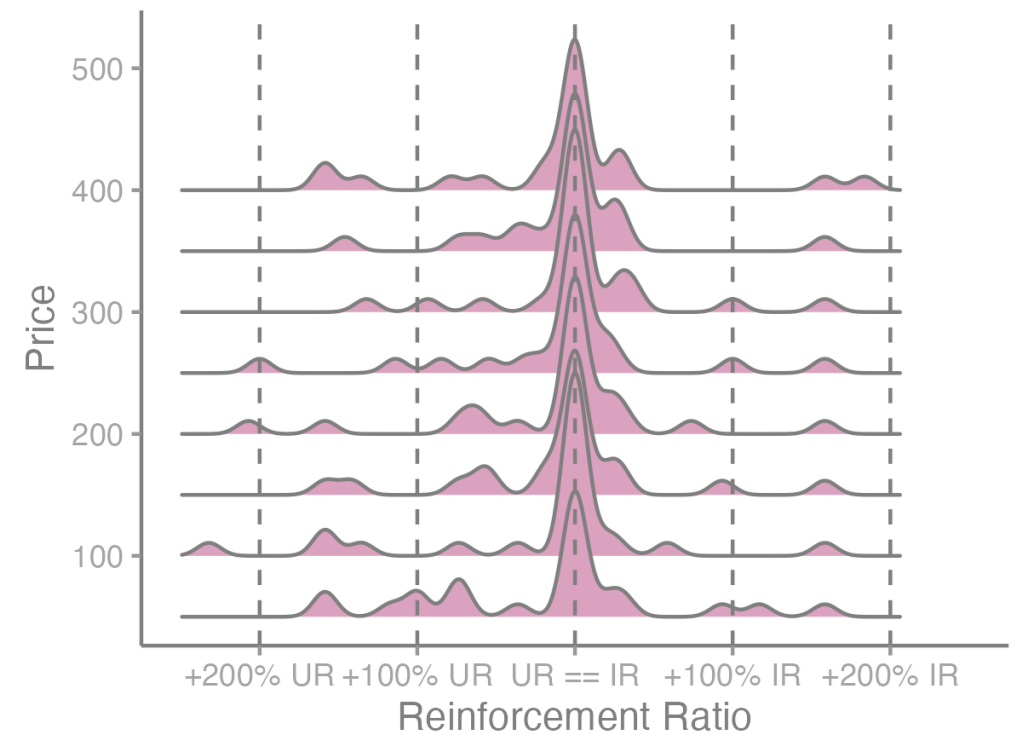
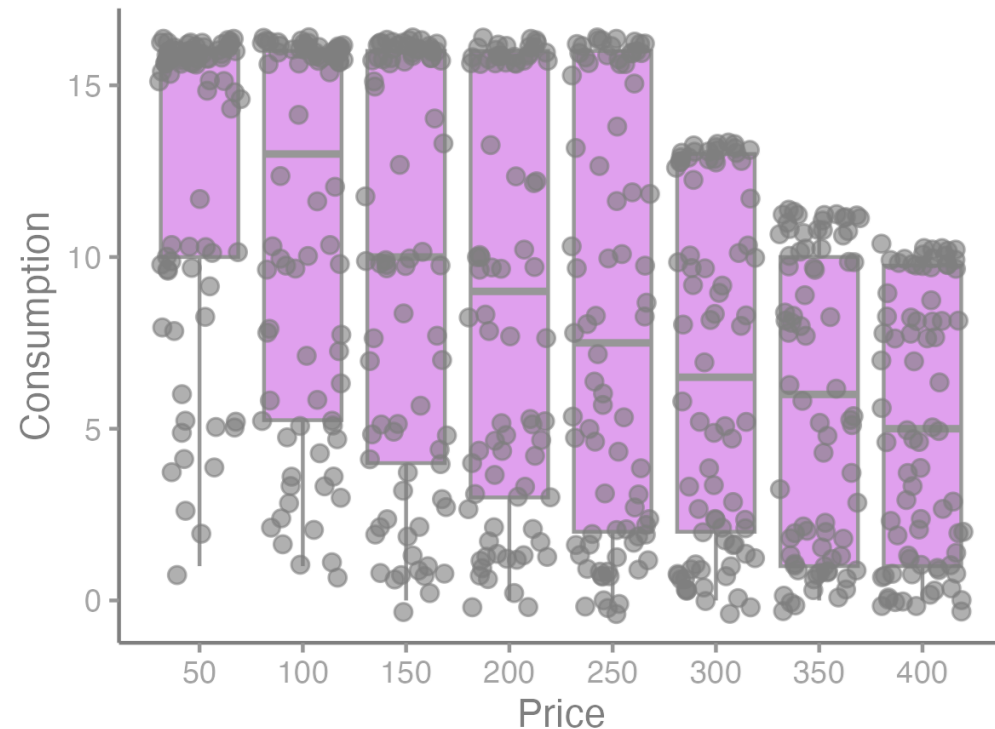


# Treatment Consumption and Maximization: Considering Utilitarian and Informational Reinforcement

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Louisiana State University

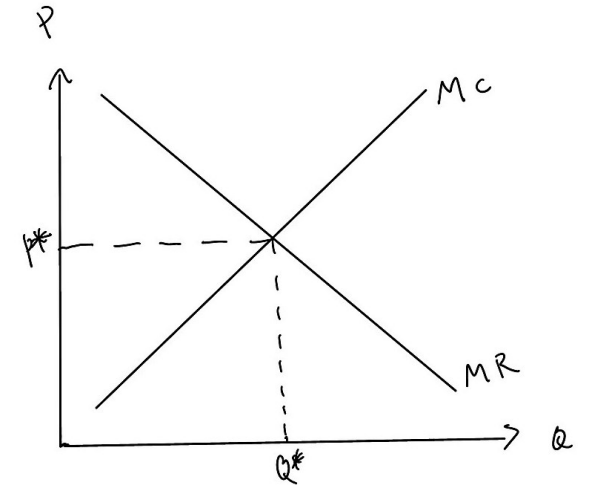


# Brief Overview of Presentation Goals

## Maximization in Consumer Choice

Maximization = characterize allocation of their limited time and resources

Allocation = combination of choices that maximize consumer value



## Factors Influencing Choice Behavior

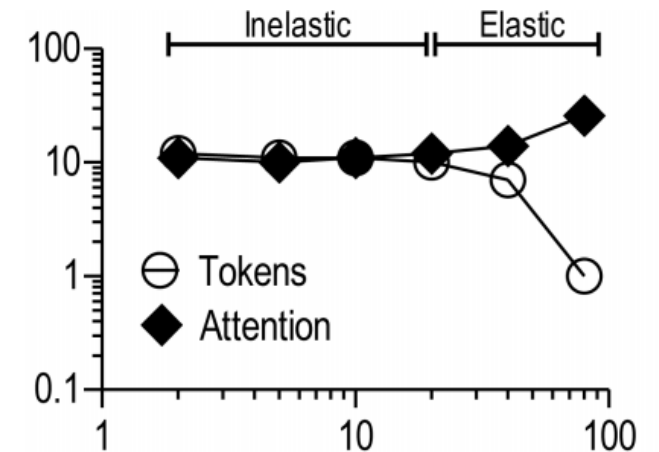
Reinforcer-reinforcer relationships as one dimension relevant to choice

Consumption at the intersection of multiple forms of reinforcement

## Characterizing Complex Consumption Patterns

Describing choice phenomena when reinforcement options are bundled

Attending to molar patterns in consumer choice across prices



# Maximization—Some Points from Economists & Behavioral Scientists

## Maximization as Economic Axiom/Process

Choice behavior *should* yield the most value to the consumer (i.e., **Maximum Utility**, Rational Choice Theory)

Facing uncertainty, competing prospects, and varying costs, consumers should adjust choices to **optimize** overall value\*

## Consumer Theory and Maximization

Consumer theory attempts to characterize spending behavior

Factors influencing individual utility functions include:

- Varying individual **preference** (e.g., immediate, delayed)
- Availability/supply of alternatives, **bundled goods**
- Varying **prices** across alternatives

Note: Maximization is **not restricted** to pricing structures

Maximization theory in  
behavioral psychology

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BEHAV ANALYST (2017) 40:457–474  
DOI 10.1007/s40614-017-0122-9



BEHAVIORAL ECONOMICS IN CONSUMER BEHAVIOR ANALYSIS

Consumer Maximization of Utilitarian and Informational  
Reinforcement: Comparing Two Utility Measures  
with Reference to Social Class

Jorge M. Oliveira-Castro<sup>1</sup> · Gordon R. Foxall<sup>2</sup>

MATCHING, DEMAND, MAXIMIZATION,  
AND CONSUMER CHOICE

Victoria K. Wells  
University of Durham

Gordon R. Foxall  
Cardiff University

# Maximizing Reinforcer Value: Informational and Utilitarian Reinforcement



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Behavioural Processes 66 (2004) 235–260

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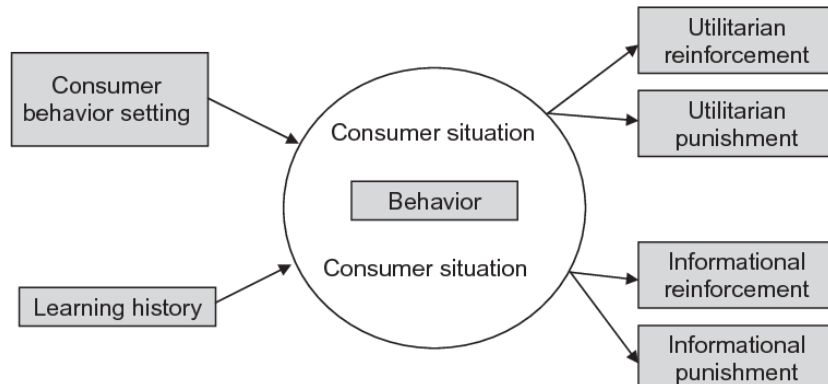
[www.elsevier.com/locate/behavproc](http://www.elsevier.com/locate/behavproc)

The behavioral economics of consumer brand choice: patterns of reinforcement and utility maximization

Gordon R. Foxall<sup>a,\*</sup>, Jorge M. Oliveira-Castro<sup>b</sup>, Teresa C. Schrezenmaier<sup>a</sup>

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## Utilitarian Reinforcement (UR)

Value/utility results from **direct** contact and consumption

Example: Purchasing clothing for the **functional benefit** it offers (e.g., protection from elements)

## Informational Reinforcement (IR)

Value results **indirectly** from contact and consumption

Example: Purchasing clothing for the **social and interpersonal effects** that follow (e.g., conveys status, in-group affiliation)

Direct, functional benefits are **just one relevant factor** to consider

See Foxall et al. (2009)

# A Novel Choice Situation: Behavioral Health Services

## Therapy Service Consumption

Developmental/behavioral issues benefit most from early, intensive, and **comprehensive** support

(Non)consumption patterns are highly heterogeneous

Example: Families of autistic children endorse consuming **7 distinct services** at any given time

Rank order of treatments in terms of percentage of parents reporting use

| No. | Treatment name                         | Category           | Percentage of parents |              |
|-----|----------------------------------------|--------------------|-----------------------|--------------|
|     |                                        |                    | Currently using       | Used in past |
| 1   | Speech therapy                         | Standard therapy   | 70.0                  | 23.2         |
| 2   | Visual schedules                       | Skills based       | 43.2                  | 18.6         |
| 3   | Sensory integration                    | Physiological      | 38.2                  | 33.2         |
| 4   | Applied behavior analysis              | Skills—ABA         | 36.4                  | 22.7         |
| 5   | Social stories                         | Skills based       | 36.1                  | 18.0         |
| 6   | Vitamin C                              | Vitamin supplement | 30.8                  | 13.4         |
| 7   | Vitamin B6                             | Vitamin supplement | 30.1                  | 25.7         |
| 8   | Essential fatty acids                  | Vitamin supplement | 28.7                  | 15.2         |
| 9   | Picture exchange communication systems | Skills—ABA         | 27.6                  | 31.1         |

## Some Relevant Factors

**Availability** of providers/services in region

Out-of-pocket **price** to consume services

Features of individual services (e.g., strength of **evidence**, **fit** with family culture and identity)

Behavior Analysis in Practice (2023) 16:93–101  
<https://doi.org/10.1007/s40617-022-00716-6>



DISCUSSION AND REVIEW PAPER



### Factors Affecting Parent Treatment Decisions for Children with Autism Spectrum Disorders: A Brief Review

C. Melanie Saez<sup>1</sup> · Matthew S. Davies<sup>1</sup> · Ellie Kazemi<sup>1</sup> · Anya Fields<sup>1</sup>

Accepted: 12 May 2022 / Published online: 23 May 2022  
This is a U.S. government work and not under copyright protection in the U.S.; foreign copyright protection may apply 2022

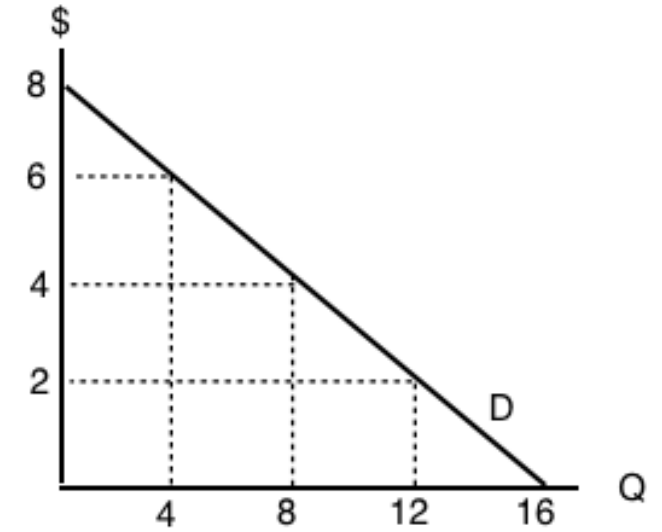
# (Briefly) Deriving Caregiver Demand for Services

## Evaluating Alone-Price Demand

Consumption of a single service evaluated across prices

Inspection reveals **price-elasticity** for a single, specific service

Estimates the **overall intensity** of demand for a given service



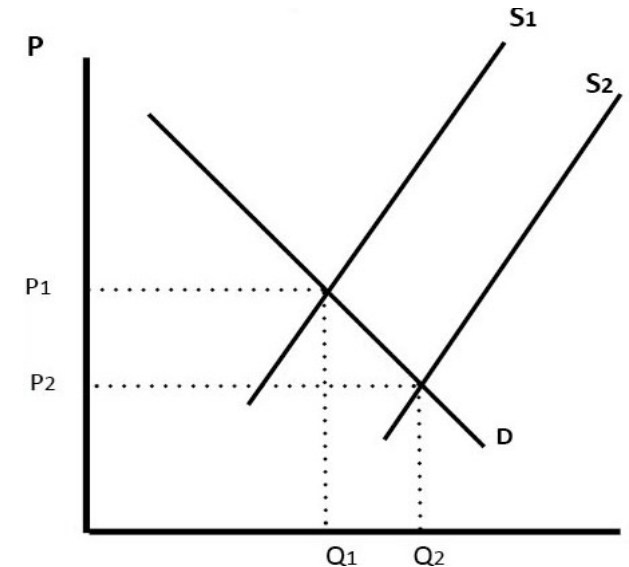
## Evaluating Cross-Price Demand

Consumption of a **multiple** services evaluated under constraint

A service is evaluated across prices, accompanied by **alternatives**

Alternatives are available at a **fixed**, typically low price

Reveals relationships between different competing options



# Demand, Substitutability of Services: Gilroy et al. (2022)

## Alone-Price Demand for Services

Caregivers interested in parent-mediated behavior therapy

Experiencing **on-going** disruptive child behavior

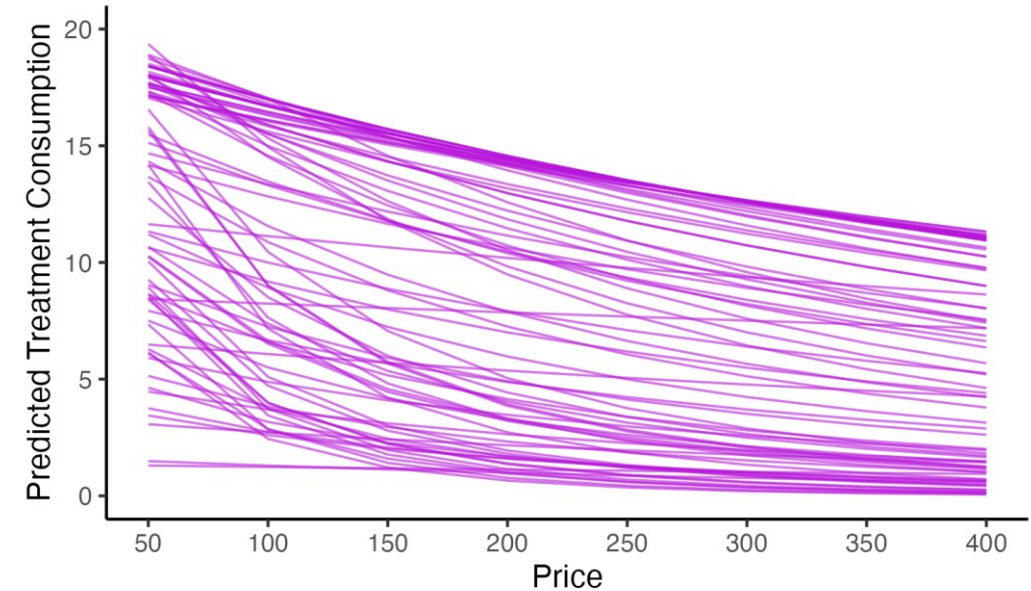
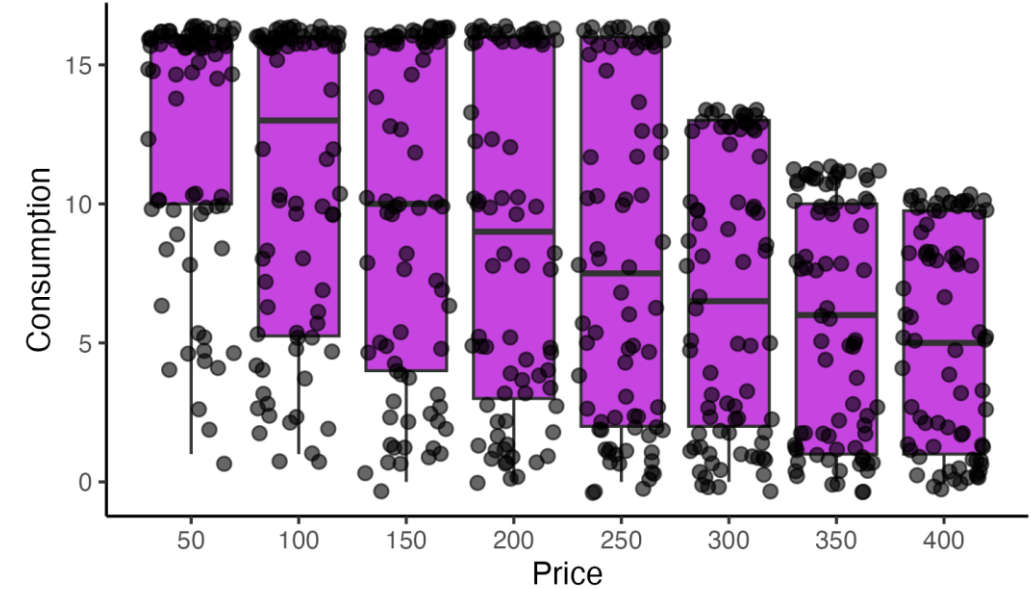
Self-selected evidence-based service (i.e., **High UR/IR** )

## Key Takeaways

Good baseline **demand** for **High UR/High IR** service

Variability in **price-elasticity** of demand

Unclear whether UR or IR most drove choice



# Demand, Substitutability of Services: Gilroy et al. (2022)

## Cross-Price Demand for Services

Maximal service accompanied by two alternatives

**Alternative 1:** Strong evidence, Weak informational value

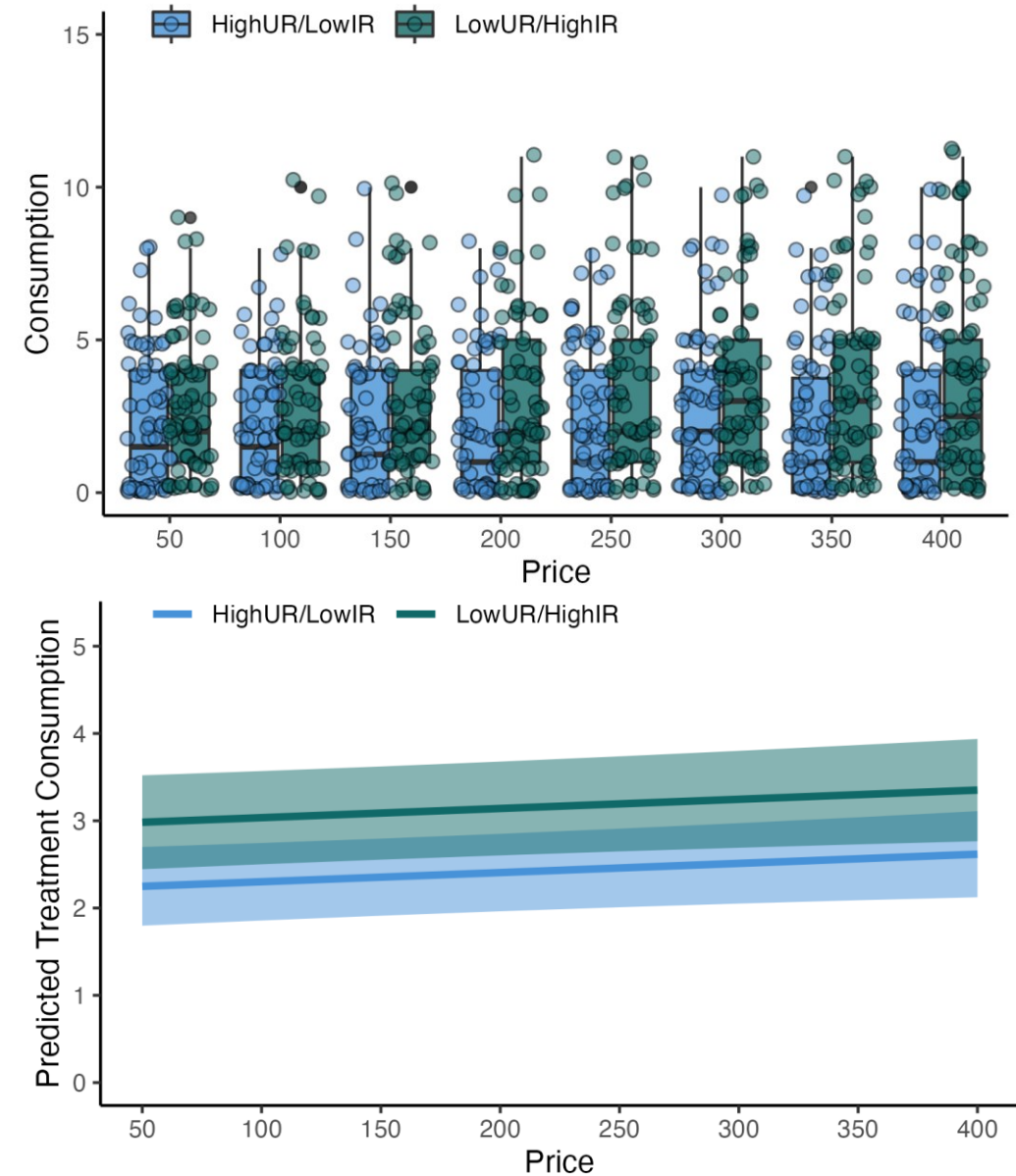
**Alternative 2:** Weak evidence, Strong informational value

## Key Takeaways

**Substitution** observed in virtually all participants

**Substitution** was revealed for both alternatives

Service with **High IR** was a stronger substitute overall



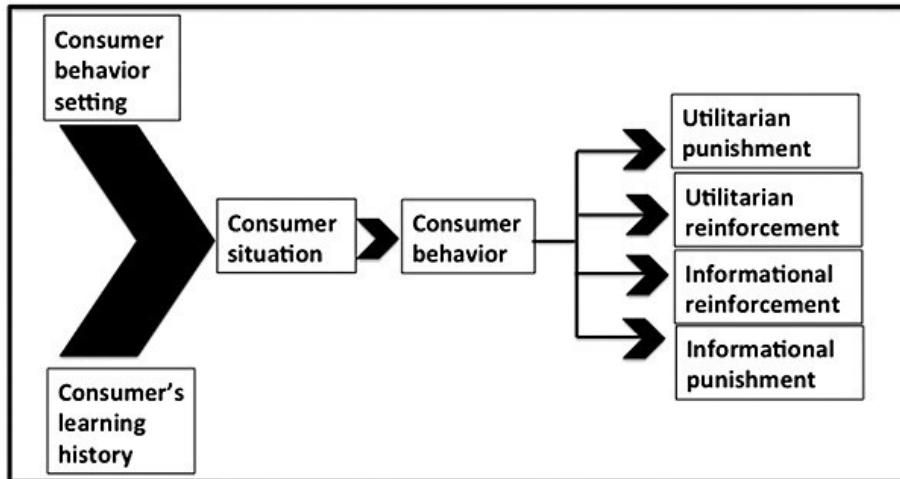
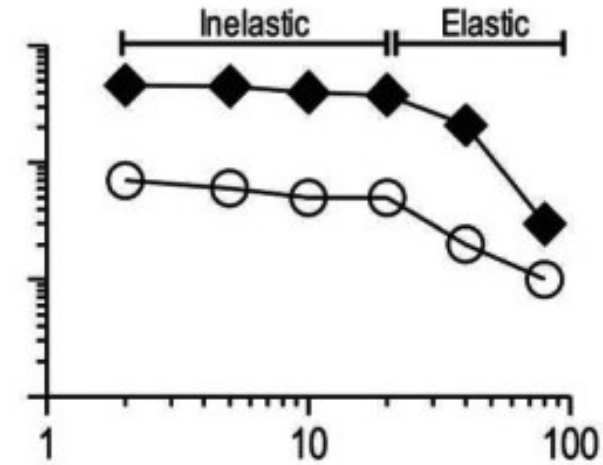
# Potential Limitations of Cross-Price Tasks Used in Operant Demand?

## What Cross-Price Tests Can Tell Us

Characterizes a **specific** reinforcer-reinforcer relationship

A slope difference  $\neq 0$  suggests **some** relationship exists

Relationships **can inform** intervention and the development of policy (e.g., harm reduction initiatives)



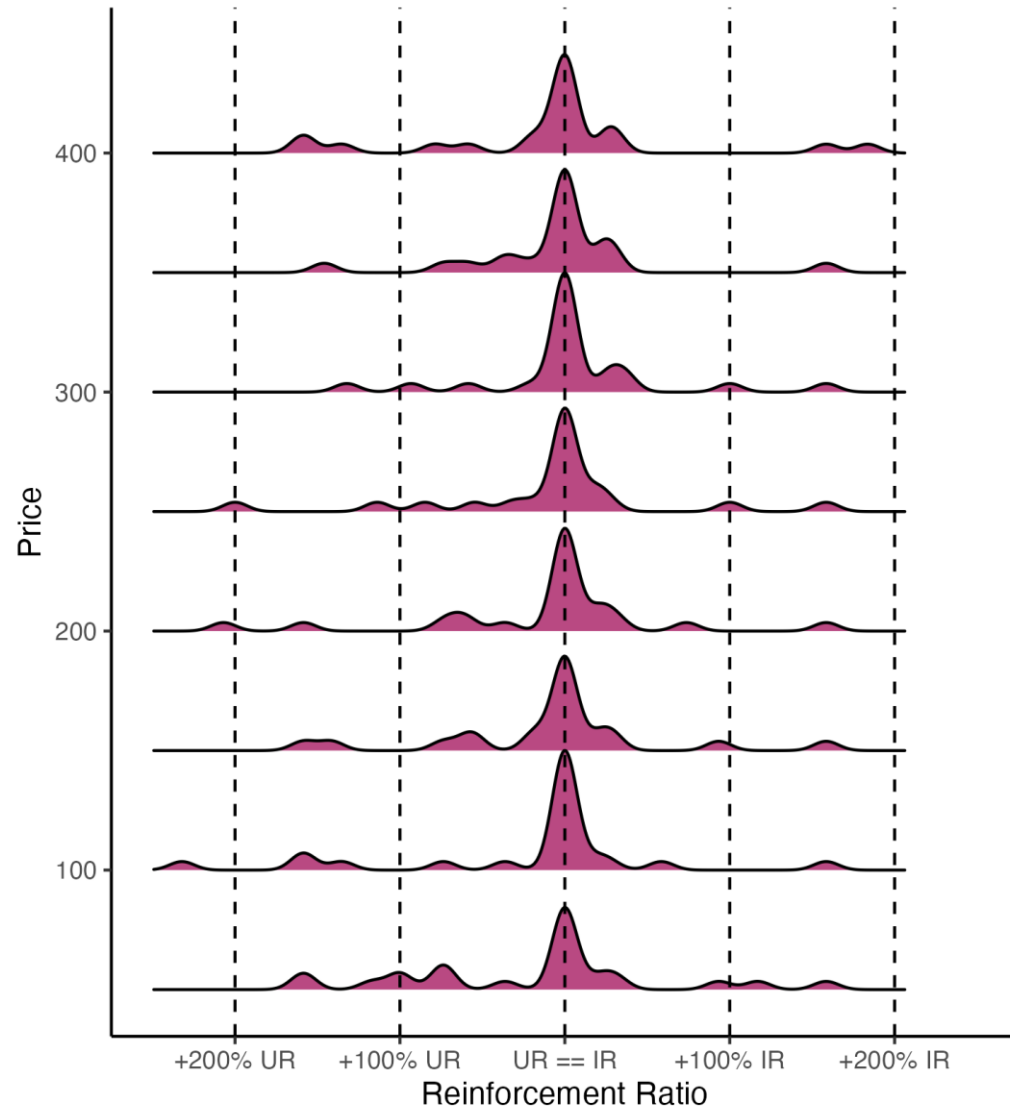
## Some Important, But Missing Details

Processes are analyzed separately, not together

Consumption **within** price structures is less apparent

Informational and contextual features usually limited

# Beyond Substitutability in Cross-Price Tasks



## Consumption Within/Across Prices

**Maximization:** Changes in consumption within each price

Indexed relative to reinforcer type (i.e., Summed IR vs. UR)

Visualized as  $\log_2$  ratio for ease of interpretation

## A Molar View of Consumer Choice

No single contingency accounted for consumer choice

Choices ratios were surprisingly stable across prices

Consistent with Foxall's model—consumers maximize for both Informational and Utilitarian Reinforcement

Note: Reinforcement Ratio =  $\ln_2 \frac{\sum IR+c}{\sum UR+c}$ , See Friedel et al. (2018) for example of ratio use/interpretation

# Operant Demand and Areas of Expansion

## More Contextualized Tasks

Informational contingencies account for some of how the social context influences choice

Real-world choice is seldom discrete, tasks may need to consider the range/availability of prospects to consumers

Qualitative elements may prove helpful in informing experiments

## Integrative Metrics of Choice

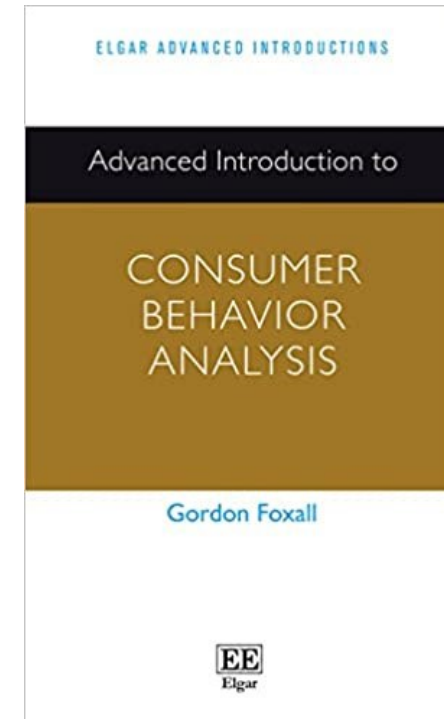
Choice is behavior in the context of *other* behavior

Substitutability of goods and services is not a yes/no question

Consumer behavior under the control of various contingencies

## The Behavioral Ecology of Brand Choice: How and What Do Consumers Maximize?

Gordon R. Foxall and Victoria K. James  
Cardiff University



# Exploring New Options

## Currently Undergoing Replication

Recruiting a community-based sample to replicate findings

Services included are based on those available in region

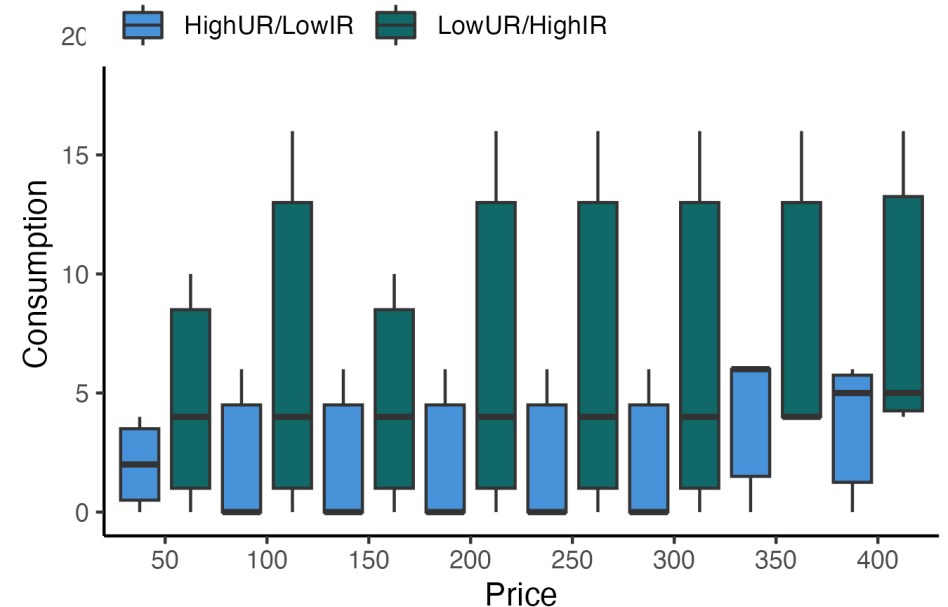
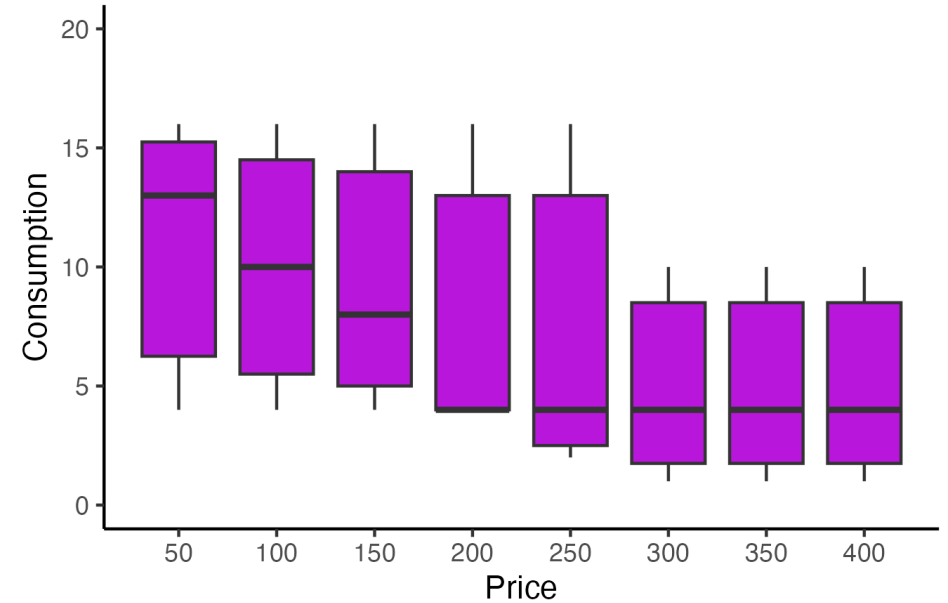
Follow-up interview to discuss other relevant factors (e.g., familiarity with prospects, sources of information)

## Some (Very) Early Observations

Trends appear consistent with crowdsourced sample

Maximal reinforcement tracks with baseline demand

Alternatives with Higher IR value appeared to be a stronger substitute



# Thank You and Contact Information

## Files, Repositories, Other Relevant Info:

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OrcID: <https://orcid.org/0000-0002-1097-8366>

ResearchGate: [https://www.researchgate.net/profile/Shawn\\_Gilroy](https://www.researchgate.net/profile/Shawn_Gilroy)

Lab Website: <https://www.smallnstats.com>

Presentation to be posted on RG and lab website

