Self-Conscious Cooperation:

Implications of a Functional Approach to Emotions for Behavior in Social Dilemmas

by

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ABSTRACT

As the world's resources face increasing pressure from a growing population, it is critical that psychologists understand the motivational processes that lead to cooperation or defection in the context of social dilemmas. Research has uncovered several key strategies for encouraging maintenance of these resources, however, one area that remains understudied is the effect various emotions may have on cooperation. Furthermore, it is important to consider the specific type of desired behavior: reduction of consumption of a shared resource, or increased contribution to a shared resource. The current study takes a step in this direction, examining the effects of two self-conscious emotions, guilt and pride, on behavior in two different kinds of social dilemmas. Guilt, a prosocial emotion that has been described as a "behavioral interrupt mechanism," is predicted to increase cooperation in both a social trap game and a public goods dilemma game. However, its effects should be strongest in the social trap game, in which the desired behavior is reduced consumption. Pride, an emotion that is conceptually related to the constructs of status and power, is predicted to motivate action in both domains, by increasing both consumption in the social trap game and contribution in the public goods dilemma game. Results partially support these predictions: Whereas guilt and pride both had the predicted effects on consumption in the social trap game, neither had a significant effect on contribution in the public goods dilemma game. Individual differences are examined, as are the results of a Game Feedback Sheet, which yielded insight as to how participants understood the rules of the games, and why they chose the strategies they did. Results support the idea that emotions represent a

potentially fruitful avenue of research in social dilemma cooperation, and possible future directions for this research are discussed.

DEDICATION

This project is dedicated to the family and friends who have supported me along this path to…wherever I end up.

To Mom, for inspiring my early and obsessive interest in guilt. Haha, just kidding!

To Mom and John, whose unflagging belief that I am where I'm supposed to be has bolstered me through the ups and downs - T-TU! And to your phenomenal handicapping skills, for sheltering my car on those 111 degree days. Thank you both for everything.

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Chapter 1

OVERVIEW

The alarming growth rate of our world population - projected to reach 9.3 billion people by 2050 - has important implications for issues of natural resource conservation (United Nations, 2011). Many of these resource management issues fall into the category of "social dilemmas": situations in which an individual benefits by being selfish (by either consuming too much of a shared resource, or not contributing enough to a shared resource), and in which large-scale individual selfishness leads to long-term negative consequences to the group (Dawes, 1980). Several types of social dilemmas have been identified, differing from each other in terms of the type of behaviors that constitute cooperation or defection. Two of the most studied and most pertinent to this discussion are *social traps*, in which people over-consume from a shared resource, and *public goods dilemmas*, in which people fail to contribute to a shared resource. Psychologists have discussed a number of strategies, based in behavioral science, through which social dilemmas can be mitigated (Allcott & Mullainathan, 2010), for example, by giving people immediate feedback (Petersen, Shunturov, Janda, Platt, & Weinberger, 2007), allowing conversation among group members (Brechner, 1977), or making salient social norms that encourage cooperation (Cialdini, Reno, & Kallgren, 1990).

One psychological phenomenon that has been understudied in terms of social dilemmas, but shows great promise, is emotion. According to proponents of the functional approach to emotions, the emotion system evolved as a fundamental motivator of human behavior, each emotion coordinating a specific subset of physiological, psychological, and behavioral mechanisms to quickly

and adaptively address a particular threat or opportunity in the environment (Cosmides & Tooby, 2000). An important implication of this approach is that each emotion should facilitate a distinct behavioral response to a given situation. Of particular relevance to this discussion is a subset of emotions called the self-conscious emotions, which play an important role in maintaining group cohesion by helping to balance the desires of the individual with the needs of the group.

Drawing from the literatures on social dilemmas and emotion, in this paper I make the argument and propose the hypotheses that the self-conscious emotions guilt and pride may be particularly well-suited to addressing social dilemmas, but that the effectiveness of each will depend on the type of social dilemma presented. Guilt, which facilitates reparation of relationships when we have done something to damage our relationship with others (Keltner & Buswell, 1996), may be experienced in response to taking more than one's fair share of a shared resource because doing so is ultimately harmful to those around us. Because guilt promotes a desire to correct harmful actions, thereby increasing prosocial behavior, guilt may be effective at decreasing overconsumption in social traps. Guilt also may increase contribution in public goods dilemmas, though to a lesser extent, because guilt is thought to serve as a "behavior interruption" mechanism (Baumeister, Reis, & Delespaul, 1995), better suited to ceasing behavior than to facilitating action. While guilt is expected to have similar effects in both types of social dilemma, varying only in magnitude, pride is hypothesized to have opposite effects, increasing both consumption in social traps, and contribution in public goods dilemmas.

Pride, which is elicited when we have engaged in a socially valued (often prosocial) action, may be experienced when we contribute to a shared resource

(Galinsky et al., 2003; Griskevicius et al., 2010). Pride serves to encourage continued, active prosociality (Tracy & Robins, 2007), therefore, pride may increase contribution to a common resource in public goods dilemmas. In contrast, pride may be detrimental in social dilemmas, in which the desired behavior is restraint. This is because pride, linked to the constructs of power and status, is proposed herein to facilitate proactive behavior in all domains (Galinsky et al., 2003). In this line of research, I will examine the effects of guilt and pride on cooperation and defection in social dilemma games, with the ultimate goal of developing effective emotion-based interventions that can be used to address the pressing problems of social traps and public goods dilemmas. To test these hypotheses, I propose a study in which I will elicit guilt, pride, or neutral affect, and ask participants to play either a social trap game or a public goods dilemma game. Individual difference measures will also be collected, to determine whether there are moderating variables.

Chapter 2

INTRODUCTION

Social Dilemmas in a Zero-Sum World

Much of human evolution occurred in a world in which resources were scarce and survival was uncertain. The harshness of this environment necessitated reliance upon and cooperation with the other members of one's group, who could provide protection and help with important tasks (Rubin, 2003; Trivers, 1971). Humans, therefore, evolved as ultra-social animals, motivated to maintain friendly relationships with the people upon whose mutual cooperation their lives depended. This ultra-sociality helped to cement group cohesiveness, facilitating the group's success. However, the ultimate benefit of group success is not to the group, but to the individual, whose fitness is maximized through his affiliation and consequent access to group protection and resources (Keltner & Haidt, 1999). It becomes clear, then, that humans often must choose between two conflicting goals: reinforcing their group membership, by making cooperative decisions that may involve a cost to the self (Trivers, 1971), or immediately maximizing their own fitness, by making self-serving decisions that may deprive the group. These two choices are often referred to as *cooperation* and *defection*, and a wide variety of social problems are defined by this choice. These problems fall under the umbrella term *social dilemma* (Dawes, 1980).

Social dilemmas generally involve a common resource (Dawes, 1980), from which people can draw, or to which people can contribute. Two primary characteristics define social dilemmas: (1) A given individual gains more by making the selfish/defective choice than by making the pro-group/cooperative choice, no matter what the other individuals do; and (2) all individuals gain more

when everyone cooperates than when everyone defects. In a social dilemma, an individual, whose outcomes are tied to both his own success and his group's success, then faces a difficult decision.

Social traps. *Social traps* are a particular type of social dilemma in which individuals behave in ways that are immediately and personally gratifying, but are ultimately damaging to the group (Platt, 1973). Classic social traps involve overconsumption of a group resource (e.g., overfishing, the tragedy of the commons) (Hardin, 1968; Platt, 1973). In these cases, the defective behavior is *consumption* – individuals are proactively making consumptive choices – and the desired cooperative behavior is cessation of this action. Refraining from overconsumption can be difficult because consumption involves an immediate and rewarding increase in resources, but if too many individuals consume too much of the resource pool, it disappears and no one can benefit from it. Restraint also involves risk, and a need to consider the likelihood of others refraining from overconsumption. If an individual decides to decrease his consumption, he also forfeits immediate access to fitness-enhancing resources. If many others also decrease consumption, the resource may remain, to the benefit of all who share it. However, if most other individuals continue to over-consume, the resource is gone anyway, and anyone who refrained is worse off for not having taken from it while they could.

Public goods dilemmas. Another type of social dilemma is the *public goods dilemma*, in which the problem is *too little contribution*: An individual benefits by not contributing to a shared resource (e.g., donating to a public goods charity, volunteering time to clean hiking trails) (Dawes, 1980). In this case, the goal is to encourage active contribution, but individuals' assessments of the cost

and benefit of doing so may inhibit this action. By not cooperating, an individual is able to conserve his own resources while others spend theirs, and the shared resource continues to exist. But defecting is risky, because if enough other individuals also defect, then the shared resource may cease to exist, and everyone suffers. Contributing is also risky, because an individual who contributes his own resources may be the only one if everyone else defects, and if contributions are not high enough, the public good will disappear anyway, often taking the individual's contribution with it. Therefore, a decision to cooperate or defect depends not only on one's own resource situation, but also on his perception of the resources and goals of others.

Proposed explanations and solutions. In both of these types of social dilemma, mass defection leads to elimination of the shared resource – an outcome that is detrimental to both the group as a whole and the individuals who belong to that group. Additionally pressing is the fact that our world is experiencing population growth that has resulted in 7 billion people last year (Moran, 2011), as well as accompanying unprecedented conflict over the management of shared resources. Therefore, it is crucial that we as psychologists continue our efforts to understand and mitigate social dilemmas. To that end, several theories have been proposed to isolate the causes of and potential solutions to social dilemmas.

Hardin (1968) proffered an evolutionary explanation, claiming that those who exploit shared resources are thereby more fit than those who cooperate, and are thus more able to pass along the genes that predisposed them toward defection. To counter this evolutionary predisposition toward defection, he favored a solution based in infrastructure, which simply did not allow defection

(e.g., having a tax system that mandates contribution to the shared resource pool). This solution may be quite effective in some contexts, but it would be both unethical and logistically impossible to monitor and govern every existing shared resource. Other researchers (Cialdini et al., 1990; Ostrom, 2000) emphasize the role of social norms: When an individual knows that others in his group are behaving cooperatively, or that they approve of cooperative behavior, the individual is motivated to cooperate. Therefore, highlighting social norms around cooperation should increase prosocial behavior, and studies on littering and energy use indicate that it does (Cialdini, Reno, & Kallgren, 1990; Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007). The power of social norms may be double-edged, however. In the case of many social dilemmas, the norm (real or perceived) is defection, and in these cases norms may actually compel the exact behavior that needs to be changed. Another explanation comes from Platt (1973), who pointed to the role of behavioral reinforcements, claiming that the immediate positive reinforcements of defection are more powerful motivators of behavior than the long-term negative consequences of defection, or the long-term positive consequences of cooperation. Platt's proposed solution was to shift the reinforcement structure so that the negative consequences of defection and the positive consequences of cooperation were immediate; indeed, the government has adopted this strategy with a system of fines, rebates, and tax write-offs. These explanations and solutions all have their strengths and weaknesses, but to date, none has been able to fully address the problem of social dilemmas. One possibly fruitful avenue that remains underexplored is emotional appeals.

Effects of Self-Conscious Emotions on Cooperative Behavior

Many emotion theorists take a functional approach to emotions, claiming that emotions evolved over the course of our ancestral history to alert us to the affordances of our current situation, and facilitate the most adaptive response (Cosmides & Tooby, 2000; Ekman, 1992; Nesse, 1990). Once elicited, emotions can be powerful drivers of human behavior (Bechara & Damasio, 2005; Cosmides & Tooby, 2000). More specifically, an individual emotion will tend to facilitate very targeted types of behavior, these behaviors having proven especially appropriate in the face of the emotion-eliciting threat or opportunity.

When it comes to the function of an emotion, there is an important distinction to be made between intra-individual functionality and inter-individual functionality. *Intra-individual functionality* pertains to the direct role played by emotions in enhancing an individual's fitness (Keltner & Haidt, 1999). Examples of intra-individual functionality include the disgust response, which facilitates avoidance and expulsion of toxic substances, and the flight response of fear, which allows an individual to escape predators. In contrast, *inter-individual functionality,* sometimes called *social functionality* (Keltner, Haidt, & Shiota, 2006) refers to the indirect ways in which emotions enhance an individual's fitness. This is generally through enhancing one's relationship with the group and boosting the success of the group (Tracy & Robins, 2007b), both of which ultimately increase one's ability to access and enjoy group resources.

Certain social emotions can clearly be seen to serve an inter-individual function. Negative social emotions, such as guilt and embarrassment, notify us that our place in the group is threatened, and remedial action must be taken. Guilt, for example, alerts us to the fact that we have somehow damaged a social

bond, and facilitates reparative action (Tangney, Miller, Flicker, & Barlow, 1996), the ultimate purpose being to avoid termination of the relationship or expulsion from the group and denial of group resources. In contrast, positive social emotions such as pride and compassion signal opportunities for us to promote our own status within the group, or to engage in a behavior that will boost the group's overall success. Pride, for instance, facilitates promotion of one's own success, with the goal of increasing one's status in the group hierarchy and thereby increasing access to group resources (Tracy & Robins, 2007c).

Because evolution has shaped human behavior to be heavily reliant on emotions, which facilitate immediate and adaptive responses to the situation, an intervention based on emotions might be able to fill in some gaps left by the strategies previously outlined. When designing an emotion-based intervention, it behooves us to think about how best to target different kinds of social dilemmas with the emotion that is most likely to be effective at bringing about the desired cooperative behavior. The goal of this study is to explore this idea, beginning with guilt and pride, two self-conscious emotions that seem particularly well-suited, in different ways, to address the problem of social dilemmas.

Self-conscious emotions and group relations. Researchers have identified an important subgroup of emotions, dubbed the *self-conscious* emotions due to their enhanced awareness of the self and how others may perceive the self (Tangney et al., 1996). These emotions – guilt, pride, embarrassment, and shame – are particularly relevant to the discussion of social dilemmas because they help individuals balance their own desires with the needs of the group (Tangney et al., 2007). Self-conscious emotions do this in several ways. For one, they are particularly sensitive to norms, in that the negative self-

conscious emotions (guilt, embarrassment, and shame) are all elicited by norm violations and serve to mitigate society's harsh judgment of these violations and future adherence to the violated norm (Tangney, Stuewig, & Mashek, 2007). The positive emotion pride, on the other hand, is elicited when one has done something that is of value to the group, or in accordance with an injunctive norm. The pride experienced upon having done this admirable thing serves to reinforce that eliciting behavior, and this may be used to advantage when the admirable behavior is a cooperative one. In support of this idea, research by Hart & Matsuba (2007) shows that pride can reinforce cooperative behavior, thereby increasing future cooperative behavior. With an understanding of the role the self-conscious emotions play in cooperative behavior, we now turn to a discussion of the implications this has for the effects of self-conscious emotions on cooperative and defective behavior in social dilemmas.

Guilt. The primary role of guilt is to alert us when we have done something that damages our relationship with others (Tangney et al., 1996), but in contrast with embarrassment and shame, guilt facilitates pro-active and prosocial reparation of the damage done. This characteristic makes guilt a potentially useful emotion in the context of social dilemmas, one that may increase cooperation across the board (i.e., in both social traps and public goods dilemmas). However, it seems likely that the prosocial effect of guilt will be stronger in social traps, in which the desired behavior is the cessation of overconsumption, than in public goods dilemmas, in which the desired behavior is active contribution. In their diary study on everyday experiences of guilt, Baumeister and colleagues found that in addition to often occurring in the context of relationships, guilt is associated with increased uncertainty and decreased

feelings of competency and safety (Baumeister, Reis, & Delespaul, 1995). The authors propose that guilt acts as a "behavioral interrupt" mechanism, in that it forces assessment of one's actions in the context of their effect on others, and facilitates restraint, in the service of relationship preservation. If this is the case, then a guilt elicitation should facilitate a careful consideration of the effects of overconsumption on others, and a decrease in this consumption.

Pride. In contrast with guilt, pride should not necessarily lead to prosocial behavior. Pride is often experienced as a feeling of increased status relative to others, and therefore the link can be made between pride and the related constructs of status and power. Studies on these constructs suggest that if pride does indeed have similar effects on behavior as status and power, then the behavioral effects associated with pride may only be prosocial in certain circumstances (Galinsky, Gruenfeld, & Magee, 2003; Griskevicius, Tybur, & Van den Bergh, 2010). For example, Galinksy and colleagues demonstrated that when primed with power, participants were more likely to engage in action of any kind, whether cooperative (in a public goods dilemma game they were more likely to contribute to a shared resource) or defective (in a social trap game, they were more likely to over-consume). For this reason it is predicted that pride, like power, will facilitate cooperation in public goods dilemmas, and defection in social traps. However, there is a possible conflicting hypothesis, which is that pride will lead to a sense of entitlement. Experiencing pride leads to a perception of the self as having increased status, and higher status can merit extra resources (Cheng, Tracy, & Henrich, 2010; Tracy & Robins, 2007c). Therefore, pride may lead participants to act in ways that optimize their own resources, by increasing consumption in a social trap and decreasing contribution in a public

goods dilemma. The research on power and action is particularly compelling, and remains the basis for the current predictions, but the current study design will allow assessment of both of these competing hypotheses.

Study Overview

The goal of this research is to begin examining the effects of emotion on cooperative behavior in social dilemmas, beginning with the self-conscious emotions guilt and pride. Specifically, guilt is predicted to decrease consumption in a social trap game and, to a lesser extent, increase contribution in a public goods game. Pride is predicted to facilitate action in both games, by increasing both consumption in a social trap game and contribution in a public goods game. Additionally, it is likely that dispositional tendencies will moderate these effects. Specifically, those who are particularly inclined to feel guilt may be especially likely to cooperate when guilt is elicited, whereas those who are dispositionally pride-prone may be especially responsive to the pride manipulation. Finally, political attitudes, which often influence beliefs about distribution of resources, may influence cooperation and defection in these games. Multiple personality scales and demographic characteristics are measured to assess these possibilities.

Chapter 3

METHOD

This study tested the proposed hypotheses using a 3 (Emotion condition: Guilt, Pride, Neutral) by 2 (Social dilemma task: Social Trap, Public Goods Dilemma) between-subjects factorial design. Individual differences in emotion experience, environmental attitudes, and prosociality, as well as basic demographics, were also measured.

Participants

Participants were 194 ASU undergraduates recruited from Psychology courses at Arizona State University (51% male, 49% female). Average age was 20.9 years, *SD* = 3.7 years, and the ethnic breakdown was as follows: 52.4% Caucasian, 19.9% Hispanic, 11.5% Asian, 6.3% Arab/Middle Eastern, 5.8% Black, 2.1% Native American, and 2.0% Other. However, seventeen participants were removed from analyses, resulting in a final sample of 177 (52% male, 48% female). Average age was 20.9 years, *SD* = 3.6 years, and the ethnic breakdown was as follows: 52.3% Caucasian, 21.8% Hispanic, 10.3% Asian, 5.7% Black, 5.7% Arab/Middle Eastern, 2.3% Native American, and 1.9% Other. For their participation, participants received one credit toward their course's research requirement, or one unit of extra credit.

Procedures

The study took approximately one hour. Participants were run in small groups of 1-10 people. Upon entering the lab, participants were seated and given instructions for the study. They were told that their participation involved three separate studies: In the first, they would recall and write about a time when they experienced a certain emotion. In the second, they would participate in a shared

resource game, with the opportunity to earn money. Participants were told that their outcome in the shared resource game (Social Dilemma task) depended not only on their own decisions, but also on the decisions of everyone in the study, and that if the group as a whole succeeded, they would receive their money at the study's conclusion. The third study would involve completion of several questionnaires.

Recalled emotion elicitation. Participants were asked to recall and write about one of the following three emotion eliciting situations: Guilt ("Describe a time when you did something that harmed someone else"), Pride ("Describe a time when you accomplished a socially valued goal"), or Neutral affect ("Describe a time when you did your laundry"). Participants were instructed to write about a specific event, not a general period of time or type of situation, with an emphasis on reliving the emotions experienced during that event. They were told that if they finished writing before the allotted time was up, they were to close their eyes and continue to silently relive the experience. See Appendix C for emotion elicitors.

Social dilemma games. After the emotion elicitation, participants began the social dilemma task – either the Social Trap Game or the Public Goods Game. To minimize confusion, all participants in a given session were assigned to the same game (i.e., there was no session in which some participants played the Social Trap game while others play the Public Goods game). Both games were based on tasks that have been successfully used in previous social dilemma research.

***Social Trap game*.** One-hundred and five participants played this game, which was adapted from Galinsky and colleagues (Galinsky, Gruenfeld, &

Magee, 2003). Participants were told that there was a shared pool of $1,000, from which they could take any amount they like. However, there were 99 other people in the pool as well, who could also take as much as they like. If the cumulative "take" added up to $1,000 or less, each participant would receive the amount of money they requested. However, if more than $1,000 was claimed, then the resource pool would disappear and no one would receive anything. Therefore, it was immediately rewarding to take the money, but if people took too much, then everyone in the group would end up with nothing. Two examples were given: In Example A, the sum of all requests added up to $900, and all participants received what they asked for; in Example B, the sum of all requests added up to $1,100, and no participant received anything. Finally, participants were asked how much money they would like to take from the pool, from $0-$1,000. A participant's "fair share" of the pot was $10 ($1,000/100 participants), however, this calculation was not provided to them, for the purpose of avoiding participants anchoring their requests at $10. See Appendix D for complete instructions and details of this task.

***Public Goods Dilemma game*.** Eighty-nine participants played this game, which was adapted for our purposes from a game played in another dissertation study (Ledlow, 2005) – the original intent was to have 100 participants, but only 89 were recruited; this did not affect the game itself in any way, only the ultimate pot. Participants were told that they and each of the other 99 players in the game were starting with a "personal bank account" of $5, and that there was also a shared resource pool that stood at $0. All 100 participants had the opportunity to contribute any amount ($0-$5) from their personal account to the shared resource pool. Once all contributions were made, the shared pool

would be doubled, and divided equally (*not* proportional to amount given) among all 100 participants. Thus, at the end of the game, each participant would receive whatever was still left in their personal account (i.e., whatever they did not contribute to the pool), as well as 1/100 of the shared pool. Therefore, it was immediately and individually costly to contribute, but collective earnings could be maximized if everyone contributed. Two examples were given: In Example A, the sum of all 100 contributions was $200, which was then doubled to $400, so each participant received $4 plus whatever they had kept in their personal account. In Example B, the sum of all 100 contributions was $400, which was then doubled to $800, so each participant received $8 plus whatever they had kept in their personal account. After hearing instructions, participants were asked how much they would like to contribute to the pot, from $0-$5. See Appendix E for complete instructions and details on this task.

Individual Differences

Several relevant personality and demographic scales were included, to be used as covariates and to determine whether individual differences would moderate the extent to which the emotions affected cooperation in social dilemmas.

The Test of Self-Conscious Affect-3 (TOSCA-3). Developed by Tangney et al. (2000), the TOSCA-3 assesses dispositional experience of the self-conscious emotions, by asking participants to rate their likelihood of engaging in each of four or five possible outcomes to sixteen different scenarios. Six categories of outcomes map on to the self-conscious emotions of interest: Shame-proneness, Guilt-proneness, Externalization, Detachment/Unconcern, Alpha Pride, and Beta Pride. For each scenario, there are four or five outcomes

(e.g., blaming others, thinking highly of oneself), each representing one of the six categories. Participants' responses to the outcomes for each category are averaged to calculate a dispositional (cross-scenario, multi-domain) score for each of the six emotional responses. Of particular interest are the dispositional Guilt and Pride (Alpha and Beta) subscales. See Appendix F for the entire TOSCA-3 scale.

Environmental Attitudes Inventory (EAI) – Subscale 8, Personal Conservation Behavior. The 10-item EAI Subscale 8, Personal Conservation Behavior, comes from a much larger 120-item scale (Milfont & Duckitt, 2010). This subscale measures participants' conservation and environmental protection behaviors, with items such as "Whenever possible, I take a short shower in order to conserve water." It is predicted that participants with high scores on this subscale will have generally more prosocial behavior (i.e., consume less in the Social Trap game, and contribute more in the PGD game), because the conservation items in this subscale involve prosocial behavior that often involves inconvenience to the self. For the entire EAI-Personal Conservation Behavior subscale, see Appendix G.

Prosocial Personality Battery (PSB). The 30-item PSB (Penner, 2002) is a shorter version of the original 54-item PSB scale. It is composed of seven subscales, which measure the prosocial tendencies of participants in a variety of domains (e.g., social responsibility, perspective taking, and self-reported altruism). Sample items are "My decisions are usually based on my concern for other people," and "When people are nasty to me, I feel very little responsibility to treat them well." These subscales have been correlated with several constructs relevant to the current research, such as empathy, which is very appropriate to

the experience of guilt, and helpfulness (Penner, 2002; Penner, Fritzsche, Craiger, & Freifeld, 1995). Both of these are correlated with prosocial behaviors, including such acts as everyday helping and willingness to serve as an organ donor (Penner, 2002). It is predicted that high scores on the PSB will be associated with greater cooperation in both social dilemma games. See Appendix H for the 30-item PSB.

Dispositional Positive Emotion Scale - revised (DPES-r). The DPES is a 28-item instrument developed to measure self-reported dispositional experience of seven positive emotions: amusement, awe, compassion, contentment, joy, love, and pride (adapted from Shiota, Keltner, & John, 2006). For the purposes of this study, the sole subscale of interest is that concerning pride, which is composed of four items like the following: "I take great pride in my achievements." It is predicted that dispositional pride will moderate the effect of the pride elicitor on consumption in the social trap task, and contribution in the public goods dilemma task (such that dispositional pride will be associated with increased cooperation in both games). To match this subscale in the context of guilt, four additional items were created (e.g., "It really upsets me when I do something that hurts another person"). See Appendix I for the eight items.

Game Feedback Sheet

The questionnaire section included a set of five questions intended to serve as a comprehension check for the rules and math involved in the social dilemma task (e.g., "Please explain the rules of the resource management game that you played in Study 2"; see Appendix J for the full set of questions).[1]

[1] After five participants had been run in the Social Trap game, it was noticed that two of them requested $1,000 each. It was unclear whether they had understood

Emotion Manipulation Check

To determine the extent to which the recalled emotion elicitation task created an experience of the intended emotion, participants were asked to complete a short emotion manipulation check, in which they rated on a scale from 0 (none at all) to 8 (the strongest experience of this emotion ever) the extent to which they had felt 14 different emotions during the recalled emotion manipulation. This list included the target emotions guilt and pride. See Appendix K for the Emotion Manipulation Check.

Demographic Information

Finally, participants were asked to answer several questions pertaining to their demographic characteristics, including age, sex, and political affiliation. See Appendix L for the complete Demographic Questionnaire.

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the game rules, so these questions were added; the game instructions were also rewritten to be even clearer at this time. Therefore, we do not have Game Feedback Sheets for these two participants. One was removed because her emotion story was not appropriate, and the other was removed as an extreme outlier, because it could not be confirmed that he understood the rules of the game. The other three participants who were run before the Game Feedback Sheet was added asked for $5, $10, and $9, all reasonable requests comparable with those of later participants who understood the game, indicating that they understood the rules and did not need to be removed from analyses.

Chapter 4

RESULTS

Emotion Story and Game Feedback Sheet

Two checks were performed to confirm that participants had correctly followed directions and understood the social dilemma task. The first check was an experimenter reading the emotion story (Task 1), to make sure that participants had written about the type of situation they were asked to (e.g., in the Guilt condition, they must have written about a time when they harmed another person). Four participants were removed because they either did not write a story at all, or the story they wrote was not appropriate for what they had been asked about (e.g., one guilt participant wrote about a time she had been hurt by someone else; this participant also requested $1,000).

Next, responses to the Game Feedback Sheet were examined. Participants whose answers indicated that they either did not understand the rules of the game (for example, one Social Trap participant thought the money was first come, first served) or did not correctly do the math (e.g., “as long as everyone asks for less than $100, we will all get money”) were also excluded. Ten participants were removed for these reasons.

Finally, one participant was removed as an extreme outlier for requesting $1,000 (this was before the addition of the Game Feedback Sheet), and an additional two participants were removed because they arrived late, were disruptive, and completed the study in a different room, where they were overheard speaking to each other during the tasks. The removal of these seventeen participants left a total of 177. The remaining analyses are conducted

on this group of 177, 91 of whom were in the Social Trap condition, and 86 of whom were in the Public Goods Dilemma condition[2].

Emotion Manipulation Check

The emotion manipulation check confirmed that the recalled stories successfully elicited the desired emotions. In each emotion condition, the target emotion was the highest-rated emotion of the 14 possible emotions. This is particularly noteworthy because we intentionally did not use the target emotion word in the task instructions, so participants could not easily determine what we were looking for. Specifically, in the Neutral condition, no emotion was rated higher than 4 on the 0-8 Likert scale (Amusement came closest, M = 3.57, SD = 2.16). Participants in the Guilt condition rated Guilt as the strongest emotion (M = 5.14, SD = 2.73), with Shame and Embarrassment also rated relatively high (both means above 4.00). Participants in the Guilt condition also rated Guilt significantly higher than did participants in both the Neutral condition (t[105] = 9.01, p < .001) and the Pride condition (t[84] = 11.33, p < .001). Those in the Pride condition rated Pride as the highest emotion (M = 6.95, SD = 1.66), with Happiness as a close second (M = 6.73, SD = 1.43). Pride participants reported experiencing significantly more Pride than did those in both the Neutral (t[101] = 13.00, p < .001) and Guilt (t[96] = 13.46, p < .001) conditions. See Table 1 for mean ratings of each emotion in all Emotion conditions.

Three-Way Social Dilemma Game x Emotion x Sex Interaction

[2] The following analyses were also conducted using all 194 participants. The same pattern of results existed for all tests except for those involving the two outlying participants who took $1,000 from the Social Trap game; their exceptionally high consumption had a strong effect on all analyses. The removal of fourteen participants from the Social Trap game had an enormous effect on the overall amount of money requested from the pool. The original 105 participants in that game requested a total of $4,370.82. Removing the two participants who requested $1,000 reduced the total to $2,370.82, and removal

To test the primary prediction, that guilt and pride would differentially influence cooperative behavior in the Social Trap and Public Goods Dilemma tasks, it was necessary to standardize the dependent variables (amount taken in the Social Trap game, which ranged from $0-$100, and amount given in the Public Goods Dilemma game, ranging from $0-$5). To do that, both dependent variables were converted to z-scores, and then the Public Goods Dilemma z-scores were multiplied by -1, so that a positive z-score always indicated more selfish behavior. With this new standardized dependent variable, a three-way analysis of variance (ANOVA) was conducted, with Social Dilemma, Emotion and Sex predicting self-interest (Sex was added because preliminary analyses suggested a possible main effect of participant sex). The 3-way interaction was not significant, $F(2, 174) = 0.04$, $p = .965$. Nor were any of the two-way interactions: Emotion x Dilemma, $F(2, 174) = 1.33$, $p = .267$; Emotion x Sex, $F(2, 174) = 0.14$, $p = .871$; Dilemma x Sex, $F(1, 174) = 0.88$, $p = .349$. None of the main effects were significant: Emotion, $F(2, 174) = 2.10$, $p = .126$; and Sex, $F(1, 174) = 2.56$, $p = .111$. There was no main effect of Social Dilemma, $F(1, 174) = 0.00$, $p = .956$, due to standardization of the dependent variable in each game.[3] Although the three-way interaction was not significant, the games differ from a psychological perspective, and the dependent variables differ largely in magnitude, so it was deemed necessary to analyze the effects of emotion on each Social Dilemma Game separately; these analyses follow.

[3] The three-way Social Dilemma Game x Emotion x Sex analyses and the two-way Emotion x Sex analyses for each game were repeated seven times, using each of the following personality subscales as a sole covariate: TOSCA-Beta Pride, DPES Pride, DPES Guilt, EAI-Personal Conservation Behavior, PSB-Mutual Concern Moral Reasoning, PSB-Other Oriented Moral Reasoning, and PSB-Self-Reported Altruism. None of these covariates significantly affected the pattern of results, therefore exact results of these covariate analyses are not reported here.

Social Trap Results

The sum of all 91 participant requests was $1,605.83, indicating an average participant request of $17.65. Because they requested more than the allotted $1,000, participants in this game did not receive any money.

Two-way Emotion x Sex interaction. To test the prediction that the emotions would have an effect on consumption behavior in the Social Trap game, a two-way ANOVA was conducted using Emotion condition and Sex as predictors of participant requests. An Emotion x Sex interaction was not predicted, nor was it found $F(2, 90) = 0.02$, $p = .979$. However, there was a main effect of Emotion, $F(2, 90) = 3.09$, $p = .051$, with the emotions having the predicted effect on consumption. Means confirmed the predicted pattern of results, with Guilt participants taking the least amount of money from the shared resource (M = \$11.54, SD = \$9.30), Pride participants taking the most (M = \$24.78, SD = \$30.14), and Neutral participants between (M = \$15.80, SD = \$20.19). T-tests reveal that Pride participants requested significantly more than Guilt participants, $t(58) = 2.36$, $p < .05$. Neither the difference between Neutral and Guilt, $t(57) = 1.06$, $p = .296$, nor between Neutral and Pride, $t(61) = 1.39$, $p = .169$, were significant.

Of particular interest was whether dispositional guilt or pride, as assessed by the DPES-Guilt and DPES-Pride subscales, would moderate the main effect of Emotion condition. For example, a participant who is dispositionally prone to experience guilt might respond particularly strongly to the Guilt manipulation (or might not respond at all, if the experimentally manipulated guilt situation did not produce a noticeable change from baseline guilt levels). To examine these possibilities, follow-up analyses were conducted to assess whether Emotion

condition interacted with either DPES-Guilt or DPES-Pride. This moderation was not significant for either DPES-Guilt, $F(2, 82) = 0.84$, $p = .436$, or DPES-Pride, $F(2, 82) = 1.22$, $p = .302$.

There was a marginally significant main effect of participant Sex, $F(1, 90) = 3.51$, $p = .065$, with female participants ($M = \$22.22$, $SD = \$25.37$) taking more than males ($M = \$14.06$, $SD = \$19.44$). This was the case in all three emotion conditions; see Figure 1 for consumption results as a function of Emotion and Sex.

Public Goods Dilemma Results

The sum of all 86 participant contributions in this game was $323.00, indicating an average participant contribution of $3.76. Per the game's rules, the total contribution was doubled to $646, and divided equally among all 89 original participants, each of whom received $7.26 from the shared resource pool, in addition to whatever was left in their personal accounts. The amount of money earned ranged from $7.26 (for those participants who contributed all $5) to $12.26 (for those who contributed nothing).

Two-way Emotion x Sex interaction. A two-way ANOVA using Emotion and Sex as predictors was conducted to test the prediction that emotions would have an effect on contribution to the shared pool in the Public Goods Dilemma game. There was no Emotion x Sex interaction, $F(2, 83) = 0.15$, $p = .864$. The main effect of emotion was not significant, $F(2, 83) = 0.48$, $p = .621$. However, means for each emotion indicate that participants in the Neutral condition contributed the least amount of their $5 ($M = \$3.50$, $SD = \$1.80$), with Pride participants contributing slightly more ($M = \$3.65$, $SD = \$1.36$) and Guilt participants giving slightly more than that ($M = \$3.93$, $SD = \$1.75$). T-tests

comparing each emotion to each other emotion yielded no significant differences (all *p*s > .35).

As in the Social Trap game, follow-up analyses were conducted to examine possible moderating effects of dispositional guilt and pride on the main effect of Emotion condition. This moderation was not significant for either DPES-Guilt, $F(2, 75) = 0.88$, $p = .419$, or DPES-Pride, $F(2, 75) = 2.00$, $p = .143$. Neither DPES-Guilt ($F[1, 75] = 0.44$, $p = .436$) nor DPES-Pride ($F[1, 75] = 0.01$, $p = .920$) were significant as covariates.

There was no main effect of Sex, $F(1, 83) = 0.20$, $p = .655$, although means indicate that Male participants contributed slightly more (M = \$3.75, SD = \$1.74) than females (M = \$3.59, SD = \$1.56); see Figure 2 for contribution as a function of Emotion condition and Sex.

Frequencies of Individual Resource Pool Decisions

Of particular interest was whether individual requests in the Social Trap game and contributions in the Public Goods Dilemma game differed significantly across Emotion conditions. This test is not the same as a test of means: Rather than comparing exact *amounts* of each contribution across Emotion conditions, it assesses the *type* of contribution. Breaking the range of individual decisions into theoretically meaningful categories – prosocial, cooperative, and pro-self – allows an assessment of whether the distribution of participants across each category differs as a function of Emotion.

Social Trap request frequencies. Each participant's decision was recoded into one of three categories: *Under $10*, indicating a generally prosocial choice (30.3% of participants fell into this category), *Exactly $10*, indicating a fair, cooperative choice (42.7%), or *Over $10*, indicating a generally pro-self choice

(27.0%). Interestingly, the modal category differed for each Emotion condition, with *Under $10* being the modal choice in the Neutral condition, *Exactly $10* the mode for Guilt, and *Over $10* the mode for Pride. A chi-square test confirms that the distribution of decisions across these categories differs as a function of emotion, X^2 (4, N = 89) = 11.22, p < .05. Also of interest is that all three participants who requested $100 (despite Game Feedback Sheet responses indicating an understanding of the rules of the game) were in the Pride condition. See Figure 4 for frequencies of each request category for the three Emotion conditions.

Public Goods Dilemma contribution frequencies. Participants' decisions were recoded into one of four categories: *$0*, indicating an entirely pro-self decision (8.1% of participants fell into this category), *$1-2*, indicating a somewhat pro-self decision (14.0%), *$3-4*, indicating a somewhat prosocial decision (26.7%), and *$5*, indicating an entirely prosocial decision (51.2%). For each Emotion group, the modal contribution was *$5*, however, the distribution across categories differed. Perhaps the most interesting difference is that only in the Guilt condition did the majority (62.1%) contribute $5. In both other conditions, the majority of participants opted to contribute less than that. A marginally significant chi-square test confirms that the distribution of contributions across these four categories differs marginally significantly as a function of emotion, X^2 (6, N = 86) = 12.06, p = .06. See Figure 5 for frequencies of each contribution category for the three Emotion conditions.

Individual Differences

Social Trap individual differences. Several individual difference measures were examined to determine how the effects of personality might affect consumption in this game.

Personality subscales. For each subscale, a hierarchical linear regression analysis was conducted to examine the predictive power of the subscale over and above other subscales with which it appeared as part of a larger scale (e.g., for the TOSCA-Shame subscale, the five other TOSCA subscales were entered as Step 1, and TOSCA-Shame alone as Step 2). The results of these analyses are presented in Table 2. Several subscales emerged as significant predictors of consumption. The TOSCA-Beta Pride subscale was a significant positive predictor of consumption, β =.30, $t(79) = 2.43$, $p < .05$, as were DPES-Pride, $\beta = .27$, $t(88) = 2.66$, $p < .01$ and PSB-Self-Reported Altruism, $\beta = .21$, $t(83) = 1.95$, $p < .05$. The only subscale that predicted decreased consumption was PSB-Other Oriented Moral Reasoning, $\beta = -.29$, $t(83) = -2.33$, $p < .05$. The Prosocial Personality Battery-Mutual Concern Moral Reasoning subscale was a marginally significant positive predictor of consumption, $\beta = .22$, $t(83) = 1.74$, $p < .10$.

Political orientation. Political orientation was examined in two ways: categorically (i.e., political party affiliation) and via a conservatism scale. There was no effect of political party affiliation on consumption, $F(5, 88) = 0.81$, $p = .549$. A test of the correlation between conservatism and consumption was not significant, $r(90) = .00$, $p = .995$.

Public Goods Dilemma individual differences.

Personality subscales. Again, each subscale was analyzed separately to determine whether it significantly predicted contribution over and above the other subscales that were part of its larger set of scales. For this game, no subscale proved significant. Results are reported in Table 2.

Political orientation. A one-way ANOVA revealed no significant effect of categorical political affiliation on contribution, $F(5, 81) = 1.13$, $p = .352$. However, targeted t-tests revealed that participants who self-identified as Republicans donated marginally significantly more (M = \$4.31, SD = \$1.03) than both Democrats (M = \$3.41, SD = \$1.76), $t(33) = 1.90$, $p = .066$, and Independents (M = \$3.43, SD = \$1.90), $t(39) = 1.92$, $p = .063$. The correlation between conservatism and contribution was not significant, $r(84) = -.02$, $p = .856$.

Chapter 5

DISCUSSION AND FUTURE DIRECTIONS

The current research examined the effects of two self-conscious emotions – guilt and pride – on cooperation in two types of social dilemmas. In the first social dilemma task, the Social Trap game, cooperation involved exercising restraint in one's consumption of a shared resource. Although participants failed at the game, results met the predicted pattern, with guilt leading to decreased consumption compared to pride, which led to increased consumption; neutral control was in the middle, although not significantly different from either emotion. These findings support the proposed hypothesis, that guilt, a prosocial emotion that has been conceptualized as a behavioral interruption mechanism (Baumeister, Reis, & Delespaul, 1995), may be particularly well-suited to facilitating cooperation in social trap situations, by leading to decreased consumption. Notably, while debate exists in the guilt literature as to whether the beneficiary of guilt's reparative behavior must be the target of the original guilt-inducing act (e.g., Carlsmith & Gross, 1969; Cryder, Springer, & Morewedge, 2012), in the current study recalling a harmful act toward a close other led to increased cooperation with unrelated others in a large, anonymous group. Because the function of guilt is to repair the relationship with the target of harm, it is possible that guilt would increase cooperation even more in situations in which cooperating directly benefits the person who had been harmed, rather than an unrelated group of people.

However, an important distinction must be made between cooperation and prosociality. In this game, cooperation may be thought of as taking one's fair share and no more, thereby ensuring that if others do the same, everyone will

benefit. Prosociality, as defined for the current purposes, would describe altruistic behavior, resulting in taking *less* than one's own fair share to make sure that everyone else benefits. It must be noted that guilt did not necessarily lead to this sort of altruism; most participants in the guilt condition did not request less than their fair share of the resource pool. Rather, their predisposition seemed to be toward *fairness,* with approximately two-thirds of Guilt participants – twice as many as in either of the other conditions – claiming exactly $10. This tendency toward fairness over prosociality may have to do with the mismatch between target of harm in the guilt elicitor and target of benefit in the game, or there may be a different explanation. Whatever the reason, guilt appeared to motivate an emphasis on fairness, and this should be explored further. Prior research suggests that guilt may motivate cooperation and an emphasis on fairness in the second iteration of social bargaining games, only for those who have previously been uncooperative, because non-cooperators who experience the unpleasant feeling of guilt are motivated to avoid it in the future (Ketelaar & Au, 2003). Current guilt may facilitate anticipatory guilt (the expectation of experiencing guilt upon acting selfishly), and therefore anticipatory guilt is a potential mediator of the effect of guilt on consumption. Future research should examine this and other possible mediators of this effect.

Unlike guilt, pride led to increased consumption in the Social Trap game, with the modal response being to take more than one's fair share. This is also consistent with the prediction, with pride leading to the active behavior – in this situation, consumption from the resource pool. However, this finding could also be explained by the hypothesis that pride leads to a sense of entitlement. If this were the case, rather than facilitating a global desire to engage in action,

perhaps pride simply led participants to believe that they merited a larger portion of the pie. This competing explanation is consistent with prior research showing that pride is associated with an enhanced view of the self, as compared to others (Tracy & Robins, 2007c), and higher status often merits increased access to resources (Cheng, Tracy, & Henrich, 2010). One way to pit these hypotheses against each other is in a situation like the Public Goods Dilemma, in which the action hypothesis would predict greater contribution, but the entitlement hypothesis would predict decreased contribution. Results pertaining to this situation are discussed below.

Across all three Emotion conditions, females consistently requested more in the Social Trap game. The literature on cooperation in social dilemma games yields conflicting findings as to which sex is most cooperative: Females are sometimes found to be more cooperative, but the case may be overstated, and dependent upon moderating variables (e.g., Cox & Deck, 2006; Frank, Gilovich, & Regan, 1993; Stockard, Van de Kragt, & Dodge, 1988). The reasons for the current results are not clear; however, Cox and Deck (2006) demonstrated that females tend to be more generous when the benefits of doing so are greater (e.g., when others will see their prosocial behavior), and in the current study, the pains taken to ensure a perception of anonymity may have eliminated any female predisposition toward cooperation. A second explanation may stem from sex differences in dispositional pride. Post-hoc analyses indicate that females averaged higher scores than males on both TOSCA-Beta Pride (t[89] = 1.97, p = .051) and DPES-Pride (reported above). Both of these pride subscales significantly predicted higher requests, suggesting that dispositional pride may be the underlying factor driving consumption.

To assess this possibility, two meditational analyses were run (following the steps described by Baron & Kenny, 1986), examining TOSCA-Beta Pride and DPES-Pride as potential mediators of the relationship between sex and consumption. The necessary criteria were met for both tests (although it should be noted that Step 1, regressing consumption on participant sex, was only marginally significant; this equation is used in the calculation of both tests: β = -8.17, $t(90) = -1.74$, $p = .085$), so the Sobel test was conducted to assess whether each mediation effect was significant (Sobel, 1982). The Sobel test values associated with mediation were marginally significant for both TOSCA-Beta Pride ($z = -1.66$, $p = .097$) and DPES-Pride ($z = -1.76$, $p = .078$), yielding moderate support for the existence of partial mediation by dispositional pride of the effect of sex on consumption. While these findings are consistent with the primary hypotheses of the study – that pride should lead to greater consumption of resources – more work remains to replicate these findings, and to determine whether dispositional pride should also predict greater or lesser contribution in a Public Goods Dilemma situation.

The Public Goods Dilemma game failed to shed much light on the effects of guilt and pride on cooperation. In the absence of significant findings for this game, one can only examine trends in the results. Compared to participants in the Neutral and Pride conditions, Guilt participants tended to contribute slightly more of their shared account toward the pool, and Guilt also had the greatest proportion of participants (62.1%) contribute their entire $5. Had these differences been significant, there would be support for the hypothesis that guilt leads to prosocial behavior in both types of social dilemma, but the current findings cannot persuasively make this point.

Regarding the two competing hypotheses that could be used to explain the pride findings in the Social Trap game, ideally, the Public Goods Dilemma game would have helped determine which of these competing explanations was true. If, as originally predicted, pride led to *action*, then Pride participants in the Public Goods Dilemma game should have contributed a greater portion of their $5 to the shared pool, compared to Neutral and Guilt participants. In contrast, if pride led to a feeling of *entitlement*, then Pride participants in that game should have felt that they deserved their personal money, and should therefore have contributed less to the shared pool, compared to the other groups. Alas, the lack of any significant findings in the Public Goods Dilemma game leaves us with no answers. Future studies identifying the mechanism through which pride acts on cooperation are needed to determine how this tricky emotion can best be optimized in the pursuit of cooperative behavior across multiple situations.

A primary contribution of this research is that not only does it indicate the benefit of considering emotions in determining the causes of cooperative behavior, but it also highlights the importance of considering the nature of the desired cooperative behavior. Whereas guilt led to increased cooperation in the Social Trap game, it failed to influence behavior in the Public Goods Dilemma game. Similarly, pride's negative influence on cooperation was found only in the Social Trap game. This inconsistency across situations could derive from two possible explanations: Either both of these emotions fail to influence behavior in a Public Goods Dilemma, or the Public Goods Dilemma game was not designed well enough to detect the effect of these emotions.

Assuming the Public Goods Dilemma game was well designed, there may exist psychological reasons for why the guilt and pride manipulations did not

have an effect on contributions. One potential issue is that the nature of a public goods dilemma requires that people give something up (therefore it is framed as a loss), distinguishing it from social traps, in which people stand to gain. Humans are more attuned to and influenced by loss than gains (Kahneman & Tversky, 1979), and therefore it may take a greater emotional motivation to move behavior in the public goods dilemma than in the social trap, especially since both guilt and pride were predicted to increase contributions (thereby increasing perceived loss). It is possible that the emotion elicitors, which were consistent across studies, were strong enough to influence gain-seeking behavior in the Social Trap game, but not strong enough to influence loss-risking behavior in the Public Goods Dilemma game. Multiple options exist for addressing this possibility, including using stronger emotion manipulations, examining dispositional gain-seeking and loss-aversion as mediators, and finding creative ways to frame the Public Goods Dilemma game so that the loss is not so salient.

The original prediction for guilt was that it would increase contribution compared to the Neutral and Pride conditions, but it was also thought that this effect would not be as strong as guilt's effect on consumption in the Social Trap game. The rationale behind this prediction derives from Baumeister and colleagues' description of guilt as a "behavioral interrupt" mechanism that causes people to assess their current harmful behavior and put an end to it. In the case of the Public Goods Dilemma game, in which the desired behavior is *increased* contribution, the action-reducing effects of guilt simply may not be the most effective emotional intervention for this type of social dilemma. In other words, if guilt simultaneously results in both prosociality and behavioral cessation, these effects – which work in conjunction to reduce consumption in the social trap

situation – would oppose each other in the public goods dilemma. An emotion that facilitates action and risk-taking, such as anger (Carver & Harmon-Jones, 2009; Lerner & Keltner, 2001), may be a more appropriate choice to increase contribution, although the framing of this emotional appeal would have to be carefully designed to avoid the possible counterproductive effects (e.g., because anger is proposed to facilitate accomplishment of one's own thwarted goals, it is equally reasonable to assume that anger would result in self-serving decisions, in this case feeling "owed" by others and retaining one's own resources).

A secondary explanation for guilt's lack of influence on contribution may stem from the lack of a true measure of "fairness" in this game. Given that guilt seemed to predispose participants toward *fairness* in the Social Trap game, rather than altruism or self-punishment, we might expect to find a similar predisposition in the Public Goods Dilemma game. However, the Social Trap game had a very clear "fair share," and it was probably obvious to most participants what the "right" or "fair" amount of consumption should be. In contrast, participants may not have been sure what constituted a fair contribution in the Public Goods Dilemma game – contributing all of one's own money? Most? Half? It is unsurprising that guilt's effect on fairness is not clear, if participants are unsure of what constitutes "fair" in the first place.

Pride's lack of influence on contribution may result from conflicting goals. In the Social Trap game, the increased consumption by Pride participants could support either the action hypothesis or the entitlement hypothesis, and it is possible that both are right. It is not uncommon for a single emotion to elicit multiple behaviors with the purpose of achieving multiple goals, which may sometimes fall in conflict with each other. For example, guilt has been proposed

to facilitate both prosociality and self-punishment (Nelissen & Zeelenberg, 2009), but these goals may conflict with each other if prosociality also benefits the self, or if self-punishment also harms the other. In the case of our Public Goods Dilemma game, it is therefore possible that both action and entitlement goals were activated in individual participants, opposing each other so that the overall effect of pride disappeared completely. It is equally possible that pride, mediated or moderated by some personality variable, acted primarily as an action-facilitator in some participants and primarily as an entitlement-enhancer in others. In this case, the overall effect of pride across the group would have averaged out and appeared to have no effect at all.

In retrospect, it is also possible that the design of the Public Goods Dilemma game may not have allowed for enough variability in the dependent variable for detection of significant differences between the groups. Unlike the Social Trap game, in which a participant's possible choices ranged from $0-$1,000, a Public Goods Dilemma participant could only contribute anywhere from $0-$5. Only two participants contributed partial dollars (in other words, almost all rounded their donations to full dollars), so there were essentially only six response options: $0, $1, $2, $3, $4, or $5. A quick examination of responses reveals that the majority of participants (51.2%) contributed all $5 from their accounts, possibly because $5 is a small enough amount that it was worth risking for the greater good. Had each individual started with a larger personal account – for example, $10 or $20 – parting with the full amount may have felt like more of a loss, and worthy of greater consideration, thereby perhaps leading to a wider range of contributions. Maximizing variance in the dependent variable in this way

could very well increase statistical power such that existing differences between the groups become significant.

Perhaps the most interesting findings to come of this research are the ones that were wholly unexpected: insights into the reasons for common poor performance at the Social Trap game. Prior literature on this type of game has often noted the surprising frequency with which participants fail to optimize their outcomes, or to win anything at all (e.g., Brechner, 1977; Galinsky, Gruenfeld, & Magee, 2003). However, these failures are often discussed in terms of such psychological phenomena as reinforcement schedules, expected values, and group size. Although researchers have identified the importance of it, there is little research examining game comprehension and thought patterns for each individual (Cárdenas & Ostrom, 2004). The addition of the Game Feedback Sheet, originally intended only to allow elimination from analyses of those participants who failed to understand the game, ended up yielding remarkable participant feedback.

Of the 105 participants who played the Social Trap game, fourteen were removed from analyses. Three were removed due to a lack of understanding of the game, suggesting that even when the rules of a shared resource game are laid out as clearly as possible, some people simply fail to understand the realities of the situation or the impact of individual behaviors on the outcome of the group. This previously unexamined deficiency may actually be a crucial driver of the prevalent failures to maximize individual and group outcomes in these situations, both experimental and real-world. A second surprising finding was that even among those participants who understood the rules of the game, seven were unable to perform the basic math required to calculate their own share, and in all

cases, this led to overconsumption by a factor of 10. This finding was wholly unexpected, but has important implications: If people have difficulty determining their own fair share when the basic mathematical equation is laid out for them, how can they be expected to estimate their own share when the situation is as complex and intangible as most social traps appear to be? An examination of the amounts requested by these seven participants (generally $90 or $100, translating to $9 or $10 if they had performed the math correctly) indicates that they were trying to cooperate. For the purposes of this study, I explicitly avoided telling participants that their fair share was $10, so that they did not anchor onto that amount. However, these results highlight the importance of making it clear to people what their piece of the pie truly is, to avoid basic errors like the ones seen here.

After the removal of all participants who did not meet the game's basic requirements, the 91 participants who understood the game and performed the math correctly still requested $1,605.83, an average of $17.65/person, and failed to cooperate well enough to meet the goal. All Emotion groups averaged requests higher than $10, indicating that even the most cooperative group, Guilt, could not have won the game. While these results are not uncommon, it suggests that even this study's best attempts at motivating cooperation are not enough. If guilt truly does facilitate cooperation or fairness, a successful guilt elicitation method must be stronger than the one used here.

The current study was designed to have an important strength: Participants were put in a situation in which real money was on the line, and therefore their decisions reflect meaningful behaviors. However, the study also involved some limitations and weaknesses. One limitation involves the game's

timeline. Due to the necessity of knowing everyone's decisions before calculating individual outcomes and doling out winnings, the study design required a time delay of several weeks between participation and earnings. Participants were aware of this time lag before making their decisions, and a couple even commented that the relatively paltry potential earnings were not enough to warrant returning later to pick them up. On the positive side, this time lag increased the ecological validity of the study, because real-life resource management dilemmas often necessitate making decisions in the present with outcomes for the future. However, it is unknown whether the knowledge of this time delay affected participants' consumption or contribution decisions in any meaningful way, and so future studies may attempt to address this issue by shortening or eliminating the time delay, or at the very least by adding questions that probe into this potential issue in the Game Feedback Sheet.

A second important limitation of the current research is that only two emotions were examined, and these were of opposite valence (guilt being generally considered a negative emotion, and pride a positive one). Therefore, although the Social Trap results support the proposed hypothesis that guilt acts as a behavioral stop mechanism to reduce consumption, and pride acts to increase action, the lack of other negative or positive emotions means a valence-based explanation cannot definitively be ruled out. In most valence-driven research, experimenters elicit one negative emotion and one positive emotion, then assess the effect of each on some outcome of interest, with the goal of showing that negative and positive affect have opposite effects on this outcome. It could be argued that this is what was done in the current study. However, a valence-based explanation is not consistent with our results. Valence research

suggests that those in a good mood should prioritize loss aversion, in an attempt to preserve the current mood, whereas those in a bad mood should prioritize gain seeking, in an attempt to improve mood (Cohen, Pham, & Andrade, 2007; Keller, Lipkus, & Rimer, 2003). In the context of the current study, therefore, a valence approach would predict that in the Social Trap game (in which participants only stand to gain), negative mood (in this case, guilt) should lead to greater gain-seeking than positive mood (pride), which was not the case. In contrast, in the Public Goods Dilemma game (in which participants stand to lose existing resources), positive mood (pride) should lead to lower contribution than negative mood (guilt); this result also failed to occur. Therefore, the current results cannot be satisfactorily explained by a valence approach.

That said, the only reliable way to rule out a valence-based explanation is to examine other negative and positive emotions. Whereas a valence approach would suggest that all positive emotions should act the same, and all negative emotions should act the same (but different from positive), an evolutionary approach would pit two same-valenced emotions against each other and show that they have opposite effects on cooperation, consistent with their proposed functions, and via different mechanisms. To do this in the Social Trap game, for example, one might begin with pride versus nurturant love. Nurturant love, a positive emotion that has been proposed to facilitate care taking of others (Shaver, Morgan, & Wu, 1996), may involve increased cooperation and prosociality, as maximizing outcomes to the self is not the central focus of concern. Nurturant love has also been shown to increase systematic processing (Griskevicius, Shiota, & Neufeld, 2010), which may cause participants to more critically evaluate the situation and realize that by taking more than $10, they

jeopardize their opportunity to win anything at all. Therefore, we might expect that nurturant love could lead to more restrained consumption, whereas pride should again lead to increased consumption. As for the negative emotions, whereas guilt led to decreased consumption, an emotion such as anger (which is associated with increased action and approach; Carver & Harmon-Jones, 2009) may lead to increased consumption in an attempt to "right the wrong" that the participant may feel he or she has endured. A thorough examination of multiple negative and positive emotions would contribute greatly to this line of research, not only for the purpose of ruling out a valence-based explanation of the current findings, but as a way of shedding greater light on the effects each emotion might have on cooperative behavior in social dilemmas.

A third limitation of the current study derives from the use of college undergraduates as a convenience sample of participants. This group differs markedly in several ways from the general public, including age, education level, and ethnicity. While these differences may call to question the external validity of these findings, there is no obvious reason why guilt and pride would cause significantly different cooperative reactions in other populations. It is possible that there would be cultural differences, with members of collectivist cultures performing more cooperatively overall due to their emphasis on enhancing group interests (Wagner, 1995). Particularly, as collectivists are less responsive to personal pride (Stipek, 1998), the intrapersonal pride manipulation used in the current studies may not have as strong an effect on them. As in any research, replication of findings in groups that vary in age, ethnicity, and education are necessary to demonstrate the robustness of the proposed effect.

Failure to maximize outcomes – or indeed, to receive any outcome at all – is common in these games, and unfortunately, the mechanisms driving this failure are contributing to serious real-world resource management dilemmas. Lacking in the literature, however, is a thorough analysis of why people tend to perform so poorly. Researchers generally discuss their results in terms of whole-group failure due to issues of behavioral economics or group dynamics, but the current research highlights the importance of identifying individual-level predictors of cooperation, such as state and trait emotional experience, and game comprehension. Ultimately, the more we learn about why participants behave the way they do and how cooperation can be improved in laboratory settings, the greater our hopes for maximizing cooperation and maintaining shared resources in the modern world.

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APPENDIX A

STUDY LAYOUT

1. Participants read and complete Cover Letter (Appendix B)
2. Recalled Emotion Manipulation (Appendix C)
    a. Participants will be randomly assigned to one of three conditions.
    b. This is a between-subjects manipulation.
3. Social Dilemma Game (Appendices D and E)
    a. Participants will be randomly assigned to one of two conditions.
    b. This is a between-subjects manipulation.
4. Test of Self-Conscious Affect-3 (TOSCA-3) (Appendix F)
5. Environmental Attitudes Inventory (EAI)-Personal Conservation Behavior (Appendix G)
6. Prosocial Personality Battery (PSB) (Appendix H)
7. Dispositional Positive Emotion Scale (DPES) (Appendix I)
8. Game Feedback Sheet (Appendix J)
9. Emotion Manipulation Check (Appendix K)
10. Demographic Information (Appendix L)
11. Participant Debrief (Appendix M)

APPENDIX B

COVER LETTER

STUDY TITLE: Recalled Experiences

10/5/2011

Dear Participant:

I am a graduate student under the direction of Professor Michelle N. Shiota in the Department of Psychology at Arizona State University. I am conducting a research study to investigate the ways in which people behave in certain situations. I am inviting your participation, which will involve approximately 1 hour of your time. In this study, you will be asked to complete three separate tasks (this hour is three studies in one). Participants have to be 18 years old or older to participate.

In the first task, you will recall and write about a time when you experienced a certain type of situation. In the second task, you will play a game in which you must make a decision about how to manage a shared resource. In this game, you will have the opportunity to make some money, but please note that your outcome depends on the decisions of everyone else in the study. For that reason, if you win the money, you will receive it at the end of the semester, once the study is complete. In the third task, you will complete a series of questionnaires.

Your participation in this study is voluntary. You can skip questions if you wish. If you choose not to participate or to withdraw from the study at any time, there will be no penalty. For example, it will not affect your grade in your PGS 101 class.

You will receive one research participation credit for participating in this study, and the results of this research study may be used in reports, presentations, and publications. Your name will not be associated with your responses. There are no foreseeable risks or discomforts to your participation. Return of the questionnaires will be considered your consent to participate.

If you have any questions or concerns, please feel free to contact Samantha Neufeld at 949-842-3497 (Samantha.neufeld@asu.edu) or Michelle N. Shiota at 480-727-8628 (lani.shiota@asu.edu). If you have any questions about your rights as a participant in this research, or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Institutional Review Board, through the ASU Office of Research Integrity and Assurance, at (480) 965-6788.

Thank you for your assistance in this research,

Samantha Neufeld

So that we can contact you regarding your possible earnings at the end of this study, please enter the information below. Note: This information will NOT be shared with anyone outside of this research laboratory, and will be used solely for the purpose of contacting you to inform you of the results of the game. The information you provide will be strictly confidential.

1. Name _____
2. Phone number _____
3. Email _____
4. Student ID _____

APPENDIX C

RECALLED EMOTION MANIPULATION

**Verbal Instructions: “For the first task, a relived experience task, we are interested in how people remember different kinds of situations. When I tell you to start, please read the instructions at the top of the page. You will be asked to relive and experience, and write about it in as much detail as possible. This is a relived experience task, meaning we want you to remember and think about the experience for a bit before you begin writing. Once you have spent some time remembering the experience, you will be given five minutes to write about it in as much detail as possible. If you finish early, please close your eyes and continue thinking about that experience. Do not move on to the next study yet, I will instruct you as to when we will move on.”

**Participants will be given the instructions in writing (below), as well as a lined sheet of paper on which to write their response.

Neutral: Please think about a recent time (within the past year) when you did your laundry. Please recall a specific event when you did the laundry, rather than a general period of time. Please reflect on this incident for a few moments, and try to remember all that you can about the circumstances surrounding it. Please be honest – this study is completely confidential. Do not include your own name or the name of anyone else in your response. Now please describe the situation, in as much detail as possible. You will have five minutes to write. If you finish early, please close your eyes and continue reliving that experience. DO NOT MOVE ON TO THE NEXT TASK.

Guilt: Please think about a recent time (within the past year) when you harmed or betrayed someone close to you. This could have been intentional or unintentional. Please recall a specific event when you harmed or betrayed someone close to you, rather than a general period of time. Please reflect on this incident for a few moments, and try to remember all that you can about the circumstances surrounding it. Please be honest – this study is completely confidential. Do not include your own name or the name of anyone else in your response. Now please describe the situation, in as much detail as possible. You will have five minutes to write. If you finish early, please close your eyes and continue reliving that experience. DO NOT MOVE ON TO THE NEXT TASK.

Pride: Please think about a recent time (within the past year) when you accomplished something important to you. This might include an academic achievement, an extra-curricular achievement, or some other time when you did something really well. Please recall a specific event when you achieved something important to you, rather than a general period of time. Please reflect on this incident for a few moments, and try to remember all that you can about the circumstances surrounding it. Please be honest – this study is completely confidential. Do not include your own name or the name of anyone else in your response. Now please describe the situation, in as much detail as possible. You will have five minutes to write. If you finish early, please close your eyes and continue reliving that experience. DO NOT MOVE ON TO THE NEXT TASK.

Please describe the situation, with as much detail as possible:

APPENDIX D

SOCIAL TRAP GAME

(Adapted from Galinsky, Gruenfeld, & Magee, 2003)

Instructions delivered verbally and in writing.
There are many resources of a fixed amount, such as fossil fuels like gasoline, that are available to everyone and whose existence depends on people not consuming too much. If enough people are reasonable about how much they consume, these resources will continue to be available. If enough people consume too much, however, they will cease to exist. In this case, the less each person consumes, the more there is for everyone. But it is also possible that people could take so much that there would be none left for anyone, including you. Thus, each person must decide whether to take from the resource at all, and if so, how much to take.

Today you will participate in a game that puts you in a situation like the one described above. You and 99 other participants in this study share access to a common pool of $1,000 dollars. You are free to ask for as much money from that pool as you like. But you should also be careful not to ask for too much, because **if at the end of the study everyone's requests add up to more than the $1,000 that is in the pool, then nobody, <u>including yourself</u>, will receive anything**. In other words, if the sum total of all 100 requests adds up to more than $1,000, no one gets any money.

Please read the following examples:

Example A) If everyone's requests added together add up to $900, every person gets the amount that they asked for, including you.

Example B) If everyone's requests added together add up to $1,100, no person gets anything, including you.

This study will be run until the end of the semester, at which point the experimenter will tally everyone's decisions. *The researcher will be the only one to see your decision.* If the 100 people have asked for a total of $1,000 or less, then everyone will receive the amount they requested. However, if the 100 people have asked for a total of more than $1,000, no one will receive anything. You will be notified of the game results via email at the end of the semester, and if you have earned money, it will be available for pick-up in the Shiota Lab in the Psychology North building on this campus.

Please decide now: How much money would you like to take from the pool?

$ _____

APPENDIX E

PUBLIC GOODS DILEMMA GAME

Instructions delivered verbally and in writing.
There are many public services and resources, such as public radio stations, that are available to everyone but whose existence depends upon voluntary contributions. If people contribute enough money, these resources will continue to be available to everyone. If voluntary contributions fall below a certain point, however, they will be under-supported and cease to exist. The more people are willing to contribute, the better these shared resources will be. It is possible to contribute nothing and still enjoy the resource, since access is open to all. On the other hand, if people do not contribute enough the resource cannot be sustained, and no one will enjoy access to it. Thus, each person must decide whether to contribute to the resource and, if so, how much to contribute.

Today you will participate in a game that puts you in a situation like the one described above. You and 99 other participants in this study will each be given a starting "personal bank account" of $5. At the current time, the resource pool stands at $0. All 100 participants, including you, will be given the opportunity to contribute anywhere from $0-$5 to the pool, and once everyone has decided how much to contribute, the pool will be doubled and divided equally among all 100 people. You will also get to keep what is remaining in your personal bank account. In other words, the more each person contributes, the larger the resource pool will become, and once it is doubled, it will be even larger. The pool will then be shared equally by everyone, regardless of how much any individual contributed, on top of what is left in their personal accounts. You are free to contribute as much or as little of your $5 as you like, and at the end of the study, you will receive whatever is left in your personal account, plus 1/100th of the resource pool.

Example A) If everyone across the entire participant group gives a *collective total* of $200, that is doubled to $400, and everyone in the study (including you) receives $4 plus whatever they kept in their bank account.

Example B) If everyone across the entire participant group gives a *collective total* of $400, that is doubled to $800, and everyone in the study (including you) receives $8 plus whatever they kept in their bank account.

This study will be run until the end of the semester, at which point the experimenter will tally everyone's decisions. *The researcher will be the only one to see your decision.* You will be notified of the game results via email at the end of the semester, and if you have earned money, it will be available for pick-up in the Shiota Lab in the Psychology North building on this campus.

Please decide now: How much money (from $0-$5) would you like to contribute to the resource pool?

$ _____

APPENDIX F

TEST OF SELF-CONSCIOUS AFFECT-3

(Tangney, Dearing, Wagner, & Gramzow, 2000)

Below are situations that people are likely to encounter in day-to-day life, followed by several common reactions to those situations. As you read each scenario, try to imagine yourself in that situation. Then indicate how likely you would be to react in each of the ways described. We ask you to rate all responses because people may feel or react more than one way to the same situation, or they may react different ways at different times.

For example:
A. You wake up early one Saturday morning. It is cold and rainy outside.
a) You would telephone a friend to catch up on news.
b) You would take the extra time to read the paper.
c) You would feel disappointed that it's raining.
d) You would wonder why you woke up so early.

In the above example, I've rated ALL of the answers by circling a number. I circled a "1" for answer (a) because I wouldn't want to wake up a friend very early on a Saturday morning -- so it's not at all likely that I would do that. I circled a "5" for answer (b) because I almost always read the paper if I have time in the morning (). I circled a "3" for answer (c) because for me it's about half and half. Sometimes I would be disappointed about the rain and sometimes I wouldn't -- it would depend on what I had planned. And I circled a "4" for answer (d) because I would probably wonder why I had awakened so early.

Please do not skip any items -- rate all responses.

1. You make plans to meet a friend for lunch. At 5 o'clock, you realize you stood him up.
a) You would think: "I'm inconsiderate."
b) You would think: "Well, they'll understand."
c) You'd think you should make it up to him as soon as possible.
d) You would think: "My boss distracted me just before lunch."

2. You break something at work and then hide it.
a) You would think: "This is making me anxious. I need to either fix it or get someone else to."
b) You would think about quitting.
c) You would think: "A lot of things aren't made very well these days."
d) You would think: "It was only an accident."

3. You are out with friends one evening, and you're feeling especially witty and attractive. Your best friend's spouse seems to particularly enjoy your company.
a) You would think: "I should have been aware of what my best friend is feeling."
b) You would feel happy with your appearance and personality.
c) You would feel pleased to have made such a good impression.
d) You would think your best friend should pay attention to his/her spouse.
e) You would probably avoid eye-contact for a long time.

4. At work, you wait until the last minute to plan a project, and it turns out badly.
    a) You would feel incompetent.
    b) You would think: "There are never enough hours in the day."
    c) You would feel: "I deserve to be reprimanded for mismanaging the project."
    d) You would think: "What's done is done."

5. You make a mistake at work and find out a co-worker is blamed for the error.
    a) You would think the company did not like the co-worker.
    b) You would think: "Life is not fair."
    c) You would keep quiet and avoid the co-worker.
    d) You would feel unhappy and eager to correct the situation.

6. For several days you put off making a difficult phone call. At the last minute you make the call and are able to manipulate the conversation so that all goes well.
    a) You would think: "I guess I'm more persuasive than I thought."
    b) You would regret that you put it off.
    c) You would feel like a coward.
    d) You would think: "I did a good job."
    e) You would think you shouldn't have to make calls you feel pressured into.

7. While playing around, you throw a ball and it hits your friend in the face.
    a) You would feel inadequate that you can't even throw a ball.
    b) You would think maybe your friend needs more practice at catching.
    c) You would think: "It was just an accident."
    d) You would apologize and make sure your friend feels better.

8. You have recently moved away from your family, and everyone has been very helpful. A few times you needed to borrow money, but you paid it back as soon as you could.
    a) You would feel immature.
    b) You would think: "I sure ran into some bad luck."
    c) You would return the favor as quickly as you could.
    d) You would think: "I am a trustworthy person."
    e) You would be proud that you repaid your debts.

9. You are driving down the road, and you hit a small animal.
    a) You would think the animal shouldn't have been on the road.
    b) You would think: "I'm terrible."
    c) You would feel: "Well, it was an accident."
    d) You'd feel bad you hadn't been more alert driving down the road.

10. You walk out of an exam thinking you did extremely well. Then you find out you did poorly.
    a) You would think: "Well, it's just a test."
    b) You would think: "The instructor doesn't like me."
    c) You would think: "I should have studied harder."
    d) You would feel stupid.

11. You and a group of co-workers worked very hard on a project. Your boss singles you out for a bonus because the project was such a success.

a) You would feel the boss is rather short-sighted.
b) You would feel alone and apart from your colleagues.
c) You would feel your hard work had paid off.
d) You would feel competent and proud of yourself.
e) You would feel you should not accept it.

12. While out with a group of friends, you make fun of a friend who's not there.

a) You would think: "It was all in fun; it's harmless."
b) You would feel small...like a rat.
c) You would think that perhaps that friend should have been there to defend himself/herself.
d) You would apologize and talk about that person's good points.

13. You make a big mistake on an important project at work. People were depending on you, and your boss criticizes you.

a) You would think your boss should have been more clear about what was expected of you.
b) You would feel like you wanted to hide.
c) You would think: "I should have recognized the problem and done a better job."
d) You would think: "Well, nobody's perfect."

14. You volunteer to help with the local Special Olympics for handicapped children. It turns out to be frustrating and time-consuming work. You think seriously about quitting, but then you see how happy the kids are.

a) You would feel selfish and you'd think you are basically lazy.
b) You would feel you were forced into doing something you did not want to do.
c) You would think: "I should be more concerned about people who are less fortunate."
d) You would feel great that you had helped others.
e) You would feel very satisfied with yourself.

15. You are taking care of your friend's dog while they are on vacation and the dog runs away.

a) You would think, "I am irresponsible and incompetent."
b) You would think your friend must not take very good care of their dog or it wouldn't have run away.
c) You would vow to be more careful next time.
d) You would think your friend could just get a new dog.

16. You attend your co-worker's housewarming party and you spill red wine on their new cream-colored carpet, but you think no one notices.

a) You think your co-worker should have expected some accidents at such a big party.

b) You would stay late to help clean up the stain after the party.

c) You would wish you were anywhere but at the party.

d) You would wonder why your co-worker chose to serve red wine with the new light carpet.

APPENDIX G

ENVIRONMENTAL ATTITUDES INVENTORY, SUBSCALE 8: PERSONAL CONSERVATION BEHAVIOR

(Milfont & Duckitt, 2010)

The following questions are answered on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree)

1. I could not be bothered to save water or other natural resources.(R)
2. I make sure that during the winter the heating system in my room is not switched on too high.
3. In my daily life I'm just not interested in trying to conserve water and/or power. (R)
4. Whenever possible, I take a short shower in order to conserve water.
5. I always switch the light off when I don't need it on any more.
6. I drive whenever it suits me, even if it does pollute the atmosphere. (R)
7. In my daily life I try to find ways to conserve water or power
8. I am NOT the kind of person who makes efforts to conserve natural resources. (R)
9. Whenever possible, I try to save natural resources.
10. Even if public transportation was more efficient than it is, I would prefer to drive my car. (R)

APPENDIX H

PROSOCIAL PERSONALITY BATTERY

(Penner, 2002)

PART 1: Below are a number of statements that may or may not describe you, your feelings, or your behavior. Please read each statement carefully and blacken in the space on your answer sheet that corresponds to choices presented below. There are no right or wrong responses.

1: STRONGLY DISAGREE
2: DISAGREE
3: UNCERTAIN
4: AGREE
5: STRONGLY AGREE

SOCIAL RESPONSIBILITY
1. When people are nasty to me, I feel very little responsibility to treat them well. (R)
2. I would feel less bothered about leaving litter in a dirty park than in a clean one. (R)
3. No matter what a person has done to us, there is no excuse for taking advantage of them.
4. With the pressure for grades and the widespread cheating in school nowadays, the individual who cheats occasionally is not really as much at fault. (R)
5. It doesn't make much sense to be very concerned about how we act when we are sick and feeling miserable. (R)
6. If I broke a machine through mishandling, I would feel less guilty if it was already damaged before I used it. (R) 7. When you have a job to do, it is impossible to look out for everybody's best interest. (R)

EMPATHY SCALE
8. I sometimes find it difficult to see things from the "other person's" point of view. PT (R)
9. When I see someone being taken advantage of, I feel kind of protective towards them. EC
10. I sometimes try to understand my friends better by imagining how things look from their perspective. PT
11. Other people's misfortunes do not usually disturb me a great deal. EC (R)
12. If I'm sure I'm right about something, I don't waste much time listening to other people's arguments. PT (R)
13. When I see someone being treated unfairly, I sometimes don't feel very much pity for them. EC (R)
14. I am usually pretty effective in dealing with emergencies. PD (R)
15. I am often quite touched by things that I see happen. EC
16. I believe that there are two sides to every question and try to look at them both. PT
17. I tend to lose control during emergencies. PD
18. When I'm upset at someone, I usually try to "put myself in their shoes" for a while. PT
19. When I see someone who badly needs help in an emergency, I go to pieces. PD

PART 2:
Below is a set of statements, which may or may not describe how you make decisions when you have to choose between two courses of action or alternatives when there is no clear right way or wrong way to act. Some examples of such situations are: being asked to lend something to a close friend who often forgets to return things; deciding whether you should keep something you have won for yourself or share it with a friend; and choosing between studying for an important exam and visiting a sick relative. Read each statement and blacken in the space on your answer sheet that corresponds to the choices presented below.

1: STRONGLY DISAGREE
2: DISAGREE
3: UNCERTAIN
4: AGREE
5: STRONGLY AGREE

MORAL REASONING
20. My decisions are usually based on my concern for other people. O
21. My decisions are usually based on what is the most fair and just way to act. M
22. I choose alternatives that are intended to meet everybody's needs. M
23. I choose a course of action that maximizes the help other people receive. O
24. I choose a course of action that considers the rights of all people involved. M
25. My decisions are usually based on concern for the welfare of others. O

Below are several different actions in which people sometimes engage. Read each of them and decide how frequently you have carried it out in the past. Blacken in the space on your answer sheet which best describes your past behavior. Use the scale presented below.

1: NEVER
2: ONCE
3: MORE THAN ONCE
4: OFTEN
5: VERY OFTEN

SELF-REPORTED ALTRUISM
26. I have helped carry a stranger's belongings (e.g., books, parcels, etc.).
27. I have allowed someone to go ahead of me in a line (e.g., supermarket, copying machine, etc.)
28. I have let a neighbor whom I didn't know too well borrow an item of some value (e.g., tools, a dish, etc.).
29. I have, before being asked, voluntarily looked after a neighbor's pets or children without being paid for it.
30. I have offered to help a handicapped or elderly stranger across a street.

Scoring Instructions:
Reverse Items with an R
Compute scores for 7 individual scales: Social Responsibility (SR) Empathic Concern (EC) Perspective Taking (PT) Personal Distress (PD) Other-Oriented Moral Reasoning (O) Mutual Concerns moral reasoning (M) Self-reported altruism (SRA)

Factor 1, Other-oriented empathy, = sum of scores on SR, EC, PT, O, M.
Factor 2, Helpfulness, = sum of PD (total reversed*) and SRA.

*After you have reversed the one PD item with an “R” after it, sum the PD items and subtract the total score on PD from 18. This makes the meaning of a high score on the Helpfulness factor clearer, because now high scores on the two scales both represent prosocial tendencies.

APPENDIX I

DISPOSITIONAL POSITIVE EMOTION SCALE – PRIDE, GUILT

(Shiota, Keltner, & John, 2006)
**Along with this subscale, we created a corresponding set of Guilt questions

Each item below contains a statement about your feelings. Think about each statement separately, and decide how much you agree with it. There are no right or wrong answers. For each statement, fill in the bubble on the left for the number from 1 (strongly disagree) to 7 (strongly agree) that best represents your feelings.

1	**2**	**3**	**4**	**5**	**6**	**7**	
O	O	O	O	O	O	O	I take great pride in my achievements.
O	O	O	O	O	O	O	It feels good to know that people look up to me.
O	O	O	O	O	O	O	I really enjoy the feeling of accomplishment.
O	O	O	O	O	O	O	I feel strong positive emotion when I do something well.
O	O	O	O	O	O	O	I feel remorse for the ways that I've harmed others.
O	O	O	O	O	O	O	It really upsets me when I do something that hurts another person.
O	O	O	O	O	O	O	I often feel guilty for things I've done.
O	O	O	O	O	O	O	I feel strong negative emotion when I've done something wrong.

APPENDIX J

GAME FEEDBACK SHEET

RESOURCE GAME INSTRUCTIONS:

Please think back to the resource allocation game you played in Study 2. In as much detail as possible, please describe the rules of that game (for example, what was the situation you were in, how does your individual outcome depend on everyone else's decisions, how does everyone else's outcome depend on your decision, and what do you think is the best strategy for success in this game)?

What was the situation?

_____
_____
_____

How does your outcome as an individual depend on the decisions made by everyone else in the study?

_____
_____
_____

How do everyone else's outcomes depend on the decision that you make?

_____
_____
_____

What do you think is the best strategy for success in this game?

_____
_____
_____
_____

Do you have any other thoughts about the game?

_____
_____
_____
_____

APPENDIX K

EMOTION MANIPULATION CHECK

Please think back to the very first task you completed, in which you wrote about a personal experience. We are interested in knowing what emotions you might have felt while writing about your experience. Please indicate how strongly you felt each emotion while you were writing about your experience and imagining yourself in that situation (0 = none at all; 8 = strongest experience of this emotion I've ever felt).

	None at All								Strongest Ever
1. Amusement	0	1	2	3	4	5	6	7	8
2. Anger	0	1	2	3	4	5	6	7	8
3. Awe	0	1	2	3	4	5	6	7	8
4. Disgust	0	1	2	3	4	5	6	7	8
5. Embarrassment	0	1	2	3	4	5	6	7	8
6. Enthusiasm	0	1	2	3	4	5	6	7	8
7. Fear	0	1	2	3	4	5	6	7	8
8. Guilt	0	1	2	3	4	5	6	7	8
9. Happiness	0	1	2	3	4	5	6	7	8
10. Love	0	1	2	3	4	5	6	7	8
11. Pride	0	1	2	3	4	5	6	7	8
12. Sadness	0	1	2	3	4	5	6	7	8
13. Shame	0	1	2	3	4	5	6	7	8
14. Tenderness/Compassion	0	1	2	3	4	5	6	7	8

APPENDIX L

DEMOGRAPHIC INFORMATION

1. Sex

2. Age

3. Religion:
    1. Atheist/Agnostic (uncertain);
    2. Catholic or Greek Orthodox;
    3. Non-Catholic Christian;
    4. LDS/Mormon;
    5. Hindu;
    6. Buddhist;
    7. Jewish;
    8. Muslim;
    9. Native American
    10. Other

4. Please rate how RELIGIOUS you are on a scale from 1-7 (1 = not at all religious, 7 = extremely religious)

5. Please rate how SPIRITUAL you are on a scale from 1-7 (1 = not at all spiritual, 7 = extremely spiritual)

6. Ethnicity:
    1. White/Caucasian;
    2. Black/African-American;
    3. Hispanic/Latino;
    4. Native American;
    5. East Asian (ex: China, Japan);
    6. South Asian (ex: India);
    7. Southeast Asian (ex: Indonesia);
    8. Asian-American;
    9. Middle Eastern;
    10. Arab/Arab-American
    11. Other

7. Political party:
    1. Democrat
    2. Republican
    3. Libertarian
    4. Green
    5. Independent
    6. Other

Political Attitudes: Rate your political views on a scale from 1 (Very liberal) to 7 (very conservative). 4 is moderate.

1. How liberal or conservative are you in terms of social issues?
   - 1 Extremely Conservative
   - 7 Extremely Liberal
2. How liberal or conservative are you in terms of fiscal issues?
   - 1 Extremely Conservative
   - 7 Extremely Liberal
3. How liberal or conservative are you, overall?
   - 1 Extremely Conservative
   - 7 Extremely Liberal

APPENDIX M

PARTICIPANT DEBRIEF

Recalled Experiences Study

Thank you for your participation in this study. In this study, we elicited pride and guilt, and then had you play a resource management game. The purpose of our research is to better understand the nature of social dilemmas, and the effects of emotions, such as guilt and pride, on people's decisions in resource management games.

Many resource management issues fall into the category of "social dilemmas": situations in which an individual benefits by being selfish (by either consuming too much of a shared resource, or not contributing enough to a shared resource), and in which large-scale individual selfishness leads to long-term negative consequences to the group. Psychologists have identified a number of mechanisms through which social dilemmas can be mitigated, for example, by giving people immediate feedback on the consequences of their actions, or emphasizing social norms that encourage cooperation. One psychological phenomenon that has been understudied in terms of social dilemmas is emotion. In particular, there is strong theoretical support for the notion that the self-conscious emotions guilt and pride should increase cooperation in resource management games. In this line of research, I am examining the effects of guilt and pride on cooperation and defection in social dilemma games.

Because your outcome in the resource management game is dependent upon the decisions of other people who are playing the same game, we cannot yet determine whether you will receive money, and how much. Once the study is complete, and everyone's decisions are aggregated, we will contact you via email to let you know about the outcome. If you have earned money, then we will have it available for you to pick up in the Shiota Lab in the Psychology North Building on this campus.

We understand that you may want to tell others about this research opportunity. That is fine, however, if you do, please do not inform them of the specific hypotheses. It is very important to our research that participants not come to this study with any preconceptions about what we are looking for.

We appreciate your participation! If you have any further questions about our research, you may contact Dr. Michelle Shiota at Michelle.Shiota@asu.edu or Samantha Neufeld at Samantha.Neufeld@asu.edu.

ASU Standard Rights: If you have any questions about your rights as a participant in this research, or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Institutional Review Board, through the Office of Human Research Administration, at (480) 965-6788.

Enjoy the rest of your semester, and thanks again for participating!

Table 1.
Emotion Manipulation Check Results. Mean Self-Reported Emotion Scores for Each Emotion, by Emotion Condition. Scores were reported on a Likert scale from 0 (no emotion at all) to 8 (the strongest experience of this emotion I've ever felt).

	Emotion Condition		
	Neutral	Guilt	Pride
Self-Reported Emotion			
Amusement	3.57	2.02	4.01
Anger	1.69	2.71	0.84
Awe	0.79	1.16	3.10
Disgust	1.38	2.84	0.61
Embarrassment	1.53	4.05	1.02
Enthusiasm	2.07	1.61	5.63
Fear	0.72	2.14	1.42
Guilt	1.05	5.14	0.53
Happiness	2.57	1.65	6.73
Love	1.74	2.58	3.90
Pride	2.09	1.65	6.95
Sadness	1.21	3.93	1.21
Shame	0.92	4.17	0.68
Tenderness	1.34	3.21	3.08

Table 2.

Personality Subscale Results. This table summarizes findings for the 16 personality subscales: Reported are the number of items in each scale, Cronbach's α for the entire sample, means and standard deviations, and the Betas and p-values for each subscale in each of the two Social Dilemma games.

Subscale	Number of items	Cronbach's α	Mean	SD	Social Trap Game		PGD Game	
					β	p-value	β	p-value
TOSCA-Shame	16	.74	2.86	0.57	-.091	.469	.082	.539
Detachment	11	.55	2.96	0.49	.028	.797	.189	.195
Externalization	16	.69	2.40	0.51	.176	.112	-.171	.284
Guilt	16	.68	3.96	0.43	.105	.375	.064	.593
Alpha Pride	5	.33	4.10	0.47	.038	.772	-.159	.271
Beta Pride	5	.45	4.12	0.52	.304	.017*	-.040	.779
EAI-Personal								
Conservation								
Behavior	10	.84	4.40	1.15	.121	.252	-.023	.837
PSB-Social								
Responsibility	7	.55	3.08	0.61	.076	.541	.088	.465
Empathic Concern	4	.29	4.05	1.21	.106	.327	-.183	.188
Perspective Taking	5	.71	3.62	0.74	-.151	.265	.073	.592
Personal Distress	3	.70	2.10	0.74	.000	.998	-.047	.706
Other Oriented								
Moral Reasoning	3	.72	3.45	0.77	-.292	.022*	.002	.992

Subscale	Number of items	Cronbach's α	Mean	SD	Social Trap Game		PGD Game	
					β	p-value	β	p-value
Mutual Concern								
Moral Reasoning	3	.53	3.72	0.59	.219	.086	.154	.287
Self-Reported								
Altruism	5	.68	2.89	0.73	.209	.054	-.024	.847
DPES-Pride	4	.84	6.35	0.76	.272	.009**	-.067	.546
Guilt	4	.85	5.49	1.31	-.103	.315	.008	.994

Note. Significance values < .05 have one asterisk, significance values < .01 have two asterisks. TOSCA = Test of Self-Conscious Affect; EAI = Environmental Attitudes Inventory; PSB = Prosocial Personality Battery; DPES = Dispositional Positive Emotion Scale.

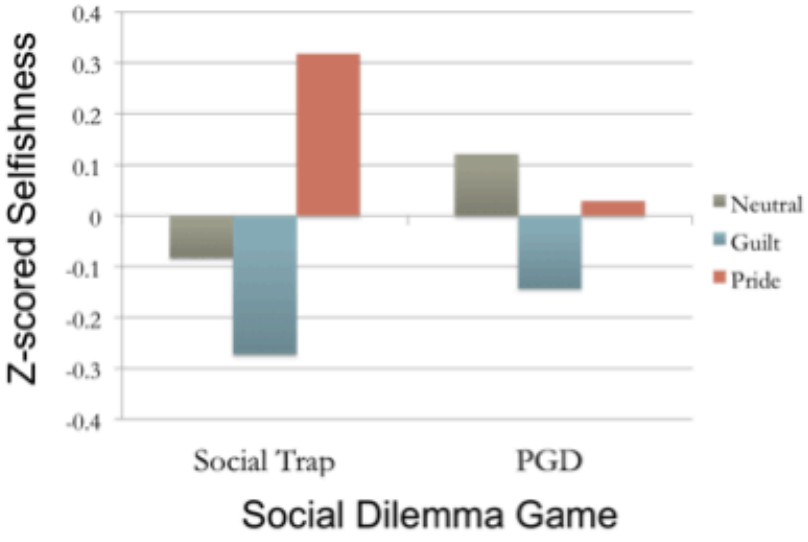

Figure 1. Results for Both Games. Average z-scored selfishness in both social dilemma games as a function of Emotion condition. Positive scores indicate pro-self resource allocation decisions, whereas negative scores indicate pro-group decisions, relative to the mean decision for each game.

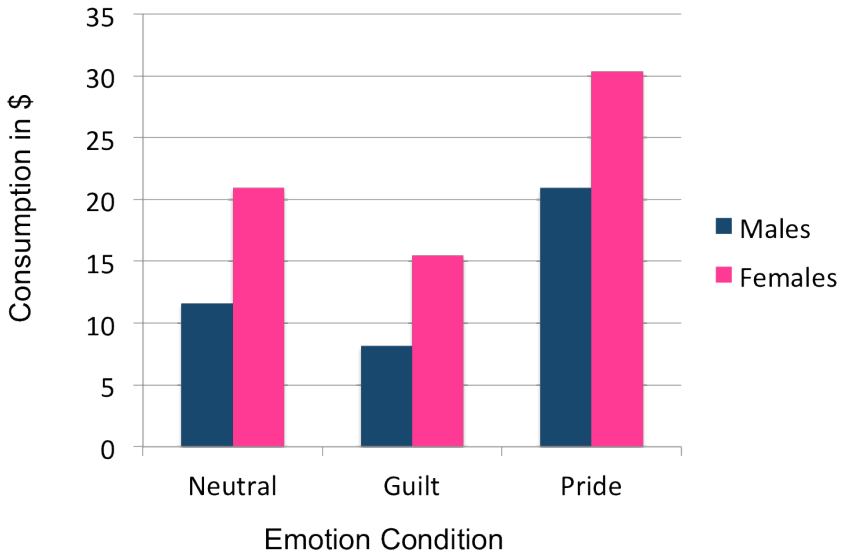

Figure 2. Consumption in Social Trap Game by Emotion and Participant Sex. Amount of money requested from $1,000 shared resource pool as a function of Emotion condition and Participant Sex in the Social Trap Game.

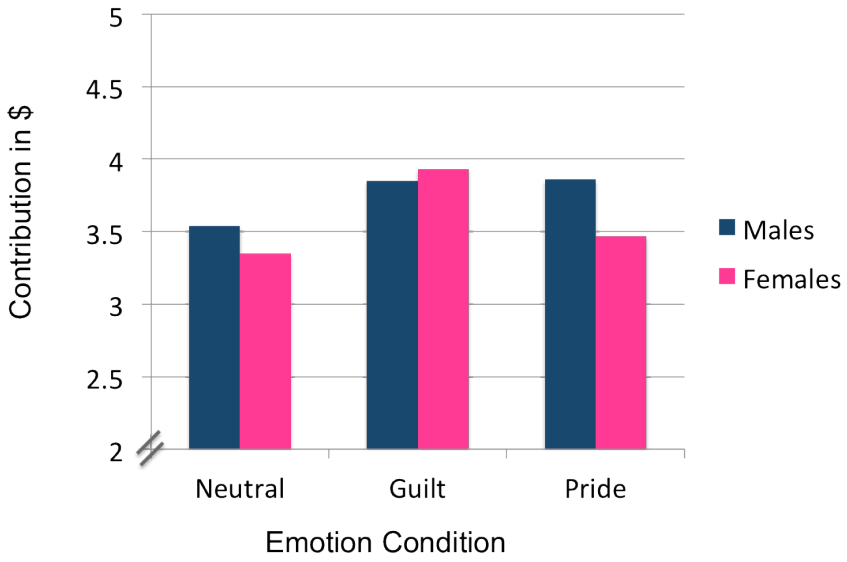

Figure 3. Contribution in Public Goods Dilemma Game by Emotion and Participant Sex. Amount of money contributed from $5 personal account to shared resource pool as a function of Emotion condition and Participant Sex in the Public Goods Dilemma Game.

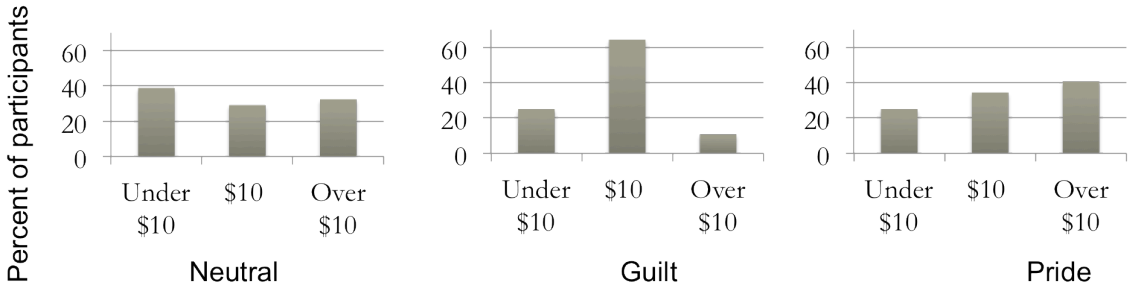

Figure 4. Frequencies of Consumption Categories in Social Trap Game. Percent of Social Trap game participants in each Emotion condition requesting either under $10 (prosocial decision), exactly $10 (cooperative decision), or over $10 (pro-self decision).

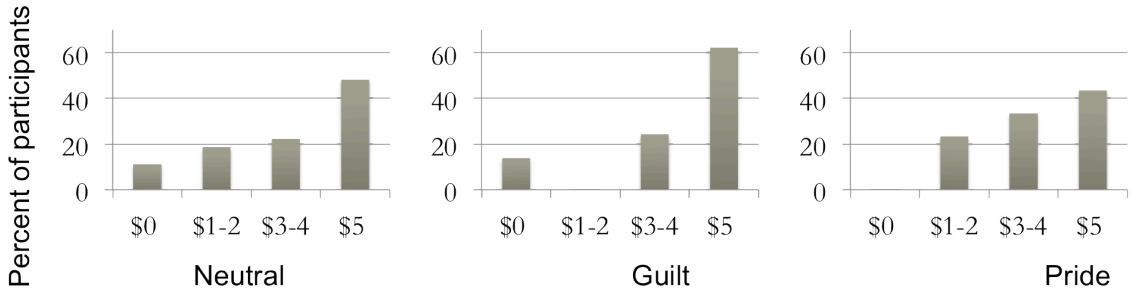

Figure 5. Frequencies of Contribution Categories in Public Goods Dilemma Game. Percent of Public Goods Dilemma game participants in each Emotion condition contributing either under $0 (entirely pro-self decision), $1-2 (somewhat pro-self decision), $3-4 (somewhat prosocial decision) or $5 (entirely prosocial decision).