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The Shadow of Consumption - How the Anticipation of Active Use Serves As A Solution to the Public Good Dilemma

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THE SHADOW OF CONSUMPTION – HOW THE ANTICIPATION OF ACTIVE USE SERVES AS A SOLUTION TO THE PUBLIC GOOD DILEMMA

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DEDICATION

"Du haftest in der Welt, beschwert von Ketten,

doch treibt, was wahr ist, Sprünge in die Wand.

Du wachst und siehst im Dunkeln nach dem Rechten,

dem unbekannten Ausgang zugewandt."

Ingeborg Bachmann, "Was wahr ist" (1956)

***

For Brent, Dave and my mom -

Words could hardly describe how grateful I am for everything each and every one of you has done for me in your own, very special ways. Many times you have saved me from the power of others, but so much more often from my own powerlessness.

I will never forget.

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I wouldn't be here without y'all. Yes, I said it.

ABSTRACT

While there have been many variations in the experimental investigation of the public good dilemma, nearly all have shared the assumption that public goods (e.g., clean air or national security) are passively/automatically consumed by actors in the real world. As a consequence, in the standard experimental design, the public good is *automatically* redistributed to all group members, regardless of whether (or how much) each contributed to its provision. Here, I suggest that the automatic distribution of benefits design, in which each group member *passively* receives his or her share of the public good, systematically under-represents many real world public goods which must be *actively* consumed in order to benefit (e.g., NPR, public parks, clean water, or 'open content' such as Wikipedia). My *'shadow of consumption'* hypothesis states that actively consumed public goods are more likely to be provided than those that are passively consumed. Specifically, I propose that actors who anticipate the *active consumption* of a public good will contribute significantly more to its provision than those who anticipate *automatic distribution* or *passive consumption*, as is the case in the standard public goods design. The results of a new experiment fully support my hypothesis. Actors contributed significantly more to the public good when they anticipated an active consumption decision than when they expected that the public good would be automatically redistributed. These results suggest that because it does not account for how anticipated use drives contribution, the standard public goods design might systematically overestimate the level of free-riding that occurs in the provision of many public goods.

Another implication of the 'shadow of consumption' hypothesis is that, all other things equal, public goods that must be actively consumed will be provided at higher levels than those that are passively consumed.

PREFACE

"I like the Walrus best," said Alice, "because you see he was a little sorry for the poor oysters." "He ate more than the Carpenter, though," said Tweedledee.

"You see he held his handkerchief in front, so that the Carpenter couldn't count how many he took: contrariwise." "That was mean!" Alice said indignantly.

"Then I like the Carpenter best—if he didn't eat so many as the Walrus."

"But he ate as many as he could get," said Tweedledum. This was a puzzler. After a pause, Alice began, "Well! They were both very unpleasant characters—".

Lewis Carroll, “Through the Looking-Glass, and what Alice found there” (1871)

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CHAPTER 1

INTRODUCTION

One of the great puzzles of sociology, psychology, economics, and many other disciplines, is why, how, and under which conditions human actors overcome conflicts of narrow self-interest to achieve collective action - "possibly only the topics of God, love, and inner struggle have received comparable attention." (Luce and Raiffa 1989 [1957]:1)

Members of many groups face the problem of a pervasive tension between individual and collective rationality (Messick and Brewer 1983): although the entire group would benefit most from mutual cooperation and the provision of a collective good, every actor is also tempted to free ride on the costly contributions of his/her fellow group members (Dawes 1980). However, if nobody contributes, the good will not be provided, nobody benefits and all will be worse off. The free rider problem (Olson 1965) jeopardizes collective action and remains a fundamental challenge for humans all around the globe (UNDP 1999; van Lange 2008.)

And "[y]et, people do overcome the collective action problem; society is possible"[1] (Willer 2009:23). Proposed solutions to the puzzle of how Public Goods[2] are provided have come from sociology (Willer 2009), political science (Ostrom 1990), social psychology (van Vugt 2009), economics (Gintis et al. 2005), and many other fields

[1] "Let me start with a provocative statement. You would not be reading this article if it were not for some of our ancestors learning how to undertake collective action to solve social dilemmas" (Ostrom 1998:1).

[2] The focus of this paper is the Dilemma of Public Goods. For a comparison between public good and Common Resource Pool Dilemmas see Apesteguia and Maier-Rigaud (2006), Ostrom (2003) or Sell and Son (1997).

(overviews in Hardin 1982; Kollock 1998; Komorita and Parks 1996; Ledyard 1995; Oliver 1993; Ostrom 1998; Udehn 1993; van Lange et al. 2013).[3] Despite many variations on the standard design in public goods experiments, nearly all of them have shared a fundamental feature: the public good is automatically redistributed to all group members, regardless of whether or how much each contributed to its provision.

Here, I suggest that the automatic distribution of benefits design, in which each group member passively consumes his or her share of the public good, systematically overestimates the level of free-riding that occurs in many real world groups. That is, while some public goods (e.g., clean air, national security) are passively consumed, many others (e.g., public radio or television, public parks and gardens, clean water, or 'open content' materials such as Wikipedia) must be actively consumed: although no one person can be excluded, each must make a decision about whether (or how often) to tune in to NPR, walk or picnic in a park, or use Wikipedia.[4]

I introduce the *shadow of consumption* hypothesis to explain why public goods that must be actively consumed are more likely to be provided than those that are passively consumed. Specifically, I argue that an actor who anticipates the *active consumption* of a public good will contribute significantly more to its provision than an actor who anticipates *automatic distribution* or *passive consumption*, as is the case in the standard public goods design.

[3] More recent approaches to the collective action problem include descriptive norms of cooperation (Cialdini 2006; Irwin and Simpson 2013), peer sanctioning (Fehr and Gaechter 2002; Eriksson et al. 2013), the legitimacy and centrality of sanctioning authorities (Baldassarri and Grossman 2011), hierarchical models of organization (Halevy et al. 2011), status differentiation within groups (Willer 2009; Simpson et al. 2012), and moral judgments of and by group members (Simpson et al. 2013).

[4] Note that the present research is mainly concerned with the way benefits of public goods are consumed (passively vs. actively), rather than the extent to which these benefits are shared equally or not.

I claim that the *passive* consumption of many Public Goods resembles inaction/*omission*, while *active* consumption of many other Public Goods is analogous to action/*commission* (de Scioli et al. 2011).

I build upon social psychological research which has shown that commissions are attributed higher levels of responsibility and intentionality, elicit more affective reactions, and are subject to much harsher moral judgments and scrutiny than omissions, even if they lead to the very same outcomes (Baron and Ritov 2004; de Scioli et al. 2011; Kordes-de Vaal 1996; Malle and Bennet 2002; Spranca et al. 1991; Zeelenberg et al. 2000). I thus suggest that in active public good settings (where the benefit must be *actively* consumed) self-serving actors will not only more likely be detected and identified as free riders than in passive settings (where the benefit is automatically received), but will also elicit more negative emotions and moral judgments of other group members. I conclude that free riding in *active* public good settings is less likely to occur than in passive settings and predict significantly higher cooperation rates for the actively consumed public goods.

I tested this and other hypotheses against the results of a first experimental study. The results fully support my main 'shadow of consumption' hypothesis: actors contributed significantly more to the public good when they anticipated an active consumption decision than when they expected that the public good would be automatically redistributed. My thesis is organized in the following way. First, I will give a brief overview of the Public Good Dilemma. I identify 'passive consumption' of Public Goods as an implicit, yet ubiquitous feature of all experimental studies of Public Goods. After introducing active consumption as a distinctly different consumption type of public

goods, I outline my theoretical argument at greater detail, and derive hypotheses. Finally, I present the results of a first experimental test using an active consumption design, discuss several possible implications of my research, and conclude with suggestions for future work.

CHAPTER 2

BACKGROUND

2.1 PUBLIC GOODS AND SOCIAL DILEMMAS

The provision of Public Goods always contains Social Dilemmas. These dilemmas are brought about by an interplay of certain structural features all Public Goods share (infeasability of exclusion and jointness of supply/consumption) as well as the generalized assumption of narrowly rational/self-interested actors. Once created, all actors have equal access to a public good's resources and cannot be excluded from equally benefitting "regardless of whether they have helped provide the good" (Kollock 1998:188).

For example, even though some people might have not donated to National Public Radio (NPR) they cannot be excluded from benefitting from its programming. Likewise, "if the law says that wage rates in a factory must be uniform for each job category, nonunion workers cannot easily be excluded from enjoying the benefits of union-negotiated wage increases." (Hardin 1982:19-20) Furthermore, the benefit of some actors does not preclude the benefitting of others: "Jointness means that the utility one person derives from a good does not diminish as a result of its use by other people" (Udehn 1993:241). Hundreds of thousands having tuned in to NPR will not prohibit others others from listening to the station. Likewise, once a wage increase has been successfully negotiated by a union, "it benefits all the relevant workers so that one worker's receipt of

the higher rate does not reduce the rate available to others." [5] (Hardin 1982:19)

One of rational choice theory's main axioms states that actors will always act to maximize their expected utility by maximizing own payoffs while minimizing personal losses (Luce and Raiffa 1989[1957]; von Neumann and Morgenstern 2004[1944]). "Though all of the members of the group therefore have a common interest in obtaining this collective benefit, they have no common interest in paying the cost of providing that collective good. Each would prefer that the others pay the entire cost, and ordinarily would get any benefit provided whether he had borne part of the cost or not." (Olson 1965:21)

The resulting social dilemma, also known as the Public Good Dilemma, has commonly been framed as a N-Person Prisoner's Dilemma (Taylor 1987): Although universal cooperation is the pareto-optimal (but unstable) solution for the entire collective, games are predicted to approach the pareto-inferior (yet stable)[6] Nash-Equilibrium (Nash 1957) of universal defection because each actor gains the maximum payoff by defecting and "free riding" (Olson 1965:76) on the cooperation of all others.

Hence, "a rational egoist in a public good game (...) should not in any way be affected by a belief regarding the contribution levels of others. The dominant strategy is zero contribution, no matter what others do." (Ostrom 2000:140) This *strong free rider*

[5] "Few, if any, joint consumption goods are perfectly nonsubtractible. The use and enjoyment of gravity as a force which firmly keeps out feet on the ground may illustrate the case of perfect *nonsubtractibility*, but most joint consumption goods are instead subject to *partial subtractibility*. At certain thresholds of supply, one person's use of a good subtracts in part from its use and enjoyment by others. Congestion begins to occur." (Ostrom and Ostrom 1999:77) "But since very few of the goals or goods that groups seek can accurately be described as pure public goods" (Hardin 1982:19), the central focus of the dilemma research tends to be on goods where exclusion is not feasible (Olson 1965), rather than those with ideal or perfect jointness (Samuelson 1954).

[6] The solution is 'stable' because defection is the dominant strategy for every actor in any situation. "One strategy is said to dominate another if the first strategy always yields a payoff at least as good and sometimes better than the second, no matter what any other player does." (Hardin 1982:24)

hypothesis[7] (Brubaker 1975) universally predicts failure of collective action: no good will be provided, nobody benefits, and "the individual is worse off than if everyone (himself included) contributed." (Marwell and Ames 1979:1338)

Although the provision of public goods poses a conflict between individual and collective interests (Messick and Brewer 1983), a large literature suggests that groups are able to overcome this tension to a much greater extent than is predicted by the rationally self-interested actor model (Marwell and Ames 1979, 1981; Ledyard 1995; Ostrom 1990, 1998.)

2.2 THE FEATURE OF PASSIVE CONSUMPTION

Social scientists have up to now frequently assumed that actors consume Public Goods *passively:* "where a good is characterized by jointness of consumption and non-exclusion, a user is generally unable to exercise an option and has little choice whether or not to consume" (Ostrom and Ostrom 1999:79). This makes intuitive sense for many Public Goods such as national security or clean air: one can neither be excluded by others, nor can one voluntarily exclude oneself from enjoying the benefits of peace or clean air.

"As we will see, there are as many variations in procedures and treatments [of public good experiments] as there are research groups" (Ledyard 1995:2); yet, almost all experiments share the feature of passive consumption. Modeled as "give-some dilemmas" (Dawes 1980), games are designed to replicate the basic features of real world social dilemmas in the laboratory by modeling a structural conflict between individual and collective rationality. Most commonly, this is achieved by establishing fixed payoff preferences resembling a N-Person Prisoner's Dilemma where for each actor DC > CC >

[7] *Free riding* is not always the same as *defection* since in case of *universal defection* (DD is predicted) there is no one on which to free-ride.

DD > CD.

In the basic or 'standard version' of the public good game[8] each actor *i* in a group of *n* people is asked how much (if any) x_i of an initial monetary endowment Ɛ in his/her "private account" he or she would like to contribute to a "group/public account". While any amount an actor keeps in his/her private account (Ɛ - x_i) initially belongs to him/her, all (if any) contributions to the group account $\sum_{i=1}^{n} (x_i)$ get multiplied by a factor α (with $1 < \alpha < n$) and are then equally divided by *n*. Finally, each actor *i's* personal share from the group account *is* "*paid* to *i* based on the choices of $x_1, \ldots, x_n$." [9] (Ledyard 1995:9, *emphasis mine.*) Said differently, in the standard model each actor *automatically receives* his/her equal personal share of the group account or public good: passive consumption is a ubiquitous feature of public goods experiments.

At this point of my analysis, an important distinction must be made. Although the design presented above is the most widely used in public good studies, not all researchers have assumed that each actor will benefit equally from the provision of a collective good (see Hardin 1982:67-90). Already Olson (1965) noted that certain "privileged" actors/groups might benefit more from certain public goods than others. Hence, many

[8] This is what Ledyard (1995:8) refers to as "simple environments with public goods."

[9] Imagine a five person public good dilemma game with initial endowments of 10 tokens per actor and α=2. Each actor profits maximally in the case of his/her defection and the maximum cooperation of all other group members (DC). Here, the returned public good share for each actor would equal 16 tokens (10 tokens*4*2/5). That is to say, the final outcome for the defector would be 26 tokens (10 in private account + 16 public good share), and for each cooperator 16 tokens (0 in private account + 16 public good share). If everyone contributes the entire endowment to the public account (CC), each actor will receive a personal share of 20 tokens, that is to say, the initial endowment will have been doubled (public good share: 10 tokens*5*2/5=20 tokens). However, if all actors keep their entire endowments without contributing anything (DD), the good will not be created and each actor will be left with his/her initial endowment of 10 tokens (public good share: 0 tokens*5*2/5=0 tokens). The worst case scenario for ego is ending up as the only full contributor in a group of free riders. CD is simply the reverse case of DC (i.e., ego ends up with the simple public good share of 16 tokens, while all others finish with an additional 10 tokens kept in their private accounts (=26 tokens).

past public good studies have modeled heterogeneous groups via asymmetrical endowments/payoff functions among actors (e.g. Isaac et al. 1985; Marwell and Ames 1981; Oliver et al. 1985; van Dijk and Grodzka 1992; van Dijk and Wilke 1993). Importantly, however, all these studies still shared the feature of passive consumption. *That is to say, although some actors benefitted at different rates than others, benefitting itself occurred exclusively in a passive way via automatic distribution of the Public Good.*

Thus, for the remainder, my research will be solely concerned with the *type* of public good consumption (i.e., the way one benefits from a good: passively or actively), and not the *symmetry* of public good consumption (e.g., whether every actor benefits at equal rates or not.) To conlcude, passive consumption is a ubiquitous feature of public goods experiments. In the chaper to follow, I will introduce a new consumption type: active consumption.

CHAPTER 3

THEORY

3.1 INTRODUCING ACTIVE CONSUMPTION

In contrast to passively, or automatically, consumed public goods, those which must be actively consumed provide actors only with a *consumption potential.* That is to say, although every actor has access to such a good (exclusion is infeasible), *whether and how much an actor actually receives of his or her share depends on a (more or less) active consumption decision.* Real world examples of public goods that, once produced, must be actively consumed abound: NPR, public parks or gardens, public transportation, "open content" such as Wikipedia, public supply of clean water, health care revolutions such as the Polio vaccination in 1950/60s America, or civil rights such as the right to vote or marry for formerly excluded groups.

For an illustration, imagine a Public Good such as NPR. Though no actor can be excluded from benefitting from NPR's programming, or diminish other actors' utilities when listening, no actor consumes the public good passively (i.e., by doing nothing), but only by *active* consumption (i.e., by deciding whether and how often to listen to NPR). Likewise, to take up the example of gay marriage, the provision of the public good (i..e, the right to marry with all related civil benefits) does not result in every gay or lesbian couple actually *using* these benefits. To benefit from the right (which is, as said earlier, an available potential), one still needs to make an active decision to get married. A

similar case can be made for a city which provides its citizens with the collective good of clean water (note that here the public good is water quality, not the water itself). Unlike clean air, the benefits from clean water for any person can only be derived via active consumption.

At this point of our investigation, a central question must be posed: given the identified qualitative differences between actively and passively consumed public goods, what will be the implications for the theory of public goods (which up to now has only treated passive consumption)? I will proceed to the main argument of my thesis: public goods which must be actively consumed will be provided at higher levels than those passively consumed. Because of that, I will claim that past experiments have exaggerated the extent to which public goods will be underprovided.

3.2 THE SHADOW OF CONSUMPTION[10]

Figure 3.1 illustrates how settings of passive consumption treat Stage II (by definition) identical to Stage III (i.e., the share of a public good is necessarily the amount passively consumed), while in settings of active consumption the two stages are distinct: here, Stage II is framed only as a *consumption potential* which is subject to a distinct active consumption choice in the subsequent stage. *My main argument states that actors who are anticipating an active consumption of a public good will contribute significantly more to the production of a public good than actors who are anticipating passive consumption.*

[10] The scope conditions of my initial theoretical model encompass typical public good scenarios in which the production of a Public Good is jeopardized by a tension between individual and collective rationality (see Appendix A).

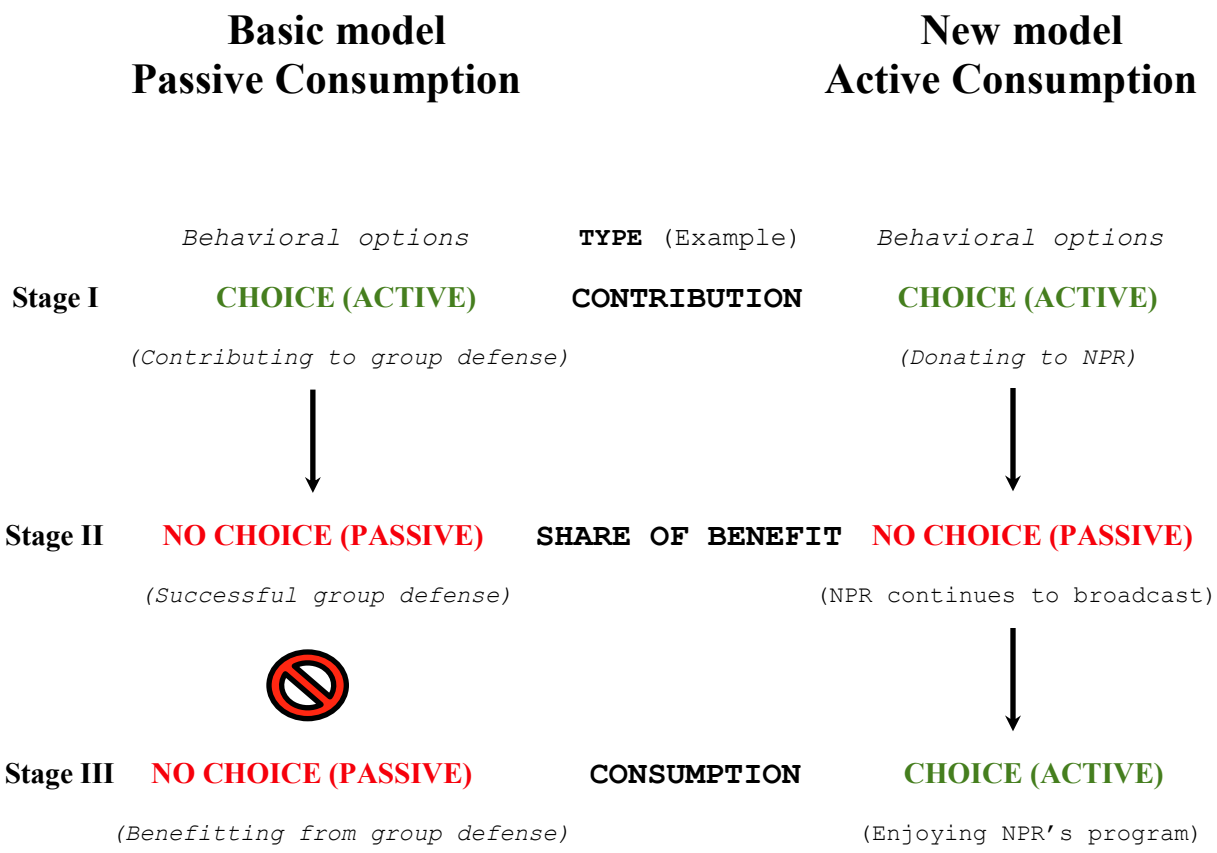

Figure 3.1 Behavioral options in two models: passive vs. active consumption.

I claim that *passive* consumption of a public good is analogous to inaction, or *omission,* while *active* consumption is analogous to action, or *commission*. I build on social psychological research which has shown that actions/commissions are generally attributed higher levels of responsibility and intentionality, are more harshly judged, and are generally more visible and salient (both for actors and observers) than inactions/omissions. Specifically, it has been found that commissions elicit higher rates of affective reactions in humans than omissions (Zeelenberg et al. 2000). This is based on attributions of more responsibility/intentionality for actions/commissions than inactions/omissions (e.g. Kordes-de Vaal 1996). Moreover, actions/commissions that lead to a positive outcome are praised significantly more than inactions/omission leading to the same positive outcome. Similar effects hold for negative outcomes: here, too, actions are blamed significantly more than inactions, even if the two lead to the *same* outcome (Baron and Ritov 1994; Malle and Bennett 2002).

A recent study by de Scioli et al. (2011) found that actors who obtained a morally questionable outcome via omission were judged less severely by observers than those who obtained the same outcome via commission. More importantly, the authors reported that when people were able to realize self-serving – and other-harming outcomes either through omission or commission, they tended to opt for omission: "These results provide evidence for a specific causal relationship in which reduced condemnation of omissions causes people to choose omissions as a strategic response" (de Scioli et al. 2011:445).

The dichotomy between omission vs. commission parallels settings of passive vs. active consumption of Public Goods. I thus suggest that free riders in the former benefit from more behavioral leeway and ambiguity than the latter. Said differently, while in the

passive model self-interested actors only need to withhold contributions in the first stage in order to free ride (and then benefit passively), narrowly rational actors in the active model need to make an additional active choice in the third stage. Besides making this choice *actively* (signaling intentionality of and responsibility for the act), free riders also need to consume the *maximum* in order to benefit most.

I claim that two distinctly intentional actions in settings of active consumption significantly increase the likelihood of being morally condemned as a free rider based on i) lower behavioral ambiguity, ii) heightened salience of one's actions, and iii) heightened sensitivity for fairness and justice (compared to passive settings where consumption happens automatically.) Further reasons to expect that free-riders on public goods that must be actively consumed will be viewed more negatively come from a study by Delton et al. (2012). Across several situational vignettes the authors tested different free rider-detection models and found that "failure to contribute is not sufficient. Failure to contribute can occur ***by intention or accident***, but the adaptive threat is posed by those who are motivated to benefit themselves at the expense of cooperators." (1252, *emphasis mine*)

They concluded that "the human mind does not equate free rides with under-contribution, nor does it lump free riders into a general category that contains all moral violators. Instead, (...) the mind classifies individuals as free riders only when their behavior indicates they have a psychological design or calibration that causes them ***to consume benefits while withholding contributions*** (1267, *emphasis mine*). This is the strategy narrowly rational actors should pursue in settings of active consumption (i.e., zero contribution + max. consumption).

However, as emphasized earlier, active consumption settings allow for much a greater visibility and attribution of intentionality of one's actions because of two decisions which are made actively: contribution *and* consumption (compared to only active contribution in passive settings. To conclude, I claim that free riding in the active setting will be judged more unfairly than in the passive setting, even when the exact same self-serving outcome is realized.

Hypothesis 1: *Low contributors who actively consume the maximum personal available amounts of a public good will be judged as acting less fair than low contributors who passively consume the same amount of a public good.*

If we can infer that the two types of consumption (passive vs. active) elicit significantly different attributions of free riders' fairness and morality by *observers*, we should also expect that *actors* themselves will be aware of that and make strategic choices in order to minimize others' negative judgments. "We infer that the preference for omission is strategic: People choose omissions to avoid third-party condemnation and punishment." (de Scioli et al. 2012:445) I hypothesize a similar strategic behavior when actors are able to determine the type of consumption setting (active vs. passive).

In the following hypothesis, I define a sucker as one who contributes a lot while his or her fellow group members contribute very little. I define a free-rider as someone who contributes very little while his fellow group members contribute a lot. I argue that suckers will prefer active consumption in order to bring others' moral transgressions to

attention, and to increase the likelihood of fair consumption. That is to say, suckers will hope that low contributors will consume less than the maximum available benefit. Free-riders, on the other hand, will prefer passive consumption of public goods, in order to mitigate the severity of others' judgments.

Hypothesis 2: *Suckers will tend to prefer a public good that is actively consumed whereas free-riders will tend to prefer a public good that is passively consumed.*

My final hypothesis:

Hypothesis 3: *Contributions will be significantly higher in settings where Public Goods are actively consumed compared to settings where they are consumed passively.*

CHAPTER 4

METHODS

Design and Participants

The experiment was a randomized two condition within-subjects design which exposed all participants to both types of consumption (active vs. passive). The main between-subjects factor was order of exposure (active consumption first vs. passive consumption first). Participants were recruited from a large public university in the southeastern US. A total of 59 participants (66% female) took part in the study.

Procedure

After arriving at the laboratory, participants were individually seated in separate isolation rooms to rule out communication among each other. Participants were informed that they would never meet other participants and that their identity would not be revealed at any time during, or after the study. Participants were informed that all decisions would be made via networked computers. Instructions informed them that they would work with four other participants on a group task, and that their final earnings would be determined by their own and others' decisions. In reality, participants interacted with simulated others whose behavior was preprogrammed.

Public Good Dilemma – Contribution Part

Participants read the contribution instructions for a typical Give-some Dilemma (see, e.g., Willer 2009). Subjects were told that each player had a "private account" which was endowed with 10 tokens. Tokens translated into a distinct monetary value, unknown to participants. Anything in each actor's private account was his/hers. Participants were then informed that there was a second account called "public account" and that they would be asked to make a decision about how much of their private endowment to contribute to the public account. Each token was displayed as a small money bag, and had to be transferred separately via drag-and-drop. Finally, participants were told that all tokens contributed to the public account would be doubled by the computer.

Manipulation of Active vs. Passive Consumption.

I now introduce the main manipulation (passive vs. active consumption).

A. Participants in the control condition (passive first) continued to read the (passive) consumption instructions of typical Public Good Games. Players were informed that the doubled public account would be divided equally among all five group members. That is to say, each participant was informed that he or she would receive 1/5 (20%) of tokens from the doubled public account, regardless of how much she had contributed.

B. Participants in the treatment condition (active first) continued to read the (active) consumption instructions for the modified Public Good Game.[11] Players were informed

[11] To the best of my knowledge, this design was introduced by Parks and Stone (2010). However, while the authors' main dependent variable was the expulsion of group members who all made active consumption

that once the public account was doubled, every member of the group was allowed to take up to 1/5 (20%) of tokens from the group account, regardless of how much she had contributed.[12] Specifically, actors had to transfer the tokens they wanted to consume from the public into their private accounts. Each token was displayed as a little money bag, and had to be transferred separately via drag-and-drop. This measure was chosen to increase the salience (and manipulation) of "active consumption", i.e., consumption involved effort, unlike typing a choice into a text-box. In order to elicit anticipation of maximum consumption participants were told that any tokens not transferred to one's private account in one round would go away (i.e., they would not be transferred to the next round). This helped ensure that, in both conditions, participants would always anticipate maximum consumption.

The two conditions posed exactly the same social dilemma. Each actor knew that everyone would benefit most in case all contributed their entire endowments (collective rationality). Similarly, I made sure to underscore that each actor in the passive consumption setting would always consume exactly 1/5 of the group account, while those in the active setting would have the potential to consume up to exactly 1/5 of the group account, regardless of individual contributions. Participants expected to play several rounds of the same game without being told how many.

Furthermore, the instructions stated that their and all others' choices would be

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decisions, the main dependent variable in the present research is the amount of contributions to a public good in active vs. passive settings.

[12] Of course an actor can only contribute anything from zero up to his/her total endowment in the contribution phase, and likewise actively consume only anything from zero up to his/her total personal share of the public good (=20%) in the second phase. Thus, the public good remains non-rival. For example, if in a group of 5, all members contribute all 10 tokens, the doubled group account would consist of (5*10)*2=100 tokens. This amount will then be divided equally among all: 100 tokens / 5 = 20 tokens. However, while the basic model would automatically allocate ***all*** 20 tokens to each participant, the new design gives participants the choice to consume ***anything from 0 up to the maximum*** of (here) 20 tokens.

publicly displayed after each round on the computer screens. Participants were told that they would only be distinguishable from each other via the random assignment of "group member IDs". Finally, a quiz was administered in both conditions to make sure participants had understood the basic features of the social dilemma, and to further reinforce the manipulations.

First and Second Decisions [Test of Hypothesis 3]

Before the beginning of the first round, actors were allegedly "randomly assigned" a group member ID by the computer. In reality, in the first two rounds participants in both conditions were always assigned to be member #2. Participants then went on to make active contribution decisions. Across conditions, participants were given the same simulated feedback of "alters'" contribution decisions, while their own choices were displayed, under their group member ID (see Appendix B). However, while in the passive consumption condition the feedback already contained the consumption output (no choice), participants in the active consumption condition went on to the subsequent consumption choice.

After that, a final feedback table was presented, now showing both the real consumption choice for ego, while presenting false feedback about others' consumption decisions. Because consumption below the maximum was non-rational (i..e, not consumed tokens could not be consumed in subsequent rounds), each simulated alter always consumed the maximum possible. In round two the basic procedure of round one

was repeated. Upon completion of the second round, subjects were told that they would now be working on a different group task with a different group of four others.

Within Manipulations – Consumption Part (second order)

I then introduced the manipulation by simply switching type of consumption. That is to say, subjects who started in the passive consumption condition were introduced to the active consumption manipulation, and vice versa. Except for subjects anticipating to work with a different group of people for the following rounds, everything else remained constant (i.e., anticipation of several rounds, etc.). Again, a quiz was administered checking for the understanding of the altered procedures.

Third and Fourth Decisions

Before the beginning of the third round, participants were again allegedly "randomly assigned" a group member ID by the computer. In reality, in the third and fourth round participants in both conditions were always assigned to be member #5. Participants then went on to make active contribution decisions. Members across conditions were given the same simulated feedback of "alters'" contribution decisions, while their own choices were displayed, under their group member ID. The basic procedure from round one and two was repeated. That is, the behavioral component of the study ended with the fourth public goods game.

Free Rider Questionnaire [Test of Hypothesis 1]

After the behavioral part of the study, participants were asked to compare and rank two members of two different "hypothetical groups" on a single dimension: fairness. The hypothetical scenario I constructed consisted of two five person groups. The two groups were distinguished by whether the type of public good they produced was actively or passively consumed. In both groups, the focal member contributed 2 tokens (out of 10) to the group fund. The group member in the active consumption setting then consumed the maximum of 12 tokens. The group member in the passive setting received the same amount automatically. Participants were then asked to rate "which person acted more unfairly" on a 7-Item Likert Scale (see Appendix C.)

Strategic Choice Questionnaire [Test of Hypothesis 2]

In a final task, participants were again presented with hypothetical feedback tables showing the ostensive contributions of a single group of five actors to the group fund. Participants were asked to imagine being a specific group member (group member #5). In one scenario, group member #5 was a *sucker* (i.e., the sole high contributor (10 tokens) in a group of low contributors [all 3 tokens]), while in a second scenario group member #5 was a *free-rider* (i..e, the sole low contributor (3 tokens) in a group of high contributors [all 10 tokens]). This was the main manipulation (ego was the sucker vs. the free rider in the contribution phase). Participants were exposed to both scenarios in random order. For each scenario, they were then asked whether they would prefer the public good to be of the actively or passively consumed type:

***Version X**: After group fund is doubled, every member automatically gets added 1/5 of tokens from the group account to his/her private account by the computer.*

***Version Y:** After group fund is doubled, every member can take any amount from 0 up to 1/5 of tokens from the group account and transfer to his/her private account."*

While version X resembled the passive consumption setting (automatic reception of tokens from the group account), version Y resembled the active consumption setting (active consumption of tokens from the group account).

This concluded the study. Subjects were then all paid the same amount ($8), checked for suspicion, thoroughly debriefed, thanked, and dismissed. The entire study lasted less than 45 minutes.

CHAPTER 5

RESULTS

Hypothesis 1

A one-sample t-test of the fairness ranking between a free rider in a passive and an active setting yielded a mean of 3.17 (SD = 1.3), significantly below the midpoint ('both actors equally unfair' -- $p < .001$, one-tailed). This confirms my first hypothesis: Low contributors who extract the maximum available benefit (i.e., free riders in active settings) are judged as acting less fairly than low contributors who automatically receive the very same amount (i.e., free riders in passive settings.)

Hypothesis 2

I claimed that free-riders and suckers would express opposite preferences for passive vs. active consumption. Results are in line with my hypothesis: while more participants (58%) chose active over passive consumption when they were in the role of a sucker, this pattern was reversed when participants were in the role of free-rider, where a majority (61%) preferred passive to active consumption. I ran a related samples McNemar test to check whether the responses in the two samples differ significantly from each other. The result was significant ($p < .013$).

Hypothesis 3

My main hypothesis states that participants in active settings will contribute significantly more than those in passive settings. Because participants played a total of four rounds of the public good game (two rounds in the active and two rounds in the passive setting, in different order), I aggregated the first and second contribution decisions in both the active and passive settings. Results are clearly in line with my predictions.

Paired sample t-tests comparing first decisions in active vs. passive settings show that participants contributed significantly more to the public good in the active consumption condition ($M_{Active\ 1} = 7.02$ vs. $M_{Passive\ 1} = 6.05$, $p < .048$). Contributions in the second round of each condition also showed higher contributions in the active consumption condition ($M_{Active\ 2} = 8.20$ vs. $M_{Passive\ 2} = 6.97$, $p < .003$). Additional analyses employing repeated measures ANOVA showed no main effect of order, and additionally confirm the results of the above analysis (for all first decisions: $F = 4.207$, $p < .045$, for all second decisions: $F = 9.817$, $p < .003$). Together, these results provide support for my central hypothesis: anticipating the active consumption of public goods increases contributions to them (see Figure 5.1.)

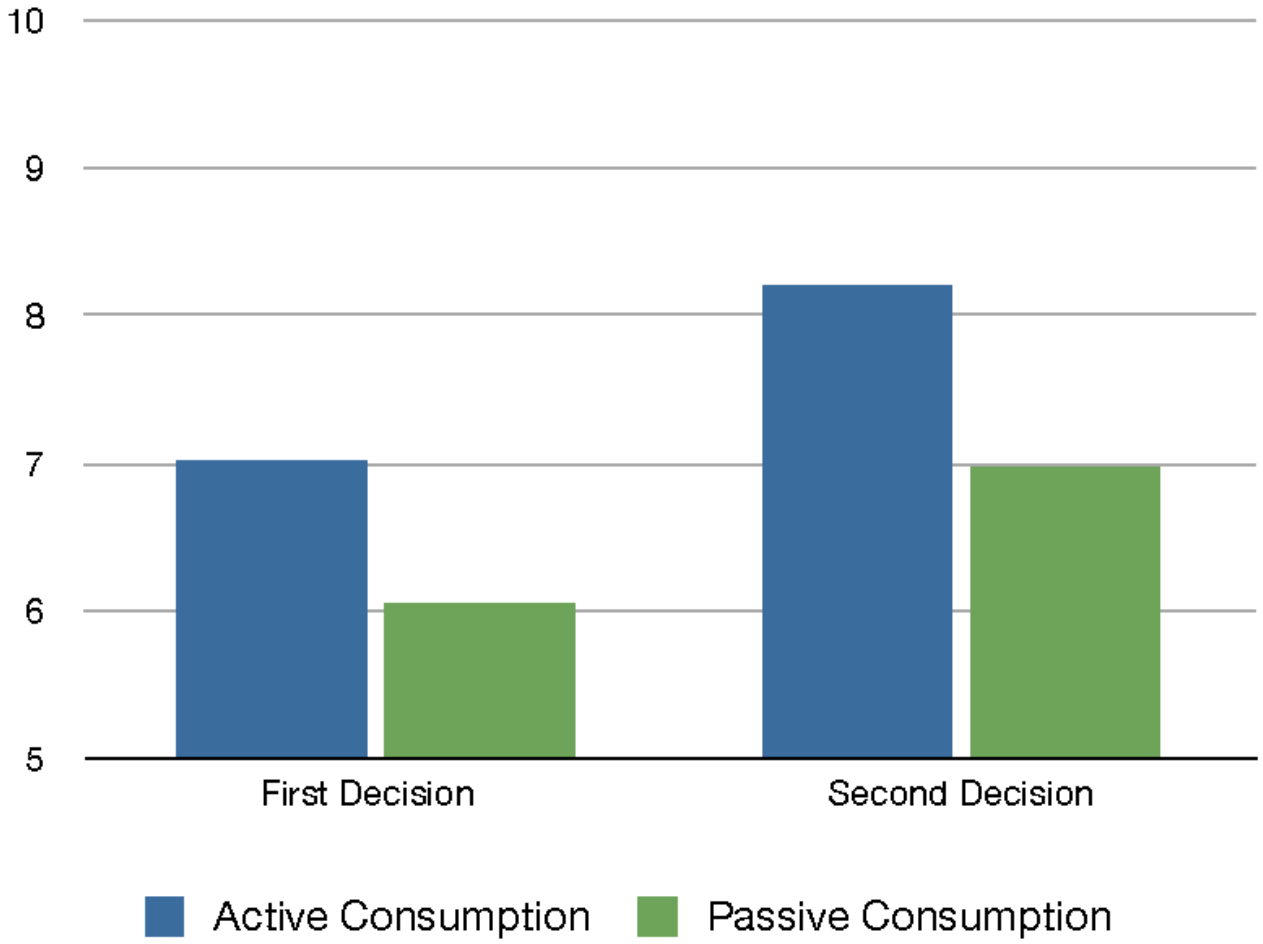

Figure 5.1 Aggregated contributions in first and second decisions.

CHAPTER 6

CONCLUSION

The results reported above support my central 'shadow of consumption' argument: those public goods which must be actively consumed will be provided at higher levels than those that are passively consumed. I present several types of evidence: *attitudinal data* (hypothesis 1) indicates that free riders in active settings are judged more negatively than free riders in passive settings; *reported preferences* (hypothesis 2) suggest that participants strategically chose active vs. passive consumption, depending on whether they were in the role of a sucker or free-rider. Finally, I present actual *behavioral data* (hypothesis 3): participants contributed significantly more to the public good when they anticipated an active consumption decision than when they expected that the public good would be automatically redistributed. This study thus provides the first evidence that passively consumed public goods differ in important ways from those that are actively consumed.

The current work extends research on the provision of public goods in a number of ways. First, prior work has not addressed how anticipated consumption serves as an independent predictor of collective action. As a result, I've argued, the standard approach to the study of public goods systematically overestimates the level of free-riding that occurs in the provision of many public goods. Second, the results suggest that the consumption of public goods is of greater theoretical significance in explaining public good provision (and maintenance) than research up to now has assumed. Finally, the

results suggest that, all other things equal, public goods that must be consumed actively will tend to be provided at higher levels than those that are passively consumed. In most cases, whether a good is consumed actively or passively is determined solely be the nature of the good. In other cases, however, policy makers might be able to implement an active decision component into the public goods consumption. My results suggest that such action would increase provision of the public good.

Directions for future studies

Before concluding, I outline several directions for future work on the shadow of consumption hypothesis. First, it is important to address the 'shadow of consumption' in dynamic collective action groups, where participants interact over multiple rounds with real – versus simulated others. Results from the existing study are promising in this regard. While participants' contribution level plummeted sharply when switching from active to passive consumption settings, the level of those entering the active setting (from passive environments) remained constant and even increased (see Figure D.1, which displays the results prior to aggregation.)

Secondly, the present research only investigated participants' *attitudes* towards hypothetical free-riders. As hypothesized, participants judged free riders in active settings more harshly than those in passive environments, despite the fact that they benefited equally. Can we expect higher levels of (costly) punishment of free-riders in active- versus passive-consumption settings?

Finally, future studies should address who is driving the surge in cooperation

levels from passive to active settings. I suggest that analyzing the interaction of social value orientation (Au and Kwong 2004; Balliet et al. 2009; Liebrand 1986; van Lange 1999) with contribution behavior in passive vs. active settings will be a promising approach. Drawing on research looking at the interaction of person and situation in prosocial behavior (Simpson and Willer 2008; Willer et al. 2013) I argue that more self-interested actors will be most affected by the 'shadow of consumption.' This is because of the increased scrutiny of actions in active active (vs. passive) consumption settings. Already having observed that the two consumption types elicit different cooperation levels, a future demonstration that "egoists" tend to contribute at rates more similar to "prosocials" in active consumption settings would be important as a key issue in public goods research in unfairness (Schroeder et al. 2003).

Conclusion

The main point of departure for the present study was the following observation: despite many variations on the standard design in public goods experiments, nearly all of them share the feature of passive consumption. I suggested that the automatic distribution of benefits design, in which each group member *automatically* receives his or her share of the public good, systematically under-represents many real world public goods which must be *actively* consumed.

I developed the main *'shadow of consumption'* hypothesis: actively consumed public goods are more likely to be provided, or provided at a higher level, than those that are passively consumed. Specifically, I proposed that actors who anticipate the *active*

consumption of a public good will contribute significantly more to its provision than those who anticipate *passive consumption*, as is the case in the standard public goods design used up to now. The results of a new experiment fully support my main hypothesis: the public good was provided at significantly higher levels when participants anticipated active consumption of the public good compared to passive consumption.

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APPENDIX A – SCOPE CONDITIONS OF THE INITIAL MODEL

1. The scope of the theory encompasses collective action situations involving the potential production of public goods which are

1a. non-excludable and subject to joint consumption,

1b. valued by all members of the group, and

1c. require costly contributions from members of the group to be produced.

2. On any given trial, there are two distinct choices to be made by each actor, linked to two distinct points of measurement, which are to occur in the following sequence:

2a. at t(+1): Contribution choice towards the provision of a public good, and

2b. at t(+2): Consumption choice towards the consumption of a public good's joint benefits.

2c. Actors need to share a common anticipation of [**2a**] and [**2b**] to occur at outset t(0).

3a. Each actor has equal access to the same amount of a public good (jointness of consumption), from which he/she can only benefit if the public good is actively consumed (i.e., extracted).

3b. Each actor may or may not consume (i.e., extract) any amount from zero to the maximum of his/her personal share of the public good in units of one.

3c. Anything not consumed (i.e., extracted) at t(+2) will *not* be consumable in the future.

4a. On any given trial, a person benefits most by both withholding contributions and extracting the maximum possible amount of personal benefit, and

4b. if all withhold contributions all will be worse off.

5. On any given trial, each actor can see each other actor's decisions.

APPENDIX B – SIMULATED FEEDBACK OF ALTERS' CONTRIBUTIONS

Table B.1 Simulated Feedback: alter contributions.

Decision	Individual Alter contributions	Total Alter contributions (without ego)	SD
1st	8-ego-7-10-7	32	1.4
2nd	7-ego-7-9-6	29	1.3
Introduction of within manipulation			
3rd	8-10-8-6-ego	32	1.6
4th	6-10-7-6-ego	29	1.9

Table B.2 Simulated Feedback: payoff range.

Decision	Lowest-Highest Total Contribution (ego 0 - 10)	Lowest-Highest Total Contribution (doubled)	Possible Payoff Range for ego
1st	32 - 42	64 - 84	**13 - 17**
2nd	29 - 39	58 - 78	**12 - 16**
Introduction of within manipulation			
3rd	32 - 42	64 - 84	**13 - 17**
4th	29 - 39	58 - 78	**12 - 16**

APPENDIX C – FREE RIDER QUESTIONNAIRE

The answer categories were presented on a 7-Item Likert Scale:

1 in Game A acted **much more unfairly -- more unfairly -- slightly more unfairly** than # 1 in Game B,

1 in Game A and #1 in Game B acted **equally unfairly,**

1 in Game B acted **slightly more unfairly-- more unfairly -- much more unfairly** than # 1 in Game A.

APPENDIX D – MEAN CONTRIBUTIONS OVER ALL FOUR ROUNDS

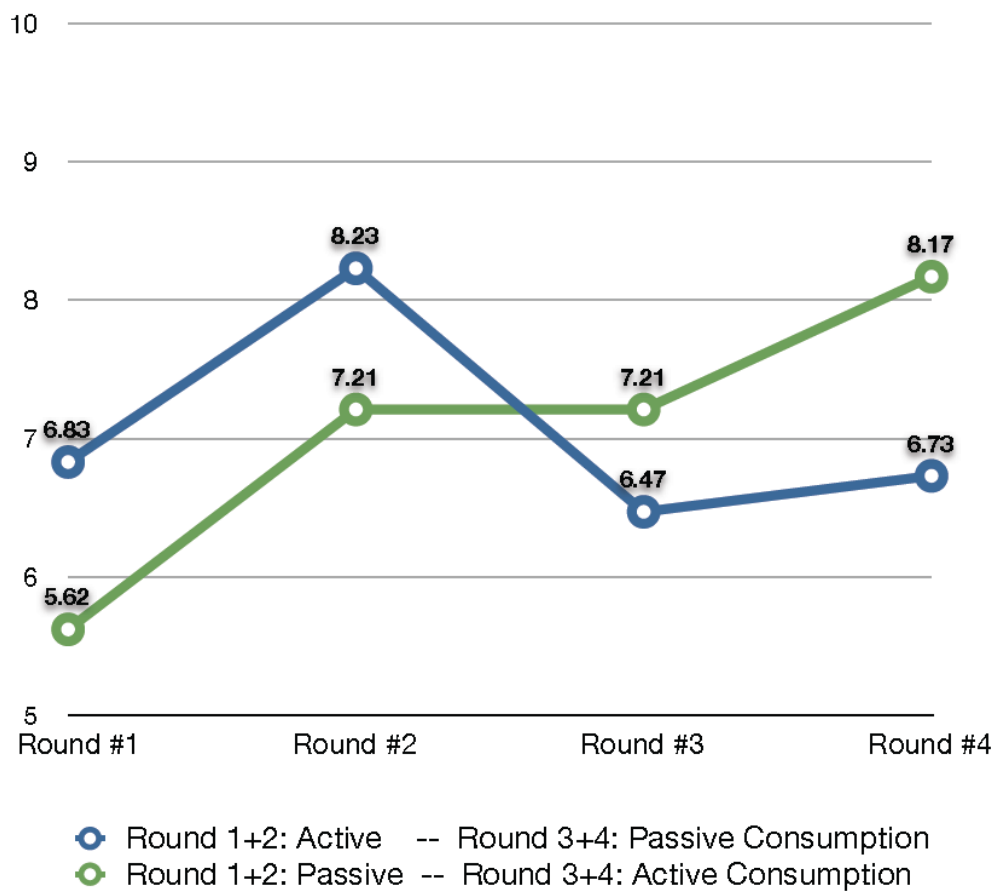

Figure D.1 Mean Contributions over all four rounds.