EXPLORING PARENTS' KNOWLEDGE OF DARK DESIGN AND ITS IMPACT ON CHILDREN'S DIGITAL WELL-BEING

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Digital technology is increasingly important to children for their education, entertainment, and social lives. Many children struggle to imagine life without the

internet (Revealing Reality, 2022). Yet the digital sphere, designed for adults, poses risks for children (UN Committee, 2021). The specific focus of this international, interdisciplinary, research study are the risks posed by digital technologies which *use 'dark patterns' or 'dark design' to influence children's behaviors.*

Dark design and its impact on children

Dark design (also known as dark patterns (European Commission, 2022b; FTC, 2022a; Gray et al, 2018), deceptive design (Brignull, undated; EDPB, 2022), persuasive design (5Rights) and nudging (ICO, 2022)) is evidenced by "a user interface carefully crafted to trick users into doing things they might not otherwise do" (Brignull, undated).

There is no agreed definition of what constitutes a 'dark pattern' (Mathur, 2021) nor any definitive list of dark patterns (for example, differing taxonomies have been developed by the OECD, 2022; the FTC, 2022a and 5Rights, 2023). Dark patterns are, however, increasingly impacting children. Dark patterns are prevalent throughout the digital sphere: in social media, ecommerce sites, apps, cookie consent banners and online games (Gray et al, 2023; Mathur et al, 2021). In this study, we identified 10 broad pattern categories (sneaking, urgency, misdirection, social proof, scarcity, obstruction, forced action, identity captures, psychological/physical triggers, seamlessness) and 41 examples of dark patterns that might impact children. Such dark patterns raise consumer protection issues, affect users' autonomy, privacy and finances, and may impact negatively upon children's social, emotional and educational wellbeing (OECD, 2022; FTC, 2022a; 5Rights, 2023).

State responsibility for protecting vulnerable children and their rights

Children are more vulnerable than adults to inappropriate online marketing, to economic fraud and to privacy violations (European Commission, 2022a; OECD, 2011; OFCOM, 2022; UNICEF, 2021). Dark design impacts children's rights to privacy, to play, and to freedom from economic exploitation (UNCRC Articles 16, 31, 32). These rights apply online as well as offline (UN Committee, 2021).

Article 3 UNCRC requires signatory states to make children's best interests their primary consideration. In Europe, the UK, and the US, various actions have been or are being taken to address the risks posed to children online; with some legislation directly acknowledging children's rights and vulnerabilities. The US (whilst not a UNCRC signatory) has enacted the Children's Online Privacy Protection Act (COPPA) to protect the personal information of children under 13. Similar protections are afforded by the EU and UK General Data Protection Regulations. The UK's Online Safety Act 2023 requires certain online service providers to ensure services are 'safe by design' and to provide enhanced protections to children. The European Union Digital Services Act requires online platform providers to ensure 'a high level of privacy, safety, and security' for children (Article 28), and imposes an explicit ban on dark patterns (Article 25).

Globally, regulators acknowledge that dark design negatively impacts adults and children (e.g. CMA, 2022; CNIL, 2022; CPRC, 2022; FTC, 2022; ICO, 2022). In the UK, the ICO advises that online service providers should not use 'nudge techniques' which

might encourage children to reveal their personal information (e.g., ICO, 2022). The US FTC has recently challenged and fined deceptive design practices aimed at children (e.g., FTC 2022b). The scope and extent of dark design is such, however, that regulators alone cannot safeguard children from dark patterns.

The parental role in protecting children from dark design

Laws such as COPPA and the UKGDPR are underpinned by an ethos of family privacy. Essentially, children are viewed as inexperienced, immature, and lacking judgment; parents are considered to have primary responsibility for children's upbringing and development, being uniquely positioned to protect, educate, and guarantee their children's rights (Fineman, 1999; Peterman & Jones, 2003; Moller-Okin, 1989). Article 18 UNCRC similarly understands that a child's best interests will be a parent's basic concern, whilst Article 5 UNCRC recognizes that parents owe duties to direct and guide their children, obliging states to respect parents' responsibilities. In the digital context, parents are viewed as responsible for supporting children in their use of digital technologies (Lievens et al, 2018) and as the most appropriate people to make decisions about children's online engagement (Milkaite et al., 2021; Livingstone and O'Neill, 2014). Many parents themselves view children's online safety as a parental responsibility (Digital Regulation Cooperation Forum, 2022), and are actively involved in mediating children's use of online technologies (Dias et al, 2016; Page Jeffery, 2021; Zaman et al, 2021).

Although several studies consider the implications of dark design for children (Yip, 2019; Fitton and Read, 2019; Fitton, Bell and Read, 2021; Melzer and Roarsen 2021), to date little attention has been paid to *parents' understanding* of how dark design approaches impact upon their children, or to how parents believe such design can best be addressed.

Methodological approach

To understand parents' opinions regarding dark patterns, we asked parents of children aged 5-17 located in the US (n=287) and UK (n=290) to complete an online survey regarding the online experiences of their oldest school-aged child. Survey questions were informed by child development theory as well as literature on parental online mediation, children's online harms, and dark patterns. Parents were asked to consider three randomly assigned examples of dark patterns from the examples compiled by the research team. We asked whether parents believed these examples could apply to their children, as well as their opinions on the examples. Additional questions sought parents' views on the effectiveness of regulation and responsibility for online design, as well as information about their online parenting strategies.

Initial findings

Descriptive statistics from an exploratory analysis follow. Overall, US and UK parents are similarly concerned about the impact of dark patterns on their children, although some country-level differences exist. Parents were asked whether they thought there was sufficient regulation of online platforms (agreement = 1, disagreement = 7). Most

parents believe there is insufficient regulation around the design of online platforms, although US parents were slightly less negative (M = 3.4, SD = 1.7) than UK parents (M = 2.8, SD = 1.4).

Parents across the US and the UK are similar in who they identify as who should be responsible for online design seen by children, with 75% or more parents naming: companies which sell a product, service or app; those who design adverts; app, web and game designers; and industry regulatory bodies. However, when asked who should be most responsible for addressing online design, UK parents most often referred to the company who sells a product, service or app (UK 40.8%, US 30.4%). In contrast, US parents said a child's parents or caregivers should be most responsible (UK 16.8%, US 34.0%).

Overall, US and UK parents believe parents bear a high level of responsibility for protecting their children from the negative impacts of online design. Approximately nine out of ten parents are aware of tools they can use to support their children's safety online (UK 86.1%, US 90.0%), with about two-thirds of all parents using such tools (UK 58.9%, US 60.2%).

These findings provide an initial discussion point for regulators, companies, marketers, and researchers. Given parents' responsibilities for protecting their children, a deeper understanding of their perspectives regarding dark patterns is key to developing effective safeguards for children online.

References

Brignull, H., (undated). "Deceptive Patterns." https://www.deceptive.design/

Competition and Markets Authority (CMA, 2022). "Online Choice Architecture: How digital design can harm competition and consumers." https://www.gov.uk/find-digital-market-research/online-choice-architecture-how-digital-design-can-harm-competition-and-consumers-2022-cma

CNIL, (2022). "La Forme des Choix: Données personnelles, Design et Frictions Désirables Cahiers IP No.6." https://www.cnil.fr/sites/default/files/atoms/files/cnil_cahiers_ip6.pdf

Consumer Policy Research Centre (CPRC, 2022). "Duped by Design: Manipulative online design: Dark Patterns in Australia." https://cprc.org.au/dupedbydesign/

Dias, P., Brito, R., Ribbens, W., Daniela, L., Rubene, Z., Dreier, M., Gemo, M., Gioia, R. & Chaudron, S. (2016). "The role of parents in the engagement of young children with digital technologies: Exploring tensions between rights of access and protection, from 'Gatekeepers' to 'Scaffolders'." *Global Studies of Childhood 6*(4), 414-427

Digital Regulation Cooperation Forum (DRCF, 2022). "Families' Attitudes towards Age Assurance*."*

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1109983/Ofcom_ICO_joint_research_-_age_assurance_report.pdf

European Commission, (2022a). "Communication from The Commission to The European Parliament, The Council, The European Economic and Social Committee and The Committee of The Regions - A Digital Decade for children and youth: The new European strategy for a better internet for kids (BIK+)' Com (2022) 212." https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52022DC0212&from=EN

European Commission (2022b). "Behavioural study on unfair commercial practices in the digital environment - Dark patterns and manipulative personalisation: final report."

European Data Protection Board (2022). "Guidelines 03/22 on deceptive design patterns in social media platform interfaces: How to recognise and avoid them." https://edpb.europa.eu/our-work-tools/our-documents/guidelines/guidelines-032022-deceptive-design-patterns-social-media_en

Fineman, M.A. (1999). "What Place for Family Privacy?" *George Washington Law Review, 67,* 1207

Fitton, D., and Read, J. C. (2019). "Creating a framework to support the critical consideration of dark design aspects in free-to-play apps". In *Proceedings of the 18th ACM International Conference on Interaction Design and Children* (pp. 407-418).

Fitton, D., Bell, B., and Read, J., (2021). "Integrating Dark Patterns into the 4Cs of Online Risk in the Context of Young People and Mobile Gaming Apps." In *IFIP Conference on Human-Computer Interaction* (pp. 701-711). Springer, Cham.

FTC (2022a). "Bringing Dark Patterns to Light" Staff Report" https://www.ftc.gov/system/files/ftc_gov/pdf/P214800%20Dark%20Patterns%20Report%209.14.2022%20-%20FINAL.pdf

FTC (2022b). "$245 million FTC settlement alleges Fortnite owner Epic Games used digital dark patterns to charge players for unwanted in-game purchases." https://www.ftc.gov/business-guidance/blog/2022/12/245-million-ftc-settlement-alleges-fortnite-owner-epic-games-used-digital-dark-patterns-charge

Gray, C., Kou, Y, Battles, B., Hoggatt, J., and Toombs, A., (2018). "The Dark (Patterns) Side of UX Design." In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*. ACM, New York, NY, USA, Article 534, 1-14.

Information Commissioner's Office (2022). "Age appropriate design: A code of practice for online services." https://ico.org.uk/media/for-organisations/uk-gdpr-guidance-and-resources/childrens-information/childrens-code-guidance-and-resources/age-appropriate-design-a-code-of-practice-for-online-services-2-1.pdf

Lievens, E., Livingstone, S., McLaughlin, S., O'Neill, B., & Verdoodt, V., (2018). "Children's Rights and Digital Technologies." In U. Kilkelly & T. Liefard. *International Human Rights of Children* (pgs. 487-513). Springer

Livingstone, S., and O'Neill, B. (2014). "Children's Rights Online: Challenges, Dilemmas and Emerging Directions." In S. Van der Hof, B. Van den Berg & B Schermer (Eds.) *Minding Minors Wandering the Web: Regulating Online Child Safety.* TMC Asser Press

Mathur, A., Mayer, J., and Kshirsagar, M., (2021). 'What Makes a Dark Pattern... Dark? Design Attributes, Normative Considerations, and Measurement Methods.' in *CHI '21, May 8–13, 2021, Yokohama, Japan*

Melzer, A., Roarsen, A., Hagen, M., and Jaccheri, L., (2021). "Towards Suitable Free-to-Play Games for Children." In *International Conference on Entertainment Computing* (pp. 264-276). Springer, Cham.

Milkaite, I., De Wolf, R., Lievens, E., De Leyn, T., and Martens, M., (2021). "Children's Reflections on Privacy and the Protection of their Personal Data: A Child-Centric Approach to Data Protection Information Formats." *Children and Youth Services Reviews* (129) 106170 https://doi.org/10.1016/j.childyouth.2021.106170

Moller-Okin, S., (1989). *Justice, Gender and the Family.* Basic Books.

OECD (2011). "The Protection of Children Online: Risks faced by children online and policies to protect them: OECD Digital Economy Paper 179." https://www.oecd-ilibrary.org/docserver/5kgcjf71pl28-en.pdf?expires=1671210597&id=id&accname=guest&checksum=543B55F6C8F2263A20773AC8C0C1AD8E#:~:text=OECD%20%282011-05-02%29%2C%20%E2%80%9CThe%20Protection%20of%20Children%20Online%3A%20Risks,OECD%20Digital%20Economy%20Papers%2C%20No.%20179%2C%20OECD%20Publishing%2C

OECD (2022). "Dark Commercial Patterns: OECD Digital Economy Papers No 336." https://www.oecd-ilibrary.org/science-and-technology/dark-commercial-patterns_44f5e846-en

OFCOM (2022). "Children and parents: Media use and attitudes report 2022." https://www.ofcom.org.uk/__data/assets/pdf_file/0024/234609/childrens-media-use-and-attitudes-report-2022.pdf

Page Jeffery, C. (2021). "It's really difficult. We've only got each other to talk to. Monitoring, mediation, and good parenting in Australia in the digital age." *Journal of Children and Media (15)*2, 202-217.

Peterman, L., and Jones T., (2003). "Defending Family Privacy." *Journal of Law & Family Studies 5*, 71.

Regulation (EU) 2022/2065 of the European Parliament and of the Council

of 19 October 2022 on a Single Market For Digital Services and amending Directive 2000/31/EC (Digital Services Act)

Revealing Reality (2022). "Research into Risk Factors that May Lead Children to Harm Online." https://www.revealingreality.co.uk/wp-content/uploads/2022/10/Research-report_-Risk-factors-that-may-lead-children-to-harm-online_Final-version-06.10.pdf

United Nations Committee on the Rights of the Child (2021). "General comment No. 25 on children's rights in relation to the digital environment CRC/C/GC/25." https://www.ohchr.org/en/documents/general-comments-and-recommendations/general-comment-no-25-2021-childrens-rights-relation

United Nations. (1989). "United Nations Convention on the Rights of the Child." (UNCRC)

UNICEF (2021). "The case for better governance of children's data: A manifesto." https://www.unicef.org/globalinsight/media/1741/file/UNICEF%20Global%20Insight%20Data%20Governance%20Manifesto.pdf

Woodhouse, B. B. (1999). "The Dark Side of Family Privacy." *George Washington Law Review* 67, 1247

Yip, J. C., Sobel, K., Gao, X., Hishikawa, A. M., Lim, A., Meng, L., ... & Hiniker, A. (2019, May). "Laughing is scary, but farting is cute: A conceptual model of children's perspectives of creepy technologies." In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems* (pp. 1-15).

Zaman, B., Nouwen, M., and Van Leeuwen, K. (2021). "Challenging Adolescents' Autonomy: An Affordances Perspective on Parental Tools." In L. Green, D. Holloway, K. Stevenson, T. Leaver, & L. Haddon (Eds.) *The Routledge Companion to Digital Media and Children* (pgs. 195-205). Routledge.