Before the
COLORADO OFFICE OF THE ATTORNEY GENERAL
Denver, CO 80203

In the Matter of	)	
	)	
Colorado Privacy Act	)	Senate Bill 21-190
	)	

COMMENTS OF COMMON SENSE MEDIA

Jolina Cuaresma
Senior Counsel, Privacy and
Technology Policy

Irene Ly
Policy Counsel

Brendan Brown
Law and Policy Intern

Common Sense
699 8th Street
Suite C150
San Francisco, CA 94103

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I.   INTRODUCTION

Common Sense Media ("Common Sense") hereby respectfully submits comments to the Colorado Office of the Attorney General ("Attorney General") regarding Colorado Privacy Act (CPA) rulemaking. We urge the Attorney General to promulgate rules that specify which types of dark patterns are prohibited under the CPA, to provide the necessary clarity to covered entities. This comment includes specific examples of the types of dark patterns that are particularly harmful to children and teens; the Attorney General's rulemaking process should limit or prohibit these dark patterns.

Common Sense is the nation's leading independent nonprofit organization dedicated to helping kids and families thrive in a world of media and technology. We empower parents, teachers, and policymakers by providing unbiased information, trusted advice, and innovative tools to help them harness the power of media and technology as a positive force in all kids' lives. Common Sense has an uncommon reach among parents and teachers, with over 100 million users and one million educators across its networks and platforms.

Children are particularly vulnerable to several types of dark patterns, including the prominent examples listed here. Dark patterns involving unwanted purchases or subscriptions exploit children's limited understanding of monetary value.[1] Children also struggle to identify and analyze advertising, which is exacerbated by dark patterns used to disguise ad content.[2] Some dark patterns take advantage of children's values and exploit children's personal relationships with friends and parasocial relationships with characters.[3] Lastly, technical design

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[1] *See, infra* notes 23-37.
[2] *See, infra* notes 38-45.
[3] *See, infra* notes 46-52.

features limit user options by obscuring user settings, setting unfavorable default options, and

limiting user choices across different types of devices.[4]

Common Sense urges the Attorney General to create targeted rules that address the dark

patterns that are most harmful to children and teens. The Attorney General should prohibit

asymmetric design practices that limit user options across different types of devices. To protect

users from harmful default settings, the Attorney General should require platforms to seek

explicit consent for data collection and sharing. To better prevent children from making

unwanted purchases, the Attorney General should require platforms to implement opt-out options

for in-app purchases. The Attorney General should also require platforms to be transparent about

the value of in-app currencies and more clearly differentiate purchases made with actual money

from those made with valueless game points. Lastly, platforms should be required to label all ad

content to allow children to more easily differentiate advertising from entertainment.

II.   DEFINING DARK PATTERNS

Dark patterns are user interface design features meant to confuse or manipulate users.[5]

Dark patterns can encourage unwanted purchases, force users to interact with ad content, and

limit users' ability to change application settings. However, the term is ambiguous and

becoming increasingly outdated due to its vagueness and the negative connotations behind it.[6]

For example, it is unclear from the term itself whether dark patterns are "dark" because they are

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[4] *See, infra* notes 53-58.

[5] Jamie Luguri, Lior Jacob Strahilevitz, *Shining a Light on Dark Patterns*, 13 J. LEGAL ANALYSIS 43 (Mar. 23, 2021),
https://www.researchgate.net/publication/350340175_Shining_a_Light_on_Dark_Patterns/fulltext/609bc913458515a04c4994d1/Shining-a-Light-on-Dark-Patterns.pdf?origin=publication_detail.

[6] Common Sense has moved to using the term "manipulative design." "Dark patterns" suggests a strongly negative connotation that elides the fact that some dark patterns are neutral or even beneficial to the user in certain contexts. Additionally, the use of the word "dark" to characterize the negative aspects of dark patterns also perpetuates implicit racial bias that views darkness as inherently bad, and lightness as good. KAT ZHOU, FTC DARK PATTERNS WORKSHOP TRANSCRIPT 15 (Apr. 29, 2021),
https://www.ftc.gov/system/files/documents/public_events/1586943/ftc_darkpatterns_workshop_transcript.pdf.

harmful or "dark" just because they are hidden from the user. To make regulations around these types of design features more clear, Common Sense suggests the Attorney General adopt the term "manipulative design" instead of "dark patterns." The term "manipulative design" is more descriptive and communicates that a design feature is harmful because of its manipulative nature. For the sake of consistency with the CPA and the Attorney General's rulemaking process, this comment will continue to primarily use the term "dark patterns" to describe the design features at issue.

III.   CHILDREN ARE UNIQUELY VULNERABLE TO DARK PATTERNS

Tech firms profit from using dark patterns because they encourage kids to make questionable purchases. A recent pediatric study, which tracked the app use of 160 children between the ages of three and five, found that manipulative designs are highly prevalent in apps used by young children.[7] Approximately 80 percent of children were exposed to dark patterns;[8] 31.6 percent of apps featured in-app advertising while 55.6 percent of apps employed manipulative designs to encourage purchases.[9]

Deploying dark patterns in apps used by children is particularly troubling. The prefrontal cortex of the human brain – the part that controls emotional maturity, self-image, and judgment – is not fully developed until the age of twenty-five. Until then, children are prone to impulsive decision making and are susceptible to advertising and prime targets for unscrupulous tech firms. Moreover, as a practical matter, kids and teens simply lack the life experience that forms the

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[7] Jenny Radesky, Alexis Hiniker, Caroline McLaren, Eliz Akgun, Alexandria Schaller, Heidi M. Weeks, Scott Campbell, Ashley N. Gearhardt, *Prevalence and Characteristics of Manipulative Design in Mobile Applications Used by Children*, JAMA NETWORK OPEN 1 (June 17, 2022), https://jamanetwork.com/journals/jamanetworkopen/articlepdf/2793493/radesky_2022_oi_220514_1654814846.21988.pdf.
[8] *Id.* at 5.
[9] *Id.*

basis for making better decisions. Compared to adults, kids are more at risk for making unwise

purchases and more readily share personal information.[10] They cannot easily differentiate

between commercial and non-commercial content,[11] and the use of dark patterns further blurs the

line between entertainment content and advertising. Furthermore, even when children are able to

identify ad content, they are still frequently unable to recognize biased or deceptive messages in

advertising.[12]

These concerns are especially troubling because of the lasting impact the COVID-19

pandemic has had on our children's lives. Today, kids and teens spend more time alone at home

instead of being with friends or participating in outside activities.[13] Their lives increasingly occur

online.[14] In 2015, children aged eight to twelve spent a daily average of nearly five hours using

screened devices; in 2021, that figure jumped by more than 20 percent.[15] For teens, aged thirteen

to eighteen, the statistics are even more alarming. In 2015, they spent roughly 40 percent of

waking hours in front of screens; in 2021, it grew to about 55 percent.[16] This increased time

online results in even greater exposure to harmful dark patterns.

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[10] See Adriana Galvan, Todd A. Hare, Cindy E. Parra, Jackie Penn, Henning Voss, Gary Glover, B.J. Casey, *Earlier Development of the Accumbens Relative to Orbitofrontal Cortex Might Underlie Risk-Taking Behavior in Adolescents*, J. NEUROSCI. (June 21, 2006), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6673830/; *see also*, SONIA LIVINGSTONE, MARIYA STOILOVA, RISHITA NANDAGIRI, CHILDREN'S DATA AND PRIVACY ONLINE: GROWING UP IN A DIGITAL AGE 29 (Jan. 2019), https://eprints.lse.ac.uk/101283/1/Livingstone_childrens_data_and_privacy_online_evidence_review_published.pdf.

[11] BRIAN L. WILCOX, DALE KUNKEL, JOANNE CANTOR, PETER DOWRICK, SUSAN LINN, EDWARD PALMER, REPORT OF THE APA TASK FORCE ON ADVERTISING AND CHILDREN 5-6 (Feb. 20, 2004), https://www.apa.org/pubs/reports/advertising-children.

[12] *Id.*

[13] VICTORIA RIDEOUT, ALANNA PEEBLES, SUPREET MANN, MICHAEL B. ROBB, THE COMMON SENSE CENSUS: MEDIA USE BY TWEENS AND TEENS 1 (2021), https://www.commonsensemedia.org/sites/default/files/research/report/8-18-census-integrated-report-final-web_0.pdf.

[14] *Id.* at 3. This increase in technology use is in addition to any increased technology usage related to the completion of school assignments and remote learning. *See id.* at 1.

[15] *Id.* at 3.

[16] *Id.*

IV.   EXAMPLES OF DARK PATTERNS THAT ADVERSELY IMPACT CHILDREN

The dark patterns listed here are some examples of dark patterns that are particularly harmful to children. Dark patterns can be used to encourage children to make undesired purchases or watch and interact with advertisements. Many dark patterns target children using emotional manipulation, taking advantage of children's values and priorities. Other dark patterns rely on technical design features, such as setting default options that disadvantage users or hiding settings to limit user choice. The Attorney General should address these dark patterns by prohibiting certain technical design features that disadvantage children, requiring certain disclosures, and issuing guidance to platform developers.

A. Costs, Fees, and Subscriptions

Many dark patterns involve hidden or deceptive costs, fees, and subscriptions. These dark patterns are especially common in the most popular online children's games. Traditionally video games required only a one-time purchase of a self-contained game. However, the advent of mobile gaming and downloadable content has drastically altered how video games are marketed and sold. Many mobile games use a "free-to-play" model with microtransactions, a system where users can download and play a game for free, with the option to purchase in-game items or rewards using small sums of real money.[17] For example, the popular online game platform Roblox is free-to-play with a three-tiered monthly premium subscription model.[18] Higher subscription tiers allow players to unlock exclusive game content as well as an allowance of the in-game currency "Robux."[19] Roblox heavily markets towards children; in 2021 approximately

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[17] Mike Colagrossi, *How Microtransactions Impact the Economics of Gaming*, INVESTOPEDIA (Aug. 27, 2021), https://www.investopedia.com/articles/investing/022216/how-microtransactions-are-evolving-economics-gaming.asp.

[18] *Roblox Premium*, ROBLOX, https://www.roblox.com/premium/membership (last visited Aug. 2, 2022).

[19] *Id.*

49.6% of daily active Roblox users were children aged 13 and under.[20] Roblox representatives claim that three-fourths of all kids in the United States between 9 and 12 years old use Roblox.[21]

Free-to-play games frequently utilize "pay-to-win" design, where it is difficult or impossible for users to advance through a game or keep up with other players without making repeat microtransactions, a system colloquially called "pay-to-win."[22] In games like Roblox, where multiple players compete against each other, it is difficult for players who do not purchase special items or power-ups to win against those who do.[23] The Roblox three-tier subscription system essentially creates multiple classes of players, with players who purchase more expensive subscriptions having competitive advantages over players who play for free or purchase a lower tier. Pay-to-win design essentially creates a virtual arms race where players have to make greater purchases to win against other players, who in turn must make greater purchases to keep up.[24] Pay-to-win games use ranking systems or public leader-boards to encourage heightened competition, resulting in greater incentive for players to make repeated purchases.[25] Pay-to-win design infringe user autonomy by forcing players to make purchases they otherwise would not have made just to keep playing or advance in the game.

"Currency confusion" is a dark pattern where apps or games force users to convert actual currency to an arbitrary in-app currency system for in-app purchases, rather than allowing users

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[20] ROBLOX, SHAREHOLDER LETTER Q3 2021 6 (Nov. 8, 2021), https://s27.q4cdn.com/984876518/files/doc_financials/2021/q3/Q3-2021-Shareholder-Letter-Final.pdf.

[21] Munsif Vengattil, Joseph Menn, *Factbox: The Nuts and Bolts of Roblox*, REUTERS (Nov. 19, 2020), https://www.reuters.com/article/us-gaming-roblox-factbox/factbox-the-nuts-and-bolts-of-roblox-idUSKBN27Z1F. Common Sense rates Roblox as appropriate for children aged 13 and up. Erin Bereton, *Roblox*, Common Sense Media, https://www.commonsensemedia.org/website-reviews/roblox (last visited Aug. 2, 2022).

[22] JOSÉ P. ZAGAL, STAFFAN BJÖRK, CHRIS LEWIS, DARK PATTERNS IN THE DESIGN OF GAMES 5 (2013), http://www.fdg2013.org/program/papers/paper06_zagal_etal.pdf.

[23] *Id.*

[24] *Id.*

[25] *Id*.

to make direct purchases.[26] The use of in-app currencies creates a level of abstraction that

obscures the true cost of in-app purchases.[27] Different apps and games use different in-app

currencies with different real-world values, creating additional confusion by forcing users to

keep track of value conversions across different apps and games.[28] For example, one Fortnite "V-

Buck" is roughly the equivalent of 0.01 US dollars, while one Roblox "Robux" is roughly the

equivalent of only 0.0035 US dollars.[29] Currency confusion is especially problematic for young

children, who lack the financial literacy and mathematical skill necessary to parse the true value

of innumerable conflicting digital currency systems. It takes years for children to fully develop

financial literacy skills, and children at different ages have different understandings of financial

concepts like saving and planning.[30] Without a physical exchange of money for goods, young

children may not even understand that their virtual purchases involve real money at all.[31]

Developers make it easy to make in-app purchases by allowing users to make one-click

purchases with credit card information saved in the app store; this further confuses children by

eroding the difference between purchases with real currency and purchases made with valueless

in-game points. Parents are typically unaware of their children's in-app purchases until later,

when the purchase appears on their credit card bill. Developers take advantage of currency

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[26] Scott Goodstein, *When the Cat's Away: Techlash, Loot Boxes, and Regulating "Dark Patterns" in the Video Game Industry's Monetization Strategies*, 92 U. COLO. L. REV. (Feb. 1, 2021), https://lawreview.colorado.edu/printed/when-the-cats-away-techlash-loot-boxes-and-regulating-dark-patterns-in-the-video-game-industrys-monetization-strategies/#post-1597-footnote-ref-93.

[27] *Id.*

[28] *Id*.

[29] *Fortnite Currency: How much are V-bucks and what are they used for?*, KIDAS (Nov. 12, 2021), https://www.kidas.net/post/fortnite-currency; *Developer Economics*, ROBLOX DOCUMENTATION, https://create.roblox.com/docs/production/monetization/economics (last visited Aug. 2, 2022).

[30] *See School-Age Children to Preteens*, CONSUMER FINANCE PROTECTION BUREAU, https://www.consumerfinance.gov/consumer-tools/money-as-you-grow/school-age-children-preteens/ (last visited Aug. 2, 2022).

[31] *Teaching Your Children About Money in the Digital Age*, MACQUARIE CREDIT UNION, https://web.archive.org/web/20210224185422/https://www.macquariecu.com.au/news-updates-teaching-your-children-about-money-in-the-digital-age.html (archived Feb. 24, 2021).

confusion to encourage children to make more purchases than they otherwise would have if they fully understood the monetary cost of the transaction. Without safeguards, the burden is placed onto parents to ensure their children are not making unwanted purchases.

B. Hidden and Deceptive Advertising

Children are particularly susceptible to dark patterns used in digital advertising. Adults can generally recognize the difference between entertainment content and ad content, but it is much more difficult for young children to make the distinction.[32] Children below the ages of 4-5 are entirely incapable of distinguishing ad content even when it is expressly labeled.[33] Older children also struggle to identify even expressly-labeled advertisements. Only 24% of children aged 8-11 and 38% of children aged 12-15 are able to correctly distinguish expressly-labeled sponsored links on Google.[34] This difficulty is exacerbated by failures to properly label ad content and the use of deceitful design practices to disguise ad content. Even when children are able to identify ad content, they are often still unable to recognize biased or deceitful messages in advertising.[35]

Platform developers use dark patterns that increase confusion by blurring the lines between entertainment content and ad content. Blurring the line between entertainment and advertising makes it difficult for even adults to recognize the difference, let alone children who already struggle to understand and identify advertising. When watching continuous streams of autoplay videos on video apps like YouTube, there are few, if any, visual identifiers separating advertising videos from user-generated videos. In mobile games, advertisements are increasingly

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[32] *See* Wilcox, *supra* note 11.

[33] *Id*.

[34] OFCOM, CHILDREN AND PARENTS: MEDIA USE AND ATTITUDES REPORT 86 (Nov. 2016), https://www.ofcom.org.uk/__data/assets/pdf_file/0034/93976/Children-Parents-Media-Use-Attitudes-Report-2016.pdf.

[35] *See* Wilcox, *supra* note 11.

integrated with gameplay.[36] Players are forced to view ads for unrelated products and services in order to receive in-game rewards, such as items, lives, or simply to advance to the next level of the game.[37] Giving in-game rewards for viewing ad content creates the impression that the ads are a part of gameplay.

Roadblock ads require users to interact with ads before the ads can be closed and the game can advance.[38] This forced interaction may simply be clicking an "X" icon or a button labeled "skip." However, advertisers often visually obscure these buttons to extend how long the ad appears before the user can move past it. Bait and switch tactics are used to disguise ads as other kinds of content or navigation to trick users to interact with ads when they otherwise would not have. Sometimes clicking any part of the ad, including the button to close it, forcibly redirects the user to another page or app selling the product. Complex ads can include embedded gameplay elements that players are forced to engage with before they can remove the ad.[39] Embedding gameplay elements into in-game advertisements eliminates all identifying cues that would allow children to differentiate game content and ad content, making the ad appear to be just another level in the game.

C. Emotional Ploys

Many apps and games use dark patterns that depend on emotional manipulation of children and teens. Social applications provide mechanisms for children and teens to develop and maintain relationships with friends and family, while games and video platforms allow children to form one-sided parasocial relationships with fictional characters. Children and teens tie their

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[36] *See e.g.*, Radesky, *supra* note 7, at 7.
[37] *Id.*
[38] *Id.*
[39] *Id.*

emotional wellbeing to the maintenance of these real and parasocial relationships, and developers use this user investment in protecting these relationships to encourage purchases, harvest data, and increase platform usage.

For example, the social media platform SnapChat includes a feature called "Snapchat Streaks" that shows users a counter for how many consecutive days they have interacted with another user.[40] Snapchat uses emoji symbols both as nudges, such as using an hourglass emoji to remind each user to interact with the other user before the daily deadline runs out, and as rewards, with different emojis representing different streak milestones.[41] If a user breaks the daily streak, they are punished by losing their emoji reward and the counter resets to zero. This system of minor rewards and losses takes advantage of young users' values, personal emotions, and social relationships with their friends. Users are motivated to seek the in-app rewards because they are designed to represent real friendships, and conversely a loss of these rewards symbolize a failure of loyalty.[42] To keep up SnapStreaks, kids and teens often go as far as giving friends their log-in information to maintain streaks for them when they are unable to use their phone, such as when they are on vacation or have had their phone taken away.[43]

In addition to preying on real social relationships, many mobile games use dark patterns that manipulate children by encouraging them to develop parasocial relationships with fictional characters. A parasocial relationship is a relationship where one party forms a one-sided emotional bond with someone or something that cannot reciprocate. Young children form strong

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[40] *Id*.

[41] *See e.g.*, Taylor Lorenz, *Teens Explain the World of Snapchat's Addictive Streaks, Where Friendships Live or Die*, BUSINESS INSIDER (Apr. 14, 2017), https://www.businessinsider.com/teens-explain-snapchat-streaks-why-theyre-so-addictive-and-important-to-friendships-2017-4.

[42] *See e.g., id*.

[43] *Id.*

parasocial relationships with the fictional characters they encounter in media.[44] These

relationships are not inherently harmful, but they can be exploited by video content creators and

app developers to manipulate children. About 25 percent of apps used by children aged three to

five use parasocial relationships with characters to prolong gameplay, and 18.8% use characters

to encourage purchases.[45] Children are encouraged to keep playing or make additional purchases

with the promise that doing so will make the in-game characters happy, or the threat that

abstaining will cause the characters to become sad, hurt, or in extreme cases be killed.[46] Children

are more vulnerable to these manipulative tactics than adults because children genuinely believe

in the emotions and wellbeing of these fictional characters.

D. Default Settings, Hidden Choices and Asymmetric Design

When an app is initially downloaded or a user account is created, the app or service

typically does not prompt users to select important user settings.[47] Instead, most apps and

services assign users default settings most beneficial to the developer, often at the expense of

user preferences. These settings may include important considerations like privacy, data

collection, cookie tracking, and advertising preferences. For example, a developer may set the

default setting for data sharing to allow maximum data sharing, benefiting the developer at the

expense of user privacy. Users must proactively change the default settings to settings that

protect their interests, but many users do not take that extra step after downloading an app or

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[44] *See* Melissa N. Richards, Sandra L. Calvert, *Measuring Young U.S. Children's Parasocial Relationships: Toward the Creation of a Child Self-Report Survey*, 11 J. CHILDREN & MEDIA 229 (Apr. 7, 2017), http://cdmc.georgetown.edu/wp-content/uploads/2012/08/Richards-Calvert-2017.pdf.

[45] Radesky, *supra* note 7, at 6.

[46] *Id*.

[47] *See* Christoph Bösch, Benjamin Erb, *Frank Kargl, Henning Kopp, Stefan Pfattheicher, Tales from the Dark Side: Privacy Dark Strategies and Privacy Dark Patterns*, DE GRUYTER OPEN 12 (June 2, 2016), https://petsymposium.org/2016/files/papers/Tales_from_the_Dark_Side__Privacy_Dark_Strategies_and_Privacy_Dark_Patterns.pdf.

creating an account. Developers obscure important settings options by requiring users to navigate

through multiple pages or screens to change settings. Hiding choices is so effective that many

users may not realize that the default settings can even be changed. The use of default settings

puts a burden on children, or their parents, to proactively seek out and check users settings they

may not even be aware of on each app or site they use.

The problems with default settings are aggravated by asymmetric design practices

between platforms.[48] Most online platforms can be accessed in both a traditional desktop browser

form and a separate mobile application version. Developers implement asymmetric design

practices where certain settings can only be accessed and changed in either the browser or

mobile version of the service, limiting options for users who only access the service through the

other method.[49] Platform asymmetry is especially problematic for children, who are more likely

to access services on mobile applications than on desktop browsers and are thus less able to

access options only available in the browser version.[50]

Because it is in developers' best interest to increase and maintain user numbers,

asymmetric design is particularly common between sign-up and cancellation processes.

Developers typically design the sign-up process to be quick and simple, usually requiring only a

few clicks to instantly create a new account or start a new subscription. Conversely, developers

use asymmetric design patterns to restrict users' ability to delete their account or cancel their

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[48] *See* JOHANNA T. GUNAWAN, FTC DARK PATTERNS WORKSHOP TRANSCRIPT 10-11 (Apr. 29, 2021), https://www.ftc.gov/system/files/documents/public_events/1586943/ftc_darkpatterns_workshop_transcript.pdf.
[49] *See id.*

[50] In 2021, 94% of children aged 8 to 18 had access to a smartphone in the home, while only 87% had access to a laptop or desktop computer in the home. Rideout, *supra* note 13, at 21. This disparity is worse for low-income households, where only 67% of children aged 8 to 18 have access to a laptop or desktop computer in the home. COMMON SENSE MEDIA, THE COMMON SENSE CENSUS: MEDIA USE BY TWEENS AND TEENS, 2021 (2022), https://www.commonsensemedia.org/sites/default/files/research/report/2022-infographic-8-18-census-web-final-release_0.pdf.

subscription.[51] Developers may implement a waiting period between users opting to delete their account and the actual time of deletion. Canceling subscriptions may require additional steps including manually sending an email request, calling the provider, or mailing a written form. In 2022, Apple instituted a new App Store policy addressing asymmetric design by mandating that any apps that allow users to create an account in the app must also allow users to delete their account in the app.[52] This policy is hugely beneficial, but only applies to people who use Apple products. Standardized regulations of asymmetric design should be applied to all developers and service providers.

V. RECOMMENDATIONS FOR THE ATTORNEY GENERAL

Common Sense recommends that the Attorney General tailor its approach based on the type of dark pattern. The Attorney General should outright prohibit dark patterns when it is necessary to safeguard user privacy. The Attorney General should address deceitful practices by requiring greater transparency and disclosures, and issuing guidelines that encourage developers to design their platforms to protect children and teens.

A. Prohibit Asymmetric Design Practices Across Platforms

Common Sense urges the Attorney General to create a rule prohibiting asymmetric platform design practices that limit users' ability to change user settings, delete personal data, or delete their account. Users should not be required to have a certain type of device to perform important account functions that impact user privacy. Many children and teens only have home access to either a smartphone or a personal computer, not both; these children, teens, and their

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[51] *See e.g.*, BRENNAN SCAFFNER, NEHA LINGAREDDY, MARSHINI CHETTY, UNDERSTANDING ACCOUNT DELETION AND RELEVANT DARK PATTERNS ON SOCIAL MEDIA (Apr. 2022), https://cpb-us-w2.wpmucdn.com/voices.uchicago.edu/dist/1/2826/files/2022/06/PREPRINT_Understanding_Account_Deletion_CSCW2022-1.pdf.
[52] *Offering Account Deletion in Your App*, APPLE DEVELOPER, https://developer.apple.com/support/offering-account-deletion-in-your-app/ (last visited Aug. 3, 2022).

parents should be able to control their accounts and protect their privacy regardless of which type of device they have access to.[53] The Attorney General should require platform developers and online services to standardize user settings and options across web and mobile versions of their platforms.

B. Require Affirmative Consent for Data Collection and Sharing

The Attorney General should create rules prohibiting the use of default settings that are invasive of user privacy. This would protect less-informed children, and their parents, who are unaware of the proactive steps that currently must be taken to protect their privacy. Platforms should also be required to ask users for affirmative consent before the platform can collect and share personal user data. At minimum, platforms should ask users for consent at the initial point where an application is downloaded or an account is created. It should be made clear to users exactly what they are consenting to, and in a concise and easy to understand fashion. While this does not shift the responsibility of protecting user privacy from users onto developers, which would ultimately be more effective, it helps relieve some of the burden on parents.

C. Require Opt-Out Options for In-App Purchases and Advertisements

The Attorney General should create rules requiring game developers to allow users the option to fully opt-out of all in-game transactions and/or advertisements, even if doing so severely limits gameplay features. Many of these games already provide the option for players to play the game in some capacity without making any in-game purchases. In such games, users should have an easily-accessible option to disable all in-app purchases. This would allow parents to better prevent their children from making unwanted in-game purchases without parental consent. The option to disable in-app purchasing should be easy to find and understand.

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[53] Rideout, *supra* note 13, at 21.

D. Require Additional Friction and Disclosures in the In-App Purchasing Process

The Attorney General should address in-game purchases and currency confusion by creating a rule requiring developers to make additional disclosures to the parent or child at the point of purchase. The Attorney General should prohibit one-click purchasing and require platforms to prompt users to confirm before completing any transaction involving actual currency. Adding more confirmation steps, or "friction," to the purchasing process will help prevent unwanted and accidental purchases. Friction in the purchasing process provides children with additional contextual signals to help differentiate purchases involving real money and purchases made with valueless in-game point systems. Additionally, the Attorney General should require platforms to be transparent about the value and exchange rate of their proprietary in-app currency systems both in the settings and at the time of purchase.

E. Require Ad Content to be Clearly Labeled

The Attorney General should require platforms to clearly label ad content. Children depend on contextual signals and cues to identify ad content.[54] Platform developers and advertisers have taken extensive measures to blur the lines between ad and entertainment content in apps and games used by children. Labeling requirements ensure that all ad content has at least one cue differentiating it from the surrounding non-ad content. Labeling ad content is not a perfect solution; children and teens struggle to identify ad content even when it is clearly labeled.[55] However, clearly labeling ad content provides at least some differentiation between ad content and non-ad entertainment content and may prevent some amount of confusion.

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[54] *See* Wilcox, *supra* note 11.

[55] *See id.*

F. Additional Steps Beyond Regulation Under the CPA

We recommend that the Attorney General write and issue guidance for platform developers to outline the ways dark patterns harm children and teens and recommend best-practice solutions. This guidance should discourage harmful practices that cannot be easily prohibited due to their dependence on contextual use. For example, it is impossible and unnecessary to ban all use of characters in apps and games, but the use of characters can be harmful to children in certain contexts involving extreme emotional manipulation or violent content. The Attorney General could issue guidance discouraging the use of characters in manners and context that may be particularly emotionally harmful to children. Developers should be encouraged to evaluate their own design practices and minimize potential harms to children and teens. Providing guidance gives platform developers the opportunity to self-regulate, which they are inclined to do to avoid potentially stricter government regulations later on. If self-regulation proves ineffective, additional laws and regulations may be required later on.

In addition to writing rules in accordance with the CPA, the Attorney General should advocate for the Colorado legislature to pass a children's design code bill. Colorado should look towards California's current efforts to pass a children's design code, the bipartisan California Age-Appropriate Design Code (AADC).[56] The AADC is designed to push companies to design their platforms with children's privacy and well-being in mind.[57] Consent requirements alone are insufficient to protect the privacy interests of children online. Stronger prohibitions against harmful data collection practices and design features are necessary. To best protect children, the

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[56] The California Age-Appropriate Design Code Act, Cal. Legis. AB-2273 (2022), https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202120220AB2273.
[57] *Id.*

Attorney General should advocate for the Colorado legislature to pass a children's design code similar to AADC, in addition to continuing to strengthen the CPA.

VI.   CONCLUSION

Dark patterns, or manipulative design features, are user interface features meant to confuse or manipulate users. Harmful dark patterns manipulate users to take, or avoid, actions that benefit the platform developer at the expense of users' interests. Children and teens are developing mentally and emotionally in ways that leave them particularly vulnerable to harmful dark patterns, and unscrupulous developers exploit this vulnerability. The Attorney General should exercise its rulemaking authority under the CPA to create tailored rules that prohibit or restrict the specific types of dark patterns most harmful to children and teens. The Attorney General should also issue guidance recommending best practices for developers who wish to mitigate potential harm to children and teens.