

The Psychological Effects of Dark Patterns

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Abstract:

Dark patterns are design elements in a website/app (or any online interface) designed to gear users into performing certain actions on the interface. By applying human psychology and user interface design (UI/UX), web engineers manipulate users into following prescribed behaviors without the user's knowledge. Using dark patterns, the users can often be negatively impacted while the web publisher benefits. Dark patterns have become highly prevalent online; however, they are difficult to catch and avoid. Educational tools of dark patterns may spread awareness of their designs and protect online users against their harmful psychological and material impacts. In this project, I designed a collection of interactive simulations that mimic real-life examples of dark patterns. With this project, I created a platform in which users can be educated about dark patterns potentially increasing their visibility while browsing the internet. Additionally, I conducted a user behavioral survey on the after-effects of dark patterns and more. The survey was conducted in November of 2022, and had 25 participants in it. I found that the most common dark patterns amongst users are Triggering Fear of Missing Out and Disguised Ads. According to the survey results, most users noticed a loss of trust after experiencing dark patterns.

Introduction:

5.07 billion people in the world use the internet today, and many people around the world have seen a dark pattern at least once or twice in their life. From online stores like Amazon to websites such as Codementor, dark patterns are all around us. Dark patterns are used to trick users into completing actions without their knowledge. Dark patterns come in many forms, ranging from the "accept cookies" buttons on a website to changes in payment totals during the e-commerce checkout process. Dark patterns increase exhaustion and leave negative psychological effects on users. Dark patterns use psychological tricks to manipulate users, and oftentimes, these tricks that websites use can have long-term psychological effects on users. Some of these effects include, loss of trust, feeling like nothing is safe to use, etc.

Dark Patterns are commonly known to violate internet user's privacy. Previous research has been done on the aftereffects of dark patterns, along with how frequently they occur and who they tend to target. An underexplored topic on dark patterns is how dark patterns affect different communities, in terms of race, social class, etc.

While there are multiple types of dark patterns, they most often come in the form of one of eight dark pattern types: Confirmshaming, Hidden Costs, Disguised Ads, Roach Motel, Triggering Fear of Missing Out, Bait & Switch, Forced Continuity, and Privacy Zuckering. In a recently conducted survey, the two most common types of dark patterns that users faced appeared to be: Disguised Ads and Triggering Fear of Missing Out.

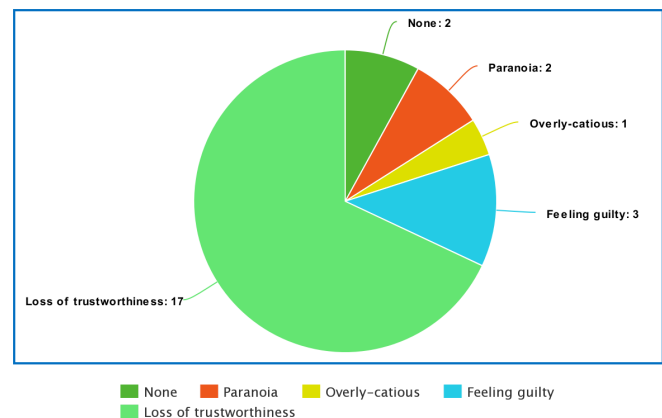
Dark Pattern Simulator:

In order to simulate the experience of encountering a dark pattern, I built a website called DPS. This website includes information about dark patterns and types of dark patterns, dark pattern examples in everyday websites, a dark pattern submission link, resources for more information, and interactive examples of real-life dark patterns. This online simulation website was created through an online interface creation platform called 'Bubble.IO.' A significant part of the Dark Pattern Simulator is the page, "Examples of Dark Patterns", which contains various examples of different types of dark patterns which people can engage with, as if it was a real dark pattern. Each example is accompanied by a detailed description of the dark pattern displayed. This website can be accessed at:

https://dark-pattern-simulation.bubbleapps.io/version-test/home_page.

Psychological Effects Due to Dark Patterns:

Dark patterns tend to rely on human psychology to achieve the goals of having their users perform certain actions. For example, a common psychological strategy that is used is rooted in colors. Users are more likely to notice the color orange, as opposed to light grey. Knowing these psychological manipulators in people, designers and online organizations include misleading elements in their webpages. People may succumb to these patterns due to a lack of knowledge or awareness. Out of the 25 participants in the survey, 3 were shown to feel guilty, 17 experienced loss of trustworthiness, 1 person expressed how they felt overly-cautious after facing dark patterns, 2 people conveyed how they felt paranoid, and 2 people didn't notice anything. According to author Ashley Firth, dark patterns have a correlation between manipulating users and their mental health. Ashley stated that dark patterns often add on to the anxiety that one already experiences. Some effects that were mentioned in the article include: it can cause people with social anxiety and panic disorders to have a hard time getting support when needed, dark patterns can trigger panic attacks and suicidality.



Decrease in Trust:

A lack of trust has been clearly shown to be the most common psychological effect of dark patterns according to the survey conducted. Out of 25 people, 17 people reported feeling a loss of trustworthiness. Many of the surveyants who answered with “loss of trustworthiness,” explained how they were not sure who they would be able to trust, if even some websites are attempting to trick them. They also explained how it’s difficult to put the same trust into another online platform, after already getting trapped by one. When having an encounter with a dark pattern, consent is not given by one. Dark patterns tend to attempt to obtain your information, and leave it at that. While the user may not be getting the best experience, on the other side, the company/organization behind the website is. One subject went on to explain how they had recently experienced a dark pattern while using a fairly popular streaming platform, HULU, “I have used my credit card details to use the first month trial on HULU. I did not think much about it later. But after 1 month it charged me for the next month. I don’t know if I can trust inputting my credit card details on any website after that.”

Different Communities That Are Harmed Due to Dark Patterns:

Dark patterns take advantage of people to achieve their goal. For instance, dark patterns tend to target people who aren’t too familiar with technology. It is easier for people who are familiar with technology to detect dark patterns than those who aren’t. Most of the time, those who don’t have a good hand with technology tend to be people from low-income families, elderly people, or people who avoid technology due to religious/cultural reasons. Companies may recognize this and deploy strategies against a community to achieve wanted outcomes. As examples, people from these communities may be left feeling guilty about not accepting an offer/sale promoted using a dark pattern or lose trust in the online world overall. Surveyants revealed that some of the information on a website will be tailored to their circumstances. All in all, many online interfaces target specific communities, as they know they will be more vulnerable to specific tricks than others.

Methods of Prevention:

In order to prevent the lasting impacts of dark patterns, it is important for online users to become familiar with different types of dark patterns, so they will be easy to identify when seen. For example, the dark pattern, Triggering Fear of Missing Out, most commonly occurs on online shopping websites that are advertising a product, or are on sale. Many surveyants expressed how they have taken extra security measures to ensure that they will be protected from dark patterns in the future. One participant explained how they installed an Ad Blocking program, called ‘uBlock Origin,’ as a safety measure. This program will have all the ads that pop up



on a webpage to be hidden. Using this program, one may be able to avoid falling into the dark pattern of Disguised Ads. Disguised Ads tend to use a psychological strategy to manipulate users into clicking on them. The background of the ad will tend to blend in with the background of the original website, and the “X” button will be extremely small, which will allow for one to believe that the ad is a part of the website, and click on the ad.

A recent study has shown that 1 in 10 websites use dark patterns to manipulate their users. Big companies such as Amazon, Apple, and LinkedIn, have been revealed using dark patterns in the past. Knowing that major companies like these have used dark patterns on a daily basis, it is important to keep a lookout for them everywhere. Ultimately, the goal of dark patterns is to gather one’s data and gain more money. To avoid dark patterns in the future and make more people more aware of dark patterns, it would be advised to:

TABLE 1: METHODS OF PREVENTION

Become more educated on the concept of dark patterns, overall	https://dark-pattern-simulation.bubbleapps.io/version-test/home_page
Make public any encounters with dark patterns to social media	Post it on twitter, and tag the company too
Take extra safety measures	Install safe programs that will ensure safety from online viruses and more
Read the information carefully	Be sure that you are not skimming over anything, and take a few minutes to observe
Report dark patterns to websites (to help make more people aware) such as:	<ul style="list-style-type: none"> - https://darkpatternstipline.org/sightings - https://dark-pattern-simulation.bubbleapps.io/version-test/about_dark_patterns

TABLE 2 DESCRIPTIONS OF COMMON DARK PATTERNS

Confirmshaming	This type of dark pattern is used to make users feel bad about their decision & trick them into completing an unwanted action that profits the company/website developer.
Hidden Costs	This type of dark pattern takes place while purchasing an item from an online store. When adding the item to the cart, the price may show up as one thing, whereas when you actually go to checkout your item, the



	price will be completely different, as there will be extra charges added without your knowledge.
Disguised Ads	This type of dark pattern tricks one into believing that an ad is a part of a website.
Roach Motel	The start will seem easy, but getting out will be difficult. For example, signing up for a platform may be easy, but deleting your account will take a lot of effort.
Triggering Fear of Missing Out	This type of dark pattern will trick you into feeling bad about not completing a specific action, and eventually trick you into completing that action.
Bait & Switch	When the initial information says something different from what is presented after clicking.
Forced Continuity	This dark pattern requires you to provide information before you can get the desired outcome.
Privacy Zuckering	This dark pattern tricks you into sharing more information about yourself than you intended to.

Discussion/Conclusion:

It is very common for users to come in contact with a dark pattern on a daily basis, as they are everywhere. From shopping websites to apps on your phone, it is difficult to completely avoid dark patterns. As a result, it is key that an internet user is educated on all the different types of dark patterns and how to avoid them. Dark patterns often target users' behaviors in order to enhance data collection and commercial goals. However, internet companies may fail to realize that using dark patterns will lose their users' trust and form bad relationships with the customer. A loss of trust has been seen to be the trend of those who have encountered dark patterns on the web. To prevent more dark patterns from arising, it is important to inform others about them and the websites that use them. In the future, it would be beneficial to gather data on how dark patterns play a role in different people's lives based on their demographic identities. It would be captivating to see how the different resources that people have access to would play a role in their online experiences.

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