

Before the
Federal Trade Commission
Washington, DC 20580

In the Matter of

Request for Public Comment on the
Federal Trade Commission's
Request for Comments Regarding Topics
to be Discussed at Dark Patterns
Workshop

Docket FTC-2021-0019

COMMENTS OF

Campaign for a Commercial-Free Childhood
The Center for Digital Democracy

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Introduction and summary

The Campaign for a Commercial-Free Childhood and the Center for Digital Democracy, through their counsel, the Communications & Technology Law Clinic at Georgetown Law, submit these comments in response to the Commission’s request for comments regarding dark patterns.¹

Children today constantly face dark patterns when they engage with modern technology. In contexts from entertainment to the ostensibly educational, children use apps that pressure them to spend more time and money on microtransactions. These dark patterns take many forms: timers that inculcate in children a fear of missing out on rare items, menu manipulations and arbitrarily labeled virtual currencies that confuse children about how much money they are spending, and even design practices that abuse their relationships with a game’s characters to encourage spending, or which pressure them to constantly consume advertising.

The explosive growth in dark patterns confronting children is easily explained—it is the natural product of current trends in the gaming industry. A family used to purchase a game in a one-time transaction, then bring it home on a cartridge or disk to be played until exhaustion. But recent years have brought a sea change in development and monetization models. Today, the dominant development model for a popular game is that of the “live service” or “living game”—a game that can be updated and monetized indefinitely, in many transactions over time, rather than through a single one-time purchase. This trend has kindled the growth of dark patterns, because manipulative design techniques support live services by driving players to spend more time and money in-game. Sophisticated development patterns and A/B testing techniques are used to refine these manipulative designs over time, making them ever more effective and irresistible to users. Most concerningly, children have been caught up in this trend, and have been deliberately targeted by dark patterns.

Children are especially vulnerable to harms from dark patterns, and those harms cannot be prevented by their parents or by private actors. Research shows that the typical characteristics of children’s developing minds serve as easy targets for exploitation by dark patterns, and that parents and guardians cannot defend them

¹ These comments were prepared with considerable assistance from Kevin Hotchkiss, Grant Loriaux, Gabriel Khoury, Caitlin VerBrugge, and Amber Morrow, student attorneys in the Communications & Technology Law Clinic at Georgetown Law, and Victoria Tang, Staff Attorney and Teaching Fellow in the Communications and Technology Law Clinic.

against those harms without unworkable and infeasible bans on technology use. Market forces have not prevented these harms, but instead have intensified their use – contemporary financial incentives and technological advancements within the gaming industry all trend toward a continued increase in live service apps with “freemium” monetization. We even see companies beginning to use machine learning to further optimize these practices.

When children form the audience for these practices, it is clear that these practices are deceptive and unfair under Section 5, and we urge the FTC to commence immediate enforcement actions. These uses of dark patterns are Section 5 violations in the wild – the Commission already has the regulatory authority it requires, and has several opportunities to make significant impacts swiftly through enforcement actions.

Going forward, we also urge the Commission to prohibit the use of dark patterns on children, issue guidance to prevent companies from developing or deploying dark patterns, and update the COPPA Rule to further enhance these protections. Specifically, we ask that the Commission forbid the use of microtransaction-based business models, and the dark patterns that support them, on children.

The Commission has an opportunity to make a positive difference in how children grow up interacting with technology, and a chance to prevent companies from enriching themselves through exploitative dark patterns.

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I. The FTC must examine and address the use of dark patterns against child users

We are deeply concerned about the negative effects of dark patterns on children. There are numerous manipulative design techniques intended to get users to do things they otherwise would not do. These techniques have exploded in recent years due to changes in underlying business models, and companies now target children with them widely on the Internet. This presents an urgent problem.

A. Dark patterns are a natural consequence of the growing popularity of “live service” games and the “freemium” business model

At its core, the growth of dark patterns can largely be attributed to the growing popularity of “live service” games and the “freemium” (a.k.a “free-to-play”) business model. When home-played video games were first introduced, monetization of a game began and ended with the one-time purchase of the game on physical media (such as a disk or cartridge) at a brick and mortar store. In contrast, the live service model, which involves continuous improvements and updates, allows game developers to temper the risk of developing a new game, maintain media and player interest well after release, grow a game’s audience over time, and continually monetize engagement through four main avenues. These are:

1. **Advertising.** Many games display in-game advertisements that constantly generate revenue.²
2. **Microtransactions.** Many developers monetize numerous aspects of game play through what are called “microtransactions”: in-game purchases to skip ads, advance the game, or obtain “add-ons” such as character outfits, weapons, and other tools. These purchases may or may not impact game play.
3. **Downloadable content.** Even for one-time purchase games, developers often sell “downloadable content” (DLC) that enables users to update or expand a game without making a physical trip to a store.
4. **Subscriptions.** Developers often sell a monthly or quarterly subscription.

Live service games, sometimes called “living games,” are often less expensive to make, and foster greater stability for developers and their staff.³ In addition, it is often easier to generate revenue through small offerings associated with the live service model. To

² These advertisements often promote other games, or future iterations of the same game. See Jordan L. Howard, *The Three Types of In-Game Advertising*, RapidFire, <https://www.rapidfire.com/blog/the-three-types-of-in-game-advertising/> (last visited May 24, 2021).

³ See Grubb, *This Chart Visualizes Why Live-Service Games Are the “It” Thing for Publishers*, VentureBeat (Mar. 4, 2019), <https://venturebeat.com/2019/03/04/this-chart-explains-why-publishers-are-chasing-live-service-games/>.

invite a surge of spending, a live service developer may need only to create a seasonal event with some chase items,⁴ as opposed to having to create an entire full-featured game.⁵

The live service development model and freemium business model go hand in hand. Live service games create a framework in which game developers can offer renewable novelty. The freemium business model monetizes that renewable novelty, by giving users a basic version of a game or product at no initial cost to the consumer as a way to establish the foundation for future purchases of game-related content.⁶

The freemium monetization model is considered beneficial to developers because it generates stable and continual income. One-time purchase revenue can be expected to peak right at an app's or game's release and quickly taper off thereafter to insignificant levels,⁷ but apps supported by ads or microtransactions can generate revenue as long as the app can convince users to stay on and buy more things.

The freemium business model also can be quite lucrative. Microtransaction mechanics in particular can extract significantly more money from individual users than could ever be extracted from traditional one-time purchases. Someone buying a full-priced game with a few additional packs of downloadable content might pay barely over \$100 in total for a game, whereas high-spending "whales" might drop thousands of dollars each year on in-app purchases in a single game.⁸

More and more video game companies are staking their futures on live service development with freemium monetization.⁹ Ubisoft recently told investors that it was

⁴ A "chase" item is one that is highly sought-after by players.

⁵ See Grubb, *supra* note 3 ("On top of that, a live-service game is probably less expensive to make. And while they are functionally more expensive to maintain, they give developers a good reason to keep talented staff on board instead of laying people off between games. That alone can save time and money in hunting down staff.").

⁶ Troy Segal, *Freemium*, Investopedia (Apr. 18, 2021), <https://www.investopedia.com/terms/f/freemium.asp>.

⁷ See Grubb, *supra* note 3, ("The first thing I noticed while watching this video is just how infrequently we get games that are big enough to make a dent on Steam. And even when a blockbuster does come along, it tends to fall off the charts after a few weeks — or sometimes in a few days.").

⁸ Paul Tassi, *Why It's Scary When 0.15% Mobile Gamers Bring In 50% Of the Revenue*, Forbes (Mar 1, 2014), <https://www.forbes.com/sites/insertcoin/2014/03/01/why-its-scary-when-0-15-mobile-gamers-bring-in-50-of-the-revenue/?sh=3e503b664065>.

⁹ Nenad Zoran Tomić, *Review: Economic Model of Microtransactions in Video Games*, 1 J. Econ. Sci. Research 17, 22 (2018) ("A classic pay-to-play approach is no longer a dominant model of monetization in the video games industry."); Taneli Palola, *The Problem With the 'Live Services' Model*, VGChartz, Apr. 30, 2018 ("Right now, the new dominating trend within the industry is not a specific genre or type of game, it's a marketing model within a variety of different games. Every publisher, it seems, wants its own 'Live Service' platform

going to expand its free-to-play and freemium game rosters,¹⁰ and Electronic Arts recently announced that already, 74% of its \$6.19 billion revenues from fiscal year 2021 came from DLC, microtransactions, live service, and mobile, with actual game sales only generating the remaining 26%.¹¹

Dark patterns are a natural consequence of these trends in the industry. Because live service games on the freemium model depend on users continuously and frequently using an app or game and viewing ads or making purchases, operators benefit from getting users “hooked” and keeping them on the app for as long as possible. Dark patterns advance these goals. Indeed, the freemium model in its current form relies upon persuasive design strategies similar to those used by Facebook and Instagram to entice players to remain in the game world as long as they possibly can.¹² As Timothy O’Shea, an analyst for the investment firm Jefferies, told Business Insider, “[t]he more they play, the more they’ll pay.”¹³

B. Nudges and other techniques designed to shape the actions of children are dark patterns

The FTC seeks comment on how to define “dark patterns.”¹⁴ We urge the adoption of a broad definition of dark patterns that includes all “nudges”—subtle psychological tricks and design choices used to nudge people who encounter them on a desired course of action—that encourage children’s continued engagement or purchases.¹⁵ When games and other apps employ nudges to encourage children to keep

that it can just bolt a massive amount of additional content onto which people can then buy after they've already bought the game itself.”).

¹⁰ Paul Tassi, *Ubisoft Shifting to More 'High-End Free-To-Play' Games, And It's Already Starting*, Forbes (May 12, 2021, 8:32am EDT), <https://www.forbes.com/sites/paultassi/2021/05/12/ubisoft-shifting-to-more-high-end-free-to-play-games-and-its-already-starting/?sh=5559a6137889>.

¹¹ Josh Coulson, *Just 26% of EA's Revenue Now Comes From Game Sales*, TheGamer (May 12, 2021), <https://www.thegamer.com/26-ea-revenue-game-sales/>.

¹² Betsy Morris, *How Fortnite Triggered an Unwinnable War Between Parents and Their Boys*, Wall Street Journal (Dec. 21, 2018), <https://www.wsj.com/articles/how-fortnite-triggered-an-unwinnable-war-between-parents-and-their-boys-11545397200>.

¹³ Lisa Fu, *Fortnite is following the blueprint of the most profitable video game of all time*, Markets Insider (May 21, 2018), <https://markets.businessinsider.com/news/stocks/fortnite-copies-most-profitable-game-gta-2018-5-1025067183>

¹⁴ *Bringing Dark Patterns to Light: an FTC Workshop*, Federal Trade Commission (Apr. 29, 2021), <https://www.ftc.gov/news-events/events-calendar/bringing-dark-patterns-light-ftc-workshop>.

¹⁵ Nudges have been used to improve organ donation rates through opt-out defaults, improve tax collection rates through social reinforcement, and reduce dishonest self-reporting through top-of-form signatures. Mark Egan, *Nudge Database v1.2*, University of Stirling (last visited May 26, 2021), <https://www.stir.ac.uk/media/stirling/services/faculties/social-sciences/research/documents/Nudge-Database-1.2.pdf>; Michael Hallsworth, John List, Robert Metcalfe, Ivo Vlaev, *The Behavioralist As Tax*

playing a game, using an app, and/or paying for in-app purchases, those nudges are harmful dark patterns and must be clearly defined as such.

There are many different types of nudges used by apps and games, and we urge the FTC to ensure that, at a minimum, its definition captures those described below that are widespread in children’s content.

C. Children encounter—and are harmed by—widespread dark patterns

From mobile games to console titles, from apps with a small player base to massive successes like Fortnite or Roblox, makers of entertainment and educational content use dark patterns to get children and teenagers playing for longer and more sustained periods, and spending more money consistently. We have documented many dark patterns that feature in games and services used heavily by children.

1. Companies use dark patterns to prey on children’s fear of missing out

In our research, we have often encountered “fear of missing out” (FOMO) tactics in children’s apps. FOMO tactics, such as countdown timers, prey on children’s natural fear of missing something important, as well as on their desire for belonging and social interactions.¹⁶ Examples of FOMO tactics include missions or opportunities that can only be encountered during specific times of the day or days of the week, item shops with stock that changes every day, and seasonal events. Depending on the tactic, a company might routinely schedule a FOMO element, or alternatively might make it truly time-limited. FOMO tactics are not new to commerce or video games, but the proliferation and precisely explicit nature of the timers is new.

One common FOMO tactic is the countdown timer, which reinforces the limited availability of an opportunity. For example, the item shop in Fortnite confronts players with a timer accompanying every item for sale. Many other games use this precise technique as well.

Collector: Using Natural Field Experiments to Enhance Tax Compliance, National Bureau of Economic Research (Mar. 2014), <https://www.nber.org/papers/w20007>; Lisa Shu, Nina Mazar, Francesca Gino, Max Bazerman, *Signing at the beginning makes ethics salient and decreases dishonest self-reports in comparison to signing at the end*, PNAS (Aug. 27, 2012), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3458378/>.

¹⁶ See Noor Bloemen, David De Coninck, *Social Media and Fear of Missing Out in Adolescents: The Role of Family Characteristics*, *Social Media and Society* (Oct. 21, 2020), <https://journals.sagepub.com/doi/full/10.1177/2056305120965517>.

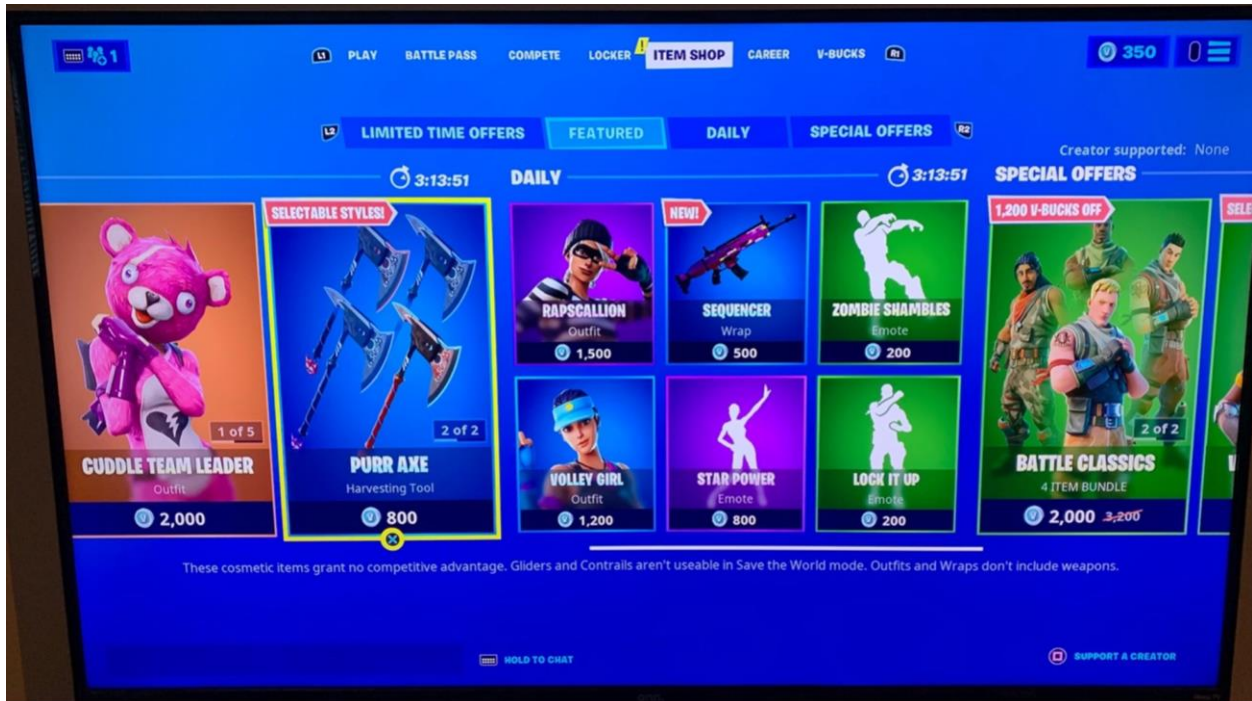


Figure 1. The shop in Fortnite displays timers for each category of purchasable item.



Figure 2. A purchase screen for a dragon in Dragon City prominently displays a timer.

Another common FOMO tactic is quick turnover in add-on inventory. By wielding novelty and limited availability in this way, game designers are able to give virtual objects an aura of exclusivity and luxury. For example, in Fortnite, inventory changes are frequent and easy to spot. Add-ons that were available in one season may not be available the next. Combining this tactic with use of a timer compounds the sense of urgency created by these design choices.

FOMO tactics harm children by conditioning them to play on the game's schedule, to play as much as possible, and to play routinely. For example, a child may be required to play a game on a specific day at a specific time in order to complete a mission needed to advance the game. A child also may feel pressured to log in every day in order to check what items and opportunities are available, because skipping a day could mean missing out on a unique or unusual opportunity, such as a special item or a seasonal event.

FOMO tactics also harm children by encouraging them to spend money impulsively right now, rather than to deliberate on a prospective purchase or perhaps discuss a spending plan with a parent or guardian. For example, in the scenarios discussed above, a child may be pressured to act now to purchase an in-game item that interests her, because she knows that the shop may not offer the item tomorrow.

In addition to encouraging children to spend more time and money playing games, the fear that these tactics cultivate and feed on has been linked to sleep deprivation, anxiety, and depression. Research has linked social media FOMO with problematic internet usage in children and adolescents,¹⁷ found that it can lead to sleep deprivation when driving late-night media usage,¹⁸ and that through compulsive social media usage, it can lead to social media fatigue, depression, and anxiety.¹⁹

¹⁷ Dorit Alt, Meyran Boniel-Nissim, *Parent-Adolescent Communication and Problematic Internet Use: The Mediating Role of Fear of Missing Out (FoMO)*, *Journal of Family Issues* (June 20, 2018),

<https://journals.sagepub.com/doi/abs/10.1177/0192513X18783493>

¹⁸ Holly Scott & Heather Cleland Woods, *Fear of missing out and sleep: Cognitive behavioural factors in adolescents' nighttime social media use*, *Journal of Adolescence*, Vol. 68 (2018), Pages 61-65,

<https://www.sciencedirect.com/science/article/pii/S0140197118301441>.

¹⁹ Amandeep Dhir, Yossiri Yossatorn, Puneet Kaur, Sufen Chen, *Online social media fatigue and psychological wellbeing—A study of compulsive use, fear of missing out, fatigue, anxiety and depression*, *International Journal of Information Management*, Vol. 40 (June 2018), Pages 141-152,

<https://www.sciencedirect.com/science/article/pii/S0268401217310629>.

2. Companies use dark patterns to prey on children's esteem needs and leverage social pressure

Dark patterns also prey on children's esteem needs, infiltrating their relationships and leveraging social pressure to keep children playing and paying. The social aspect of a game often compounds the effectiveness of FOMO tactics. A child may find that possessing rare in-game items adds to their prestige among friends who play the game, and similarly may feel pressured to purchase items that the game has friends prominently display.²⁰ They also may feel extra pressure to log in for specific events or other opportunities if they know that some of their friends are participating, and extra anxiety about missing out. For example, apps like *Prodigy* promote their premium membership players as being better than non-premium players by having premium players ride on clouds whereas non-premium players must walk.²¹ Some games also feature extended cooperative sections such as raids that require significant commitments of time and energy to a group activity.²²

Games with competitive multiplayer modes that also feature “pay-to-win” purchases for competitive advantage pressure children to pay to gain that advantage. In these games, microtransactions can provide benefits such as a larger collection of cards in a digital card game, or better quality weapons and armor. “Pay-to-skip” transactions can also fall into this category in competitive games, because such transactions allow players to accumulate resources faster than players that do not similarly pay. While many of these games advertise their friendliness to players who do not spend money on microtransactions, attaining a high rank and its associated awards typically requires competing with players who have spent significant sums. Pay-to-win business models have historically been less popular in the United States and Europe, but have seen many

²⁰ Patricia Hernandez, *Fortnite is free, but kids are getting bullied into spending money*, Polygon (May 7, 2019, 12:21pm EDT), <https://www.polygon.com/2019/5/7/18534431/fortnite-rare-default-skins-bullying-harassment>.

²¹ *7 Reasons to Say No to Prodigy*, Campaign for a Commercial-Free Childhood (Feb. 2021), <https://commercialfreechildhood.org/pf/prodigy/>.

²² A raid in World of Warcraft could be expected to take several hours. See *Raid*, Wowpedia, <https://wowpedia.fandom.com/wiki/Raid> (last visited May 24, 2021). See also Jack Flanagan, *The Psychology of Video Game Addiction*, The Week (Feb. 6, 2014), <https://theweek.com/articles/451660/psychology-video-game-addiction>.

successes overseas.²³ And recently, games using this business model have become financial successes in the United States and Europe, and are growing in popularity.²⁴

These practices harm children because in order to monetize a children's relationships, games foster children's anxiety about their peer relationships, as well as competitiveness among friends, including competitiveness based on children's (or their in-game characters') material goods or appearance. Similar to other social media, games employing these tactics prey upon the esteem needs of children.

3. Companies use dark patterns to place children on an endless treadmill

"Endless treadmill" tactics also pressure children to play as much as possible, by convincing them that there is always more to do in a game. Similar to endless scroll designs on many social media apps and autoplay designs on streaming platforms like YouTube and YouTube Kids, endless treadmill dark patterns present a never-ending stream of content available for consumption. This can come in the form of "grinding" (where a player can progress in a game only through significant time invested in repetitive tasks), through additional content added as an inherent part of the live service model, or through ever-increasing levels of difficulty after an easy start. The endless treadmill makes a player feel that there is always more to do in a game.

These tactics harm children by making them feel that they should always be playing, as well as by depriving them of natural breaks. In addition, because further play exposes children to other dark patterns, the endless treadmill serves as an enabling tactic for other techniques. The endless treadmill also functions to drive in-app purchases, because many games offer "pay to skip" options that enable those with the ability and

²³ Mariusz Patryk Diaczok & Patrick Tronier, *An Investigation of Monetization Strategies in AAA Video Games* at 56, https://research-api.cbs.dk/ws/portalfiles/portal/59805548/666123_An_investigation_of_monetization_strategies_in_AAA_video_games.pdf; Eustance Huang, *Americans largely won't pay to win a video game – but Chinese gamers will*, CNBC (May 30, 2018, 3:01 AM EDT), <https://www.cnbc.com/2018/05/30/pay-to-win-video-games-differences-between-us-and-chinese-gamers.html>; See also SensorTower, *World of Tanks Blitz PVP MMO 3D tank game for free*, <https://sensortower.com/android/US/wargaming-group/app/world-of-tanks-blitz-pvp-mmo-3d-tank-game-for-free/net.wargaming.wot.blitz/overview> (last visited May 24, 2021).

²⁴ For example, *Fire Emblem Heroes* generated \$656 million in lifetime revenue by 2020, *Mario Kart Tour* was the most downloaded iOS game in 2019, and *Marvel Strike Force* saw revenues of \$300 million in 2020 alone.

Chaim Gartenberg, *Nintendo's mobile games have made over \$1 billion, mostly thanks to Fire Emblem Heroes*, *The Verge* (Jan 28, 2020, 3:26 pm EST), <https://www.theverge.com/2020/1/28/21112029/nintendo-mobile-games-revenue-fire-emblem-heroes-mario-run-android-ios>; Brendan Sinclair, *How Scopely's acquisition of FoxNext led to Boundless opportunity*, *gamesindustry.biz* (Apr. 15, 2021), <https://www.gamesindustry.biz/articles/2021-04-15-how-scopelys-acquisition-of-foxnext-led-to-boundless-opportunity>.

willingness to pay a premium to purchase progress in the game, rather than earning it through time-intensive and often tedious gameplay.²⁵

4. *Companies use dark patterns to cloud children's ability to understand how much they are spending*

Dark patterns also pressure children to spend money. One particularly prominent practice, that of the arbitrary, premium in-game currency, is designed to obfuscate the value of money spent.²⁶ Developers use in-game currency for the same reason that casinos use poker chips²⁷—to encourage players, in this case children, to part with their money.²⁸ This practice is incredibly widespread, and extremely frustrating to parents.²⁹ Limited-use currencies that can be bought with state-issued currencies are not new either to commerce or video games, but in contemporary games these currencies are optimized for deception and extraction. There is no physical counterpart to an in-game currency, and most do not cleanly translate to specific denominations. Thus, all that is represented to children—including young children still learning early math—is a number on a screen.

Furthermore, premium in-game currencies are typically “discounted” in bulk, encouraging children to purchase larger quantities at a time. For example, in Fortnite, \$7.99 buys 1,000 V-Bucks at a conversion rate of approximately 125 V-Bucks per dollar, but \$79.99 will buy 13,500 V-Bucks, at a conversion rate of about 169 V-Bucks per dollar. In addition, items bought within Fortnite are not sold at the rates that are advertised in bundles — the game sells V-Bucks in bundles of 1000, 2800, 5000, and 13,500, but in-game items are sold at price points like 500, 800, 1500, 2000, or 3200 V-Bucks. Beyond further obfuscating how much each item would actually be worth in

²⁵ Diaczok & Tronier, *supra* note 23, at 54.

²⁶ An in-game “premium currency”—one that can be purchased using real-world money—can in some instances be distinguished from an in-game “standard currency”—one that, like Monopoly money, exists only in the context of the game, can be earned through gameplay, and cannot be purchased for real money. *See id.* at 6 (“The authors have chosen to label the ones which are earned by playing the game as ‘standard currencies, whereas the ones bought with real money are termed ‘premium currencies.’”).

²⁷ *See* Al Alvarez, *The Biggest Game in Town* 43 (“The chip is like a conjurer’s sleight of hand that turns an egg into a billiard ball, a necessity of life into a plaything, reality into illusion. Players who freeze up at the sight of a fifty-dollar bill, thinking it could buy them a week’s food at the supermarket, will toss two green chips into the pot without even hesitating if the odds are right. ‘Chips don’t have a home,’ said Jack Straus. ‘People will play much higher with chips than they will with cash.’”).

²⁸ Tomić, *supra* note 9, at 22 (2018) (“An even greater problem is the abstractness of spending real money, which leads children to unconscious spending.”).

²⁹ *See, e.g.,* Olivia Niland, *Kanye West is pissed about in-app purchases in kids games*, Mashable (Oct. 10, 2015) <https://mashable.com/2015/10/10/kanye-west-s-app-rant/>; Nick Tylwalk, *Jack Black’s Son Spent \$3000 in Mobile Game IAPs*, AppTrigger (May 5, 2015), <https://apptrigger.com/2015/05/05/jack-blacks-son-spent-3000-in-mobile-game-iaps/>.

dollars, the mismatch between amounts of V-Bucks purchased and item price points almost universally results in “leftover” change in a player’s virtual wallet, tempting them to purchase more currency to buy their next item. In short, imagine entering a store that required all purchases to be made through pre-set gift cards. Just as the design of gift cards results in extra unredeemed cash that accrues to the store itself,³⁰ so too do arbitrary premium in-game currency schemes skim extra cash off of players, especially children.

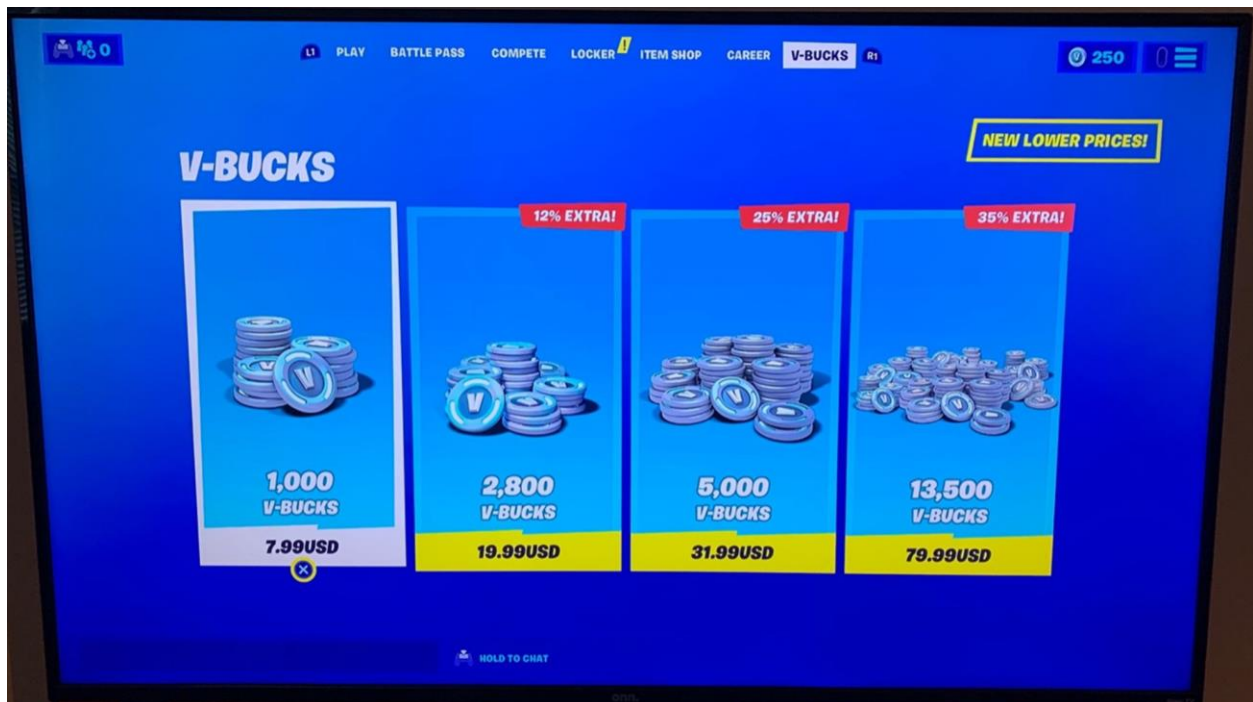


Figure 3. Fortnite’s V-Bucks are purchasable at a discount if bought in arbitrarily-denominated bundles.

³⁰ Shawn Baldwin, *Consumers lose \$3 billion a year in unspent gift cards*, CNBC (May 24, 2020, 11:00am EDT), <https://www.cnbc.com/2020/05/24/how-amazon-and-walmart-make-money-from-unused-gift-cards.html>.



Figure 4. Dragon City's Gems are similarly discounted in bulk, and also display prominent sale countdown timers to encourage impulse purchases.

Some may argue that children cannot make purchases without a parent's knowledge and permission. But as some researchers have pointed out, payment for many in-game purchases is "executed through an account at the mobile application store. As the payment instrument is already linked to an account, children can pay by themselves."³¹ As a result, children often make purchases without their parents' knowledge, sometimes even leading to instances where children have unwittingly spent thousands of dollars,³² much to the chagrin of their parents.

³¹ Tomić, *supra* note 9, at 22.

³² See *id.*; see also Malcom Owen, *Child Spends \$16K on iPad game in-app purchases*, Apple Insider (Dec. 13, 2020), <https://appleinsider.com/articles/20/12/13/kid-spends-16k-on-in-app-purchases-for-ipad-game-sonic-forces>; Zoe Kleinman, 'My son spent £3,160 in one game', BBC (July 15, 2019), <https://www.bbc.com/news/technology-48925623>; Nicole Pelletiere, *Mom warns parents after son charges \$16K on in-app purchases*, Good Morning America (Dec. 18, 2020), <https://www.goodmorningamerica.com/family/story/mom-warns-parents-son-charges-16k-app-game-74756591>.

5. *Companies use dark patterns that manipulate menus and user interfaces to draw children into making purchases.*

Even when a child plays a game with a specific goal in mind that is unrelated to financial transactions, dark patterns often redirect them, steering them back into purchases. These can take the form of dark patterns similar to those outside of gaming, such as obfuscated or faded options that would otherwise let a child avoid or back out of buying something or divulging personal information. Games might bombard children with advertisements that are tricky to close.³³ Designers at Facebook tacitly and explicitly encouraged game developers to trick children (who were explicitly known to be children to the platform and developers) into spending more money.³⁴ User interface designers for Fortnite changed the appearance of an “undo purchase” button to minimize its visibility and to encourage users to click through to a point where they could no longer undo potentially unwanted purchases.³⁵

³³ Sydney Ember, *X Marks the Spot That Makes Online Ads So Maddening*, New York Times (Dec. 6, 2015), <https://www.nytimes.com/2015/12/07/business/x-marks-the-spot-that-makes-online-ads-so-maddening.html>.

³⁴ Nathan Halverson, *Facebook knowingly duped game-playing kids and their parents out of money*, Reveal (Jan. 24, 2019), <https://revealnews.org/article/facebook-knowingly-duped-game-playing-kids-and-their-parents-out-of-money/>.

³⁵ Adnan Kljajic - Nem, *Fortnite's Purchase Cancel Button Change Got the Players Upset*, AltChar (June 25, 2019), <https://www.altchar.com/game-news/fortnites-purchase-cancel-button-change-upset-the-players-a1k7B9Z7FUfm> (“Previously, the players could clearly see the button that would allow them to undo or cancel their purchase. Epic Games have since changed this button’s visibility and it got relegated to the bottom right corner. Furthermore, the font is smaller, there is no bracket around it and the letters are made to match that of adjacent options. Needless to say, the changes were not announced - Epic just slipped them in.”).

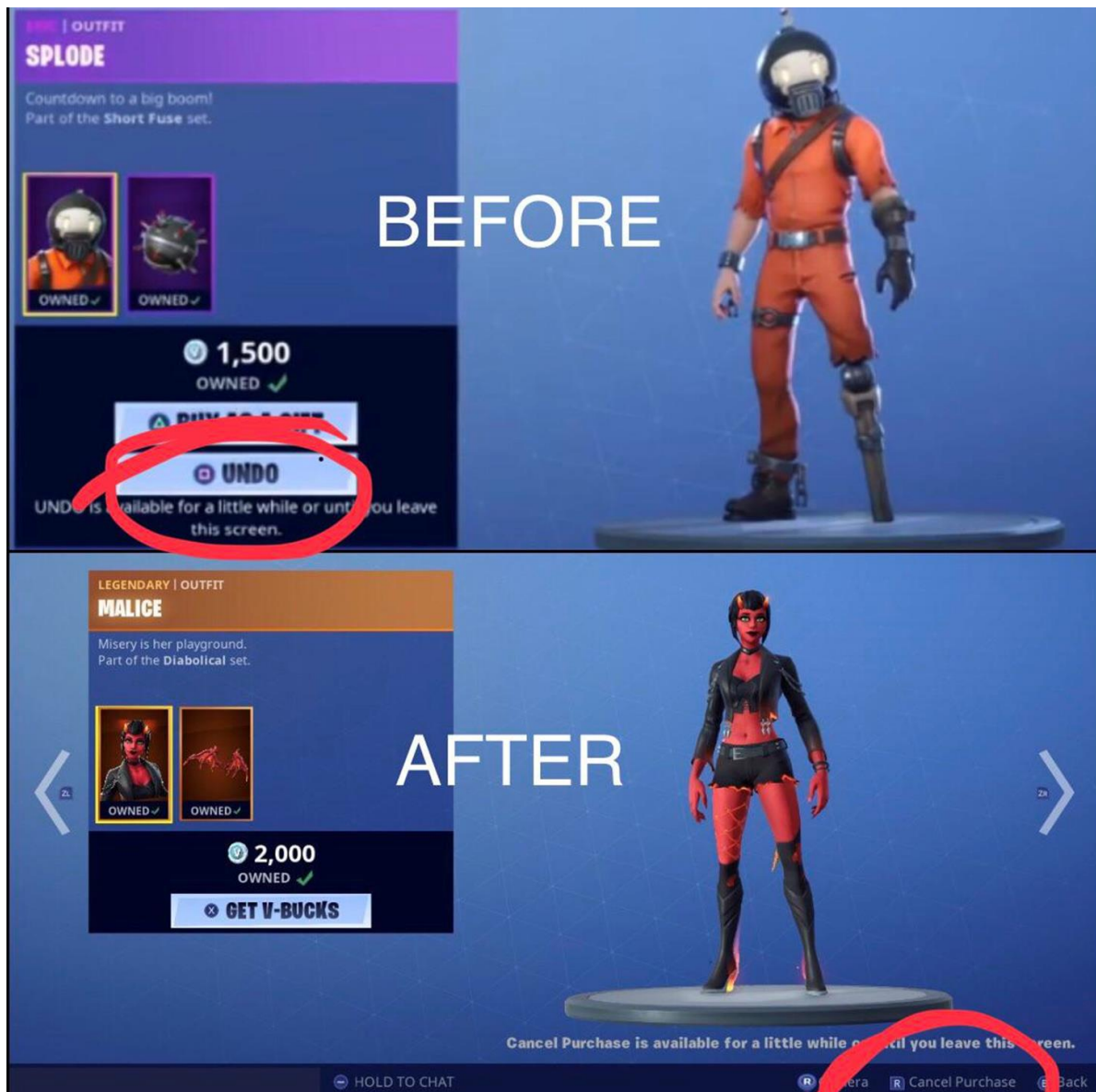


Figure 5. A comparison of the changed location of the Undo/Cancel Purchase button, location highlighted in red.³⁶

These dark patterns harm children by hijacking whatever they are doing in a game and redirecting them toward options designed to enrich the game's owners. They reduce children's autonomy by trickery, and take advantage of their trust in the game's systems to extract money from them.

³⁶ Figure originally posted at *Seriously, this is NOT okay*, Reddit (June 22, 2019), https://reddit.com/r/FortNiteBR/comments/c3mmgo/seriously_this_is_not_okay/.

6. Companies use dark patterns to pressure children to divulge personal information

Dark patterns may imply that a child must divulge personal information in order to play a game or participate in certain parts of it. We have seen games collect and share personal information that is not required for necessary functionality in violation of COPPA.³⁷ A 2018 study found that a third of 135 Android apps marketed to or played by children prompted players to rate the app on the Google Play store, and 14% prompted players to share information on social media.³⁸ These sharing functions also serve data collection purposes on social media, since such sharing often results in children granting wide-ranging permissions to extract information about social media contacts. A September 2020 study found that almost half of 153 apps in Google Play's "Designed for Families" category transmitted advertising identifiers.³⁹ This is a specific slice of the general trend, where dark patterns pressure users into oversharing and data collection.⁴⁰

Furthermore, privacy options in multiplayer games often default to settings that reveal the most personal information, a situation that can harm children. Research has shown that default options tend to be 'sticky' and unlikely to ever be changed even when the users in question are adults with more understanding of a system's workings.⁴¹

Lastly, companies often use iterative A/B testing to optimize their algorithms — such testing functions by extracting information from children in the form of their preferences and behaviors when exposed to design changes. A/B testing⁴² gathers information by exposing different segments of a user base to differently designed

³⁷ Jennifer Valentino-DeVries, Natasha Singer, Aaron Krolik, Michael H. Keller, *How Game Apps That Captivate Kids Have Been Collecting Their Data*, New York Times (Sept. 12, 2018), <https://www.nytimes.com/interactive/2018/09/12/technology/kids-apps-data-privacy-google-twitter.html> at 5.

³⁸ Meyer M, Adkins V, Yuan N, Weeks HM, Chang YJ, Radesky J. *Advertising in Young Children's Apps: A Content Analysis*. *J Dev Behav Pediatr*. 2019 Jan;40(1):32-39. doi: 10.1097/DBP.0000000000000622. PMID: 30371646. <https://pubmed.ncbi.nlm.nih.gov/30371646/>

³⁹ Fangwei Zhao, et al, *Data Collection Practices of Mobile Applications Played by Preschool-Aged Children*, *JAMA Pediatrics* (Sept. 8, 2020), <https://jamanetwork.com/journals/jamapediatrics/article-abstract/2769689>.

⁴⁰ See generally *Deceived by Design*, Forbrukerrådet (June 27, 2018), <https://fil.forbrukerradet.no/wp-content/uploads/2018/06/2018-06-27-deceived-by-design-final.pdf>.

⁴¹ Eric J. Johnson, Steven Bellman, Gerald L. Lohse, *Defaults, Framing, and Privacy: Why Opting In-Opting Out*, *Marketing Letters* 13 (2002), Pages 5-15, <https://link.springer.com/article/10.1023/A:1015044207315>; Yee-Lin Hai, Kai-Lung Hui, *Internet opt-in and opt-out: investigating the role of frames, defaults, and privacy concerns*, *SIGMIS CPR '06* (April 2006), <https://dl.acm.org/doi/abs/10.1145/1125170.1125230>.

⁴² Other common names for this practice include split testing, bucket testing, multivariate testing, and A/B/n testing.

versions of the same app or website and learning how users in each group behave differently. These tests are increasingly popular because they allow companies to measure the impact of site, game, or app improvements and design changes on core business metrics. Google, Facebook, Microsoft, Netflix, Uber, Twitter, Facebook, Amazon and other well-resourced, large companies have in-house teams of people dedicated to designing, implementing, and assessing the results of these kinds of tests. Companies with fewer resources perform A/B testing using services such as Optimizely, Google Experiments, and Unbounce. This testing can gain insights into the behavior of children, letting companies optimize further dark patterns.

These dark patterns harm children by violating their privacy and allowing companies to gain insights into their personal lives – which in turn allows for further exploitation via dark patterns.

7. *Companies use dark patterns to create and abuse parasocial relationships*

Companies prey on children’s documented tendencies toward forming relationships with characters real and imaginary to keep children playing and paying. As shown below, as part of developing an understanding of the social world, children are naturally drawn to fictional and animated characters and may form relationships with them.⁴³ Young children in particular often develop trusting relationships with animated characters and act as if those characters have real thoughts and feelings.⁴⁴ Educational programming may take advantage of these tendencies to convey positive messages about life through cartoon or exaggerated characters,⁴⁵ but game companies bootstrap off of those same tendencies to encourage unhealthy behaviors and in-app purchases. Games use mascot characters to directly pressure children to purchase via a combination of encouragement and shame tactics. For example, in our research, the mascot character in *Strawberry Shortcake Sweet Shop* suggested that purchases would make the game

⁴³ A “parasocial relationship” is a one-sided relationship – typically the relationship between a fan and a celebrity, or between a child and their imaginary friends. *Overview: parasocial interaction*, Oxford Reference, <https://www.oxfordreference.com/view/10.1093/oi/authority.20110803100305809> (last visited May 26, 2021).

⁴⁴ See Kaitlin Brunick, Marisa Putnam, Lauren McGarry, Melissa Richards, Sandra Calvert, *Children’s future parasocial relationships with media characters: the age of intelligent characters*, *J Child Media* (2016) 181-190, <https://www.tandfonline.com/doi/abs/10.1080/17482798.2015.1127839>.

⁴⁵ For example, Sesame Street or Mr. Roger’s Neighborhood of Make Believe.

easier to play,⁴⁶ and *Dragon City* presented images of crying dragons when a player attempted to decline a sudden purchase offer.



Figure 6. In *Dragon City*, this screen appears when a player attempts to decline a sudden “Level Up Offer.” Distressed cartoon dragons appear near the red “Lose Offer” button which a player must touch to avoid the transaction.

A 2013 Report from the United Kingdom’s Office of Fair Trading concurs, stating that certain games “implied that consumers who did not make a purchase would let others down,” and that children were more susceptible to these tactics.⁴⁷

Having characters express disappointment or sadness that a child did not make an in-game purchase is unfair to young children who do not understand that these characters are incapable of “feeling” disappointment or sadness. This practice links the act of making friends and developing relationships with monetary transactions, and makes children feel guilt or distress for declining purchases.

⁴⁶ See generally *We’re asking the FTC to investigate apps that manipulate kids*, Campaign for a Commercial-Free Childhood (Oct. 30, 2018), <https://commercialfreechildhood.org/were-asking-ftc-investigate-apps-manipulate-kids/>.

⁴⁷ Office of Fair Trading, *Children’s Online Games: report and consultation*, at 18, <https://assets.publishing.service.gov.uk/media/53330c4de5274a5660000005/oft1506.pdf> (last visited May 24, 2021).

By enticing or guiltting children into making purchases to meet the emotional needs of characters that don't actually have emotions, these practices also cause financial harm. Because children place trust in these characters, it is all the more easy for companies to use these characters to keep children engaged and willing to spend.

8. *Companies use dark patterns to expose children to persistent advertising*

Companies design games and content that take advantage of children through advertisements, through carrot and stick tactics, integration into content, or through simple bombardment. Games using carrot and stick tactics link advertisements to other features like pay to skip: feature a mandatory waiting period of hours or even days, or the prospect of repetitive play to progress, and then present players with an option to skip the undesired wait by watching advertisements.⁴⁸ On the more subtle side, games may also seamlessly integrate native advertising into the standard flow of gameplay and menu navigation, minimizing the conceptual distance between content and ad. Games such as Fortnite are heavily invested in these integrations, and it makes heavy use of branded content deals and product placement for monetization.⁴⁹ For example, Fortnite engaged in a cross-promotion with Marvel, that resulted in Marvel Cinematic Universe character Thanos as a temporarily playable character in Fortnite⁵⁰ and also engaged with the NFL to offer football skins as purchasable add-ons.⁵¹

Researchers have heavily documented how exposing children to excessive advertising fosters materialism, parent-child conflict, and unhappiness.⁵² In addition, the

⁴⁸ See e.g. Márcio Freire, *How ad-supported game monetization can be a win-win-win for publishers and gamers*, VentureBeat (Sept. 9, 2020), <https://venturebeat.com/2020/09/09/how-ad-supported-game-monetization-can-be-a-win-win-win-for-publishers-and-gamers/>.

⁴⁹ Matthew Liebl, *How Fortnite is revolutionizing in-game advertising*, Fansided (June 2020), <https://apptrigger.com/2020/05/23/fortnite-advertising/>; see also George Slefo, *Fortnite Emerges as a Social Media Platform for Gen Z*, AdAge (June 10, 2019), <https://adage.com/article/digital/fortnite-emerges-social-media-platform-gen-z/2176301>.

⁵⁰ Joe Donnelly, *Fortnite's Thanos mode is live, here's how it works*, PCGamer (2018), <https://www.pcgamer.com/fortnite-thanos-mode-is-live-heres-how-it-works/> (last visited May 25, 2021).

⁵¹ Charlie Hall, *NFL Skins are coming to Fortnite*, Polygon (Nov. 5 2018), <https://www.polygon.com/fortnite/2018/11/5/18064374/fortnite-nfl-skins-uniforms>.

⁵² See e.g. Baize Valkenburg, *The effects of television advertising on materialism, parent-child conflict, and unhappiness: a review of research*, J. Appl. Dev. Psych. 437-456 (2003); Matthew Lapierre et al., *The Effect of Advertising on Children and Adolescents*, 140 J. Am. Acad. Pediatrics 152, 156 (2017), https://pediatrics.aappublications.org/content/140/Supplement_2/S152.
https://pediatrics.aappublications.org/content/pediatrics/140/Supplement_2/S152.full.pdf

close integration of content and advertising makes it difficult for children, who are already at a disadvantage in distinguishing between the two, to resist the advertising.⁵³

II. The harm to children from dark patterns will not go away without intervention

Given the immense profits generated by the deployment of dark patterns, developers are unlikely to stop deploying them on children without regulatory intervention. Consumer education is unlikely to be an effective remedy given that dark patterns are designed to work on users in ways that they do not notice or understand. In addition, many dark patterns used on children take advantage of kids' developing capacities. For instance, it is simply not realistic to expect a child who is a concrete thinker to understand the complexities and abstractions of a virtual currency with no fixed value. Parents and guardians in the digital era cannot watch over everything their children do and see online, and even if they could monitor, recognize, and address every manipulative tactic faced by their children, this would not be enough to protect children from the harm suffered by mere exposure to dark patterns. Nor will the market correct the problem, because natural financial incentives exist to encourage the continued adoption and growth of dark patterns. In fact, dark patterns are likely to become an even bigger problem for children as more developers adopt machine learning tools to enhance the effectiveness of manipulative tactics through personalization.

A. Children cannot protect themselves from dark patterns

Children do not yet have the cognitive abilities necessary to recognize, let alone defend themselves against, most of the persuasive techniques that underlie dark patterns. As Dr. Jenny Radesky described during the Workshop, children are vulnerable to persuasive techniques in the following ways:⁵⁴

- Children have immature and developing executive functions, which leads to impulsive behavior and hard-wired reactions to novel stimuli.
- Children easily form imaginative and social relationships with characters.
- Children are easily influenced by positive reinforcement and other rewards.
- Children are concrete thinkers while developing their abstract thinking capabilities.

⁵³ See Katie Sherwin, Jakob Nielsen, *Children's UX: Usability Issues in Designing for Young People*, Nielsen Norman Group (Jan. 13, 2019), <https://www.nngroup.com/articles/childrens-websites-usability-issues/>.

⁵⁴ *Transcript of FTC Dark Patterns Workshop* at 55, https://www.ftc.gov/system/files/documents/public_events/1586943/ftc_darkpatterns_workshop_transcript.pdf.

- Children have an immature understanding of currency of any kind, and the more abstract currency is (such as a virtual currency with no physical component and without fixed value), the less children understand.

Dark patterns exploit all of these cognitive characteristics. FOMO tactics and endlessly continuing content exploit immature executive functions and induce positive reinforcement loops. Games go to lengths to create characters for parasocial exploitation. Dark patterns abuse children's' developing abstract thinking to gather data on them. In-game currencies use arbitrary values to obscure any sense of real value.

For more about children's cognitive abilities regarding dark patterns and other persuasive techniques, we urge the FTC to look closely at the important research done by Dr. Radesky and others.⁵⁵ Researchers have found, among other things, that children under 13 may not properly recognize persuasive intent in advertising,⁵⁶ that recognition of persuasive intent does not heavily mitigate an advertisement's persuasive power in teenagers,⁵⁷ that children 12 and under have difficulties identifying what counts as an advertisement on a web page,⁵⁸ and that children's ability to both recognize and understand the intent of advertising emerges even more slowly when advertising is embedded in content as is frequently the case with digital cases.⁵⁹

B. Parents and guardians cannot protect their children from dark patterns

Parents and guardians are also at a fundamental disadvantage in protecting their children from dark patterns. Many dark patterns are deployed in games that children play by themselves and parents are most likely unaware of how they are deployed. The

⁵⁵ Meyer M, Adkins V, Yuan N, Weeks HM, Chang YJ, Radesky J. *Advertising in Young Children's Apps: A Content Analysis*. *J Dev Behav Pediatr*. 2019 Jan;40(1):32-39. doi: 10.1097/DBP.0000000000000622. PMID: 30371646. <https://pubmed.ncbi.nlm.nih.gov/30371646/>

⁵⁶ Ester Rozendaal et al., *Comparing Children's and Adults' Cognitive Advertising Competences in the Netherlands*, *J. Children & Media* 77,78 (2010), https://www.researchgate.net/publication/232995879_Comparing_Children's_and_Adults'_Cognitive_Advertising_Competences_in_the_Netherlands

⁵⁷ Van Reijmersdal et al., *This is advertising! Effects of disclosing television brand placement on adolescents*, *J. Y. & Adol.* 15 (2016), <https://link.springer.com/article/10.1007/s10964-016-0493-3>.

⁵⁸ Ali Moondore et al., *Young children's ability to recognize advertisements in web page designs*, *Br. J. Dev. Psych.* 71, 83 (2009), https://www.researchgate.net/publication/40459548_Young_children's_ability_to_recognize_advertisements_in_Web_page_designs.

⁵⁹ Andreas I. Andronikidis & Maria Lambrianidou, *Children's Understanding of Television Advertising: A Grounded Theory Approach*, 27 *Psychology & Marketing* 299, 316 (2010); see also Dr. Barbie Clarke & Siv Svanaes, *Digital marketing and advertising to children: a literature review*, *Advertising Education Forum* 45 (2012) (citing Mallinckrodt and Mizerski 2007; Ali, Blades et al. 2009).

limited information available to parents before they purchase or download an app does little to alert parents to the types of dark patterns present or their prevalence. For example, while app stores like Google Play may disclose that a game has “in-app purchases,” the games’ descriptions do not warn parents that the games will deploy dark patterns like exploiting parasocial relationships.

In addition, even if parents take measures to protect their families from financial harm by not allowing in-game purchases, mere exposure to dark patterns can harm children. As we have seen during the pandemic, children and teenagers heavily relied upon multiplayer games like Fortnite and Roblox to communicate with each other.⁶⁰ Even if a game features parental controls, those controls will almost never prevent exposure to the dark patterns themselves. The controls may prevent a child from making in-app purchases, but they will usually not stop exposure to the patterns that make the child obsessed with making those purchases. For games like Prodigy that market themselves as educational, the interruptions and pressure to buy something for an in-game character or purchase a subscription distract children from learning.⁶¹

A guardian’s only real option for defending their child against dark patterns is to forbid the child from playing games that use those dark patterns – which is a large percentage of games that children play. Furthermore, because today’s most popular games often use these tactics, keeping children away from these games also has the effect of separating them from their peers who are also playing.

C. Market forces and technological advances will grow, rather than curb or correct, the use of dark patterns against children

Market forces will not correct this problem, either. Without regulatory intervention, financial incentives will encourage the adoption and growth of dark patterns. This is due, as discussed above, to the growth of the “live service” monetization model (in which revenue is generated continuously through ad-revenue, in-app purchases, subscription fees, or DLC as opposed to one-time purchases). Because live service revenue increases the more that users use an app, operators benefit from getting children “hooked” and encouraging regular and continuous use. Game companies see

⁶⁰ Jessica Guynn, *COVID-19 social distancing: Together apart, screen time connects isolated kids with family, friends*, USA Today (Mar 27, 2020), <https://www.usatoday.com/story/tech/2020/03/27/coronavirus-covid-19-social-distancing-screen-time-parents-children-zoom-facetime-fortnite-minecraft/5084998002/>; Ari Levy, *While parents Zoom, their kids are flocking to an app called Roblox to hang out and play 3D games*, CNBC (Apr. 9, 2020), <https://www.cnbc.com/2020/04/08/roblox-is-seeing-a-surge-during-coronavirus-shelter-in-place.html>.

⁶¹ See Nellie Bowles, *Your Kid’s Apps are Crammed with Ads*, New York Times (Oct. 30, 2018), <https://www.nytimes.com/2018/10/30/style/kids-study-apps-advertising.html>.

direct benefits to their bottom line from the use and optimization of dark patterns: in 2016, an average iPhone user spent about \$27 on game-related content,⁶² by 2018, an average Fortnite player making in-game purchases spent \$84.67,⁶³ and that average increased to \$104.42 by 2020.⁶⁴ Dark patterns directly advance a game company's goals.

Existing disincentives, such as reputational harm suffered as a result of any potential backlash to dark patterns, are not enough to counter the strong financial incentives driving the growth of dark patterns. To date, companies that use dark patterns have not faced significant reputational harms, at least none that show up on financial statements. While there have been some public backlashes to newsworthy and especially egregious practices, such as with Electronic Arts' 2017 implementation of lootboxes in *Star Wars Battlefront II*,⁶⁵ these tend not to result in actual financial harm to the company involved, nor do they result in a marked trend away from dark patterns.

Furthermore, even if some individual players become inclined to reject games featuring dark patterns, it is difficult for them to “vote with their wallets” by choosing to switch to other games. Not only do most popular contemporary games feature dark patterns, but network effects often make switching between multiplayer games unsatisfactory or difficult—alternative options almost certainly will not have a player's entire in-game social graph as fellow players.

App stores have not served as an appropriate check on dark patterns. While Apple's iOS App Store has taken some measures to require disclosure of in-app purchases as part of its review process,⁶⁶ these measures have not meaningfully curbed the use of dark patterns, and the same things could be said about Google Play.⁶⁷ Innovations like the Apple Arcade's subscription model, while laudable in their rejection of dark patterns, have also not led to meaningful checks on dark patterns in the greater

⁶² Juli Clover, *The Average iPhone User in the U.S. Spent \$40 on Apps in 2016*, MacRumors (Feb. 21, 2017, 12:17pm PST), <https://www.macrumors.com/2017/02/21/iphone-average-app-spending-2016/>.

⁶³ Mike Brown, *The Finances of Fortnite: How Much Are People Spending on This Game?*, Lendedu (Jun. 26, 2018), <https://lendedu.com/blog/finances-of-fortnite/>.

⁶⁴ Mike Brown, *Finances of Fortnite (Season 2): In-Game Spending Increases by 21%*, Lendedu (Mar. 3, 2020), <https://lendedu.com/blog/finances-of-fortnite-part-two/#survey>.

⁶⁵ Connor Trinske, *Star Wars Battlefront 2 Loot Box Controversy Was DICE's Lowest Moment*, Screenrant (Aug. 26, 2019), <https://screenrant.com/star-wars-battlefront-2-loot-box-controversy-rock-bottom/>.

⁶⁶ *App Store Review Guidelines*, Apple Developer, <https://developer.apple.com/app-store/review/guidelines/> (last visited May 25, 2021).

⁶⁷ Campaign for a Commercial-Free Childhood, Center for Digital Democracy, *Re: Request to Investigate Google's Unfair and Deceptive Practices in Marketing Apps for Children* (March 31, 2021), https://commercialfreechildhood.org/wp-content/uploads/2021/03/google_play_complaint_21.pdf.

app landscape due to competitive weakness against the attractions of games filled with dark patterns.⁶⁸

D. The technological limitations that restricted the historical impacts of dark patterns no longer exist.

While dark patterns are not new to video games, the arcade games that featured them were of limited contexts and small in scale. Arcade games of the 1970s-1990s used dark patterns as well, but were limited in scope and reach. Games would exploit players by employing countdown timers, forcing them to keep inserting quarters to continue playing against ever-increasing levels of difficulty. But the physical nature of both the coins that players would have to spend to continue, and of the arcade machines themselves, limited how exploitative these dark patterns could get. Players must physically insert coins into the machine, an action that has significant “friction.” Arcade machines were mostly restricted to the arcades themselves, and could typically only be played by one person at a time. Therefore, the monetization models for arcade games were similar to that of restaurants: keep people paying, and when they stop paying, make them leave as fast as possible to make room for more paying customers.

Today’s games do not face any of the technological limitations that cabined the scale of previous dark patterns. Games are not restricted to large physical cabinets but are instead contained within devices small enough to fit in a pocket. Most people have their own devices, rather than needing to share a communal pool. Broadband connections and digital payment processors mean that games no longer need bulky mechanisms to handle physical currency, but can instead simply wire transactions over the internet. Therefore, there are no longer any technological barriers to this business model.

E. In the near future, we are also likely to see companies use machine learning tools to enhance the effectiveness of dark patterns through personalization and exploitation of group and individual vulnerabilities.

With few incentives against and many in favor, companies are likely to find that, just as ad personalization is claimed to lead to greater click-through rates, dark pattern personalization could lead to greater monetization rates. We are already seeing companies claim that personalization is the way forward for increasing monetization: industry CEOs argue that “offering your players exactly what they want at the exact time

⁶⁸ Josh Burns, *Apple Arcade, one year on: no killer games, can't compete with free*, Mobile Dev Memo (Dec. 10, 2020), <https://mobiledevmemo.com/apple-arcade-one-year-on-no-killer-games-cant-compete-with-free/>.

is key to keeping users engaged and this is the only way to succeed,” and “machine learning leads to a new paradigm that will enable us to optimize the data to improve the personalization of our games and innovate on how to improve monetization as a consequence.”⁶⁹

If left to their own devices, the games industry will trend toward a vicious cycle of exploitative monetization practices. The combination of cloud computing with rampant data collection and A/B testing will lead to a feedback loop where novel and evolved dark patterns will seek to ensnare each individual player with their own psychological weaknesses. Already, game designers and platforms seek to target young people who are particularly prone to making in-game purchases (“whales” in industry parlance).⁷⁰ As personalization becomes more refined, we can expect games to target young people with the dark patterns that individual users are most vulnerable to.

III. The FTC should take swift and strong action to enforce Section 5 against developers that use manipulative design techniques on children

The FTC can and should take swift and strong action to clarify that the FTC Act already prohibits using practices described above against children. These practices are deceptive because they are likely to mislead children into playing more and paying more than they otherwise would in the absence of these tactics. The FTC should examine these practices from the perspective of a reasonable child. These deceptions materially harm children monetarily and psychologically. These practices are unfair because they cause significant harm to children. Children cannot avoid these ever-present practices, and any possible benefits from these practices are easily outweighed by their harms to children.

A. Manipulative design techniques are deceptive when used against children

The FTC’s Policy Statement on Deception sets out a three-part test for deception. First, the FTC assesses whether there has been a representation, omission or practice that is likely to mislead the consumer. Second, where the representation is directed to a particular group, the FTC examines reasonableness from the perspective of that group. Third, the FTC determines whether the representation, omission, or practice is material,

⁶⁹ *Machine Learning to Enhance Gaming Monetization*, Jump-Data Driven Intelligence (Dec. 10, 2020), <https://www.jumpdatadriven.com/press-notes/machine-learning-to-enhance-gaming-monetization/>.

⁷⁰ Nathan Halverson, *Facebook knowingly duped game-playing kids and their parents out of money*, *Reveal* (Jan. 24, 2019), <https://revealnews.org/article/facebook-knowingly-duped-game-playing-kids-and-their-parents-out-of-money/>.

i.e., whether it is likely to affect the consumer's conduct or decision with regard to a product or service.⁷¹

Many, if not all, design techniques intended to manipulate users into doing things they otherwise would not do constitute representations or practices likely to mislead the consumer. In particular, premium in-game currencies and use of parasocial relationships with fictitious characters are categorically deceptive when used on children.

Premium in-game currencies trick children into believing that they are not spending real money on in-game purchases. Many children lack the foundational financial literacy necessary to understand currency at all, let alone to understand that gems, shells, V-Bucks, or whatever other premium item is used in the game to purchase other things has real-money value. This is especially the case when a variety of other tactics, including dynamic and non-linear conversion rates as described above, further obfuscate the real-world cost of premium in-game currency. In addition, the minimization of UI elements like “cancel purchase” buttons obscures courses of action that don’t involve paying money.

Promoting in-game products through children’s parasocial relationships with fictitious characters tricks children into believing these characters—and their emotions—are real and are affected by the child’s in-game behavior. As documented above, some games include representations of in-game characters acting disappointed that children are not doing what game developers want them to do. But many children believe that the Tooth Fairy and Santa Claus are real, and that monsters may lurk under beds and in closets. A representation that a baby dragon will be sad if the child does not purchase more gems, or that a virtual pet will be taken away by the SPCA if not properly cared for, may be completely believable for a child.

More generally, a variety of tactics designed to keep children spending more time and money on live service games are deceptive, because they trick children into believing that in-game victory is possible. In reality, live service games continuously move the goalposts, constantly adding more objectives, more challenges, and more coveted items. This model keeps children in a state of sustained dissatisfaction and yearning, contrary to what they have been led to expect and hope for.

When these practices appear in entertainment and education apps used heavily by children, the Commission should analyze these practices from the perspective of

⁷¹ See FTC Policy Statement on Deception, October 14, 1983, https://www.ftc.gov/system/files/documents/public_statements/410531/831014deceptionstmt.pdf.

children.⁷² Manipulative techniques that adults might be able to recognize and defend against are much more likely to mislead children. Children who are developing an understanding of fiction vs. reality, and dollars, cents, and change, are not able to ignore the pleas of fictitious in-game characters or fully parse layers of arbitrary conversion ratios for in-game currencies.

B. Manipulative design techniques, as well as the A/B testing used to develop them, are unfair when used against children

Under the FTC's Policy Statement on Unfairness, an injury to consumers must satisfy three tests to be considered unfair: it must be substantial; it must not be outweighed by any countervailing benefits to consumers or competition that the practice produces; and it must be an injury that consumers themselves could not reasonably have avoided.⁷³

The manipulative design techniques described above clearly cause substantial injury to children. Dark patterns cause financial injury by driving both impulsive and completely unintentional in-app purchases, including for premium in-game currencies that children cannot understand.⁷⁴ But even beyond the obvious financial harm, dark patterns harm children's wellbeing through mere exposure. As discussed above:

- FOMO tactics harm children by pressuring them to play as much as possible and to spend money impulsively, as well as by contributing to sleep deprivation, anxiety, and depression.⁷⁵
- Tactics that leverage children's esteem needs harm children by fostering anxiety about peer relationships and competitiveness for material goods and superficial appearance.⁷⁶
- The creation and manipulation of parasocial relationships with fictitious characters to promote in-app purchases harms children by causing them to feel distress for declining purchases, thereby guiltting them into making purchases.⁷⁷

⁷² *Id.* at 3.

⁷³ FTC Policy Statement on Unfairness, Dec. 17, 1980, <https://www.ftc.gov/public-statements/1980/12/ftc-policy-statement-unfairness>.

⁷⁴ See generally *supra* Section I.C.

⁷⁵ See discussion in *supra* Section I.C.1.

⁷⁶ See discussion in *supra* Section I.C.2.

⁷⁷ See discussion in *supra* Section I.C.7.

- Tactics that entice children to constantly view persistent advertisements harm children because exposure to excessive advertising has been linked to materialism, parent–child conflict, and unhappiness.⁷⁸

A/B testing, which may be used to develop design techniques to manipulate children into playing games longer and spending more money, also causes substantial injury to children. A/B testing helps developers refine and perfect manipulative design, intensifying the harms described above.

Dark patterns and the A/B testing used to refine them offer no countervailing benefits for children and their families that could possibly outweigh these substantial harms. Any “benefits” from the usage of dark patterns accrue solely to the company that employs them. Any actual benefits to competition or the ability of companies to make more games derive from the fundamentals of microtransaction- or subscription-based business models. A steady income stream is obviously valuable to ensure stability and expansion, but there must be reasonable limits. The exploitative dark patterns that currently accompany live service development and freemium monetization models only “benefit” developers by unfairly extracting money from manipulated children.

Finally, the harms caused by dark patterns and the testing mechanisms that support these techniques cannot be avoided by children and their parents, because these tactics pervade popular games and are growing more pervasive and effective by the year. A/B testing typically is not disclosed to children and parents, so families lack even the basic information required to avoid becoming test subjects. And as shown above, the gaming industry is relying ever more heavily on in-app microtransactions as its business model, and the accompanying dark patterns that extract money from players go hand-in-hand with that trend. A game that has microtransactions as its core model, and is optimized to deliver on that monetization model, acts effectively as a continual advertisement for itself. The only “winning” move is not to play, but when most of the popular games on the market—and especially the ones that a child’s friends play—are reliant on dark patterns, there is little that can be done to avoid exposure.

In addition, even if parents insist that their children play no online games for entertainment or socializing, schools may assign apps like Prodigy that use dark patterns for monetization.⁷⁹

⁷⁸ See discussion in *supra* Section I.C.8.

⁷⁹ Re: *Request for Investigation of Deceptive and Unfair Practices by the Edtech Platform Prodigy*, Campaign for a Commercial-Free Childhood (Feb. 19, 2021), at 2, https://commercialfreechildhood.org/wp-content/uploads/2021/02/Prodigy_Complaint_Feb21.pdf. (Prodigy Complaint)

C. The FTC should immediately enforce Section 5 against developers employing these unfair and deceptive practices

The FTC should act without delay to enforce Section 5 to protect children from dark patterns. Although these practices are extremely widespread, at the time of these comments, the FTC has not brought a single enforcement action against an app used by children for these practices.⁸⁰ We call on the FTC to use its enforcement powers to crack down on these practices and protect children.

Not only will children and their families benefit from the FTC limiting dark patterns, but FTC action is also important to provide a much-needed signal to companies large and small that these techniques will not be tolerated when used against children. Entertainment and education software for children constitute a rapidly growing industry. That industry is growing in the wrong direction—toward more live services and more dark patterns. The FTC must use its strength to steer the industry in a less harmful direction.

In the urgent and immediate near-term, the FTC must bring enforcement actions against companies that sell premium in-game currencies and those that use in-game character's emotions to manipulate children into taking particular actions. As explained above, these practices are categorically deceptive when used against children, and constitute low-hanging fruit for the FTC's enforcement efforts.

In addition, we urge the FTC to act on several open requests for investigation that CDD and CCFC have filed in past years. These filings could provide the basis for initial enforcement actions:

- In October 2018, CCFC and CDD and 22 other consumer advocacy organizations urged the FTC to investigate using parasocial relationships and other dark patterns to drive in-game purchases in popular Android apps for young children.⁸¹

⁸⁰ The FTC has established consent decrees with Amazon, Apple, and Google re in-app purchases by children, but that does not go far enough. *FTC settlement with Amazon yields \$70 million for consumers, advice for business*, Federal Trade Commission (May 30, 2017), <https://www.ftc.gov/news-events/blogs/business-blog/2017/05/ftc-settlement-amazon-yields-70-million-consumers-advice>; *FTC Approves Final Order in Case about Apple Inc. Charging for Kids' In-App Purchases Without Parental Consent*, Federal Trade Commission (March 27, 2014), <https://www.ftc.gov/news-events/press-releases/2014/03/ftc-approves-final-order-case-about-apple-inc-charging-kids-app>; *FTC Approves Final Order in Case About Google Billing for Kids' In-App Charges Without Parental Consent*, Federal Trade Commission (Dec. 5, 2014), <https://www.ftc.gov/news-events/press-releases/2014/12/ftc-approves-final-order-case-about-google-billing-kids-app>.

⁸¹ Letter to Donald Clark & Andrew Smith, October 30, 2018, https://commercialfreechildhood.org/wp-content/uploads/archive/devel-generate/piw/apps_FTC_letter.pdf.

- In December 2018 we also urged the FTC to investigate Google for promoting apps on its Play Store as family-friendly that violate Google’s own criteria, COPPA, and Section 5.⁸²
- This year, a coalition of 22 organizations urged the FTC to investigate the EdTech app Prodigy⁸³ for using dark patterns and manipulative design to drive premium memberships. Given that use of EdTech platforms is often compulsory and therefore the harms caused by Prodigy’s dark patterns hard to avoid – both the financial harm for students whose families purchase a membership and the inequities experienced by students whose families do not – it is particularly important that the FTC hold Prodigy accountable for its unfair and deceptive practices. With venture capital and private equity investments in EdTech startups increasing from \$1.7 billion to \$2.2 billion from 2019 to 2020,⁸⁴ EdTech developers will be under enormous pressure to monetize so it is critical that the FTC establish that dark patterns cannot be used to monetize EdTech apps and platforms used in schools.

More broadly, we ask the FTC to look critically upon any live service game used heavily by children, and the practices these games employ for the purpose of keeping child users playing longer and spending more. As explained above, these are the games most likely to employ the troubling tactics described above.

IV. The FTC should be proactive about protecting children from dark patterns moving forward

In addition to using its enforcement authority to crack down on existing widespread practices that violate Section 5, we urge the FTC to take steps to protect children from dark patterns moving forward. First, the FTC should make clear that it is impermissible to use dark patterns on children, and should require companies to take reasonable steps to ensure they are not doing so. Second, the FTC should issue guidelines warning operators not to use dark patterns on children, and alerting parents to the existence of these unfair and deceptive practices. Finally, the FTC should update the COPPA Rule to further bolster its stance against dark patterns.

⁸² *Request to Investigate Google’s Unfair and Deceptive Practices in Marketing Apps for Children*, Dec. 19, 2018, https://commercialfreechildhood.org/wp-content/uploads/archive/develop/generate/vad/google_ftc_complaint.pdf.

⁸³ Prodigy Complaint, https://commercialfreechildhood.org/wp-content/uploads/2021/02/Prodigy_Complaint_Feb21.pdf.

⁸⁴ Tony Wan, *A Record Year Amid a Pandemic: US Edtech Raises \$2.2 Billion in 2020*, EdSurge (Jan 13, 2021), <https://www.edsurge.com/news/2021-01-13-a-record-year-amid-a-pandemic-us-edtech-raises-2-2-billion-in-2020>.

A. The FTC should prohibit the use of dark patterns on children, and require companies take steps to avoid using dark patterns against children

The FTC should proactively prevent companies from using these techniques against children through a finding that these techniques are deceptive or unfair under Section 5 of the FTC Act. The Commission should outright prohibit the use of dark patterns in games and educational content directed at or marketed to children. Further, companies that do not explicitly direct their products to children but that have a substantial number of child users should take one of two approaches:

- If the company can reliably differentiate which users are children, it must do so. Dark patterns such as premium in-game currencies must not be used against children.
- If the company cannot reliably differentiate which users are children, it should treat all players the same, and not employ dark patterns on any player.

This includes games such as Fortnite that may position themselves as general audience games but intentionally court the children's market. Fortnite is rated "Teen" by the ESRB and its parent company, Epic Games, states in its privacy policy that "The Epic services are intended to be appropriate for general audiences and are not directed to children."⁸⁵ However, Fortnite is played by a large number of children, and Epic Games capitalizes on that audience, placing or licensing its brand and characters on products clearly geared toward children such as Nerf guns,⁸⁶ action figures marketed as appropriate for ages 5–13,⁸⁷ and size 8 children's clothing.⁸⁸ The FTC's Section 5 analysis examines a practice from the perspective of a reasonable member of the group targeted.⁸⁹ If an app or game targets children or has a substantial number of child users, as with Fortnite, techniques used in the game should be scrutinized from the perspective of a child, and dark patterns must not be tolerated.

The Commission should also take steps to ensure that companies cannot use the information extracted from children to develop or optimize dark patterns. We urge the

⁸⁵ Epic Games Privacy Policy, (last updated Mar. 31, 2020), <https://www.epicgames.com/site/en-US/privacypolicy>.

⁸⁶ *Fortnite X Nerf: Bring your Fortnite battles into real life with Nerf Fortnite blasters!*, Hasbro (last visited May 24, 2021), <https://nerf.hasbro.com/en-us/fortnite>.

⁸⁷ *Fortnite Legendary Series 6in Figure Pack, Tomatohead S2*, Walmart (last visited May 24, 2021), <https://www.walmart.com/ip/Fortnite-Legendary-Series-6in-Figure-Pack-Tomatohead-S2/146074959>.

⁸⁸ *Boys' Fortnite Camo Print Rash Guard Swim Shirt - Black M*, Target (last visited May 24, 2021), <https://www.target.com/p/boys-39-fortnite-camo-print-rash-guard-swim-shirt-black-m/-/A-77063580>.

⁸⁹ FTC Policy Statement on Deception, October 14, 1983 at 3, https://www.ftc.gov/system/files/documents/public_statements/410531/831014deceptionstmt.pdf.

Commission to follow the path set by its recent settlement with Everalbum,⁹⁰ which ordered the company to delete or destroy any Affected Work Product, which included “any models or algorithms” developed using data from deceptive facial recognition practices.⁹¹ The Commission should require that companies cease using or developing machine learning advertising algorithms trained on data gathered from children, that companies cease using A/B testing to design dark patterns, and that companies eliminate game elements developed from A/B testing or other testing designed to optimize children’s game time or microtransaction revenue.

B. The FTC should issue guidelines warning operators not to use dark patterns, and alerting parents and guardians to them

The FTC also should issue guidelines that define unfair and deceptive dark patterns that must not be used against children. Such guidelines are needed to notify the game industry of what design choices are unacceptably exploitative. As discussed at length above, trends in gaming industry development and monetization models are naturally fostering the growth of dark patterns, which are already extremely widespread. To rein in these practices at scale, the FTC should post clear guidance on its website that developers can use to understand what practices are prohibited and what, and what steps they should take to ensure they are in compliance with Section 5.

In addition, guidelines explaining the aims of dark patterns and illustrative examples can help families and children to understand them. Parents and guardians experience numerous frustrations with the dark patterns documented above, such as conflicts with their children (who insist on playing games compulsively and at inopportune times, due to endless treadmill and FOMO tactics), excessive or accidental in-app purchases, and even serious problems like sleep deprivation and anxiety in their children. Families may be vaguely aware of some of these frustrations, but not understand the design mechanisms causing these problems, or the full scope of the harms that may befall their children as a result. Much-needed guidance from the FTC could help families better identify and understand dark patterns in the entertainment and educational apps used by their children. It is important to emphasize, however, that any consumer education efforts by the Commission must be in addition to, not as a substitute for, enforcement actions and industry guidance.

⁹⁰ In the Matter of Everalbum, Inc., FTC File No. 1923172, <https://www.ftc.gov/enforcement/cases-proceedings/1923172/everalbum-inc-matter>.

⁹¹ Agreement Containing Consent Order in the Matter of Everalbum, Inc., File No. 1923172, https://www.ftc.gov/system/files/documents/cases/everalbum_order.pdf.

C. The FTC should update the COPPA Rule to bolster its stance against dark patterns

The current review of the COPPA Rule presents a valuable opportunity to counter the harms that dark patterns inflict on children. Bringing the COPPA Rule in line with rapidly-changing technology requires stopping the gaming industry's use of manipulative design to target children.

In particular, we urge the FTC to state clearly that the “support for internal operations” exception does not encompass the use of children's information to inform A/B testing. As explained above, the refinement of dark patterns often is supported by A/B testing. This testing relies on user data. When users are children, the information used to inform A/B testing is covered by COPPA. At present, discussion in the FTC's COPPA Frequently Asked Questions of the “support for internal operations” exception does not clearly state that testing to improve product performance or sales does not fall within this exception. This should be made clear in the rule or at least in the FAQs.

We also urge the FTC to partially address dark patterns by fleshing out its implementation of the COPPA provision ordering the FTC to promulgate regulations that “prohibit conditioning a child's participation in a game, the offering of a prize, or another activity on the child disclosing more personal information than is reasonably necessary to participate in such activity.”⁹² Data minimization is important, and not observed—or enforced—seriously enough in children's games and apps, an issue that we have already raised with the FTC and asked it to address in its next update of the COPPA Rule.⁹³ Dark patterns make this problem worse because they often encourage the disclosure of additional unnecessary personal information, such as by misleading a child into creating a superfluous profile to play a game or compelling a child to consent to behavior tracking that can, in turn, be used to foist an in-app purchase on the child. When dark patterns are used to manipulate a child into disclosing additional information, the FTC should conclude that the operator using such techniques has “conditioned” participation on the child disclosing that information. The FTC's implementation of this provision also should clearly prohibit subjecting a child to A/B testing, because using a child's information for *testing* constitutes conditioning the child's participation on the disclosure of more information than is necessary to *participate* in the activity.

⁹² 15 CFR § 6502(b)(1)(C).

⁹³ Comments of Campaign for a Commercial-Free Childhood, et al., In the Matter of: Request for Public Comment on the Federal Trade Commission's Implementation of the Children's Online Privacy Protection Rule, Dec. 11, 2019, <https://commercialfreechildhood.org/wp-content/uploads/2019/12/CCFC-COPPA-comments.pdf>.

Conclusion

The FTC should take immediate action to stop companies from using dark patterns against children. The Commission already has the authority to begin enforcing Section 5 against companies that do so, and can prevent current and future harms from these unfair and deceptive practices that keep children playing and spending on microtransaction-based content.

Respectfully submitted,

/s/ _____
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