

SOCIAL IDENTITY AND COOPERATION

A Senior Scholars Thesis

by

BIANCA NICOLE MANAGO

Submitted to the Office of Undergraduate Research
Texas A&M University
in partial fulfillment of the requirements for the designation as

UNDERGRADUATE RESEARCH SCHOLAR

April 2010

Major: Sociology

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Approved by:

Research Advisor:
Associate Dean for Undergraduate Research:

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ABSTRACT

Social Identity and Cooperation. (April 2010)

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This study seeks to examine the effects of cooperation on social identity in group work. I posit that members of groups which are cooperative and therefore successful will be more likely to identify with the group, than members of those groups which are not cooperative. To test the prediction, I conduct an experimental test in which groups of four work on a public goods task. While groups' cooperative behavior is not related to social identity, individuals' *perceptions of others' cooperation* is significantly related to social identity.

DEDICATION

This is dedicated to my friends, family and professors, who inspire me, challenge me and teach me new things daily.

ACKNOWLEDGMENTS

I would like to briefly acknowledge the individuals who have supported me throughout my research.

This project would not have been possible without the help of my advisor, Dr. Jane Sell, who provided me with guidance and support that is truly unmatched. I feel very much indebted for the opportunities she provided me with, and for the support she has shown. Not only has she provided emotional support, but she also challenged me with alternative view points and a constant constructive criticism of my work. Her willingness to help her students and enable them to perform to the best of their ability is what is unmatched.

Tiffany Spivey, my colleague, worked side by side with me and provided constant healthy competition in which to work to improve my research. I will never cease to be amazed by the things which she will accomplish in life.

My mother, Mary Manago, who has always taught me that I can accomplish anything I set my mind to do. I know that I could never do anything to let her down as long as I am trying my best, no matter what the end result may be. Her undying support in anything that I choose to do is incredible, and I am truly grateful for her constant presence in my life.

To my sister, Courtney Huhn, who has been a great role model and friend. Her presence in my life is unmatched. Setting the bar as a go-getter and an older sister, she always shot for the moon and encouraged me to do the same. Without her love and support as a sister and a friend, I know that I would not be nearly where I am today.

To my friends, who no matter what, stand by my side and support me. Without them I would be lost and lonely. Ryan, Whitney, Brianne, Mikala, Betsy, Michaela, Josh and many others – I am so lucky to have you in my life.

I hope this end result does not let down my family, friends, and colleagues who have supported me all along. I assume full responsibility for all the remaining shortcomings – which without their support would be far greater.

NOMENCLATURE

H1	Hypothesis 1
H2	Hypothesis 2

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CHAPTER I

INTRODUCTION

Social dilemmas are situations in which individual interests and collective interests are opposed, at least in the short run. In social dilemmas, individuals must decide whether to cooperate or to defect. Rational choice theories suggest that, other things being equal, most individuals will defect when presented with a choice. However, there is clear evidence that some factors can change individuals' choice. There is overwhelming evidence that social identity increases cooperation in social dilemmas. The processes which are credited for contributing to this phenomenon include; (1) the idea that individuals no longer distinguish between the group's goals and their own, and (2) that fear is decreased because actors expect the group members to act as they will.

This research seeks to examine the reverse process. That is, can cooperation in social dilemmas lead to group identity? When placed in a social dilemma, if the group proves to be cooperative, do individuals more strongly identify with successful or cooperative groups and not with unsuccessful groups? I posit that in those groups which are cooperative, fear is decreased thereby allowing common fate and social identity processes to take place.

Social dilemmas

Social dilemmas are commonly found in society. A social dilemma is a conflict between individual prosperity in the short run and the prosperity of the group (Dawes 1980). Social

This thesis follows the style of the *American Sociological Review*.

dilemmas are often categorized as public goods or resource goods. In resource goods, the individual can decide to either consume or abstain from consuming a limited resource (Sell and Son, Y. 1997). To illustrate, one example of this would be the limited water supply which is confronting the world. To utilize water supplies in reservoirs in the future we must be frugal and refrain from depleting these sources now. If we are not however, there will be no potable water left for future generations. Public goods dilemmas are those in which an individual has the option of consuming without contributing (Sell and Son, Y. 1997). One example of a public goods dilemma would be supporting clean air in the environment. Individuals can still benefit from clean air while they practice habits which contribute to air pollution. Moreover, those who take public-transportation, walk, or ride bikes are contributing to clean air, yet still suffer the consequences of those who are not. In both forms of these social dilemmas, resource goods and public goods, individuals have one of two choices, to cooperate or to defect (De Cremer et al. 2008). For an individual to demonstrate cooperative behavior in the above examples one would limit their water usage and take green transportation. However, because of the incentive structure, people will be tempted to defect or free ride to benefit their own self-interests (Luce and Raiffa 1957). Defection in the aforementioned examples would be exemplified by someone who does not conserve water or protect the air. As one can see, without an appropriate incentive structure to gear the individual's behavior towards that of the collective, the problem of defection will not solve itself. Since this type of situation proves to be common in society, social scientists are interested in answering the question; how can we encourage individuals to act on the behalf of the group when at least in the short term, they do not benefit from the cooperation?

To answer this question, researchers have been examining the causes for defection for several years. The two most prominent reasons for defection suggested by researchers are fear and greed (Smith, E. Jackson, J., and Sparks, C. 2003). Fear for the actor, stems from the idea that their cooperation in the group will be taken advantage of (Kerr 1989). The other reason for defection, greed, occurs because people tend to act to benefit self interest (De Cremer 2008). Free riding is a form of defection associated with either fear or greed. The free rider problem is associated with a person who does not contribute to the group, but still benefits. Since this problem is so common in society many theories exist on the topic of how to stop the free rider problem. However, most researchers would agree that one of the most important factors for increasing the likelihood of cooperation is increased social identity among group members (Brewer and Kramer 1986; Ostrom 1998; Simpson 2006; Sell and Love 2009).

Social identity

The two theoretical perspectives which address the process of the formation of identity are identity theory (also known as identity control theory), and social identity theory. Identity theory focuses on these processes as in how they related to the individual where as social identity looks at these on the social and group stage (Stets and Burke 2000). Essentially, personal identity focuses on the differences between an individual and others, and social identity focuses on the likeness of a person to a particular in-group, and the differences with various out-groups (Reid A and Deaux 1996). Social identity is associated with membership in a social group and includes a cognitive, evaluative and emotional element of that membership (Tajfel 1981; Sell and Love 2009). Many hold the view that to create a

group in which to form social identity, an out group must exist in which to contrast one's own group membership. However, Brewer (1979) concluded that increased bias was more related to in-group identification than out-group hostility. Therefore, Brewer's conclusion notes the importance of social identification in increasing cooperation without the necessity of an out group (1979).

However, as Stets and Burke (2000) suggest, identity and social identity are closely linked as well. They suggest that the processes which are occurring on the social level are inseparable from those which are happening on the personal level. For example, within the perspective of social identity when one categorizes themselves with a group it is known as 'self categorization', when this same process occurs in identity theory it is referred to as 'identification' (Stets and Burke 2000). Each includes the process of drawing comparisons between self and others. However, when those comparisons are also drawn by others this creates a group, or social network. Over time, the individual creates many of these social identities or categories which make up their personal identity (Stets and Burke 2000). From these social groups, and subsequent internalized identities, there is a set of behavior which is expected and correlates with each group (Roccas and Brewer 2002). For example, as a sport's team fan it is expected that you know the players on the team, the game schedule, the cheers and yells, and some of the history. You would go to the games and represent the team colors through what you are wearing. The identities that one may accumulate or realize overtime may overlap and even conflict (Roccas and Brewer 2002). This conflict can be exemplified in a social dilemma. One may identify with the group, and also identify with self interest, making decisions to cooperate more difficult on the

individual.

Although, most researches would agree that social identity plays a major role in increasing cooperation in social dilemmas, there are several different ideas as to how social identity effects cooperation.

Social identity and cooperation

The traditional explanation as to why increased social identity increases cooperation, suggests that social identity increases cooperation by reducing participants' tendency to draw distinctions between their own welfare and the welfare of others. This is supposed to eliminate greed which is a common cause of defection. This theory suggests that with an increase in social identity, there is an increase in the mindset that 'the shared and mutual perception by in-group members of their interests as interchangeable' (Turner et al 1985). In other words, due to increased social identity between group members, the self interest becomes the same as the group interest. Once the interests are interchangeable, group members are likely to be more cooperative because they are not distinguishing their interests from those of the group.

However, there are alternative explanations as to how social identity effects cooperation. Yamagishi and Kiyonari suggest that increased social identity creates expectations among members of the in-group (Yamagishi, T and Kiyonari, T 2000). Thus, as social identity increases for group members, they will anticipate increased cooperation from other group members. Furthermore, as the group members recognize these expectations of others, they

will internalize them and act accordingly. Therefore, those who are members of the in-group fear the result of not acting according to these expectations and do so because of the social pressure which is added when one identifies with a group (Yamagishi, T and Kiyonari, T 2000).

Brewer suggests that social identity is increased by diminishing the perceived differences which exist between group members (Brewer 2000). Furthermore, by maximizing differences of the out group, social identity is shown to increase even more, therefore increasing cooperation in group settings. Simpson's studies supported this concept by demonstrating that minimizing the differences between group members decreases fear of the betrayal of others. However, in Simpson's studies these techniques did not seem to be successful at decreasing personal greed (Simpson 2006).

One of the more popular theories when discussing the method of how social identity is created is the idea of common fate.

Common fate

Common fate is often shared among group members if the outcome of a certain situation is dependent upon the other members of the group. If the success or failure of a group is dependent upon all of the members cooperation, the group members are said to share common fate (Sell and Love 2009). Brewer and Kramer (1986) argue that if group members feel that they have a common fate, social or group identity should be increased between the group members. Members of a defined group will feel as though part of their

outcome is determined by their membership with the group. For example, if we are all Americans there are certain outcomes which we would expect to be common to all of the members in this group. Brewer seems to suggest that the need for security associated with common fate is the main contributing factor to social identity (Caporael and Brewer 1995). However, Brewer (2000) also notes that the sense of need for security emphasizes the issue of trust, which can contribute to the disassociation with an out-group. In summary, common fate often increases social identity however this is not always the case.

Hypotheses

Social dilemmas have the ability to create a sense of common fate because there is a shared sense of how outcomes are tied to group membership. As described above, this sense of common fate has the potential to create increased social identity between group members. Moreover, if the group is seen to be cooperative, group members will have positive feelings towards the group and be more likely to identify with the group. If the group ends up favorably performing to the desired outcome of its members, the common fate of that group will be considered to be good. Therefore, when group members look back and analyze the cooperative behavior of the group members, the members will want to associate with this behavior which is looked at as positive. Much of what inhibits cooperative behavior in social dilemmas is a fear of betrayal, and social identity is said to lessen this fear. Therefore, I posit that if the fear of betrayal is eliminated, the inability for group members to form social identity should also be diminished. On the same note, I suggest that if the group member no longer feels insecure, and the group turned out to be trustworthy, common fate is increased which in turn increases social identity.

However, if the group does not cooperate, and the group is not successful, group members will be less likely to want to associate with this behavior. A lack of success in the group will only highlight the issues of trust and insecurity which are shown to decrease one's ability to form social identity. Therefore, members will not adopt uncooperative behavior into the image of their own identity but rather associate the deviant behavior as characteristic of the out-group.

(H1) If a participant is a member of a group that has shown to be cooperative during a social dilemma this participant will have increased social identity with the group. The group members will be more likely to want to associate with the positive behavior. In reverse, it is posited that group members will associate an unsuccessful turnout, on the group as a whole and will not want to associate with uncooperative behavior or less success. [H2] If a participant is a member of a group that has shown to be uncooperative during a social dilemma this participant will not have increased social identity with the group. We also look to examine if group members are simply identifying with the attribute cooperation, or if they are identifying with the group as a whole.

CHAPTER II

METHODS

Recruiting

Participants consisted of undergraduate students who were recruited from classes at Texas A&M University. (See Appendix A for a copy of the recruitment form) As an incentive, students were offered the opportunity to earn money to participate in any one of many studies which happen at the university. Students who were interested in participating were then asked to fill out an information sheet which asked for their name, number, classification, age, gender, and schedule. The students were also asked for a list of studies which they had participated in prior to ensure they had not already participated in a similar study. Students were scheduled by phone. (for the telephone recruiting script, see Appendix B)

Settings and procedures

Upon arriving in the lab, participants were met by a researcher who asked them to read over an informed consent sheet which explained the procedures. The informed consent sheet informed participants that they can leave the study at any time and still receive compensation for their participation (See Appendix C for the IRB approval; see Appendix D for the informed consent). Participants were informed that they would receive compensation in private immediately after the study.

After all of the participants arrived, they were seated in a room with 8 individuals and told that they would be working together in groups of 4 to earn money. However, to control for anonymity, participants were not informed which 4 of the 8 people in the room would be in

their group. Additionally, the researchers ensured that there were not groups that consisted of only one sex. This controls for participants being able to conclude that their group was either all men or all women. (We know this to be an important aspect of public goods studies based on prior research. See Sell et al, 1993 and Sell 1997)

To record each participant's decision and to inform the participant of his or her earnings, participants used an iPod Touch which had an application designed for our experiment. The study and the different types of investments were thoroughly explained to the participants. Participants were then given a worksheet to ensure they understood the procedures and the funds. After the researcher explained the worksheet, participants went through three trial runs of the study using the iPod Touches to ensure comfort with the process and technology. The experiment did not proceed until all participants were comfortable with all aspects of the study.

Experimental design

The entire experiment was composed of two conditions, a crisis condition in which participants initially thought that they were in an individual study, and a control condition in which participants always understood that they were in a group study. For the purposes of this study, I am analyzing only those participants in the control condition. There were 22 groups of 4 members each in the control condition.

Participants could decide whether they wanted to contribute to the group fund or keep their money in the individual fund. Each round, 100 tokens were placed in each participant's

private fund. Each of the tokens in the individual fund is worth one cent in United States currency. Tokens contributed to the group fund were worth three cents, but were then divided equally among all four of the group members. This process ensured that the money in the group fund was truly a public good. Each round, participants were given the opportunity to contribute tokens to the group fund (cooperate), or to keep tokens for themselves (defect). Participants did not have the option to take tokens from the group fund for their individual fund.

At the beginning of each decision period, participants were given the following instructions (See Appendix E for copy of instructions):

At the beginning of each decision period 100 tokens will be placed in your private fund. You have two choices as to what you can do with these tokens.

The first option is to contribute tokens into the group fund. Each token contributed to the group fund is worth three cents, and each token invested in the group fund is divided equally among the members of the group – no matter how much they contribute to the group. In summary, regardless of your contributions as an individual, you always receive $\frac{1}{4}$ of the group fund.

The second option is to keep your tokens in the private fund. Each token added to the private fund is worth one cent. It is added to your earnings and is not shared with the other group members.

During the study, a record sheet was given to participants so that each participant could record his or her decisions (See Appendix F for the record sheet). Furthermore, the iPod Touch also kept a record of the decisions and total earnings so that participants could

check their work. Participants were able to see the total amount in the group fund, but not what the individual members of their group contributed.

Dependent variable

The dependent variable, social identity, was measured by participants' response to a series of 7 questions concerning the study (See Appendix G for questionnaire). For example, question 4a asks; "How important is belonging to this group?" For each statement, participants were asked to indicate their response on a Likert scale which ranged from -5 to 5. These questions were used to measure the participant's social identity with group members.

Independent variables

Two independent variables were used in this study of social identity: cooperation behavior and perception of group cooperation. The cooperation of the group was measured by the number of tokens contributed to the group fund by the group members, not including the participant. Thus, each group member had a unique value for cooperation of other group members. In addition, the participants were asked four questions which measured the participant's perception of the cooperation of their group members. These four questions formed an index of perception of group cooperation. Each of these independent variables was used to predict social identity using a regression equation.

Post experimental procedures

Upon completion of the study, participants were asked to write down their final earnings on the record sheet, and to make sure that this number corresponded with the amount on the iPod touches. Participants were then asked to fill out a questionnaire regarding the study which they just participated in. After responding to the questionnaire, each participant was randomly called separately out of the room, and paid based on their earnings.

CHAPTER III

RESULTS

I first assess the measurement of the dependent variable, social identity. Cronbach's alpha, a measure of internal consistency is α . This indicates a high level of consistency for the items and suggests I can use it as an index.

Contributions

All groups completed four trials in the public goods task. For each individual participant, a maximum of 1200 tokens could have been entered into the group fund by his or her group members throughout the four rounds that each group had in common.

Perception of group behavior

Participants were asked to analyze their group behavior using four questions in Likert format. Those groups perceived as being most cooperative could have received a score up to 44 from the participant, and those seen as being the least cooperative received a score of 4. The internal reliability of the index questions to measure the participant's interpretation of the group behavior was acceptable at .906.

Table 1 depicts the results for the regression testing the relationship between contributions and social identity (page 41). As indicated, the model is not significant at the traditional .05 level. However, the next model in which perceptions of group cooperation is added is significant. Therefore, increased social identity was not dependent on the number of token's group members donated, but only on whether the participants perceived this

behavior as cooperative. The statistical significance of .0001 indicates that there is little chance of making a type 1 error. Additionally, these results suggest that approximately 26% of one's likeliness to identify with the group is determined by how they rank their group's behavior. Therefore, our study found that as the participant's perception of cooperation increases, the participant amount of social identity the participant has with the group members, excluding his or herself, also increases.

Table 1

Models of the effect of cooperation of the group and perceived cooperation of the group on social identity

	Model 1		Model 2	
Cooperation of others in group	Beta	.116	Beta	.023
	SE	.008	SE	.002
	B	.009	B	.002
Perception			Beta	.971*
			SE	.031
			B	1.218
	R²	.013	R²	.948
	Df	86	Df	85

*Significant at the .01 level

CHAPTER IV

SUMMARY AND CONCLUSIONS

This study examined how cooperative behavior and perceptions of cooperative behavior affect group members' social identity. I found that perceptions of cooperative behavior, but not necessarily the cooperative behavior itself significantly predicted social identity.

Although the actions of the group members may have been more cooperative, the participants may not have interpreted this behavior as so. Therefore, the participants did not associate with these group members. However, if the participant recognized the behavior of the group members as being cooperative, then the participant did have higher social identity with the group members.

This finding is interesting from many differing perspectives. One of the most important concepts in social psychology is the social construction of reality: the idea that perception shapes the way in which actors interact and therefore the consequences. My finding illustrates that while behavior may be important the perception of the behavior is most critical for social identity.

Mead (1934) also discusses the concept of perception in terms of the interpretation of a gesture being an action which elicits a response. To relate this to the above study, the gestures that were being produced by the group members were not significant to the participant because they didn't fully understand the social context. It is my assumption that although the participants understood the investments, they did not have a means for

social comparison. Therefore, it was difficult for them to assess the cooperation of their group members. Festinger (1954) discusses the importance of this social comparison in making self evaluations, as well as evaluating others. The gesture of contributing may not have been seen as a significant symbol because there was not a generalized social context in which to assess the contributions of group members.

In the future, researchers might add information about social context so that participants might assess their group more fully. Additionally, research might explore participants' assessments of their own behavior, specially, their own cooperation. For example, it may be important to investigate how participants see themselves relative to the others in the group.

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APPENDIX A

RECRUITMENT SCRIPT IN CLASS

My name is _____ and I am here to tell you about some studies that we are conducting in the Department of Sociology and to invite you to volunteer to participate in these studies. You will have the opportunity to see how sociologists conduct research, and to be paid for your participation. I can not tell you exactly what study you might be in or exactly what you will be paid because we are recruiting for several different studies right now. But I can tell you that some of our studies pay up to \$20.00 for as little as one hour of your time. Other studies are short questionnaire studies that may take only half an hour and those usually pay around 7-10 dollars.

In a minute, I will hand out these sign up sheets [HOLD SIGN UP SHEET SO CLASS CAN SEE IT], which ask for your name, telephone number and the times most convenient for you to participate. If you decide to sign up, we will call you sometime in the next few weeks to schedule a time. We can give you information about the specific study, pay and time, location, etc, when we call to schedule you. At that time, you can agree to participate or to be removed from our pool. You will notice that we also ask some other questions about your experiences, for example, if you have any certifications that involve emergency actions (such as EMT or Paramedic training). This is because we are doing a series of studies that involve asking people to remember certain emergency events they have been trained to deal with.

Now, you may have heard stories about experiments that actually caused people to have negative experiences. There is a famous study, for example – the Milgrom study – in which people thought they were sending electric shocks to other people and hurting them. They were not really, but they thought they were. Today, that experiment is considered to have ethical problems because people suffered psychological trauma just from being in the study. I want to assure you that nothing like this is going on in our studies. Partly because of problems in past experiments, new federal guidelines were developed for all studies that use human subjects. Here at A&M, all our studies go through the human subjects review board (called the IRB). Importantly, if you should ever feel uncomfortable while in ANY study, you should just leave.

Another thing I want to make sure you understand is that you are not obligated in any way to sign up. Your participation has nothing to do with this class. Dr. (Fill in professor's name) won't know if you come or if you don't come. There is no extra credit for participation. So, just because I show up here in your class, don't feel obligated to sign up. If you are interested and would like to participate, please fill out the form and pass it in to me. If you are not interested, simply hand the form back.

I appreciate your help.

Are there any questions?
[Hand out sign-up sheets.]

APPENDIX B

TELEPHONE SCRIPT FOR SCHEDULING

Hello. This is _____, and I am calling from the Social Psychology Lab at Texas A&M University. May I please speak to _____?

[if speaker is not _____, wait for _____, then re-identify self as above. If _____ is not available, ask when would be a good time to call back. If information is not available, than answerer and say good bye. On contact info sheet, write time/date of call, and that roommate answered. If time to call back was available write that too.]

Earlier in the semester, in one of your classes, (OR earlier today, last week, yesterday, as appropriate) you were invited to participate our paid research studies and you indicated that you were interested in participating. I am calling to now to follow up on that.

Let me verify, are you an undergraduate student at Texas A&M?

(If yes) Great.

Let me quickly tell you about this study: It takes place on campus, in the Academic Building, and lasts about (put time in here). You can expect to earn from (put in Amount here). You will be asked to work on (put relevant information here about the study). The research asks no questions that are sensitive or personal. Your participation is completely voluntary. If you do volunteer, you may refuse to answer any individual question and you have the right to withdraw your participation at any time.

[Note: use information from sign up sheet regarding convenient time for subject]

Would you be able to make it at _____ (time) on _____ (day)?

[If YES: go to confirmation; if NO . . .]

How about _____ (time) on _____ (day)?

[If YES: go to confirmation; if NO . . .]

Could you make it at _____ on _____?

[If YES: go to confirmation; if NO, continue reading next each available time, in order, until you find one that subject can make]

Confirmation: Great! Why don't you get a pencil while I put you on our schedule?

[When subject has pencil and paper]

You have been scheduled to participate in a study that takes place at _____ on _____ . The study will take place in room 305 of the Academic Building. That's on the third floor.

Do you know where that is?

[If not, Directions: Academic Building is the one with the big dome, behind Evans Library. If you go to the Ross statue, you'll see the dome on the building right behind it. We are on the third floor. There will be signs posted leading to 305.

Thank you again for agreeing to participate. I, or someone else from the lab will call you the day before your scheduled time to leave a reminder.

We'll see you at _____ on _____ .

Thank you.

[Make sure to place the participant's first name only and phone number in the Google calendar. Once two persons are scheduled for a given time, not that in the title of the time block so it is visible without opening the time block. Remove the contact info sheet from the active pool]

Individual or Experimental: You will simply be answering some questions and will be paid according to your responses. This can take different amounts of time, but people do not usually take over an hour. The pay varies from about 5 to about 25 for that amount of time.

Control: you will be working with a group of people. Your pay depends on what you and other group members do. This can take different amounts of time, but the study does not usually take more than an hour. The pay varies from about 5 to 25 dollars for that amount of time.

APPENDIX C

IRB APPROVAL

TEXAS A&M UNIVERSITY

DIVISION OF RESEARCH AND GRADUATE STUDIES - OFFICE OF RESEARCH COMPLIANCE

1186 TAMU, General Services Complex
College Station, TX 77843-1186
750 Agronomy Road, #3500

979.458.1467
FAX 979.862.3176

<http://researchcompliance.tamu.edu>

Human Subjects Protection Program

Institutional Review Board

DATE: 05-Feb-2010

MEMORANDUM

TO: SELL, JANE

FROM: Office of Research
Compliance
Institutional Review
Board

SUBJECT: Initial Review

**Protocol
Number:** 2010-0059

Title: Public Goods and Change of Expectations

**Review
Category:** Expedited

**Approval
Period:** 05-Feb-2010 **To** 04-Feb-2011

Approval determination was based on the following Code of Federal Regulations:

45 CFR 46.110(b)(1) - Some or all of the research appearing on the list and found by the reviewer(s) to involve no more than minimal risk.

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation or quality assurance methodologies.

(Note: Some research in this category may be exempt from the HHS regulations for

the protection of human subjects. 45 CFR 46.101(b)(2) and (b) (3). This listing refers only to research that is not exempt.)

Provisions:

This research project has been approved for one (1) year. As principal investigator, you assume the following responsibilities

1. **Continuing Review:** The protocol must be renewed each year in order to continue with the research project. A Continuing Review along with required documents must be submitted 30 days before the end of the approval period. Failure to do so may result in processing delays and/or non-renewal.
2. **Completion Report:** Upon completion of the research project (including data analysis and final written papers), a Completion Report must be submitted to the IRB Office.
3. **Adverse Events:** Adverse events must be reported to the IRB Office immediately.
4. **Amendments:** Changes to the protocol must be requested by submitting an Amendment to the IRB Office for review. The Amendment must be approved by the IRB before being implemented.
5. **Informed Consent:** Information must be presented to enable persons to voluntarily decide whether or not to participate in the research project.

This electronic document provides notification of the review results by the Institutional Review Board.

APPENDIX D

CONSENT FORM

Social dilemma study

You have been asked to participate in a study concerning the ways in which people solve problems. You were selected to be a possible participant because you volunteered your contact information when one of our researchers spoke to your class earlier this semester. The study will involve approximately 660 people and will be conducted in rooms located in the Academic Building. The purpose of this study is to examine how people make decisions in group settings.

If you agree to be in this study, you will be asked to work with 3 other people to make decisions. We will also be asking you to fill out some questionnaires concerning the study. Other than the financial compensation, there are no direct risks or benefits to being a participant in this study. You do not have to answer any questions that make you feel uncomfortable.

There is variation in how long this study will take. Most studies take from forty minutes to an hour and a half. Your earnings depend upon how you and your group members make decisions. Therefore, your pay can vary from about 5 dollars to about 25 dollars. If you are uncomfortable during the study you may stop at any time. If you stop, you will earn the amount up to the time you stop.

This study is confidential. Although your first name will be used on decision recording sheet, no identifiers linking you to the study will be included in any sort of report that might be published. Only the researchers associated with this study will have access to your written records.

This study is not associated with any class at Texas A&M University. There will be no class credit involved, and your participation in this study will not affect your grades now or in any future classes at Texas A&M University.

This research study has been reviewed by the Human Subjects' Protection Program and/or the Institutional Review Board at Texas A&M University. For research-related problems or questions regarding your rights as a research participant, you can contact these offices at (979)458-4067 or irb@tamu.edu.

Please be sure you have read the above information, asked questions and received answers to your satisfaction. You will be given a copy of the consent form for your records. By signing this document, you consent to participate in this study.

Signature of Subject

Date

Signature of Researcher

If you have any further questions, feel free to contact Dr. Jane Sell, Sociology Department, TAMU, 845-6120.

APPENDIX E

SCRIPT

The study in which you will participate concerns how people in groups make decisions. You are one member of a group of **four** people. Everyone in the group will be making the same kinds of decisions. The people in your group may be in this room or they may be in another room. You will not be able to speak to the other members of your group. This is because we are interested in how people interact in environments in which they cannot see each other or interact face-to-face.

Each member will make a number of decisions and record them on the green sheets we gave you when you came in. At the end of the study you will be paid, in private, the amount that you have earned throughout these trials.

The decisions that you will be making concern what to do with 100 tokens that will be put into a PRIVATE FUND for every decision.

You will be working with the same group members for all of the decisions in this study. At the beginning of each decision period, 100 tokens are put into your private fund. Then, you have 2 choices about what to do with the tokens in your private fund.

The first choice involves INVESTING tokens in the group fund. Each token invested in the group fund is worth **3 cents** and each token in this fund is evenly divided among all members of the group—no matter how much they invest in the group fund. That is, regardless of what you do as an individual, you always receive $\frac{1}{4}$ **share** of the group fund.

The second choice involves KEEPING tokens in the private fund. Every token put in your private fund is worth **1 cent**. This is added directly to your earnings—it is not shared with other group members.

For every decision period, you may invest up to **100** tokens in the group fund or keep up to **100** tokens in your private fund.

Let's go through some examples so that it is clear how you make a decision and the outcomes of the decision are determined.

As an example, suppose during one decision you invest no tokens in the group fund and instead keep all **100** tokens in your private fund. (On your record sheet, you would show your decision by putting **0** in the column marked '# Tokens I have in the Group Fund.'). On the iPod touch you would enter 0 when asked how much you wish to contribute to the group fund.

So, after you have made each decision, you will enter your decision on the iPod touch. After you enter your decision, a computer spread sheet will generate the results and send them back to you. When the results are sent back, please copy down your results on the record sheet in front of you. Based on all the decisions by the people in your group, you will find out how many tokens are in which funds, and consequently what everyone will earn.

Continuing with this example. Suppose the other 3 group members invest a total of **240** tokens in the group fund and you kept all 100 tokens in your private fund. How much would you earn?

To figure this out, you take the 100 tokens you kept in the private fund and multiply that by **1 cent**. This equals \$1.00. Then we take the **240** tokens in the group fund and multiply that by **3 cents**. This equals \$7.20 or 720.

Since all group members receive an equal share of this, every member's share is $720/4$ or 180. So, for this decision, you would earn $\$1.00 + \$1.80 = \$2.80$.

Shown again in a format that is broken down:

Private Fund Earnings: $100 \times 1 = 100$ or \$1.00

Group Fund Earnings: $240 \times 3 = 720$ or $\$7.20/4 = \1.80

Total Earnings for this period: Private Fund Earnings + Group Fund Earnings

$$\$1.00 + \$1.80 = \$2.80$$

As a second example, suppose during one decision you invest all 100 of your tokens in the group fund. (You would show this decision by writing 0 in the ‘# tokens I have in the Private Fund’ indicating 0. Then you would mark 100 in the ‘# tokens I have in the Group Fund’ column.)

Now, suppose that the other group members invest another 60 tokens to the group fund. Thus the group fund equals 160 tokens. The 160 tokens in the group fund are multiplied by 3 cents to equal \$4.80 or 480 cents. Since all group members receive an equal share of this, your share is $480/4$, which equals 120 or \$1.20. So, for this decision you earn \$0 (from your private fund) and \$1.20 in the group fund which equals \$1.20.

Shown again in a format that is broken down:

Private Fund Earnings: $0 \times 1 = 0$ or \$0.00

Group Fund Earnings: $160 \times 3 = 480$ or $\$4.80/4 = \1.20

Total Earnings for this period: Private Fund Earnings + Group Fund Earnings

$$\$0.00 + \$1.20 = \$1.20$$

Please pull out your green sheet. The first column labeled ‘# of tokens I have in the private fund’ is how much you are choosing to keep in your private fund – this will be multiplied by 1 cent and is yours only. The column labeled ‘# of tokens I have in the group fund’ is the amount that you are choosing to invest in the group fund – this will be multiplied by 3 cents and divided among all of the group members.

The column labeled “My total earnings for this period” is the combination of the private fund, and your portion of the group fund. Finally, the column labeled “Total” allows you to keep a running tally of how much you have earned by adding your total earnings from each period together.

Just to make sure that you understand the two types of investments, please work through the examples on the yellow piece of paper on your desk. When you are finished, please place your pen and calculator down. If you have any questions, a researcher will be happy to help you. We will go through all of the problems together when everyone has finished.

Let's go through the yellow sheet together –

EXAMPLE RUN THROUGH

Now how and what will happen in every decision period?

For all trials, you will mark on your green sheet whether you wish to invest any of your tokens in your private fund to the group fund. You will then ALSO enter in your decision in the iPod touch.

After all group members have entered their decision, you will be able to see the sum of all members' investment in the group fund, your individual earnings for each trial and your total earnings for the trial. For each round please copy the information down from the iPod Touch so that we have two copies of the amount earned. The iPod Touch will tell you how much you have earned each period in your group fund, private fund, and your total earnings for the period. You will be responsible for adding each of your total earnings per period together using the calculators.

So, after each period, you will enter your decision on the iPod touch, then after all group members have entered their decision, you will be given information about your earnings for each trial.

Here are the instructions for using the iPod Touch:

Please **DO NOT TOUCH** the iPod Touch until we ask you to.

To begin we will have you touch on the TAMU icon. It will then ask you for your participant number. This number was written by a researcher and is on your green sheet

labeled Participant #. Then you will wait. DO NOT press “click to begin” until we say we will be starting the round.

Once we announce the beginning of the period, you may click to begin.

This screen as seen on the transparency will pop up. You will click on the small arrow and scroll to choose the number of tokens you wish to invest in the group fund. After you choose the number you can press submit.

Once everyone has submitted the number of tokens they wish to invest the iPod Touch will calculate your earnings and send these values back to you.

Please copy these values onto your green sheet. You will repeat this process for several rounds. When you have finished you may set your record sheet down.

Now, how many times will you be asked to make the decisions? Well, we are studying situations where the amount of interaction is uncertain. So, all that we can tell you is that you will make more than one decision. You may be making quite a few decisions or you might be making only a few.

PRACTICE RUN:

We are going to do a practice run to ensure your comfort with the technology. You will be entering the values which are already typed onto your practice sheet. Everyone will be entering the same values. You may begin by pressing the TAMU icon. Now you may enter your participant number. DO NOT CLICK TO BEGIN.

Now that everyone has entered their participant number you may click to begin –

Your green sheet states the # of tokens in the group fund as being 50.

Please scroll to the 50 to indicate that you wish to invest 50 tokens into the group fund and therefore keep 50 tokens in your private fund.

Then press submit. Has everyone entered 50?

Please DO NOT move onto the next period until we have told you to do so.

See how the values correspond with your sheet? These are the values you will be asked to write on your sheet when they are not provided for you.

Now, please scroll to the 70 to indicate that you wish to invest 70 tokens into the group fund and therefore keep 30 tokens in your private fund.

Now press submit. Can everyone see their earnings for this round?

So the \$2.00 from the previous round and the \$2.50 from this round add up to equal \$4.50.

This is the last practice entry before you will choose how much you choose to invest, after you enter your value and press submit, place your iPod touch on the desk.

Please scroll to the 30 to indicate that you wish to invest 30 tokens into the group fund and therefore keep 70 tokens in your private fund.

Now press submit. Can everyone see their earnings for this round?

So we now add the \$1.60 from this round to the \$4.50 from the previous two rounds to equal \$6.10.

Please set your iPod touches down.

Are there any questions?

Summary

We will begin the study in a moment.

You are working in groups of 4. Some of the people you are working with may be in this room or they may be in another room.

I will announce each period.

You can invest tokens in a group fund in which every group member receives an equal share. Each token in this fund is multiplied by 3 and then divided by 4 to determine individual shares.

You can keep tokens in your private fund in which each token is worth 1 cent and is only yours.

You can mix your tokens in any way you wish.

You will have more than one decision.

Let's begin. This is Decision 1.

Please write down on your sheet how many, if any, tokens you want to take from your **Private Fund** and put it in the space where it says **Group Fund**. After you have done this, enter your decision on your iPod touch. After everyone in your group has responded, you will then be able to see the sum of what other group members have invested in the group fund and your earnings.

Are there any questions?

If you should have any questions about the iPod touch, please raise your hand and one of the researchers can help.

APPENDIX F
RECORD SHEET

Record Sheet

First name

Participant #

You are one member of a group of 4 people

Period	# Tokens I keep in the Private Fund	# Tokens I invest in the Group Fund	My Group fund Earnings	My Total Earnings for this period	Total
Practice	50	50	\$1.50	\$2.00	\$2.00
Practice	30	70	\$2.10	\$2.40	\$4.40
Practice	70	30	\$0,90	\$1.60	\$6.00
1					
2					
3					
4					
5					

Participant

#

You are one member of a group of 4 people

Period	# Tokens I keep in the Private Fund	# Tokens I invest in the Group Fund	My Group fund Earnings	My Total Earnings for this period	Total
6					
7					
8					
9					
10					
11					
12					
13					

You are one member of a group of 4 people

Period	# Tokens I keep in the Private Fund	# Tokens I invest in the Group Fund	My Group fund Earnings	My Total Earnings for this period	Total
14					
15					
16					
17					
18					
19					
20					
21					

You are one member of a group of 4 people

Period	# Tokens I keep in the Private Fund	# Tokens I invest in the Group Fund	My Group fund Earnings	My Total Earnings for this period	Total
22					
23					
24					
25					
26					
27					
28					
29					

APPENDIX G

QUESTIONNAIRE

These questions are referring to the task which you just completed. When the question asks about the group, it is referring to the group which you were working with through the I touch. Please answer the following questions to the best of your ability. Please take care in considering your answers to each question. Please circle the numbered response that best matches your opinion.

1. For each of the following, please rate from -5 to 5 how you would best describe your group's behavior.

- | | | | | | | | | | | | |
|-----------------------|----|----|----|----|----|---------|---|---|---|---|--------------------|
| A. Very Unhelpful | | | | | | Neutral | | | | | Very Helpful |
| | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
| B. Very Uncooperative | | | | | | Neutral | | | | | Very Cooperative |
| | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
| C. Very Self Oriented | | | | | | Neutral | | | | | Very Team Oriented |
| | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
| D. Very Unsupportive | | | | | | Neutral | | | | | Very Supportive |
| | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |

2. For each of the following, please rate from -5 to 5 how you would best describe your feelings about the exchanges during the experiment.

- | | | | | | | | | | | | |
|---------------------|----|----|----|----|----|---------|---|---|---|---|----------------|
| A. Very Displeased | | | | | | Neutral | | | | | Very Pleased |
| | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
| B. Very Unsatisfied | | | | | | Neutral | | | | | Very Satisfied |
| | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
| C. Very Not Joyful | | | | | | Neutral | | | | | Very Joyful |
| | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
| D. Very Bored | | | | | | Neutral | | | | | Very Excited |
| | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
| E. Very Unmotivated | | | | | | Neutral | | | | | Very Motivated |
| | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
| F. Very Unhappy | | | | | | Neutral | | | | | Very Happy |
| | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |

E. How much did you trust the members in your group?

None		Little		Neutral		Some		A lot		
-5	-4	-3	-2	-1	0	1	2	3	4	5

F. In your opinion, how much do you share in common with the group?

None		Little		Neutral		Some		A lot		
-5	-4	-3	-2	-1	0	1	2	3	4	5

G. How common are your goals to those of the group?

None		Little		Neutral		Some		A lot		
-5	-4	-3	-2	-1	0	1	2	3	4	5

5. A list of statements follow, please indicate the choice that best represents your opinion about the statement.

A. In the future, I would be willing to work with my group again.

A) Strongly Agree B) Agree C) Neutral D) Disagree E) Strongly Disagree

B. In the future, I would choose to work with another group before working with the same group I worked with today.

A) Strongly Agree B) Agree C) Neutral D) Disagree E) Strongly Disagree

CONTACT INFORMATION

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