Shining a Light on Dark Patterns

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Dark Patterns

• Colorado law defines dark pattern as “a user interface designed or manipulated with the substantial effect of subverting or impairing user autonomy, decision making, or choice.” Colorado Privacy Act of 2021

• Dark patterns tend to discourage deliberative decision-making and thwart users’ considered preferences.

• Typical objectives of dark pattern designers – to prompt consumers to purchase goods or services they are not inclined to purchase or to prompt consumers to surrender personal information they would otherwise not share.
Examples of Dark Patterns In the Wild: Confusion

Membership Status

Canceling your membership?
Are you sure you want to cancel your membership? You will no longer receive membership pricing on all our products.

CONTINUE  CANCEL
Confusing Double Negatives

My Health Record

Do you wish for your record NOT to be sent to My Health Record?

No

Save and Continue
Different Obstruction Tactics – Unnecessary Delays

Processing Preferences

We are processing the requested change to your cookie preferences.

This may take up to a few minutes to process.

Processing 29%

CANCEL

Privacy Policy

Powered by: TrustArc
The Ticketmaster Purchase Experience

Selection Required

Yes, Protect my Ticket Purchase to Hamilton: The Exhibition at Hamilton: The Exhibition on 26-May-19 (Highly Recommended)

Another Ticketmaster customer protected their ticket purchase a minute ago.

No, do not protect my Hamilton: The Exhibition ticket purchase.

93,829 people protected their tickets in the last 7 days.

"Will never purchase tickets without it again!" – Tanya H., Alpharetta, GA.

By continuing until this page, you agree to our Terms of Use.

Place Order
The Ticketmaster Purchase Experience: Dubious Recommendations, Social Proof

Yes, Protect my Ticket Purchase to Hamilton: The Exhibition at Hamilton: The Exhibition on 26-May-19 (Highly Recommended)

Another Ticketmaster customer protected their ticket purchase a minute ago

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Place Order
Ticketmaster App: Nagging

Get the latest info on your ticket!

Tap OK when prompted about push notifications to stay on top of the latest popular events, deals, and relevant information for tickets you purchase.
Ticketmaster Purchasing Saga Continues

Your Hamilton: The Exhibition purchase has unlocked a trial set from Harry’s. Get a 5-blade razor, handle of your choice, and shave gel for just $3 shipping. Redeem now!

Yes please  No thanks

You may receive details via email for any selected offer. To skip and view the confirmation page, click here.
Visual Interference

Your Hamilton: The Exhibition purchase has unlocked a trial set from Harry’s. Get a 5-blade razor, handle of your choice, and shave gel for just $3 shipping. Redeem now!

Yes please  No thanks

You may receive details via email for any selected offer. To skip and view the confirmation page, click here.
Preselection, Forced Continuity, Roach Motel, False Hierarchy: by Sony Playstation Plus
Obstruction

PS Plus: 1 Month Membership
1 MONTH
C Sony Interactive Ent

$9.99

When you subscribe to this service, [Fund Wallet Automatically] will be set to [Yes]. If your wallet does not have enough funds when an automatic subscription renewal is due, it will be automatically funded from the default payment method on record to cover the renewal cost (at least the minimum funding amount will be added). For details, refer to the Terms of Service and User Agreement.

You can change the automatic funding settings after the purchase is complete by going to [Settings] > [Account Management] > [Account Information] > [Wallet] > [Purchase Settings].

[Cancel] [Proceed to Checkout]
Sony is Perfectly Capable of Designing a Simple Opt Out of Automatic Renewal

PlayStation Subscriptions

PlayStation®Plus
Sony Interactive Entertainment

<table>
<thead>
<tr>
<th>Title:</th>
<th>PlayStation®Plus 3-Month Membership (3 Month Package)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charge:</td>
<td>$24.99</td>
</tr>
<tr>
<td>Starts:</td>
<td>2/14/2019</td>
</tr>
<tr>
<td>Expires:</td>
<td>5/14/2019</td>
</tr>
<tr>
<td>Next Renewal Date:</td>
<td>5/14/2019</td>
</tr>
<tr>
<td>Status:</td>
<td>In Use</td>
</tr>
</tbody>
</table>

[Extend] [Turn Off Auto-Renew]
## A Taxonomy of Dark Patterns

<table>
<thead>
<tr>
<th>Category</th>
<th>Variant</th>
<th>Description</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nagging</td>
<td>Repeat messages</td>
<td>Repeated requests to do something firm prefers</td>
<td>Gray</td>
</tr>
<tr>
<td>Social Proof</td>
<td>Activity messages</td>
<td>Misleading notice about other consumers’ actions</td>
<td>Mathur</td>
</tr>
<tr>
<td>Social Proof</td>
<td>Testimonials</td>
<td>Misleading statements from customers</td>
<td>Mathur</td>
</tr>
<tr>
<td>Obstruction</td>
<td>Roach Motel</td>
<td>Asymmetry between signing up and canceling</td>
<td>Gray, Mathur</td>
</tr>
<tr>
<td>Obstruction</td>
<td>Price Comparison Prevention</td>
<td>Frustrates comparison shopping</td>
<td>Brignull, Gray, Mathur</td>
</tr>
<tr>
<td>Obstruction</td>
<td>Intermediate Currency</td>
<td>Purchases in virtual currency to obscure cost</td>
<td>Brignull</td>
</tr>
<tr>
<td>Sneaking</td>
<td>Sneak into Basket</td>
<td>Item consumer did not add is in cart</td>
<td>Brignull, Gray, Mathur</td>
</tr>
<tr>
<td>Sneaking</td>
<td>Hidden Costs</td>
<td>Costs obscured / disclosed late in transaction</td>
<td>Brignull, Gray, Mathur</td>
</tr>
<tr>
<td>Sneaking</td>
<td>Hidden subscription / forced continuity</td>
<td>Unanticipated / undesired automatic renewal</td>
<td>Brignull, Gray, Mathur</td>
</tr>
<tr>
<td>Sneaking</td>
<td>Bait &amp; Switch</td>
<td>Customer sold something other than what’s originally advertised</td>
<td>Gray</td>
</tr>
<tr>
<td>Interface Interference</td>
<td>Hidden information / aesthetic manipulation / false hierarchy</td>
<td>Important information visually obscured</td>
<td>Gray, Mathur</td>
</tr>
<tr>
<td>Interface Interference</td>
<td>Preselection</td>
<td>Firm-friendly default is preselected</td>
<td>Bösch, Gray</td>
</tr>
<tr>
<td>Interface Interference</td>
<td>Toying with emotion</td>
<td>Emotionally manipulative framing</td>
<td>Gray</td>
</tr>
<tr>
<td>Interface Interference</td>
<td>Trick questions</td>
<td>Intentional or obvious ambiguity</td>
<td>Gray, Mathur</td>
</tr>
<tr>
<td>Interface Interference</td>
<td>Disguised Ad</td>
<td>Consumer induced to click on something that isn’t apparent ad</td>
<td>Brignull, Gray</td>
</tr>
<tr>
<td>Interface Interference</td>
<td>Confirmshaming</td>
<td>Choice framed in way that seems dishonest / stupid</td>
<td>Brignull, Mathur</td>
</tr>
<tr>
<td>Forcing Action</td>
<td>Forced Registration</td>
<td>Consumer tricked into thinking registration necessary</td>
<td>Bösch</td>
</tr>
<tr>
<td>Urgency</td>
<td>Low stock / high-demand message</td>
<td>Consumer falsely informed of limited quantities</td>
<td>Mathur</td>
</tr>
<tr>
<td>Urgency</td>
<td>Countdown timer / Limited time message</td>
<td>Opportunity ends soon with blatant false visual cue</td>
<td>Mathur</td>
</tr>
</tbody>
</table>
Relevant Existing Federal Law

• Many dark patterns may violate section 5 of the Federal Trade Commission Act, which restricts unfair or deceptive practices in trade, or the Restore Online Shoppers’ Confidence Act (ROSCA), which makes it unlawful to charge consumers without a clear and conspicuous disclosure of transaction’s material terms.

• **Key Case:** *FTC v. AMG Capital Mgmt.*, 901 F.3d 417 (9th Cir. 2018)

  • FTC action against payday lender employing visual interference (online fine print), confusing “trick question” prompts, bad default settings, negative option feature (forced continuity), hidden costs.
  
  • Court says “technically correct” disclosures inadequate – consumers acting reasonably likely to be deceived; $1.27 billion award on summary judgment affirmed. Court doesn’t reference “dark patterns” but that’s the core of what case is about.
Other Important Dark Pattern Cases

• *FTC v. LeadClick Media*, 838 F.3d 158 (2d. Cir. 2016). Disguised ads and false testimonials are deceptive under section 5 of FTC Act.

• *Fanning v. FTC*, 821 F.3d 164 (1st Cir. 2016). Phony user-generated content deceptive under section 5.

• *Schertzer v. Bank of America* (pending S.D. Cal.). Class action lawsuit against various banks, ATM operators over deceptive user interfaces that prompt unnecessary charges for consumers to check balances.
Federal Trade Commission Focusing on Dark Patterns

- Federal Trade Commission complaint in *In re Age of Learning, Inc.* in September 2020, alleging the company employed various dark patterns including obstruction (roach motel), forced continuity (negative option feature), interface interference (hidden information), confusing cancellation prompts and pathway to increase revenue for its ABCmouse, which sells educational content to children and families.

- Consumers seeking to cancel had to navigate through six to nine screens, and it got more difficult over time.

- Company hold times for cancellation through calls to customer service exceed 30 minutes, more than 60% of callers hung up without reaching someone.
Before You Go...

If you find that your child is not as engaged in ABCmouse.com as you’d like, we find that many children love visiting the Aquarium, Hamster, Zoo, Farm, and the Shopping areas of our site. Every section of ABCmouse.com is educational, so your child will always be learning!

- Go to My Hamster
- Go to My Aquarium
- Go to the Farm
- Go to the Zoo
- Go Shopping

Back Home  No Thanks, I’ll Wait  Continue
ABC Mouse Trap? - $10 Million Settlement
Have Consumers Consented?

• *Sgouros v. TransUnion*, 817 F.3d 1029 (7th Cir. 2016), Material information displayed on screen that reasonable consumer almost certainly did not see is inadequate to create contractual assent
2021 Regulations Prohibit Dark Patterns under California Consumer Privacy Act (CCPA)

• “A business’s methods for submitting requests to opt-out shall be easy for consumers to execute and shall require minimal steps to allow the consumer to opt-out. A business shall not use a method that is designed with the purpose or has the substantial effect of subverting or impairing a consumer’s choice to opt-out.”

• Regulations are limited to consumer information (privacy) context but the law may become a model for broader regulation of e-commerce
California Regulation Prohibits These Techniques for Securing Consumer Opt-Outs

• The business’s process for submitting a request to opt-out shall not require more steps than that business’s process for a consumer to opt-in to the sale of personal information after having previously opted out.

• A business shall not use confusing language, such as double-negatives when providing consumers the choice to opt-out.

• A business shall not require consumers to click through or listen to reasons why they should not submit a request to opt-out before confirming their request.

• The business’s process for submitting a request to opt-out shall not require the consumer to provide personal information that is not necessary to implement the request.

• The business shall not require the consumer to search or scroll through the text of a privacy policy or similar document or webpage to locate the mechanism for submitting a request to opt-out.
Colorado Prohibits Dark Patterns Under 2021 Colorado Privacy Act

• Statute explicitly prohibits using dark patterns to obtain consumer consent to process personal data (including processing data for sale or for profiling)

• Requires that consent under the Act entail a “clear affirmative act signifying a consumer’s freely given, specific, informed, and unambiguous agreement, such as by a written statement, including by electronic means”

• Law goes into effect: July 1, 2023
European Competition Law

- Directive 2005/29/EC of European Parliament/Council, articles 8 & 9 prohibit “aggressive commercial practices ... that significantly impair the average consumer’s freedom of choice [and] thereby causes ... a transactional decision he would not have taken otherwise” including “onerous or disproportionate non-contractual barriers imposed ... where a consumer wishes to exercise rights under the contract.”
Dark Pattern Empirics

• Teams of researchers have documented the prevalence of dark patterns, Arunesh Mathur and co-authors (2019) (US), and Midas Nouwens and co-authors (2020) (Europe)

• But no academic researchers had previously determined how effective dark patterns are at convincing consumers to “choose” options they might not prefer

• We tested dark patterns experimentally on large, census-weighted samples of American adults. Respondents look like US adult population (race, age, gender, region, education).
Study 1: Our Experimental Set-up

- In a fifteen minute pre-registered experiment, subjects spent the first ten minutes supplying demographic information about themselves and answering a series of survey questions about their privacy preferences.

- After this part of the survey was complete, subjects saw a screen that said “Calculating your privacy propensity score ...” Following a short delay, subjects were told that our algorithm had identified them as having a “heightened concern about their privacy.”

- Subjects told that using their IP address, phone number, & other information they had supplied, we had identified them.

- Subjects told we had partnered with nation’s largest identity theft protection company and signed them up for a data protection plan. After 6 month free trial they would be charged a monthly fee (randomly set to $2.99 or $8.99), but they could cancel at any time.
Subjects Randomly Assigned to One of Three Conditions

- Control Group
- Mild Dark Pattern
- Aggressive Dark Pattern
Control Group Condition

• Following this screen subjects in this condition answered questions about mood, freedom to say no, etc., plus some filler questions to keep experimental time constant across conditions
Mild Dark Patterns Condition

• There was a final “tell us why you declined” screen (see next slide) for those selecting the first option on screen 2, but it changed a trivial number of minds in both conditions.
Aggressive Dark Patterns Condition – First Two Screens Identical to Mild Dark Pattern

• Do you wish to accept or decline the data protection plan?
  ☑ Accept and Continue (Recommended)
  ☐ Other options

• Selecting “Other options” led to this prompt:
  ☐ I do not wish to protect my data or credit history
  ☐ After reviewing my options, I would like to protect my privacy and receive data protection and credit history monitoring

Combined effect of first two screens similar across conditions, but first screen did more in aggressive condition, second screen did more in mild condition.
Aggressive Dark Patterns – Screens 3 to 5

- (selecting second box meant subjects would see two additional similar screens with more text, the same options & 10-second countdown timer)
Aggressive Dark Patterns – Screen 6

• Subjects who declined on the third delay screen saw this prompt:

If you decline this free service, our corporate partner won’t be able to help you protect your data. You will not receive identity theft protection, and you could become one of the millions of Americans who were victimized by identity theft last year.

Are you sure you want to decline this free identity theft protection?

- No, cancel
- Yes

• Respondents who selected Yes advanced to a final (tell us why you declined) screen; Respondents who selected “No, cancel” were treated as having accepted the dark pattern
Final Screens Across All Conditions

• Please describe your current mood (using a 7-point Likert scale)

• ”Some survey participants may be contacted to do a follow up survey by the same researchers. Are you interested in potentially participating?” (7-point scale of responses)

• “How free did you feel to refuse the offered data protection and identity theft plan?” (7-point scale)

• ”Do you have any questions or comments for the researchers?”

• After this screen, all participants were fully debriefed on the experiment, and the purpose of the deception was explained
How Effective Were the Dark Patterns?

<table>
<thead>
<tr>
<th>Condition</th>
<th>Acceptance Rate</th>
<th>Adjusted Acceptance Rate (treats drop-outs as declines)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Group</td>
<td>11%</td>
<td>11%</td>
</tr>
<tr>
<td>Mild Dark Pattern</td>
<td>26%</td>
<td>25%</td>
</tr>
<tr>
<td>Aggressive Dark Pattern</td>
<td>42%</td>
<td>37%</td>
</tr>
</tbody>
</table>
## Acceptance Rate by Stakes

<table>
<thead>
<tr>
<th>Condition</th>
<th>Overall (% accept)</th>
<th>Low Stakes ($2.99/month)</th>
<th>High Stakes ($8.99/month)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group</td>
<td>11.3%</td>
<td>9.3%</td>
<td>13.3%</td>
</tr>
<tr>
<td>Mild</td>
<td>25.8%</td>
<td>26.8%</td>
<td>24.9%</td>
</tr>
<tr>
<td>Aggressive</td>
<td>41.9%</td>
<td>40.9%</td>
<td>42.8%</td>
</tr>
</tbody>
</table>
Which Dark Patterns were Most Effective?

• It’s the first screen (pre-checked option + “recommended” text + Accept & Continue versus “Other Options”) in both conditions that does most of the work
  • Upwards of 75% of those accepting agreed to the data protection plan on the first screen in the mild dark pattern condition
  • Roughly 65% of those accepting agreed to the data protection plan on the first screen in the aggressive dark pattern condition

• Screen two (second chance to accept) prompted 23% of acceptances in mild dark pattern and 10% of those in the aggressive dark pattern condition
Aggressive Dark Patterns Condition

• The three “annoying delay and text overload” screens combined to explain another 13% of the acceptances in the aggressive dark patterns condition

• The confusing “No-Cancel” prompt explains 11% of acceptances in the aggressive dark patterns condition
Susceptibility to Dark Patterns

• We analyzed a host of demographic factors to discover which ones are associated with vulnerability to dark patterns

• We predicted that less educated subjects would be more readily manipulated by dark patterns

• The data supports that hypothesis
  • In the easy condition, education is not significantly correlated with accept / decline decisions
  • In the dark pattern conditions, less educated subjects significantly more likely to accept the plan (mild – 34.1% vs. 21.2%; aggressive -- 49.2% vs. 38.1%)
  • Introducing controls for income and other demographics, less educated subjects are significantly more likely to accept in mild dark pattern condition but not in aggressive dark pattern condition
## Some Data on Respondents’ Mood, Sentiment, Revealed Preferences

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Mild</th>
<th>Aggressive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mood (1-5)</td>
<td>M = 2.96; SD = 1.61</td>
<td>M = 3.05; SD = 1.73</td>
<td>M = 3.94; SD = 2.06***</td>
</tr>
<tr>
<td>Anger Expressed %</td>
<td>5.70%</td>
<td>6.09%</td>
<td>12.82%***</td>
</tr>
<tr>
<td>Exit the Survey %</td>
<td>N/A</td>
<td>1.5%</td>
<td>11.1%***</td>
</tr>
</tbody>
</table>
Do Market Forces Deter the Use of Dark Patterns?

• Subjects who accepted data protection plan did not have moods, willingness to repeat affected by dark pattern treatment; effects generated by subjects who declined the plan

• Means also varied significantly on freedom to refuse question (6.2 control; 5.8 mild; 4.7 aggressive) (7 = perfectly free to refuse).

• External validity – what’s missing from the experiment: Many digital platforms have market power, and consumers may be responsive to sunk costs and network effects (e.g., development of network of Facebook friends, data portability limits).
Study 2 — Format

• 3,777 Experimental subjects – once again we used a census weighted sample based on race, age, region, education, and gender

• Each subject sees zero, one, or two dark patterns – order randomly varied. This allows us to see which dark patterns are especially potent

• Testing other prevalent dark patterns (urgency, countdown timer, double negatives, small and harder to see print, social proof)

• Randomly varying cost between $8.99 and $38.99 per month, with only one month of free monitoring
## Study 2 – 4 Form, 5 Content Conditions

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Control</th>
<th>Recommended</th>
<th>Default</th>
<th>Obstruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scarcity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confirmshaming</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Proof</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hidden Information</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Content Conditions – Study 2

• **Hidden Information.** Participants told that they would “receive one month of data protection and credit history monitoring free of charge*”, and that “[t]erms and conditions apply.” At the bottom of the page, the price information was included in small, grey font.

• **Social Proof.** “1,657 other participants have accepted this free month of data protection and credit history monitoring in the last three weeks. Would you like to accept the program and join them?”

• **Scarcity.** “Congratulations! You have been selected to receive one month of free data protection and credit history monitoring. But you must **ACT FAST**! We only have three trial memberships left and this offer will expire in the next 60 seconds.”

• **Confirmshaming.** Option to decline the program was phrased as “I don’t care about protecting my data or credit history.”
Form Conditions – Study 2

• Participants in the control condition could either choose “Accept” or “Decline.”
• Those in the default condition had the “accept” answer preselected.
• Those in the recommendation condition could chose either “Accept (recommended)” or “Decline.”
• Those in the obstruction condition saw the choices as “Accept and continue” or “Other options.”
  • Those selecting “Other options” were randomly assigned to short or long obstruction. Short = Yes / No choice. Long = Two Identity Theft information screens with 15 second countdown timers.
Trick Question – Appeared for Half the Sample

• After making their selection, some respondents were asked: “Would you prefer not to decline this free data protection and credit history monitoring?”
  • Respondents who wish to reject the data protection plan should select “No”
  • Question employs a confusing double negative
## Acceptance Rate by Content Condition

<table>
<thead>
<tr>
<th>Condition</th>
<th>Acceptance Rate (%)</th>
<th>Number of Respondents Accepting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Group</td>
<td>14.8%</td>
<td>191 (out of 1289)</td>
</tr>
<tr>
<td>Scarcity</td>
<td>14.3% *p = .78</td>
<td>91 (out of 635)</td>
</tr>
<tr>
<td>Confirmshaming</td>
<td>19.6% *p = .008</td>
<td>120 (out of 612)</td>
</tr>
<tr>
<td>Social Proof</td>
<td>22.1% *p &lt; .001</td>
<td>140 (out of 634)</td>
</tr>
<tr>
<td>Hidden Information</td>
<td>30.1% *p &lt; .001</td>
<td>183 (out of 607)</td>
</tr>
</tbody>
</table>
### Acceptance Rate by Form Condition

<table>
<thead>
<tr>
<th>Condition</th>
<th>Acceptance Rate (%)</th>
<th>Number of Respondents Accepting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Group</td>
<td>16.7%</td>
<td>216 (out of 1294)</td>
</tr>
<tr>
<td>Recommended</td>
<td>18.1% <em>p = .39</em></td>
<td>156 (out of 861)</td>
</tr>
<tr>
<td>Default</td>
<td>20.1% <em>p = .045</em></td>
<td>171 (out of 851)</td>
</tr>
<tr>
<td>Obstruction</td>
<td>23.6% <em>p &lt; .001</em></td>
<td>182 (out of 771)</td>
</tr>
</tbody>
</table>
Study 2 – Acceptance Rates by Condition, \( p \)-value Compared to Control / Control

<table>
<thead>
<tr>
<th>Condition</th>
<th>Control</th>
<th>Recommended</th>
<th>Default</th>
<th>Obstruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>13.2%</td>
<td>15.1% (p = .46)</td>
<td>15.0% (p = .49)</td>
<td>19.5% (p = .03)</td>
</tr>
<tr>
<td>Scarcity</td>
<td>10.6% (p = .39)</td>
<td>10.8% (p = .41)</td>
<td>18.9% (p = .061)</td>
<td>17.4% (p = .19)</td>
</tr>
<tr>
<td>Confirmshaming</td>
<td>20.5% (p = .02)</td>
<td>16.4% (p = .29)</td>
<td>21.0% (p = .012)</td>
<td>20.4% (p = .03)</td>
</tr>
<tr>
<td>Social Proof</td>
<td>19.0% (p = .053)</td>
<td>21.0% (p = .01)</td>
<td>21.4% (p = .009)</td>
<td>27.9% (p &lt; .001)</td>
</tr>
<tr>
<td>Hidden Information</td>
<td>30.8% (p &lt; .001)</td>
<td>28.7% (p &lt; .001)</td>
<td>26.7 (p &lt; .001)</td>
<td>34.5% (p &lt; .001)</td>
</tr>
</tbody>
</table>
Trick Question Effect

• Percentage of respondents who answered yes in response to trick / double negative question (thereby accepting the service) – 33.4%
  • But only half of these respondents (16.7% of total) reported accepting the program. So half the trick question acceptances were by people who didn’t realize what they had done.

• Highly significant increase in acceptance rate ($p<.001$)

• Respondents who spent more time on trick question screen were significantly less interested in doing follow-up research with us

• Respondents who answered the trick question correctly were in a worse mood and less likely to agree to follow-up research
Study 2 – Costs of Service Again Didn’t Matter

Acceptance Rate in High Stakes ($38.99 / month) Condition:
17.3%

Acceptance Rate in Low Stakes ($8.99 / month) Condition:
19.8%

• This difference is not statistically significant ($p = .09$)

• Stakes had no effect on acceptance rates

• 73.7% of respondents said they were at least somewhat likely to cancel plan after the first month; 21.1% said they definitely would cancel. This probably significantly overstates cancellation levels.
Condition Effects on Mood, Willingness to Participate in Future Studies

- Confirmshaming and social proof had no significant effect on mood, compared to control
- Hidden information and scarcity conditions significantly improved the mood of subjects compared to control
- Content conditions had no effect on self-reported mood
- Form condition (control, recommended, default, obstruction) had no significant effect on mood or willingness to participate in future research
Study 2 – Education Level Again Predicts Susceptibility to Dark Patterns

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Acceptance Rate in Control Condition (%)</th>
<th>Acceptance Rate in Treatment / Dark Pattern Condition (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High school diploma or less</td>
<td>7.2%</td>
<td>17.8%</td>
</tr>
<tr>
<td>Some college or associate’s degree</td>
<td>16.3%</td>
<td>22.2%</td>
</tr>
<tr>
<td>Bachelor’s degree or graduate degree</td>
<td>17.8%</td>
<td>22%</td>
</tr>
</tbody>
</table>
Normative Take-aways

• It’s the **mild dark patterns that are most insidious**. They significantly increased acceptance of a program with dubious benefits without alienating consumers or causing large numbers of them to log off.

• Less educated subjects were particularly vulnerable to dark patterns.

• Effects of dark patterns swamp effects of price changes.

• Dark patterns vary substantially in terms of potency.

• Dark patterns have proliferated because they work:
  • We’re playing catch up with in-house social scientists.
For More Information, Please See


• You can download the article for free here:
  • bit.ly/darkpatternspaper (all lower-case)
  • bit.ly/darkpatternsarticle (all lower-case)

Or just type “Shining a Light on Dark Patterns” into your favorite search engine and download the paper from SSRN or the Journal of Legal Analysis website. It’s an open-access journal.
Thank you!