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The Heaven Dictator Game: Costless taking or giving

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Abstract

We present experimental data from the Heaven-Dictator game, a generalization of the dictator game that investigates the overstatement of inequality reduction in the motivation of social preferences. In this game, two players start with equal endowments and the heaven-dictator player, without incurring in any pecuniary cost or profit, chooses among increasing, decreasing or maintaining the earnings of the passive player. Thus, any choice except for the status quo generates unequal payoffs. The design avoids the experimenter demand effect of the standard "give only" version while simultaneously allowing participants to manifest antisocial preferences, inequity aversion or retaliation cannot be called for as motives. We find that the overwhelming majority of subjects, 75.4%, choose to increase their partners' earnings; however, there is a non-negligible 24.6% of subjects that either choose the status quo (11.9%) or to decrease (12.7%) their partners' earnings. Based on the psychological literature on music as a mood-inducing stimulus and on the effects of mood on helping behavior, we study the effect of exposure to different types of music on the heaven-dictator choices. Overall, observed preferences are independent of the music condition.

Keywords: experiment, behavior, other-regarding preferences, music, dictator game

JEL classification: C72, C91

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Abstract

We present experimental data from the Heaven-Dictator game, a generalization of the dictator game that investigates the overstatement of inequality reduction in the motivation of social preferences. In this game, two players start with equal endowments and the heaven-dictator player, without incurring in any pecuniary cost or profit, chooses among increasing, decreasing or maintaining the earnings of the passive player. Thus, any choice except for the status quo generates unequal payoffs. The design avoids the experimenter demand effect of the standard "give only" version while simultaneously allowing participants to manifest antisocial preferences, inequity aversion or retaliation cannot be called for as motives. We find that the overwhelming majority of subjects, 75.4%, choose to increase their partners' earnings; however, there is a non-negligible 24.6% of subjects that either choose the status quo (11.9%) or to decrease (12.7%) their partners' earnings. Based on the psychological literature on music as a mood-inducing stimulus and on the effects of mood on helping behavior, we study the effect of exposure to different types of music on the heaven-dictator choices. Overall, observed preferences are independent of the music condition.

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1. Introduction

Experiments reveal that individuals have other-regarding preferences. Models of social preferences incorporate this by assuming diverse individuals' motivations based on either outcome -distribution of payoffs across players- or intentions (Cooper and Kagel, 2013). Distributional motivations include inequity aversion and social welfare. Inequity aversion models assume that individuals dislike unequal distributions. Social welfare models assume that individuals like to increase social surplus, particularly helping those worst off. Intentions-based motivations focus on reciprocity. Reciprocity models assume that individuals mainly react to other's behavior towards them. However, social preferences' motivations are usually mingled in the experimental games. In general, inequality reduction has been overstated as motivation for Pareto-modifying behavior, and in particular, its conjunction with negative reciprocity –retaliation- for Pareto-damaging behavior (Charness and Robin, 2002)[2]. Moreover, reciprocity is claimed to be a stronger motivation than distributional preferences (Cooper and Kagel, 2013, part II.C, p.20). We present a modified Dictator game (DG), the Heaven Dictator game (HDG), to study Pareto-modifying behavior that: first, is not driven by inequality reduction or retaliation; secondly, unlike the most commonly studied, generates inequality; and thirdly, does not interfere with self-interest. The HDG allows individuals to exhibit a complete range of distributional preferences.

In the two player DG, the dictator splits an amount of money with the receiver, who has no say in the matter. Therefore, self-interest conflicts with distributional preferences and reciprocity is expelled. In the HDG, players start with equal payoffs and the HD player chooses among maintaining, increasing or decreasing the receiver's payoff at no pecuniary cost or benefit. Hence, self-interest and inequality reduction are barred as countervailing motives. Self-interest is excluded because the HD player's payoff is invariant throughout choices. Inequality reduction is dismissed because any choice of the HD player, other than the status quo, generates inequality (*difference seeking* behavior) and modifies social surplus. The HDG tests for the presence of Pareto-damaging behavior that generates advantageous inequality and Pareto-improving behavior that generates disadvantageous inequality.

The HDG allows both social and antisocial preferences to emerge. Thus, it avoids the criticism that the commonly observed generosity in the DG might result from either being the only available action or a willingness to appear fair, i.e., a sort of experimenter demand effect (Dana, Weber and Kuang, 2006; Dana, Cave and Dawes, 2006; Bardsley, 2008; List, 2007). This criticism applies also to burning games (see Abbink and Herrmann, 2011).

[2] In particular, inequality reducing Pareto-damaging behavior is, first, clearly driven by retaliation and, second, the only plausible Pareto-damaging behavior. Similarly, but not conversely, inequality reducing Pareto-improving behavior, first, appears when retaliation is not at stake and, second, is the only plausible Pareto-improving behavior (Charness and Rabin 2002, p. 818).

We present an experimental design that captures also the effect of exposure to different types of music on distributional preferences. In many churches and other religious or social contexts in which charitable giving takes place, music is played live or from a record, creating the appropriate atmosphere for the emergence of positive feelings. It is a common strategy by marketing practitioners to use music in supermarkets and other types of outlets as a means of promoting buying and spending behavior. Video games where antisocial behavior is played out have background music too. Distinct music styles accompany distinct individuals' behaviors. The HDG analyses the prevailing direction in other-regarding preferences when individuals can exhibit both sides, will music have an effect on it?

In order to challenge the robustness of our findings to differences in the mood states of heaven dictators, we have exposed subjects to two alternative stimuli environments. In one of them, classical music is heard while in another, modern commercial pop music is played on the loudspeakers of the lab. Classical and modern music treatments are performed and compared to behavior under no music at all. Both the classical and modern music treatments were run using a specifically designed sequence of pieces, recorded in a professional studio for the purposes of this project[3]. Both sequences consist of music parts (not complete songs) which follow each other in a smooth, controlled and similar across treatments way. The classical music used here was selected from a library of much shorter pieces (longer versions were used for realism, to resemble real-life environments with music) which have been classified and are used in psychology research as stimuli causing pleasant or very pleasant feelings to the listener. Modern music has been chosen among popular contemporaneous pop and rock songs.

Our results show that the majority of participants choose to maximize social surplus despite putting themselves behind, but there is a non-negligible 24.6% that either choose the status quo (11.9%) or to minimize social surplus putting themselves ahead (12.7%). Overall, it seems that the observed preferences are independent of the musical condition.

The paper is organized as follows. Next section summarises the relevant literature. Section 3 describes the experimental design and procedures. Results are in Section 4. Section 5 concludes.

2. Literature Review

Kahnemann et al. (1986) initiate the DG experimental paradigm by removing incentives for strategic behavior in the ultimatum game. Forsythe et al. (1994) further refine the game (Engel, 2011). In the DG, two players are randomly matched and assigned the role of dictator versus recipient. The dictator

[3] The sequences are freely available for replication in a scientific context at the web site of the LEE (www.uji.es). Use for commercial or other purposes is strictly forbidden.

player receives a certain amount of money and chooses how to split that amount between herself and the recipient. The recipient (tacitly) accepts the dictator choice. Over 25 years of experimental research shows that the majority choice is not consistent with the payoff maximization hypothesis: dictators on average give 28.35% of the money (Engel, 2011, p. 588).

Standard explanations of dictator behavior advocate for some kind of other-regarding preferences, ranging from inequity aversion (Bolton, 1991; Bolton and Ockenfels, 2000; Fehr and Schmidt, 1999), altruism (Andreoni and Miller, 2002), egocentrism (Cox et al., 2007) to Rawlsian "social welfare" preferences (Charness and Rabin, 2002). However, Bardsley (2008) posits an alternative explanation and claims that generous dictator behavior is due to the experimental setting, primarily because giving is the only possible action in the dictator game. In fact, this last explanation is further explored by the literature on burning games (Abbink and Sadrieh, 2009; Abbink and Herrmann, 2011; Zizzo and Oswald, 2001; Zizzo, 2003). In this type of burning game experiments, where players have the option to destroy their partners' earnings or keep the status quo, players do destroy others' earnings in consonance with basic ideas of fairness (inequity aversion) and self-protection. The HDG is an attempt to address the question of whether individuals exhibit social preferences when they have the chance to exhibit antisocial preferences.

North et al. (2004) summarize the psychological literature that investigates the effect of mood on prosocial behavior and conclude that: positive moods increase helping (e.g., Baron, 1997; Berkowitz, 2000; Gueguen, 2001); negative moods only foster helping with high benefits and low costs (Weyant, 1978), and reduce helping only when they have been externally induced (Rogers et al., 1982) or they are not caused by the person being helped (e.g. Carlson and Miller, 1987). This research uses several mood induction techniques, among which music remains rather under-investigated. Our design relates to the laboratory study by Fried and Berkowitz (1979) who find that altruism is more positively related to soothing music than to aversive or no music.

Drawing on the findings above, North et al. (2004) investigate further the role of music, as mood inductor. They focus on altruism and whether the role of music is mediated by the characteristics of the helping task. In this field experiment, subjects in a university gym are exposed to two types of music (inducing either positive or negative mood), and subsequently faced with two distinct helping tasks (signing a petition or distributing leaflets). North et al. (2004) find that although the music type is irrelevant in a time-costless task (signing a petition), it did affect the time-costly task. Negative-mood music significantly diminishes the willingness to distribute leaflets. Mood induction was controlled by two questionnaires after completing the task. Subjects in that study first answered a questionnaire about their perceptions of the music being played and then a mood questionnaire.

In economics, evidence supports the effect of mood on probability assessment (Wright and Bower, 1992), or individuals' decisions (Lerner et al., 2004; Schwarz, 2000). Moreover, Capra (2004) finds that music induces positive mood, which fosters prosocial behavior in strategic games. A recent hypothetical DG study by Fukui and Toyoshima (2014) finds that dictators allocate more money to recipients after listening to music they liked than after listening to music they disliked.

The HD player is given three behavioral options: doing nothing in line with strictly self-regarding preferences; and two options in line with some kind of other-regarding preferences: increasing–altruism- versus decreasing –nastiness- the partner's earnings, without any pecuniary consequences for himself. In the context of Charness and Rabin's (2002, footnote 8 on page 823) model of social preferences and taking into account that in the HDG both players start with equal payoffs, we could define the preferences of the HD by the following function:

$$U_{HD} = (1 - \sigma)\pi_{HD} + \sigma\pi_{PP}$$

where U_{HD} and π_{HD} refer to, respectively, the utility and the payment of the HD, and π_{pp} refers to the payment of the passive player. Parameter σ captures how the passive player's payoff is taken into consideration by the HD player. Thus, $\sigma > 0$ for those subjects who choose to increase their partner's earnings; $\sigma < 0$ for those subjects who choose to decrease their partner's earnings; and $\sigma = 0$ for those subjects who choose the status quo.

A positive σ would indicate an individual preference for maximising social welfare; a negative σ would indicate a preference for minimising social welfare. A zero σ would indicate inequity aversion. Since the HDG players have equal endowments and this is common knowledge, inequality reduction is dismissed: any choice of the HD player, except for the status quo, generates inequality (*difference seeking* behavior) and modifies social surplus. Hence, only the status quo is consistent with inequity aversion. That the HD player's payoff is invariant throughout his choices excludes self-interest. However, equity aversion cannot be discarded. Increasing choices by the HD player might be due to equity aversion together with a preference for being behind. Conversely, decreasing choices by the HD player might respond to equity aversion with a preference for being ahead.

3. Experimental design

All sessions were run in the LEE (Laboratorio de Economía Experimental) at the Universitat Jaume I (Castellón, Spain). Altogether, 252 students took part in this experiment. Participants were students of different disciplines, and were recruited through the online recruitment system for economic experiments, ORSEE.

At the beginning of each experimental session, subjects were randomly paired receiving 10 euros each. The computer assigned a role to each player: player 1 or 2. Player 1 was the HD player and had to choose among three options: maintaining, increasing or decreasing the earnings of the passive partner player 2. The set of alternatives for player 1 was A_1= {-4, -2, 0, 2, 4}. Meaning that, for example, choosing the alternative "-4" implies decreasing by four euros the passive player's earnings, while choosing "2" means increasing by two euros the passive player's earnings. Initial payoffs in our HDG do not depend on players' choices. Therefore, earnings for the HD player are 10 euros while the passive player earns 10 euro plus/minus the amount chosen by the partner.

The experiment was programmed in z-Tree (Fischbacher, 2007). At the beginning of each session, subjects' instructions[4] were shown in the computer screen, and read aloud by the experimenter. Each session lasted about one hour. On average, subjects earned 14 euros, including a 3 euros show-up fee.

In order to check the robustness of our results with respect to variations in the subjects' emotional state, we implemented the experiment under three treatments, varying subjects' exposure to continuous musical stimuli. In the baseline, no music was played during the session. In the second treatment, a sequence of classical music creations was played, chosen from a list of pieces which have been studied and calibrated to be effective as stimuli causing strong positive emotions (Västfjäll, 1992; Juslin and Västfjäll, 2008). For the third treatment, a similar list has been created and put together in a professional studio (SONO S.L.), to create a similar sequence of pieces falling under the heading contemporary Pop and Rock music

We denote our treatments *without music* (baseline), *classical music* and *modern music*. The classical music pieces were selected from music psychology indexation in terms of the emotional arousal and pleasantness they induce: Carmen (Bizet), Suite de Peer Gynt (Grieg), Moldavia (Smetana), Meditation (Massenet), Sonata n17 (Beethoven), Nutcracker (Chaicovsky), Bridal Chorus (Warner), September (Strauss), Scherezade (Korssakoff). The modern music pieces were selected by a professional musician following the "good and commercial" criteria[5]: Billie Jean (Michael Jackson), Toxic (Britney Spears), Back to Black (Amy Winehouse), Rock the house (Chemical Brothers), Grace Kelly (Mika), Whiskey Bar (The Doors), What's up (4 Non Blondes), I Feel Good (James Brown), etc.

[4]The original instructions were in Spanish. The English version is available upon request.

[5]This material is available upon request.

4. Results

As the active players are the only subjects taking a decision in the HDG, there are 126 observations in total: 36 observations without music and 90 observations under any music, from which 48 belong to the classic music treatment and 42 to the modern music treatment.

Table 1 summarizes the frequencies, mean and median HD player choices under each treatment and the pooled data for the condition "any music". First, and considering the whole sample, we observe some reduction of the recipient earnings. Specifically, 16 out of 126 (12.7%) subjects choose to reduce their partner's endowment and are consistent with antisocial preferences or equity aversion; 15 (11.9%) of them choose the status quo and are consistent with inequity aversion models. However, the overwhelming majority of subjects, 95 of them (75.4%), do increase their partner's earnings in line with pro-social other-regarding preferences, or equity aversion. That is, in terms of the simplified version of the Charness and Rabin's (2002) social preferences model discussed in the introduction, $\sigma > 0$. In fact, only the 11.9 % of our subjects choose the status quo and are therefore consistent with HDG inequity aversion.

Table 1. Descriptive statistics of the HDG experimental data

Treatment	**Choice Frequencies (%)**					**Mean**	**Median**
(Obs.)	**-4**	**-2**	**0**	**2**	**4**		
Without Music	2	0	7	12	15	2.1	2
(36)	(5.5)	-	(19.4)	(33.3)	(41.6)		
Any Music	7	7	8	20	48	2.1	4
(90)	(7.7)	(7.7)	(8.8)	(22.2)	(53.3)		
Classical Music	5	2	4	8	29	2.25	4
(48)	(10.4)	(4.2)	(8.3)	(16.6)	(60.4)		
Modern Music	2	5	4	12	19	1.95	2
(42)	(4.7)	(11.9)	(9.5)	(28.5)	(45.2)		
Total	9	7	15	32	63	2.11	3
(126)	(7.1)	(5.5)	(11.9)	(25.4)	(50)		

Despite we observe a larger tendency to reduce the recipient's earnings with music, the difference is not significant ($\mathcal{X}^2_{(8)} = 13.06,\ p = 0.110$)[6] . Hence, a first look at our results suggests that music

[6] None of the Mann-Whitney tests rejects the null hypothesis of equal distributions, neither the Kruskal-Wallis test that accounts for the ordinality of choices.

does not affect significantly the decision making of subjects in the HD game. The histograms depicted in figure 1 and the box plots in figure 2 offer an overall view of these results.

However, examining in more depth the without music versus the classical music treatments, there is a just 10 % significant relationship between choices and classical music ($\mathcal{X}^2_{(4)} = 7.8, p = 0.099$). This effect is more significant when pooling decreasing-choices (i.e., -4 and -2) ($\mathcal{X}^2_{(3)} = 7.28, p = 0.06$). It seems that listening to classical music instead of none may have an influence on the HD choices.

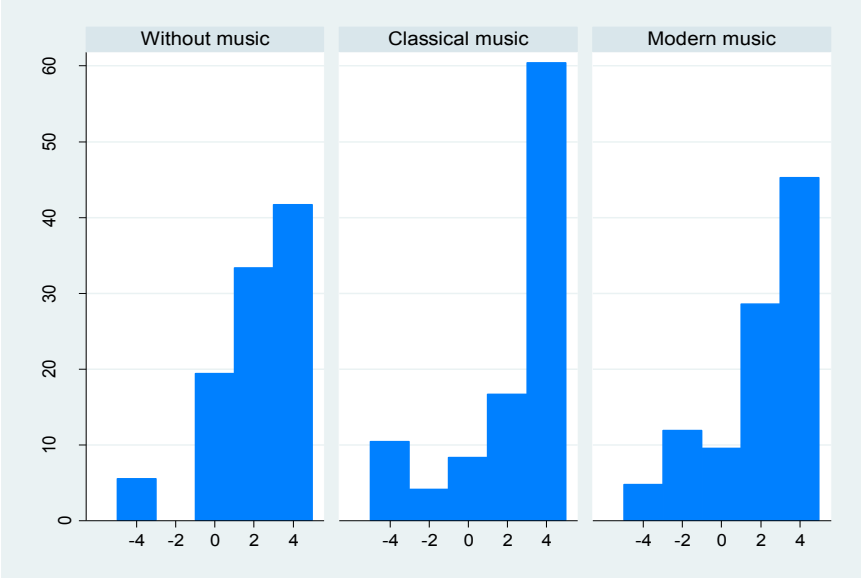

Figure 1. Histograms of Heaven Dictator choices per treatment

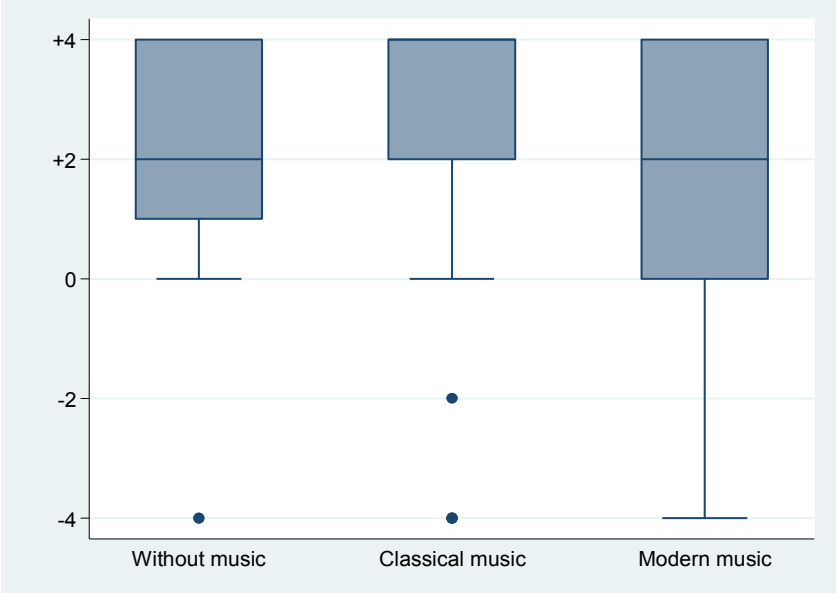

Figure 2. Box plots of each treatment distribution

5. Conclusions

As a modified dictator game, we use the heaven dictator game to study distributional preferences (pure altruism versus pure antisocial preferences) removing demand effect, inequality reduction and reciprocity as motivations. We find that, in a context where individuals are given the option to exhibit whatever type of distributional preferences they have, subjects mainly exhibit altruistic preferences (their utility increases with the other payoff, Cox, 2007).

In our design, we have checked the robustness of our results with respect to variations in the subjects' emotional state varying subjects' exposure to continuous musical stimuli: no music played during the session, a sequence of classical music causing strong positive emotions, and a sequence of contemporary Pop and Rock music. In a similar way to North et al. (2004) results on the time-costless task, we do not observe any effect of music on HDG choices. Overall, it seems that their distributional preferences, as defined in our experiment, are independent of background music. However, if we group the observations attending to whether heaven-dictators choose to maintain or increase versus decrease their partners' earnings, we observe that weakly prosocial behavior is significantly more frequent under the classical music condition than under the without music condition.

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