"More Than a Game: Sports Team Affiliation as a Social Identity Marker and its Implications for Selective Cooperation In a Resource Allocation Task"[1]

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ABSTRACT

In this study, we investigate how sports affiliation compares to three other social identity groupings (minimal group, TV preferences, and political preferences) in influencing trust with in-group and out-group strangers. We predicted that minimal grouping would yield small but significant effects, TV show preference would yield slightly larger effects, and political preference would yield the largest effects. Compared to these, we expected to find that the sports team condition would have a larger effect than the minimal groups paradigm; and perhaps be as large as the political condition. Our results only found an effect in the political preference domain. We end by suggesting avenues for future research to further explore our hypothesis.

RUNNING HEAD: Sports and Group Membership: Differences in Cooperative Behavior

INTRODUCTION

Cooperation is (almost) ubiquitous

Our proclivity to cooperate is pervasive: humans often choose to cooperate without hesitation in isolated encounters (Rand, Greene & Nowak 2012), and from a very young age (Warneken & Tomasello, 2006; Hamlin, Wynn & Bloom, 2007; Buttelmann & Böhm, 2014). Burkhart et al. even argue that the crucial evolutionary difference between humans' more advanced cognitive systems and those of our primate ancestors was our unique cooperative social structures (Burkhart, Hrdy, & Van Schaik, 2009).

While our tendency to cooperate is far-reaching, however, humans' pro-sociality is subject to systematic constraints. We cooperate with those who cooperate with us (Trivers, 1971), and punish those who cheat us, even if punishment is costly to us (Fehr & Gächter, 2002; see Pederson, Kurzban, & McCullough, 2013, or Baumard, 2010, for a rebuttal).

Group membership also affects our cooperativeness. We tend to cooperate more with those in our own group compared to those outside our group (see Hewstone, Rubin & Willis, 2002, for a review). However, our increased generosity toward in-group members comes with responsibility. As potential exchange partners, we expect in-group members to be cooperative consistently. When a friend or potential trade partner shirks cooperative expectations, they destabilize the security of future cooperative trades.

Thus, we sanction non-cooperative friends to enforce cooperation. However, we have lower expectations of out-group members. We do not perceive them as potential trade allies, and so their defection does little to destabilize future relations. Accordingly, Shinada et al. find that we punish defectors in our in-group more heavily than we punish defectors from our out-group (Shinada, Yamagishi & Ohmura, 2004).

Cooperation can be an evolutionary puzzle: game theory examples

As previously mentioned, humans often take actions that benefit both themselves and their group. Such situations lend themselves to relatively straightforward evolutionary explanations, because mutually beneficial cooperation can be in the individual's own self-interest. However, mutual beneficence is not entirely sufficient for cooperation in all contexts. To illustrate this concept, some scholars borrow an example game theorists call the Stag Hunt (Skyrms, 2001). There are two players In the Stag Hunt (SH), who are both hunters trying to capture and kill their dinner. They have two choices each: hunt "stag" or "rabbits." If they both choose stag, they hunt together successfully and reap a large benefit of (4 for the first hunter, 4 for the second hunter). If they both choose rabbit, they kill smaller game but hunt more efficiently than they would alone, and so reap a benefit of (3,3). However, if they cross their strategies and one hunts rabbit while the other chooses stag, the rabbit-hunter reaps (1) (it is not so hard to kill a rabbit alone, after all), while the stag-hunter hunts large game by himself in vein (0). The payoff matrix is shown below.

	Hunter 2		
		Rabbit	Stag
Hunter 1	Rabbit	(3, 3)	(1, 0)
	Stag	(0, 1)	(4, 4)

Importantly, both players would prefer to coordinate and hunt together in this game. While the best outcome for both would be (stag, stag), if one thinks the other one is hunting rabbit, he should hunt rabbit too to avoid being left behind with (0). So, even though (stag, stag) is obviously the most preferred outcome for both players, it is not the guaranteed outcome when they face uncertainty about what the other will do. In games with this structure, the ability to coordinate becomes vital, because even if both act with the best intentions where cooperation is mutually beneficial, they can fail to achieve the most desired outcome.

Unfortunately, sometimes even coordination is not sufficient to secure cooperation. Such is the case when individual welfare and group welfare pull in opposite directions. Game theory sheds light on this issue also, with an illustration called the Prisoner's Dilemma (Weibull, 1997). Like in the Stag Hunt, two players have two choices each in the Prisoner's Dilemma (PD): 'cheat' or 'cooperate.' Also like in the SH, each player's payoffs depend on their own action as well as their partner's. In the matrix shown below, Player 2 receives a payoff of (3) if both she and Player 1 choose 'cooperate.' However, if she thinks Player 1 will choose 'cooperate,' she gets a higher

payoff (5) by choosing 'cheat,' leaving Player 1 with (-1). In fact, even if she thinks Player 1 will 'cheat,' Player 1's higher payoff comes from cheating also ((0,0) rather than (5, -1)). Thus, regardless of what she expects Player 2 to do, Player 1 maximizes her own payoff by choosing 'cheat.' Because the payoffs are symmetrical, this same logic holds for Player 1 considering Player 2's actions and her best responses. Note that this is *unlike* the SH; even if both players know what the other is doing, they both want to cheat. Thus, even though the highest-paying outcome for both players is 'cooperate, cooperate,' (3, 3) all strictly self-regarding, rational players will pick 'cheat, cheat' and end up with only (0, 0).

	Player 2		
		Cooperate	Cheat
Player 1	Cooperate	(3, 3)	(-1, 5)
	Cheat	(5, -1)	(0, 0)

In an evolutionary context, we might think of 'cooperate' as 'stay and fight when an enemy approaches the group,' and 'cheat' as 'run away.' If both players stay to protect the group (cooperate, cooperate), they overpower their enemy and everyone survives, perhaps with only minor injuries (3,3). If one stays to fight and one runs away (cooperate, cheat), the one who helpfully stood guard staved off the enemy, but she experienced extreme mortal danger as sole defender, while the cheater relaxed in a nearby cave (-1,5). If both run away, they lose their territory but both survive unhurt

(0,0). Thus, either way it is individually more advantageous to 'cheat' and run, even though if both cooperated by staying and fighting, both would survive and maintain their territory. In this game framework, even if they attempted to coordinate beforehand to both stay and fight, like in the Stag Hunt, when the enemy came around the corner, neither could trust the other stay.

Game theorists describe this phenomenon as a stable Nash Equilibrium, whereby no player wants to unilaterally change her move based on what she thinks the other player is doing. It implies that even though both players can understand this payoff structure and agree that 'cooperate, cooperate' is better for both of them than 'cheat, cheat,' they should still consistently, regrettably end up at 'cheat, cheat.'

However, individuals frequently overcome this Prisoner's Dilemma in laboratory and real life settings by choosing 'cooperate, cooperate,' each forgoing the additional short-term benefits from cheating while the other player cooperates (Rapoport, 1974; model by Harrington, 1995). Such cases are of particular interest for evolutionary psychologists, who have sought to study how, given the harsh environment of evolutionary adaptation due to natural selection, this and other such costly pro-social behaviors could arise and persist.

Modified Prisoner's Dilemma paradigm justifies cooperation

To explain how cooperation arose and persisted in light of harsh evolutionary environments, evolutionary scholars sometimes refer back to the Prisoner's Dilemma in

a modified form. Namely, if the PD paradigm becomes a repeated game, players cooperate at higher rates (Andreoni & Miller, 1993). This more nuanced PD paradigm mirrors certain aspects of humans' evolutionary environment. Ancestral humans coalesced in relatively small hunter-gatherer societies where group members interacted with each other often enough to discriminate between helpful and recalcitrant others. In such social structures, *reciprocity* encouraged cooperation, among other factors (Southworth, 2012). Reciprocity is sometimes described as "exchange relationships" in cognitive science (Clark & Mills, 1993).

The modified PD demonstrates the power of this societal feature, as cheating in a repeated environment becomes costly – players may be able to fool their partner a few times, but those small gains come at the expense of receiving minimal payoffs more often when their partner stops trusting them to cooperate and begins to cheat consistently. In fact, variations of a Tit-for-Tat strategy, wherein a player simply starts by cooperating in round 1, and thereafter copies her partner's most recent move, famously outperforms almost all other possible strategies (Wedekind & Milinski, 1996). Of course, the chance of *punishment*, whereby a slighted partner may incur a small fee to erase a large percentage of the cheater's earnings, further increases incentives to cooperate (Balliet, Mulder, and Van Lange, 2011).

Public reputation, also a likely feature of humans' evolutionary environment, also incentivizes cooperativeness in a multi-round PD. Players become willing to incur a small short-term cost of cooperating instead of cheating when future partners know

their past behavior, so that future partners will trust them to cooperate, and cooperate back in turn (Kreps, Milgrom, Roberts, & Wilson, 1982).

Crucially, such calculations are inherently self-interested. Humans cooperated not to advance the aims of their groups per se, but to advance *their own interests within the group over time*. Importantly, these mechanisms promoting cooperation may work unconsciously. Individuals in humans' evolutionary past did not need to understand payoff matrices, or even cunningly choose not to defect. Even a slightly higher, heritable proclivity to cooperate, wittingly or unwittingly, increased one's reproductive fitness by leading the individual to long-term benefits from increased access to mutually beneficial cooperative activities. Over many generations, being nice to others spread throughout the population through natural selection, which helps explain its modern prevalence (Noë & Hammerstein, 1994; André & Baumard, 2011).

Of course, people who cooperate today rarely cite their motivation in terms of increasing their reproductive fitness at the gene level. Rather, our everyday cooperative actions are other-oriented: we wanted to do something nice for our neighbor, etc. However, our brains, which evolved in an evolutionary environment rewarding cooperation, are what make us want to do something nice for someone else in the first place. Succinctly, today we act nicely because desire to be helpful, but the reason we have the desire to be helpful at all is because of evolved cooperative tendencies.

Nuances in cooperation across cultures

However, this evolutionary explanation has not yet explained why people cooperate in isolated anonymous encounters typified by laboratory experiments. In these unusual settings, one's partner does not even know the your identity; they cannot sanction you for noncooperation. And your in-lab, anonymous behavior cannot hurt your reputation. So why not defect? To explain this widespread apparent blunder, David Rand and colleagues put forth the 'Social Heuristics Hypothesis,' which states, "cooperation is typically advantageous in everyday life, leading to the formation of generalized cooperative intuitions. Deliberation, by contrast, adjusts behaviour towards the optimum for a given situation" (Rand et al., 2014). Indeed, in Rand's meta-analytic study, participants cooperate *more often* rather than less often under time pressure; deciding to cheat requires lengthy consideration (Rand et al., 2014; Cone & Rand, 2014).

Of course, cooperative behaviors vary across cultures with different norms. Rand et al put forward the Social Heuristics Hypothesis (SHH) based on their research in the United States. In fact, the vast majority of behavioral science studies are conducted in western, educated, industrialized, rich, democratic ('WEIRD') cultures. A prediction of the SHH is that cooperative social heuristics should be less strong in contexts around the world where cooperation *with strangers* is less reliably beneficial.

Reflecting this, Joseph Henrich expands behavioral research subject populations beyond WEIRD cultures (Henrich, Heine & Norenzayan, 2010). Henrich's research shows that compared to "23 small-scale human societies, including foragers, horticulturalists,

pastoralists, and subsistence farmers, drawn from Africa, Amazonia, Oceania, Siberia and New Guinea," the U.S. is an outlier in the two most commonly studied economic cooperation paradigms. According to SHH, this finding suggests that cooperation is less generally advantageous in many other cultures, causing people to default to behaviors other than generosity (see Baumard, Boyer & Sperber, 2010, for a rebuttal that the under-determination of economic paradigms better explains people's differing behaviors than do cultural differences).

The two economic games most commonly studied are the Ultimatum Game and the Dictator Game. In the Ultimatum Game, one participant (Player 1) is initially allotted money and given the choice to transfer up to the full amount to another anonymous participant (Player 2), who can either accept the offer, or reject it and leave both players with 0. According to classic economic theory, in which each player pursues short-term self-maximization, Player 2 should accept offers of $0.01 and above, because any positive amount makes them better off. Anticipating this, Player 1 should only offer $0.01. However, in real life most people actually reject offers that put them at a substantial disadvantage (Thaler, 1998). Based on the results of an experiment using a similar paradigm, Fehr and Gächter conclude that such costly punishment behaviors driven by "negative emotions towards defectors are the proximate mechanism behind altruistic punishment" (Fehr & Gächter, 2002). Anticipating this intuitive reaction, Player 1 often offers amounts up to 50% of the total prize, even though Player 1 is the stronger

player (see Debove, Baumard & André, 2014, for a brief review and an evolutionary modeling explanation).

In the Dictator Game, the structure is almost the same except that Player 2 cannot reject Player 1's offer; they thereby de facto accept whatever Player 1 transfers to them. Thus, whereas the Ultimatum Game investigates Player 1's estimations of how little Player 2 will accept, the Dictator Game investigates strict generosity in a one-shot transfer, as Player 2 cannot choose to reject the sum given to them by Player 1. Compared to vast quantities of U.S. participants, people in other cultures tend to give much less money, and accept much lower offers. Henrich's findings urge caution when researchers using only WEIRD participant populations seek to make claims about human nature writ large.

So, while the puzzle of cooperation under some contexts is still under ongoing investigation (Delton, Krasnow, Cosmides & Tooby, 2012; Rand & Nowak, 2013), researchers have already reached a consensus on certain aspects. In essence, many seemingly individually costly, cooperative actions actually do benefit the actor (Axelrod & Hamilton 1981; Nowak, 2006). Thus, cooperation is not necessarily a purely altruistic endeavor. Rather, many evolutionary scholars posit that cooperation, natural selected over time on the gene level, facilitated human interactions in which long-term fitness benefits disproportionately accrued to those who worked together (Axelrod & Hamilton 1981, p. 1391).

Requirements for consistent cooperation

After establishing the puzzle of how human evolution supported costly cooperation, one might ask when *in particular* cooperation is most likely to arise. Typically, successful cooperation requires that each partner feels reasonably confident that the other will return any favors provided, in order to incentivize cooperation in the first place (de Waal & Suchak, 2010). To achieve this crucial trust, an individual must first differentiate potential trustworthy partners from suspicious "others." Often, she does this by sorting others into groups based on readily apparent markers of social identity, and then favoring others of the same 'kind' as her. This is hardly a shocking observation, considering that one important mechanism through which cooperative individuals benefit is via membership in a highly successful group or partnership (Rand & Nowak, 2013). Simply stated, aiding a fellow group member is more likely to enhance one's own success, for example via positive future interaction (Krasnow, Cosmides, Pederson & Tooby, 2012).

What constitutes meaningful "otherness"

Humans' propensity to sort others into groups and consider their group status relative to our own when deciding whether to cooperate is both robust and flexible. Almost any readily apparent feature can help distinguish comrades from competitors: political partisanship (Huddy 2003; Munro, Lasane & Leary 2010) and religious belief (Seul 1999) can both operate as meaningful classifiers, for both adults and children

(Buttlemann & Böhm 2014, Dunham, Baron & Carey 2011). However, not all social markers of group status carry equal weight. Sometimes, the pull to discriminate is sufficiently strong to occur even for features that society explicitly discourages taking into account for cooperation, such as race (Greenwald & Banaji 1995; Bertrand & Mullainathan 2003). Other types of grouping elicit much milder favoritism, which can be combatted by "interdependence, intergroup similarity, and shared fate" in experimental design (Brewer 1979, p. 319). In fact, because people have multi-dimensional identities, they can be sorted into an almost infinite number of groups, depending on the feature considered. Because group membership often serves as a starting point for potentially cooperative encounters, the terms upon which people sort others into groups has important consequences.

Some scholars tested the boundaries of humans' capacity for discriminating based on relative group status. They use a method called minimal grouping, whereby participants are assigned to groups each would readily accept if asked—at least at the outset—is not meaningful, such as their preference between two paintings, or whether a flipped coin landed heads or tails (Brewer 1979; Tajfel 2010). Researchers find in-group favoritism using minimal grouping, even among pre-school aged children (Patterson & Bigler 2006). This result causes many to wonder why the pull to discriminate according to group status is so powerful that humans do it even when they acknowledge that the dimension upon which the group was formed is frivolous.

How people detect "others" for cooperative purposes

David Pietraszewski seeks to explain why people sort others into groups so automatically and persistently, using information about how people cooperate more with in-group members compared to outsiders. In particular, he suggests that perhaps race is a particularly persistent dimension for group sorting in our society not because of its visibility, but rather because people experience race to be a statistically reliable estimator for social alliance, even if without consciously interpreting race in this way.

Pietraszewski builds on earlier research, which investigates how groups act as coalitions to unite individuals against a common enemy. He proposes that evolution has equipped the mind with cognitive machinery, which he calls the 'alliance detection system,' which is specialized for detecting coalitions for the purpose of participation in cooperative coalitions (Pietraszewski, Cosmides & Tooby, 2014). He suggests that people do not sort others into groups according to some dimension of their identity based on the property's degree of perceptual salience per se, like skin pigmentation. Rather, he shows how people become attuned to particular markers because those properties act as proxies for likely *social alliances,* which is peoples' ultimate aim when grouping others (Pietraszewski, Cosmides & Tooby, 2014).

To demonstrate this theory, Pietraszewski conducted a carefully counter-controlled racially heterogeneous Who-Said-What (WSW) paradigm. In the WSW, participants watched a video of people conversing, and were asked to recall afterward who said what comment. Recall accuracy is low, but which people the participants

mistake for which other people conveys important information. Namely, the experimenter can spatially plot how participants mentally grouped the video actors with each other, based on the proportion of times certain people were confused for certain others. For example, women are more likely to be misremembered for another woman than for a man. Usually, participants have been shown to robustly sort by race, in a so-called "race effect," as well as by gender. In his study, Pietraszewski varied the color of the video actors' shirts as a cue for their social alliance (who was friends with whom), and eliminated the so-called "race effect" for recall in situations where race did not predict social alliance. When race did *not* predict social alliance, people virtually ignored it. Gender sorting did not disappear independent of social alliance predictions, perhaps because it also conveys information about mating, which is vitally important for humans for other reasons.

So, Pietraszewski provides evidence that even identifying characteristics that people might think are vital for group bias, such as race, are learned. We do not learn them so readily for their own sake, but rather because these identifying markers are *usually* associated with what we really care about, which is which people in our environment are likely to cooperate with whom. In the event that some other feature better predicts social alliance, such as shirt color, we attune to that more specific information (see Kurzban, Tooby & Cosmides, 2001, for additional evidence).

Developmental psychologists study the emergence of such learned differentiation between people, and how children come to prefer strangers in their in-

group to out-group. Existing scholarship shows that race, gender, and age are key identifying characteristics by which children as young as infants distinguish between—and differentially prefer some—strangers (Kelly et al. 2005; Quinn et al. 2002; Sanefuji, Ohgami & Hashiya, 2006). Katherine Kinzler and colleagues extend this research to the domain of language; they show empirically that children pay particular attention to language and accent, and even prefer pictures of children of other races with native accents to pictures of children of the same race, with foreign accents (Kinzler et al., 2009). This finding supports Pietraszewski's idea that people attend to race (and other less pervasive identity characteristics, by implication) to the extent that it predicts social alliances.

Sports as a source of group identity

Meanwhile, investigation into sports team identity constitutes an important line of research related to social groupings. Intuitively, anecdotes abound highlighting how strongly some die-hard fans associate with their favorite teams. Some paint their faces and bodies for home games; others purchase costly season tickets year after year; still others refuse to sit for the entirety of their team's matches.

Considering that team sports are activities typically structured such that multiple groups are pitted against each other in a fierce competition for a zero-sum resource (i.e. a 'win'), perhaps team sports utilize the cognitive machinery designed for alliance detection and selective cooperation that Pietraszewski outlined in his research studying

race, or Kinzler demonstrated in her study about children's accent preferences. At the very least, it seems reasonable that sports team affiliation might create a sufficiently robust sense of social identity to yield in-group and out-group cooperative effects similar to those found in other aspects of daily life (Dimmock, Grove & Ecklund, 2005). Indeed, psychologists Branscombe and Wann argue, "sports team identification replaces more traditional family and community-based attachments to the larger social structure" (Branscombe & Wann, 1991).

However, people can usually choose whether or not to root for a particular sports team during any given season or day. This makes sports team affiliation a relatively fluid form of social identity compared to more rigid aspects of people's born identities (i.e. race, sex, or socioeconomic status). Research findings indicate that people really do selectively identify with sports teams based on certain external factors. In particular, sports fans show a pattern of behavior researchers refer to as BIRGing and CORFing, or basking-in-reflected-glory and cutting-off-reflected-failure (Wann & Branscombe, 1990). When their preferred team wins, fans BIRG, or increase their association with a successful entity as a self-esteem maintenance mechanism. The opposite occurs when their team loses.

Subsequent research shows the particular importance of emotion in sports team affiliation as a form of social identity (Wann & Branscombe, 1992; Wann, 2006). Importantly, "die-hard" fans BIRG more and CORF less, highlighting how highly committed fans maintain a sense of social identity tied to their team even in the face of

defeat (Wann & Branscombe, 1990). Additionally, fans' ratings of their rival out-groups were lower than for their in-group when team affiliation was made salient (Wann & Grieve 2005). Taken together, these findings suggest that, at least for highly committed fans, sports are a robust form of social identity.

In light of these findings in sports psychology and management, as well as Pietraszewski's research, we directly tested this intuition about the effect of sports team affiliation as a form of social identity for the purpose of moderating cooperation. Our guiding questions were as follows: are team-sports robust forms of social identity, such that committed fans will cooperate more with fellow fans than with fans of rival teams? If so, can such discriminatory cooperation be explained solely by how much fans care about the sport and teams in question? Alternatively, do people differentially cooperate within the domain of sports identity beyond how much they care about the domain, precisely because sports structurally matches our evolutionary context of small, discrete groups cooperating within themselves and competing with each other for scarce resources? We directly investigate this question by testing people's cooperative behavior within a sports domain, and measuring differences in their cooperation toward their in-group relative to their out-group. We compare these effect sizes to those in other domains, some of which do *not* bear structural similarities to sports (i.e. they do not pit rivals against each other in competition for a zero-sum resource). We also measure how much participants care about each domain, separate from their cooperation towards members of the in-group and out-group.

Concretely, we asked whether sports team affiliation produces marginal cooperation effects like minimal grouping does, or if it was socially divisive, causing participants to strongly differentiate between people who supported their team and people who supported another team.

METHODS

Using a Trust Game to test forms of group identity

To test whether sports team affiliation can act as a form of social identity sufficient for differing levels of cooperation, we asked subjects to participate in a Trust Game (TG). In the TG, participants are allotted some initial sum of money (Player 1). They are given the opportunity to transfer some portion of their allotment to an unknown counterpart (Player 2). Any money transferred to Player 2 is multiplied by a positive factor greater than 2. Player 2 has the opportunity to transfer however much of the initial investment enlarged by the multiplier back to Player 1. The multiplier always exceeds 2, so that if Player 1 invests all her money with Player 2, and Player 2 divides the allotment equally (which Player 2 may do, or may choose to return more or less), they both end up better off than if Player 1 had kept all the initial money. For example, with a multiplier of 3, if Player 1 started with $10 and invested all of it, Player 2 would receive $30. If Player 2 divided the investment equally, both players would end with $15 each. However, with a multiplier of 1.5, if Player 1 invested all $10, Player 2 would only

receive $15. Dividing $15 equally leaves both players with $7.50, effectively penalizing Player 1 for being nice. Both players are compensated according to the decisions made by Player 1's and Player 2's final decision.

Note that this Trust Game paradigm offers complexity whereby experimenters can measure how likely participants think their partner is to act generously toward them (Player 1), and how they utilize such information about their counterpart's behavior when deciding how much to return to their investor (Player 2). This paradigmatic complexity has the advantage of studying subtler cooperative questions the Dictator and Ultimatum Games cannot address. For example, people often confront situations with payoff structures similar to the Stag Hunt described earlier. For example, they could choose to work alone on a professional project or to collaborate with another person. Working alone is more secure, as the worker has complete control over the product. On the other hand, collaborating often creates a better final product if the worker is willing to take the risk to trust the other person to contribute. If the worker trusts the other person, they are more likely to invest their resources in collaborating in hopes of achieving a jointly better product, or outcome. The TG employs exactly this structure to test people's behavior in such scenarios. The TG builds on previous scholarship, which shows that it is an effective and reliable paradigm to investigate cooperation, given certain experimental controls (Johnson & Mislin, 2011).

Participants

398 participants (161 female, mean age 36) from the United States were recruited via Amazon Mechanical Turk (MTurk). Equal numbers of participants were randomly assigned to each experimental condition, although they became slightly unequally distributed after accounting for those who failed to complete the survey after being assigned to an experimental condition.

Survey design

Section 0: sorting into domain conditions

In the experiment description, MTurk participants were informed that they would be rewarded $0.75 for completing an experiment that would take about 5 minutes. They read an informed consent waiver and agreed to participate. Upon beginning the study, unbeknownst to them, participants were randomly assigned to 1 of 4 possible experimental domain conditions: TV show [free response], sports team [free response], national politician [Obama/Trump], or minimal grouping [blue/green]. 101 of participants who completed the survey were sorted into minimal condition, 100 into the TV condition, 96 into sports team, and 102 into politics. Each part of the design was entirely *between-subjects*: each participant remained within one domain condition throughout the experiment.

Section 1: Trust Game explanation and comprehension check

Next, the participants were given written instructions to complete a hypothetical trust game (see Appendix A). The task was explicitly titled a 'trust game' rather than merely a 'monetary task' or an 'investment game' to frame the situation for the participants to think about the paradigm in terms of trust, rather than overt competition or in a more neutral way (framing the same task with different language has been shown to influence decisions; Liberman et al., 2004). On the same page with the description of the game, participants answered two comprehension check questions. These were not used to exclude participants, but instead to support participant understanding of the task.

Section 2: selecting most / least preferred options within conditions

For those randomly sorted into the TV show (sports team) domain conditions, participants were asked to type in their most preferred "nationally known TV show" ("nationally known sports team"). Then, 'TV show condition' participants were asked to type in their least preferred TV show. 'Sports team condition' participants were asked the same question with slightly different wording: "please type in your least preferred sports team *who might feasibly play your most preferred team*" (emphasis added). We altered the phrasing as such to create dichotomies where the teams selected might potentially compete for a zero-sum win, prohibiting answer profiles featuring (for example) a beloved professional football team and a reviled collegiate basketball team.

This phrasing was in keeping with our research question about sports team identity as a form of group identity cognitively similar to identities (e.g. shared race, native language, etc.) important in our evolutionary past. Importantly, the 'TV show condition' served as a control free-response condition for 'sports team,' because TV shows do not have the same inherently competitive structure as team sports, Emmy Awards notwithstanding. Viewership is not mutually exclusive; one person may watch both shows, while both opposing sports teams cannot simultaneously prevail.

For the 'national politician' condition, participants were asked to pick whom they most preferred between Barack Obama and Donald Trump. Donald Trump is perhaps the most widely known Republican politician, while Democrat Barack Obama is still widely known after eight years of presidency (by contrast, Hillary Clinton, Trump's recent opponent, has faded from national attention). While Obama and Trump never directly ran against each other, they are their political parties' most famous figureheads, and have clashed numerous times recently. For the minimal group domain, participants were informed that they had been randomly sorted into the blue or green group, and directed to select the one they had been sorted into to indicate their comprehension (i.e., although the choice of 'blue' or 'green' was not up to them, we asked them to click on the group they had been assigned to match the behavior of selection that participants in the other groups experienced). Thus, there were two conditions with dichotomous conditions (minimal groups, national politicians), and two free-response conditions (TV show preference, sports team preference).

We decided to divide the four domain conditions into two free response conditions and two dichotomies because we wanted to maximize any differences in how much people preferred their in-group to their out-group for the sports condition. There are countless teams across many levels of play, within a multitude of sports. Accordingly, asking participants to choose between two pre-established rival teams (e.g. The Boston Red Sox and New York Yankees) may have created a floor effect whereby participants who would have otherwise differentially cooperated based on sports group status, but who do not care about the Red Sox—Yankees rivalry, appeared not to care about sports. We made the 'TV show condition' free response for similar reasons, and to provide a more controlled comparison condition for the sports condition. We made the 'national politicians condition' and 'minimal groups condition' dichotomous to more closely resemble previous scholarship (e.g. studies where participants' in-group and out-group are randomly dichotomously assigned). Also, selecting ones' preferred color would have invalidated minimal grouping, which acts as a necessary control condition for the other three conditions.

Section 3: caring about domain

After the participants selected a group (or showed they understood their grouping in the 'minimal group condition'), they were asked how much they cared about the domain on a 1-7 Likert scale (see Appendix A for all question wordings). For three of the domains (not the minimal group assignment), participants were also asked how

many times they discussed the topic in the last 30 days [0 times, 1-3 times, 4-9 times, 10+ times], though these data were not analyzed.

Section 4: Trust Game decisions

On the next screen, roughly half the participants (N=183) were asked to imagine that they had been paired with another participant who shared their domain preference choice, and the other participants (N=216) were asked to imagine that they had been paired with another participant who had the opposite preference choice. We phrased the pairing hypothetically so we could test people's behaviors when interacting with their most extreme in-group versus most extreme out-group, without lying to the participants by saying they were paired with them when they actually were not, or expanding the study exponentially to find sufficient pairings. While most online economic studies are not hypothetical, many MTurk studies that are not economic games ask participants hypothetical questions. Participants may have acted differently if they had actually been paired with real partners, and correspondingly had real monetary consequences from their answers. However, because this study is the first study of its kind to the authors' knowledge, it seeks to establish a weaker claim that people might cooperate differently based on sports team group status. Whether or not they actually do when money is at stake is a stronger question, and an excellent direction for future research (discussed below).

Next, participants played both roles in the TG. They indicated on a sliding scale how much of their allotted $10 they would transfer to their counterparts, in $1 increments, with the understanding that each dollar transferred would be multiplied by a factor of 3. Therefore, if Player 1 transferred $3 of her $10, the person playing Player 2 would accrue $9, while an $8 transfer would become $24.

Participants also played the role of Player 2, whereby they indicated in $1 increments how much they would transfer back to Player 1 for one of two possible decisions a Player 1 might make: $3 invested or $8 invested. These two values were chosen to see how people responded to low trust ($3 invested) and high trust ($8 invested). We picked $3 and $8 because they are clearly different from a somewhat ambiguous 50/50 split, and both allow for Player 2 to give back money while making sure each player ended with equal amounts of money ($8 with a $1 back-transfer for the former condition, $12 with a $10 back-transfer in the latter).

Each person saw Player 1 and Player 2 on a single page and was encouraged to make the decisions all at once, until they were satisfied with their answers for both roles. We did this as such to encourage reflection about all decisions, and to reduce order effects of playing one role before the other. We did not counterbalance which role appeared first on the page because we assumed that seeing Player 1 first would increase participant understanding of the task overall. Relatedly, allowing participants to play both roles in the TG ensured that participants fully understood the ramifications of their choices in each role – they could see how it would affect the person in the other

role. Finally, participants were asked demographic information questions before exiting the survey for descriptive purposes, such as age and gender.

Summary

The experimental design was 4 [domain] by 2 [group status relative to randomly assigned hypothetical counterpart]. The dependent variables were how much of participants' allotments they entrusted to a hypothetical Player 2, and how much they each indicated they would return to a hypothetical Player 1 for either level of initial investment (operationalized as "low trust" or "high trust").

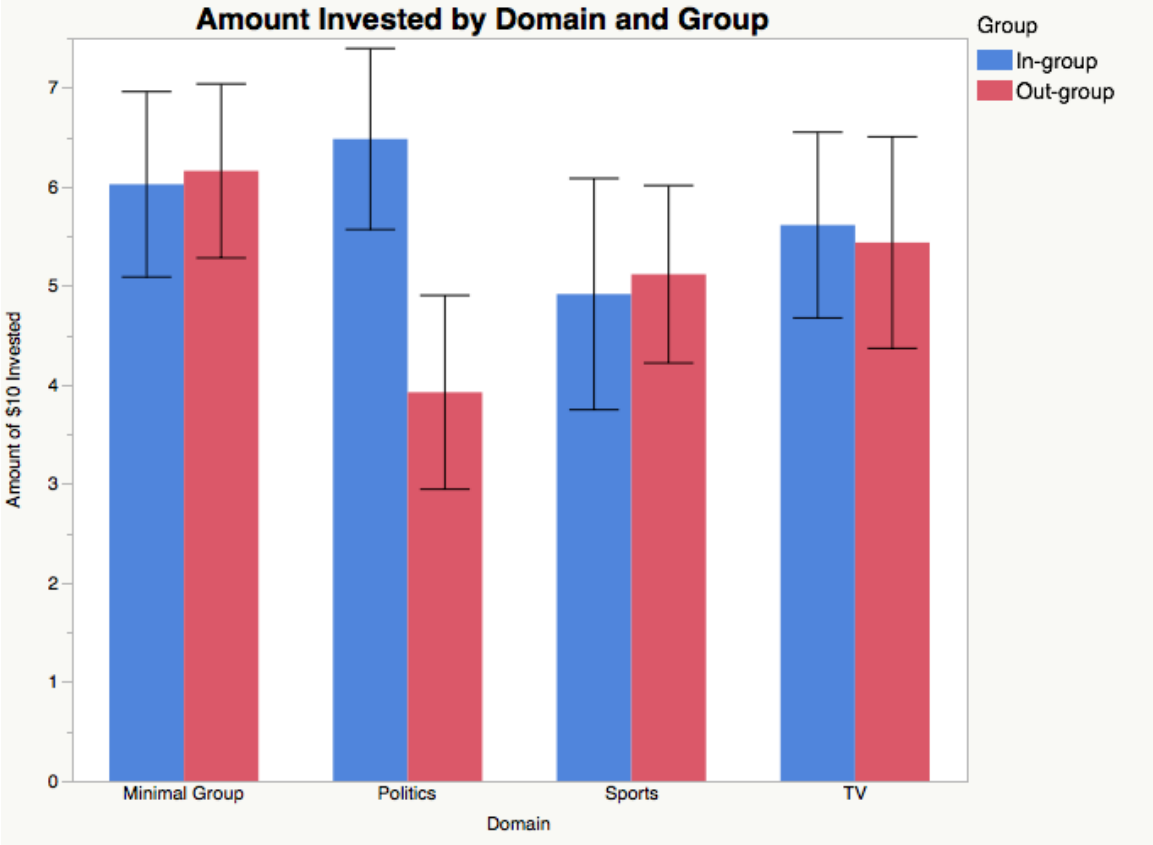
RESULTS

In order to show that sports team affiliation can create a sense of social identity such that one cooperates more with their sports in-group compared to out-group, we needed to at least show that participants in the sports + in-group condition show statistically significantly more trust toward their partners in Player 1 role (measured by how much of their allotted $10 they gave their partners), as well as more reciprocity toward their investor in Player 2 role, than participants in the sports + out-group condition. To show that sports team affiliation is a particularly robust dimension of group identity, the difference in participants' trust (Player 1) and generosity (Player 2) toward their partners between in-group and out-group conditions needed to be greater

for the sports domain than the minimal group and TV show domain conditions. Given the ubiquity and divisiveness of politics as a social organizer, sports domain effects at least on par with the national politician domain would be strong evidence that sports is a robust form of social identity. Results are depicted and synthesized below, broken down by player roles.

Analysis #1: Player 1 transfer

First, we conducted a two-way ANOVA and found that the only domain that had a significant effect on how much participants cared was politics. Looking only at domain, participants in the politics domain condition cared significantly more about the domain than did participants in the minimal group condition, $F(3)=1.256$, $p<0.001$, TV show condition, $F(3)=1.087$, $p<0.001$, and sports team condition, $F(3)=1.148$, $p<0.001$. No other domain had a significant effect on how much participants cared, or differed significantly from any other domain. This pattern of results suggests that politics struck a chord with participants, while the other domains did not.

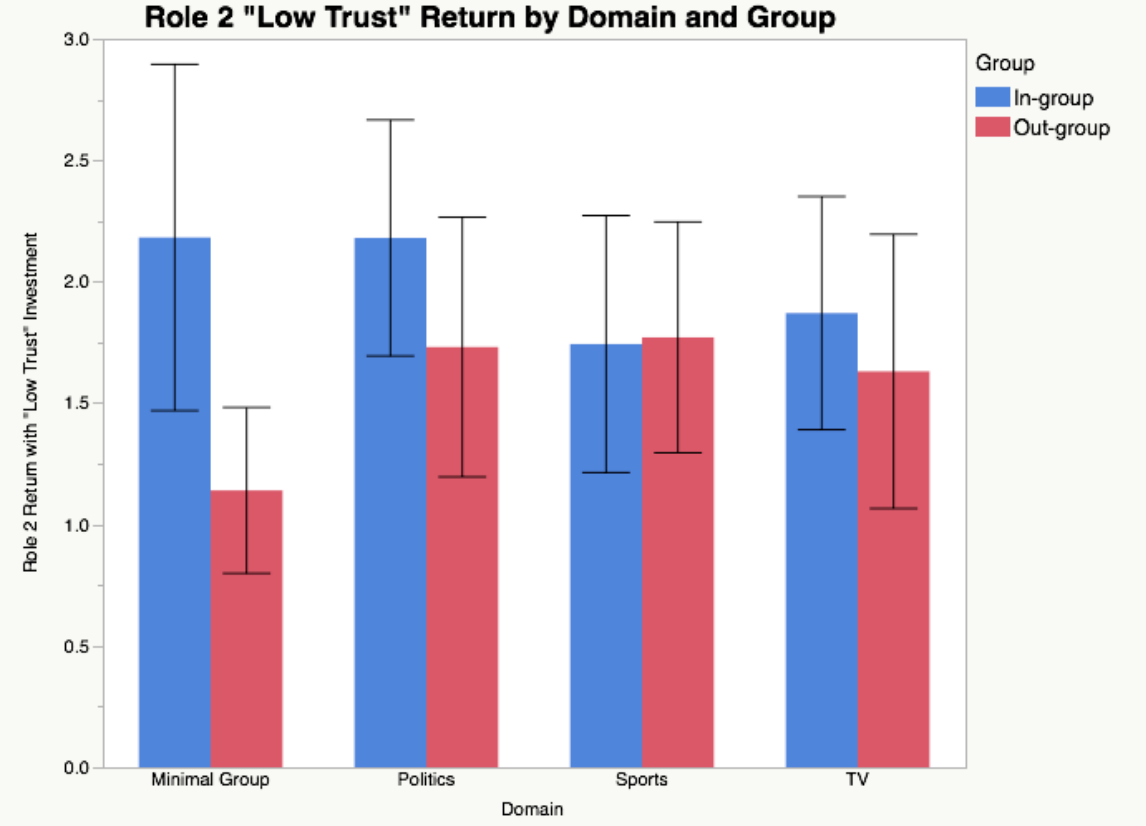


Relatedly, we found (and depicted above) a pattern of results for Player 1 whereby politics elicited the strongest—and only—domain effect on Role 1 investment amount, as measured by as the difference between the in-group and out-group conditions $t(100)=3.830$, $p<0.001$. This result is interesting though unremarkable, as politician choice forms a particularly robust and stable form of identity, made even more salient in the recent and divisive 2016 presidential election. Politics was the only domain for which participants invested significantly different amounts depending on whether their imagined partner was an in-group or out-group member.

The TV show, sports team, and minimal grouping domains yielded no significant results. TV show showed a highly insignificant effect, $t(98)=0.251$, $p=0.803$. Sports also

showed an insignificant effect in the wrong direction, t(94)=-0.273, p=0.785. Most interesting of these null results was the minimal grouping. Namely, this particular pool of participants failed to replicate the well-known minimal group effect in this study design, t(99)= -0.210, p=0.834. The latter result, or rather lack thereof, suggests that perhaps any other effects may have been similarly suppressed by the heretofore-untested survey structure and wording.

Analysis #2: Player 2 transfer, low-trust

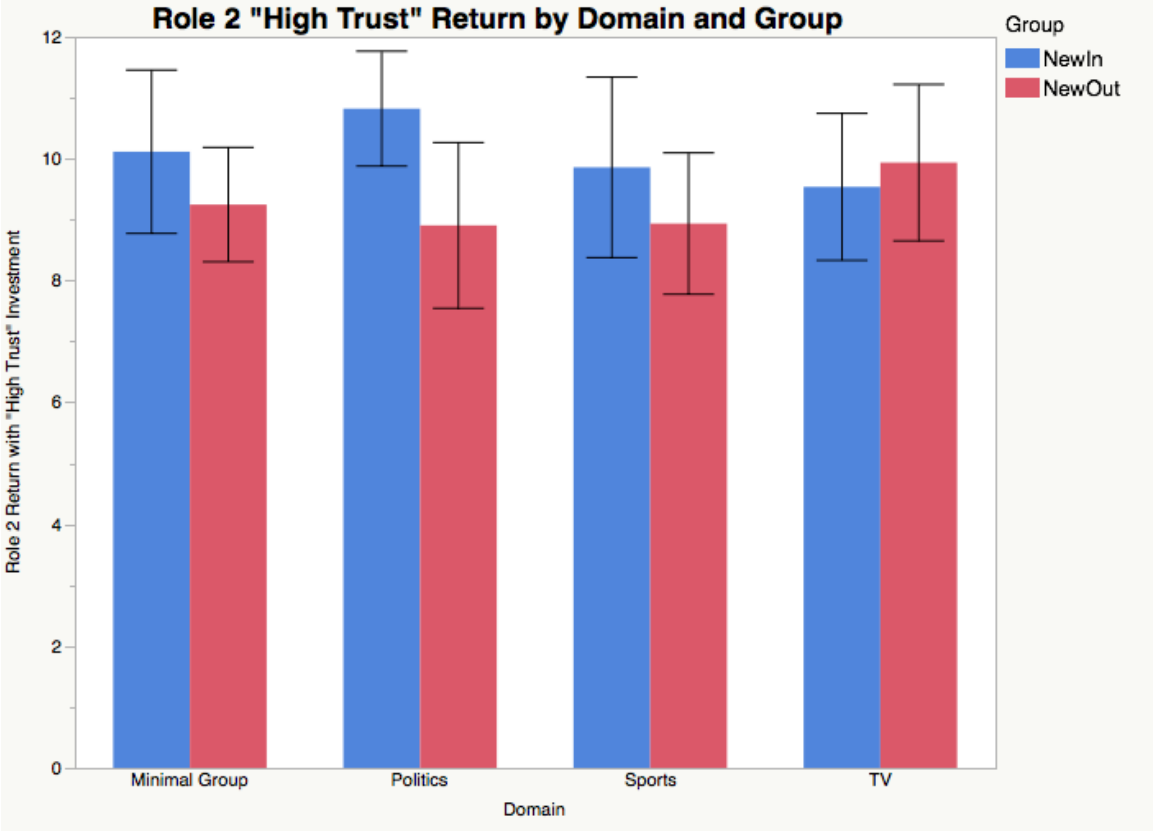


To analyze Role 2 answers, we first dis-aggregated the data from Player 2 role into two sections: a Player-1-low-trust condition ($7 kept, $3 transferred, $9 endowment) and a high-trust condition ($2 kept, $8 transferred, $24 endowment). We did this in anticipation that Player 2's reciprocal cooperative behaviors might hinge on how much some Player 1 trusted the participant. For example, I might be insulted if a fellow Red Sox fan only trusted me with a $9 endowment, and thus might have no qualms keeping all of it, whereas if they had entrusted me with $24, I might feel obliged to split the spoils more generously.

To uncover any potential differences between high- and low-investment return behavior, we conducted two 2-by-4 ANOVAs to measure the effect of domain and relative group status (in group or out-group partner) on player 2's generosity, for both the low trust and the high trust conditions. We operationalized the low-trust condition2 using the question about how much participants playing Player 2 would give back to Player 1 if they received a $9 endowment ($3 initial transfer). We found no main effect of domain on Player 2 generosity using the Bonferroni technique, $F(3)=0.478$, $p=0.698$. There was a main effect of relative group on generosity, $F(1)= 5.398$, $p=0.021$. Specifically, participants generally returned more money to fellow in-group members ($M=1.994$, $SE=0.135$) than out-group members ($M=1.568$, $SE=0.124$). There was no interaction effect, $F(3)=1.517$, $p=0.210$.

[2] Please note: everyone included in the data analysis answered this question. The word "condition" signifies the question item, not a between-subjects condition like domain.

Analysis #3: Player 2 transfer, high-trust



As the graph shows, a 2x4 ANOVA revealed no significant effects of group status on Role 2 behavior in the high trust scenario. There were no main effects of domain, group, or interaction effects. Perhaps if a hypothetical Role 1 partner entrusts the participant playing Role 2 enough money, the participants vis-a-vi Role 1 felt obliged to reciprocate that trust, regardless of group status or along what dimension the partners had been grouped.

Analysis #4: Follow up analyses

Following these preliminary analysis, we ran several correlation tests examining how well the participants' responses of caring about the domain correlated to their pro-social behavior toward their imagined partner in Role 1, Role 2 low trust, and Role 2 high trust. We did this to directly test of our question of how much of any domain effect size was driven by the domain itself compared to the amount that participants care about the domain. In theory, we ultimately wanted to know whether or not people use sports team affiliation as a meaningful marker for social identity, and wanted to isolate the effects of sports team identity itself as a particularly powerful dimension of social identity independent of fan zeal. Because sports team domain did not significantly affect how much participants invested with in-group partners compared to out-group partners, we did not expect to find any additional information through this test. Rather, we ran it to test this intuition about the only domain for which there was an effect – politics.

An initial bivariate correlation showed a small effect of investment on return behavior. Those who invested more of their imagined $10 also returned more money to Role 1 in the "high trust" scenario $r(399)=0.461$, $p<0.01$. Interestingly, there was no such correlation, either positive or negative, when the imagined Role 1 player exhibited low trust $r(399)=0.037$, $p=0.461$. A negative correlation would have made sense; I might be angry with someone who did not trust me since I was generous when I played Role 1. However, no such correlation was found, suggesting that perhaps people did not think

indignantly in this way (assuming they engaged enough with the task to internalize how their Role 1 behavior compared the hypothetical partner's).

A secondary bivariate correlation split the results depending on participants' relative group status, to see whether behavior varied systematically depending on whether the counterpart was friend or foe. Oddly, caring about the domain did not correlate with how people interacted with in-group members. More straightforwardly, however, that the more participants cared about the domain, the less they invested with an out-group member $r(399)= -0.155$, $p=0.023$.

Finally, we note that excluding those who failed either of the two comprehension checks drastically decreased our predictive power, as roughly ¼ of participants failed one of the questions (112 of 398). Because of this, we reasoned that the comprehension checks did not operate as intended to ferret out those participants who were mindlessly selecting answers, but rather some participants who understood the structure of the Trust Game but made an arithmetic mistake could have easily failed. Additionally, the comprehension check did not ensure that even participants who understood the mathematics of the Trust Game internalized that a Role 1 player only investing $3 meant the player did not trust the participant. As such, we did not analyze our data based on passing or failing the comprehension checks.

DISCUSSION

We found that political preference ("Obama" or "Trump") influenced people's behavior in a Trust Game. Specifically, they cared more about the domain than the participants in other domain conditions. They also entrusted the other player with a smaller investment when told the other player had the opposite political preference, although they did not return significantly less to out-group members than to in-group members as Player 2. On the other hand, we found no effects for the TV show, sports team, or minimal grouping domains. We expected weak effects for at least minimal grouping, based on the findings of previous research into the topic. In particular, Tajfel and colleagues famously stumbled upon in-group bias effects through minimal grouping, spawning decades of subsequent research into social identity theory as it relates to inter-group conflicts (Tajfel & Turner, 1979). More recently, Summerville and Chartier show that MTurkers act more generously toward minimally grouped in-group partners than toward out-group partners, even when they are not actually paired with real partners, but rather are falsely told as much (Summerville & Chartier, 2013). Minimal groups spontaneously *create* social alliances rather than deriving them from a pre-existing characteristic. As such, it would make sense that the effect on cooperation turns out to be weakest, but still present, for that dimension, since presumably none of the participants cared about the blue or green group outside the context of this experiment. Our inability to find any such effects may have been an artifact of the hypothetical survey design, or perhaps simply because we did not use exact wording of previous studies that have been shown to reproduce the effect.

Similarly, we found no effect for the TV show domain. In comparison to minimal groups, TV shows are classifications that exist outside the confines of the experiment, and thus presumably undergird a somewhat more stable form of social identity. However, the category does not necessarily lend itself to competitive rivalries the same way politician preferences, as a proxy for partisanship, and sports teams do, because while *Game of Thrones* and *Keeping Up With the Kardashians* might vie for the hearts and minds of potential fans, they do not compete for a zero-sum resource like Electoral College seats or a championship trophy. If everyone can obtain what they want without competing, one of the motivating factors for intergroup conflict (and thus, one reason for detection of social alliances in the first place) is erased. Rather, the 'TV show' condition provided a survey-design control, since unlike in the political condition participants were allowed to indicate their most and least preferred options, rather than picking between two forced choices. Perhaps partially as a consequence of decreased head-to-head competition, TV shows, although many have large loyal fan-bases, less frequently elicit the same levels of sustained emotionality that are hallmarks of contemporary politics and competitive sports. The analyses confirmed this rule of thumb, except that they failed to demonstrate that even sports create a robust sense of group status.

We correctly expected politician choice to show the strongest group status effects on pro-sociality. Political partisanship became especially salient in the recent presidential election wherein Trump largely campaigned against the Obama

administration, despite formally running against Hillary Clinton, and wherein Trump prevailed over the Democratic candidate (Clinton) who linked herself closely to Obama. The circumstances of the election were also particularly divisive, which may have contributed to the effects of in-group favoritism and out-group coolness. Importantly, politician choice was the strictest test for sports overall effect size: it elicited a substantial effect size against which sports team affiliation domain effects could be compared. Sports teams and political parties are also similar in structure: they have clearly opposing sides competing for a zero-sum resource, and are widespread in American society. These similarities made them excellent candidates for comparison when investigating selective cooperation based on group identity.

Sports team affiliation showed no significant effect, leading us to suggest directions for future research to test similar questions in slightly different variations to tease out any effect that may have been suppressed by the unique design of this study implementation.

In conclusion, many evolutionary explanations for cooperation posit that the behavior arose and persisted within human activity because it ultimately benefited the individual cooperator. Because individuals often benefit via membership in a successful partnership or group, our group identity is of critical significance. Interestingly, we can create—and derive meaning from—groups according to almost any feature of social identity, from political partisanship (Huddy, 2015) to religion (Seul, 1999) to which way a coin landed (Tajfel 2010). David Pietrasweski shows how people pay most attention to

the features of social identity that best predict others' social alliances, rather than according to the feature's perceptual salience (Pietraszewski, Cosmides & Tooby, 2014). Scholars researching the dynamics of team sports have shown that sports identity is also an important feature of our social identities, though more fluid than some other features because of voluntary self-association (Wann & Branscombe, 1990; 1992; Wann, 2006; Wann & Grieve, 2005).

DIRECTIONS FOR FUTURE RESEARCH

This experiment takes an important step to bring sports team identity into the realm of social identity research studying cooperation. However, the experiment features several limitations, which offer plentiful opportunities for exploration in future studies.

First and foremost, logistical considerations impelled us to conduct the survey hypothetically rather than actually matching participants with their in-group and out-group members as partners. Specifically, we used a design that allowed participants in two of the conditions to choose the domain-relevant in-group and out-group categories that were most personally relevant. Although this has the advantage that theoretically it created the most extreme in-group and out-group constructions possible for each participant for that particular domain, it made it impossible to actually match

participants in a real interaction. Perhaps a different pattern of results might emerge if one runs a much larger, more complex, real-time version of the study where participants transferred money non-hypothetically. Such a study design would be ideal, especially given that most online behavioral economic studies are conducted in this way.

Regarding potential directions for future research, domain-specific effects for sports team unexplained by how much the participants care about the domain provides a starting line for further investigation. Several plausible explanations come to mind. Perhaps sports attract people who are naturally more competitive, in which case the effects would bely an endogenous effect rather something about sports teams as alliance detection markers per se. Perhaps sports team affiliation works through to 'muscular bonding,' a term coined by anthropologist William H. McNeill. Wilmermuth and Heath expound upon the idea of the power of physical synchrony to argue that, "acting in synchrony with others can foster cooperation within groups by strengthening group cohesion," in part by "[producing] positive emotions that weaken the psychological boundaries between the self and the group" (Wilmermuth & Heath, 2009). While political parties never have their rank and file march in lines to increase group cohesion, sports teams occasionally show this feature, through group cheers at matches, etc. However, physical synchrony usually occurs exclusively for team members, for example during drills at practice or group conditioning circuits. As such, physical synchrony would be a much more convincing explanation of the differences

between politics and sports for those actually engaged in the activity, rather than spectators who merely observe the activities and associate with one side or the other.

Lastly, the results herein described invite the question: would the same pattern of effects found in a laboratory setting hold in a naturalistic setting? A potential extension of this study might be conducted outside the gates of a sporting event before a contest, when participants are already thinking of themselves as "fans of X team," rather than dentists or fathers or Star Trek aficionados, for example. This effect size could be compared to any found by interviewing participants outside a town hall meeting for Congressional representatives of both political parties.

One might also seek to replicate the study in an environment in which one sport uniquely dominates the sports landscape. While in America, baseball, football, basketball, hockey and soccer all compete with each other and with other sports for potential fans' attention, in Europe soccer reigns supreme. In this environment, many more sports fans may be able to easily compare their most- and least-preferred teams, as they play the same sport, perhaps even on the same level—namely, professional—since collegiate athletics as America knows it does not exist virtually anywhere else.

Finally, one could explore the nuances in sport that might lend themselves to different effects. While some team sports arguably require every starting player to perform well in order to win (e.g. baseball), others have features whereby individual players can excel while the team fails (e.g. tennis). These dynamics of the structure of

games give rise to very different within-team dynamics, as cooperation that is vital in some contexts has limited efficacy in other contexts.

Final words

In this study, we reviewed the widespread behavior of human cooperation. We utilized basic game theory to document evolutionary psychologists' theory of how seemingly individually costly actions have become so pervasive, given harsh evolutionary pressures to privilege ones' own needs over others' demands. We turned to the concept of group social identity, and group-level social alliances, to discern how people determine which strangers are trustworthy potential trade partners, and which are suspicious outsiders less worth cooperative investments. We noted that cooperative behaviors vary across cultures, and cautioned against making sweeping claims regarding evolved human nature based on a WEIRD population sample. Finally, we conducted a novel study testing whether sports team affiliation acts as a group identity marker sufficient for social alliance detection. In a sentence, "today's Yankees fan was yesterday's rival tribe, and I'll be damned if I offer to fetch their foul balls." We found that our task only showed group differences for our strongest manipulation (politics) and not for any other (minimal, TV show, sports), and therefore ended with suggestions for future research. Most importantly, a task in which the minimal group manipulation shows an effect *not* at floor is important to see the relative effect of sports.

RUNNING HEAD: Sports and Group Membership: Differences in Cooperative Behavior

Notes: This thesis was based on an idea first proposed in a Spring 2016 course "Evolution of Morality" (CGSC406).

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APPENDIX: SURVEY QUESTIONNAIRE WORDING

Overview

In this HIT, you will imagine how you would interact with a person in an activity known as a "Trust Game." First you will learn about the Trust Game, then you will answer some questions and learn about a hypothetical person you would interact with. Finally, you will answer questions about how you would interact with that person in a hypothetical Trust Game.

- ☐ I understand I will first learn about the "Trust Game"
- ☐ I understand I will then learn about a hypothetical person
- ☐ I understand I will then imagine how I would play the Trust Game with the hypothetical person

Trust Game explanation

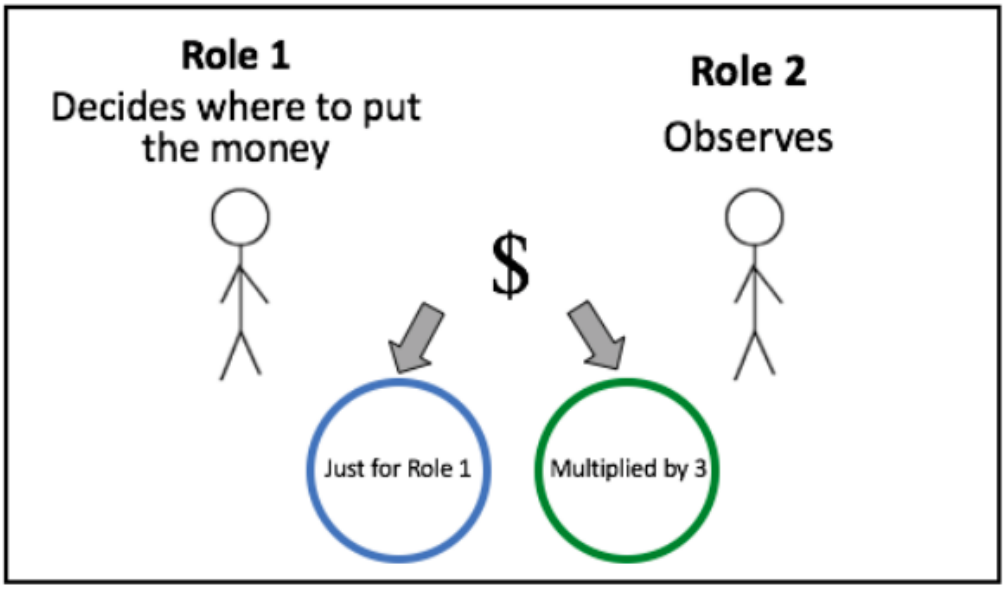
In this HIT, you will imagine how you would interact with a person in an activity known as the "Trust Game."

This is a two-person activity, in which both players interact to potentially earn money.

The activity is explained below. We will ask you about decisions you would make in BOTH roles.

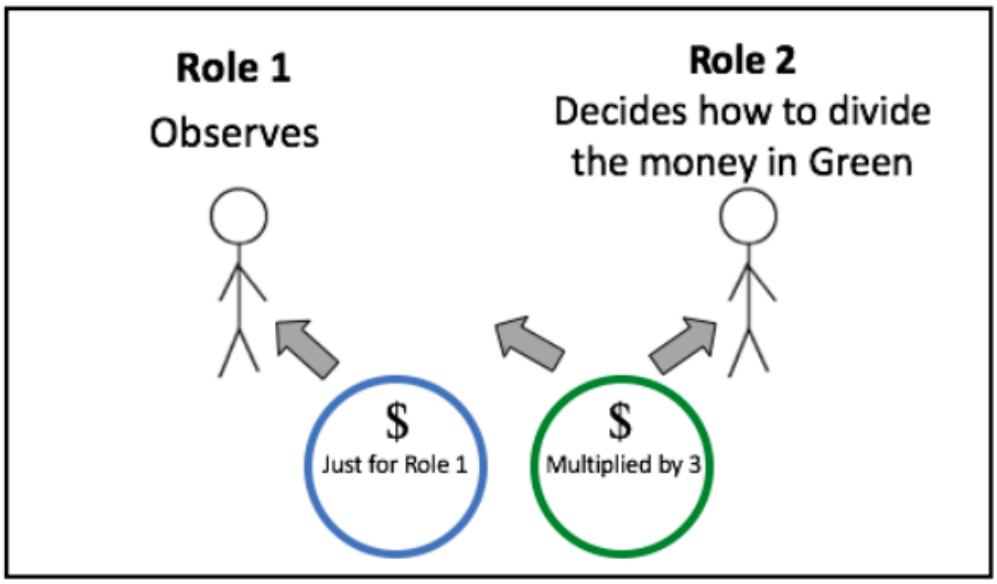
Step 1: Role 1 decides how to divide dollars between circles.

The person in "Role 1" decides how to divide $10 between a blue circle and a green circle. Any dollars put in the blue circle are only for Role 1. Any dollars put in the green circle will be multiplied by 3 (e.g. $3 become $9).



Step 2: Role 2 decides how to divide dollars in the green circle.

The person in "Role 2" sees how many dollars are in each circle: the blue circle that is only for Role 1, and the green circle where dollars are multiplied by 3 and Role 2 decides how to divide them. After thinking about how many dollars are in each circle, Role 2 decides how to divide the dollars in the green circle.



Comprehension check: Imagine that, in Step 1, Role 1 puts $7 in the blue circle and $3 in the green circle. In Step 2 (after multiplication), how many dollars would there be for Role 2 to divide between the two people?

- ☐ 1
- ☐ 3
- ☐ 6
- ☐ 9 [correct answer]
- ☐ 10
- ☐ 12

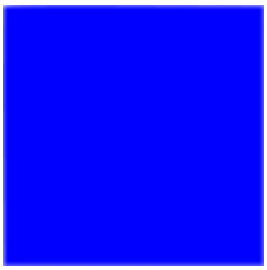
Comprehension check: Imagine that, in Step 1, Role 1 puts $1 in the blue circle and $9 in the green circle. In Step 2 (after multiplication), if Role 2 decides that Role 1 gets 12 of the green circle dollars, how many dollars will Role 1 end with?

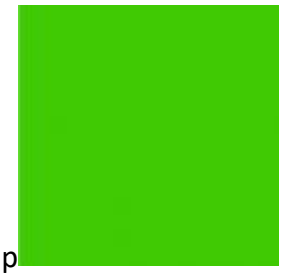
- ☐ 0

- ☐ 1
- ☐ 12
- ☐ 13 [correct answer]
- ☐ 27

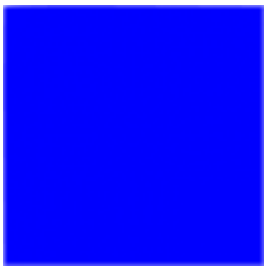
Domain Option 1: Minimal Grouping

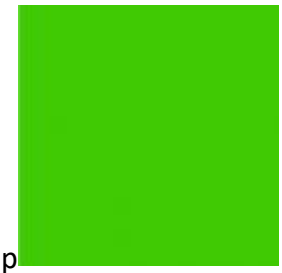
For the purposes of this study, you have been randomly sorted into the following color: Green. Please click the button of that group to indicate that you understand how you have been randomly sorted.

☐ Blue Group 

☐ Green Group 

For the purposes of this study, you have been randomly sorted into the following color: Blue. Please click the button of that group to indicate that you understand how you have been randomly sorted.

☐ Blue Group 

☐ Green Group 

Domain Option 2: TV

Which nationally known TV show do you most prefer?

Which nationally known TV show do you dislike the most?

Domain Option 3: Sports

Which nationally known sports team do you most prefer?

Which nationally known sports team do you dislike the most (that might reasonably play your most preferred team)?

Domain Option 4: Politics

Which of the following two recent US Presidents do you prefer?

☐ Barack Obama 

☐ Donald Trump 

Minimal Caring

How much do you care about your color assignment on the previous page?

Not at all A moderate amount This is incredibly important to me

○ ○ ○ ○ ○ ○ ○

Minimal Group Manipulation

In this study, you will imagine how you would interact with someone who has the **SAME** color assignment as you.

In this study, you will imagine how you would interact with someone who has the **OPPOSITE** color assignment from you.

TV Caring

How much do you care about your TV preferences on the previous page?

Not at all A moderate amount This is incredibly

important to me

○ ○ ○ ○ ○ ○ ○

How often have you discussed these TV shows in the last 30 days?

- ☐ 0 times
- ☐ 1-3 times
- ☐ 4-8 times
- ☐ 9 or more times

TV Group Manipulation

In this study, you will imagine how you would interact with someone who has the **SAME** TV show preference as you.

In this study, you will imagine how you would interact with someone who has the **OPPOSITE** TV show preference from you.

Sports Caring

How much do you care about your sports team preferences on the previous page?

Not at all A moderate amount This is incredibly

important to me

○ ○ ○ ○ ○ ○ ○

How often have you discussed these sports teams in the last 30 days?

☐ 0 times

☐ 1-3 times

☐ 4-8 times

☐ 9 or more times

Sports Grouping Manipulation

In this study, you will imagine how you would interact with someone who has the **SAME** sports team preference as you.

In this study, you will imagine how you would interact with someone who has the **OPPOSITE** sports team preference from you.

Presidents Caring

How much do you care about your US President preferences on the previous page?

Not at all A moderate amount This is incredibly

important to me

How often have you discussed these US Presidents in the last 30 days?

- ☐ 0 times
- ☐ 1-3 times
- ☐ 4-8 times
- ☐ 9 or more times

Presidents Group Manipulation

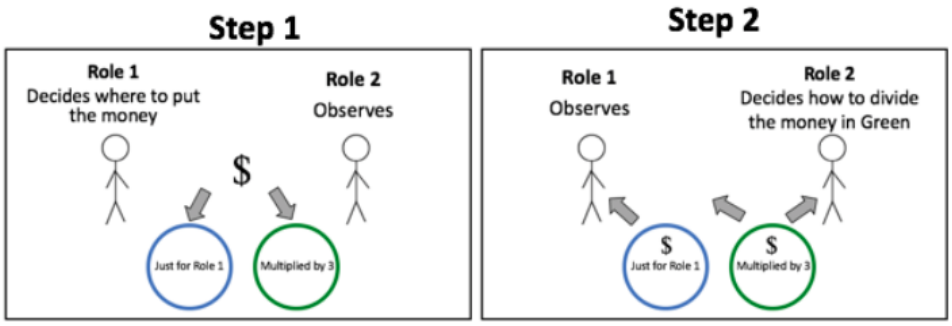
In this study, you will imagine how you would interact with someone who has the **SAME** US President preference as you.

In this study, you will imagine how you would interact with someone who has the **OPPOSITE** US President preference from you.

TG Answers

Note: This page contains questions about what you would decide in both Role 1 and Role 2. Please consider all of your answers, changing any of them as you think about the situations, before moving on to the next page.

Remember the structure of the Trust Game:



Role 1

Imagine you are in Role 1. How much of your allotted $10 would you put in the blue circle (only for Role 1) and how much would you put in the green circle (will multiplied by 3, Role 2 decides how to divide)?

- ☐ Blue Circle [write in response, required to add to 10 with next response]
- ☐ Green Circle [write in response]

Role 2

Imagine you are in Role 2. Imagine that you find out that Role 1 had put $7 in the blue circle and $3 in the green circle. How much of the resulting $9 would you assign to Role 1 (the other person)?

0 1 2 3 4 5 6 7 8 9

to Role 1 _____

Imagine you are in Role 2. Imagine that you find out that Role 1 had put $2 in the blue circle and $8 in the green circle. How much of the resulting $24 would you assign to Role 1 (the other person)?