Using Behavioral Economics to Predict Sensitivity to Moral Injury in Military Recruits: Validation of the Moral Injury Purchase Task

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Introduction

- Moral Injury is a psychological phenomenon that arises when a person witnesses or actively participates in something that would go against what that person would deem "wrong" (Shay, 2014)

- Military veterans, one of the most susceptible groups to events that could cause moral injury, experience progressively worse quality of life along with increasing severity of moral injury (McDaniel, 2023)

- While there have been a wide variety of studies showing what groups could be affected by moral injury, how it occurs, and how to possibly treat it, there has been a lack of studies talking about the prevention of moral injury (Williamson et al., 2021)

- The Hypothetical Purchase Task, which is a methodology from the behavioral economics literature, bases itself on the law of demand and is frequently used to study addiction or health behaviors (Jacobs & Bickel, 1999)

- There is potential use for the hypothetical purchase task in the study of moral injury, particularly in determining how susceptible/sensitive military recruits would be to moral injury in severe circumstances

- If valid, such as tool could be used to target military recruits for preventive moral resilience services, which, if offered, could reduce the costs of treating moral injury in the long term

Methodology

Study Design and Sample

- An online survey was created in SurveyMonkey and posted on Amazon Mturk for this cross-sectional study

- Inclusion criteria were the following: (a) must either be planning to join the United States Armed Forces or (b) be a military service member/veteran, and (c) be aged > 18 years

- Seventy-five participants consented, met inclusion criteria for the study, and were paid $2

- Using Stein et al.'s (2015) algorithm, we identified and eliminated 49 nonsystematic responses as it pertains to the Law of Demand ($n = 26$)

Measures

- A hypothetical purchase task was created in with the following premise: the participant noticed something whilst in combat that could possibly cause moral/values-based trauma (e.g., seeing the death of innocent civilians), and they were asked to determine how many years they would purchase therapy, at exponentially increasing prices (maximum price = $163,840), to help them forget the trauma caused by the incident

- Example item: "For $5 per year, how many years would you purchase services to help you never think about your experiences in war?

- After reading the hypothetical purchase task, participants were also directed to complete the Moral Injury Events Scale (Nash et al., 2013)

Methodology (Cont.)

Data Analysis

- We calculated standard demand metrics for purchase tasks, including unconstrained intensity of demand (i.e., Q_0), maximum expenditure (i.e., O_{max}), commodity value at which demand because elastic (i.e., P_{max}), and the price at which consumption is suppressed (i.e., break point)

- We used Koffarnus et al.'s (2015) equation, below, to model demand in military recruits and service members/veteran separately

$$Q = Q_0 * 10^{k(e^{-\alpha Q_0 C} - 1)}$$

- We compared the α and Q_0 values of the models for military recruits and service members/veterans by estimating an extra sum-of-squares F-test (Cassidy et al., 2020)

- We established convergent validity by estimating a log-log simple linear regression model for the association between summed scores on the Moral Injury Events Scale and each participant's P_{max}

- The Benjamini and Yekutieli (2001) adjusted p-value was used in order to account for the inflation of type I error

Results

- Koffarnus et al.'s (2015) demand equation provided a good fit to the data provided by the entire sample ($R^2 = 0.90$) (Figure 1)

- Results showed that the demand curves for the two populations were not significantly different ($F_{(1, 438)} = 5.30$, $p = 0.07$)

- Observed demand indices for the entire sample, as well as stratified by military service status, are shown in Table 1

- In a log-log simple linear regression model aimed at determining convergent validity, a 1-unit increase in a participant's MEIS score was associated with a 4.62 unit increase in a participant's Pmax ($b = 4.62$, $SE = 1.80$, $p = 0.03$)

Table 1
Demand indices calculated from the hypothetical purchase task

Index	M	SD
Entire Sample (n = 26)		
Q_0	46.85	26.37
O_{max}	156,342.00	353,967.50
P_{max}	12,978.87	29,762.00
Breakpoint	16,835.71	21,377.36
Military Recruit (n = 14)		
Q_0	39.79	28.59
O_{max}	29,712.36	72,590.65
P_{max}	2,613.21	3,909.67
Breakpoint	16,914.00	23,885.34
Service Member/Veteran (n = 12)		
Q_0	55.08	21.86
O_{max}	304,076.50	484,057.30
P_{max}	25,072.14	41,216.16
Breakpoint	16,640.00	16,392.00
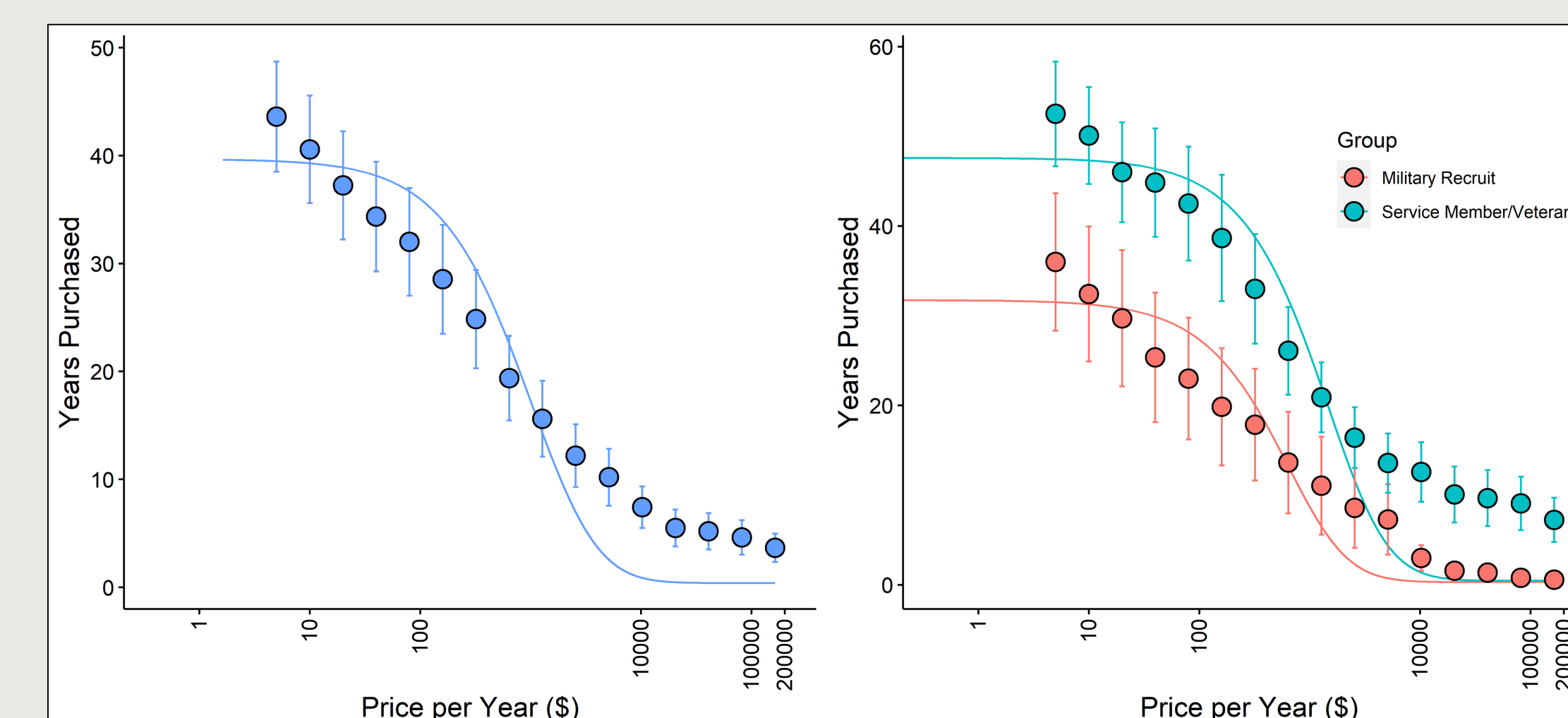
Figure 1
Hypothetical demand for services to alleviate the effects of morally injurious war experiences as a function of price in the Moral Injury Purchase Task. The graph on the right depicts the demand curve stratified by military experience, where years of services purchased are shown on the y-axis and the prices of those services are shown on the x-axis. The graph on the left depicts the demand curve for the entire sample (n = 26).

Conclusion

- The equations used in the study showcase that the Moral Injury Purchase Task is a potentially valid means of determining pre-exposure sensitivity to moral injury among future military recruits

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Acknowledgements