No Excuses for Good Behavior*

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Abstract

We study the quantity and quality of voluntary contributions in a dynamically changing social environment. Extending Benabou and Tirole (2006) framework where people engage in prosocial behavior to signal their altruism, we derive theoretical predictions on time volunteered when (1) there are no excuses to stop volunteering and (2) an authority figure is present. We partner with a local nonprofit to engage laboratory subjects directly in its operation, thus inducing the context for prosociality in a setting where social environment can be precisely controlled. We find that when excuses for stopping are unavailable, time volunteered increases without reducing productivity. The increase is primarily driven by subjects' reluctance to be the first to stop volunteering; once someone else stopped, subjects are far more likely to also stop. Audience identity matters: the presence of an authority figure reduces time volunteered, while the presence of a larger number of peers increases time volunteered.

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1 Introduction

Economists have long been interested in the motivation behind prosocial behavior such as volunteering or donating money. While altruism or "warm glow" (Andreoni,1989) may play a large role, recent theoretical models have drawn attention to the role of social image concerns (Bernheim, 1994, Seabright, 2002, Benabou and Tirole 2003, 2006). In support of these theoretical models, Carpenter and Myers (2007) found that having a vanity license plate is positively associated with volunteering as a firefighter. In a lab experiment where keyboard clicks are translated to donation for charity, Ariely, Bracha, and Meier (2009) found that subjects clicked more when they have to announce their donation to the room. In our experiment, we unpack the components of image concerns and connect them to a dynamic social environment, specifically focusing on visibility and social stigma.

Our volunteering experiment is motivated by Benabou and Tirole's (2006) examination of honor, stigma, and visibility. They provide a model of binary participation in a prosocial activity where agents' utility comes from intrinsic altruism, the cost of participating, and image rewards. We extend their binary model to discrete contributions of volunteer work in order to examine how two social image manipulations affect the time volunteered by individuals. Our theoretical predictions focus on two conditions: the availability of (unverifiable) excuses, which lower the stigma of not contributing, and the presence of observers, which increases overall image benefits by increasing visibility. We also consider alternative models of specific social norms that do not require that individuals know the distribution of altruistm in the population.

Abstract games of monetary transfers suggest that the desire to avoid the stigma of being thought of as a bad person can be a strong motivator. Unconditional transfers in games (the dictator game in Andreoni and Bernheim (2009) and the modified trust game in Tadelis (2008)) are less generous when players are able to obscure their decision behind a random mechanism. Our experiment investigates the role stigma avoidance plays in contributions of time and effort to social causes, which entails higher personal engagement and may be subject to different norms.

Two separate strands of literature describe how the act of monitoring can change behavior. The experimenter-demand-effect literature suggests that the experimenter takes on the role of an au-

thority figure for the subjects, who then act more generously when the experimenter is present than they otherwise would (Levitt and List (2007) and Zizzo (2008)).[1] Evidence from lab experiments on the experimenter demand effect is inconclusive[2] and relies mostly on evidence from double blind procedures, which obscure the subjects's actions from *both* the experimenter and other subjects.[3] On the other hand, a separate literature examines crowding out from monitoring, arguing that the presence of a monitor may be interpreted as distrust and could therefore decrease prosocial contributions (Dickinson and Villeval (2008), Frey and Jegen (2001), Schultze and Frank, (2002), Falk and Kosfeld (2006)).

We find that image concerns play significant and complex roles in volunteering. While our model predicts that an increased awareness of being observed should increase time contributed, instead we found that this depends on the identity of the observer. While the effect of an audience of peers is generally positive, the presence of a monitor can be counterproductive. We observe strong evidence that removing excuses induces norms of greater contribution – however, this effect is weakened as soon as a single member of the group rejects the norm by refusing to contribute. Furthermore, we predict that this first rejection can lead other individuals to also stop contributing. This suggests that while social image can be manipulated to increase prosocial behavior, the effect is sensitive to the details of the environment.

The paper proceeds as follows. In Section 2 we describe the theoretical model and derive hypotheses about the impact of excuses and monitoring on volunteering. In Section 3 we describe our experimental design and survey. Section 4 presents the results. Section 5 concludes. Proofs for Section 2 and experimental materials (instructions, software screen shots, and survey questions) can be found in the Appendix.

2 Theoretical Model

Several signaling models have been proposed to describe prosocial behavior, such as Benabou and Tirole (2003, 2006), Seabright (2006), and Ellingsen and Johanssen (2008). We motivate our

[1] See Fleming, Townsend, Lowe and Ferguson (2007) and Paulhus (1991) for surveys of demand effects in psychology

[2] The introduction of a double blind protocol does not change the outcome of the voluntary contribution game (Laury, Walker, and Williams, 1995) but it does for the dictator game (Hoffman, McCabe, and Smith, 1996).

[3] As we will see in our experiments, the effect of being observed by other subjects can be quite different from being observed by an experimenter.

experiment with a simplified version of the Benabou and Tirole (2006) model,[4] henceforth BT, for two reasons. First, the model illustrates the different components driving image concerns: visibility, stigma, and honor. Second, the model does not use the standard principal agent setup, and is therefore flexible enough to also include signaling to non-principal observers. The baseline model addresses social signaling when agents make binary participation decisions. We extend the framework of BT to model individual choices over discrete contribution levels; this allows us to make theoretical predictions on the impact of social image concerns on a volunteer's contribution of time.

A crucial assumption in BT's model is that agents know the distribution of altruism in the population. In our primary model, agents make participation decision using their knowledge about this distribution. Image benefits are derived from others' expectation of one's altruism given his participation in the prosocial activity. In our alternative model subjects do not know the distribution of altruism in the population and decide over time whether to stay or not given (observable) changes in the social environment.

2.1 Binary Participation

Let v represent an agent's underlying altruism, which has density $g(v)$ on the interval $[v_L, v_H] \subset \mathbb{R}_+$. Let C be the cost of volunteering. Let $x \in \mathbb{R}_+$ be the visibility of volunteering, which represent agent's awareness of being observed.

Let the decision to volunteer be represented by $a = \{0, 1\}$. An individual with type v who faces a choice to volunteer with visibility x has the following utility for volunteering:

$$u(a = 1) = v - C + x(E(v|a = 1) - E(v|a = 0)) \tag{1}$$

Individuals participate if $v \geq C - x(E(v|a = 1) - E(v|a = 0)) \equiv v^*$ where the equilibrium threshold of altruism v^* is implicitly defined by the equation:

$$v^* - C + x(E(v|v \geq v^*) - E(v|v < v^*)) = 0 \tag{2}$$

Total participation is decreasing in the equilibrium threshold type (where N represents the total population).

$$\bar{a} \equiv N(1 - G(v^*)) \tag{3}$$

[4]Since we consider only unpaid volunteering in this paper, we omit parameters related to material incentives.

Let $\Delta(v^*|x) = x(M^+(v^*) - M^-(v^*))$ be an agent's **image reward** from participating, where $M^+(v^*) \equiv E(v|v \geq v^*)$ is the *honor* for participating and $M^-(v^*) \equiv E(v|v < v^*)$ is the *stigma* of nonparticipating. Benabou and Tirole shows the dependence of equilibrium threshold v^* on the distribution of types and the cost of volunteering. We summarize their results below.

Proposition 2.1. *Benabou and Tirole (2006)*

(i) When $g(v)$ is decreasing or uniform in v, then $\Delta(v^*|x)$ is increasing in v^*. Participation is described by a unique equilibrium threshold v^*.

(ii) When $g(v)$ is increasing (unimodal) in v, then $\Delta(v^*|x)$ is decreasing (quasiconvex) in v^*. Multiple equilibria exist for a large range of C and $g(v)$.

Because of multiple equilibria, and the fact that the population parameter and volunteering costs cannot be observed, it is difficult to derive theoretical predictions without making assumptions about the distribution function $g(v)$. We make the assumption that the pdf $g(v)$ is weakly decreasing; in other words, with regards to our volunteering task there are fewer highly altruistic types in our population than less altruistic types.[5]

Now suppose that with some probability $\delta \in [0, 1]$ individuals may be prevented from volunteering by (unverifiable) external circumstances. It is straightforward to infer the type of agents who participate, but more difficult to do so with agents who do not. This is because there are two reasons why an agent might not participate: with probability δ he has been prevented by circumstances, and with probability $1 - \delta$ he is not altruistic enough to continue participating. The honor of participating remains unchanged, but the stigma of not participating is now lessened:[6]

$$M^-(v^*|\delta) \equiv \frac{\delta E(v) + (1-\delta)G(v^*)E(v|v < v^*)}{\delta + (1-\delta)G(v^*)} \tag{4}$$

This binary model suggests several different social channels to encourage prosocial behavior. It may be possible to increase visibility (x) by performing volunteering in the presence of peers or a monitor. Specific components of social image could also be targeted. For example, it may be that stigma avoidance can be activated by removing any justifiable excuse (δ) for not participating. We now extend the binary model to a more general situation where agents choose how long to work in

[5] We will later discuss a simple alternative model that does not make assumption about population parameters.

[6] When no excuses are available ($\delta = 0$), we are back to the case where $M^-(v^*) = E(v|v < v^*)$. However when individuals are always prevented from participating ($\delta = 1$), there is nothing that can be learned from non participation, hence $M^-(v^*) = E(v)$.

order to explore the effect of monitoring and excuses on contribution of time. The proofs can be found in the appendix.

2.2 Discrete Levels of Contribution

Suppose there are t levels of contribution: participate 1 minute, 2 minutes, up to a maximum of T minutes. Let $C(t)$ be the cost function for contribution level t where $C'(t) \geq 1$. Let v_t^* be the threshold type for participation level t. Individuals contribute at level t if:

$$u(t) = vt - C(t) + \Delta(v_t^*|\delta, x) \geq 0$$

Each individual faces T binary participation decisions where $v^* = (v_1^*, .., v_t^*, .., v_T^*)$ are the equilibrium threshold types induced by the environment (δ, x). We can show that higher levels of participation induce strictly higher thresholds than lower levels of participation. In other words, individuals who do not choose to volunteer in level t will also not participate in level t' where $t' > t$.

Lemma 2.2. *Level t threshold type v_t^* is strictly higher than level $t-1$ threshold type v_{t-1}^*.*

The monotonicity of v_t^* allows total time volunteered to be computed in intervals. Letting N be the total number of agents in the population, average time volunteered is:

$$\bar{a}_T(\delta, x) \equiv \sum_{t=1}^{T-1} t(G(v_{t+1}^*) - G(v_t^*)) \tag{5}$$

We can now derive the theoretical predictions that motivate our experiment.

Proposition 2.3. *In a volunteering setup involving T levels of participation,*

- ***Excuses Prediction:*** *Removing excuses increases average time volunteered.*

$$0 = \delta < \delta' \Rightarrow \bar{a}_T(\delta, x) > \bar{a}_T(\delta', x)$$

- ***Monitoring Prediction:*** *Reduced monitoring decreases average time volunteered.*

$$0 < x < x' \Rightarrow \bar{a}_T(\delta, x) < \bar{a}_T(\delta, x')$$

2.3 Alternative Models of Social Context

Benabou and Tirole's signaling model makes strong assumptions about individuals' awareness of their altruism relative to others. As an alternative, we examine specific theories of how visible changes in the social environment affect individuals' decisions about when to stop volunteering. These models do not assume knowledge of the distribution of altruism in the population that is required in the Benabou and Tirole's signaling model.

Let $\{v_1, v_2, ..v_N\}$ represent the altruism of a group of N volunteers, listed in increasing order. We assume that individuals do not know how altruistic they are relative to other people. Let $\Delta_C(t) = C(t) - C(t-1)$ be the increase in cost from working an additional minute at time t and S(t) be the image utility from the current social environment. Individual i's utility for volunteering an extra minute is:

$$U_i(t) = v_i - \Delta_C(t) + S(t)$$

We now consider behavioral changes coming from avoiding the stigma of being the least altruistic person in the room and the image benefit from being part of a large group of volunteers.

2.3.1 Stigma: Bad Apple

In some situations, the relationship between social stigma and behavior may not be continuous; for example, the shame associated with being the first person to stop contributing may be particularly great. The first person to stop working may want to avoid being considered a bad apple, which affords some disutility B.[7] In this model of stigma avoidance, $S(t) = B$ when no one has left the room; $S(t) = 0$ otherwise.

Let t_i^* the solution to $v_i - \Delta_C(t) = 0$, person i's optimal stopping time without the bad apple stigma. The least altruistic individual, unaware that he is of the lowest type v_1, will continue working past t_1^* up to time $\hat{t}_1$ which solves $v_1 - \Delta_C(t) + B = 0$. At $\hat{t}_1$, he will leave (and suffer B) to prevent negative utility. This first act of leaving immediately removes B as a constraint to the individual optimization problem of the remaining individuals. Depending on the distribution of altruism, this can induce a "cascade": all people of type v_i whose optimal stopping time has

[7] In public goods games, there is a body of evidence which suggests a strong social norm against deviators. In fact, people are willing to reduce their own payoffs in order to bring about this norm (Fehr and Gächter, 2002).

passed $t_i^* < \hat{t}_1$ would now also leave.

When excuses are available, with probability δ an individual who leaves first is no longer a bad apple. This has two effects. First, the stigma is now lessened to $(1-\delta)B$, reducing volunteered time even when nobody in the room is actually restricted. Second, if a person of type $v_j > v_1$ actually is restricted at an earlier time than $\hat{t}_1$ (v_1's stopping time), the bad apple stigma will be completely eliminated early in the session. Note than both effects shorten the length of the cascade, since removing the bad apple stigma earlier reduces the number of people staying to avoid that stigma.

2.3.2 Audience Effect: Group Size

Results from Falk and Ichino (2006) suggest that individuals may be willing to work more when working alongside others. It may be that individuals derive greater utility from working when their peers are present. This utility can come in many forms such as heightened intrinsic utility from camaraderie or good feelings from colleagues (Rotemberg, 1994) or in the case of prosocial behavior, a larger audience to send signals of altruism. A model where individuals derive greater social image benefits when more people observe their altruism is consistent with the framework proposed by Benabou and Tirole where the visibility parameter (x) is interpreted as the number of people observing the decision.[8]

Here we let the social image at time t, $S(t)$ correspond to the number of people in the room at the end of period $t-1$, $X(t-1)$.[9] When (unverifiable) external circumstances prevent some individuals from volunteering with some probability $\delta \in (0,1]$, the number of people that are available to volunteer is smaller. Since $S(t|\delta) = (1-\delta)X(t-1)$ the image utility from the current social environment is lower, thus reducing the utility for volunteering.

[8] Evidence presented by Dufwenberg and Muren (2006) would seem to contradict a theory whereby individuals receive greater social image benefits from larger audience. Their results suggest that individuals are less generous in a dictator game when giving on a stage in front of an audience of people.

[9] Formally, $X(t-1) = \{v_j | v_j - \Delta_C(t-1) + X(t-2) > 0\}$, where the beginning of the period $X(t=0) = N$.

3 Experiment

In order to test the Excuses Prediction and Monitoring Prediction, we need to precisely isolate opportunities for social signaling. In the field, potential image benefits are more difficult to isolate due to challenges in controlling or observing the visibility of volunteers' actions to others. In empirical studies which rely on survey answers about the amount of time spent volunteering, the preference to be seen as a good person may be confounded with strategic image building such as bolstering college application, resumes, and career contacts. The lab offers no strategic image benefit and allow us to isolates social signaling to only observers present in the lab.

We integrated the context of a real volunteering opportunity into the lab by partnering with the Los Angeles based nonprofit School On Wheels (SOW). SOW requested that student volunteers build a database of educational resources for tutors of homeless children. This task is comparable to what actual SOW volunteers would do; the frustrations and successes that are inherent in most volunteering situation are present in this laboratory experiment. In designing our image treatments, our goal was to be as subtle as possible and not artificially call attention to an individual's contribution.

Pilot tests of the laboratory experiments took place at Claremont McKenna College in 2007 and the full set of experiments was run at UCLA[10] in Spring 2008 and Spring 2009.[11]

3.1 Experimental Design

Subjects received an email publicizing an opportunity to participate in an experiment on decision making. Subjects were not aware that the experiment would study volunteering. The experiment consisted of two stages: training and volunteering. As soon as the subjects were seated, they were told that they would be trained to build a valuable resource for a local nonprofit and would have a chance to volunteer unpaid for the task as long as they liked up to the limit of the computer lab's

[10]We are cognizant of the fact that college students who sign up for experiments do not completely represent the face of volunteers in America. College students were a much smaller fraction of active volunteers in 2005 than older people (Bureau of Labor Statistics). We attempted to address this issue by replicating our lab experiment with actual SOW tutors. The tutors who showed up for the experiment were around 50-60 years old; however, the number of participants were not adequate to replicate the experiment. We are continuing to pursue research that broadens the subject pool for our experiment.

[11]The experiments ran at Claremont include only a subset of the treatments discussed in the paper. The pilot results support our findings from the main experiments at UCLA and are available from the authors upon request.

availability (90 minutes).

The training session lasted 15 minutes; the experimenter first gave an introduction to SOW and encouraged subjects to read the promotional materials.[12] The volunteering task was to do internet searches for educational resources and to enter the information that was found. Seven database entries (subject, website address, grade level, etc) could be completed for each educational resource found. Subjects first practiced the task by performing one directed internet search and data entry task. For their participation in the training session, subjects were paid $20. We took extra steps to ensure that subjects did not construe the show-up fee as a monetary incentive for later volunteering. We clearly stated that once subjects had completed the training, they had earned their show up fee and were free to go whenever they chose and we did indeed observe some subjects leaving right away.

Subjects who remained in the lab after the practice session could volunteer (up to a time limit) and could stop volunteering when they chose. Each subject received a list of randomly assigned grade levels, school subjects and types of materials to search for with their SOW promotional package. The list contained several choices for each subject and was designed to minimize overlap between subjects. Subjects were aware that they were all working on different portions of the database and understood fully that the work they completed would not be redundant. Over the course of running the experiments, we first completed a database of lesson plans before moving on to a database of educational activities.[13] The task had to change once the first task was completed to ensure that subjects' volunteered efforts continue to be useful for the organization. We controlled for the task change in the data analysis.

When volunteers finished working, the database software directed them to a survey. The survey collected data on demographic characteristics that have been found to be important determinants of prosocial behavior (Schady, 2001, Freeman, 1995, Mellstrom and Johannesson, 2005) and religious activity (Brooks, 2006). To control for past volunteering experience, we ask subjects to report the length of time since their last volunteering experience, the organization they worked with, and the rating they assign to that experience. We also asked them to rate the value of the work done in

[12]Promotional materials included a People magazine article on SOW and a thank you letter from SOW's lead volunteer coordinator to lab volunteers.

[13]The complete database of the results of subjects' volunteer work is available at http://www.hss.caltech.edu/∼slinardi/data.xls

the lab volunteering task. To control for the relevance of social connections or peer pressures, we asked the subjects to report the number of people in the room that they knew by name.

3.2 Social Image Treatments

We started with a baseline treatment where subjects had access to unverifiable excuses and the experimenter remained in the room. Our first treatment tested the Excuses Prediction by removing excuses while keeping monitoring constant. Our second treatment tested the Monitoring Prediction by removing the monitor while keeping excuses constant.

Baseline=Excuses+Monitored

Excuses: We provided our subjects with excuses to stop volunteering through a random mechanism embedded in the database software. After training, subjects clicked on a button on their screen to "roll a die" that would determine this upper limit. This random mechanism introduced the uncertainty δ that was described in the theoretical section. Subjects could leave the lab at any point before they reach the time limit. When the time limit was reached, subjects were prevented from making any further database entries. Subjects were aware that the maximum number of volunteering minutes was randomly determined for each person through dice rolls but they did not know the specific probability distribution. This approximates the natural occurrence of excuses where the true distribution of obstacles to prosocial behavior is unknown; all that is known is that $E(\delta) > 0$.

In our experiment, $\delta = 0$ with probability $\frac{2}{3}$, ensuring that a large share of the data was generated from subjects who did not have excuses and could be compared directly to subjects in the Remove Excuses treatment. In order for it to be credible to subjects that there was a randomly generated stopping point, we set $\delta = 1$ with probability $\frac{1}{6}$, meaning that some subjects would be observed leaving the lab right away. The remaining $\frac{1}{6}$ of subjects received a time limit randomly chosen between 1 and 90. Neither the experimenter nor other subjects in the room were able to know for sure whether the subject stopped by choice or because of the random mechanism.

Monitored: The experimenter stayed at the front of the room for the entire period of volunteering

and answered subjects' questions in person.[14]

Treatments

Remove Excuses: No Excuses + Monitored:
In this treatment, the random mechanism was disabled. After training, subjects were told that they could stay in the lab and volunteer for any amount of time they chose, up to 90 minutes.

Remove Monitor: Excuses + Unmonitored :
In this treatment, the experimenter left the room after training. In case questions about lab protocol or the volunteering task arose during the experiment, subjects could initiate contact with the experimenter through an anonymous chat software. Subjects randomly selected chat IDs out of a paper cup, thus fully assuring that their identity was protected from the monitor.

Implementation

The lab experiments were run in 13 separate sessions with a total of 156 subjects, generating data for 121 subjects who were not affected by the random mechanism. Sessions were run with between 10 and 16 subjects. We collected two main outcome variables: the number of minutes worked by subjects (as a proxy for quantity) and the number of entries completed per minute (as a proxy for quality). The number of minutes volunteered was visible and theoretically should be affected by our image treatments. However, volunteer productivity (number of entries completed per minute) was not visible and therefore should not be affected by the image treatments.

4 Results

We see a range of behavior in the experiment, with some subjects leaving right away while others remain to volunteer for nearly 90 minutes. The largest and most significant treatment effect comes from a comparison of subjects in the Excuses and No Excuses treatments. We define *unrestricted subjects* as those whose maximum time limit was 90 minutes; these are subjects that were unaffected by the random time limit. Throughout our analysis of time worked and productivity, we consider only unrestricted subjects. A comparison of the empirical distributions of minutes volunteered is

[14] In all treatments, a lab technician was available to deal with computer problems if they arose.

presented in Figure 1; Table 1 shows the average minutes volunteered in each of the three treatment groups.[15]

Table 1: Average Minutes Volunteered by Treatment Group

	Remove Excuses No excuses Monitored	**Baseline** Excuses Monitored	**Remove Monitor** Excuses Unmonitored
Average	38.76	20.02	26.97
Standard Error	(3.06)	(1.78)	(2.19)
N	49	41	31

Consistent with the **Excuses Prediction**, removing excuses increases the total minutes volunteered. The difference between Remove Excuses and Baseline is positive and statistically significant at the 1% level using a non-parametric Wilcoxon (Mann-Whitney) test (z=4.26). The striking impact of excuses can be seen in Figure 1 where the distribution of minutes worked in the Remove Excuses treatment stochastically dominates the distribution of minutes worked in the Baseline. When subjects are provided with a cover for their decision to quit via the random mechanism, there is less shame associated with leaving and hence less pressure to continue working. This provides evidence that stigma avoidance is a significant motivator for individual behavior and that reducing plausible excuses can increase participation in prosocial behavior.

We then examine the **Monitoring Prediction**. Holding excuses constant, we compare the effects of monitoring by comparing Baseline and Remove Monitor. We see more volunteering in the *absence* of monitoring. This difference is statistically significant at the 5% level (Mann-Whitney test statistic of $z = 2.41$). Furthermore, the distribution of minutes worked in the Remove Monitor treatment stochastically dominates the minutes worked in the Baseline treatment. This result is not consistent with our theoretical prediction; instead of increasing the amount of time volunteered, the presence of a monitor appears to have unintended negative consequences in this setting. Our findings suggest that feeling observed does not automatically increase prosocial behavior, even when agents are image seeking. This could be consistent with a model of crowding out from monitoring (Frey, 1993). The setting can be intepreted as one where the agents are engaged in an intrinsically motivated task that produces noisy signals through the availability of excuses. The principal's choice to monitor indicates distrust, which reduces intrinsic motivation without making it more

[15]Excluding subjects whose volunteering time was restricted does not introduce selection effects since these subjects were randomly chosen by our random mechanism

costly for the agents to shirk, hence reducing total volunteering.

Because it is difficult to quantify visibility, no theoretical prediction can be made about the dominance of excuses relative to monitoring. We see that subjects work more under Remove Excuses than Remove Monitor and the difference is statistically significant at the 5% level when the distributions are compared using a non-parametric Mann Whitney test (z=2.10). The treatment effect of Remove Excuses seems to dominate the presence of the experimenter, suggesting that the experimenter may not be such a strong determinant of behavior in experiments as previously assumed in the experimental economics literature.

4.1 Consistency of lab behavior with natural volunteering behavior

We perform several robustness checks to confirm that lab behavior is consistent with volunteering behavior in a natural setting. First we verified that subjects were actually performing volunteer work during the experiment by considering whether subjects who spent more time volunteering generated more output. Figure 2 shows the relationship between the number of minutes worked and the entries completed. The strong positive trend between minutes worked and entries completed suggests that subjects were actually working, not merely pretending to work.[16]

We then examine the relationship between the number of minutes worked and subjects' self-reported valuation for the task. As seen in the scatter plot in Figure 3, the higher subjects rated the task, the longer they work. There is a strong positive relationship between the number of minutes worked and the self-reported value of volunteering[17]. Consistent with responses in natural settings, the more subjects perceive the task to have social value, the more they are willing to volunteer.

The random mechanism of the excuses treatment introduces arbitrary differences in the maximum time that subjects can work. One potential concern is that subjects who received large time limits may perceive this as unfair and may respond by working less. In Figure 4, we plot the randomly determined maximum time limit and the amount of time actually worked by the 35 *restricted* subjects (those that were assigned a time limit below the maximum time of 90 minutes). We see no

[16]We also manually checked for evidence of internet searches or webpage visits unrelated to the task at hand after subjects finished working. We saw only 4-5 cases where subjects were doing work unrelated to the experiment.

[17]One concern is that some subjects who indicated that they had never volunteered before *do* volunteer in the lab. After conversing with the subjects at the end of the experiment, we think this may be explained by the lower cost of volunteering in the lab. All the usual transactions costs for volunteering such as searching for a cause to work for, learning the task, and traveling are not impediments in our setting.

evidence that subjects react negatively when they are randomly asked to work more than others, instead we see that subjects respond positively to larger time limits. Subjects with higher randomly chosen time limits work more. This result is consistent with non-profits insistence on "the power of the ask,"[18] modeled by Andreoni and Payne (2003) as a latent demand for contribution.

4.2 Time Volunteered

In Model 1 and 2 of Table 2 we report results from least squares regressions examining the **Excuses Prediction** and the **Monitoring Prediction**.[19] The estimated coefficient on Remove Excuses suggests that removing excuses doubles the time volunteered over the baseline.[20]

In Models 3 and 4 of Table 2, we allow for the possibility that important variation in the amount that subjects worked is introduced in the experimental session. This could be due to group specific norms, or some correlation in behavior induced by the composition of subjects in each experiment (e.g subjects in the same session may be friends). Models 3 and 4 of Table 2 estimate the effect of the treatments on the minutes worked, including random effects for experimental sessions with and without covariates. In each estimation, we again see strong evidence that Remove Excuses increases the time volunteered. Remove Monitor has a slightly positive effect, but this negative effect of monitoring is not statistically significant after controlling for experiment-level random effects.

Across all models, the demographic characteristics do not appear to have predictive power in explaining the amount of time volunteered in any of the four models. Tests for the joint significance of all of the demographic controls yields an F-statistic of 0.53 for Model 2 and an χ^2-statistic of 3.67 for Model 4. This shows that individual characteristics are not statistically significant predictors of the amount of time spent volunteering. Results from field studies that suggest that individual characteristics predict volunteering activity. For example, many studies have shown that women

[18] Giving and Volunteering in the United States 2001, The Independent Sector; Andreoni (2006)

[19] One subject who finished volunteering early failed to complete the survey; we therefore imputed the values for their demographic characteristics.

[20] Subject in earlier experiments searched for worksheets (*task1*), while those in later experiments searched for educational activities. We estimate a separate intercept for subjects working on worksheets, *task1*, which is negative and statistically significant. This may be because subjects may have found searching for activities less tedious than searching for worksheets and therefore were more willing to spend time on activities. When we separately estimate the treatments on the subset of task 1 and task 2 data, the results are qualitatively similar. The results are available from the authors upon request.

volunteer more than men – the negative coefficient of *Male* suggests that this may be true in our population. We also see further evidence of a negative relationship between males and volunteering in our duration model analysis presented in Section 4.4.

4.3 Output and Productivity

We also consider the effect of the treatments on the total number of data entries completed in Models 1 and 2 of Table 3. The average number of entries found is 33, which corresponds to a contribution of almost 5 educational resources per person to the database. The coefficient on Remove Excuses remains positive and significant, however the coefficient on Remove Monitor is not significant. Therefore, we draw similar conclusions when considering how treatments affect actual output as we do when we consider the number of minutes worked. In our experiments, encouraging volunteering by removing excuses does not have a negative effect on output.

As a further check of our model, we examine whether volunteer productivity is affected by our treatments. The theoretical model discussed in this paper is concerned with the visible dimension (the amount of time volunteered), but makes no prediction on the invisible dimension (entries completed per minute). Image benefits are derived entirely from visible "quantity" of work (time) and not from invisible "quality" of work (productivity). We would therefore not expect to see any effect of our treatment on the number of entries completed per minute.

Models 3 and 4 in Table 3 estimate models of volunteer behavior that consider productivity (the number of entries per minute) as the dependent variable. As predicted, the coefficient on Remove Excuses is close to zero and not significant. While not significant, the coefficient on Remove Monitor is negative, suggesting that while we see more time volunteered in the unmonitored sessions, the time volunteered may be slightly less productive.

Unlike our estimation of treatment effect on visible output, we do not see any evidence of statistically significant random effects at the level of the experiment using a Breusch Pagan test (test statistic=0.45). Norms or dynamics at the level of the experimental session play a role only when behavior is visible. We conclude that while removing excuses has a powerful impact on increasing volunteering time, it does not have any negative impact on the quality of work.

4.4 Duration Model

We now develop an empirical strategy to address whether the success of removing excuses can be explained through intensified "bad apple" stigma or through the preservation of larger peer groups. We also investigate whether removing excuses has any additional effect after taking into account the role of these two specific norms. We consider a discrete time duration model where the decision to continue volunteering varies with time-varying observable variables of the social environment, mainly whether anyone else had left in the preceding time interval, the number of individuals leaving in the current period, and the number of remaining peers at the start of the time interval.

For our discrete time model, we consider time in five minute intervals. The results are robust to smaller intervals.[21] In Table 4 we consider only the subsample of 121 unrestricted individuals. The full sample of 156 individuals is presented in Table 5, where we added an additional control for the number of time periods remaining in each individuals' maximum time limit. Model 1 of Tables 4 and 5 estimates the baseline discrete-time duration model without including any time-varying social image variables. Consistent with the evidence presented earlier on the number of minutes worked, we see that the existence of excuses has a powerful effect; in any given period subjects are still 20-24% more likely to be volunteering when excuses are removed.

We also confirm that subjects respond to an increase in the maximum time limit by working longer. We interpret this as evidence that the randomly determined time limit in the excuses treatment is not perceived by the subjects as unfair treatment. As we would expect, we see a negative coefficient on the current time period trend, indicating that subjects are less likely to continue volunteering in later periods.

4.4.1 Evidence – Bad Apple

In order to examine the extent to which the bad apple norm drives our results, we consider how the probability of continuing to volunteer in a given time interval changes with a a binary variable that indicates whether any other individual in the group has stopped working. These estimates are

[21] Since it takes less than five minutes to complete a unit of the volunteering task, intervals larger than five minutes is too large to capture the effect of changes in the social environment on decisions.

presented in Model 2 of Tables 4 and 5. We also include interactions with Remove Excuses and Remove Monitor, allowing the intensity of the bad apple stigma to vary across the treatments. We find that when no excuses are available, individuals are 13-17% more likely to leave after another peer has left. When excuses are available, the probability of continuing to volunteer is unaffected by the fact that one person in the group had already left, regardless of whether a monitor is present. This suggests that when excuses are removed, prosocial behavior is strongly motivated by the desire to avoid being the first person to show a lack of altruism.

The effect of Remove Excuses remains significant after we consider the effect of another peer leaving first, increasing the probability that an individual continues to volunteer by 38-42%. Approximately one third of the treatment effect of Remove Excuses is consistent with subjects avoiding the stigma of being the first to leave when excuses are unavailable. This evidence suggests that while the bad apple norm is important, lack of excuses introduces a more general stigma avoidance behavior that lasts throughout the experiment. Our evidence suggests that the bad apple norm arises most strongly in the absence of excuses, when individuals have no cover for the stigma of being seen as the least generous individual.[22]

In Model 3 of Tables 4 and 5 we examine the evidence for cascades of subjects leaving simultaneously (consistent with a bad apple model) by examining individuals' propensity to leave during the same period when others have left. Again, we see that individuals are more likely to leave when others leave only when no excuses are available. When no external excuses are available, an individual is between 3 and 5% less likely to continue volunteering for every person who leaves in the current period. It appears that in the absence of excuses, following the behavior of others alleviates the stigma from being perceived as not altruistic enough to continue volunteering.[23] Removing excuses continues to have a powerful effect on behavior after taking these cascades into account, increasing the probability of volunteering by between 27 and 34%.

[22] Another possibility is that we do not detect the effect of the first person leaving in the excuses treatment because of lack of variation in when the first person is forced to leave by the random mechanism. Because of our random mechanism, subjects often leave in the first period. In only two session of the Excuses treatment are subjects randomly assigned to leave after the first period.

[23] Goeree and Yariv (2006) provide evidence that subjects in the lab exhibit preferences for conformity, which is an intrinsic taste to follow what other people do. In our experiment, it may be that subjects simply want to do what others do because of some intrinsic utility and not for social signaling reasons.

4.4.2 Evidence – Audience Effects

We next examine the extent to which removing excuses changes behavior by altering the size of peer groups, consistent with our model of audience effects. In Model 4 of Tables 4 and 5, we estimate the effect of the number of peers present at the beginning of the period on the probability of continuing to volunteer in that period. We also estimate the differential effect of an audience of peers in the Remove Excuses and the Remove Monitor treatments. Our model of audience effects suggests that increasing the number of peer observers will offer greater social image benefits and therefore increase the willingness to work. We see evidence consistent with this model. An additional peer observer present during the period will increase the probability that an individual will remain working by 4-5%. Furthermore, we do not see evidence that subjects respond differently to the size of the audience across our treatments. Throughout our estimation, the coefficient on removing the monitor is consistently positive (though not always significant), suggesting that in this setting being observed by a large peer group induces the opposite behavior being monitored by an authority figure.[24] Therefore, we conclude that the type of audience is important when individuals engage in prosocial action for social signaling purposes.

Even after controlling for the number of peer observers, the effect of removing excuses still has a strong impact on increasing the probability of continuing to work. This evidence suggests that while individuals do appear to be more motivated to work when there are more observers, removing excuses still has a powerful impact on social signaling behavior. We conclude that stigma avoidance as proposed in our social signaling model is an important motivator behind the success of removing excuses for volunteering, even after the effect on the number of peer observers is taken into account.

5 Conclusion

Recent theoretical and empirical studies have shown that image concerns play a central role in prosocial behavior. However, while a large body of literature studies financial contributions, only a

[24]This is consistent with crowding out from monitoring; audience of peers does not communicate distrust, thus increases your image concerns without crowding out your intrinsic motivation. An alternative interpretation is that the pleasure from additional peers comes from gain in instrinsic motivation and hence does not affect image signaling.

small literature exists on contributions of time and effort.[25] We focus on volunteering, a prosocial activity performed by a quarter of Americans on a weekly basis (Bureau of Labor Statistics, 2006) and the lifeblood of the nonprofit sector.[26]

Our experiments focus on unpacking the various components of social image, with a focus on visibility and stigma. We focus on the role of excuses for not contributing and the effect of monitoring on volunteering behavior. As a starting point, we consider Benabou and Tirole (2006)'s model of binary participation when the distribution of altruism in the population is known. We generalize their model to analyze choice of time contributed and then provide alternative frameworks of image signaling that do not depend on knowing the distribution of altruism.

Working closely with the nonprofit School on Wheels, we designed an experiment that translates the core components of institutional volunteering into a carefully controlled laboratory setting. By using the nonprofit's own promotional material and volunteering task, we engage student subjects directly in the social mission of the nonprofit. The lab setting allows us to control recruitment, task training, and more importantly, the observability of volunteers' actions and availability of excuses while precisely measuring both time and effort contributed.

As a whole, subjects contributed substantial time and effort, producing several large databases of internet resources. However, providing subjects with an unverifiable excuse to leave early reduced the average minutes worked by half. Contrary to commonly held opinions, our experimental evidence shows that prosocial behavior is slightly lower when a monitor (the experimenter) is present. This not only provides evidence of altruism in the lab independent from the presence of the experimenter, but also suggest the possibility of crowding out from monitoring. We leave this question open for future research.

Volunteers' productivity was unaffected by changes in the availability of excuses. In this experiment, image treatments targeting the observable component of the contribution (time) do not affect the unobservable component of the contribution (productivity). This confirms that prosocial behavior serves as both an expression of intrinsic altruism *and* as a way of publicly signaling this

[25] Some examples of studies of financial contribution include Karlan and List (2006), Landry et al (2006) and Shang and Croson (2005). Studies in labor contribution include Gneezy and Rustichini (2006), Ariely, Bracha, and Meier (2007), Carpenter and Myers (2007)

[26] Hodgkinson and Weitzman (1994) report that in 1990, Americans gave $100 billion in funds, and an estimated $182.3 billion worth of volunteer labor.

altruism.

Our evidence suggests that social image motivations are complex. First, the identity of the observer matters: while a larger audience of peers makes individuals more likely to volunteer, the presence of a monitor can be counterproductive. Second, stigma is context specific – in this experiment the stigma of being the first person to be appear not altruistic is especially dominant. This suggests that social norms create focal points that stigmatize certain behavior more than others. The ability to isolate and observe social norms in detail illustrates the opportunity to use the control of the lab experiments to collect unique data on the relationship between social context and prosocial behavior.

Our results have some implications for interventions to encourage prosocial behavior. Making it hard for potential volunteers to give excuses can increase the amount of time volunteered without impacting the quality of work. Therefore common nonprofit practices such as asking for contributions of time or money in public (ie: church collection plates) or precommiting contribution (such as pledges or organizing work retreats) is likely to be effective. However, the success of removing excuses may be reduced by the presence of a single bad apple who openly refuses to contribute. In other words, while social image can be manipulated to increase prosocial behavior, the level of success is highly sensitive to the details of the social environment.

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APPENDIX

Proofs for Section 2

Recall that v represents an agent's underlying altruism, distribution the interval $[v_L, v_H] \in \mathbb{R}_+$ with density $g(v)$ where $g'(v) < 0$. We first show how excuses and monitoring affect binary participation then discuss the discrete choice case.

Lemma 5.1. *$\Delta(v^*|\delta, x)$ is increasing in v^*.*

Proof. By Proposition 6 (Benabou and Tirole, 2006), the assumption that $g(v)$ is decreasing implies that $\Delta(v^*|\delta, x)$ is increasing in v^* when $\delta = 0$. Since M^+ is unaffected by δ, we only need to show that the slope of M^- when $\delta > 0$ lies beneath the slope of $E(v|v < v^*)$.

Let $f(v) \equiv E(v|v < v^*)$ and $f'(v)$ be its derivative. Let $f_H \equiv E(v|v < v_H) = E(v)$. Also define $e(v^*) \equiv \delta + (1-\delta)G(v^*)$ and $h(v^*) \equiv \frac{(1-\delta)G(v^*)}{e(v^*)}$. Rewrite $M^-(v^*|\delta) = \delta\ f_H e(v^*)^{-1} + h(v^*)f(v^*)$ and take its derivative:

$$\frac{\partial M^-(v^*|\delta)}{\partial v} = -\frac{\delta f_H}{e(v^*)^2} + h'(v^*)f(v^*) + h(v^*)f'(v^*) \tag{6}$$

Taking the derivate of $h(v^*)$ and substituting with $e(v^*)$ we get:

$$h'(v^*) = \frac{(1-\delta)G'(v^*)e(v^*) - (1-\delta)G(v^*)e'(v^*)}{e(v^*)^2} = \frac{(1-\delta)G'(v^*)\delta}{e(v^*)^2} \tag{7}$$

Substituting Eq.7 into Eq.6 and simplifying, we are left to show that:

$$\frac{\delta(1-\delta)G'(v^*)f(v^*) - \delta f_H}{e(v^*)^2} < f'(v^*)(1-h(v^*))$$

Since $0 < h(v^*) < 1$ and $f'(v^*) > 0$, $f'(v^*)(1-h(v^*)) > 0$. Since by assumption $g'(v^*) < 0$, $(1-\delta)G'(v^*)f(v^*) < f_H$, which implies that the slope of $M^-(v^*|\delta > 0)$ is smaller than $M^-(v^*|\delta = 0)$. Hence $\Delta(v^*|\delta > 0, x)$ must be increasing in v^*. □

Lemma 5.2. *Removing excuses increases total participation.*

$$0 = \delta < \delta' \Rightarrow \bar{a}(\delta, x) > \bar{a}(\delta', x)$$

Proof. Let v' the solution to $v + \Delta(v|\delta', x) - C = 0$. Honor remains unchanged by excuses while stigma is lowered, hence $\Delta(v|\delta', x) < \Delta(v|\delta, x)$. When excuses become unavailable $v' + \Delta(v'|\delta, x) - C > 0$, which implies v' will still participate. By Lemma 5.1 we know that $\Delta(v^*|\delta, x)$ increases in

v^*, hence the new cutoff type v^* whom is now indifferent about volunteering must be a lower type. Since participation is decreasing in type, $v^* < v'$ implies higher total participation when $\delta = 0$. □

Lemma 5.3. *Reduced monitoring decreases participation.*

$$0 < x < x' \Rightarrow \bar{a}(\delta, x) < \bar{a}(\delta, x')$$

Proof. Let v' the solution to $v+\Delta(v|\delta, x')-C = 0$. When visibility is decreased, $v'+\Delta(v'|\delta, x)-C < 0$ hence type v' will no longer participate. By Lemma 5.1 we know that $\Delta(v^*|\delta, x)$ increases in v^*, hence the new cutoff cannot be smaller than v'. Hence $v^* > v'$, and since participation is decreasing in type, this implies lower total participation. □

Lemma 2.2

Proof. The utility of the cutoff type at each level is zero:

$$v_t^* t - C(t) + \Delta(v_t^*|\delta, x) = v_{t-1}^*(t-1) - C(t-1) + \Delta(v_{t-1}^*|\delta, x) = 0$$

Note that $v_t^* = \frac{C(t)-\Delta(v_t^*|\delta,x)}{t}$. Subtracting the utilities we get:

$$(v_t^* - v_{t-1}^*)(t-1) + v_t^* - (C(t) - C(t-1)) + \Delta(v_t^*|\delta, x) - \Delta(v_{t-1}^*|\delta, x) = 0 \tag{8}$$

Substituting v_t^* into Eq 8 and simplifying we arrive at:

$$(v_t^* - v_{t-1}^*)(t-1) + \Delta(v_t^*|\delta, x) - \Delta(v_{t-1}^*|\delta, x) = \frac{\Delta(v_t^*|\delta, x)}{t} + C(t) - C(t-1) - \frac{C(t)}{t}$$

From the assumption that $C'(t) \geq 1$, $C(t) - C(t-1) - \frac{C(t)}{t} \geq 0$. Since $\frac{\Delta(v_t^*|\delta,x)}{t} > 0$ the entire right hand expression is positive. By Lemma 5.1 we know that $\Delta(v^*|\delta, x)$ increases in v^*, hence v_t^* can't be smaller than $v_{t-1}^* < 0$ since this implies $\Delta(v_t^*) - \Delta(v_{t-1}^*) < 0$ and that the left hand expression is negative. Hence $v_t^* > v_{t-1}^*$. □

Proposition 2.3

Proof. Let $v' = (v'_1, .., v'_t, .., v'_T)$ denotes the vector of cutoff types induced by environment (δ', x) while $v^* = (v_1^*, .., v_t^*, .., v_T^*)$ denotes the vector of cutoff types induced by environment (δ, x). Hence v'_t is the solution to $v_t t + \Delta(v_t|\delta', x) - C(t) = 0$ while v_t^* solves $v_t t + \Delta(v_t|\delta, x) - C(t) = 0$. Following the proof of the binary case Lemma 5.2 we arrive at $v_t^* < v'_t$, which implies $\bar{a}_T(\delta, x) > \bar{a}_T(\delta', x)$. Using same steps and application of Lemma 5.3 we show that $\bar{a}_T(\delta, x) < \bar{a}_T(\delta, x')$ for $0 < x < x'$. □

Figure 1: CDF of minutes volunteered

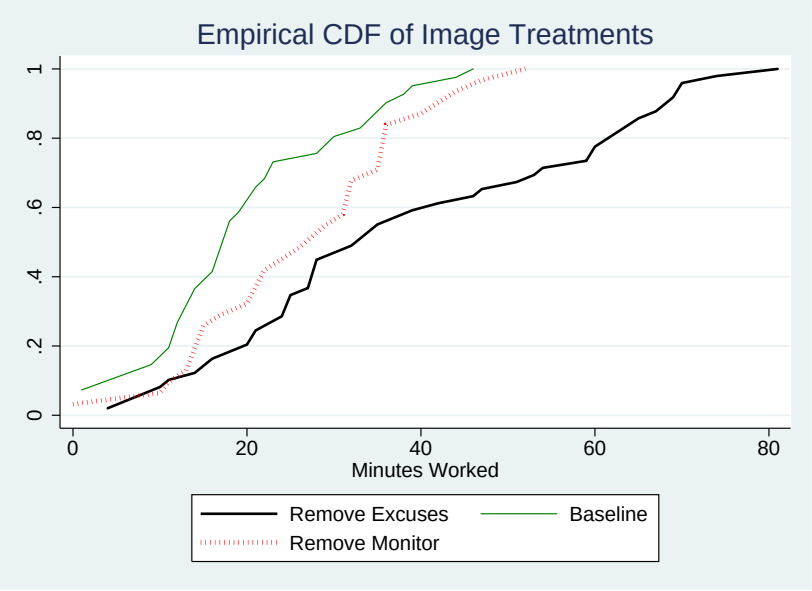

Figure 2: Time Volunteered and Amount of Work Completed

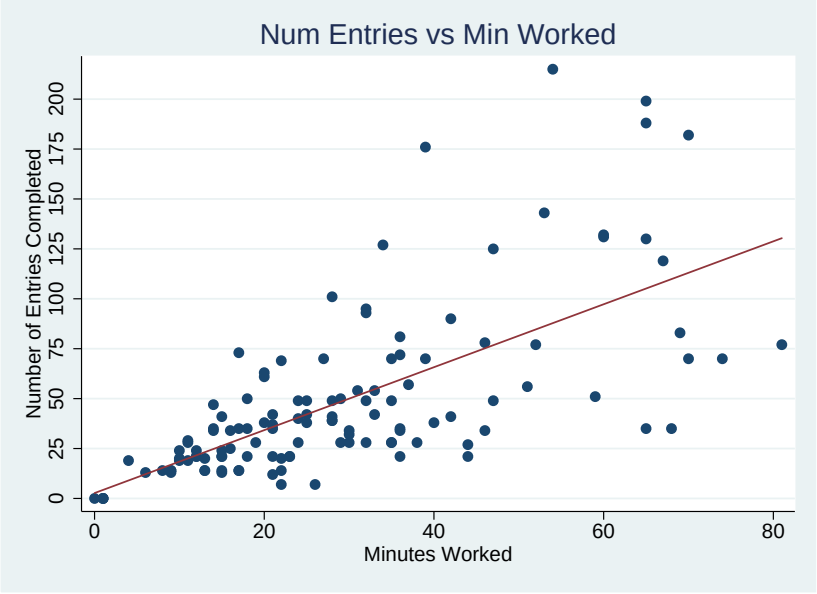

Figure 3: Time Volunteered and Self-Reported Value of Volunteering

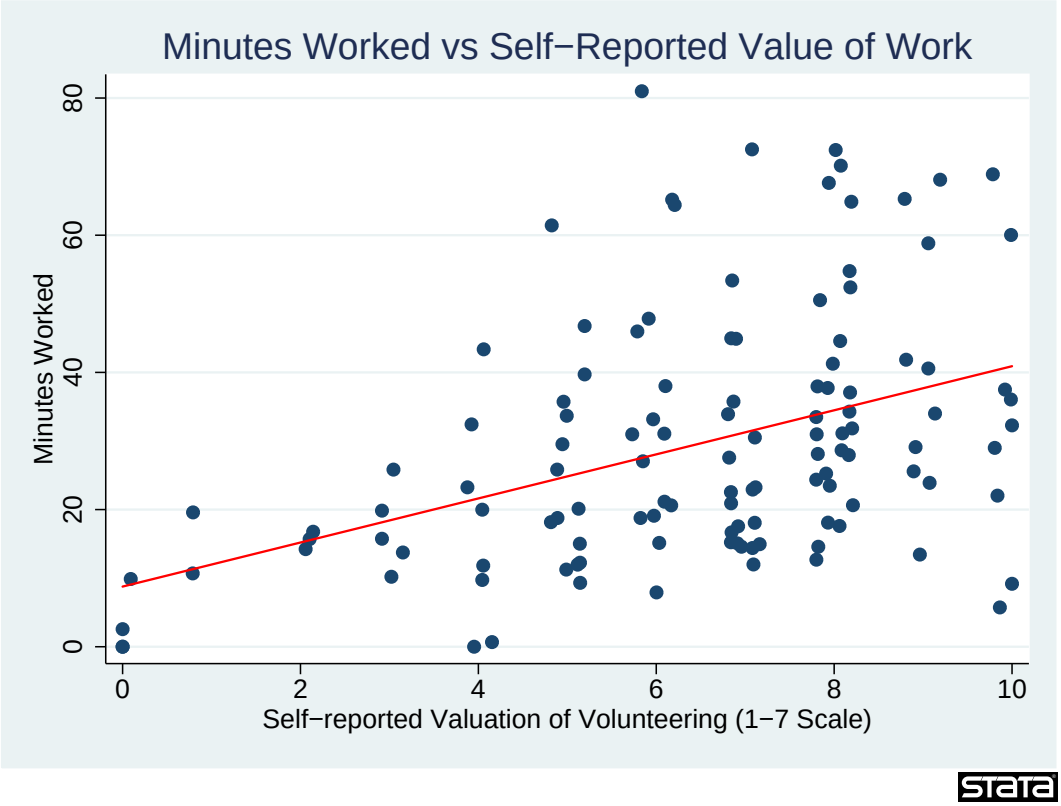

Figure 4: Relationship Between Restricted Time Limit and Minutes Worked

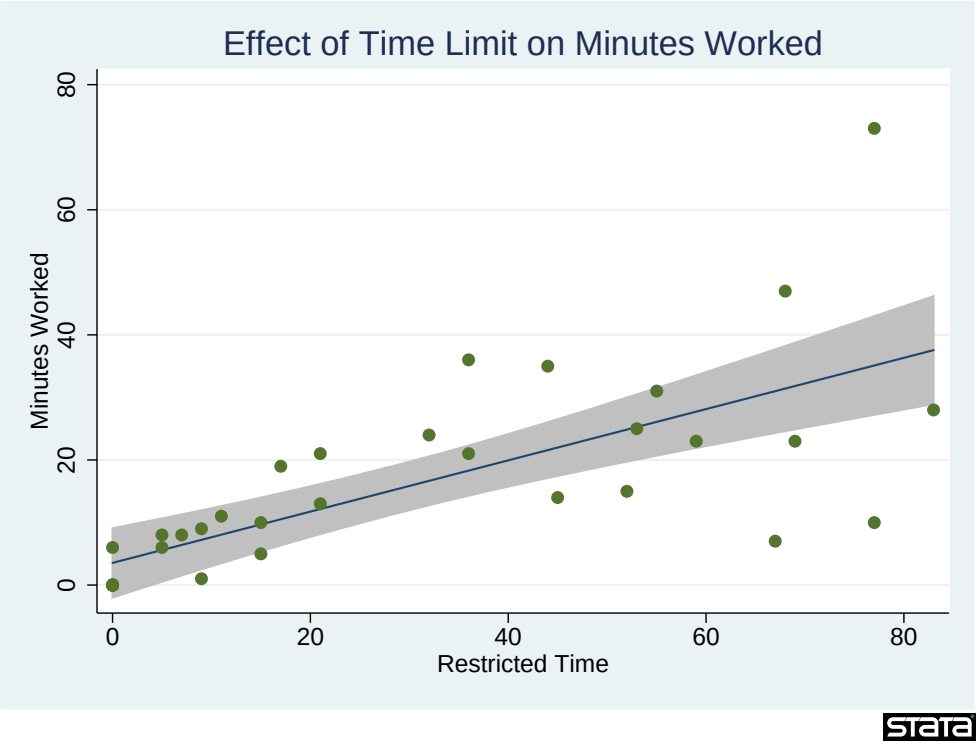

Table 2 *Effect of Treatments on Minutes Worked*

Dependent variable: Minutes volunteered				
	Least Squares		Random Effects	
	Model 1 Coefficient	Model 2 Coefficient	Model 3 Coefficient	Model 4 Coefficient
(Intercept)	20.750***	21.975***	21.356***	21.907***
	(1.851)	(4.066)	(6.041)	(7.172)
Remove Excuses	20.636***	19.959***	22.559**	22.124**
	(3.814)	(4.216)	(9.015)	(10.240)
Remove Monitor	8.137***	7.724**	7.425	6.815
	(2.902)	(3.218)	(9.082)	(10.280)
Task 1	-4.959	-5.26	-3.992	-4.231
	(3.516)	(3.551)	(7.801)	(8.826)
Random Effects (by experiment)			YES	YES
ρ			0.543***	0.612***
Breusch Pagan LM statistic			(181.68)	(185.97)
Covariates:				
Male		-2.622		-2.48
		(3.065)		(2.190)
Religious		0.432		2.062
		(3.163)		(2.247)
Recent Volunteer		1.716		1.454
		(3.103)		(2.154)
Know other subjects		-2.783		-2.814
		(3.145)		(2.793)
N	121	121	121	121
Test Statistic	10.250	4.880	6.470	8.740
P-Value	0.000	0.000	0.091	0.272
Test	F-Test		Wald test	

* significant at 10%; ** significant at 5%; *** significant at 1%
robust standard errors in parenthesis
Subset of subjects whose volunteering was unrestricted by random time limit

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Table 3 *Effect of Treatments on Output and Productivity*

	Dep Var = Entries		Dep Var = Entries/Min	
	OLS	Random Effects	OLS	Random Effects
	Model 1	Model 2	Model 3	Model 4
(Intercept)	33.213***	33.461***	1.385***	1.393***
	(9.412)	(11.715)	(0.210)	(0.230)
Remove excuses	34.851***	36.465**	0.221	0.195
	(9.064)	(14.409)	(0.203)	(0.248)
Remove Monitor	2.698	1.152	-0.299	-0.309
	(9.477)	(14.656)	(0.212)	(0.256)
Task 1	16.129**	18.655	0.794***	0.805***
	(7.796)	(12.465)	(0.174)	(0.215)
Random Effects (by experiment)		YES		YES
ρ		0.190***		0.058
Breusch Pagan LM statistic		(15.46)		(0.45)
Covariates:				
Male	-12.900*	-12.232*	-0.110	-0.105
	(7.077)	(6.652)	(0.158)	(0.158)
Religious	-2.276	-1.479	-0.031	-0.044
	(7.261)	(6.823)	(0.162)	(0.162)
Recent Volunteer	3.051	3.045	0.010	0.013
	(7.098)	(6.589)	(0.159)	(0.157)
Know other subjects	4.61	3.533	0.256	0.250
	(9.236)	(8.561)	(0.206)	(0.205)
N	121	121	121	121
Test Statistic	5.650	17.850	5.100	22.830
P-Value	0.000	0.013	0.000	0.002
Test	F-test	Wald	F-test	Wald

* significant at 10%; ** significant at 5%; *** significant at 1%
Robust standard errors in parenthesis
Subset of subjects whose volunteering was unrestricted by random time limit

Table 4 *Discrete Time Duration Model – Unrestricted Subjects*

	Model 1	Model 2	Model 3	Model 4
Probability of working	0.161	0.178	0.157	0.194
	dy/dx	dy/dx	dy/dx	dy/dx
Variable				
Remove Excuses	0.244***	0.417***	0.337***	0.178**
	(0.062)	(0.117)	(0.071)	(0.079)
Remove Monitor	0.108**	0.008	0.105**	0.080
	(0.045)	(0.063)	(0.049)	(0.086)
Period #	-0.057***	-0.058***	-0.058***	-0.027***
	(0.005)	(0.005)	(0.005)	(0.006)
Task1	-0.072**	-0.065*	-0.072**	-0.063
	(0.033)	(0.034)	(0.031)	(0.037)
Time varying social factors				
Anyone left in prior periods		-0.121		
		(0.077)		
Anyone left in prior periods		-0.165**		
x No Excuses		(0.057)		
Anyone left in prior periods		0.117		
x Unmonitored		(0.087)		
# subjects leaving in period			0.009	
			(0.008)	
# subjects leaving x No Excuses			-0.052***	
			(0.014)	
# subjects leaving x Unmonitored			0.006	
			(0.012)	
# subjects remaining in period				0.053***
				(0.010)
# subjects remaining x No Excuses				-0.012
				(0.009)
# subjects remaining x Unmonitored				-0.005
				(0.009)
Demographic controls				
Male	-0.051*	-0.069**	-0.048	-0.086**
	(0.030)	(0.032)	(0.029)	(0.037)
Religious	0.011	0.025	0.010	0.041
	(0.031)	(0.033)	(0.030)	(0.040)
Recent Volunteer	0.016	0.037	0.018	0.023
	(0.031)	(0.033)	(0.030)	(0.038)
Know other subjects	-0.013	-0.023	-0.012	-0.002
	(0.031)	(0.036)	(0.030)	(0.042)
AIC	0.584	0.539	0.515	0.538
N	2299	2299	2299	2299

Table 5 *Discrete Time Duration Model – All Subjects*

	Model 1	Model 2	Model 3	Model 4
Probability of working	0.128	0.141	0.125	0.156
	dy/dx	dy/dx	dy/dx	dy/dx
Variable				
Remove Excuses	0.197***	0.381**	0.273***	0.139*
	(0.058)	(0.119)	(0.070)	(0.079)
Remove Monitor	0.079**	0.025	0.068*	0.057
	(0.022)	(0.045)	(0.037)	(0.071)
Period #	-0.036***	-0.036***	-0.038***	-0.010*
	(0.004)	(0.004)	(0.004)	(0.005)
Task1	-0.045*	-0.039	-0.045*	-0.031
	(0.025)	(0.027)	(0.024)	(0.029)
Remaining periods before	0.011***	0.012***	0.011***	0.015***
time limit	(0.002)	(0.003)	(0.002)	(0.003)
Time varying social factors				
Anyone left in prior periods		-0.027*		
		(0.042)		
Anyone left in prior periods		-0.127***		
x Remove Excuses		(0.035)		
Anyone left in prior periods		0.018		
x Remove Monitor		(0.047)		
# subjects leaving in period			-0.001	
			(0.007)	
# subjects leaving x Remove Excuses			-0.036**	
			(0.011)	
# subjects leaving x Remove Monitor			0.009	
			(0.010)	
# subjects remaining in period				0.039***
				(0.008)
# subjects remaining x Remove Excuses				-0.003
				(0.007)
# subjects remaining x Remove Monitor				-0.003
				(0.007)
Demographic controls				
Male	-0.032	-0.041*	-0.030	-0.054*
	(0.023)	(0.024)	(0.022)	(0.029)
Religious	0.009	0.018	0.009	0.032
	(0.023)	(0.024)	(0.022)	(0.030)
Recent Volunteer	0.003	0.015	0.004	0.004
	(0.023)	(0.024)	(0.022)	(0.029)
Know other subjects	-0.008	-0.015	-0.008	-0.031
	(0.024)	(0.028)	(0.024)	(0.029)
AIC	0.607	0.547	0.516	0.541
N	2964	2964	2964	2964

Standard errors are clustered by individuals
Marginal effects after glm (Bernoulli distribution with complimentary log-log link function)
Periods are defined in minute intervals (0, 1-5, 6-10)
* significant at 10%; ** significant at 5%; *** significant at 1%

Educational Activity Resource Database

Help us build a database of targeted educational activities to help tutors engage their students. Please work carefully. If you cannot find the information from the webpage, please write "N/A". Click **Next** to proceed to the next entry. Click **Finish Volunteering** if you have completely finished working.

Your practice task today is to find *instructions for an art activity using recycled materials*.
Please open another tab (Ctrl T) to perform searches and use this screen to enter information. Do not close this screen.
Use this practice session as an opportunity to ask any questions you have.

1. Subject:

2. Grade level:

3. Description/topic area (algebra, history, painting, etc):

4. Website address:

5. Approximate duration of time needed to complete (please estimate):

6. Description of online resource or the activity itself (worksheet, field trip, experiment, etc):

7. (Optional) What is interesting about this resource? What advice do you have for the tutor who chooses to do this activity with his/her student? Does it require special preparation/skills?