

## ORIGINAL ARTICLE

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## Norms of Fairness and Generosity Among People Experiencing Homelessness: A Dictator Game Field Experiment

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### Abstract

Society often ascribes negative stereotypes to people experiencing homelessness. However, people experiencing homelessness have been found to display highly nuanced social behaviors. We employ a field dictator game to examine prosocial behavior among 173 unhoused individuals in Nashville, TN. We test whether an unhoused population displays ingroup bias, wherein they are more generous toward other people experiencing homelessness (the hypothesized ingroup) than people not experiencing homelessness (the hypothesized out-group). Additionally, we explore relationships between sociodemographic and personal characteristics (social support, perceptions of deservedness/generosity) and dictator game behavior. We did not observe ingroup bias. However, on average, participants allocated 29% of their game endowment to recipients, consistent with cross-cultural dictator game studies. We found that the duration of homelessness, social support, and gender were associated with dictator game allocations. Additionally, people experiencing homelessness were more generous when they perceived other unhoused individuals would be more generous and deserving.

### Keywords

Social networks, game theory, cross-cultural studies, homelessness

## Introduction

There is a range of negative perceptions about people experiencing homelessness (people experiencing homelessness), wherein people assume that unhoused individuals are substance-addicted, mentally ill criminals, or too lazy to seek employment and obtain housing (Snow & Bradford, 1994). However, research shows that people experiencing homelessness display highly nuanced social behaviors (Snow & Anderson, 1987; 1993). Often, people experiencing homelessness form networks within their community, where they assist each other in acquiring survival resources like food, clothing, shelter, and emotional support (Anderson et al., 2021). For example, some people describe having

a “street family,” referring to people with whom they share particularly close bonds (Smith, 2008). Still, the unhoused often can be wary, even judgmental, of others experiencing homelessness (Snow & Anderson, 1993). For instance, they may distance themselves from other unhoused individuals by endorsing negative homeless stereotypes while separating themselves from that group—e.g., “I’m not like *those* homeless people” (Anderson et al., 2021).

Despite the large body of qualitative work on the social behaviors of the unhoused population, a robust quantitative investigation of fairness and generosity norms does not exist among this group. Here, we employ a version of the dictator

game to examine prosocial behavior, or “other-regarding” behavior, among 173 people experiencing homelessness in Nashville, TN. We test whether the unhoused population displays ingroup bias, wherein they are more generous toward other people experiencing homelessness (the hypothesized ingroup) than people not experiencing homelessness (the hypothesized out-group). Additionally, we explore the relationships between self-perceptions of generosity and deservedness and dictator game behavior among this population.

### The Dictator Game and Ingroup Bias

The dictator game, a variant of the ultimatum game, has been employed in both field and laboratory settings to assess prosocial or “other-regarding” behavior, such as fairness, generosity, and altruism norms (Benenson et al., 2007; Ben-Ner et al., 2009; Henrich, 2009). In a standard dictator game, the participant (dictator) is given some low-stakes, fixed endowment—usually money. The dictator is tasked with dividing that endowment between themselves and an anonymous recipient. The recipient receives only the amount the dictator chooses to give, and the dictator keeps the remainder. Upon completion, the experimenter collects the allocation, if any, from the dictator and provides it to the recipient. The dictator and recipient remain anonymous throughout the entire experiment.

Dictator games can be manipulated wherein the experimenter provides dictators with information about the recipient (e.g., demographic or behavioral characteristics). A more generous dictator toward recipients who share an attribute in common suggests an ingroup bias for that attribute. For example, people have been found to display ingroup bias for ethnicity (Friesen et al., 2012; Whitt & Wilson, 2007), political affiliation (Rand et al., 2009), and religion (Ben-Ner et al., 2009). However, whether people experiencing homelessness display an ingroup bias for homelessness is unknown. Homeless service providers and society-at-large use housing status to categorize a specific societal group— “the homeless.” Our experiment provides a unique perspective on whether housing status elicits the formation of an ingroup among people experiencing homelessness (Tajfel, 1970; 1974; Winetrobe et al., 2017).

### Factors Associated with Dictator Game Behavior

Dictator game behavior has also been associated with numerous personal characteristics. For example, previous work has found that demographic characteristics, including age (Benenson et al., 2007), gender (Gummerum et al., 2010), and ethnicity (Whitt & Wilson, 2007), are associated with how people behave in dictator-game experiments. Additionally, dictator game participants tend to be more generous when they perceive recipients as “worthy” (Fong, 2007). In other economic games, social support is associated with behavior (O’Malley et al., 2012; Twenge et al., 2007). Thus, we test for associations between personal characteristics—sociodemographic factors, social support, and perceived deservedness—and dictator game behavior among people experiencing homelessness. We describe these measures in more detail in the Methods section.

### Examining Prosocial Norms Using the Dictator Game

Although standard economic theory predicts people will behave selfishly to maximize economic gain, i.e., *Homo economicus* (Margolis, 1984), dictator-game studies demonstrate that this prediction is almost universally violated (Engel, 2011). In nearly all cases, dictator-game participants show regard for fairness and generosity norms. Although dictator games assess these norms, what behavior is considered “normative” varies substantially across cultural contexts (Henrich et al., 2005). Studies worldwide found that dictator-game behavior was associated with socio-cultural factors, daily social interactions, and economic factors, like market integration (Ensminger & Henrich, 2014).

Despite homelessness being embedded in Western society, those experiencing it in the United States (US) represent a unique culture. Research has found shared attitudes surrounding shelter use and resource sharing (Snow & Anderson, 1993) and shared language and survival behaviors among people experiencing homelessness (Donley & Wright, 2012). However, whether people experiencing homelessness demonstrate a perceived regard for social norms is unknown. Thus, our study

benchmarks fairness and generosity norms among people experiencing homelessness, contributing to a growing body of cross-cultural dictator-game literature.

## Methods

### Participants and Recruitment

We recruited 173 participants via convenience sampling at two brick-and-mortar homeless service sites and three street locales in Nashville, TN, from July 2019 to October 2019 (Anderson et al., 2021). At this time, Nashville-Davidson County reported a homeless population of 1,986 (Department of Housing and Urban Development (HUD), 2019, p. 201). Any person  $\geq 18$  years old who self-identified as homeless could participate and be interviewed immediately following recruitment. During the consent process, participants were informed they would participate in an experiment and be administered a survey after gameplay.

### Dictator Game

Participants played one dictator game using eight single-ride Nashville MTA bus passes (\$1.70 each) as the endowment. The Nashville bus system is the primary transportation mode besides walking among people experiencing homelessness; thus, bus passes represent a relevant currency. We gave participants an even number of passes because we expected participants to allocate them in pairs, representing a round-trip journey.

Each participant was randomly assigned to one of three scenarios using a random-number generator without replacement. In all scenarios, participants were told the recipient was someone in Nashville who regularly used the bus. The participant was then told the recipient was either (1) housed, (2) unhoused, or (3) no information was provided about their housing status (control scenario). We defined “housed” recipients as people who had a home and were not experiencing homelessness and “unhoused” recipients as people who were also experiencing homelessness.

Participants were told to split passes with the recipient, allocating 0–8 passes. Both participants and recipients remained anonymous. They

confirmed their understanding of the game rules and then placed passes in a sealed envelope to be distributed later. The experimenter left during pass allocation to ensure anonymity. Afterward, a survey was administered. Participants’ behavior in the dictator game is sensitive to perceived observation or judgment by the experimenter (Haley & Fessler, 2005). Therefore, the experimenter left the testing area while the participants divided their passes to ensure anonymity. The participant was instructed to notify the experimenter after they completed this step. Once the game was over, the experimenter administered a survey.

Each participant’s donation envelope and post-game survey were linked to the randomly generated number without identifying information. Thus, participants were ensured that their allocations remained anonymous to the recipient and experimenter. Participants received a \$5 gift card as a thank-you after study completion. Gift cards were provided as a surprise to ensure they would not affect the relative stakes of the dictator game, and we attempted to maintain this strategy throughout the study. Following study completion, recipient bus passes were given to homeless service providers in Nashville, who distributed bus passes to relevant recipients (i.e., housed people, unhoused people, or anyone who takes the bus, regardless of housing status) in the quantities allocated by participants. Thus, no deception was used in this study.

### Survey-Based Data

The experimenter collected sociodemographic data post-dictator game, including age, gender, ethnicity, education, bus-use frequency, and social support. To assess social support among people experiencing homelessness, we asked them to identify individuals who provided financial, emotional, or material support in the past 30 days, generating variables for the number nominated in each support category and total network size (Almquist, 2020; La Gory et al., 1991; Lee et al., 2010). We also inquired about participants’ estimated lifetime duration of homelessness. To determine sheltered status, we asked about the number of nights spent in a shelter in the past 30 days, classifying participants as sheltered if they

spent >14 nights residing in a shelter. We followed HUD guidelines and classified those who use emergency shelters as experiencing homelessness. Lastly, we gauged norm perceptions by asking participants how deserving they felt the recipient was compared to themselves and how many passes they thought other people experiencing homelessness in the game would allocate in the same scenario.

### ***Associations with Dictator-Game Behavior Among People Experiencing Homelessness***

We initially used a Poisson regression model to test treatment-group effects on bus-pass allocation. We explored various Poisson models to understand participant attributes, recipient perceptions, and pass allocation. We ran models for each treatment group and the study population, testing different models with sociodemographic factors, social network composition, and perceived deservedness and generosity. We excluded ethnicity and participants identifying as non-binary due to their limited impact. We employed an additive model-building approach using AIC/BIC

(Akaike, 1974; Kass & Wasserman, 1995) to select the best model. We gradually included sociodemographic characteristics, social network characteristics, and perception variables in multivariate models. We also examined the potential interaction effects of gender and social support in the analysis.

### ***Associations with Giving Nothing in the Dictator Game***

We constructed a binary logistic regression model to evaluate patterns among participants who gave nothing in the dictator game. This model was a descriptive check for associations between significant individual-level characteristics in the multivariate models and the probability of a participant giving zero bus passes (coded as 1) compared with participants who donated at least one pass (coded as 0).

## **Results**

Participant characteristics are presented in Table 1.

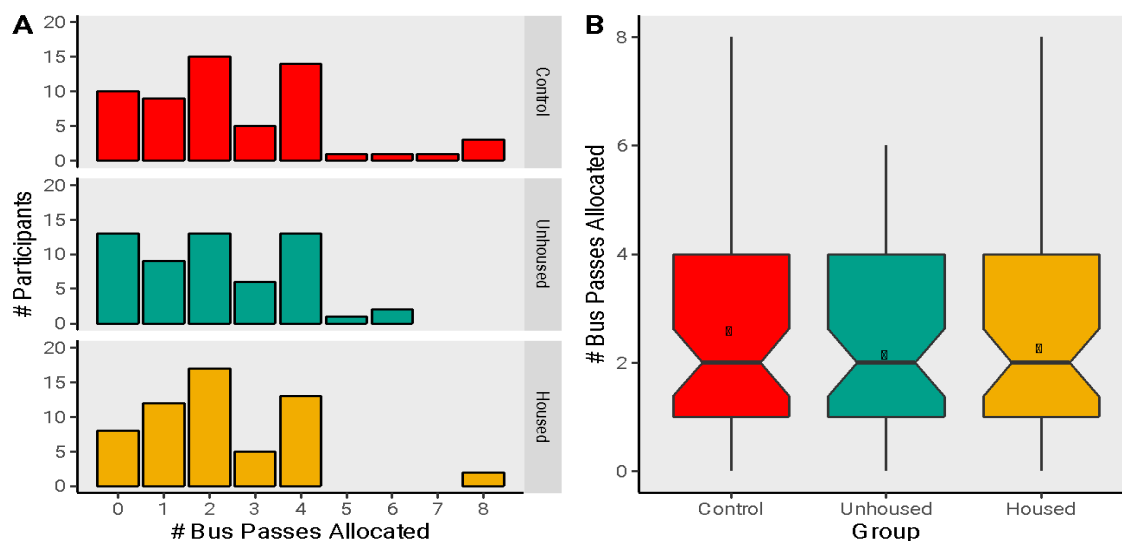
**Table 1.** *Distribution of Sociodemographic and Social-Network Factors Among N=173 People Experiencing Homelessness in Nashville, TN*

|                                 | Total |      | Control |      | Unhoused |      | Housed |      |
|---------------------------------|-------|------|---------|------|----------|------|--------|------|
|                                 | N     | %    | n       | %    | n        | %    | n      | %    |
| <b>Sociodemographic Factors</b> |       |      |         |      |          |      |        |      |
| Gender                          |       |      |         |      |          |      |        |      |
| Male                            | 117   | 67.6 | 38      | 64.4 | 40       | 70.2 | 39     | 68.4 |
| Female                          | 53    | 30.6 | 20      | 33.9 | 16       | 28.1 | 17     | 29.8 |
| Non-binary                      | 3     | 1.8  | 1       | 1.7  | 1        | 1.7  | 1      | 1.8  |
| Ethnicity                       |       |      |         |      |          |      |        |      |
| White                           | 99    | 57.2 | 32      | 54.2 | 34       | 59.6 | 33     | 57.8 |
| Non-White                       | 74    | 42.8 | 27      | 45.8 | 23       | 40.4 | 24     | 42.2 |
| Education                       |       |      |         |      |          |      |        |      |
| K-11th grade                    | 52    | 30.1 | 13      | 22.0 | 20       | 35.1 | 20     | 35.1 |
| GED or high school              | 75    | 43.4 | 25      | 42.4 | 25       | 43.9 | 25     | 43.9 |
| Trade school or any higher ed.  | 46    | 26.5 | 21      | 35.6 | 12       | 21.0 | 12     | 21.0 |
| Rides bus daily                 |       |      |         |      |          |      |        |      |
| No                              | 79    | 45.7 | 30      | 50.8 | 27       | 47.4 | 22     | 38.6 |
| Yes                             | 94    | 54.3 | 29      | 49.2 | 30       | 52.6 | 35     | 61.4 |
| Lifetime homelessness duration  |       |      |         |      |          |      |        |      |
| ≤1 year                         | 31    | 17.3 | 5       | 8.6  | 14       | 24.5 | 12     | 21.1 |
| 1-5 years                       | 70    | 40.5 | 29      | 49.1 | 20       | 35.1 | 21     | 36.8 |
| 5-10 years                      | 32    | 18.5 | 13      | 22.0 | 6        | 10.5 | 13     | 22.8 |
| >10 years                       | 40    | 23.7 | 12      | 20.3 | 17       | 29.9 | 11     | 19.3 |
| Sheltered or unsheltered        |       |      |         |      |          |      |        |      |

|                                                                    |             |           |             |           |             |           |             |           |
|--------------------------------------------------------------------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|
| Sheltered                                                          | 12          | 7.5       | 5           | 9.3       | 1           | 1.8       | 6           | 11.8      |
| Unsheltered                                                        | 161         | 92.5      | 54          | 90.7      | 56          | 98.2      | 51          | 88.2      |
| Perceived deservedness of recipient<br><deserving than participant | 52          | 30.0      | 15          | 25.4      | 23          | 40.3      | 14          | 34.6      |
| ≥deserving than participant                                        | 120         | 69.8      | 44          | 74.6      | 33          | 59.7      | 43          | 65.4      |
|                                                                    | <b>Mean</b> | <b>SD</b> | <b>Mean</b> | <b>SD</b> | <b>Mean</b> | <b>SD</b> | <b>Mean</b> | <b>SD</b> |
| Age                                                                | 45.2        | 11.5      | 46.3        | 11.9      | 45.9        | 11.2      | 43.2        | 11.4      |
| <b>Social Network Factors</b>                                      |             |           |             |           |             |           |             |           |
| Perceived people experiencing homelessness allocations             | 1.8         | 1.5       | 2.1         | 1.5       | 1.7         | 1.4       | 1.6         | 1.4       |
| Network size                                                       | 2.5         | 1.8       | 2.5         | 2.0       | 2.8         | 1.8       | 2.3         | 1.5       |
| No. financial supports                                             | 1.3         | 1.5       | 1.4         | 1.6       | 1.5         | 1.5       | 1.1         | 1.3       |
| No. emotional supports                                             | 1.3         | 1.4       | 1.5         | 1.6       | 1.4         | 1.5       | 1.0         | 0.9       |
| No. material supports                                              | 1.8         | 1.5       | 1.8         | 1.6       | 1.9         | 1.5       | 1.7         | 1.5       |

Our sample comprised 117 (67.6%) men and 53 (30.6%) women. The mean participant age was ~45 years. The mean number of emotional- and material-support contacts in participants'

networks was 1.3 and 1.8, respectively. Bus-pass allocation distribution by treatment group is presented in Figure 1.



**Figure 1.**

*Frequency Distributions of Bus-Pass Allocations by Treatment Group (A) and Box-and-Whisker Plot of Bus-Pass Allocations by Treatment Group (B).*

The mean number of bus-pass allocations for participants assigned to the control, unhoused, and housed treatment groups was 2.6, 2.1, and 2.3, respectively. A univariate Poisson regression revealed that neither the unhoused treatment group ( $\exp(\beta)=0.83$ , 95% CI: -0.42-0.10) nor the housed treatment group ( $\exp(\beta)=0.88$ , 95% CI: -0.37-0.10) differed from the control group. However, individual characteristics of the

dictator were associated with the number of allocations.

### Sociodemographic, Bus Use, and Homelessness Duration Correlates of Generosity

Multivariable Poisson regression models are presented in Tables 2 and 3. Model 1 examined

associations between sociodemographic characteristics, bus-use frequency, homelessness duration, and number of bus passes allocated. We found no difference in the amount of passes allocated across treatment groups, genders, or education. We found that people experiencing homelessness who had experienced 5–10 years of homelessness over their lifetimes allocated 34% fewer passes than people experiencing homelessness who experienced homelessness for one year or less ( $\exp(\beta)=0.66$ ,  $p<0.01$ ). Finally, people experiencing homelessness who rode the bus more than half the days of a typical month were allocated 36% fewer passes than people experiencing homelessness who rode the bus less than half the days of a typical month ( $\exp(\beta)=0.64$ ,  $p<0.001$ ).

### Network Composition and Perception Correlates of Generosity

In Model 2, there was no association between network size or number of material supports and the number of bus passes allocated. However, with each increase in emotional support, bus-pass allocations increased by 11% ( $OR=1.11$ ,  $p<0.05$ ). Participants who felt that the recipient was equally or more deserving than themselves allocated 39% more passes than people experiencing homelessness who felt the recipient was less deserving ( $OR=1.39$ ,  $p<0.01$ ). Finally, for each additional pass participants perceived other people experiencing homelessness would give if they played the game, people experiencing homelessness gave 9% more passes ( $OR=1.09$ ,  $p<0.01$ ).

**Table 2.**

*Multivariate Poisson Regression Estimates Between Number of Bus Passes Allocated and Sociodemographic, Social-Network, and Community Perception Factors Among N=173 People Experiencing Homelessness in Nashville, TN*

|                                      | Model 1        |             | Model 2        |             |
|--------------------------------------|----------------|-------------|----------------|-------------|
|                                      | Exp( $\beta$ ) | 95% CI      | Exp( $\beta$ ) | 95% CI      |
| <b>Treatment Group</b>               |                |             |                |             |
| Control (reference)                  | ---            | ---         | ---            | ---         |
| Unhoused                             | 0.81           | (0.63–1.03) | 0.93           | (0.72–1.19) |
| Housed                               | 0.94           | (0.74–1.20) | 1.03           | (0.80–1.33) |
| <b>Sociodemographic Factors</b>      |                |             |                |             |
| Gender                               |                |             |                |             |
| Female (reference)                   | ---            | ---         | ---            | ---         |
| Male                                 | 1.04           | (0.83–1.31) | 1.01           | (0.80–1.28) |
| Education Level                      |                |             |                |             |
| K–11th grade (reference)             | ---            | ---         | ---            | ---         |
| GED or high school                   | 1.21           | (0.94–1.56) | 1.11           | (0.86–1.44) |
| Trade school or any higher education | 1.17           | (0.89–1.56) | 1.09           | (0.81–1.45) |
| Lifetime homelessness duration       |                |             |                |             |
| ≤1 year (reference)                  | ---            | ---         | ---            | ---         |
| 1–5 years                            | 0.95           | (0.73–1.25) | 1.00           | (0.76–1.31) |
| 5–10 years                           | 0.66*          | (0.46–0.93) | 0.69*          | (0.48–0.98) |
| >10 years                            | 0.87           | (0.63–1.19) | 0.86           | (0.62–1.19) |
| Rides bus daily                      |                |             |                |             |
| No (reference)                       | ---            | ---         | ---            | ---         |
| Yes                                  | 0.64***        | (0.53–0.79) | 0.67***        | (0.54–0.82) |
| <b>Social Network Composition</b>    |                |             |                |             |
| No. emotional supports               | ---            | ---         | 1.11*          | (1.02–1.20) |
| No. material supports                | ---            | ---         | 0.95           | (0.87–1.02) |

### Perceived Deservedness and Generosity of Other People Experiencing Homelessness

|                                                      |     |         |        |             |
|------------------------------------------------------|-----|---------|--------|-------------|
| Perceived deservedness of the recipient              |     |         |        |             |
| <deserving than participant (reference)              | --- | ---     | ---    | ---         |
| ≥deserving than participant                          | --- | ---     | 1.39*  | (1.09–1.79) |
| Perceived people experiencing homelessness donations | --- | ---     | 1.09** | (1.02–1.17) |
| Exp(Intercept)                                       |     | 3.05*** |        | 1.35        |
| AIC                                                  |     | 656.6   |        | 637.6       |

Significance values: \* $p \leq 0.05$ , \*\* $p \leq 0.01$ , \*\*\* $p \leq 0.001$

### Gender and Support Interactions

Model 3 included an interaction term between participant gender and emotional support. For each additional emotional support, men increased their allocation by 39% compared

with women (OR=1.39,  $p < 0.001$ ). Model 4 included an interaction effect between gender and material support. Similarly, men increased their allocations by 28% for each additional material support compared with women (OR=1.28,  $p < 0.001$ ).

**Table 3.**

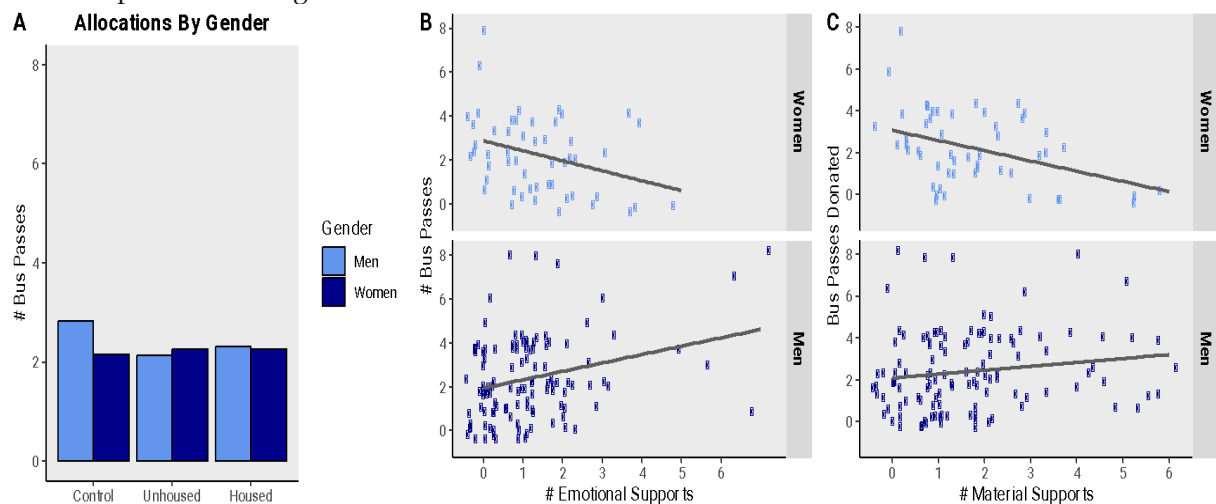
*Multivariate Poisson Regression Estimates Between the Number of Bus Passes Allocated and Treatment Group, Sociodemographic, Social-Network, and Community Perception Factors Among N=173 People Experiencing Homelessness in Nashville, TN*

|                                      | Model 3        |             | Model 4        |             |
|--------------------------------------|----------------|-------------|----------------|-------------|
|                                      | Exp( $\beta$ ) | 95% CI      | Exp( $\beta$ ) | 95% CI      |
| <b>Treatment Group</b>               |                |             |                |             |
| Control (reference)                  | ---            | ---         | ---            | ---         |
| Unhoused                             | 0.88           | (0.68–1.14) | 0.84           | (0.64–1.09) |
| Housed                               | 1.02           | (0.79–1.31) | 0.95           | (0.74–1.22) |
| <b>Sociodemographic Factors</b>      |                |             |                |             |
| Gender                               |                |             |                |             |
| Female (reference)                   | ---            | ---         | ---            | ---         |
| Male                                 | <b>0.66*</b>   | (0.48–0.92) | <b>0.68*</b>   | (0.48–0.95) |
| Education level                      |                |             |                |             |
| K–11th grade (reference)             | ---            | ---         | ---            | ---         |
| GED or high school                   | 1.13           | (0.87–1.46) | 1.11           | (0.86–1.44) |
| Trade school or any higher education | 1.03           | (0.77–1.38) | 1.09           | (0.82–1.46) |
| Lifetime homelessness duration       |                |             |                |             |
| ≤1 year (reference)                  | ---            | ---         | ---            | ---         |
| 1–5 years                            | 1.01           | (0.77–1.34) | 0.98           | (0.75–1.30) |
| 5–10 years                           | <b>0.66*</b>   | (0.45–0.93) | 0.71           | (0.49–1.01) |
| >10 years                            | 0.82           | (0.59–1.14) | 0.91           | (0.66–1.25) |
| Rides bus daily                      |                |             |                |             |
| No (reference)                       | ---            | ---         | ---            | ---         |
| Yes                                  | <b>0.69***</b> | (0.56–0.84) | <b>0.69***</b> | (0.5–0.85)  |
| <b>Social Network Composition</b>    |                |             |                |             |
| No. emotional supports               | <b>0.82*</b>   | (0.68–0.98) | ---            | ---         |

|                                                                                        |                |              |               |              |
|----------------------------------------------------------------------------------------|----------------|--------------|---------------|--------------|
| No. material supports                                                                  | ---            | ---          | <b>0.82*</b>  | (0.70–0.96)  |
| <b>Perceived Deservedness and Generosity of Other people experiencing homelessness</b> |                |              |               |              |
| Perceived deservedness of recipient                                                    |                |              |               |              |
| <deserving than participant (reference)                                                | ---            | ---          | ---           | ---          |
| ≥deserving than participant                                                            | 1.22           | ---          | 1.26          | (0.99–1.63)  |
| Perceived people experiencing homelessness donations                                   | <b>1.08*</b>   | (1.01–1.16)  | <b>1.09*</b>  | (1.01–1.17)  |
| <b>Gender and Emotional Support Interaction</b>                                        |                |              |               |              |
| Female x emotional supports (reference)                                                | ---            | ---          | ---           | ---          |
| Male x emotional supports                                                              | <b>1.39***</b> | (1.14–1.71)  | ---           | ---          |
| <b>Gender and Material Support Interaction</b>                                         |                |              |               |              |
| Female x material supports (reference)                                                 | ---            | ---          | ---           | ---          |
| Male x material supports                                                               | ---            | ---          | <b>1.28**</b> | (1.08–1.54)  |
| Exp(Intercept)                                                                         |                | <b>2.41*</b> |               | <b>2.33*</b> |
| AIC                                                                                    |                | 628.1        |               | 635.7        |

Significance values: \* $p \leq 0.05$ , \*\* $p \leq 0.01$ , \*\*\* $p \leq 0.001$

The gender-stratified relationship between several emotional supports and bus-pass allocations is presented in Figure 2.



**Figure 2.**

Frequency Distributions of Bus-Pass Allocations by Gender and Treatment Group (A) and Relationship C Between the Number of Emotional Supports

#### Factors Associated with Giving Nothing in Dictator Game

Our logistic regression model (Model 5) examining associations between participant characteristics and giving nothing is presented in Table 4.

**Table 4.**

*Multivariate Logistic Regression of Factors Associated With Allocating Zero Bus Passes in the Dictator Game Among N=173 People Experiencing Homelessness in Nashville, TN*

| <b>Model 5</b>                                       |                |      |              |
|------------------------------------------------------|----------------|------|--------------|
|                                                      | Estimate       | OR   | 95% CI (OR)  |
| Gender                                               |                |      |              |
| Female (reference)                                   |                |      |              |
| Male                                                 | -0.07          | 0.93 | (0.38–2.38)  |
| Rides bus daily                                      |                |      |              |
| No (reference)                                       |                |      |              |
| Yes                                                  | <b>1.40**</b>  | 4.07 | (1.60–11.99) |
| Lifetime homelessness duration                       |                |      |              |
| ≤1 year (reference)                                  |                |      |              |
| 1–5 years                                            | 0.46           | 1.58 | (0.46–6.50)  |
| 5–10 years                                           | 1.10           | 3.01 | (0.80–13.24) |
| >10 years                                            | 0.44           | 1.55 | (0.39–6.84)  |
| No. emotional supports                               | -0.08          | 0.92 | (0.64–1.26)  |
| Perceived people experiencing homelessness donations | <b>-0.32*</b>  | 0.70 | (0.50–0.97)  |
| Intercept                                            | <b>-2.27**</b> | 0.10 | (0.02–0.47)  |
| AIC                                                  | 157.9          |      |              |

Significance values: \* $p \leq 0.05$ , \*\* $p \leq 0.01$ , \*\*\* $p \leq 0.001$

Among sociodemographic predictors included in Models 1–4, only whether the participant rode the bus daily was significant; they were ~4 times more likely to donate nothing in the dictator game (OR=1.40,  $p < 0.001$ ). Alternatively, for each pass, participants perceived other people experiencing homelessness would donate in an identical scenario; we found a 30% decrease in the odds of donating nothing.

### Discussion

Our original hypothesis that people experiencing homelessness would be more generous to other unhoused individuals than

housed recipients was not supported in our analysis. People experiencing homelessness allocated an average of 2.35 (29.35%) of their bus passes to recipients. This is similar to allocations seen in previous dictator-game studies with university students, where participants typically allocate around 28.35% of their currency to recipients (Engel, 2011). In field settings, participants allocate around 20% of their endowment on average, which is considered a universal norm (Levitt & List, 2007). However, in subsistence societies (Barrett & Haley, 2014; Bolyanatz, 2014; Marlowe, 2014) allocations vary, ranging from 26% (e.g., Hadza of Tanzania) to 41% (e.g., Sursurunga of Papua New Guinea). In a non-student population in rural North

America, mean and modal allocations were 47% and 50%, respectively. Our finding that people experiencing homelessness allocated ~29% of their bus passes to recipients aligns with the trend of non-student populations being more generous than student populations (Ensminger & Cook, 2014). Notably, only 19.9% of people experiencing homelessness in our study gave nothing, indicating that people often act unselfishly even among a Western resource-poor group. We observed a bimodal distribution in allocations across treatment groups (Figure 1), with two prominent modes at two and four bus passes. This action suggests a shared sense of fairness, as even numbers allow recipients to complete round-trip journeys.

### Characteristics Associated with Generosity

Participants' demographic characteristics, including lifetime homelessness duration and monthly bus use, were associated with the number of allocated passes. Although our study suggests that people experiencing homelessness value bus passes as an important resource (as those who used the bus more frequently gave fewer bus passes), they nevertheless shared this resource with recipients they perceived needed them.

People experiencing homelessness who had experienced 5–10 years of homelessness over their lifetimes allocated ~31%–34% fewer bus passes to recipients compared with people experiencing homelessness who had experienced homelessness 1–5 years or 10+ years (Models 1–3). Past work showed that, as homelessness duration increases, people experiencing homelessness tend to replace social ties to housed people with ties to unhoused people. Long-term people experiencing homelessness often develop “cliques,” or tight-knit social circles with other long-term people experiencing homelessness (Osborne, 2002). As homelessness duration increases, people become less likely to share resources with anonymous recipients, as in the dictator game, and more likely to share resources within their personal networks.

Participants were more generous in the dictator game when they perceived (1) the recipient to be equally or more deserving of free bus passes than themselves and (2) that other people experiencing homelessness in an identical

scenario would be generous. This action is consistent with past studies that found a positive association between the dictator's perception of recipient “worthiness” and allocations (Fong & Luttmer, 2011). Our models further revealed that people experiencing homelessness allocated 8%–9% more passes for each additional pass they thought other people experiencing homelessness would give in an identical scenario. We also found that for each pass participants thought other people experiencing homelessness would allocate, they were 30% less likely to give nothing, indicating that people experiencing homelessness adhere to perceived fairness and generosity norms. Our findings build upon decades of social psychology research showing that people usually follow perceived norms, and people experiencing homelessness are no different (Miller & Prentice, 2016; Prentice & Paluck, 2020).

Finally, our study suggests that social supports function differently for men and women in influencing generosity. Larger material and emotional support networks were associated with greater generosity among men but not women (Models 3 and 4). Anthropological research finds that men are more likely than women to engage in costly signaling that requires greater public sacrifice (Bird & Smith, 2005; Bird et al., 2001; Sosis, 2000). Conversely, women tend to engage in more subtle signaling, like investing in relationships with close associates (Bird et al., 2018). In our experiment, it is possible that male people experiencing homelessness with larger support networks felt compelled to “pay it forward” to an anonymous recipient as a reputation mechanism, signaling a willingness to contribute and cooperate. However, women with larger support networks may be more likely to share resources with affiliates than anonymous recipients. Research into prosocial behavior is needed to understand gender-based resource allocation among people experiencing homelessness.

Our study into fairness and generosity norms among people experiencing homelessness can aid in combating negative stereotypes (Knecht & Martinez, 2009). Future work into generosity and fairness among people experiencing homelessness may build empathy within the general population by reframing homelessness as a circumstance, not a character flaw, and facilitate

service and support efforts at local and national levels.

### Limitations

Our study has several limitations. Dictator games carry inherent limitations in that participants may be more generous than they would in real-world scenarios because they feel judged by the experimenter. A perceived lack of anonymity and feelings of being watched are well-documented dictator-game methodology shortcomings (Haley & Fessler, 2005; Lamba & Mace, 2010). To limit bias, the experimenter left the test area while participants were allocated bus passes. We also used anonymous identifiers for participants. Finally, because our study population is small and convenience-sample-generated, our findings may not be generalizable to all homeless populations. However, according to the HUD Continuum of Care population estimate (Almquist et al., 2020), our sample represented about one-third of unsheltered people experiencing homelessness in Nashville (Department of Housing and Urban Development, 2020), and our sample was demographically comparable to the 2016–2020 Nashville-Davidson County PIT count (Anderson et al., 2021).

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