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"What's in a Name?": The Use of Instructional Design in Overcoming Terminology Barriers Associated with Dark Patterns

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ABSTRACT

Many users experience a phenomena when they are shopping on-line where they feel they are being pressured to either spend more money than they had intended, or to share more personal data than they wanted. In academic circles we use the term "Dark Patterns" to describe these deceptive practices, and categorize them as being within the discipline of User Experience (Narayanan, 2020). As academics it is important to name phenomena, and to categorize them, so that we can discuss and analyze these issues. However, this particular topic is one that all users should be made aware of when interacting online, and therefore these ideas should be explained in a manner to ensure that the terminology does not prove to be a barrier to understanding these concepts (Gordon, *et al*., 2014). To overcome the terminological barriers, this research proposes the use of a model of instructional design called Elaboration Theory, developed by Charles Reigeluth (1999). Crucially this model proposes that when explaining a new concept, the last thing the instructor should do is to mention the name of the concept, they should first explain the concept, and at the very end of an instructional session, say "*And by the way, this concept is called…*". This model also contends that the instructor should explain the concept in simple terms first, and then continue to elaborate on that explanation throughout the teaching process (adhering to the notion of a *Spiral Curriculum*). It also suggests that the content should be summarized at each level of explanation, and analogies should be used to help clarify concepts. Therefore, this research proposes the redevelopment of existing teaching content about *Dark Patterns*, where these patterns are retitled as "Online Shopping Tricks", and the teaching content is redesigned to begin with a simple explanation of *Dark Patterns* and to elaborate with more complexity at a number of levels of explanation, and including summarizers and analogies at the end of each stage. This content will be subsequently piloted on a number of non-academic participants to determine whether or not this redesign process has been effective.

1. INTRODUCTION

Gray, *et al*. (2018) defined dark patterns as "*instances where designers use their knowledge of human behavior (e.g., psychology) and the desires of end users to implement deceptive functionality that is not in the user's best interest*", in other words, where websites use tricks to get the users to share more information or spend more money than they had intended to spend. Dark Patterns are closely aligned with the idea of "Nudging" (making small changes that have big impacts), which is based on soft paternalism, positive reinforcement and compliance (Acquisti, 2009). Nudging can be and has been used both with good intentions and bad intentions in mind and has been proved effective (Almuhimedi, *et al*., 2015; Peer, *et al*., 2020). Nudging is one of the most common digital manipulation strategies used to mislead users into bad decisions privacy-wise.

Mathur *et al*. (2019) undertook a meta-analysis of 11,286 shopping websites, and developed a taxonomy to explain how dark patterns affects user decision-making (by exploiting cognitive biases). Their taxonomy has the following characteristics: Asymmetric, Covert, Deceptive, Hides Information, and Restrictive. They found that 11.1% (1254 websites) of the sites had dark patterns, and they recommend the development of plug-ins for browsers to help detect these patterns. Similarly, Di Geronimo, *et al*. (2020) explored the use of Dark Patterns in mobile apps. They looked at 240 popular mobile apps and explored whether or not these apps included any dark patterns, and found that 95% of

the apps they reviewed included one or more Dark Patterns, with an average of 7.4 malicious designs per app, with a standard deviation of 5. Almost 10% of the apps included 0, 1, or 2 Dark Patterns (N=33), 37% of the apps had between 3 to 6 Dark Patterns (N=89), while the remaining 49% had 7 or more (N=118). They also conducted an online experiment with 589 users on if they perceive Dark Patterns in such apps, and the majority of users did not spot malicious designs in the app containing Dark Patterns (55%), some were unsure (20%), and the remaining found a malicious design in the app (25%). But they found that most users did perform better in recognizing malicious designs if they are informed on the issue.

In previous research (Curley, *et al.*, 2021), we identified 18 different patterns from different resources, and categorized them into six (6) different types of patterns, which are presented below in Table 1.

Level 0	Level 1	Level 2
DARK PATTERNS	Sneaking	Sneak into Basket
		Hidden Costs
	Misdirection	Trick Questions
		Misdirection
		Confirmshaming
		Disguised Ads
	Obstruction	Roach Motel
	Forced Action	Forced Continuity
	Variegations	Privacy Zuckering
		Price Comparison Prevention
		Bait and Switch
		Friend Spam
	Beyond Brrignull	Fake Activity
		Fake Reviews
		Fake Countdown
		Ambiguous Deadlines
		Low Stock Messages
		Deceptive High Demand

Table 1. Categorization of Dark Patterns

However, looking at the names of these patterns, it is not necessarily obvious their meaning is. Therefore, we propose the renaming of these patterns to use terms that are more simple and clearer, using a model from Instructional Design.

2. INSTRUCTIONAL DESIGN

Instructional design is rooted in educational research, and focuses on the systematic design, development and delivery of teaching content in a way that is appealing to learners (Merrill, 1996). One model in particular is Elaboration Theory, developed by Charles Reigeluth (1999), which focuses on the idea of starting to present concepts that are broad and simple first, and to gradually elaborate on those concepts to build to narrower and more detailed concepts. This model also recommends that terminology should be simplified and also left until after the concept is explained in simple terms.

3. TOWARDS A NEW VOCABULARY

The challenge of educational and technological terminology has been explored by Anohina (2005), who concluded that terminology is so widely used and ambiguous that it is very important to try to define terms clearly, to categorize them, and to define relationships between them. A similar conclusion was reached by both Michaelson (2006) and Al-Ajlan & Zedan (2008) who underscore that

terminological confusion will always be a problem, and it is important that people have an agreed understanding. Below we present the new terms for Dark Patterns in Table 2.

Level	Academic Term	Simplified Name
Level 0	Dark Patterns	Online shopping tricks
Level 1	Sneaking	Surprise Costs
Level 1	Misdirection	Distraction Tactics
Level 1	Obstruction	Unsubscribe Prevention
Level 1	Forced Action	Uncancellable Free Trial
Level 1	Variegations	Other Patterns
Level 1	Beyond Brignull	Other Researchers
Level 2	Sneak into Basket	Surprise Items
Level 2	Hidden Costs	Surprise Charges
Level 2	Trick Questions	Confusing Checkboxes
Level 2	Misdirection	Distraction Tactics
Level 2	Confirmshaming	Using Guilt
Level 2	Disguised Ads	Hidden Ads
Level 2	Roach Motel	Unsubscribe Prevention
Level 2	Forced Continuity	Uncancellable Free Trial
Level 2	Privacy Zuckering	Confusing Privacy Settings
Level 2	*Price Comparison Prevention*	*Price Comparison Prevention*
Level 2	Bait and Switch	Altered Control Buttons
Level 2	Friend Spam	Spam Your Contacts
Level 2	Fake Activity	Fake Rival Shoppers
Level 2	*Fake Reviews*	*Fake Reviews*
Level 2	Fake Countdown	Unnecessary Countdown
Level 2	Ambiguous Deadlines	Unspecific Deadlines
Level 2	Low Stock Messages	Fake Low Stock
Level 2	Deceptive High Demand	Fake High Demand

Table 2. New Terms for Dark Patterns

It is worth noting that two patterns ("Price Comparison Prevention" and "Fake Review") remain unchanged as we felt that their terms were sufficiently descriptive as they are.

4. CONCLUSIONS

In this research we looked at the importance of the naming of concepts, and in particular how terminology can potentially prove to be a barrier for a general audience to understand a specific issue. In this case we were looking at Dark Patterns, which are website designs that trick users into sharing more data, or spending more money than they had intended. To address this issue we proposed the use of a model of Instructional Design, known as the Elaboration Model, which advises the use of simpler terminology, and to introduce the technical terms towards the end of the explanation instead of at the start. Based on this we presented a table of new terminology for Dark Patterns.

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