The Problem of Dishonesty in Government Safety Nets

Scott E. Bokemper
Center for the Study of American Politics
Institution for Social and Policy Studies
Yale University

Peter DeScioli
Department of Political Science
Stony Brook University

Abstract

Many governments provide benefits to unemployed citizens but someone might claim unemployment even when they actually have a job. Here we use economic experiments to examine how the rules of social insurance institutions affect people's honesty. In an unemployment game, participants interact in a difficult job market where they can claim unemployment to request help. In Experiment 1, participants were more honest about unemployment when they repeatedly interacted with the same partner compared to when they switched partners. In Experiments 2 and 3, participants could request benefits from a public fund that was financed by taxes on employed workers. When benefits were unregulated, participants frequently (67%) made false unemployment claims. However, when we apply common regulations from real-world unemployment programs, including limits, bans, and fines, participants were dishonest at considerably lower rates (33%-40%). We discuss implications for the efficient relief of hardship and the experimental study of social insurance institutions.

Introduction

The concept of social insurance is simple: People help others who suffer hardships such as unemployment, illness, or hurricane damage, and they receive help when they are the ones in trouble, so everyone gains some protection against hardship. All societies have at least some basic forms of social insurance such as helping family or friends, and many societies have developed highly elaborate institutions for mitigating hardship. In hunter-gatherer societies, foragers who find food frequently share it with those who do not (Gurven 2004; Kaplan and Hill 1985). In agricultural societies from past eras, some governments stockpiled food in granaries that they would distribute to citizens during famines (Shiue 2005). In modern societies, people hit by hard times look for help from family, friends, charities, and, increasingly, the government (e.g., Larrimore, Dodini, and Thomas 2016). For example, in the United States, over half of the federal budget is spent to relieve hardships, including illness, injury, poverty, and unemployment (DeSilver 2017). In many developed countries, the government has become in large part a social insurance institution.

In practice, however, social insurance is often not so simple. There is the thorny question of who is responsible for helping a given person struck by calamity, whether it should be their family, friends, community, government, or some combination. Naturally, many people will feel that someone else should bear the burden, leading to fierce struggles over responsibilities. Then there is the question of how benefits should be controlled and regulated. This includes which hardships will be compensated, the amount of benefits in each case, how claims of hardship will be evaluated, and how false claims will be deterred. These and other complications arise in every form of social insurance, whether among family members in a household, citizens in a nation, or nations in the global community.

We focus on a key issue at the core of social insurance: the problem of dishonesty in claims of hardship. The basic problem is easy to appreciate for anyone who has been asked for help. Does this person really need help? Do they really need help as much as they say, or do they only seek to gain from another's generosity? The dilemma is a difficult one, and errors on either side are costly. To turn down a genuine claim is to abandon someone in need, add further injury to the victim, and shirk any responsibilities to help. But to accept a false claim is to squander resources, reward deception, and invite many more opportunists to the door.

We ask how people manage the problem of dishonesty in social safety nets and particularly how government institutions can promote honesty. We use economic experiments to recreate the dilemmas of social insurance in a laboratory microcosm in which key elements can be controlled and manipulated. We designed a novel unemployment game in which participants are workers who look for a job and use their wages to pay the bills and improve their health. At the end of the game, a worker's health determines how much real money they earn, allowing us to observe participants' decisions when real incentives are at stake. In some rounds, the worker is unemployed and if they cannot pay their bills, then they suffer the hardships of poverty which do substantial damage to their health. To prevent hardship, workers can ask for help from other participants who are also workers in the game. Importantly, however, the worker's employment is not known to others, so they could ask for help even if they actually found a job and are at no risk of hardship.

We use the unemployment game to trace the problem of dishonesty through a broad arc of safety net institutions found across many societies. In Experiment 1, we begin with the most basic form of social insurance by looking at how peers help each other through unemployment. We test a key prediction from reciprocity theories that participants will be more honest about their employment when they repeatedly interact with the same partner compared to when they interact with a different person each period. This mirrors the difference between helping in small close-knit groups versus large anonymous communities. In Experiment 2, we examine a form of government social insurance in which a public fund collects taxes from the employed players and distributes money to players who claim unemployment. We test whether participants will be more honest when there is a limit on the number of times they can claim unemployment compared to when the unemployment benefits are unregulated. In Experiment 3, we examine a public fund in which participants know that there is a chance (1/3) that each claim of unemployment will be checked to see if they actually had a job. We test whether penalties deter dishonesty and if deterrence is greater when the penalty is a fine compared to a ban from requesting benefits in the next period.

Reciprocity and covert cheating

In the most basic form of social insurance, family and friends help each other through hard times. This kind of helping is observed across cultures including in small-scale foraging societies (Gurven 2004; Kaplan and Hill 1985). When people rely on peers for support in hard times, the recipient's honesty is typically enforced by a kind of reciprocity (Andreoni and Miller 1993; Axelrod 1984; Nowak 2006; Trivers 1971). If a helper discovers that the recipient made false claims about their needs, then they generally refuse to help in the future.

Importantly, the stability of reciprocity depends on repeated interactions and the ability to detect cheating. Repeated interactions are important because it is the potential withdrawal of help in the future that creates an incentive for people to help each other and to be honest about their needs. Coate and Ravallion (1993) applied the logic of reciprocity to social insurance in a game theoretic model in which two households with uncertain income can help each other through hard times. The model shows how this type of social insurance can be sustained in repeated interactions. Similarly, in an economic experiment in which participants received uncertain income each period, they were more willing to give money to an unlucky partner when there was a greater chance that they would interact with the same partner again in the future (Charness and Genicot 2009). Reciprocal strategies also require the ability to detect cheating when it occurs. Research from psychology finds that people closely monitor others' cheating and they withhold future cooperation in response (Alford and Hibbing 2004; Axelrod 1984; Cosmides 1989; Cosmides, Barrett, and Tooby 2010; Delton et al. 2012).

However, in many real-world situations, an individual does not know for sure if someone cheated. For instance, a worker could exaggerate their needs by claiming they were unable to find work when they actually chose not to work. Or they could hide their income to ask for more money or so they are not pressured to share with others. For instance, in one study in a Kenyan village, researchers found that many participants were willing to pay an extra fee to hide their profits in the study from their fellow villagers in order to avoid the social pressure to share

(Jakiela and Ozier 2015). These uncertain situations make reciprocal helping more difficult to sustain. For example, researchers have found in game theory models that reciprocal strategies perform worse in noisy environments where other players' choices are uncertain (Bendor 1993). This has also been found in economic experiments in which participants who were strictly reciprocal in a noisy environment did worse than those who were more forgiving (Fudenberg, Rand, and Dreber 2012). In situations of uncertainty, a reciprocal player needs to use probabilistic inferences in order to imperfectly guess whether their partner is cheating. These uncertainties frequently apply to social insurance and hardship, including claims of unemployment in which it can be difficult to discern whether someone has a job and if they really made an effort to find one.

Mass society and government social insurance

Reciprocity is also more challenging to sustain in larger groups in which it is difficult to monitor individuals' reputations (Boyd and Richerson, 1988). As societies grew in size from small-scale bands of foragers to immense, anonymous societies, this created new challenges for maintaining reciprocity and hence the social insurance institutions that depend on it. When people are more anonymous in large groups, they are less constrained by reputation and the repercussions for future interactions. For a stranger roaming through a crowd, each interaction approximates a one-shot game in which cheating has no long-term costs. This means that a self-interested stranger is expected to exaggerate their needs, and in response, helpers will attribute little credibility to these claims, thus compromising the basis for social insurance.

In response to these distinctive challenges, people have devised a variety of institutions to provide social insurance in mass societies. Among them is government social insurance, in which centralized government programs collect funds though mandatory taxes and then deliver benefits to citizens who suffer hardships. This includes unemployment insurance to protect against job loss, which is especially important in modern economies characterized by an extreme and ever-shifting division of labor (Moene and Wallerstein 2001; Rehm, Hacker, and Schlesinger 2012). Government unemployment programs face a difficult problem of dishonesty because they need to distinguish true from false claims of unemployment for strangers in a noisy environment. Consider, for instance, a government that gave benefits to anyone who claimed unemployment, no questions asked. Most likely, a swarm of unscrupulous opportunists would devour the funds and there would be nothing left for those who are actually unemployed—a case of the tragedy of the commons (Hardin 1968; Ostrom 1998).

To prevent exploitation and inefficiency, policymakers create regulations that promote honest claims and efficient targeting, including rules for who is eligible to receive benefits, how often they can receive them, and what penalties apply for breaking the rules. Equipped with a battery of regulations, many unemployment programs appear to do fairly well at preventing fraud. For instance, one report estimated that in 2016 the U.S. government provided about $600 million in unemployment benefits to citizens who misrepresented their earnings, which represents only 1.9% of program spending (United States Department of Labor 2016). Importantly, however, false claims are difficult to measure precisely because people actively seek to conceal them.

The problem of dishonesty is critical for efficient social insurance institutions. When the government provides benefits based on a false claim, this essentially diverts vital resources from other uses, including providing help to others in genuine need. This is particularly important because social insurance programs are a perennial source of political conflict whose funding is frequently attacked and constrained by political opponents. When funds are politically limited, their efficient use becomes even more crucial for the effective relief of hardship. Moreover, the problem of dishonesty is also important for public support of social insurance programs. Surveys and experiments find that public opinion about social programs is shaped by whether people think the recipients deserve to receive benefits (Aarøe and Petersen 2014; Gilens 1999; Jensen and Petersen 2017; Petersen 2012; Petersen, Slothuus, Stubager, and Togeby 2012, van Oorschot 2006). Hence, the prevalence of dishonesty is likely to be a key determinant of the public's support for social spending.

Economic experiments and social insurance institutions

We developed the unemployment game for studying government social insurance with the tools of experimental science. This approach follows the methods of experimental economics, in which researchers use economic games to study economic and political institutions such as markets, auction mechanisms, voting systems, and regulations for common pool resources (Kagel and Roth 2016; Morton and Williams 2010; Ostrom 1998; Palfrey 2009; Smith 1982). In this general framework (see especially Smith 1982), an economic or political system is defined as: (a) a set of players whose choices affect each other's payoffs, and (b) institutions that set the rules for how players interact and communicate. Based on this conception, researchers typically use incentivized games and convenience samples to create small-scale political systems for testing theories about institutions and behavior. Importantly, an economic game is necessarily and deliberately a stark simplification of the real-world phenomena it is used to study. This is similar to how a game theory model purposefully simplifies political phenomena. It also follows the long scientific tradition of using artificial microcosms to test ideas, such as studying aircraft in wind tunnels, bacteria in sterilized flasks, or memory in rodents running through mazes. In all of these cases, experimenters are well aware that laboratory observations do not automatically generalize to much more complex environments, but they nonetheless offer a controlled environment for testing ideas, providing a valuable source of evidence.

When it comes to social insurance institutions, there is of course a massive literature on the topic spanning multiple fields and methods, including historical accounts, observational analyses, economic models, aggregate indicators, opinion surveys, and so on. In comparison, the *experimental* study of social insurance institutions is in a relatively nascent state compared to other major methods, consisting of a handful of experiments. Hence, we think it is imperative to foster an experimental approach in order to complement other methods.

Previous research has used economic experiments to examine several core aspects of social insurance institutions and behavior. One key question is about how people decide whether to support social programs for helping people with low income in their community. Researchers have examined this issue in economic experiments in which participants vote on the tax rate for

funding social programs to help other participants in their group (Ahlquist, Hamman, and Jones 2017; Barber, Beramendi, and Wibbels 2013; Esarey, Salmon, & Barrilleaux 2012). For instance, one study examined people's relative support for programs that aim to promote equality per se versus programs that specifically protect against the risk of low income (Barber, Beramendi, and Wibbels 2013). In a series of rounds, participants earned income and voted on a tax rate for their group. In the beginning, the tax revenue was allocated by a redistributive institution, then the program changed to a social insurance institution, and finally it changed to a hybrid institution that mixed both functions. Under the redistribution program, participants who earned more income voted for a lower tax rate; in the social insurance program, participants who were more vulnerable to risk preferred a higher tax rate; when the institution served both functions, participants' tax rate preferences were driven by their exposure to risk, but not their income. Similarly, another experiment found that participants voted for higher taxes in their group when they were at greater risk of suffering a loss of income (Esarey, Salmon, & Barrilleaux 2012).

In addition to support for social spending, another literature has examined how citizens decide whether to pay their fair share of taxes, which would ultimately affect the funds available for government programs. In a typical tax evasion experiment, participants receive income and decide how much to report to the tax collection agency (reviewed in Alm 2012; Kirchler et al. 2010). Participants are subject to random audits that reveal their true income and they face a penalty for underreporting their income. With this basic setup, experimenters have studied how people's tax compliance depends on key factors such as the tax rate, the frequency of audits, and the severity of penalties (e.g. Alm, Jackson, and McKee 1992; Friedland, Maital, and Rutenberg 1978; Spicer & Thomas 1982). For example, one study found that participants were more likely to honestly report their income when they could vote on whether there would be a fine for tax evasion compared to when it was imposed on them (Feld and Tyran 2002).

Finally, another set of experiments examines a kind of social insurance among peers, rather than implemented by collective institutions. One common method is the solidarity game in which three players each receive an uncertain income and then the players who receive more income choose how much to share with the ones who receive less (Büchner, Coricelli, and Greiner 2007; Ockenfels and Weimann 1999; Selten and Ockenfels 1998). Specifically, each player (independently) has a 2/3 chance of receiving income and a 1/3 chance of receiving nothing. Before finding out if they received income, each player then decides how much money to give to those who receive zero (in the event that the player receives income themselves). Generally, these experiments find that participants are willing to share substantial amounts with the unlucky group members. For instance, one study found that participants gave an average of 14% of their income with a single unlucky group member, and they gave 10% each when both of their group members were unlucky (Büchner, Coricelli, and Greiner 2007). However, in another variation researchers found that participants were less willing to share when the unlucky player made a risky choice that contributed to their misfortune (Trhal and Radermacher 2009). Finally, another experiment added an element of collective choice to the solidarity game (Bolle, Liepmann, and Vogel 2012). Instead of deciding individually, participants voted on how much money the lucky players should give to the unlucky ones; in this case, participants voted for more generous transfers compared to when they individually decided how much to give.

The present experiments add several key features that help extend the experimental literature on social insurance. First, we introduce the concept of hardship, which is a high cost that occurs when a player's income is insufficient to cover their expenses. This cost represents the disproportionate damage of poverty due to factors such as hunger, illness, displacement, or homelessness. The high cost of hardship also means that poverty poses a threat to economic efficiency and that efficiency can be restored if people help each other through hard times. Hence, unlike the solidarity game, helping in the employment game is not only a zero-sum transfer of money, because it can improve economic efficiency when help is directed toward the unemployed. Second, the player decides whether to honestly report their unemployment, and the receiver of the message cannot be sure whether it is true. Hence, a player does not know for sure if their partner is being honest. This kind of noisy cooperation has been studied in a few previous experiments (Aoyagi and Fréchette 2009; Fudenberg, Rand, and Dreber 2012; Rand, Fudenberg, & Dreber 2015), but not for the particular case of social insurance. Third, Experiments 2 and 3 introduce a centralized institution for social insurance, which is a public fund that collects taxes and provides benefits to those who claim unemployment. These experiments vary the institution's regulations including limits and penalties for false claims. While there is a large literature on punishment in cooperative games (reviewed in Balliet et al. 2011) and on penalties for tax evasion (Alm 2012; Kirchler et al. 2010), we examine regulations and penalties for the specific case of social insurance institutions.

The Unemployment Game

Consider a simple model of social insurance with two players: a worker and a helper. The worker looks for a job and they either find one with some probability or they are left unemployed. Then the worker chooses whether to *Claim*, unemployment to ask for help paying the bills or remain *Silent*. The helper does not know whether the worker found a job, but they do know the chances of finding a job. The helper chooses whether, if the worker asks for help, to *Give* money or *Deny* the request.

Figure 1 shows this situation in a payoff matrix. The payoffs represent a player's general health which can be increased by income and decreased by bills and hardship. The payoffs are denominated in general health to reflect the fact that hardship can damage not only someone's financial reserves but also their physical and psychological wellbeing. The worker's chance of finding a job is p(employment) = .5. The helper does not know whether the worker found a job and hence which payoffs apply, but they do know the chance of finding a job. (In game theory terms, it is a Bayesian game in which the helper has incomplete information about the worker's employment). The payoffs reflect parameters for wages, bills, and the costs of hardship. The helper and an employed worker receive a wage of $w = 20$, while an unemployed worker receives 0. (In this example, the helper is always employed with wages which allows them to help if they choose; later we allow both players to be helper or worker.) The helper and worker both pay bills of $b = 6$, deducted from their wages. If the worker does not have enough money to pay the bills, then they pay the cost of hardship, $h = 12$, which reflects debt from unpaid bills and the additional costs of poverty due to deprivation of food, shelter, and medicine.

If the worker asks for help and the helper chooses to *Give*, then the helper gives the worker enough money to pay the bills, +*b* for the worker and –*b* for the helper, which prevents the worker from suffering hardship. (The helper's choice to *Give* transfers money only if the worker chooses to *Claim*, not if they are *Silent*.) The payoffs in Figure X sum these parameters accordingly. For instance, the helper earns the wage minus the bills (20 – 6 = 14) when they do not give money; when they do give money (in response to *Claim*), they earn less (20 – 6 – 6 = 8).

Given this model, so far, the helper is expected to always deny requests since giving is costly. (*Deny* is a weakly dominant strategy.) Moreover, this is economically inefficient when the worker is unemployed, since the aggregate payoffs are greater when the helper gives money to an unemployed worker (aggregate of 8 + 0 = 8 versus 14 + -12 = 2) because giving prevents the additional cost of hardship.

Figure 1: Payoffs for the Unemployment Game

		Employed (p = .5) **Worker**			Unemployed (1 - p) **Worker**	
		Claim	*Silent*		*Claim*	*Silent*
Helper	*Give*	8, 20	14, 14	*Give*	8, 0	14, -12
	Deny	14, 14	14, 14	*Deny*	14, -12	14, -12

Figure 1. Unemployment game. This is a simplified version with fixed roles for helper and worker. We extend the model in the text and experiment to a repeated version in which both players could be a helper or worker.

Now consider a repeated version of the game in which players have equal chances of being a worker or helper each period. In this case, a helper who is willing to give money to an unemployed worker could potentially benefit in the future if their partner returns the favor when the roles are reversed. Hence, when repeated, the unemployment game becomes a familiar social dilemma like the well-known repeated prisoner's dilemma (Axelrod, 1984). Consequently, as in the repeated prisoner's dilemma, there are multiple equilibria including a selfish equilibrium in which players always ask for help while denying help to others, and a cooperative equilibrium in which players honestly signal their unemployment and give money to a partner who is unemployed, yielding greater payoffs for both players in the long run.

However, cooperation could be more difficult to sustain in this variant of social dilemma compared to other forms. The reason is that there are two ways to cheat: A player can deny help when they could provide it and they can falsely claim unemployment. False claims pose a special difficulty because the helper cannot observe the worker's employment status, so they can only estimate probabilistically whether the partner is lying based on the chances of employment. On the other side, this means it is more tempting for a worker to make false claims. because they can gain additional money from a generous partner while this cheating is concealed.

In the present experiments, we use the unemployment game to pose participants with these difficult dilemmas at the core of social insurance. We observe how participants claim

unemployment and provide unemployment benefits in variations of the game with different social insurance institutions.

Experiment 1

In Experiment 1, we start with the simplest form of social insurance in which peers can help each other through hard times. Motivated by reciprocity theory (e.g., Axelrod 1984), we test whether participants are more honest when they interact with the same partner repeatedly compared to interacting with a new partner in each round. Previous experiments have found that repeated interaction promotes cooperation. However, players in the unemployment game cannot know for sure whether their partner is being honest about unemployment, creating an additional obstacle for cooperation. Moreover, the difference between repeated and one-shot interactions mirrors a key difference in real-world social insurance systems found across societies: Some forms of social insurance rely on personal relationships and reputations, whereas other forms such as government social insurance are implemented by impersonal institutions where it can be difficult to monitor individual reputations.

Methods

Participants and Procedure

We recruited undergraduates (N = 142) to participate in a laboratory experiment (59% female; mean age = 20 years, S.D. = 2 years. Participants earned $5 for attendance and they earned additional money from the experimental game (mean = $16.76, S.D. = $4.08). Participants were seated at computer terminals to interact in groups of eight players on a computer network in a laboratory designed for economic experiments. Participants read the instructions, answered comprehension questions, and then played the unemployment game[1]. Participants' final health in the game determined their additional earnings (20 cents per health point; see Appendix for instructions).

Unemployment Game with a Peer Safety Net

We designed an online unemployment game to observe participants' honesty in a peer safety net. We wrote the game software in HTML and Javascript, and participants played the game on an internet browser. In the game, participants take the role of workers in a laboratory economy where they look for jobs to pay the bills and buy goods to boost their health. A worker begins with 20 health points. Each month, a worker has a 50% chance of finding a job. An employed worker receives 20 in wages which they can use to pay the bills, which cost 6 per month, and to buy goods that add to their health. If a worker does not find a job, then they cannot pay the bills so they suffer the additional damage of hardship, which deducts 12 from their health.

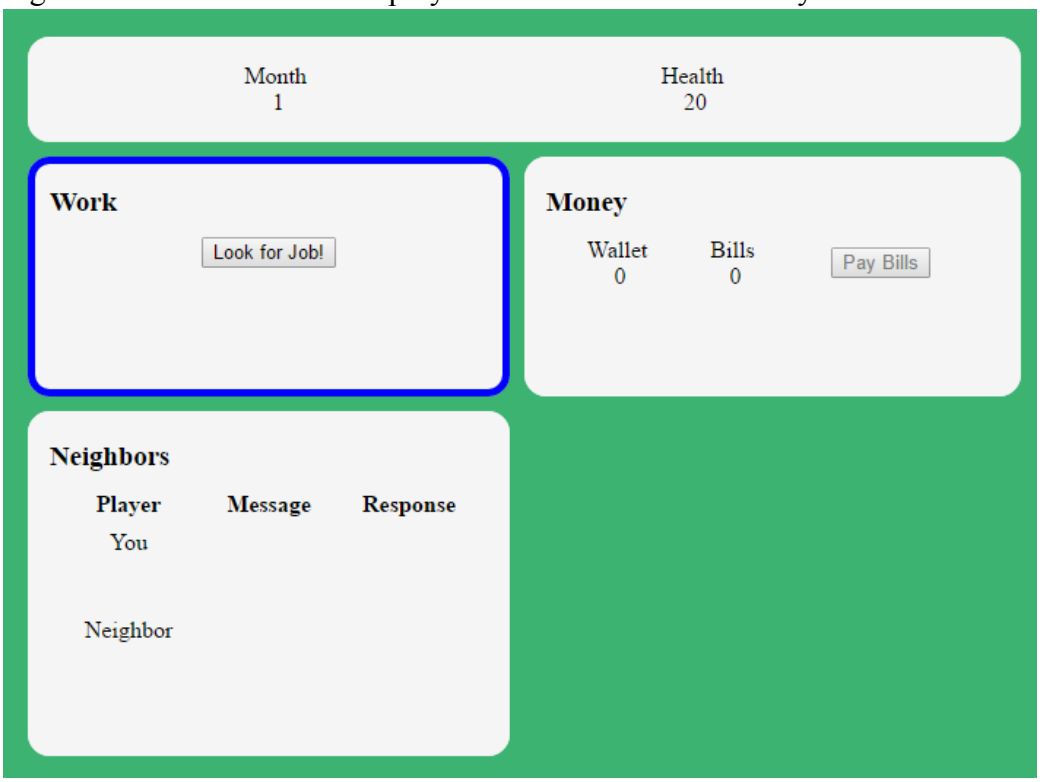
To avoid this damage, a worker can claim unemployment to ask their neighbor for help. Each worker is matched with a neighbor, who is another participant playing a worker in the game. If the worker requests help and their neighbor found a job, then the neighbor can choose to send 6 to cover the worker's bills, which prevents the cost of hardship. Both neighbors can claim unemployment (whether they found a job or not), and they see these decisions simultaneously;

[1] A demo version of the game is here: sbokemper.com/software/unemploymentgame.html

similarly, players decide simultaneously whether to send money if their neighbor claimed unemployment.

After both workers decide whether to request and send help, they pay their bills, spend any remaining money on goods, and then advance to the next month. (To focus on social insurance, players cannot insure themselves by saving money across months.) This sequence repeats for a total of 24 months (participants were unaware of the exact number of months to prevent end game effects). A participant's final health in the game determines their cash earnings.

Figure 2: Screenshot of Unemployment Game with Peer Safety Net



Design and Hypotheses

Participants were assigned to either the partner condition (n = 76) or stranger condition (n = 66*)*. In the partner condition, participants are paired with the same neighbor for all 24 months. In the stranger condition, participants are paired randomly with a new neighbor each month.

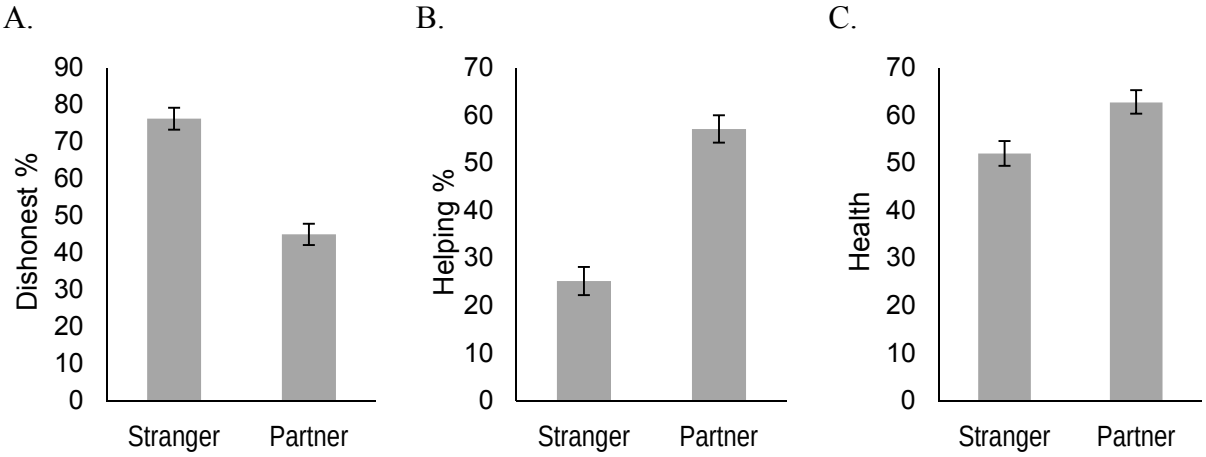
The main dependent variable is dishonesty: the percentage of time that a participant claimed unemployment when they actually had a job. Hence, this dependent measure could potentially vary from 0%, if a player never claimed unemployment when they had a job, to 100%, if they always claimed unemployment when they had a job. We also examine how often an employed player helped someone who requested it. This dependent measure could vary from 0%, if an employed player never helped someone who requested it, to 100%, if they always helped when asked.

Based on reciprocity theory, the reputation hypothesis predicts that participants will be more honest in repeated interactions than in one-shot interactions. If people rely on the same neighbor for help, then the neighbor can detect probabilistically if they are making deceptive claims. Specifically, all players know that the chance of being unemployed is 50%, so a neighbor who asks for help substantially more than half of the time is likely to be exaggerating their needs. In this instance, there is a possible incentive for workers to be honest because excessive requests could lead their neighbor to suspect cheating. On the other hand, an employed worker has a short-term incentive to ask for help anyway to make some extra money, since their partner cannot detect any particular instance of lying, which could potentially make honesty difficult to sustain.

Results

Figure 2 shows participants' dishonest claims, helping, and final health for the stranger and partner conditions. In the stranger condition, participants frequently made false claims of unemployment (mean = 76% dishonest); however, in the partner condition, participants were substantially less dishonest (mean = 45% dishonest), $t(140) = 7.55$, $p < .001$. Participants were also more likely to help a requester in the partner condition than the stranger condition, $t(140) = 7.72$, $p < .001$. Further, participants earned greater total health in the partner condition than the stranger condition, $t(140) = 3.06$, $p < .01$. We also examined whether participants' dishonesty and helping changed as the rounds progressed in the game; a regression analysis showed no change in dishonesty and a small decline in helping in both conditions (See Appendix). Overall, these results show that participants created more effective social safety nets, despite uncertainty about each other's honesty, when they could establish reputations over time in repeated interactions.

Figure 2. Mean (S.E.) Dishonesty, Helping, and Health by Condition



Did liars and helpers make more money?

We analyzed whether lying paid off, i.e., whether participants who lied more often made more money. Figure 3 (panel A) plots the best-fit lines for a participant's final health by how often they were dishonest. The plot suggests that lying paid off in the stranger condition but not the partner condition. To look further, Table 1 reports a regression of final health with predictors for the percent dishonest, partner condition, and the interaction (Column 1). In the stranger condition, participants who were more dishonest earned more health, as indicated by the coefficient on dishonesty. The significant interaction shows that this differed by condition; namely, in the partner condition, a participant's frequency of lying had no significant effect on health, $t = 0.53$, $p = .60$ (test of combined coefficients for dishonesty and the dishonesty X partner interaction). This confirms that dishonesty paid off in the stranger condition but not in the partner condition.

We did the same analysis to see whether helping paid off. The plot for helping (Figure 3, panel B) suggests that players who helped more often made less money in the stranger condition but not in the partner condition. A regression analysis (Table 1, Column 2) confirms that in the stranger condition, participants who helped more often earned less health points. The significant interaction shows that this differed in the partner condition; namely, there was no relationship between helping and health, $t = .29$, $p = .77$ (test of the combined coefficients for helping and helping X partner interaction). This confirms that helping reduced a player's earnings in the stranger condition but not in the partner condition.

Figure 3: Final Health by Dishonest % and Helping %

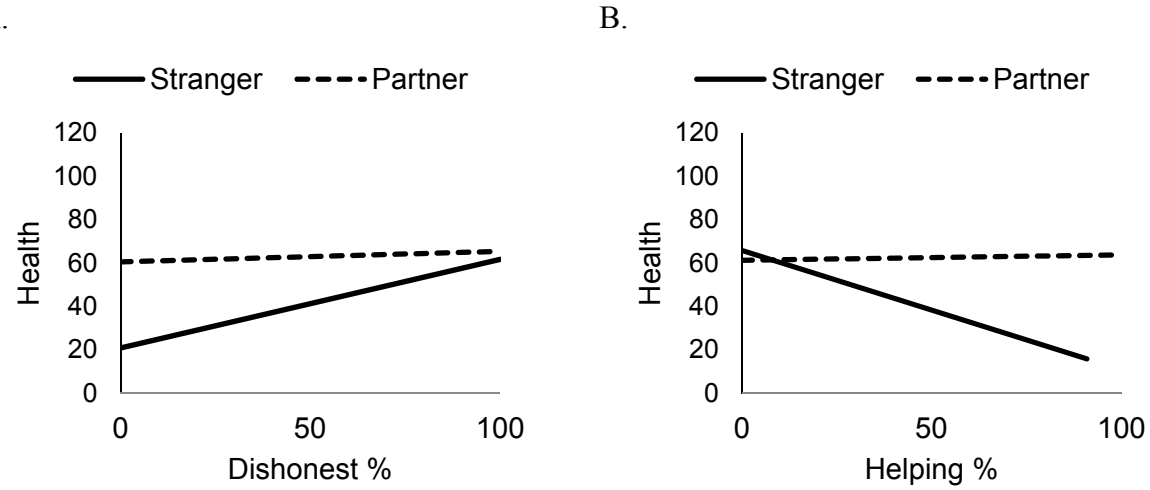


Table 1: Health Predicted by Dishonest % and Helping %

	(1)	(2)
Partner	39.66 (9.38)***	-4.57 (6.37)
Dishonest %	0.41 (0.10)***	-
Partner X Dishonest %	-0.36 (0.14)**	-
Helping %	-	-0.55 (0.10)***
Partner X Helping %	-	0.58 (0.13)***
Constant	20.89 (8.12)*	65.82(3.37)***

Note: Standard errors in parentheses. $n = 142$. $R^2 = 0.162$ in model 1 and 0.240 in model 2. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Did participants who received more help also give more help?

To examine reciprocity, we test whether participants who received help from their neighbor were more likely to give help to their neighbor. Table 2 reports a logistic regression of a participant's decision to help (coded 0 or 1) when they had a job, received a request, and had requested help in the previous round, which their neighbor provided or declined (coded 0 or 1). The model includes the partner condition, whether the participant received help in the previous round (lagged received help), the interaction, and a random effect for each participant to account for repeated observations for each participant. Consistent with reciprocity, the results show that participants who received help in the previous round were more likely to give help. Specifically, the model indicates that in the partner condition, the participant's probability of giving help increased from 52% to 70%, when their own previous request for help was denied or fulfilled, respectively; in the stranger condition, the participant's probability of giving help increased from 21% to 40% when their previous request was denied or fulfilled, respectively.

Table 2: Giving Help Predicted by Help Received

Partner	1.75 (0.28)***
Lagged Received Help	1.12 (0.32)**
Partner X Lagged Received Help	-0.18 (0.42)
Constant	-1.65 (0.20)***

Note: Coefficients with standard errors in parentheses. n = 1,038 helping decisions. Logistic regression with random effect for participant (n = 142 participants). *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Economic efficiency

Last, we can compare participants' economic efficiency to what would happen with full cooperation or full defection. If players were always honest and helped whenever they were asked, then in expectation they would earn 80 total health (same for both conditions). Our results show that participants in the partner condition earned 22% less than this cooperative benchmark, and those in the stranger condition earned 35% less. On the other hand, with full defection, a player would earn in expectation 44 total health; in the partner condition, participants earned 43% more than the defection benchmark, and in the stranger condition, they earned 18% more.

Discussion

Overall, participants were more honest and provided more help when they had the same partner every round, compared to when their neighbor was a new stranger each month. Participants also made more money and achieved greater economic efficiency in the partner condition than the stranger condition. These results show that participants were able to create peer safety nets despite uncertain needs, but only when they could monitor each other's reputation in repeated interactions. However, in the stranger condition participants lied at high rates and also provided little help, showing how peer helping can break down when individuals are more anonymous.

Experiment 2

Government institutions may offer a solution to effectively providing social insurance in anonymous societies. Governments can collect taxes to distribute benefits to people who have fallen on hard times. This ensures that more help is available for people who need it, but does not by itself address the problem of dishonesty. In Experiment 2, we test whether individuals will be more honest with their claims when an institution limits the number of times they can withdraw help compared to when the institution is unregulated. With limited claims, people could potentially manage their own supply of benefits by claiming unemployment only when they need benefits to prevent hardship. Hence, the resource management hypothesis predicts that participants will be more honest when benefits are limited compared to when they are unregulated. Alternatively, participants might not sufficiently plan for the future, in which case limits will cause little or no decrease dishonesty.

Methods

Unemployment Game with Institutional Safety Net

We modified the unemployment game by introducing a public fund to replace peer helping. This institution is funded by taxes on employed workers to help unemployed workers pay their bills. When a worker finds a job, they still earn 20, but they pay -6 in taxes to the public fund. If a worker does not find a job and cannot pay their bills they suffer a cost of -18, -6 for the unpaid bills and -12 for the hardship of poverty. As in Experiment 1, there is no saving from month to month.

Before paying bills, workers can ask for help from the public fund. Importantly, workers can ask whether they found a job or not. If there are funds available, any worker who asks for help receives it. If there are not enough funds to give benefits to every worker who requested, the public fund randomly determines which workers receive help, irrespective of whether they are employed. At the end of each month, the money left in the public fund carries over to the next month. After 24 months, any money in the public fund is split evenly between eight workers in the group. Unlike Experiment 1, workers know that the game lasts for 24 months.

Participants and Procedure

We recruited undergraduates (N = 128) to participate in a laboratory experiment (58% female; mean age of 19.6 years (S.D. = 1.42 years). Participants earn $5 for participant in the experiment and they earned additional money based on the decisions they made (mean = $16.95, S.D. = $5.20). Participants played the unemployment game described above in groups of eight workers. Health in the game was converted to money with the exchange rate of 1 health point to 20 cents. After completing the game, participants took a short survey and were dismissed.

As we did with Experiment 1, we examine dishonesty and health. However, in Experiment 2, we investigate the effect of the type of public fund on hardship: The number of times in 24 months that a worker could not pay their bills and suffered the penalty.

Design and Hypothesis

We use this modified unemployment game to examine if participants can sustain a public fund that is not regulated. To do this, we assigned participants to either an unregulated fund (n = 64) or a fund where they can only request help a limited number of times (n = 64), a policy tool commonly used in unemployment insurance programs. In the unregulated condition, workers could receive help every month as long as funds were available. In the limited condition, workers could only request help in 12 of 24 months. If a worker did not receive help when they requested, they kept the request for the future.

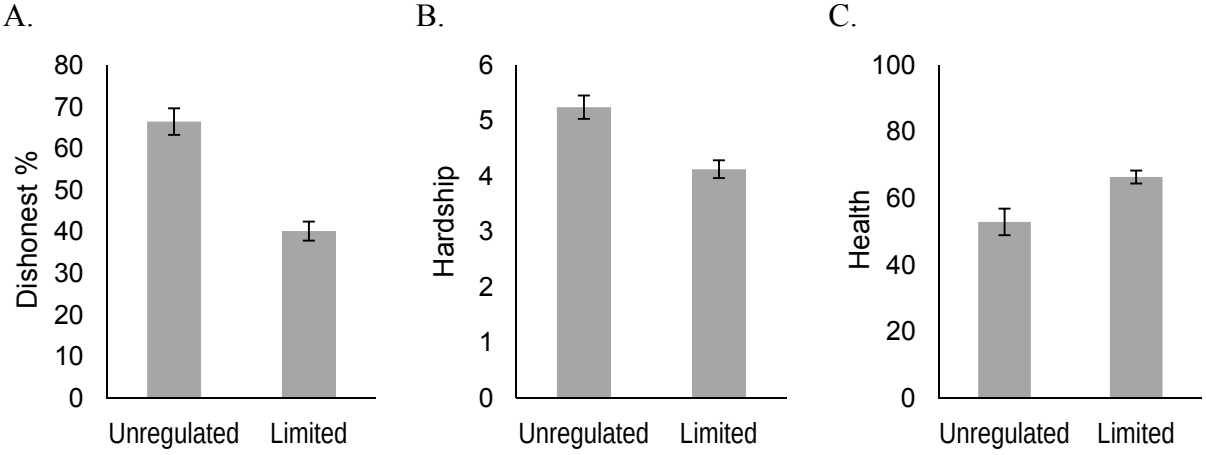
The resource management hypothesis predicts that participants will be more honest in the limited condition than the unregulated condition. In this condition, participants' self-interest is aligned with conserving their requests for when they are unemployed due to the damage they face for not paying their bills. Limiting requests also incentivizes participants to behave closer to the socially optimal outcome of full honesty, which keeps the fund well stocked enough to address most instances of unemployment. Alternatively, people might not plan for the future

adequately and claim benefits when they are employed because they do not weight the chance they will be unemployed in the future highly enough or they want to claim money when it is available now because there may not be enough money in the public fund for them to withdraw in a future round.

Results

Figure 4 shows participants' dishonest claims, hardship, and final health for the unregulated and limited conditions. Participants had were less dishonest when unemployment claims were limited (mean = 38% dishonest) compared to when benefits were unregulated, (mean = 67% dishonest), $t(126) = 7.67$, $p < .001$. Participants also suffered hardship less often in the limited condition than the unregulated condition, $t(126) = 4.25$, $p < .001$, and they earned more health (and money) in the limited condition than the unregulated condition, $t(126) = 3.03$, $p < .01$. These results show that when unemployment benefits were regulated by limits, participants were less dishonest about their employment, they suffered less often from hardship, and they achieved better economic outcomes.

Figure 4. Mean (S.E.) Dishonesty, Hardship, and Health by Condition



Did dishonesty change over time?

Figure 5 shows the percentage of dishonest claims by round aggregated across all participants. The aggregate dishonesty in each round is the percentage who requested benefits out of the total number who had a job and could request benefits (i.e., those who had not reached their limit in the limited condition). Looking at the trends in the figure, when benefits were unregulated, participants became steadily more dishonest over time up to about 90% in the final rounds, presumably as they learned the incentives and inferred that others were being dishonest. When benefits were limited, dishonesty remained steady at relatively low levels (~40%) up until the last two rounds, when it suddenly rose all the way to 95%. To look closer, we conducted a logistic regression of a participant's decision to claim unemployment (when they had a job) with

predictors for the limited condition, round, the interaction, and random effects for participant to account for individual-level variation (Table 3, Column 1). The significant interaction indicates that there was less change in dishonesty over time in the limited condition than the unregulated condition.

Finally, we note the sudden increase in dishonesty in the final rounds of the limited condition. This endgame effect makes strategic sense since players knew that these were the last rounds. (They needed to know the last rounds in this case in order to manage their limited unemployment claims.) Hence, a strategic self-interested player might as well use up their remaining claims whether they found a job or not. To examine this, we reanalyzed the time trends while excluding the last two rounds when endgame effects would be expected (Table 3, Column 2). As before, in the unregulated condition, dishonesty increased over time, but now in the limited condition, there was no significant change over time in dishonesty there was. These results show that rates of dishonesty were stable over time in the limited condition, until the endgame effect in the final rounds. Moreover, we think this prominent endgame effect points to participants' alert opportunism; even after 22 rounds of being relatively honest in their claims of unemployment, participants quickly became highly dishonest in the final rounds when restraint no longer served their self-interest.

Figure 5. Dishonesty (%) by Month

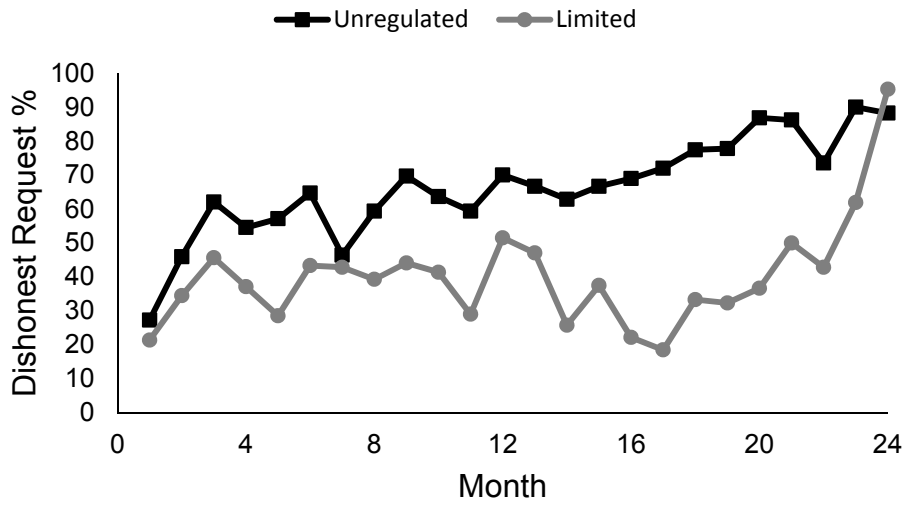


Table 3: Dishonesty Predicted by Limited and Round

	(1) All Rounds	(2) Rounds 1-22
Limited	-0.49 (0.30)	-0.28 (0.32)
Round	0.11 (0.01)***	0.10 (0.02)***
Limited X Round	-0.07 (0.02)***	-0.10 (0.02)***
Constant	-0.38 (0.22)	-0.33 (0.22)

Note: Coefficients with standard errors in parentheses. Column 1, n =1,499 opportunities to lie. Column 2, n = 1,393 opportunities to lie. Logistic regression with random effect for participant (n = 128 participants). *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Did liars make more money?

Next, we analyzed whether people who were more dishonest gained more total health. Figure 6 shows the best-fit lines for participants' final health by dishonesty in each condition. The plot indicates that participants who were more dishonest made more money in the unregulated condition, but they made less money in the limited condition. To examine further, we conducted a regression of participants' final health with predictors for their dishonesty (%), the limited condition, and the interaction. Table 4 shows the results. There is a significant interaction, indicating that the effect of dishonesty differed by condition. Specifically, in the unregulated condition, the effect of dishonesty does not differ from zero. For the limited condition, we test dishonesty by combining the coefficients for dishonesty and the dishonesty X limited interaction, which shows that lying had a negative effect on health, $t = 3.86$, $p < .001$.

Figure 6. Health by Dishonest %

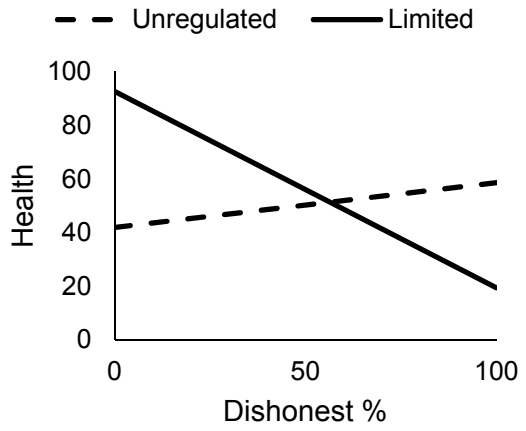


Table 3. Health Predicted by Dishonest % and Limited Condition

Limited	51.80 (11.39)***
Dishonest%	0.17 (0.12)
Limited X Dishonest %	-0.89 (0.22)***
Constant	41.89 (8.35)***

Note: Standard errors in parentheses. $n = 128$. $R^2 = .177$.
*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Economic Efficiency

Finally, we compare participants' economic efficiency to full cooperation and full defection. We used computer simulation to determine the expected value of each of these strategies (see Online Appendix). If all players only asked for help when they were unemployed, then in expectation they would earn 101.83 health (same for the unregulated and limited conditions). Our results show that participants earned 35% less and 48% less than full cooperation in the limited and unregulated conditions, respectively. In contrast, with players always requesting help, they would have earned 31.69 health in the limited condition and 34.95 health in the unregulated condition. Participants outperform these benchmarks by 120% in the limited condition and 52% in the unregulated condition.

Discussion

In sum, we find that participants were more honest when their claims of unemployment were limited compared to when benefits were unregulated. As a result, the social insurance institution performed better with limits, allowing participants to suffer less often from hardship and to earn more health and money. Thus, we find support for the resource management hypothesis that people can efficiently manage a limited supply of benefits, even when they could be tempted to claim benefits when they are employed.

Experiment 3

In Experiment 3, we examine whether another commonly used policy tool, penalties, result in people being more honest in their claims of unemployment. Many social insurance programs penalize people who claim benefits they are not eligible to receive. Two common penalties are fines and bans from receiving benefits in the future. Given that governments do not have the resources to thoroughly check all claims, some people who lie to get benefits will go unpunished. We examine whether probabilistic fines or bans are more effective at deterring dishonesty. Fines take money away from an offender, which violates their sense of ownership of their money. Conversely, bans only withdraw the possibility of receiving benefits from someone. If the fine is viewed as too harsh, people may retaliate against it by increasing their false claims of unemployment. However, people may not be deterred by a ban because it only imposes a financial cost on them if they do not find a job during the time they cannot receive benefits.

Methods

Participants and Procedure

We recruited undergraduates (N = 128) to participate in a laboratory experiment (55% female; mean age of 19.8 (S.D. = 1.88 years). Participants were paid $5 for showing up to participate in the experiment and they earned additional money based on the decision they made (mean = $20.98, S.D. = $5.87). Participants played the unemployment game described above in groups of eight workers. As with the previous experiments, participants received 20 cents in payment for each health point. After the unemployment game, participants were paid and dismissed individually.

The dependent variables are the same as in Experiment 3. In the analysis of the ban condition, we exclude any months where a participant was banned form asking for help since they did not have the option to lie.

Design and Hypothesis

Participants were assigned to either the fine condition or the ban condition. In both conditions, workers are checked for honesty with 1/3rd probability. In both conditions, if there are not funds available to help a worker, their claim is not checked.

In the ban condition, if funds are available to help a worker, then their claim can be checked. When an employed worker's claim is checked, the worker does not receive help and is banned from asking for help in the next month. In the fine condition, if a worker received help, they can be checked when an employed worker is checked in the fine condition, they lose -15 health, which consists of -6 to pay back the money they received and an additional fine of -9.

The resentment hypothesis predicts that participants will be more honest in the ban condition than the fine condition. Adam Smith concisely articulated this key difference between a fine and a ban: "To be deprived of that which we are possessed of, is a greater evil than to be disappointed of what we have only the expectation" (1759/2010). Since a fine is more harsh, it may provoke more resentment and lead to more dishonesty. Conversely, a ban might provoke less resentment because it does not directly take money from them; instead, it indirectly exposes them to hardship.

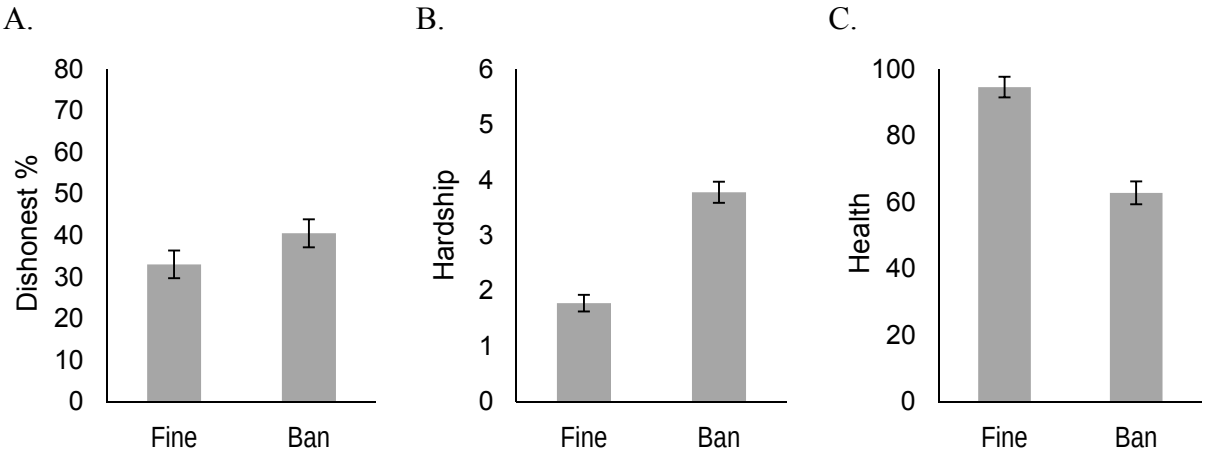
Alternatively, the deterrence hypothesis oppositely predicts that participants will be more honest in the fine condition than the ban condition. People will feel that the fine is more harsh because it takes money away from them, which violates their sense of ownership over their money. Consequently, people should be more deterred by fines than bans. If this deterrent effect predominates over any opposing resentment, then the fine will be more effective for enforcing honesty. Importantly, the expected cost of the ban and fine are roughly the same (about -5), so they do not differ in deterrence purely in terms of raw monetary incentives. This allows us to test for a greater deterrent effect of fines over bans, due to a greater transgression of ownership, holding constant the underlying incentives.

Results

Figure 7 shows participants' dishonest claims, hardship, and health in the fine and ban conditions. Participants were less dishonest in the fine condition than the ban condition, although

this difference was only marginally significant, $t(126) = 1.58$, $p = .059$. We also examined how many participants never lied at all. We found that more participants never lied in the fine condition (23%) than the ban condition (6%), $\chi^2(1) = 7.48$, $p < .01$. Participants suffered hardship less often in the fine condition than the ban condition, $t(126) = 8.27$, $p < .001$. Participants also earned more health in the fine condition than the ban condition, $t(126) = 6.86$, $p < .002$. Unlike Experiment 2, we did not find a significant relationship between honesty and health in either condition (see Appendix). Overall, these results suggest that the fine was more effective than the ban at deterring dishonesty, preventing hardship, and promoting economic health.

Figure 7. Mean (S.E.) Dishonesty, Hardship, and Health by the Penalty Condition



We further compare these cases to the institutions from Experiment 2 with unregulated and limited benefits. Compared to unregulated benefits, participants lied considerably less in the fine condition, $t(126) = 7.23$, $p < .001$, and the ban condition, $t(126) = 5.60$, $p < .001$, showing that both penalties reduced dishonesty. Compared to the limited condition, the fine and ban conditions showed similar effectiveness: rates of dishonesty did not differ from the limited condition for either penalty, ps $> .10$. These results show that punishment was effective at promoting honesty, although penalties did not differ from limits in effectiveness.

Did dishonesty change over time?

Figure 8 shows the percentage of dishonest claims by round aggregated across participants. The aggregated dishonesty in each round is the percentage who requested benefits out of the total number who had a job and could have requested benefits (i.e., participants who were not currently banned). The figure appears to show a slight increase in dishonesty in the first few rounds, followed by stable levels of dishonesty (~30-50%) for the remaining rounds, except for a sudden increase in the final round of the ban condition (75% dishonest). To analyze these trends, we conducted a logistic regression of a participant's dishonesty with predictors for the type of penalty, month, the interaction, and a random effect for participant (Table 4, column 1). The model shows a small but significant increase in dishonesty over time in both conditions. However, similar to Experiment 2, there is reason to suspect an endgame effect in the ban condition, because there is no cost from a ban in the final round (a participant will not need

future benefits). Indeed, dishonesty reached the highest rate at 75% in the final round of the ban condition, consistent with an endgame effect, which also reveals participants'. Given this endgame effect, we reanalyzed the time trends while excluding the final month from the analysis (Table 4, column 2). Now we do not find a significant increase in dishonesty over time in the fine condition (coefficient for round) or the ban condition, $t = 1.05$, $p = .293$ (test of combined coefficients for round and the ban X round interaction). More generally, the jump in dishonesty in the final round of the ban condition points to participants' strategic sophistication and opportunism: The moment the ban no longer imposed a financial cost, participants became considerably more dishonest, increasing from ~50% to 75%.

Figure 9: Dishonesty (%) by Month

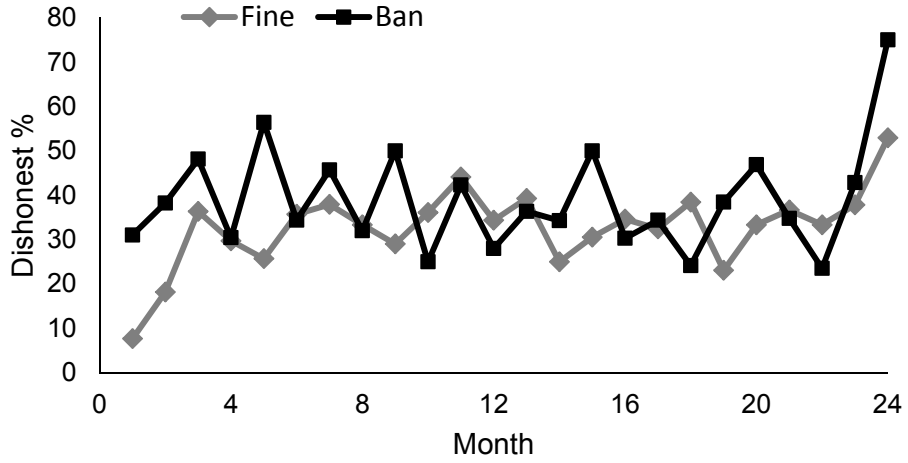


Table 4: Dishonesty Predicted by Month and Limits

	(1) All Rounds	(2) Rounds 1-23
Ban	0.83 (0.37)*	0.92 (0.38)*
Round	0.03 (0.01)**	0.03 (0.01)
Ban X Round	-0.03 (0.02)	-0.04 (0.02)*
Constant	-1.45 (0.27)***	-1.38 (0.27)***

Note: Coefficients with standard errors in parentheses. Column 1, n =1,485 opportunities to lie. Column 2, n = 1,423 opportunities to lie. Logistic regression with random effect for participant (n = 128 participants). *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Did punishment affect lying?

The resentment hypothesis predicts that people will become more dishonest after they are punished in the fine condition than the ban condition. Table 5 shows a logistic regression of an

employed participant's dishonesty with predictors for the type of penalty, whether they were penalized in the previous round (lagged penalty), the interaction, and a random effect for participant. The results show that participants were *more* likely to lie after they were penalized in the previous round, and this effect did not differ by the type of penalty. In the fine condition, the probability that an employed participant lied increased from 32% to 64% if they were penalized in the previous round. Similarly, the probability increased from 36% to 72% in the ban condition. Thus, we find that participants were more likely to lie about their employment immediately after being penalized, supporting the hypothesis that people can react to penalties with resentment and resistance, rather than exclusively being deterred by their costs.

Table 5: Dishonesty Predicted by Previous Penalties

Ban	0.24 (0.25)
Lagged Penalty	1.70 (0.47 ***
Ban X Lagged Penalty	0.22 (0.69)
Constant	-0.98 (0.18)***

Note: Coefficients with standard errors in parentheses. n = 1,481 opportunities to lie. Logistic regression with random effect for participant (n = 128 participants). *** $p <$ 0.001, ** $p < 0.01$, * $p < 0.05$.

We can further break down the effect of a ban by whether it actually imposed financial costs on a participant. A ban has no actual effect if the participant was lucky enough to find a job in the period that they were banned. Hence, we compare a ban that had no actual cost to a ban that did have an actual cost because the participant suffered hardship during the ban. We conducted a logistic regression of an employed participant's dishonesty in the ban condition with predictors for whether they were banned in the previous round (lagged ban), whether they suffered hardship in the previous round (lagged hardship), the interaction, and a random effect for participant (Table 6).

The results show that the effect of the ban depended on whether it imposed actual financial costs. Namely, the significant interaction (lagged hardship X lagged ban) shows that the ban with actual costs was more likely to deter dishonesty. Specifically, a participant's predicted probability of lying was 89% after a costless ban, but this dropped to 55% dishonesty after a ban with financial costs—a 34 percentage point difference.

Table 6: Dishonesty Predicted by Suffering Hardship and Being Banned

Lagged Hardship	0.56 (0.24)*
Lagged Ban	3.33 (1.10)**
Lagged Hardship X Lagged Ban	-2.96 (1.29)**
Constant	-0.65 (0.19)**

Note: Coefficients with standard errors in parentheses. n = 688 opportunities to lie. Logistic regression with random effect for participant (n = 64). *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Economic Efficiency

We compare participants' economic efficiency to full cooperation and full defection. In both conditions, full cooperation yields an expected payoff of 101.83 health. Participants in fine condition achieved 8% less than health than full cooperation, while participants in the ban condition earned 38% less. For full defection, participants would have earned 84.28 health and 5.23 health in the fine and ban conditions, respectively. Participants earned 12% more than full defection in the fine condition and 1,102% more than full defection in the ban condition.

Discussion

We find that fines were a little more effective than bans at promoting honesty. Participants made fewer requests while employed under fines than bans with only marginal significance. However, we observed that more participants were completely honest in the fine condition compared to the ban condition. Consequently, participants in the fine condition achieved greater earnings and less hardship. These results support the deterrence hypothesis that fines are more effective than (payoff-equivalent) bans because a fine directly takes the cheater's money, which feels more harsh than a ban because it transgresses the cheater's sense of ownership. Further, participants were more likely to lie immediately after being fined or banned, which is consistent with the idea that participants resented being punished. Importantly, participants showed no less resentment for bans than fines: They increased cheating to the same extent after receiving a penalty, contradicting the hypothesis that fines provoke greater resentment.

General Discussion

We presented three experiments that examine key problems faced by unemployment insurance programs. In Experiment 1, we found that participants were able to create and sustain a safety net when they interacted repeatedly with a partner. However, when participants interacted with a stranger, the peer safety net fell apart as people were dishonest and provided little help when asked. These results show a critical difference in the effectiveness of social safety nets when participants interact repeatedly, as in small tightknit communities, or more anonymously, as in large mass society. In Experiment 2, we found that when the public fund was unregulated, participants frequently (67% of the time) claimed unemployment even though they were

employed. But when the fund was regulated by limits, participants' dishonest claims greatly decreased (40%) as they were able to effectively manage their limited supply of benefits. In Experiment 3, we found that penalties also promoted honesty in unemployment claims. The fine was a little more effective than the ban at deterring dishonesty. Taken together, these findings offer insight into how the rules of a social insurance affect people's dishonesty about hardship, a key problem faced by peers and governments alike.

Cooperation is fundamental in social and political life (Alford & Hibbing 2004). Past research has shown that cooperation can be sustained by reciprocity (Axelrod 1984; Nowak 2006; Trivers 1971). However, reciprocity is harder to maintain when people cannot tell whether their partner defected intentionally or unintentionally due to mistakes or external constraints (Fundenberg, & Rand, & Dreber 2012). The results of the peer safety net (Experiment 1) show that participants were able to sustain cooperation with repeated interactions, despite the fact that they could not know for sure if their partner was being honest about their unemployment.

Traditional theories of redistribution assume that transfers of wealth from the rich to the poor reduce efficiency (Mankiw 2013; Okun 1975). The unemployment game developed in this paper instead accounts for the ability of aid to prevent the damages of poverty, allowing the possibility of achieving greater efficiency by preventing hardship among the unemployed. Specifically, the unemployment game introduces an explicit cost of hardship to reflect the fact that money spent to alleviate the harms of poverty generates more economic surplus than when the same money is spent on regular goods and services. This is similar to how previous experimental games such as the public goods game use multipliers to represent gains in trade from working together or making a deal for exchange; except in the unemployment game, the gains come from meeting a person's needs for food, shelter, and other necessities. Moreover, the cost of hardship can be varied to represent different threats of hardship.

Policymakers often face the challenge of determining the right form and amount of punishment for false claims of unemployment. If an important goal of policy is to maximize social welfare, then it is desirable to set the amount of punishment just high enough to be effective, but not so high that it inflicts more damage with no further benefits (Bentham, 1780/2000). Future research can examine the effects of different levels of penalties on honesty. One possibility is that lower penalties could still be effective because they reinforce the social expectation that someone should not lie about employment. Finding the right level and target of fines may be especially important for programs that deal with low-income citizens, because a harsh fine could push someone past the tipping point into poverty.

Another challenge for policymakers is crafting policies that are likely to receive public support, while also best serving the beneficiaries. Different citizens have different beliefs about the role of government and who deserves benefits (e.g. Petersen 2012), which can make it difficult to develop policies that appeal to a majority. The unemployment game can be adapted to measure support for various regulations of social insurance programs, while giving participants experience with how particular regulations affect their economic outcomes. For example, participants could be allowed to vote on the level of fines, the probability of audits, or the number of claims workers can make to the public fund.

Participants were more honest when benefits were limited (Experiment 2), but they still made false claims of unemployment about 40% of the time. This suggest that participants had some difficulty managing their budget. Past research has found that participants learned with experience to improve their management of resources, and this could also apply to the management of a limited budget of claims (Ballinger, Palumbo, & Wilcox 2003; Brown, Chua, & Camerer 2009).

The increase in dishonesty immediately after a fine or ban in Experiment 3 supports the resentment hypothesis. However, it might alternatively reflect participants' misperception that there was less chance of being checked again immediately after being caught lying. This interpretation would be consistent with tax compliance experiments that found that participants were more likely to evade taxes immediately after being audited (Guala & Mittone 2005; Kastlunger et al. 2009). These possibilities can be further examined in future work.

Importantly, we used carefully controlled laboratory experiments to examine when individuals will misrepresent their needs. However, the social insurance programs that people rely in on their daily lives are immensely more complicated than the public fund institution in these experiments. For instance, in real labor markets different workers have different chances of suffering unemployment. Policymakers are regularly embroiled in political conflicts over funding for social programs. Bureaucrats vet applicants to ensure that they meet the criteria necessary to receive assistance. Economic experiments must simplify many of these complexities in order to study the underlying social behaviors with all of the advantages of controlled experiments. Importantly, however, this means that the results of experiments do not necessarily directly extrapolate to a given real-world program, even if they can provide an unusually clear view of the social behaviors underlying various political systems.

Economies around the world are rapidly changing and so are the needs of workers. New technologies threaten to make many traditional jobs obsolete. Government safety nets will need to keep up with the quickly shifting needs of citizens. The present experiments illustrate how difficult problems such as evaluating workers' claims of need and preventing economic hardship can be studied scientifically in controlled laboratory experiments. In these changing times, we can use the methods of experimental economics to help design the social safety nets of the future.

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Appendix

Supplemental Analyses for Experiment 1

Did lying and helping change over time?

We examined whether participants' dishonesty changed over time as the game progressed. We conducted a logistic regression analysis of participants' dishonesty (coded 0 or 1) that included the partner condition, round, the interaction, and a random effect for participant to account for repeated observations. We did not find a change in dishonesty over time (Table A1, Column 1). We conducted the same analysis for helping and found a small but significant decline in helping over time in both conditions (Table A1, Column 2).

Figure A1: Dishonest % by Month

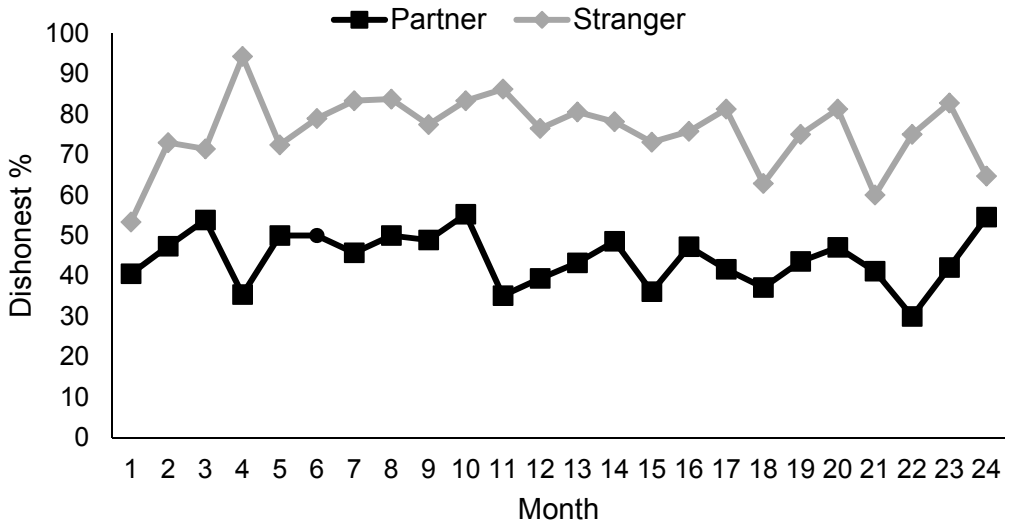

Figure A2: Percentage Helping Requesters by Month

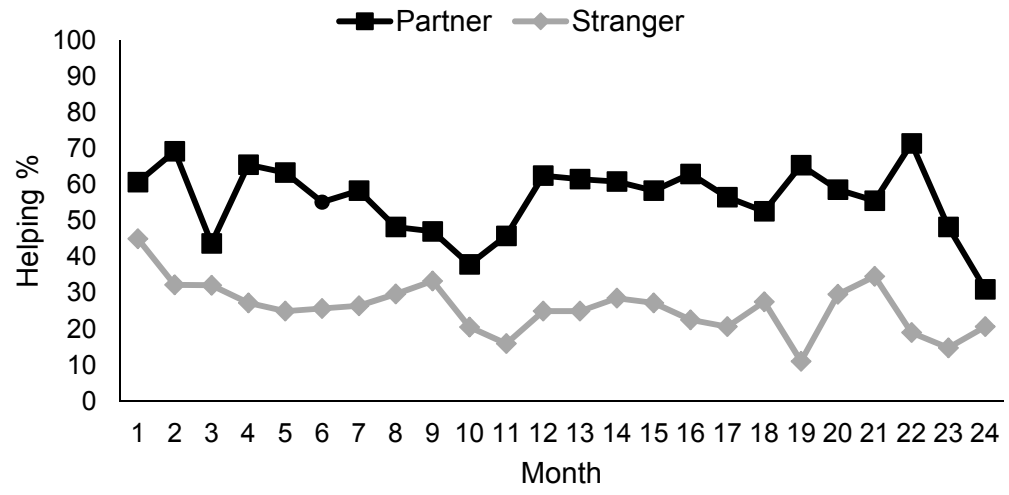

Table A1: Dishonesty and Helping Predicted by Round

	(1) Dishonesty	(2) Helping
Partner	-1.91 (0.34)***	1.43 (0.34)***
Round	-0.01 (0.01)	-0.03 (0.01)*
Partner X Round	0.01 (0.02)	0.02 (0.02)
Constant	1.71 (0.26)***	-0.96 (0.25)***

Note: Coefficients with standard errors in parentheses. Logistic regression with random effect for participant (n = 142 participants). Column 1 dishonesty: n = 1,704 decisions when the participant had a job. Column 2 helping: n = 1,325 decisions when the participant was asked to help and had a job. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Supplemental Analysis Experiment 3

Did liars make more money?

We conducted a regression analysis to examine if participants who were more dishonest made more money (Table A2). We included predictors for dishonest, ban, and the interaction between the two. We do not find a significant interaction or significant main effect of dishonesty.

Figure A3: Health by Dishonest %

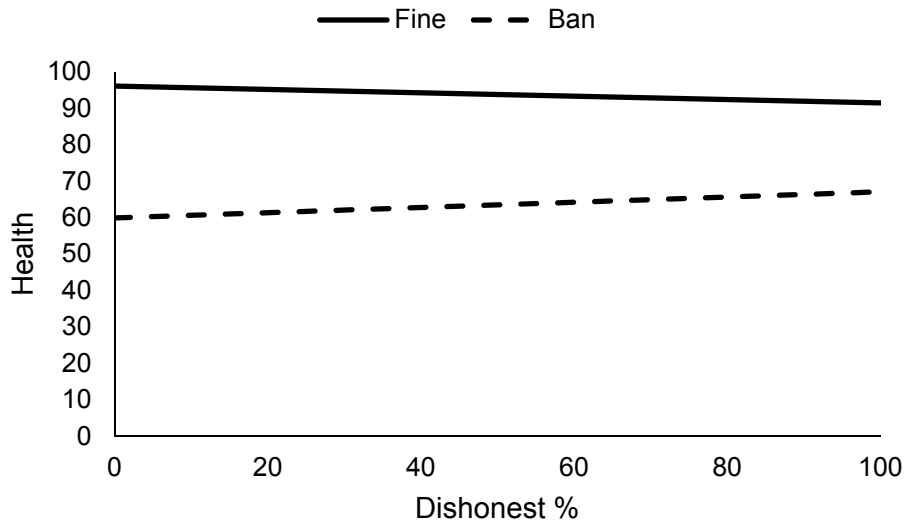

Table A2: Regression of Health by Dishonest % and Ban

Ban	-36.22 (7.98)***
Dishonest %	-0.05 (0.12)
Ban X Dishonest %	0.12 (0.18)
Constant	96.16 (0.26)***

Note: Standard error in parentheses. $n = 128$. $R^2 = 0.27$. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Simulations for Economic Efficiency in Experiment 2 and 3

We programmed simulations using Javascript to determine the full cooperation and full defection benchmarks for each condition of Experiment 2 and Experiment 3. In the full cooperation simulations, agents only requested help from the public fund when they had a job. In the full defection simulations agents requested help in every round unless they had received help 12 times in the limited condition or they could not ask for help in the ban condition. We repeated the simulation of an 8 player, 24 round Unemployment Game 1 million times. We conducted 8 separate simulations: full cooperation and full defection in each of the unregulated, limited, fine, and ban conditions. After a simulation was complete, the expected value of the strategy was determined by calculating the mean final health across all iterations of that particular simulation.

Partner Instructions

Page 1

Instructions

This is a decision-making study. Please do not talk or communicate with any other participants during the study. If you have any questions, please raise your hand and a monitor will come to answer your questions privately.

In this study, you will participate in an interaction with other participants. Each participant begins with health points and their health points can increase or decrease depending on everyone's choices. At the end of the study, you will be paid based on your final health, 20 cents for each point.

The decisions that you make are anonymous and the other participants will not know who made which decisions. Your decisions will affect your own payment and other people's payments, so please carefully read these instructions.

Page 2

Overview

In this interaction, you will look for a job in order to pay bills at the end of each month. The bills are the cost of meeting basic needs such as food, shelter, and medicine. If you cannot pay the bills, then you do not meet your basic needs and your health suffers. To avoid this, you can ask your neighbor for help. Your neighbor is another participant in this study. When you request help, your neighbor decides whether or not to send money to help you pay the bills. Your neighbor can also request help from you, and you can choose whether or not to send money. Importantly, both you and your neighbor will not know for sure whether the other person has found a job. And, both individuals can request money whether they find a job or not.

These steps repeat for a series of months. Every month, you have the same neighbor who is played by the same participant for all of the months.

Your final health at the end determines your additional earnings in the study, 20 cents per health point.

Page 3

Work

Please locate the work panel on your screen. Each month, you look for a job by clicking the button labeled "Look for Job!" You have a 50% chance of finding a job and a 50% chance of unemployment. If you find a job, you earn a wage of 20. If you are unemployed, you earn 0. Your earnings will appear in your wallet in the money panel.

Page 4

Money

Your wallet shows the money you have available to spend for the month. Each month, you also have to pay bills of -6 to meet your basic needs. If you cannot pay the bills, then your health decreases by -12. If you can pay your bills, then you spend any leftover money on extra goods that boost your health by 1 point for each dollar spent. Note that you always automatically spend any money in your wallet at the end of the month to boost your health as much as you can.

Page 5

Neighbors

You can ask your neighbor for help each month. If you ask, your neighbor decides whether to send 6 dollars to cover your bills or to send 0 dollars. Your neighbor can also ask you for help,

and if so, you similarly decide whether to send 6 or 0 dollars. Any money that you send or receive is deducted from or added to your wallet. Note that you cannot send money if you have 0 in your wallet or if you do not receive a request.
You have the same neighbor played by the same participant for all months.

Page 6

Summary

Each month, you have a 50% chance of finding a job that pays 20 in wages.
Next, you decide whether to request help from your neighbor and whether to send money if your neighbor requests help. You have the same neighbor played by the same participant for all months.
Last, you pay bills and spend any remaining money to boost your health, 1 point per dollar. If you cannot pay bills of -6, your health suffers and you lose -12 health points.
These steps repeat for a series of months. At the end, you then earn 20 cents per health point based on your final health.

Stranger Instructions

Page 1

Instructions

This is a decision-making study. Please do not talk or communicate with any other participants during the study. If you have any questions, please raise your hand and a monitor will come to answer your questions privately.

In this study, you will participate in an interaction with other participants. Each participant begins with health points and their health points can increase or decrease depending on everyone's choices. At the end of the study, you will be paid based on your final health, 20 cents for each point.

The decisions that you make are anonymous and the other participants will not know who made which decisions. Your decisions will affect your own payment and other people's payments, so please carefully read these instructions.

Page 2

Overview

In this interaction, you will look for a job in order to pay bills at the end of each month. The bills are the cost of meeting basic needs such as food, shelter, and medicine. If you cannot pay the bills, then you do not meet your basic needs and your health suffers. To avoid this, you can ask your neighbor for help. Your neighbors are other participants in this study. When you request help, your neighbor decides whether or not to send money to help you pay the bills. Your neighbor can also request help from you and you can choose whether or not to send money. Importantly, both you and your neighbor will not know for sure whether the other person has found a job. And, both individuals can request money whether they find a job or not.

These steps repeat for a series of months. Each month, you will have a new neighbor who is played by different participants in different months. Your new neighbor will be randomly selected from the other participants and will be numbered neighbor 1, 2, 3, etc. according to the current month.

Your final health at the end determines your additional earnings in the study, 20 cents per health point.

Page 3

Work

Please locate the work panel on your screen. Each month, you look for a job by clicking the button labeled "Look for Job!" You have a 50% chance of finding a job and a 50% chance of unemployment. If you find a job, you earn a wage of 20. If you are unemployed, you earn 0. Your earnings will appear in your wallet in the money panel.

Page 4

Money

Your wallet shows the money you have available to spend for the month. Each month, you also have to pay bills of -6 to meet your basic needs. If you cannot pay the bills, then your health decreases by -12. If you can pay your bills, then you spend any leftover money on extra goods that boost your health by 1 point for each dollar spent. Note that you always automatically spend any money in your wallet at the end of the month to boost your health as much as you can.

Page 5

Neighbors

You can ask your neighbor for help each month. If you ask, your neighbor decides whether to send 6 dollars to cover your bills or to send 0 dollars. Your neighbor can also ask you for help, and if so, you similarly decide whether to send 6 or 0 dollars. Any money that you send or receive is deducted from or added to your wallet. Note that you cannot send money if you have 0 in your wallet or if you do not receive a request.

Each month, you have a new neighbor who is played by different participants in different months. Your new neighbor will be randomly selected from the other participants and will be numbered “Neighbor 1”, “Neighbor 2”, etc. according to the current month.

Page 6

Summary

Each month, you have a 50% chance of finding a job that pays 20 in wages.

Next, you decide whether to request help from your neighbor and whether to send money if your neighbor requests help. You have different neighbors played by different participants each month.

Last, you pay bills and spend any remaining money to boost your health, 1 point per dollar. If you cannot pay bills of -6, your health suffers and you lose -12 health points.

These steps repeat for a series of months. At the end, you earn 20 cents per health point based on your final health.

Unregulated Public Fund Instructions

Page 1

Instructions

This is a decision-making study. Please do not talk or communicate with any other participants during the study. If you have any questions, please raise your hand and a monitor will come to answer your questions privately.

In this study, you will participate in an interaction with other participants. Each participant begins with health points and their health points can increase or decrease depending on everyone's choices. At the end of the study, you will be paid based on your final health, 20 cents for each point.

The decisions that you make are anonymous and the other participants will not know who made which decisions. Your decisions will affect your own payment and other people's payments, so please carefully read these instructions.

Page 2

Overview

In this interaction, you will look for a job in order to pay bills at the end of each month. The bills are the cost of meeting basic needs such as food, shelter, and medicine. If you cannot pay the bills, then you do not meet your basic needs and your health suffers. To avoid this, you can ask for help from your group. You are in a group of eight workers who live in the same town. The other workers in your group are other participants in this study.

The town has set up a Public Fund with an administrator who collects contributions and distributes benefits to unemployed workers. Workers pay taxes to the fund when they earn income, and they can ask to withdraw money from the fund after they look for a job.

Importantly, you and the other workers could withdraw money from the fund whether you find a job or not. The administrator of the Public Fund cannot check a worker's employment so they do not know if a worker is really unemployed. However, if all of the funds have been used up, then no one can receive benefits whether they are unemployed or not.

These steps repeat for 24 months. Every month, you are in the same group of workers and any unused money in Public Fund carries over to the next month.

Your final health at the end determines your additional earnings in the study, 20 cents per health point.

Page 3

Work

Please locate the work panel on your screen. Each month, you look for a job by clicking the button labeled "Look for Job!" You have a 50% chance of finding a job and a 50% chance of unemployment. If you find a job, you earn a wage of 20. All workers pay 6 in taxes to the Public Fund when they find a job. If you are unemployed, you earn 0. Your earnings will appear in your wallet in the money panel.

Page 4

Money

Your wallet shows the money you have available to spend for the month. Each month, you also have to pay bills of -6 to meet your basic needs. If you cannot pay the bills, then you suffer

hardship and your health decreases by -18. If you can pay your bills, then you spend any leftover money on extra goods that boost your health by 1 point for each dollar.
Note that you always automatically spend any money in your wallet at the end of the month to boost your health as much as you can.

Page 5

Public Fund

All workers in your group can ask for help from the Public Fund each month. The Public Fund is set up for workers who are unemployed but the administrator cannot check their employment. So, a worker could also ask for help whether they find a job or not.
The Public Fund gains money each month by collecting taxes from workers. A worker who requests help will receive 6 from the Public Fund to pay their bills if funds are available. If no more funds are available, then all requests are denied until more taxes are collected. (If multiple workers request the last remaining funds, the recipients will be randomly determined.)
Any remaining money in the Public Fund carries over to the next month. After the last month, any remaining money in the Public Fund is divided equally among workers and adds to their health.

Page 6

Workers

The workers panel shows the workers in your group, their health, and how many times they asked for help. Your worker icon is highlighted in blue.

Page 7

Summary

Each month, you have a 50% chance of finding a job that pays 20 in wages. If you find a job, you pay 6 in taxes to the Public Fund.
Next, you decide whether to request help from the Public Fund. The administrator cannot check employment, so a worker could request help whether they find a job or not.
Last, you pay bills and spend any remaining money to boost your health, 1 point per dollar.
If you cannot pay bills of -6, you suffer hardship and you lose -18 health points.
These steps repeat for 24 months. At the end, you earn 20 cents per health point.

Limited Public Fund Instructions

Page 1

Instructions

This is a decision-making study. Please do not talk or communicate with any other participants during the study. If you have any questions, please raise your hand and a monitor will come to answer your questions privately.

In this study, you will participate in an interaction with other participants. Each participant begins with health points and their health points can increase or decrease depending on everyone's choices. At the end of the study, you will be paid based on your final health, 20 cents for each point.

The decisions that you make are anonymous and the other participants will not know who made which decisions. Your decisions will affect your own payment and other people's payments, so please carefully read these instructions.

Page 2

Overview

In this interaction, you will look for a job in order to pay bills at the end of each month. The bills are the cost of meeting basic needs such as food, shelter, and medicine. If you cannot pay the bills, then you do not meet your basic needs and your health suffers. To avoid this, you can ask for help from your group. You are in a group of eight workers who live in the same town. The other workers in your group are other participants in this study.

The town has set up a Public Fund with an administrator who collects contributions and distributes benefits to unemployed workers. Workers pay taxes to the fund when they earn income, and they can ask to withdraw money from the fund after they look for a job.

Importantly, you and the other workers could withdraw money from the fund whether you find a job or not. The administrator of the Public Fund cannot check a worker's employment so they do not know if a worker is really unemployed. However, if all of the funds have been used up, then no one can receive benefits whether they are unemployed or not. To help conserve the fund, the administrator allows each worker to request help no more than half of the time, specifically a worker can make up to 12 requests over 24 months.

These steps repeat for 24 months. You will stay in the same group of workers and the amount in Public Fund carries over from month to month.

Your final health at the end determines your additional earnings in the study, 20 cents per health point.

Page 3

Work

Please locate the work panel on your screen. Each month, you look for a job by clicking the button labeled "Look for Job!" You have a 50% chance of finding a job and a 50% chance of unemployment. If you find a job, you earn a wage of 20. All workers pay 6 in taxes to the Public Fund when they find a job. If you are unemployed, you earn 0. Your earnings will appear in your wallet in the money panel.

Page 4

Money

Your wallet shows the money you have available to spend for the month. Each month, you also have to pay bills of -6 to meet your basic needs. If you cannot pay the bills, then you suffer

hardship and your health decreases by -18. If you can pay your bills, then you spend any leftover money on extra goods that boost your health by 1 point for each dollar.
Note that you always automatically spend any money in your wallet at the end of the month to boost your health as much as you can.

Page 5

Public Fund

All workers in your group can ask for help from the Public Fund each month. The Public Fund is set up for workers who are unemployed but the administrator cannot check their employment. So, a worker could also ask for help whether they find a job or not.
The administrator allows each worker to ask for help up to half of the time. A worker can make up to 12 requests every 24 months. When a worker has used all of their requests, they can no longer ask for help.
The Public Fund gains money each month by collecting taxes from workers. A worker who requests help will receive 6 from the Public Fund to pay their bills if funds are available. If no more funds are available, then all requests are denied until more taxes are collected. (If multiple workers request the last remaining funds, the recipients will be randomly determined.)
Any remaining money in the Public Fund carries over to the next month. After the last month, any remaining money in the Public Fund is divided equally among workers and adds to their health.

Page 6

Workers

The workers panel shows the workers in your group, their health, and how many times they asked for help. Your worker icon is highlighted in blue.

Page 7

Summary

Each month, you have a 50% chance of finding a job that pays 20 in wages. If you find a job, you pay 6 in taxes to the Public Fund.

Next, you decide whether to request help from the Public Fund. The administrator cannot check employment, so a worker could request help whether they find a job or not. You can ask for help up to 12 times every 24 months.

Last, you pay bills and spend any remaining money to boost your health, 1 point per dollar. If you cannot pay bills of -6, your health suffers and you lose -18 health points.

These steps repeat for 24 months. At the end, you earn 20 cents per health point based on your final health.

Ban Instructions

Page 1

Instructions

This is a decision-making study. Please do not talk or communicate with any other participants during the study. If you have any questions, please raise your hand and a monitor will come to answer your questions privately.

In this study, you will participate in an interaction with other participants. Each participant begins with health points and their health points can increase or decrease depending on everyone's choices. At the end of the study, you will be paid based on your final health, 20 cents for each point.

The decisions that you make are anonymous and the other participants will not know who made which decisions. Your decisions will affect your own payment and other people's payments, so please carefully read these instructions.

Page 2

Overview

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The town has set up a Public Fund with an administrator who collects contributions and distributes benefits to unemployed workers. Workers pay taxes to the fund when they earn income, and they can ask to withdraw money from the fund after they look for a job. If all of the funds have been used up, then no one can receive benefits whether they are unemployed or not. Importantly, you and the other workers could withdraw money from the fund whether you find a job or not. The administrator of the Public Fund does not have time to check every worker's claim of unemployment, but they will check 1/3 of the time, and if the worker did have a job, then they do not receive the money and they are banned from asking for help the following month.

These steps repeat for 24 months. Every month, you are in the same group of workers and any unused money in Public Fund carries over to the next month.

Your final health at the end determines your additional earnings in the study, 20 cents per health point.

Page 3

Work

Please locate the work panel on your screen. Each month, you look for a job by clicking the button labeled "Look for Job!" You have a 50% chance of finding a job and a 50% chance of unemployment. If you find a job, you earn a wage of 20. All workers pay 6 in taxes to the Public Fund when they find a job. If you are unemployed, you earn 0. Your earnings will appear in your wallet in the money panel.

Page 4

Money

Your wallet shows the money you have available to spend for the month. Each month, you also have to pay bills of -6 to meet your basic needs. If you cannot pay the bills, then you suffer

hardship and your health decreases by -18. If you can pay your bills, then you spend any leftover money on extra goods that boost your health by 1 point for each dollar.
Note that you always automatically spend any money in your wallet at the end of the month to boost your health as much as you can.

Page 5

Public Fund

All workers in your group can ask for help from the Public Fund each month. The Public Fund is set up for workers who are unemployed. But, a worker could also ask for help whether they find a job or not.
The Public Fund gains money each month by collecting taxes from workers. A worker who requests help will receive 6 from the Public Fund to pay their bills if funds are available. If there are not enough funds available (less than 6), then all requests are denied until more taxes are collected. (If multiple workers request the last remaining funds, the recipients will be randomly determined.)
Any remaining money in the Public Fund carries over to the next month. After the last month, any remaining money in the Public Fund is divided equally among workers and adds to their health.

Page 6

Checking Unemployment

Before a worker receives money from the Public Fund, the administrator could check their unemployment. The administrator does not have time to check everyone but they will spot check 1 out of 3 claims of unemployment. For each case, the check is randomly determined and there is a 1/3 chance that the claim will be checked and a 2/3 chance the claim will not be checked.
If the administrator checks and the worker does have a job, then the worker does not receive the money and is banned from asking for help the following month.

Page 7

Workers

The workers panel shows the workers in your group, their health, and how many times they asked for help. Your worker icon is highlighted in blue.

Page 8

Summary

Each month, you have a 50% chance of finding a job that pays 20 in wages. If you find a job, you pay 6 in taxes to the Public Fund.
Next, you decide whether to request help from the Public Fund.
Before you receive money from the Public Fund, there is a 1/3 chance that the administrator will check your employment. If you have a job, then you do not receive the money and you are banned from asking for help the following month.
Last, you pay bills and spend any remaining money to boost your health, 1 point per dollar.
If you cannot pay bills of -6, you suffer hardship and you lose -18 health points.
These steps repeat for 24 months. At the end, you earn 20 cents per health point.

Fine Instructions

Page 1

Instructions

This is a decision-making study. Please do not talk or communicate with any other participants during the study. If you have any questions, please raise your hand and a monitor will come to answer your questions privately.

In this study, you will participate in an interaction with other participants. Each participant begins with health points and their health points can increase or decrease depending on everyone's choices. At the end of the study, you will be paid based on your final health, 20 cents for each point.

The decisions that you make are anonymous and the other participants will not know who made which decisions. Your decisions will affect your own payment and other people's payments, so please carefully read these instructions.

Page 2

Overview

In this interaction, you will look for a job in order to pay bills at the end of each month. The bills are the cost of meeting basic needs such as food, shelter, and medicine. If you cannot pay the bills, then you do not meet your basic needs and your health suffers. To avoid this, you can ask for help from your group. You are in a group of eight workers who live in the same town. The other workers in your group are other participants in this study.

The town has set up a Public Fund with an administrator who collects contributions and distributes benefits to unemployed workers. Workers pay taxes to the fund when they earn income, and they can ask to withdraw money from the fund after they look for a job. If all of the funds are used up, then no one can receive benefits whether they are unemployed or not. Importantly, you and the other workers could withdraw money from the fund whether you find a job or not. The administrator of the Public Fund does not have time to check every worker's claim of unemployment, but they will check 1/3 of the time, and if the worker did have a job, then they must return the money and pay a fine.

These steps repeat for 24 months. Every month, you are in the same group of workers and any unused money in Public Fund carries over to the next month.

Your final health at the end determines your additional earnings in the study, 20 cents per health point.

Page 3

Work

Please locate the work panel on your screen. Each month, you look for a job by clicking the button labeled "Look for Job!" You have a 50% chance of finding a job and a 50% chance of unemployment. If you find a job, you earn a wage of 20. All workers pay 6 in taxes to the Public Fund when they find a job. If you are unemployed, you earn 0. Your earnings will appear in your wallet in the money panel.

Page 4

Money

Your wallet shows the money you have available to spend for the month. Each month, you also have to pay bills of -6 to meet your basic needs. If you cannot pay the bills, then you suffer hardship and your health decreases by -18. If you can pay your bills, then you spend any leftover money on extra goods that boost your health by 1 point for each dollar.

Note that you always automatically spend any money in your wallet at the end of the month to boost your health as much as you can.

Page 5

Public Fund

All workers in your group can ask for help from the Public Fund each month. The Public Fund is set up for workers who are unemployed. But, a worker could also ask for help whether they find a job or not.

The Public Fund gains money each month by collecting taxes from workers. A worker who requests help will receive 6 from the Public Fund to pay their bills if funds are available. If there are not enough funds available (less than 6), then all requests are denied until more taxes are collected. (If multiple workers request the last remaining funds, the recipients will be randomly determined.)

Any remaining money in the Public Fund carries over to the next month. After the last month, any remaining money in the Public Fund is divided equally among workers and adds to their health.

Page 6

Checking Unemployment

Each time a worker receives money from the Public Fund, the administrator could check their unemployment. The administrator does not have time to check everyone but they will spot check 1 out of 3 claims of unemployment. For each case, the check is randomly determined and there is a 1/3 chance that the claim will be checked and a 2/3 chance the claim will not be checked.

If the administrator checks and the worker did have a job, then the worker has to pay back the money, -6, and pay a fine of -9, so they lose -15 health.

Page 7

Workers

The workers panel shows the workers in your group, their health, and how many times they asked for help. Your worker icon is highlighted in blue.

Page 8

Summary

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Next, you decide whether to request help from the Public Fund.

Then, you pay bills and spend any remaining money to boost your health, 1 point per dollar.

If you cannot pay bills of -6, you suffer hardship and you lose -18 health points.

If you received money from the Public Fund, then there is a 1/3 chance that the administrator will check your employment. If you had a job, then you must return the money, -6, and pay a fine of -9, so you lose -15 health.

These steps repeat for 24 months. At the end, you earn 20 cents per health point.