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Better call your lawyer: Dark Patterns are best understood as unfair commercial practices

Work in progress - please do not circulate

‘Dark pattern’. It seems like everyone is concerned by them. But what are they?

Policy-oriented debates are often driven by a perception of the great salience of a certain issue. When this happens, the expression associated with that idea becomes a buzzword and its meaning somewhat uncertain. In recent years, we have seen this phenomenon for example with ‘nudges’. At some point, the impression was that almost all attempts to influence somebody else would be nudge.

In the case of dark patterns, the impact on public discourse is perhaps even more explicit. This is particularly evident in the European Union. First, the European Commission has funded a study entitled ‘Behavioural study on unfair commercial practices in the digital environment - Dark patterns and manipulative personalisation: final report’.¹ This study was commissioned specifically to investigate digital market conditions and assess whether the current EU consumer protection regulatory framework was effective in addressing the challenges posed by practices such as dark patterns. Second, the main legal instruments introduced by the previous Commission to organize the EU digital market refer to dark patterns, namely the Digital Services Act, the Digital Markets Act, and the Artificial Intelligence Act.

Against this background, this article seeks to bring some clarity. More precisely, this article combines a systematic literature review with conceptual analysis to, ultimately, justify the following claim: the conceptual framework proposed by the unfair commercial practices directive offers the most solid standpoint for reflecting on dark patterns; dark patterns may be misleading (by action or by omission) and/or aggressive (undue influence, harassment, coercion) and do not necessarily exploit heuristics and biases.

This claim is justified as follows. A systematic literature review is used to map the literature around three topics: definitions of ‘dark pattern’; examples of dark pattern; qualification of dark patterns under EU law. The findings regarding each of these topics is then further developed.

Definitions of ‘dark pattern’ are connected with the broader reflection prompted by digital markets on the idea of manipulation. At the same time, our SLR presents an updated list of dark patterns. The list demonstrates that – contrary to a widespread opinion emerging from the literature – not all dark patterns are connected to heuristics and/or biases.

The SLR also shows essentially unanimous consent among EU legal scholars regarding the qualification of dark patterns as unfair commercial practices within the meaning of Directive 2009/25 (Unfair Commercial Practices Directive; UCPD). Building on this finding, the article investigates the hypothesis that dark patterns are best classified using the UCPD framework.

Accordingly, the article classified dark patterns under the UCPD categories: misleading action; misleading omission; harassment; undue influence; coercion.

A comparison between the resulting classification and the classifications by the Behavioural Study (relying in particular on Luguri et al. 2021) and Mathur et al. 2021 suggests that the UCPD offers a better classificatory framework.

This conclusion is further strengthened by combining the results of our SLR with those of a different one on dark patterns (with a slightly different data collection protocol and different research questions). The combination confirms that the concerns associated with dark patterns are

the same UCPD is meant to address. This finding confirms the connection between dark patterns and the UCPD.

The Article is divided in two parts. Part I is dedicated to the Systematic Literature Review (SLR). It details the methodology employed, including the use of the PRISMA protocol, and presents the results of the review. Part I provides an overview of the sources examined and the key themes emerging from the existing literature on dark patterns.

Part II integrates the results of the SLR with the regulatory framework of the UCPD. To propose a clear and UCPD-inspired classification (UCPC) of dark patterns that will be shown to be superior to the one proposed by the Behavioural Study. The superiority is two-fold. In absolute terms, the UCPC is conceptually more convincing. Moreover, the UCPC establishes better grounds for interdisciplinary dialogue between social and interface design experts and the law community, thereby reducing linguistic barriers to effective enforcement.

The article makes five contributions. First, the article offers much-needed clarity regarding the meaning of ‘dark pattern’.

‘Second, it provides an improved classification of the dark patterns identified in the literature. Third, by connecting dark patterns to a well-established EU legal framework, the article simplifies enforcement in the European Union. At the same time, present and future anti-dark pattern legislation in Europe and beyond can be better drafted and interpreted by relying on this classification. Fourth, the comparison between the UCPD classification of dark patterns and the Cognitive Bias Codex helps construct convincing theories of harm, thereby strengthening enforcement further.

Finally, from a methodological point of view, the article illustrates the often underestimated analytical value of existing legal structures. Thus, the article suggests that social scientists pay more attention to legal dogmatics in the construction of their theoretical frameworks.

PART I

DEFINING DARK PATTERNS: A SYSTEMATIC LITERATURE REVIEW

1. Introduction

We conducted a systematic literature review (SLR) to map the literature around three topics: definitions of ‘dark pattern’; examples of dark pattern; qualification of dark patterns under EU law.

SLR represents a relatively new methodology in legal research. Traditionally, legal scholarship has relied primarily on narrative-doctrinal reviews, which employ a qualitative approach by analyzing specific influential articles to explore theoretical and contextual aspects of a topic¹. While these reviews are valuable for developing knowledge and providing readers with up-to-date insights on specific topics or issues, they typically do not specify the types of databases and methodological approaches used in conducting the review, nor do they outline the criteria for including articles retrieved during database searches².

For instance, a legal scholar might propose a trend in recent federal court decisions based on a select few cases, or a judge might cite a widely referenced opinion without substantiating evidence. This lack of transparency not only complicates the assessment of the claim's validity but also risks hindering future legal analyses by potentially introducing systematic errors and biases into legal interpretations.

¹ W. Baude, A. S. Chilton & A. Malani, 'Making Doctrinal Work More Rigorous: Lessons from Systematic Reviews' (2017) 84, *University of Chicago Law Review*, 37.

² E. T. Rother, 'Systematic literature review X narrative review' (2007) 20, *Acta paulista de enfermagem*, v-vi.

In contrast to the traditional narrative-doctrinal approach, systematic reviews prioritize objectivity and rigor through a well-defined framework³. This framework includes rigorous criteria for selecting relevant studies and conducting comprehensive searches across diverse databases. The transparency of the methodology, with its focus on minimizing bias and individual interpretations, fosters the generation of highly reliable findings. Additionally, the documented and replicable nature of the process allows other researchers to verify and build upon the findings, further strengthening the overall body of knowledge⁴.

While traditionally employed in (strictly speaking) scientific disciplines (e.g., healthcare, engineering, economics)⁵, SLRs hold value for legal research on interdisciplinary topics like dark patterns. Dark patterns, by their very nature, draw on insights from psychology, human-computer interaction, consumer behavior and other disciplines, making a comprehensive understanding crucial.

The granularity of SRs ensures the identification of nuances and variables associated with dark patterns, aspects that might be overlooked within a more traditional doctrinal review. In other words, this methodology is useful for studying the ‘anatomy’ of the subject from all possible angles.

2. Methodology

This systematic literature review was conducted according to the ‘Preferred Reporting Items for Systematic Reviews and Meta-Analyses Statement’ (PRISMA)⁶, a widely recognized standard that ensures transparency and rigor throughout the review process⁷. PRISMA protocol includes a rigorous 27-items checklist specifically designed for reporting systematic reviews with meta-analyses⁸.

Below is an outline of the PRISMA checklist⁹:

- Items 1-4: cover the title (1), abstract (2), and introduction (including rationale (3) and objectives (4) of the review (Section 1)
- Items 5-15: focus on the methods used in the review (Section 2.1 -2.5).
- Items 16-22: address the results of the review (Section 3)
- Items 22-23: discussion (Section 4).
- Items 24-27: cover additional information such as registration and protocol (24), support (25), competing interests (26), and availability of data, code, and other materials (27) - not included in this review

2.1. Scope of the review (items 3-4)

Our overarching aim was to establish, ‘What does the literature tell us about the anatomy of dark patterns?’ To explore this, we broke down our investigation into three research questions. The

³ J. P. T. Higgins, D. G. Altman & J. A. C. Sterne, *Cochrane Handbook for Systematic Reviews of Interventions*, Wiley 2019.

⁴ T. J. Lasserson, J. Thomas & J. P. T. Higgins, 'Chapter 1: Starting a review', in J. P. T. Higgins, J. Thomas, J. Chandler, M. Cumpston, T. Li, M. J. Page & V. A. Welch (eds), *Cochrane Handbook for Systematic Reviews of Interventions*, Wiley 2019, pp. 3-12..

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⁶ Matthew J Page and others, ‘The PRISMA 2020 Statement: An Updated Guideline for Reporting Systematic Reviews’ (2021) *BMJ* n71.

⁷ A. Liberati, D. G. Altman, J. Tetzlaff et al., 'The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate healthcare interventions: explanation and elaboration', *BMJ (Clinical research ed)* (2009) 339.

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⁹ The official checklist is available at <https://www.prisma-statement.org/prisma-2020-checklist>

first and second questions explore definitional aspects (Gutpa et al. 2023). The third focuses on the legal analysis of dark patterns and, in particular, their qualification under existing EU law.

RQ 1: ‘How does the literature *extensively* define a dark pattern?’. Answering this question allows us to understand the broad conceptualizations of dark patterns as outlined by various scholars. Extensive definitions focus on the general characteristics and traits that are commonly associated with dark patterns, providing a foundational framework for understanding what constitutes a dark pattern.

RQ 2: ‘How does the literature *ostensively* define a dark pattern?’. Ostensive definitions are those that define a concept by providing concrete examples or instances that illustrate its meaning. In the context of dark patterns, ostensive definitions are significant because they provide a more practical, example-based understanding of how dark patterns manifest in real-world digital environments. This approach is essential for recognizing specific tactics used by designers and for distinguishing between what constitutes a dark pattern and what does not.

RQ 3: ‘How are dark patterns qualified under EU law?’. The EU legislator has introduced a variety of special provisions about dark patterns. Yet, from a systematic point of view, it is significant to provide a qualification of dark patterns to safely connect them to the body of legal materials developed for the analogical world.

2.2. Eligibility criteria (item 5)

Complete *inclusion criteria* for the review were:

1. Written in English language
2. Focused on dark patterns related to practices the digital environment
3. Included a discussion of the topic
4. Peer-reviewed publications, book chapters, reviews, notes, and editorials that included ‘dark pattern*’ in the title, abstract, and/or keywords

Exclusion criteria:

5. Not written in English language
6. Non-peer-reviewed publications, book chapters, reviews, notes, and editorials (e.g., theses, conference/review proceedings).
7. Peer-reviewed publications, book chapters, reviews, notes, and editorials that:
 - a) Mention ‘dark pattern*’ only in the title, abstract, and/or keywords without in-depth exploration of the topic.
 - b) explore dark patterns but they are not directly related to practices in the digital environment (e.g., focus on dark patterns in clinical settings).

2.3. Information Source and Search Strategy (items 6-7)

For the literature search we selected Scopus-Elsevier database, a comprehensive database known for its high-quality peer-reviewed publications. We specifically targeted titles, abstracts, and keywords using the keyword “dark patterns*”.

The search was performed on April 23, 2024, without time restrictions. 440 papers were identified.

The results were further refined by limiting the search to specific fields relevant to the review, including ‘computer science’, ‘engineering’, ‘neuroscience’, ‘business’, ‘management’ and ‘accounting’, ‘psychology’, ‘multidisciplinary’, ‘economics’, ‘econometrics and finance’, ‘decision sciences’, and ‘social sciences’.

The final string included

TITLE-ABS-KEY ("dark pattern") AND (LIMIT-TO (SUBJAREA, "COMP") OR LIMIT-TO (SUBJAREA, "SOCI") OR LIMIT-TO (SUBJAREA, "ENGI") OR LIMIT-TO (SUBJAREA, "BUSI") OR LIMIT-TO (SUBJAREA, "NEUR") OR LIMIT-TO (SUBJAREA, "DECI") OR LIMIT-TO (SUBJAREA, "PSYC") OR LIMIT-TO (SUBJAREA, "ECON") OR LIMIT-TO (SUBJAREA, "MULT"))).*

Duplicated papers were excluded. 309 papers remained for the selection process.

2.4. Selection process (item 8)

The selection process is illustrated in **Fig. 1 (omissis)**

In the first stage of the selection process, papers were selected based on their title or abstract according to the 1-4 inclusion criteria and 5-6 exclusion criteria. A total of 80 papers were excluded based on titles, and an additional 5 papers were excluded based on their abstracts. Ultimately, 224 papers remained eligible for further evaluation, and full-text files were obtained for these papers.

In the second stage, papers were rejected based on the 5-6 exclusion criteria or if they could not be accessed (e.g., not open access). 72 papers remained for the data collection process.

2.5. Data collection process (items 9-10)

Data extracted from eligible papers were tabulated and used in the quantitative and qualitative synthesis. The following information was recorded (1) Authors; (2) Title; (3) Investigated topic; (4) Background of the author; (5) Definition (6) list of dark patterns.

As the review progressed, additional elements were identified as useful and merited further analysis to better address the research questions: (7) Impact on user/consumer; (8) Intentionality; and (9) reference to manipulation.

3. Results (items 16-17)

The final data set is illustrated in **Fig. 2 (omissis)**

Before presenting the results of the review, it is important to highlight crucial elements that emerged in our analysis. The preliminary findings indicated that the literature on dark patterns typically approaches the topic from various perspectives, which is influenced in part (and often reflects) the authors' diverse academic backgrounds.

We identified six distinct clusters:

- **Classification of dark patterns:** papers in this cluster focus on classifying dark patterns, identifying recurrent characteristics, and developing taxonomies.
- **Impact on users:** These papers analyze the effects of dark patterns on user behavior, examining how dark patterns influence decision-making, user awareness, and the leveraging of cognitive biases and fallacies.
- **Quantitative survey of dark pattern prevalence:** Papers that conduct quantitative surveys to measure the prevalence of dark patterns in digital environments, also providing statistical insights into how widespread these practices are.
- **Legal implications:** Papers exploring the legal ramifications of dark patterns, including potential violations of data protection laws, consumer protection regulations, and unfair contract terms.
- **Design ethics:** Papers discussing ethical concerns in the user interface design process, also proposing strategies and guidelines for ethical user interface design to prevent the use of dark patterns and promote responsible design practices.

- **Other conceptual studies:** papers that can be categorized into other clusters, providing a descriptive study of the topic

Table 1 illustrates the distribution of these topics among the literature. The boundaries between are flexible, as many articles analyse more than one topic. For instance, a paper that focuses on the prevalence of dark patterns might also discuss their impact on user decision-making. In such cases, the paper is categorized under multiple topics.

Table 1 Most investigated topics (omissis)

Our analysis revealed that the research on dark patterns has been primarily driven by researchers from two main disciplines: computer science (including human-computer interaction and information technology) and legal studies. Sociology, marketing research, and consumer psychology have also contributed valuable insights. Table __ provides an overview of the distribution of case studies across these disciplines.

Table 2 Distribution of articles by field (omissis)

Fig. 3 Distribution of articles by field percentages

4. Discussion (item 23)

4.1. RQ 1 - Extensive definitions of dark patterns

To address RQ 1 - ‘How does the literature *extensively* define a dark pattern?’ - we began by examining the definitions provided in each of the 72 papers included in our dataset.

The review revealed that there is no single, universally accepted definition of dark patterns. On the contrary, the literature approaches dark patterns from different perspectives, resulting in different conceptualizations of the term. Table 3 illustrates the three primary conceptualizations of dark patterns that emerged from our review:

- i) dark patterns as graphic elements; ii) dark patterns as psychological-based elements in user interfaces iii) dark patterns as commercial practices.

It is important to note that these frameworks are not mutually exclusive; rather, our analysis found that several papers draw on multiple perspectives to provide a more comprehensive definition of dark patterns. For instance, a study might define a dark pattern primarily from a technical standpoint, emphasizing specific elements of user interface design, while simultaneously considering the legal ramifications of such design practices or exploring the psychological mechanisms by which these designs influence user behaviour.

By integrating these diverse perspectives, the literature offers a more nuanced understanding of dark patterns and their multifaceted impact on digital environments.

Table 3 dark patterns frameworks in definition

Conceptualisation	References
Dark patterns as graphic elements	2,3,4,5,6,9,10,11,12,13,14,15,16,18,19,20,21,22, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 36, 37, 38, 39, 40, 41, 43, 45, 46, 48, 49, 50, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73

Dark patterns as psychological-based elements in user interfaces	7, 21, 28, 42, 47, 51
Dark patterns as commercial practices	2, 7, 8, 31, 35, 39, 42, 44, 49, 54, 57, 58, 62, 63, 66, 68, 73

A total of 62 papers addresses dark patterns by focusing on their technical characteristics within the context of the user interface design process (technical conceptualization). 6 papers conceptualise dark patterns as behavioural elements embedded in online choice architecture designed to influence users' decisions (behavioural conceptualization). Finally, 17 papers conceptualise dark patterns as practices occurring within a business-to-consumer relationship, where the trader aims to achieve economic profit (legal conceptualization).

4.1.1. Dark patterns as graphic elements

62 papers conceptualise dark patterns by adopting a technical approach, which focuses on the technical aspects of user interface design and implementation. The review found that this approach can be further divided into three categories: i) dark patterns as user interfaces/user experiences, ii) dark patterns as user interface's elements and iii) dark patterns as techniques/design choices (Tab. 4).

Table 4 Technical conceptualizations of dark patterns

Conceptualization	References
UI/UX	11, 20, 24, 27, 30, 37, 38, 39, 40, 41, 43, 48, 55, 56, 57, 59, 67
UI elements	6,16, 25, 58, 69
UI design choices	2,3,4,5,9, 10,12, 13, 14, 15,18, 19, 21, 22, 26, 28, 29, 31, 32, 34, 36, 45, 46, 49, 50, 52, 53, 54, 60, 61, 62, 63, 64, 65, 66, 68, 70, 71, 72, 73

4.1.1.1. Dark patterns as user interfaces (UI) or user experiences (UX)

18 papers conceptualise dark patterns as 'user interfaces' (UI) or 'user experiences' (UX) (11, 20, 24, 27, 30, 37, 38, 39, 40, 41, 43, 48, 55, 56, 57, 59, 67). Notably, 4 of the 18 papers treat UI and UX as synonymous (24, 30, 38, 53).

In computer science, a 'user interface' refers to the space where interactions between humans and machines occur. It includes all visual elements, such as buttons, icons, menus, and other graphical components that allow users to interact with digital systems through visual representations^[5]. The concept of a 'user interface' differs from 'user experience', which refers to the overall relationship between an individual and a product, service, or system. UX encompasses all aspects of the end-user's interaction, including beliefs, preferences, physical and psychological responses, behaviours, and outcomes resulting from the use of the product or service^[6].

Defining dark patterns as UIs or UXs implies adopting a very broad perspective of such concept. It implies that dark patterns are not merely isolated elements but are integrated into the overall design, affecting the user holistically rather than targeting specific actions or decisions.

4.1.1.2. Dark patterns as UI elements

5 papers conceptualize dark patterns not as encompassing the entire user interface, but rather as specific 'elements' or 'features' within user interfaces (6,16, 25, 58, 69). These studies identify dark patterns as particular components of the interface that users directly interact with, such as buttons, checkboxes, text fields, dropdown menus, sliders, and pop-up notifications. In the context

of dark patterns, these elements are intentionally designed to manipulate users into making decisions that favor the designer or their principals.

4.1.1.3. Dark patterns as techniques or UI design choices

39 papers conceptualise dark patterns as 'techniques,' 'tactics,' or 'design choices' occurring within the user interface design process (2,3,4,5,9, 10,12, 13, 14, 15,18, 19, 21, 22, 26, 28, 29, 31, 32, 34, 36, 45, 46, 49, 50, 52, 53, 54, 60, 61, 62, 63, 64, 65, 66, 68, 70, 71, 72, 73).

This approach is particularly noteworthy as it highlights the psychological dimension inherent in the design process. By conceptualizing dark patterns as 'techniques' or 'design choices,' this approach emphasizes that they result from deliberate and strategic decisions made by designers to influence user behaviour. This aspect is often overlooked in previous conceptualizations, which tend to describe dark patterns merely as isolated features or elements within the user interface. Instead, this perspective reveals that dark patterns are not incidental but are intentionally crafted outcomes of a deliberate design strategy.

4.1.2. Dark patterns as psychological-based elements in user interfaces

6 papers conceptualise dark patterns as psychological and behavioural elements embedded within user interfaces to influence user behaviour in specific ways (7, 21, 28, 42, 47, 51). These papers define dark patterns as 'digital choice architectures' designed to exploit cognitive biases and limit users' ability to make well-considered decisions^[7].

This conceptualization is grounded in behavioural economics, particularly the notion of 'choice architecture' introduced by Richard Thaler and Cass Sunstein in their 2008 book *Nudge: Improving Decisions About Health, Wealth, and Happiness*.^[8] The authors demonstrate how the presentation and structuring of choices can significantly influence decision-making. They define a 'nudge' as 'any aspect of choice architecture that alters people's behaviour in predictable ways without restricting options or significantly changing their economic incentives'^[9].

Nudges are particularly effective because they leverage predictable patterns in human decision-making, based on cognitive psychology research that highlights how people often rely on mental shortcuts and are prone to judgment errors, known as cognitive biases and heuristics.

The literature relates dark patterns to nudges, pointing out that they fundamentally share the same theoretical framework but differ significantly in their impact. Indeed, nudge theory leverages human cognitive fallacies to guide behaviour in ways that enhance and benefit the recipient. In contrast, dark patterns leverage such principles to guide recipients' behaviour in ways that primarily benefit the designers or their principals. (Omissis - to be done)

4.2. RQ 2 - Dark patterns as commercial practices

17 papers conceptualise dark patterns as commercial practices that occur between traders and consumers (2, 7, 8, 31, 35, 39, 42, 44, 49, 54, 57, 58, 62, 63, 66, 68, 73).

Commercial practices encompass any action, omission, conduct, statement, or commercial communication, including advertising through various media and product marketing, undertaken by a professional in relation to the promotion, sale, or provision of goods or services to consumers

This approach is particularly supported by scholars from legal disciplines, who classify dark patterns as 'unfair'. To understand this classification, it is important to note that regulations have been established to protect consumers' commercial decisions and economic interests by expressly prohibiting unfair commercial practices.

The relevant provisions against unfair commercial practices are outlined in EC Directive 2005/29, also known as the 'Unfair Commercial Practices Directive' (UCPD). The main purpose of the

UCPD is to safeguard the consumer's freedom of choice, ensuring that consumers can assess the essential elements of an economic offer clearly from the initial point of contact, thus enabling them to make informed and deliberate decisions in the market.

According to the UCPD, a commercial practice is deemed unfair (and thus prohibited) if it violates the principle of professional diligence and distorts or is likely to distort the average consumer's behaviour. Such distortion must influence the consumer to make decisions they would not have made otherwise.

3.2. RQ 2 - Ostensive definitions of dark patterns

To address RQ 2, 'How does the literature *ostensively* define a dark pattern?', we analysed concrete examples of dark patterns discussed across the articles. This approach enabled us to understand how dark patterns are illustrated and operationalized in real-world contexts, thereby providing a clearer understanding of their defining characteristics and manifestations.

Two main challenges emerged during this phase of our analysis. First, not all papers were focused on classifying dark patterns or developing new taxonomies. Many studies were more concerned with concept-based analyses or exploring the effects of dark patterns on user behavior rather than categorizations. These papers often relied on pre-existing taxonomies, reproducing tables, or referencing commonly recognized examples of dark patterns without introducing new classifications.

Second, our review identified inconsistencies in terminology across both taxonomy-focused and non-taxonomy-focused papers. For example, similar patterns were labeled differently (e.g., "difficult cancellation" versus "hard to cancel," or "preselection" versus "bad defaults"). Furthermore, some papers grouped dark patterns with similar characteristics into broad categories such as "social proof," "sneaking," or "urgency," but the interpretation of these categories varied significantly, leading to inconsistencies in classification. For instance, while most papers identified "nagging" as a distinct pattern, some included it under the broader category of "interruption." Second, our review identified inconsistencies in terminology across both taxonomy-focused and non-taxonomy-focused papers. For example, similar patterns were labeled differently (e.g., "difficult cancellation" versus "hard to cancel," or "preselection" versus "bad defaults" - e.g., XXX). Furthermore, some papers grouped dark patterns with similar characteristics into broad categories such as "social proof," "sneaking," or "urgency," but the interpretation of these categories varied significantly, leading to inconsistencies in classification. For instance, while most papers identified "nagging" as a distinct pattern, some included it under the broader category of "interruption. (e.g., 15).

Second, the review uncovered inconsistencies in terminology across both taxonomy-focused and non-taxonomy-focused papers. For instance, similar patterns were labelled differently (e.g., 'difficult cancellation' vs. 'hard to cancel' or 'preselection' vs. 'bad defaults'). Additionally, several papers grouped dark patterns with similar characteristics into broad categories such as 'social proof', 'sneaking', or 'urgency'. However, the interpretation of these categories varied, leading to inconsistencies in classification. For example, while most papers categorized 'nagging' as a distinct pattern, others included it under 'interruption' To address these challenges, we adopted the ostensive definitions of dark patterns provided by the European Commission (EC) in its 2022 Behavioural Study as our benchmark. A few clarifications are necessary in this regard.

The EC study developed its taxonomy by building upon two previous frameworks: the one established by Luguri and Strahilevitz in their 2019 paper "Shining a Light on Dark Patterns" and

another framework, based on the structure of the Unfair Commercial Practices Directive (UCPD), developed by Leiser and Yang in 2022.

In cases of overlap between these taxonomies, we prioritized Leiser and Yang's framework over Luguri and Strahilevitz's for several reasons: (1) Leiser and Yang's taxonomy is more recent and considers dark patterns not addressed by Luguri and Strahilevitz; (2) it is grounded in the UCPD, which aligns more closely with the regulatory focus of the EC study; and (3) the EC's 2022 Behavioural Study also incorporates the dark patterns identified in Leiser and Yang's taxonomy. Finally, we categorized dark patterns according to their alignment with the descriptions provided in the EC study, grouping them based on their similarities. For those dark patterns not covered by the EC taxonomy, we relied on definitions from others to mitigate potential biases from both the authors of the SLR and the studies themselves.

Table 5 Ostensive definitions of Dark patterns

Dark pattern	Description	Frequency
Activity messages	Misleading notice about other consumers' actions	6 (12, 22, 24, 50, 57, 70)
Ad drop down delay	using a delay in dismissing or closing intrusive advertisements or pop-ups, which forces users to interact with the ad before they can continue using the site or app. This tactic is designed to maximize ad visibility and user interaction, often at the expense of a smooth user experience.	12 (1)
Aesthetic manipulation	design elements are used to mislead or deceive users by manipulating visual or interactive aspects of a website or app. This can involve using confusing layouts, deceptive imagery, or misleading labels to subtly influence users' decisions or actions.	6, 9, 12, 30, 40, 50, 53, 57 (8)
Autoplay	design strategy where media content, such as videos or audio, starts playing automatically without the user's explicit consent or intention. This often happens on websites or apps when a video begins playing as soon as a page loads or an ad starts without a clear prompt from the user.	12 (1)
Bait and Switch	Compelling users to accept a particular arrangement by manipulatively navigating them away from their original objective regardless of their willingness	6, 11, 12, 30, 33, 35, 40, 58, 63, 69 (10)

Confirmshaming	Choice framed in a way that seems dishonest / stupid for consumer	6, 11, 12, 22, 29, 50, 57, 58, 64, 69, 71 (11)
consent walls	<p>users are forced to agree to certain terms or conditions, usually related to data collection or privacy policies, in order to access content or use a service. Essentially, it's a barrier that requires users to give consent before they can proceed, often without providing a straightforward option to refuse or opt out.</p> <p>This design tactic can manipulate users into consenting to terms they might not fully understand or agree with, as it places their access to desired content behind a barrier that demands consent. It often takes advantage of the user's desire to quickly access information or services, pushing them into accepting conditions they might otherwise decline if given a clearer choice</p>	9 (1)
Cuteness	using adorable or charming design elements to influence user behavior or decisions. This tactic relies on the appeal of cute visuals, such as friendly characters, playful animations, or appealing color schemes, to make users more likely to engage with or take desired actions on a website or app.	50, 57, 73 (3)
Difficult cancellation	design tactic where canceling a subscription or service is intentionally made challenging for users. This can involve creating barriers or hurdles that make it hard for users to find or complete the cancellation process.	4, 5, 22, 36, 50, 63 (6)
Disguised advertisement	Compelling users to view an advertisement by manipulatively navigating them away to a location that they did not expect to reach, regardless of their willingness	6, 11, 12, 30, 33, 35, 40, 50, 57, 58, 62, 63 (12)
Distraction	Using design elements to divert users' attention away from important information or actions, often to manipulate their behavior in favor of the provider's goals. This tactic is	12 (1)

	used to ensure users overlook key details or options that might lead them to make a different choice.	
Fake countdown timers	Misleading users by providing them fraudulent information	12, 22, 23, 26, 35, 50, 55, 57, 70 (12)
Fake discounts	misleading users with artificially inflated original prices to make a discount appear more significant than it actually is. This tactic is designed to create a perception of greater savings and urgency, encouraging users to make purchases they might not otherwise consider.	24 (1)
Forced action (Enrol to Access, Pay to Skip, and Accept to Access)	Restricting unpaid or unsubscribed users from options such as content access or skipping of advertisements	3, 6, 19, 23, 35, 40, 41, 50, 53, 60, 69, 71 (13)
Forced continuity	<p>a user is encouraged to sign up for a free trial or subscription with the intention of automatically transitioning to a paid plan after the trial period ends, without clear and explicit consent or adequate reminders.</p> <p>In this setup, users might not be fully aware of the billing details or the process to cancel before the trial period ends. As a result, they are often billed for a service or product they did not intend to purchase or continue using. This tactic relies on users forgetting to cancel or not noticing the billing terms until after charges are made.</p>	6, 11, 12, 33, 58 (5)
Forced registration	Consumer tricked into thinking registration is necessary	6, 12, 41, 50, 57, 63, 69 (7)

Friend spam	Misleading users by providing deceiving information	5 (6, 11, 30, 50, 57)
Gamification	incorporating game-like elements into a website or app to manipulate user behavior, often to achieve the provider's goals rather than the user's. This can include elements like points, badges, leaderboards, or progress bars that are designed to encourage users to engage more frequently or to spend more time on the platform.	6, 12, 50, 57 (4)
Hidden costs	Delaying price information provisions	6, 11, 12, 22, 24, 30, 39, 41, 50, 57, 58, 63, 64, 67 (14)
Hidden information/ False hierarchy	Important information visually obscured or ordered in a way to promote a specific option	6, 12, 25, 50, 53, 57, 58, 63 (8)
Hidden legalese	concealing or obscuring complex legal language, terms, and conditions in a way that makes it difficult for users to fully understand what they are agreeing to. This tactic often uses legal jargon or dense text that is placed in less visible or less accessible parts of a website or app, such as long-winded privacy policies or terms of service.	6, 50 (2)
Hidden subscription/forced continuity	Compelling consumers to continue the subscription by renewing their membership subtly	6, 5, 22, 39, 50, 57, 58 (7)
Immortal accounts	design tactic where a service or website makes it difficult for users to completely delete or deactivate their accounts. Instead of providing a straightforward and accessible way to close an account, the process is intentionally complicated or obstructive, often resulting in the account remaining active indefinitely.	6, 50, 69 (3)
interface interference	dark pattern that involves manipulating the user interface (UI) to disrupt or steer user actions and decisions in a way that benefits the service provider, often at the expense of the user's interests. This dark pattern employs various deceptive design techniques to make	22, 26, 29, 41, 50, 58 (6)

	certain actions or choices more difficult, confusing, or less visible, while promoting the actions that benefit the service provider.	
Intermediate currency	Purchases in virtual currency to obscure costs	6, 12, 50, 57 (4)
Limited-time messages	Misleading users by providing them deceiving or exaggerated information	22, 26, 50, 57, 70 (5)
low stock/high demand messages	Consumers falsely informed of limited quantities	12, 22, 24, 26, 50, 55, 57, 70 (8)
Misdirection (visual interference)	Misleading users by using visual interference	11, 12, 22, 30, 31, 33, 62 (7)
Nagging	Repeated requests to do something that the online company prefers	3, 5, 6, 12, 19, 22, 35, 40, 41, 42, 50, 53, 57, 58, 62, 63, 71 (17)
Obstruction	also known as " roach motel " or " friction ", is a deceptive design strategy used in digital interfaces to intentionally make certain actions more difficult, frustrating, or time-consuming for users. The purpose of this dark pattern is to discourage users from taking actions that are not in the best interest of the service provider, such as canceling a subscription, deleting an account, or opting out of a service. Conversely, the interface design makes actions that benefit the provider—such as subscribing, signing up, or agreeing to terms—much easier and more straightforward.	3, 19, 22, 30, 35, 40, 42, 53, 58, 60 (10)
pause (no permanent stop) notification	presenting users with an option to pause or temporarily stop a service, subscription, or feature, while making it difficult to permanently cancel or stop it. This tactic is designed to give users the illusion of having control over their subscription or service, while actually ensuring that they remain engaged or continue paying	12 (1)
Pay to skip	tactic used in digital environments where users are required to make a payment to bypass certain obstacles, delays, or	15, 50 (2)

	<p>annoyances intentionally designed into the user experience. This pattern exploits users' desire to avoid inconvenience, often creating friction by limiting access or slowing down progress unless the user pays a fee. For example, in a mobile game, a player might encounter a lengthy waiting period before they can continue playing, but they are given the option to pay to skip the wait and proceed immediately. This dark pattern leverages psychological pressure, manipulating users' impatience or frustration to encourage monetary transactions, often without providing clear, upfront information about the true costs or benefits.</p>	
playing by appointment	<p>design strategy where users are required to schedule a specific time or appointment to access a service or use an app, rather than providing immediate access. This tactic is often used to create a sense of exclusivity or control, and can lead to user frustration or manipulation.</p>	18 (1)
Preselection (default	<p>Preselected default option that is in the company's interest</p>	9+2 Bad defaults 2 (6, 58):
Pressured selling (Repeated Dialogs or Shaming) Pop up Confirm	<p>Imposing pressure on users through repeated inquiries or wordings that make users experience guilt or shame</p>	22, 41, 50, 57 (4)
Price comparison prevention	<p>Misleading users by withholding clear and comprehensible price information</p>	11, 30, 50, 57, 58, 62 (6)
Privacy Zuckering	<p>Compelling consumers to accept the undesirable subscription by using tricks that thrust them towards subscriptions</p>	6, 10, 11, 12, 16, 17, 26, 29, 30, 34, 38, 50, 53, 56, 57, 58, 62 (17)
Roach motel/difficult cancellation	<p>Making specific actions such as unsubscribing more complicated than needs to be</p>	4, 5, 6, 11, 12, 22, 29, 30, 33, 35, 36, 50, 57,

		58, 62, 63 (16)
Scarcity	Misleading users by providing them false, confounding, deceiving, or exaggerated information	12, 22, 23, 40, 41, 42, 58, 67 (8)
Sneak into basket	Compelling consumers to accept the uninvited products by directly placing the products in their shopping carts	6,11, 12, 22, 39, 57, 58 (7)
Social proof	influence user behavior by suggesting that others are engaging in a particular action, thereby encouraging users to do the same. This dark pattern exploits the psychological principle of social proof, which holds that people tend to look to others' behavior as a guide for their own actions, especially in situations of uncertainty. s.	6 (67, 58, 42, 41, 40, 22)
Social pyramid	<p>deceptive design tactic that leverages social influence to coerce or manipulate users into taking specific actions, often to benefit the platform or increase its user base. In a social pyramid scheme, users are encouraged or incentivized to recruit others to join a service or participate in an activity, often with the promise of gaining some reward or status enhancement. The pattern operates similarly to a traditional pyramid scheme, where initial users must bring in new members, and those new members are then tasked with recruiting even more users.</p> <p>This dark pattern exploits social dynamics and peer pressure, making users feel obliged to involve their friends or family, sometimes under the guise of helping them benefit from a service. The underlying intention is to create a self-perpetuating cycle of user growth and engagement without transparently disclosing the true nature of the incentives or the diminishing returns for new recruits. The "social pyramid" pattern is often used in digital marketing strategies, particularly in social media or referral-based applications, where viral growth is highly valued.</p>	4 (6, 12, 50, 57)

Testimonials of uncertain origin	Misleading users by providing them false, confounding, deceiving, or exaggerated information	3 (22, 25, 50)
Toying with emotions	Emotionally manipulative framing of the design	6, 12, 50, 53, 57 (5)
Trick questions	Misleading users through wording	6, 11, 12, 22, 26, 30, 31, 35, 40, 50, 57, 58 (12)
Upsell to premium	promoting a more expensive or premium version of a product or service in a way that pressures or manipulates users into upgrading from a basic or free option. This tactic is designed to highlight the perceived benefits of the premium option, often by downplaying or making the basic option seem inadequate. Common strategies for upselling to premium include: Highlighting Limited Features, Highlighting Limited Features, Limited Time Offers, Obscuring Basic Features	12 (1)
Urgency	creating a false sense of urgency to pressure users into making quick decisions or completing actions they might not otherwise take. This tactic exploits the psychological tendency to act quickly in response to time-limited offers or limited availability. Common methods used in urgency dark patterns include Countdown Timers, Limited Stock Alerts, Pop-ups or Notifications	22, 40, 41, 58, 63 (5)
Visual interference	"Visual interference" is a dark pattern that involves manipulating the visual presentation of a digital interface to influence user behavior in a way that benefits the service provider, often at the user's expense. This type of dark pattern leverages design techniques that confuse, mislead, or distract users from making clear, informed choices. The aim is to subtly guide users towards actions that are more advantageous to the provider, such as making a purchase, sharing data, or signing up for a service.	3, 6, 19, 35, 42, 53, 60 (7)

4.3. RQ 3 – Dark patterns qualification under EU law

As discussed in RQ 1 (Section 3.1.1.3), a segment of the literature conceptualizes dark patterns as commercial practices between traders and consumers in digital environments. This conceptualization is notably supported by legal scholars, who identify dark patterns as problematic commercial practices because they often lead consumers to make choices contrary to their interests; in this regard, it should be stressed that measures and regulations have been established to protect consumers' commercial decisions and economic interests.

Under EU law, these types of practices are qualified as 'unfair'. The primary provisions addressing unfair commercial practices in the EU are outlined in EC Directive 2005/29, commonly referred to as the 'Unfair Commercial Practices Directive' (UCPD). The UCPD explicitly prohibits unfair commercial practices against consumers. Its primary objective is to safeguard consumers' autonomy and freedom of choice, ensuring that they can make informed and deliberate decisions in the marketplace.

According to the UCPD, a commercial practice is considered unfair (and thus prohibited) if it infringes upon the principle of professional diligence and either distorts or is likely to distort the behavior of the average consumer. Such distortion must be significant enough to influence the consumer into making decisions they would not have made under ordinary circumstances.

PART II THE DARK PATTERNS UCPD CLASSIFICATION (UCPC)

1. The structure of the UCPD: Overview

The UCPD introduces a general prohibition for any commercial practice that is contrary to professional diligence and “it materially distorts or is likely to materially distort the economic behaviour with regard to the product of the average consumer whom it reaches or to whom it is addressed, or of the average member of the group when a commercial practice is directed to a particular group of consumers” (Article 5(2) lett. b).

As scholars have long noted, this is a complex text to apply in practice (eg, Dundevorte 2009). It is thus important that this general prohibition enjoys three levels of specification. First, the directive introduces the categories of misleading and aggressive practices. Misleading practices focus on the information provided, whereas aggressive practices are unfair, independently of the correctness and comprehensiveness of the provided information.

Second, misleading practices can be either actions or omissions. Aggressive practices can exercise undue influence, harass consumers or coerce them. Third, the directive introduces a blacklist of practices that are always prohibited without the need to perform any transactional decision test. The directive currently includes thirty-four items; twenty-six are considered misleading; only eight are aggressive.

A misleading action contains false information or is likely to deceive the average consumer, even if the information is factually correct. The scope of the prohibition is narrowed by a materiality requirement. The practice must relate to material information, such as the main characteristics of the product (including its composition) or the price. For example, the blacklist includes “Making a materially inaccurate claim concerning the nature and extent of the risk to the personal security of the consumer or his family if the consumer does not purchase the product” (item 12).

A misleading omission omits material information that the average consumer needs to make an informed transactional decision, or hides or provides such information in an unclear,

unintelligible, ambiguous, or untimely manner. Failing to provide material information violates this prohibition, thereby complementing the prohibition of misleading actions. In practice, this provision is importantly connected with mandatory disclosures since failing to disclose mandated information is a misleading omission pursuant to Article 7(5). The blacklist does not include any apparent example of misleading omission.

Coercion is the most evident form of aggression. It consists in the use of physical force, threats, or intimidation so that the consumer makes a transactional decision. The blacklist includes “Creating the impression that the consumer cannot leave the premises until a contract is formed” (item 24). ‘Harassment’ refers to repetitive communication to pressure the consumer to enter the transaction. The blacklist includes “Making persistent and unwanted solicitations by telephone, fax, e-mail or other remote media” without a contractual justification to do so (item 26). Finally, undue influence is a more elusive and residual category. It includes subtle forms of pressure such as “Explicitly informing a consumer that if he does not buy the product or service, the trader’s job or livelihood will be in jeopardy” (item 30).

2. The UCPC

Having introduced the categories used by the UCPD to classify unfair commercial practices, it is possible to present a classification of dark patterns based on said categories, namely: Misleading Omission; Misleading Action; Undue Influence; Harassment; Coercion. To this end, several dark patterns that were found in the literature have been grouped in a sub-category. For example, the dark pattern ‘hidden information’ includes pieces of information noted by the literature (cost, subscription) and a peculiar modality (hidden legalese). In some occasions, the classification is uncertain. For example, confirm shaming is presented here as undue influence, but depending on the frequency, it could be harassing.

Moreover, the legal significance of these dark patterns is not homogeneous. On one extreme, ‘cuteness’ seems hardly a violation of the good faith and fair dealing requirement. On the opposite, a social pyramid might violate the UCPD, but potentially also criminal law (as a form of criminal fraud). However, these ‘intensity’ issues can hardly be evaluated in the abstract and, therefore, can remain on the background of this classificatory exercise.

Category	Pertinent dark patterns
Misleading Omission	Disguised ads; Hidden information (including costs, legalese, subscription) Hidden
Misleading Action	Activity messages; Aesthetic manipulation; Fake information (discounts, high-demand messages, social proof, testimonials, urgency, scarcity); False hierarchy; ‘Forced’ action (including continuity, enrollment, registration, subscription); Intermediate currency; Misdirection; Preselection (including bad defaults); Sneaking (into basket or elsewhere); Social pyramid; Trick questions
Undue Influence	Autoplay; Confirm shaming; Cuteness; Distraction; Infinite scrolling; Playing by appointment; Privacy suckering; Toying with emotions; Upsell to premium
Harassment	Friend spam; Nagging; Obstruction (including roach motel)
Coercion	Ad drop down; Bait and switch; Consent walls (including pay to skip); Delay/pause (no permanent stop) notification; Difficult cancellation;

	Gamification; Immortal accounts; Price comparison prevention; Pressured selling (including scarcity and urgency, such as: countdown timer/limited time messages/'low stock' notification)
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The only items that remain excluded from this list related are visual and interface interference. The reason is that these dark patterns are too generic and too close to the general ostensive definition of dark pattern that emerged from the SLR.

This observation allows us to transition to the next step of this analysis of the SLR results, namely the comparison between this classification and the one by the Behavioural Study.

3. The UCPC as opposed to the classifications by the Behavioural Study: Conceptual and practical superiority

The Behavioural Study is an impressive exercise in evidence-based policymaking. It is rare to consult a study with this level of engagement with the literature and *ad hoc* evidence collection. The Behavioural Study is thus a best practice from many points of view. Importantly, and contrary to a widely held position in the literature (see Part I.2), the Behavioural Study makes it clear in multiple occasions that a dark pattern does not need to rely on heuristics or biases, even if many of them do so.

However, the Behavioural Study erred in trying to provide a self-standing classification of dark patterns, especially once it repeatedly recognized the importance of the UCPD for their legal classification. As a matter of interdisciplinary bridge-building (or epistemic translation; Bennet 2024) taking seriously the UCPD categories would have been, *ceteris paribus*, an advisable course of action. This conclusion is reinforced by the contingent observation that the classification is not fully convincing.

The basic distinction introduced by the Behavioural Study is between the impact of the dark pattern on the 'choice architecture' and on the 'decision-making component'. The distinction is explained as follows. A choice architecture is "the design or structure in which information is presented to consumers" (p. 35). Choice architectures can impact the "information available" or the "procedure to execute the choice". Thus, choice architectures impact either deliberation or the consequent action. In parallel, the 'decision-making component' seems to refer to the target of the dark pattern. More precisely, the dark pattern can impact the "budget constraint" by increasing the cognitive or material cost of deciding. In parallel, the dark pattern can affect the consumers' value perception of the product.

The further distinctions are also not entirely convincing. Within the choice architecture, dark patterns distinguishes between attribute and costs. In this regard, it is apparent that the cost is a sub-category of an attribute and that, in any event, it is more precisely indicated as a 'price'. More importantly, the capacity of the categorization to account for the selected dark patterns is sub-optimal. For example, it is not obvious that an immortal account increases 'cost complexity' or that 'limited time message' (or other urgency-based dark patterns) increase the complexity of the attribute.

The main concern is that the Behavioural Study classifies dark patterns in a way that does not matches closely the relevant legal categories. This is problematic for the following reason. The study articulates quite well 'theories of consumer harm' (Riefa et ali. 2018; Sibony et al. 2020; Esposito 2021). It does it in terms of increased costs, preference 'shaping' (better: manipulation), etc.

The problem is that the relevant legal tests are articulated in slightly different ways. The UCPD does not put so much emphasis on costs and preferences. The focus is on giving to the consumer the relevant information at the right time and refraining from polluting the decisional process.

Admittedly, the Behavioural Study somewhat follows these lines. For example, the category ‘choice complexity’ has to do with the obstacles to a made decision and, in this way, it reminds of coercion. However, with coercion, preferences are not shaped, they are substituted. Similarly, undue influence shapes preferences – but it is not specified if it does so by affecting the perception of any attribute, or the price in particular, or of the choice to be made.

Additional examples would be possible. However, the point has already been made: the Behavioural Study offers an authoritative account of the harms dark patterns can make. However, it fails to frame these considerations in a language that is readily accessible and familiar to the legal community. Accordingly, the Behavioural Study increases the choice complexity in an already complex legal area.

Instead, the UCPC can incorporate the harm-related considerations offered by the Behavioural Study, but it frames them in a way that is congenial to legal decision-makers. Any senior judge or lawyer with a classical education and little training in social sciences is likely to understand that ‘preselection’ is legally problematic because “the consumer must undo a selection that they never made, and their budget constraint is affected by increasing the search costs required to complete a transaction (i.e., the consumer must realise that this selection was made and undo it)” (p. 37).

By qualifying ‘preselection’ as a misleading action, the UCPC orients the legal decision-makers directly towards the appreciation of a legal category with a pre-existing meaning, application history, etc. Qualifying ‘preselection’ as a choice architecture that increases choice complexity and, in so doing, affects consumers’ budget constraints will have much less persuasive power.

For these reasons, the UCPC is arguably slightly superior to the Behavioural Study’s classification conceptually, but significantly superior to it from a practical point of view.

This article has successfully supported its central claim: the conceptual framework proposed by the unfair commercial practices directive offers the most solid standpoint for reflecting on dark patterns; dark patterns may be misleading (by action or by omission) and/or aggressive (undue influence, harassment, coercion) and do not necessarily exploit heuristics and biases.