

# Community Design

**SWE 632**  
**Fall 2024**

# Administrivia

- HW7 due today
- Next week: Project Presentations
  - Extra Credit: Best Presentation & People's Choice Awards: 20 points
- Three weeks (Dec 17): Final Exam

# Overview of Community Design

# Crowdsourced Content Creation / Curation

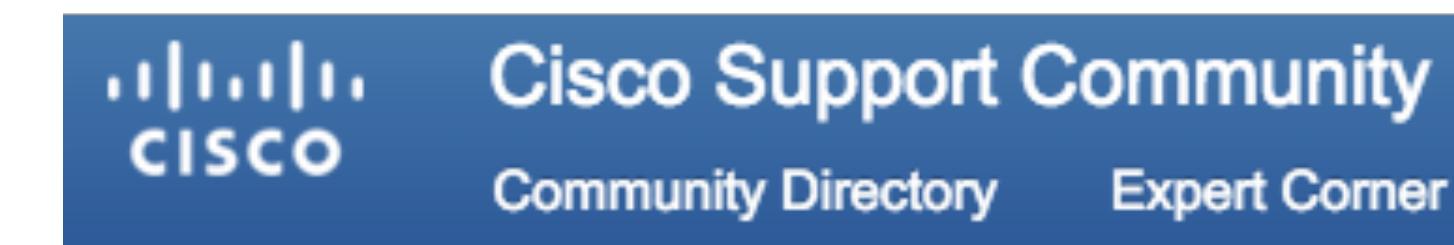
- You'd like to build a site that lets users share their favorite news stories with their friends.
  - Help users discover news stories that are more relevant to their interests.
  - Help users become more informed by reading more news.
  - Raise money from news publishers, who want more readers
- Sounds like a simple app with great potential.
- What could possibly go wrong??

# Online Communities

- Online communities are virtual spaces where people come together to converse, exchange information or resources, learn, play [Kraut & Resnick]
- Supported by technology platforms, such as email, wikis, comments, social networks, automated feedback
- May be public, open community or an internal community inside a company
- Break barriers of time, space, scale that limit offline interactions



# A Few Examples of Online Communities



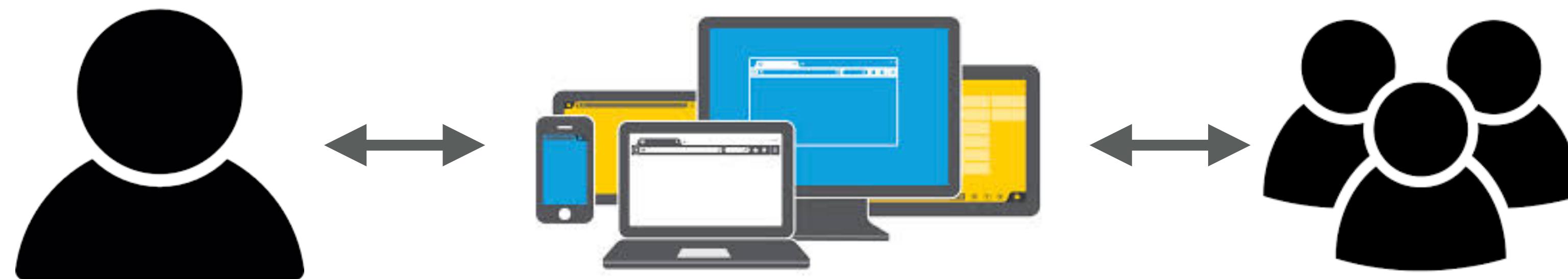
**CARCINOID@LISTSERV.ACOR.ORG**

The Carcinoid Cancer Online Support Group



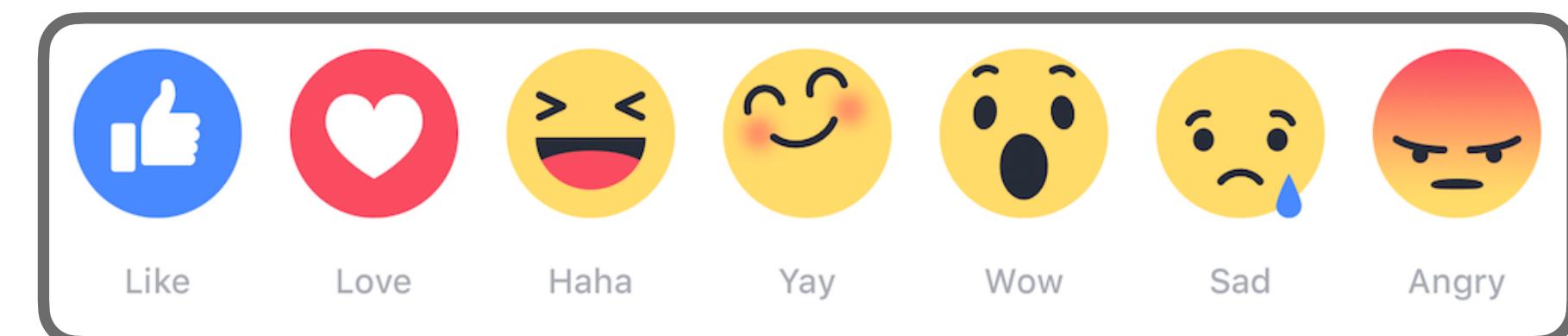
# Designing Online Communities

- Interactions with other users are shaped and enabled by the ways in which user interfaces let users interact
- These interactions can be designed



# Example: Facebook Reactions

- Want to incentivize positive, supportive interactions rather than negative, judgmental interactions
  - Solution: like button that expresses approval
  - What about expressions about bad event?
    - Dislike button might turn likes into voting
    - Solution: FB reactions



# Community Design

- Most of course: designing for task performance
  - Methods & principles derived from underlying cognitive psychology of user interactions with interfaces
- Community design: designing for successful community behavior
  - Methods & principles derived from social psychology of how humans interact with other humans

# Dimensions of Socio-technical System Design

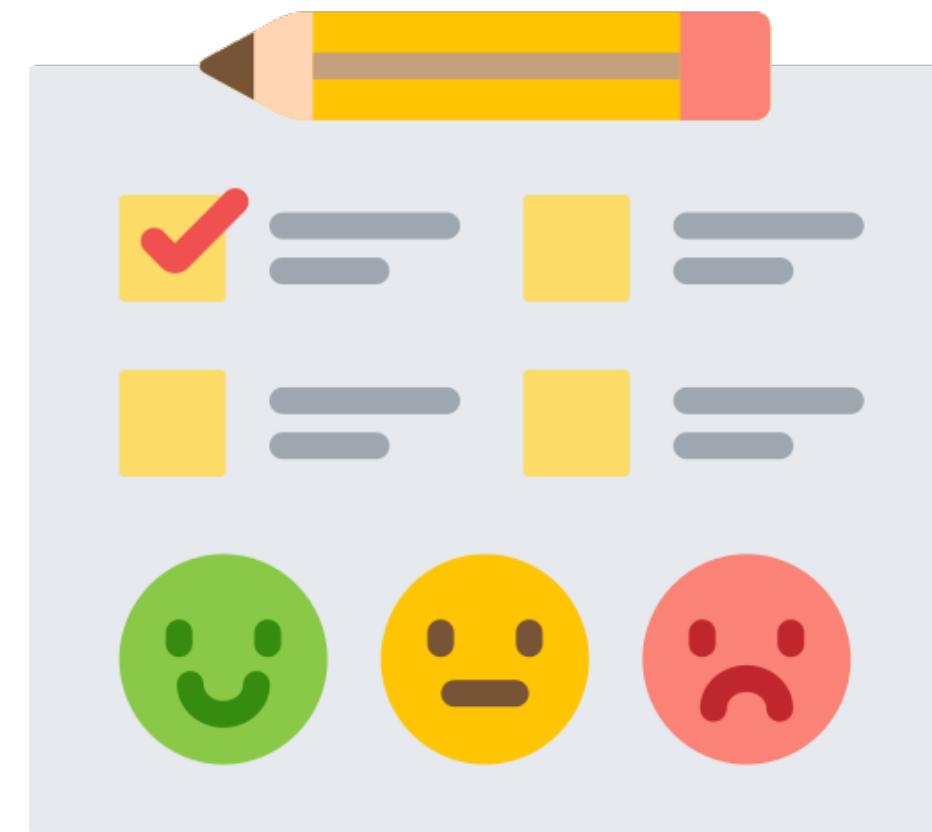
- Community structure
  - Size of community
  - Homogeneity of member interests
  - Presence of subgroup structures
  - Relationship of membership to existing social ties

# Dimensions of Socio-technical System Design

- Content, tasks, activities, external communication
  - Presence of self disclosure (e.g., user profiles) vs anonymity; visibility internally or externally
  - Presence of professional generated content, imported / exported from other communities
  - Welcoming activities & safe spaces for exploration
  - Tasks that are independent or interdepend, embedded in social experiences
  - Ability to invite friends & share content

# Dimensions of Socio-technical System Design

- Feedback, rewards, sanctions
  - Feedback telling members how to behave may be informal or structured (e.g., ratings)
  - Give or take away something valuable such as intangible (approval, status) or tangible (community privileges, prizes)



# Dimensions of Socio-technical System Design

- Roles, rules, access control, & visibility
  - Members may have specialized roles as welcomers for newcomers or dispute handlers
  - May be rules & guidelines for behaviors
  - May be procedures for decision-making & conflict resolution
  - May be access controls which limit who can join & actions that can be taken; might require money to perform certain actions
  - May be moderators regulating behavior
  - Communication choices on visibility of bad behavior & punishment

# Challenges in Community Design

- Starting a new community
  - Dealing with newcomers
- Encouraging commitment
- Encouraging contribution
- Regulating behavior

# Starting a New Community

# Difficulties Starting a Community

- Communicating value to users
  - Does the community offer services or experiences users want?
- Visibility
  - Do users know it exists?
- Competition
  - Why spend time in this community, rather than another community (that might have more users and activity)?

# Carving Out a Useful Niche

- Picking a scope
  - Topic and activities (e.g., Minnesota twins fan community)
  - Pre-existing group (e.g., GMU alumni group)
- Mixed-topic scopes can reduce value of community
  - If most content isn't relevant, why pay attention?
- Can subdivide spaces into multiple spaces that are more relevant
  - But don't want inactive spaces that are dead
  - Better to subdivide spaces after become active than create too many empty spaces

# Design Techniques for Subdivided Spaces

- Navigation aids that highlight active spaces
- Recommender systems for spaces
- Schedule of “expected active times” for spaces with synchronous activity

Rooms in Social Issues and Politics	Memb...
Issues With Race 01	47
Neak Cheat Niyum Khmer	30
The Wake Up Project	28
Constitutional Conservatives Unite	27
Paltalk News Network	17
Current Events 1 Politics and Chat	12
international politics and economy with charla	8
Radio America Interactive Chat Room	8
The Truth Movement	8
Black Gold Society II	5

# Competing for a Niche

- Communities may compete with existing community
  - Eg., introducing enterprise social networking, compete with FB and LinkedIn
- Switching costs creating profile, learning system finding content
- Awareness costs of following multiple communities



# Techniques for Competition

- Reduce startup costs (e.g., shared IDs and profiles)
- Content sharing
- Advertising & celebrity endorsements
  - “The aura of inevitability is a powerful weapon”

# Critical Mass and Effects of Scale

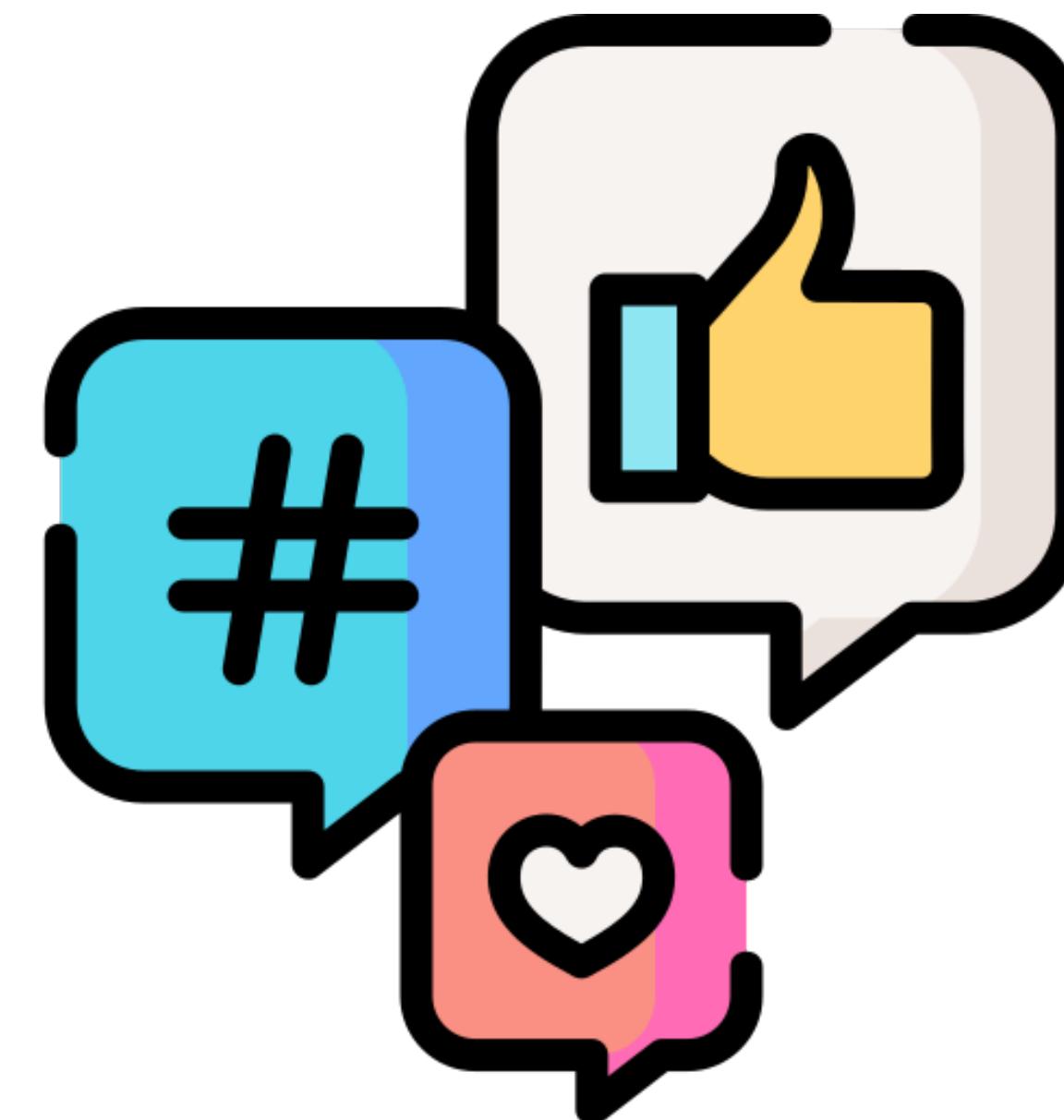
- Communities may fail if
  - Not enough members to provide content & interaction opportunities
  - Lack of a shared purpose about the scope of activity and membership
- Why do users use FB?
  - *Everyone else* uses FB
  - The more users join, the greater value space provides of reach individual
  - Costs of joining per user fixed, but value to user increases as more join
- Critical mass - the point at which the benefits of increasing network size dwarf costs

# Bootstrapping Communities

- Series of community states in which activity of early users is sufficient to attract more users
- Techniques
  - *Incentives* (e.g., opinions paid early users for reviews, but then demotivating when stopped)
  - *Discounts* & free services (less problematic)
  - *Viral* membership spread (e.g., inviting friends)

# Making Membership Visible to Non-members

- Post membership to existing social network site
- Post activity to existing social network site (e.g., crossposting twitter feed to FB)
- Referral benefits for members



# Early Adopter Benefits

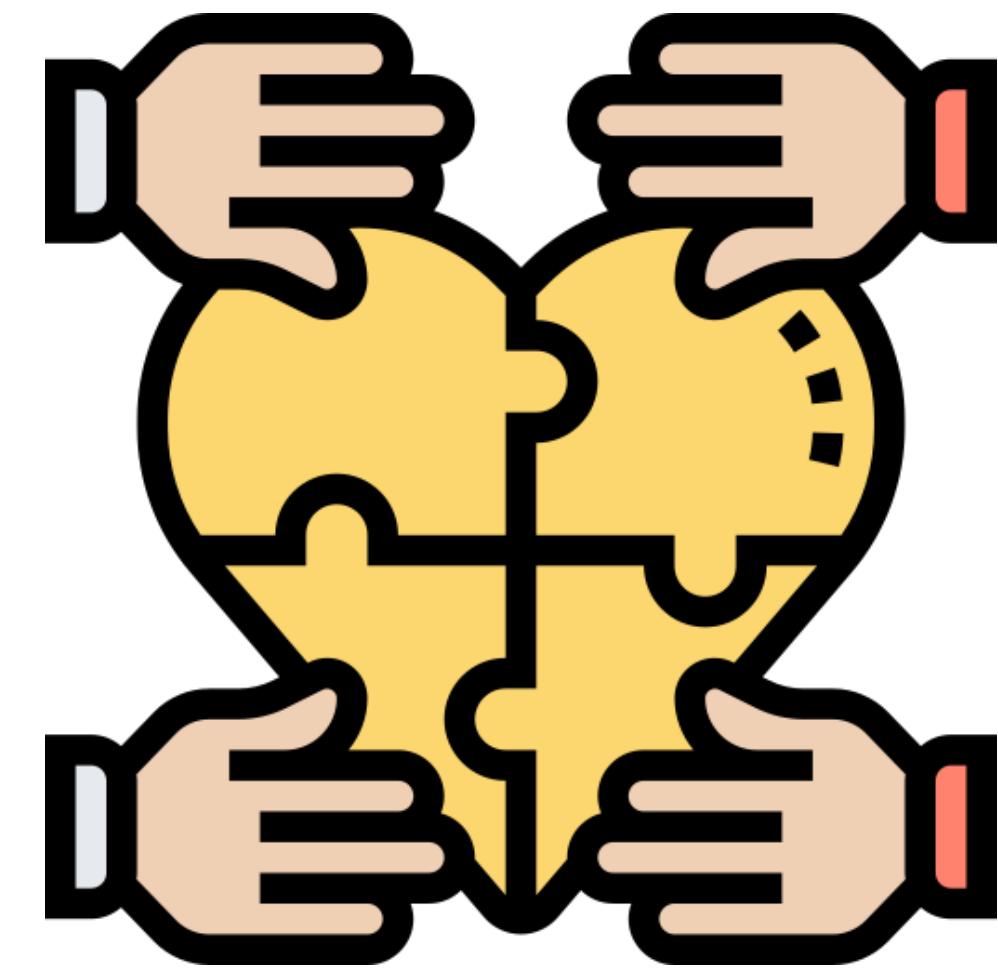
- Permanent discounts to early adopters
- Promoting the status of being an early adopter to an “undiscovered” community
- Scarce, claimable resources (e.g., user names, URLs)



# Encouraging Contribution

# Challenges of Contribution

- Communities rely on resources created by community (e.g., YouTube videos, Wikipedia articles)
- Often a contribution gap between work to be done & work being done
  - Too much work, not enough workers
  - Users don't know how to help
  - Users don't find the task appealing



# Visibility of Requests for Contributions

- Make lists of needed contributions easily visible
  - e.g., Wikipedia has 125,000 articles that need citations
- Let users track and follow work as it is done
  - e.g., FB posts profile changes to newsfeed
- Personal appeals to specific members to contribute (esp. simple requests)
  - Especially requests that are simple, stress benefits of contribution, by high status community member (e.g. Jimmy Wales requesting support for Wikipedia), by likable requestors

# Requesting Contributions

- Social proof makes user more likely to comply when others have already complied
  - e.g., ESP game announces that over a million labels have already been created
- Provide specific & highly challenging goals
  - e.g., rate 16 movies on Movielens in the next week

# Group Goals

- Goals for group coupled with specific deadline
  - e.g., apply for Feature Article status on Wikipedia
  - e.g., release cycle on software project
- Offer frequent feedback about performance with respect to goal
  - e.g., thermometer on fundraising site

# Increasing Motivation for Contributions

- *Intrinsic motivation* - activity is an *end* by itself
- *Extrinsic motivation* - activity is a *means* to an end
- Example - slaying monsters in World of Warcraft
  - Intrinsic - enjoy the task or camaraderie
  - Extrinsic - enjoy status that comes from achieving higher level character

# Enhancing Intrinsic Motivations

- Social contact is important intrinsic motivator
  - e.g., Q&A site w/ interactions between requestor & responders
- Encourage flow: immersive experiences with clear goals, feedback, and challenge
- Performance feedback, particularly positive feedback, as comments or quantitative performance metrics (if viewed as sincere)
  - e.g., like button

# Comparative Feedback

- Can be especially motivating to beat competitors
  - e.g., leaderboards & lists of top contributors
- But can also be demotivating
  - Reminded how much time “wasted” on site
  - May feel they have done enough
  - Discouraging when success unattainably high (e.g., leaderboard of 10 in population of thousands)

This week's Leaderboard		
	Today	Yesterday
Hacker	Score	
1	 Arthur Dent	1,203
2	 Ford Prefect	862
3	 Zaphod Beeblebrox	723
4	 Trillian	601
5	 Marvin	427
6	 Slartibartfast	216
7	 Humma Kavula	187
8	 Questular Rontok	124
9	 Douglas Adams	98

# Enhancing Extrinsic Motivation with Rewards

- Rewards increase extrinsic motivation
- *Reputation & status* - change how others interact with them
- *Privileges* - opens new actions
  - e.g., commit privileges on OSS project
- *Tangible* rewards
  - e.g., money, prizes, charitable donations to causes

# Perverse Incentives: Gaming the System

- Rewards may create the wrong incentives, leading to counterfeit actions
  - e.g., rewards for inviting new members might lead to invitations to fictitious entities
- Gaming particular problem for rewards contingent solely on quantity rather than quality
  - e.g., on Amazon Mechanical Turk, automated quality checks
- Status & privileges lead to less gaming than tangible rewards, as value becomes meaningless with gaming
- Making reward criteria less transparent & more unpredictable reduces gaming

# Trade-offs Between Intrinsic & Extrinsic Motivation

- Extrinsic rewards can reduce intrinsic motivation
  - e.g., people less likely to donate blood if offered compensation for contribution
- Extrinsic rewards must outweigh loss in intrinsic motivation to be valuable
- **Tangible** incentives diminish intrinsic motivation when they reduce feelings of autonomy & competence by being perceived as **controllers** of behavior

# Collective Outcomes

- Benefits may accrue to individuals based on success achieved by group
- Group benefits motivating when
  - More committed to group
  - Group is smaller
  - People feel they can make a unique contribution
  - Contributions by others are complimentary or contingent rather than substitute

# Encouraging Commitment

# Committed Users

- Committed users
  - Work harder, say more, do more
  - Provide content that others value
  - Stick with community
  - Care enough to sustain the group through problems
  - More likely to enforce norms & regulate behavior

# Types of Commitment

- Affective commitment - *wanting* to continue
  - closeness & attachment to members of community
- Normative commitment - *ought* to continue
  - feelings of rightness or obligation to group
- Need-based or continuance commitment - **must** continue
  - incentive structure in group & net costs of leaving group
- Can have more than one type of commitment

# Types of Affective Commitment

- Identity-based commitment
  - Feeling of being part of community and helping to fulfill its mission
  - Attachment to community as a whole
- Bonds-based commitment
  - Feeling close to individual members of the group
  - Attachment to individual members

# Encouraging Identity-based Commitment

- Recruiting or clustering those that are similar into homogenous spaces
  - e.g., FB group for Mason SWE masters students
- Explicitly providing a name and tagline that articulates shared interests
  - e.g., Wikipedia, “the free encyclopedia anyone can edit”
- Increasing subgroup identity increases commitment to larger community
  - e.g., being part of FB group increases commitment to FB

# Encouraging Identity-based Commitment

- Making community fate, goals, or purpose explicit
  - e.g., want Wikipedia to succeed
- Joint, interdependent tasks to which multiple group members must contribute to succeed
  - e.g., guilds in World of Warcraft
- Highlighting an out-group
  - e.g., want Wikipedia to be of Britannica or better quality
- Making group members anonymous

# Encouraging Bonds-based Commitment

- Recruiting members who have existing ties to the members of community
  - e.g, Piazza site for course
  - Facilitating interactions with friends of friends
  - Displaying photos and info about individual members and recent activities
  - Opportunities to engage in personal conversation

# Encouraging Bonds-based Commitment

- Mechanisms that increase likelihood that members will encounter again those they have previously encountered
  - Places, spaces, groups, friend feeds
  - User profile pages that increase self-disclosure & interpersonal liking
    - e.g., profile that includes personal contact information
  - Enabling self-disclosure under a pseudonym when sensitive information is shared
    - e.g., revealing daily information on weight in weight loss community

# Normative Commitment

- Feeling that one has obligations to community to be loyal and act on its behalf

# Encouraging Normative Commitment

- Highlighting community's purpose & success in achieving that purpose
- Testimonials about other's normative commitment to the community
- Priming norms of reciprocity by highlighting normative obligations
  - e.g., cancer survivors that participate in forum after their own cancer is in remission
- Highlight opportunities to return favors to other users
  - e.g., someone reviews your commit, review theirs

# Needs-based Commitment

- Commitment that depends on the net benefits experienced from community
- Benefits include information, social support, companionship & reputation
- Costs include time, effort, frustration
- Members remain due to needs-based commitment when benefits exceeds costs

# Encouraging Needs-based Commitment

- Providing experiences that match motivation
- Requires knowing needs

Community Type	Motivational Category			
	Info. Exchg	Companionship	Social Support	Fun
Professional	53%	11%	22%	10%
Health	38%	17%	38%	4%
Hobby	52%	29%	2%	9%
Sports	58%	18%	4%	11%
Pets	48%	36%	3%	9%
Other interests	53%	26%	0%	9%
Overall Percentage	50%	24%	11%	9%

- e.g., code fests for OSS projects that satisfy needs of friendship as well as support for planning

# Regulating Behavior

# Community Norms

- Communities develop norms about what is or is not acceptable behavior
- Communities differ on what behaviors may or may not be normative
  - e.g., personal insults
  - e.g., neutral perspective on wikipedia vs. viewpoint on Huffington Post
- May be conflicts between members in community
  - e.g., flame war
  - e.g., edit war on Wikipedia

# Individuals Can Damage Community

- Trolls that derive satisfaction from disrupting community
- Manipulators that want the community to produce a particular outcome
  - e.g., Wikipedia members who want page to show a particular viewpoint
- Producing low quality content that wastes community's attention

# Limiting Effects of Bad Behavior

- Moderating content creation through pre-screening before posting
- Techniques to increase moderation system effectiveness
  - Redirecting inappropriate posts to other places
  - Consistently applied moderation criteria, a chance to argue a case, & appeal procedures
  - Moderation by community members seen as impartial

# Limiting Effects of Bad Behavior

- Reversion tools
  - e.g., Wikipedia lets pages be reverted to past version
- Filters or influence limiters
- Activity quotas limiting spam-like activity
- Gags and bans on bad actors

# Encouraging voluntary compliance

- Making norms *clear* and *salient* by publicly displaying examples of appropriate behavior
- Publicly contrasting inappropriate behavior in context of norm with appropriate behavior
  - e.g., examples of uncivil comments on Wikipedia
- Displaying examples of formal *feedback* provided to norm-violators
- Displaying statistic that highlight prevalence of normative behaviors
  - e.g., sign listing the number of days since last workplace injury

# **Ethics of UI Design**

# UI Design Ethics

- What are our responsibilities to users as UI/UX Designers?

# Existential Values

- What are your values as a designer?
  - A focus on facilitating user tasks
  - Broadening access to technology
  - Expressing truth to users and hiding misinformation
  - Refraining from collecting data
- How do those values align with the business directives of your company?
- How will you encode your values into your intent, and reconcile it with your business?

# III or Misdirected Intent

- Balancing a user's needs with business needs can be tricky
- Sometimes, business needs may be prioritized, leading to harmful or misdirected intent
- Prominent Example of this:
  - *Dark Patterns*

# Dark Patterns

*1,818 Instances of Dark Patterns on Shopping websites, falling into 15 main types*

<https://webtransparency.cs.princeton.edu/dark-patterns/>

## **Dark Patterns at Scale: Findings from a Crawl of 11K Shopping Websites**

ARUNESH MATHUR, Princeton University, USA

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ELENA LUCHERINI, Princeton University, USA

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ARVIND NARAYANAN, Princeton University, USA

Dark patterns are user interface design choices that benefit an online service by coercing, steering, or deceiving users into making unintended and potentially harmful decisions. We present automated techniques that enable experts to identify dark patterns on a large set of websites. Using these techniques, we study shopping websites, which often use dark patterns to influence users into making more purchases or disclosing more information than they would otherwise. Analyzing ~53K product pages from ~11K shopping websites, we discover 1,818 dark pattern instances, together representing 15 types and 7 broader categories. We examine these dark patterns for deceptive practices, and find 183 websites that engage in such practices. We also

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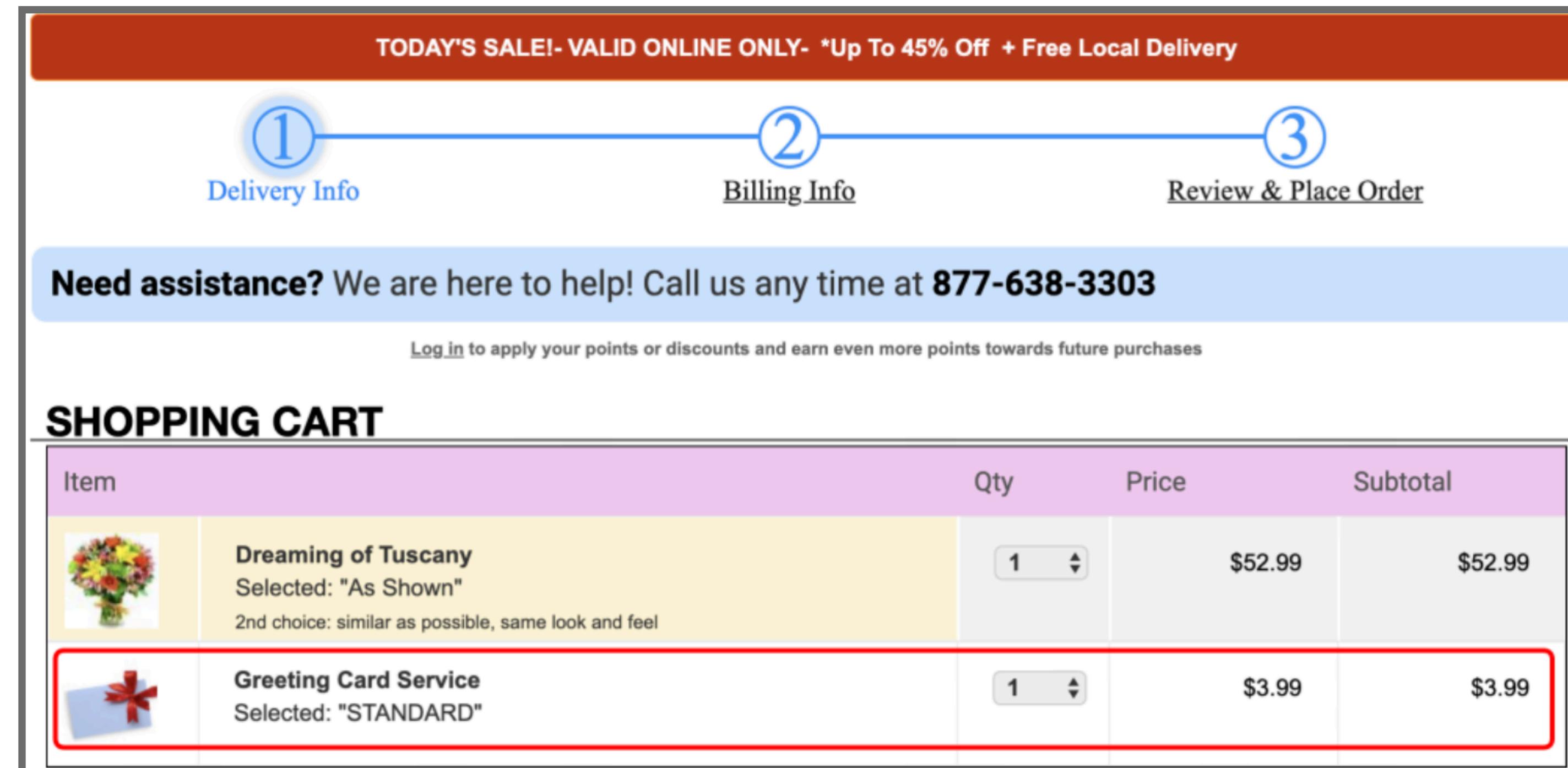
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# Dark Patterns: Sneaking



**TODAY'S SALE!- VALID ONLINE ONLY- \*Up To 45% Off + Free Local Delivery**

① [Delivery Info](#) ② [Billing Info](#) ③ [Review & Place Order](#)

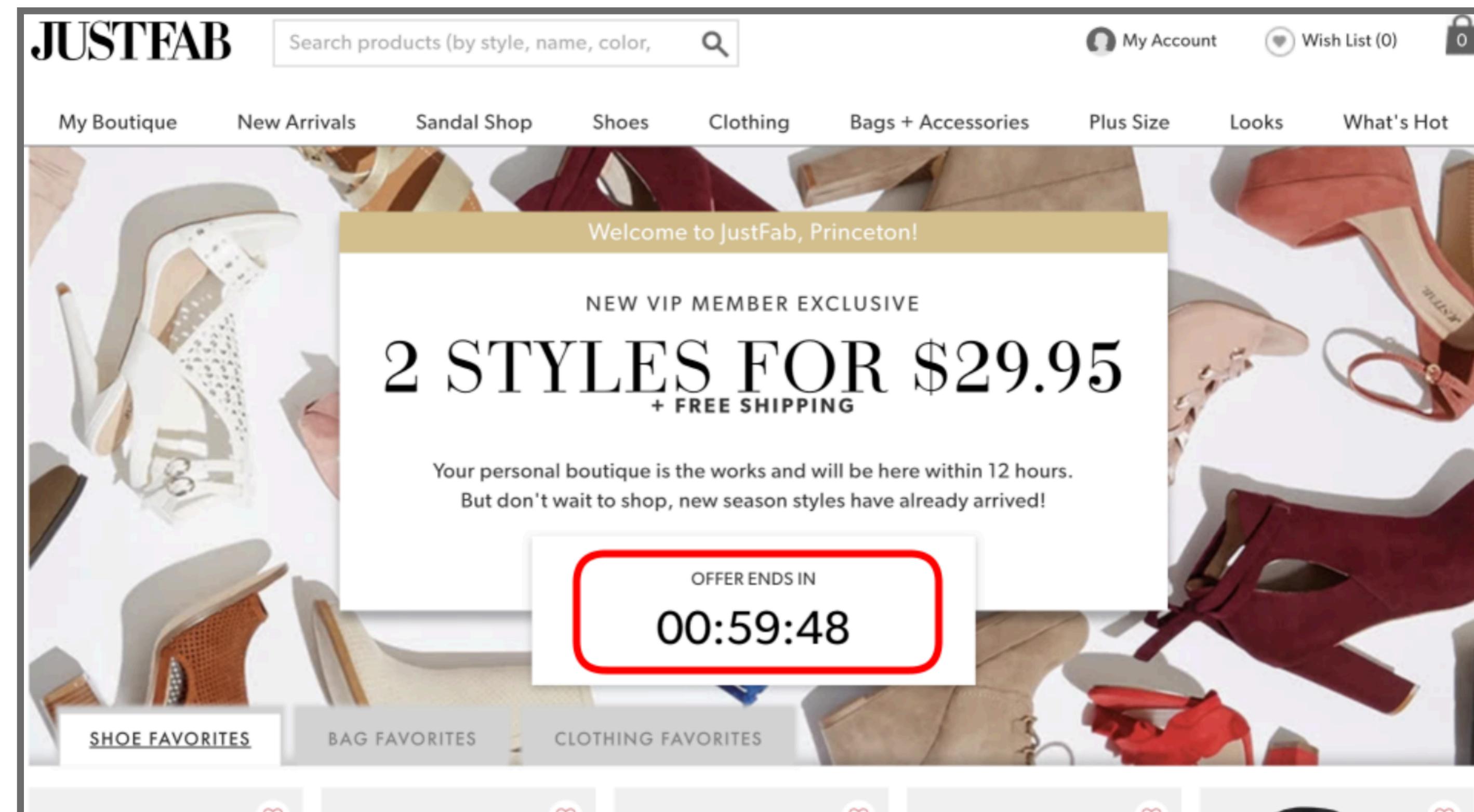
**Need assistance? We are here to help! Call us any time at **877-638-3303****

[Log in](#) to apply your points or discounts and earn even more points towards future purchases

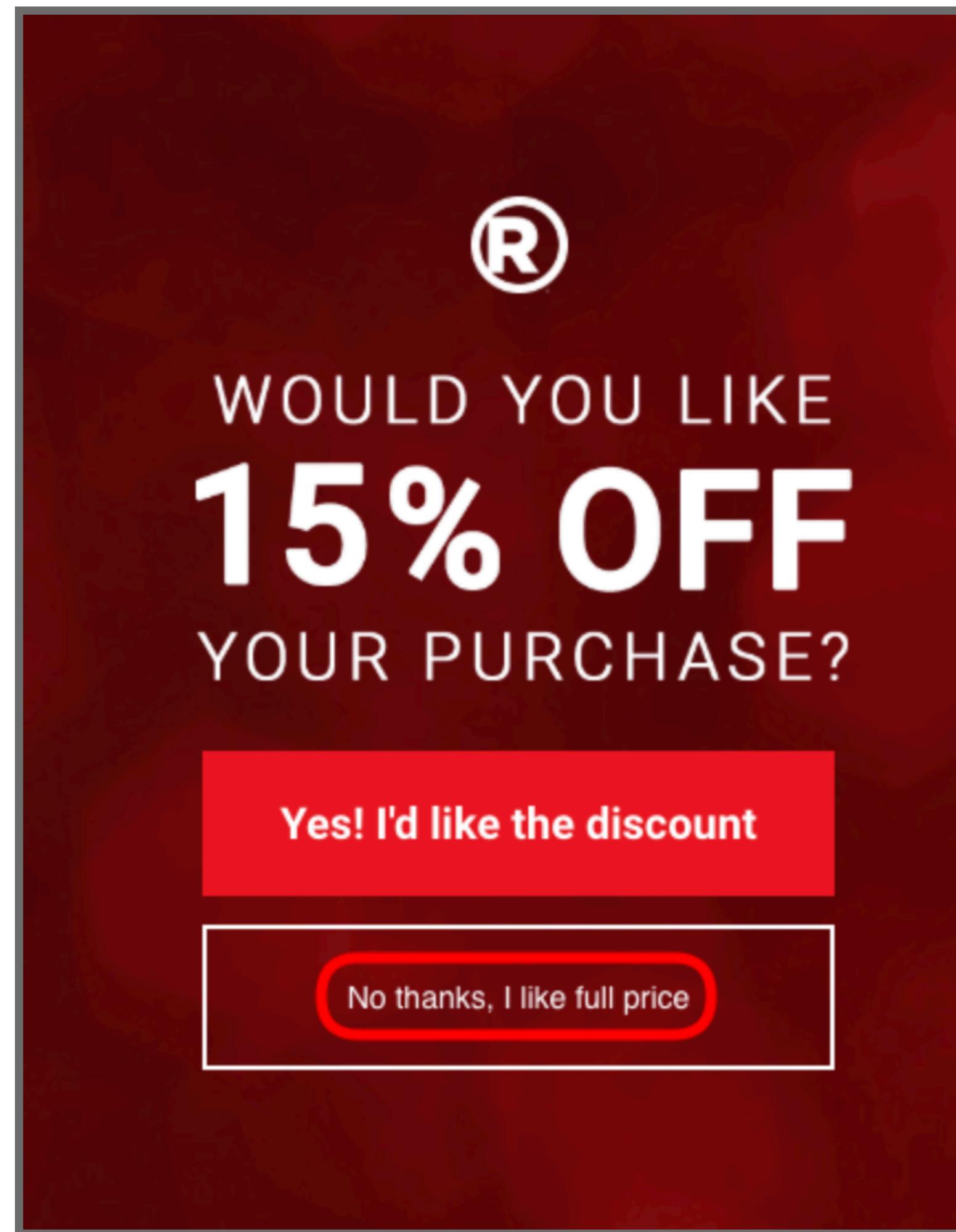
**SHOPPING CART**

Item	Qty	Price	Subtotal
 <b>Dreaming of Tuscany</b> Selected: "As Shown" 2nd choice: similar as possible, same look and feel	1	\$52.99	\$52.99
 <b>Greeting Card Service</b> Selected: "STANDARD"	1	\$3.99	\$3.99

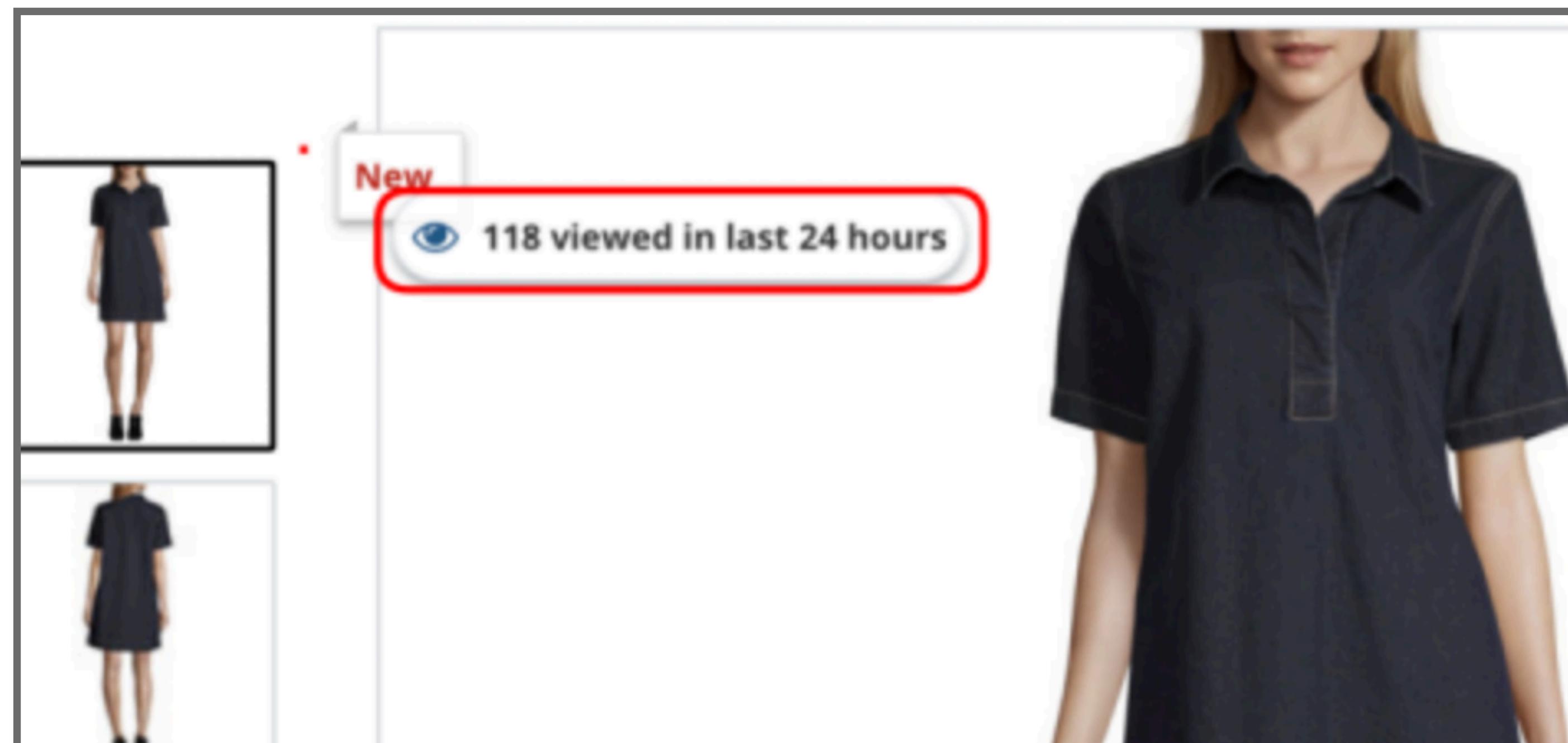
# Dark Patterns: Urgency



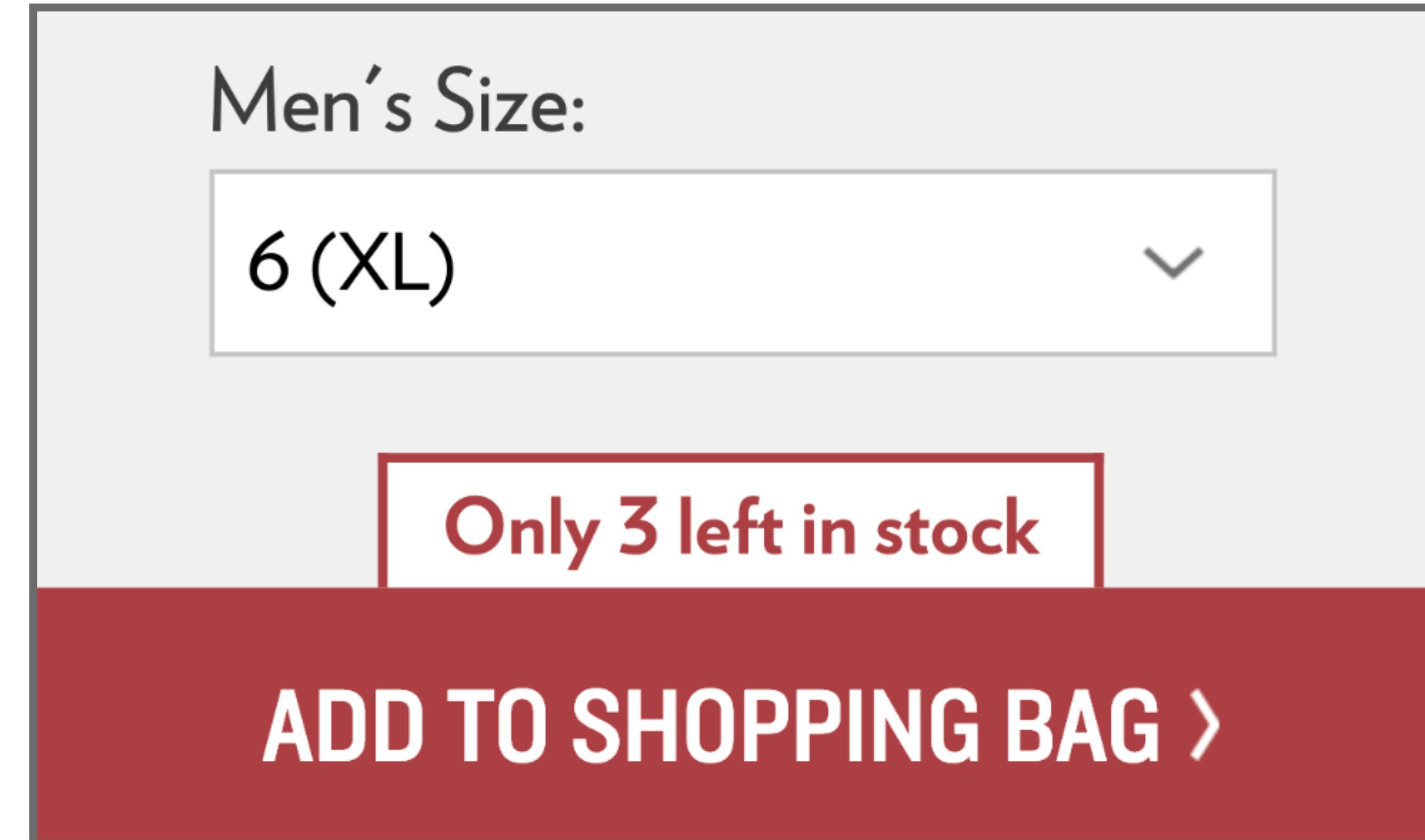
# Dark Patterns: Misdirection



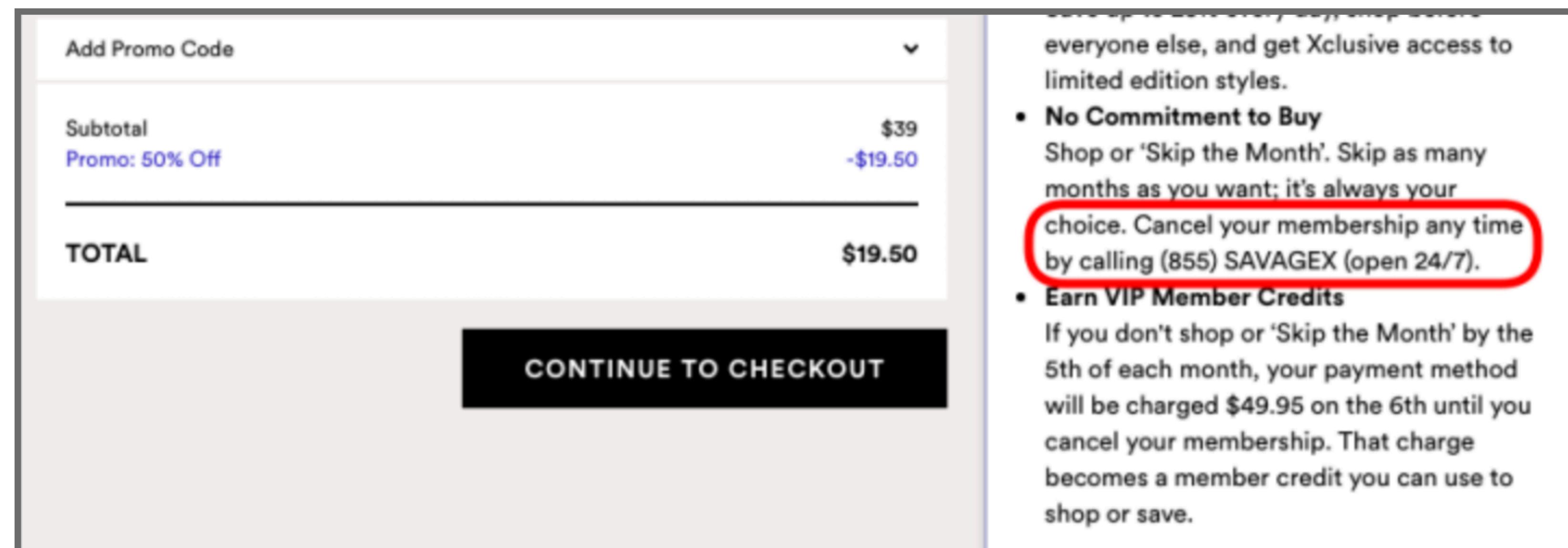
# Dark Patterns: Social Proof



# Dark Patterns: Scarcity



# Dark Patterns: Obstruction



The image shows a screenshot of a checkout page. On the left, there is a summary table with the following data:

Add Promo Code	
Subtotal	\$39
Promo: 50% Off	-\$19.50
<b>TOTAL</b>	<b>\$19.50</b>

Below the table is a large black button with the text "CONTINUE TO CHECKOUT" in white capital letters.

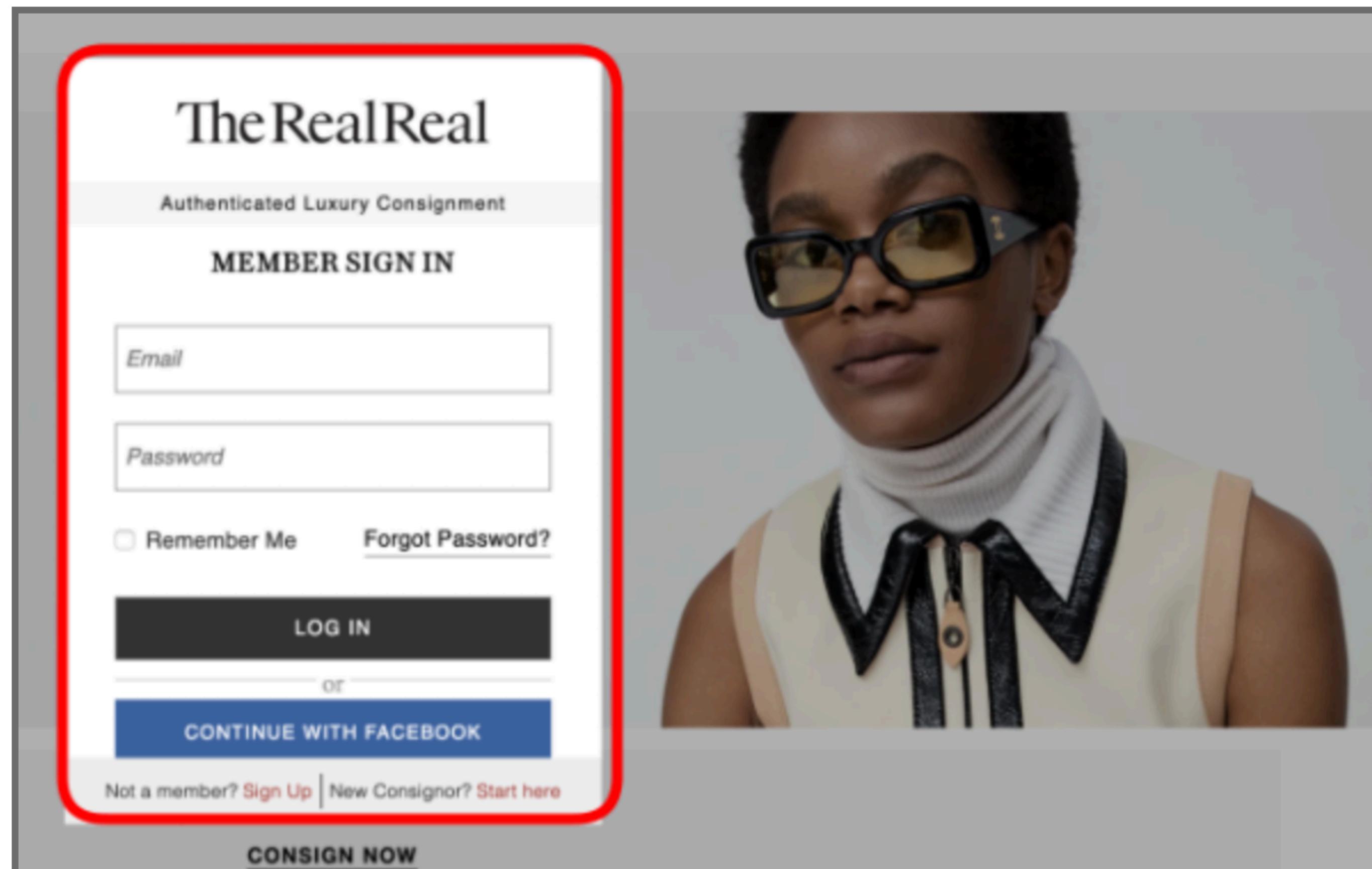
On the right side of the page, there is a block of text describing a membership offer:

everyone else, and get Xclusive access to limited edition styles.

- **No Commitment to Buy**  
Shop or 'Skip the Month'. Skip as many months as you want; it's always your choice. Cancel your membership any time by calling (855) SAVAGEX (open 24/7).
- **Earn VIP Member Credits**  
If you don't shop or 'Skip the Month' by the 5th of each month, your payment method will be charged \$49.95 on the 6th until you cancel your membership. That charge becomes a member credit you can use to shop or save.

A red oval highlights the sentence "choice. Cancel your membership any time by calling (855) SAVAGEX (open 24/7)".

# Dark Patterns: Forced Action



# Additional Reading

<https://arxiv.org/pdf/2101.04843.pdf>

## What Makes a Dark Pattern... Dark?

Design Attributes, Normative Considerations, and Measurement Methods

ARUNESH MATHUR, Princeton University

JONATHAN MAYER, Princeton University

MIHIR KSHIRSAGAR, Princeton University

There is a rapidly growing literature on dark patterns, user interface designs—typically related to shopping or privacy—that researchers deem problematic. Recent work has been predominantly descriptive, documenting and categorizing objectionable user interfaces. These contributions have been invaluable in highlighting specific designs for researchers and policymakers. But the current literature lacks a conceptual foundation: What makes a user interface a dark pattern? *Why* are certain designs problematic for users or society?

We review recent work on dark patterns and demonstrate that the literature does not reflect a singular concern or consistent definition, but rather, a set of thematically related considerations. Drawing from scholarship in psychology, economics, ethics, philosophy, and law, we articulate a set of normative perspectives for analyzing dark patterns and their effects on individuals and society. We then show how future research on dark patterns can go beyond subjective criticism of user interface designs and apply empirical methods grounded in normative perspectives.

### ACM Reference Format:

Arunesh Mathur, Jonathan Mayer, and Mihir Kshirsagar. 2021. What Makes a Dark Pattern... Dark?: Design Attributes, Normative Considerations, and Measurement Methods. In *CHI Conference on Human Factors in Computing Systems (CHI '21), May 8–13, 2021, Yokohama, Japan*. ACM, New York, NY, USA, 27 pages. <https://doi.org/10.1145/3411764.3445610>

### 1 INTRODUCTION

Recent scholarship has called attention to dark patterns, user interface designs that researchers deem problematic. The preponderance of academic literature on dark patterns has curated collections of objectionable user interface designs [3, 21] and highlighted the frequency of dark patterns in specific contexts, such as privacy settings [4], online gaming [62], and online shopping [25]. Related work has also traced the lineage of dark patterns to discrete trends in

# Moving Forward: Benevolent Intent

- A Benevolent or “thoughtful” intent is what we should strive for
- This is where the user’s needs are considered above all else
- Business goals are balanced, but the designing for the user is a core value
- This can be difficult to achieve, but I sincerely believe this necessary.

# 10 Minute Break

# In Class Activity

# Case Study: Build the next great social media site

- In Breakout Groups of 2-3:
  - You're applying to be a new chief product officer of the up and coming social media site Bluesky.
  - Based on community design principles, what are 3 new features or initiatives you'd introduce to help your site grow and be a more effective competitor to more established social media such as FB, X, and TikTok.
- Deliverables:
  - List at least 3 new feature ideas and the community design principles that explain how they would help Bluesky