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IN SEARCH OF SOCIAL CAPITAL
IN ECONOMICS

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Abstract

(19 pages)

The economic well-being of economic agents is assumed to be interpersonally dependent and varies according to the strength of relationships, values, and social bonds. The extent of this interpersonal dependency is measured using social capital coefficients in a neoclassical model in which agents with stable preferences maximize utility. The model's predictions are tested empirically by asking agents how their distribution of a scarce resource is altered by relationships.

Key Words: *social capital, social capital coefficients, utility of consumption*

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Introduction

The purpose of this study is to determine the extent to which an agent's resource allocation decisions are influenced by changes in the well-being of others with whom a relationship has been established. If relationships are unimportant, then an agent's resource allocation decisions should be unaffected by changes in the well-being of others. Under these conditions, the traditional neoclassical model that emphasizes selfishness of preferences is acceptable. If, however, relationships are important, then modeling how an agent's choices affect the well-being others should add insights to agents' economic behavior and improve the predictive ability of economic models.

In what follows, the literature is reviewed that supports economists' emphasis on self-interest. Next, the literature supporting the view that relationships modify agents' pursuit of self-interest is reviewed. Then, relationships are introduced into the neoclassical model using social capital coefficients. The resulting neoclassical model with social capital coefficients modifying preferences is then tested empirically. The survey asked respondents how to report how their distribution of a scarce resource is changed when their choices can alter the well-being of others. After reporting the results of the survey, this paper concludes with a discussion of the relevance and need to include considerations of social capital in agricultural and natural resources related research.

The Assumption of Self-Interest

Implicit in most applications of the neoclassical model is the assumption that only the decision maker's own income matters. Moreover, in most neoclassical economic models, the identity of participants in an economic exchange do not affect the outcome (Telser and Higenbotham). The literature supporting neoclassical economists' emphasis on self-interest is well-known. Edgeworth, a famous 19th century economist, wrote that: "The first principle of Economics is that every agent is actuated only by self-interest" (Rescher). Mueller added that only the assumption of egoism was essential to a descriptive and predictive science of human behavior. Adam Smith (1776) declared: "It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest" (p. 25). Summarizing the focus on self-interest, Etzioni wrote:

"The neoclassical paradigm, we have seen, attempts to show not merely that there is an element of pleasure (self-interest) in all seemingly altruistic behavior, but that self-interest can explain it all."

Evidence That Relationships Matter

Few would argue that economic agents often act selfishly. On the other hand, an increasing amount of evidence supports the view that what an agent considers to be in his or her self-interest is modified by relationships, social bonds, and values (Swedberg). As a result, economic agents may be influenced in their choices by how their actions affect others.

Everyday events support the view that relationships alter economic behavior (Robison and Hanson (1994, 1996); Schmid and Robison). Realtors recognize that the sale price of a particular parcel of land depends on the relationship between the seller and buyer. Only "arms-length" sales between unrelated individuals can be used to reflect the market value of land (Gilliland). Nepotism laws impose restrictions on close relatives being hired by the government in the same agency. These laws recognize the tendency of government employers to grant advantages to their relatives. Civil rights laws prevent employment being denied when the basis of the discrimination is race. These laws recognize that race, a special kind of relationship, sometimes influences employment decisions.

Many persons make significant efforts to return lost items even though they belong to a stranger. The reason for such actions may be based on a relationship to oneself that to be positively maintained requires actions consistent with an internalized set of values. This internalized relationship is sometimes referred to as one's conscience.

Many donate food, other material, time, and money to victims of natural disasters or misfortunes. Rarely do these donors seek for recompense or earn public recognition. For many the reward of seeing the well being of another improved is reward enough.

Other groups of people who fail to fit the selfish preference caricature include those who vote even when the outcome is not in doubt and individuals who buy life insurance for beneficiaries from whom no reciprocal action is expected. Other individuals frequently exchange gifts without any enforceable contract for a repayment in kind. The

explanation for the gift giving is most often that there exists a special relationship between the gift provider and the gift recipient, often a neighbor (Webley).

It is frequently the case that preferential offers in business arrangements are made when a relationship exists. According to a U.S. Bureau of Labor study, 63.4 percent of the jobs are a result of informal contacts where the job seekers exercise their own initiative in building on personal contacts. Gwilliams found that 89 percent of Michigan farmland leases were between friends or family. Between related individuals, farm land leases tend to be oral and more successful than leases between unrelated lessees and lessors (Johnson et al.). Nelton noted that family businesses account for 76 percent of Oregon's small companies. Finally, Calonius wrote that 75 percent of U.S. companies are family-owned or controlled.

Relationships between individuals and causes account for large amounts of voluntary donations. Despite a sluggish economy, philanthropic giving across the nation increased in 1991 over 1990 by 6.2 percent to $124.7 billion. According to the Trust for Philanthropy, the American Association of Fund-Raising Counsel's research arm, 89 percent of the amount contributed was by individuals. Largest recipients included religious organizations, $67.6 billion, and education, $13.3 billion. Other recipients included environmental groups, the arts, health organizations, and other nonprofit groups providing human services (Tetsch).

Finally, according to a U.S. Census study, 80 million Americans volunteered an average of 4.7 hours per week in 1987 or 19.5 billion hours. Unless there can be found a taste for giving away one's money and time, billions of dollars worth of economic activity in the U.S. economy is largely unaccounted for by the selfishness of preference assumption which focuses on promoting one's selfish interests through two way exchanges.

Frank summarizes the conflict between the assumption of selfish preferences in economics and observed preferences:

> "...Economists, for their part, point with pride to the power of self-interest to explain and predict behavior, not only in the world of commerce but in networks of personal relationships as well. And yet, the plain fact is that many people do not fit the me-first caricature. They give anonymously to public television stations and private charities. They donate bone marrow to strangers with leukemia.

> They endure great trouble and expense to see justice done, even when it will not undo the original injury. At great risk to themselves, they pull people from burning buildings, and jump into icy rivers to rescue people who are about to drown. Soldiers throw their bodies atop live grenades to save their comrades. Seen through the lens of modern self-interest theory, such behavior is the human equivalent of planets traveling in square orbits."

Evidence also supports the view that relationships matter in the aggregate as well at the individual level. For example, sister cities develop special cultural and trade relationships. Most favored nation status provides some countries special advantages not available to other nations. Countries that establish most favored trading relationships most often share cultural, language, geographic, or other features that bind them together. Countries thus bound together often establish special trading relationships that do not develop between countries that lack the particular bond. Finally, nations often act to restrict trade when unfavorable relationships exist. For example, national policies such as apartied or human rights abuses within a country often lead to restricted trade with other countries even though the undesirable behavior is not imposed outside of the country.

In response to evidence that relationships matter, some economists concede that relationships matter, but not in important ways. Economists who support this view believe that we can continue business as usual with selfish preferences as the foundation for our models (Hirshliefer, Gardner).

Some important economic transactions may not be affected by relationships. For example, in perfectly competitive markets in which many buyers and sellers unknown to each other trade a standardized good, relationships may not be important. On the other hand, strong evidence suggests that in transactions in which the buyer and seller are known to each other, relationships matter. Moreover, we expect from our interpretation of the evidence that as the contact between buyers and sellers becomes more personalized, the more important will be the effect of the relationships on the transactions.

The Altruism Literature

A review of the neoclassical model extensions to account for relationships can be found in Robison and Hanson (1996). One extension of the neoclassical model assumes an altruistic agent has a taste for philanthropy. Characteristic of this work is Schwartz and Feldstein and Taylor. A second extension of the self-interested neoclassical model treats the i^{th} person's utility as dependent on own consumption of good x_i and the j^{th} person's utility function U_j. Hence, the i^{th} person maximizes $U_i=f(x_i,U_j)$. In this model, the utility of the j^{th} person is treated as a consumer good that person *i* consumes to increase his or her self-interest (Bernheim and Stark). A third extension of selfishness of preference approach is the club model. At the heart of this approach is the assumption that the desire to belong to the club leads to behavior consistent with the goals of the club. Other extensions of the neoclassical model recognize that relationships among family members influence economic behavior. Becker's (1981) famous work formalizes some interesting conclusions for family members whose preferences are interdependent and whose actions have external consequences. Consistent with the focus on the family are studies linking altruism to genetic fitness (Samuelson, Dawkins, and Becker (1976a)).

Social Capital and the Neoclassical Model

Central to the neoclassical paradigm is the assumption that rational economic agents with stable preferences who maximize their own utility usually defined over own consumption bundles. Quirk and Saposnik refer to this assumption as the selfishness of preferences assumption. In this paper the assumptions that decision makers are rational and maximize their own utility are maintained. However, in the model to be defined, utility depends on the income levels of others whose significance in the utility function depends on relationships measured by social capital coefficients. This assumption is in the tradition of the altruism work cited earlier but extends this work by imposing more specific structure on the nature of these relationships.

The intellectual foundation for the social capital approach adopted in this study can be traced to Adam Smith (1759) who recognized the interdependence of preferences when he wrote:

"How selfish soever man may be supposed, there are evidently some principles in his nature, which interest him in the fortune of others, and render their happiness necessary to him, though he derives nothing from it, except the pleasure of seeing it" (p. 3).

Smith (1759) not only noted that preferences were interpersonally dependent, but that they varied according to the strength of the relationship.

"Every man feels his own pleasures and his own pains more sensibly than those of other people...After himself, the members of his own family, those who usually live in the same house with him, his parents, his children, his brothers and sisters, are naturally the objects of his warmest affection" (p. 321).

We define the potential influence of relationships as social capital. Social capital has been introduced to agricultural economists by Robison and Schmid (1989, 1994), Robison and Hanson (1994, 1996), and Schmid and Robison. Coleman discussed social capital and its application to sociology and Hyden discussed it in a political science setting. Putnam suggested recently that its supply in the United States has decreased. Finally C. Flora and J. Flora discuss the importance of social capital in maintaining society's social contract.

The underlying assumption of "social capital theory" is that the relationships between person *i* and person, place, or thing *j* influence economic choices. Furthermore, sociologists have long recognized that the strength of relationships between individuals varies. Park considers the concept of "distance" to mean the grades and degrees of understanding and intimacy that characterize personal and social relations. Park's social distance concept appears to combine elements of both relationships and awareness and are included in what we refer to as social capital.

Social capital coefficients K_{ij} are used to model the degree to which person *i*'s well-being is influenced by the well-being of person, place, or thing *j*.[1] Person *i* may develop a relationship toward person, place, or thing *j* of sympathy ($K_{ij}>0$), antipathy ($K_{ij}<0$), or neutrality ($K_{ij}=0$) (Bogardus). However, the reverse is not always true. Places and things are not usually assumed to be capable of a relationship with person *i*. That is, *i* must be a person capable of vicarious sensing to have a relationship with person, place, or thing *j*.

The i^{th} person is assumed to maximize the following utility function:

(1) $$\underset{x}{Max}\ U = U[\pi_i(x), K_{ii}(x), \pi_j(x), K_{ji}(x), K_{ij}(x)]$$

for $j \neq i$=1,2,... subject to an upper limit on *i*'s time and resource *x*. Variables π_i and π_j in equation (1) represent *i* and *j*'s income or other measures of well-being. It is assumed that marginal utility is positive for K_{ii}, K_{ij}, K_{ji}, and π_i, and from the definition of social capital that $\left(\frac{\partial U_i}{\partial \pi_j}\right) \gtreqless 0$ for $K_{ij} \gtreqless 0$. The first-order condition for the utility maximization problem now becomes:

(2) $$\frac{\partial U_i}{\partial x} = \frac{\partial U}{\partial \pi_i}\frac{\partial \pi_i}{\partial x} + \frac{\partial U}{\partial K_{ii}}\frac{\partial K_{ii}}{\partial x} + \frac{\partial U}{\partial \pi_j}\frac{\partial \pi_j}{\partial x} + \frac{\partial U_i}{\partial K_{ji}}\frac{\partial K_{ji}}{\partial x} + \frac{\partial U_i}{\partial K_{ij}}\frac{\partial K_{ij}}{\partial x}$$

Agent *i* chooses *x* to maximize the sum of the marginal utilities from increases in own and *j*'s income, and increases in social capital coefficients. The first term, $\frac{\partial U}{\partial \pi_i}\frac{\partial \pi_i}{\partial x}$, is the marginal utility of own income and is also the first-order condition in the neoclassical model. The second term, $\frac{\partial U}{\partial K_{ii}}\frac{\partial K_{ii}}{\partial x}$, is the marginal utility of an increase in social capital towards one's self; the third term, $\frac{\partial U}{\partial \pi_j}\frac{\partial \pi_j}{\partial x}$, is the marginal utility of an increase in *j*'s income the sign of which depends on the sign of social capital coefficient K_{ij}; the fourth term, $\frac{\partial U}{\partial K_{ji}}\frac{\partial K_{ji}}{\partial x}$, is the marginal utility of an increase of social capital of *j* toward agents *i*; and finally, $\frac{\partial U}{\partial K_{ij}}\frac{\partial K_{ij}}{\partial x}$, is the marginal utility of an increase in social capital toward *j*.

The arguments of equation (1) suggests several utility maximizing opportunities that are ignored in most neoclassical models. These have been described recently by Robison and Schmid (1994). For example, consider the case where *i* cannot influence π_j significantly. This may be the case when *j* is wealthy compared to *i*. Such a wealth relationship might exist between a fan and a famous entertainer, an alum and the alum's alma mater, or a listener and a public radio station. In these examples, person *i* may still contribute some of his or her resources to *j* because it increases K_{ij} and thus increases *i*'s utility.

In other cases, efforts to increase π_i may reduce K_{ii}, *i*'s relationship to self. Such an activity might include engaging in illegal activities. Other activities available to agent *i* may increase π_i but decrease $K_{i,j}$. Such an activity might include aggressive personalized competition. In such cases, an activity that maintains or increases K_{ii} and K_{ij} may be preferred to one that earns a higher level of π_i but lowers K_{ii} and K_{ij} because the goal is not merely to increase π_i but to increase social capital.

In summary, social capital theory views self-interested individuals as capable of vicariously sensing the well-being of others. Social capital theory also recognizes that individuals do not experience the well-being of others equally. This ordering of relationships leaves individuals most sensitive to the well-being of persons, places, or things with which they are most alike, with whom they have made commitments and assumed responsibility, or with those with whom they have significant emotional and social ties.

Social Capital and Prisoners of War

To test for social capital, a survey was designed to elicit from respondents allocation decisions that match the five motives described in equation (1). The survey is included in Appendix A. The survey was administered to a capstone course of senior level students from the College of Agricultural and Natural Resources at Michigan State University. The students represented a cross-section of students at the College and the course was designed for students to reflect generally on working with others in teams to solve problems. Thirty-two students completed the questionnaire.[2]

The survey designed for the purpose of testing equation (1) asked respondents to consider the following situation:

> Assume you are a member of the American task force sent to Bosnia. Unfortunately, you have been captured by one of the hostile groups in the region. Life as a prisoner of war is unpleasant with life sustaining but tasteless food and few other comforts. You have no way of knowing when or if you will be released. In the midst of this Spartan life, you receive a box of Hershey candy bars. Red Cross rule enforcement assures you that these candy bars cannot be taken from you. So you may do with them what you choose. Please indicate in the blanks below how many of the candy bars you would eat and how many you would share with others described in questions 2 through 4.

The own consumption of candy bars is assumed to reflect the value of x in the argument $\pi_i(x)$. The allocation of candy bars to keep a promise is assumed to equal the investment in own social capital $K_{ii}(x)$. Candy bars given to a close friend represents the x value in the $\pi_j(x)$ expression. Candy bars given to the prison guard to increase the guard's goodwill represent the x value in the expression $K_{ji}(x)$. Finally, candy bars donated to the camp escape effort is viewed as the x value in the $K_{ij}(x)$, a contribution that increases i's connection to the camp.

All the students completing the study were assumed to have the same Cobb-Douglas utility function and to maximize the expression:

$$\underset{x}{Max}\ U = U[\pi_i(x), K_{ii}(x), \pi_j(x), K_{ji}(x), K_{ij}(x)] = \underset{x}{Max}\ E\left\{x_1^{\alpha_1} x_2^{\alpha^2} x_3^{\alpha_3} x_4^{\alpha_4} x_5^{\alpha_5} e^{\epsilon}\right\} \tag{3}$$

$$s.t. \quad W_0 = x_1 + x_2 + x_3 + x_4$$

where $\epsilon \sim N(0, \sigma_2)$. This Cobb-Douglas utility function assumption implies:

$\pi_i(x_1)$	=	$x_1^{\alpha_1}$	(own consumption)
$K_{ii}(x)$	=	$x_2^{\alpha_2}$	(promise keepers)
$\pi_j(x)$	=	$x_3^{\alpha_3}$	(sharing)
$K_{ji}(x)$	=	$x_4^{\alpha_4}$	(goodwill)

$K_{ij}(x) \quad = \quad x_5^{\alpha_5}$ (together)

To estimate values for $\alpha_1,\ldots,\alpha_5$, the expected value of the function was transformed by taking logarithms to obtain:

$$\underset{x}{Max}\ EU_i = \alpha_1 ln\, x_1 + \alpha_2 ln\, x_2 = \alpha_3 ln\, x_3 + \alpha_4 ln\, x_4 + \alpha_5 ln\, x_5 - \lambda[x_1 + x_2 + x_3 + x_4 + x_5 - W_0]$$

where λ is a LaGrange multiplier that constraints the allocation of candy bars to equal each individual's allocation.

First-order conditions for the constrained maximization problem equal:

(4a) $$\frac{\alpha_1}{x_1} = \lambda,$$

(4b) $$\frac{\alpha_2}{x_2} = \lambda,$$

(4c) $$\frac{\alpha_3}{x_3} = \lambda,$$

(4d) $$\frac{\alpha_4}{x_4} = \lambda,$$

(4e) $$\frac{\alpha_5}{x_5} = \lambda,$$

(4f) $$x_1 + x_2 + x_3 + x_4 + x_5 = W_0$$

Solving for $x_1,\ldots,x_5$ and substituting the results into (4f) we solve for λ and find:

$$W_0 = \frac{\alpha_1 + \ldots + \alpha_5}{\lambda} = \frac{1}{\lambda} \quad \text{or} \quad \lambda = \frac{1}{W_0}$$

since the sum of α_i's sum to one because of linear homogeneity. Substituting the solution for λ in equations (4a) through (4e), we find our estimating equations:

(5a) $$x_1 = \hat{\alpha}_1 W_0 + \epsilon$$

(5b) $$x_2 = \hat{\alpha}_2 W_0 + \epsilon$$

(5c) $$x_3 = \hat{\alpha}_3 W_0 + \epsilon$$

(5d) $$x_4 = \hat{\alpha}_4 W_0 + \epsilon$$

(5e) $$x_5 = \hat{\alpha}_5 W_0 + \epsilon$$

The system of equations in (5a) through (5e) can be estimating using seemingly unrelated regressions which are equivalent to OLS estimation. The empirical results from our estimation equal:

Prisoner of War Empirical Results

	Own Cons. α_1	Promise Keepers α_2	Sharing α_3	Good Will α_4	Together α_5
Coef	.33	.19	.25	.09	.14
t stat	13.67	10.97	18.61	5.79	11.02
$\bar{R}^2$	57%	49%	69%	11%	56%
DW	.92	1.45	1.08	1.43	1.71
$\bar{X}_0$	6.8	3.9	5.4	2.2	2.7
2-Tail Significance	.000	.000	.000	.000	.000

All of the coefficients are significant at levels of less than one percent. The own consumption coefficient, α_1, is the largest, as neoclassical economists might have predicted. However, the "sharing" coefficient was 76 percent of

the own consumption coefficient. Next in significance was the "promise keeper" coefficient, .19; the "together" coefficient, .138, was next; and last, the "goodwill" coefficient equals .089. The percentage allocation of the candy bars equals the coefficients which together sum to one (.999).

The correlation matrix provides some interesting insights about the different motives. The most significant correlation was between own consumption and promise keepers. The more an agents consumes, the less likely the agent is to keep promises. The next most significant correlation is between sharing with friends and supporting the camp. These two allocations represent two different social capital investment approaches: one intensive and the other extensive. One might infer that survey respondents made the choices either to concentrate social capital investment in a friend or tended to more generally invest social capital in the group. Finally, selfish behavior can be manifested by consuming or building goodwill with the guard. Efforts to build goodwill with the guard, however, are meaningful only if the agent believes social capital investments are possible. Own consumption and investing in goodwill with the guard are two selfish activities that are negatively correlated and viewed as substitute activities.

Table of Partial Correlation Coefficients

	Own Cons.	Promised Keepers	Sharing	Goodwill	Together
Own Cons.	1	-.58	-.08	-.32	-.24
Promised Keepers		1	-.38	.10	.35
Sharing			1	.12	-.36
Goodwill				1	-.06
Together					1

Conclusions

This study reports on a test of the proposition that relationships affect resource allocation. To test the proposition, the neoclassical model was extended by introducing relationships into the model using social capital coefficients. The resulting model was then used to generate several hypotheses describing how relationships influenced the resource allocation of economic agents.

Empirical results generated from survey data provide preliminary support for the hypothesis that relationships alter resource allocation decision. The agricultural economic implications of the results of this study are significant. For example, the results suggest that the use of potentially harmful pesticides will be reduced if those affected are related to or have friendly relations with the producer. The willingness to bear unpleasant odors increase if the odors originate from a family member's farm. Or that monitoring costs can be determined by comparing the consistency between the regulation to be enforced and the values of the person expected to obey the regulation. Finally, the results of this study suggest that the analysis of decision makers resource allocation decisions must be examined in a broader context than has been used in the past; one in which relationships and external consequences are included in the decision model.

Most of our agricultural policies are designed as though economic agents act independently and selfishly. Beginning with this assumption leads to the view that farmers and others can be motivated to alter the use of potentially harmful herbicides, pesticides, and hormone growth stimulators or other activities that may increase impose costs on others only by threat of litigation or income incentives. Social capital theory suggests there may be other important motives to which farmers respond. In addition, citizens may have social capital developed toward farmland and other natural resources that leads to socially desirable behavior without any external threats or subsidies. These social capital ties may lead some farmers to act as responsible stewards of their resources without outside intervention. Understanding the interdependence of social relationships and economic decision making may help in explaining economic behavior and lead to more enlightened policy decisions.

Endnotes

1. Although not emphasized in this paper, social capital can develop between an individual and impersonal objects such as animals, pictures, one's alma mater, and the environment. Social capital that develops between individuals and impersonal objects may result from personal relationships that endows impersonal objects with social capital qualities. Social capital is often symmetrically held between persons but is not symmetric when the object of social capital is not a person.

2. The reliability of survey responses to hypothetical questions continues to be debated with no clear resolution. Social psychologists argue that hypothetical choices predict behavior best when the choice context is familiar and specific (Ajzen and Fishbein).

   Perhaps the most extensive test of hypothetical versus actual choices is that reported in Fox et al. They first elicited hypothetical responses to various choices involving food safety. They compared these hypothetical responses to choices in which subjects realized their choices. They found after repeated trials that actual and hypothetical responses were nearly equal or that bias in hypothetical responses could be calibrated. Their work supports the view that under certain conditions hypothetical responses can be trusted to reflect actual behavior.

   In the study reported in this paper, survey questions were designed to match those conditions required for hypothetical response reliability. The respondents were asked to give responses to specific risks with which they were familiar.

   There is, however, another defense of the contingent valuation approach that utilizes responses to hypothetical questions. It is that even when actual outcomes occur in response to an agent's choice, the choice is still made under hypothetical conditions. What the subject is required to do is to imagine the conditions that will result from his or her choice and decide on an action before the actual outcomes resulting from the choice. Thus, for both hypothetical and actual choice settings, the decision is made without the subject experiencing the actual outcome.

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Appendix A

Assume you are a member of the American task force sent to Bosnia. Unfortunately, you have been captured by one of the hostile groups in the region. Life as a prisoner of war is unpleasant with life-sustaining but tasteless food and few other comforts. You have no way of knowing when or if you will be released. In the midst of this Spartan (no pun intended) life, you receive a box of 12 Hershey candy bars. Red Cross rule enforcement assures you that these candy bars cannot be taken from you so you may do with them what you choose. Please indicate in the blanks below how many of the candy bars you would eat and how many you would share with others described in questions 2 through 4. *Please make sure that the sum of the candy bars allocated in questions 1 through 5 equals 12.*

1. The number of candy bars I would consume personally is: _____

2. Earlier I entered into an agreement with another prisoner that we would share food received from the outside. The other prisoner has no way of knowing I received a package of 12 Hershey candy bars. The number of candy bars I would give to this prisoner with whom I made this promise is: _____

3. A close friend and I were taken captive at the same time. The number of candy bars I would share with my close friend is: __

4. I will receive better treatment in the camp if I gain the goodwill of one of the guards. The number of candy bars I would give to one of the guards to gain this goodwill is: _____

5. The entire camp has organized an escape effort. Even if successful, only a few of the prisoners will escape, but the effort helps maintain morale in the camp. A contribution of candy bars to the person in charge of organizing the escape would demonstrate I support the effort even though I may not benefit personally and my contribution may have little, if any, effect on the outcome. The number of candy bars I would give to this effort is: _____

Please repeat the exercise under the assumption that you received 24 instead of 12 Hershey candy bars. *Please check your allocation of candy bars to make sure that the sum of candy bars allocated in questions 1' through 5' equals 24.*

1'. The number of candy bars I would consume personally is: _____

2'. Earlier I entered into an agreement with another prisoner that we would share food received from the outside. The other prisoner has no way of knowing I received a package of 24 Hershey candy bars. The number of candy bars I would give to this prisoner with whom I made this promise is: _____

3'. A close friend and I were taken captive at the same time. The number of candy bars I would share with my close friend is: __

4'. I will receive better treatment in the camp if I gain the goodwill of one of the guards. The number of candy bars I would give to one of the guards to gain this goodwill is: _____

5'. The entire camp has organized an escape effort. Even if successful, only a few of the prisoners will escape, but the effort helps maintain morale in the camp. A contribution of candy bars to the person in charge of organizing the escape would demonstrate I support the effort even though I may not benefit personally and my contribution may have little, if any, effect on the outcome. The number of candy bars I would give to this effort is: _____