doctor of Philosophy degree in Social Psychology from The University of Maine in May 2019.