Gameplay or Gametrap? A Closer Look at Deceptive Patterns in Nintendo Switch Games Popular Among Children

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Abstract

This paper examines the presence and types of deceptive design in five console games popular among children: Rocket League, Mario Kart 8 Deluxe, Go Vacation, My Friend Peppa Pig, and PAW Patrol: Mighty Pups Save Adventure Bay. We use previously established categories of deceptive patterns—Temporal, Monetary, Social, and Psychological patterns—in a qualitative analysis to identify and outline possible manipulative designs at play. Psychological and Temporal deceptive patterns were found to be most prevalent, potentially affecting children's sustained engagement and overall experience with the games. The findings underscore the importance of raising awareness among parents[1] and children so they can identify deceptive design. On this basis, we outline opportunities for future research: First, evaluations of children's player experience and examination of the long-term effects of deceptive patterns on how children engage with games should be carried out to complement existing theoretical considerations. Second, future research should explore how knowledge about deceptive patterns in children's games can be made actionable in a way that it can help parents and children recognize and reflect on deceptive design in games.

Keywords

Children, Deceptive Design, Games

1. Introduction

Games have potential to significantly contribute to the development and well-being of young people [7, 8, 25, 45, 28]. However, deceptive patterns[1] — manipulative design strategies that alter user behavior [48] — can thwart benefits, steering player behavior at the cost of their autonomy and well-being (e.g., see [20]). Considering developmental aspects, manipulative tactics in game design can emphasize vulnerabilities of children (e.g., their ability to regulate engagement with games [9, 18, 4]), thereby undermining their experience with games [40]. A key challenge is that deceptive patterns often go unnoticed by players, making it difficult for children and their parents to address their effects [2]. This is relevant because children have a right to play (e.g., see UN Convention on the Rights of the Child [13]), which needs to be protected, and requires researchers and designers to critically reflect upon unethical practices in game design [40]. Additionally, understanding deceptive patterns in children's games is crucial for fostering healthy relationships with technology and supporting children and parents in navigating digital experiences, which in turn ensures that children can have enriching experiences with games [3].

In our work, the key research question (RQ) that emerges is **whether deceptive patterns are present in popular children's games, and if so, whether they are covered by existing collections, and which ones are most prevalent**. While deceptive patterns have already been examined in the context of mobile games (e.g., [14]), our work addresses this question through a combination of elements of textual analysis [16] with qualitative content analysis [51] to explore the presence of deceptive patterns

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[1]For readability, we use the term parents to refer to any adult who may be the main responsible caretaker for a child. This can be biological or adoptive parents, or legal guardians involved in the care.

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[1]In our work, we use the term deceptive patterns in replacement of previously popular terminology in an effort to avoid further perpetuating problematic language, also see [**patterns**].

in five popular children's games available on console platforms, which can also be referred to as AAA titles[2]: Rocket League, Mario Kart 8 Deluxe "Mario Kart", Go Vacation, My Friend Peppa Pig "Peppa Pig", and PAW Patrol: Mighty Pups Save Adventure Bay "PAW Patrol". Our selection specifically centered on high-quality AAA games, either specifically designed for children or broadly popular among them.

We employ known deceptive patterns including Temporal, Monetary, Social, and Psychological aspects [2, 48, 14, 42] as analytical lens to examine the extent to which the games incorporate these deceptive patterns into their design. Our results show that Psychological and Temporal deceptive patterns are present in the games included in the analysis, with Psychological patterns being most common. For example, PAW Patrol includes *Invested/Endowed Value*: As players advance, they unlock essential powers for each character (e.g., Chase gains super speed, Skye controls the weather, and Marshall creates fire). Likewise, Mario Kart uses the *Completing the Collection* pattern, where players collect coins in races to unlock characters and karts, requiring substantial time. Temporal deceptive patterns are also evident, e.g., *the lack of auto-save* and *the inability for players to exit whenever they want*. Meanwhile, Monetary deceptive patterns are less frequent, and traditional Social deceptive patterns are absent due to our focus on single-player modes, though *Parasocial Interactions* are present. Furthermore, *Hidden Information Techniques* and *the use of manipulative sounds*, such as rewarding coin collection jingles, contribute to the complexity of these patterns. Overall, our findings emphasize the relevance of deceptive design in AAA games popular among children.

Our work contributes the following stepping stones to pave the way for further research: (1) We show that existing lists of deceptive patterns capture those present in AAA children's games, but that their interpretation needs to be expanded to fully grasp how games draw children in, for example also drawing upon evaluations of children's player experience, and examination of the long-term effects of such patterns on how children engage with games. (2) We show how pattern-based analysis can help identify potentially problematic game mechanics, and we discuss opportunities for future work to create actionable information about deceptive patterns for parents and their children to empower them to critically reflect upon the games they play.

2. Background: Deceptive Patterns and Games for Children

In this section, we first give an introduction to deceptive patterns in games, summarizing common types of patterns and implications for players. Then, we discuss deceptive design in the context of children, giving an overview of how it relates to child development and parental mediation of media use.

2.1. A Brief Introduction to Deceptive Patterns in Games

Deceptive patterns apply tactics to mislead players into actions they did not intend [48]. This affects player experience, causing issues such as exceeding intended playtime, player frustration, financial issues, or the plain absence of enjoyment [14], and suggesting a focus on profit over player well-being [2]. Deceptive patterns have been observed in a range of media, e.g., social media [32], as well as in digital products for children, e.g., games [3]. Prior research exploring problematic design strategies has grouped the employed tactics into Temporal, Monetary, Social, and Psychological, and investigated how each category impacts players [2]:

Psychological Deceptive Patterns involve tactics that manipulate players' psychological biases, guiding their decisions toward outcomes that may not be in their best interest [2]. A key example is the *Invested/Endowed Value* concept, a common pattern that compels players to continue to engage with a game due to prior significant investment of time and money, making it harder to disengage and potentially affecting their in-game decisions [42]. For instance, players may keep playing to justify hours leveling up a character or money spent on in-game purchases [2]. Another tactic is the drive to "*complete the collection*," where players feel compelled to secure all items, achievements, or secrets

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[2]AAA games are commonly understood to be produced by larger studios/publishers, and typically generate significant revenue, e.g., see [1]

within a game, thereby fueling continued play and spending [42]. Additionally, the *principle of variable rewards*, where unpredictable rewards increase addiction more than regular ones, underscores the complex psychological tactics in game design [42].

Temporal Deceptive Patterns in game design refer to mechanics that unexpectedly extend playing time, "cheating" players out of their time [48], and creating an obligation for unproductive, meaningless engagement [30], negatively impacting the gaming experience [48]. A notable instance is the *Playing by Appointment* pattern, which requires players to return at specific times to progress or maintain their status, manipulates players' schedules by dictating when they must engage with the game, often aligning with real-time events or opportunities within the game [48, 30, 2]. Another common pattern is Grinding, which involves performing repetitive and tedious tasks that consume substantial time without offering equivalent rewards or gameplay progression. This pattern often results in prolonged play with minimal advancement, impacting player satisfaction [48, 30]. Additionally, the *Daily Rewards Mechanism* operates by offering players various incentives for launching the game daily [2]. These rewards are often strategically timed or placed to encourage prolonged engagement, particularly among younger players, thereby keeping children playing for longer periods [38].

Monetary Deceptive Patterns manipulate players into spending money by leveraging their desire for progress or success [40]. These strategies exploit psychological biases to induce purchases under false pretenses, often taking advantage of impulsive decision-making or hidden information [29]. For instance, *premium in-game currency*, which players buy with real money, obscures its actual cost while providing benefits like faster progression or customization, thereby deepening engagement with further deceptive patterns [14]. *Artificial scarcity* involves creating a misleading perception of limited availability to spur urgent purchases [41]. Additionally, *pre-delivered content*, such as on-disc DLC, includes content already within the game but locked until players pay an additional fee, fostering a sense of an incomplete initial purchase [48].

Social Deceptive Patterns are strategies that exploit players' social networks and their desire for community connection, encouraging actions beneficial to developers, such as in-game purchases or promoting the game through peer pressure and social comparisons [2]. One popular strategy within this pattern within this pattern is *Social Pyramid Schemes*, which incentivizes players to recruit others by offering benefits, thereby posing risks to both the player and their social relationships [48]. Another form of this pattern involves *Parasocial Interaction* in games, where in-game characters exert emotional pressure on players, encouraging prolonged engagement or purchases. This interaction leverages a one-sided emotional connection, where players may feel a personal bond with characters who seem to react to their actions, even though the relationship is not genuinely reciprocated [17].

2.2. Deceptive Design in Games for Children

Deceptive design is omnipresent in digital media, ranging from general user interfaces [21] to natural interaction such as voice interfaces [35], but also expanding to immersive media [23] and games [24], with those targeting children being no exception. For example, in apps for children—especially in free-to-play mobile games—deceptive patterns are common and raise the risk of exposing children to manipulative designs [38]. In particular, studies reveal that popular free games for young children are filled with Temporal, Monetary, and Psychological deceptive patterns aimed at enhancing engagement and encouraging in-app purchases [42]. For example, Aesthetic Manipulation exploits children's preference for bright graphics, enticing them to make purchases, impacting their decision-making and understanding of value [42]. Additionally, loot boxes (i.e., packages containing randomized content that remains undisclosed until the player opens them [22]) exploit children's cognitive development stage and enjoyment of surprises to promote spending [40], introducing mechanics to games that resemble those typically applied in gambling [49]. While there have been extensive research efforts exploring the intersection of gaming and gambling in the context of loot boxes, research on children's interactions with deceptive patterns and their integration in games addressing children more broadly remains limited [50, 22], highlighting a relevant gap in empirical studies despite known risks [40]. Here, much of the work focuses on mobile and free-to-play games, while less attention is given to full-price

Figure 1: A collection of gameplay screenshots from My Friend Peppa Pig, Go Vacation, Mario Kart 8 Deluxe, Rocket League, and PAW Patrol Mighty Pups Save Adventure Bay.

games (i.e., games to be played on popular console or PC platforms, also referred to as AAA-games) and the strategies they might employ. Benefits of AAA-games have previously been highlighted in the context of family play, where Nintendo platforms and related games are highly relevant [12, 33].

At the same time, we are beginning to understand the relevance of players and other stakeholders being able to identify deceptive design, for example, the benefits of parents developing knowledge about deceptive design in media for children, and being able to better mediate children's media exposure [6]. Hence, we believe is crucial that we broadly understand presence and shape of deceptive patterns in games for children across platforms and game types. Our work takes a first step in this direction through an analysis of AAA-games popular among children and the presence of deceptive patterns, laying the foundation for future research wishing to engage in responsible game design and helping children and parents develop a better understanding of deceptive design in games.

3. Methodology

Here, we outline our approach to investigating deceptive patterns in our selection of AAA children's games, encompassing game selection, framework creation, data collection, and analysis.

3.1. Game Selection

The Nintendo Switch was selected as primary platform due to its well-known family-friendly nature[3][4][5] and a wide range of games tailored for children[6]. For game selection, our strategy centered on AAA-games known for their general appeal, popularity amongst a younger audience in particular, or those being specifically marketed towards children. Also, AAA games are often regarded as the "masterpieces" and the gold standard of the gaming industry [47]. Thus, we consulted databases and lists recommending games suitable for children[7][8][9][10][11]. The games we considered for analysis had to have a PEGI rating of 3, signifying appropriateness for all age groups and the absence of content that could potentially disturb or frighten young children. We further only considered games that had an Amazon rating of no less than 4 out of 5 stars, indicating popularity among customers. Where available, metascores for the selected games ranged from 64 for Go Vacation (lowest game) to 92 for Mario Kart 8 Deluxe (highest game).

Our chosen games include Go Vacation [G5], Mario Kart 8 Deluxe [G34], My Friend Peppa Pig [G36], PAW Patrol Mighty Pups Save Adventure Bay [G15], and Rocket League[G37]. We only included single-player modes to provide a controlled environment, focusing on mechanics without external influences. This approach suits younger children, who are less likely to play multiplayer games, and allows parents greater oversight to identify deceptive patterns. Figure 1 shows a collection of gameplay screenshots from these games, and the characteristics and rating known for their general popularity, popularity

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[3]https://www.verywellfamily.com/best-video-game-consoles-for-kids-6754397
[4]https://www.uswitch.com/broadband/guides/best-games-console-for-kids/
[5]https://www.retrogaminghouse.com/blogs/news/best-video-game-consoles-for-families-a-comprehensive-guide
[6]https://www.internetmatters.org/resources/tech-guide/gaming-consoles-for-children/
[7]https://thetoyzone.com/nintendo-switch-games-for-4-year-olds
[8]https://thetoyzone.com/best-switch-games-for-toddlers
[9]https://www.familygamingdatabase.com
[10]https://www.huffpost.com/entry/nintendo-switch-games-for-kids_l_64da4514e4b0516e112da7ce
[11]https://www.nintendoworldreport.com/review/47859/go-vacation-switch-review

among a younger audience in particular, or those being specifically marketed towards children of the games are summarized in Table 1.

Table 1
Overview of key characteristics of the Nintendo Switch games included in our analysis.

Game	Rating	Developer	Genre	Gameplay	Objective	Graphics
Go Vacation	3+	Bandai Namco	Adventure	Exploration, Mini-Games	Complete Activities	Bright, colorful cartoons
Mario Kart 8 Deluxe	3+	Nintendo	Racing	Racing	Win Races	Bright, colorful cartoons, smooth animations
My Friend Peppa Pig	3+	Outright Games	Adventure	Explore, Interact	Play with Peppa	Simple, charming art style
PAW Patrol Mighty Pups	3+	Outright Games	Adventure	Rescue Missions	Complete Missions	Colorful, engaging show style
Rocket League	3+	Psyonix	Sports	Vehicle Soccer	Score Goals	Realistic 3D, detailed vehicles

The selected games target a range of age groups: PAW Patrol and Peppa Pig target very young children due to their simplistic gameplay and association with the respective popular children's TV series, while older children and whole families are targeted with more challenging and competitive play, such as in Mario Kart, Go Vacation, and Rocket League. With this, we ensure that our analysis reflects a variety of gaming interests in children.

3.2. Analytical Approach

The data collection process employed an approach that combined elements of textual analysis [16] with qualitative content analysis [51]. Textual analysis is a common approach in game studies (e.g., see [10]), and comprises extensively playing a game (understood as a *playable text* [11]) with focus on key aspects of a game, including *gameplay logs*, which are particularly relevant here: The main researcher engaged in each of the selected games for 3-5 hours daily over the course of a week, producing reports of gameplay and taking screenshots where relevant. In particular, logs focused on core game mechanics and opportunities for player interaction, provision of player feedback, and progression systems in each of the games. For each playing session, multiple entries were made, aligning with key observations. For example, when playing Peppa Pig, a log entry reads, *"During a bedtime story scene, no option to skip or exit was available, requiring around two minutes wait before continuing.".* Likewise, an entry for Paw Patrol explains that the main researcher *"Replayed the mission to collect missed pup treats, which were marked as uncollected despite progress being partially saved. Navigating through already completed sections unnecessarily extended playtime.".* This strategy improved our understanding of gameplay dynamics. Insights into game mechanics and deceptive patterns were garnered through this approach; observations focused on the nature of patterns and how they were integrated into gameplay.

Based on these detailed *gameplay logs*, the main author undertook a deductive coding process aligned with qualitative content analysis [51]: First, we constructed a suitable categorization of deceptive patterns based on the literature (see [2, 14, 48]) to serve as a foundation to develop categories and codebook for analysis, thereby defining our coding agenda (see Table 2).

After data collection, the primary researcher applied the codes from our codebook based on these categories to a portion of the gameplay logs. The suitability of the coding agenda was then reviewed by the other researcher to discuss thematic patterns. Afterwards, the primary researcher completed the analysis of the remaining data. Finally, the primary researcher compiled the report of the findings presented in the next section.

4. Results

In this section, we present the analysis results along our main categories (see Table 2). Overall, our results highlight that Psychological deceptive patterns are most commonly found in the games we analyzed, followed by Temporal patterns. Social patterns requiring multiplayer or social media access were largely absent due to our focus on single-player modes, and monetary patterns were most common in the free-to-play title included.

4.1. Psychological Deceptive Patterns

In our collection of games, we encountered multiple Psychological deceptive patterns, especially the *Invested/Endowed Value pattern*, which was present in all titles we analyzed. *Badges/Endowed Progress* and *Complete the Collection* patterns were also frequently observed, in contrast to *Variable Rewards*, which were less common in our sample of games.

The presence of the pattern of *Invested/Endowed Value*, i.e., fostering a deeper commitment from players by requiring time, effort, and occasionally money to enhance their progression or status within the game [42], stands out when analyzing the mechanics of the games we included. Here, games like Mario Kart, Rocket League, and PAW Patrol draw players in through mechanisms that require time and spark curiosity, e.g., unlocking items. Likewise, games that allow players to form emotional ties with characters such as Peppa Pig and PAW Patrol amplify this investment, seeking to make players feel like indispensable parts of the team. The pattern of *Badges/Endowed Progress* (e.g., present in Rocket League), introduces notifications for unlocks and sets long-term objectives, such as winning a set number of matches. Under the *Complete Collection pattern*, collecting coins in Mario Kart unlocks characters and karts that boost gameplay. Rocket League and Go Vacation provide personalization collectibles without altering gameplay, while Paw Patrol integrates a "Collectibles" section, where gathering items or completing tasks unlocks new game elements. The *Variable Rewards* pattern in Rocket League, offering random post-match item drops even in single-player modes against computer-controlled players, is similar to Mario Kart and its item boxes, and adds unpredictability to the collection process. Overall, the analysis uncovers prevalent use of Psychological deceptive patterns in the examined games, especially those enhancing player investment and playing on player's desire to complete tasks.

4.2. Temporal Deceptive Patterns

We identified four key strategies of Temporal deceptive patterns, i.e., manipulative design techniques used to extend or otherwise manage playtime [30], in our sample of games:

First, we observed instances of *Playing by Appointment*, e.g., the Haunted Hallows event in Rocket League that encourages players to align game time with real-world events. Second, we observed the use of a *Daily Rewards Mechanism* in games like Go Vacation, offering in-game benefits (e.g., outfits, equipment) and penalizing missed days, disrupting the reward progress. Go Vacation also previews upcoming rewards using silhouettes, playing on players' curiosity. This may risk encouraging habits of compulsive engagement, as such designs exploit children's natural desire for rewards, fostering a repeated need to log in daily. Third, the *Grinding Mechanic* that requires players to repeat specific actions or tedious tasks to achieve some sort of progression [30] was apparent in games like PAW Patrol. The game includes lengthy periods of repetitive gameplay where "pup treats" need to be collected, and encourages replaying missions if not all items were collected initially. Finally, our analysis reveals a widespread implementation of design mechanisms that *complicate pausing or saving*. While pausing gameplay is possible, early exits lead to lost progress. For example, in PAW Patrol, if the player exits before a mission is completed, progress within that mission is lost, compelling players to reach specific milestones or complete missions to avoid loss of progress, significantly influencing session planning in games without time constraints.

4.3. Monetary Deceptive Patterns

Overall, Monetary deceptive patterns were rare. They were most prominent in Rocket League—the only free-to-play game in our sample. For example, *Premium Currency* is used for cosmetics like antennas, trails, player banners, and toppers or the Rocket Pass, i.e., it offers exclusive content through timed progression. None of these elements provide competitive advantages, however, this may not be clear to younger players. Likewise, *Artificial Scarcity* is employed to induce urgent purchases during special events [2], fostering compulsive engagement by exploiting children's limited ability to assess these mechanisms or resist fear of missing out, as also noted in recent research [6]. Also *Waste Aversion*, the tendency to avoid wasting resources already invested [2], is exploited through Rocket Pass challenges to maximize players' engagement with their purchases. Additionally, the shop places inexpensive items alongside costly ones, making it more difficult to assess item value. Mario Kart includes *pre-delivered content* in the base game, i.e., content that is part of the initial game but is locked behind a paywall [48]. The game also offers special cups through the Booster Course Pass, a type of downloadable content (DLC), which allows for the expansion of the game with new features and tracks. These contents are shown in the base game, but cannot be accessed by players unless purchased.

4.4. Social Deceptive Patterns

Our analysis focused on single-player modes, revealing no traditional Social deceptive patterns due to the lack of multiplayer elements. However, we observed *Parasocial Interaction* (PSI) [17] in some games, where players were invited to emotionally connect with characters as if they were real [17]. Given that enduring Parasocial Relationships (PSRs) can mimic real-life interactions [17], there is potential to influence players. In games like Peppa Pig and PAW Patrol, familiar TV characters continuously address the player from the start, offering guidance and feedback throughout the game. For example, in PAW Patrol, the main character of the TV series, Ryder, is prominently included in high fidelity and welcomes and guides players. In Peppa Pig, Peppa and her family warmly greet and accompany players through the game, for example, during player onboarding, but also at the stage of disengagement, during which Peppa is taken to bed by her family.

Table 2 summarizes the deceptive patterns identified in each game, highlighting their varied prevalence.

5. Discussion

In our discussion, we answer the research question by examining the prevalence of deceptive patterns in children's games, and we explain our findings. Furthermore, we highlight avenues for future work for the games research community to help better understand deceptive design through user studies involving children, and by providing tools for children and their parents to educate themselves about deceptive design in games.

5.1. RQ: Do deceptive patterns exist in children's games, and if so, which specific deceptive patterns are most prevalent in popular AAA games for children?

Deceptive patterns do indeed exist in AAA children's games, as revealed by our analysis of popular Nintendo Switch titles. The most prevalent patterns include Psychological deceptive patterns, e.g., *Invested/Endowed Value* in Mario Kart, where collecting coins in races unlocks new karts, wheels, and gliders, providing players with more options, and Temporal deceptive patterns, e.g., *the absence of an auto-save option* evident across all games we analyzed. Monetary deceptive patterns were notably absent from full-priced games (except for the DLC in Mario Kart), but extremely prominent in the free-to-play title Rocket League. Social deceptive patterns were not observed due to the single-player focus; however, given its prevalence in other children's media such as mobile apps [38], *Parasocial*

Table 2
Overview of deceptive patterns that we identified in the games we analyzed. Presence of a pattern is marked with the letter X.

Deceptive Patterns	Go Vacation	Mario Kart 8	Peppa Pig	PAW Patrol	Rocket League
Psychological Deceptive Patterns					
Invested / Endowed Value [2, 42]	X	X	X	X	X
Badges / Endowed Progress [2]				X	X
Complete the Collection [42]	X	X		X	X
Variable Rewards [44, 42]		X			X
Complicate Pausing or Saving [3]				X	
Temporal Deceptive Patterns					
Playing by Appointment [14, 42, 2, 44, 48]					X
Daily Rewards Mechanism [42, 2]	X				
Grinding Mechanic [14, 42, 44, 48, 30]			X	X	
Monetary Deceptive Patterns					
Premium Currency [42, 44, 14]					X
Artificial Scarcity [44, 2]					X
Waste Aversion [2]					X
Pre-Delivered Content [14, 48]		X			
Pay to Win [14, 42, 2, 44, 48]					
Social Deceptive Patterns					
Parasocial Interaction [17]			X	X	
Social Pyramid Schemes [14, 42, 48]					

Interaction [17] and associated risks should be further examined in games utilizing familiar characters for companionship and guidance, for example, in games like Peppa Pig and PAW Patrol.

We also want to prompt reflection upon deceptive design, and whether problematic instances of game design for children expands beyond the deceptive patterns explicitly discussed here. For example, we observed frequent use of sound to reinforce reward mechanisms, e.g., in PAW Patrol, where reward sounds like the coin collection sound in combination with verbal feedback from a non-player character are prominently employed. In addition, we were surprised by the amount of hidden information and control options, like deeply nested or missing exit buttons, hindering easy disengagement. For example, Peppa Pig lacks an exit option in its menu, while PAW Patrol lacks one during long cutscenes. This may evoke feelings of entrapment, removing children's autonomy and causing distress. Previous research on games [19, 26, 43] has shown that fulfilling basic psychological needs like autonomy is crucial

for a positive gaming experience. This underscores the need to analyze games in relation to basic psychological needs such as autonomy, competence, and relatedness, enabling us to better understand enriching, fulfilling, and enjoyable gaming experiences.

Finally, our findings support the notion that free-to-play games, such as Rocket League, are more prone to the utilization of deceptive patterns despite their generally high-quality game design. In particular, we observed an emphasis on Monetary deceptive patterns, e.g., premium currencies, which have been highlighted as problematic in previous research [27, 14]. In these cases, parents should be cautious if their children play such games, potentially educating themselves and their children about monetization strategies and implications, or instead opt for games with more transparent payment models. In contrast, casual mobile games examined by Dahlan and Susanty [14] revealed both monetary and social deceptive patterns, such as "Monetized Rivalries," where players are encouraged to spend money for competitive advantages, and "Social Pyramid Schemes," incentivizing players to recruit others for rewards. While these patterns were less relevant in single-player AAA children's games, they highlight the broader spectrum of manipulative techniques utilized in other gaming formats.

Overall, these findings complement existing work on deceptive patterns in mobile games for children as for example the work by Sousa and Oliveira [42], highlighting that the issue also extends to console gaming.

5.2. Avenues for Future Work

In this section, we outline areas for future work that we believe would be promising for the Human-Computer Interaction (HCI) and games research community to address on the basis of what we presented here.

5.2.1. Avenue 1: Studying Children's Experiences of Deceptive Patterns in Game Design

Our work shows that deceptive patterns are prominent in children's games. While it is important to highlight these explicitly problematic design strategies, we also need to develop a more nuanced understanding of their implications for the player experience of children. For example, the boundaries between deceptive design and regular game mechanics related to player progression can be blurry, and need to be examined on a case-by-case basis. For example, the unlocking of additional items in Mario Kart appears to be largely unproblematic, but links between player progress and real-world events in Rocket League directly relate to temporal deceptive patterns. In addition, certain players may respond to specific game design patterns more strongly. Here, we have little empirical data (see section 2.2) on how the presence of specific game mechanics and those considered deceptive patterns in games affect player experience and engagement patterns of children. This is a challenge in the HCI and games research community, where little data on children's player experience is available, albeit a recent trend of seeking to understand children's experiences with games more deeply [31]. In the context of deceptive patterns, HCI and games research should explore whether certain patterns are perceived as problematic by children, and how they change their player experience, whether and how children reflect on such patterns.

5.2.2. Avenue 2: Fostering Media Competency in Families

Identifying deceptive patterns and other problematic design strategies in games for children can only be a first step. A key challenge in this process is to support parents and children in developing media competency, equipping them with the ability to identify and act upon deceptive design in games. In future work, our community should build on our findings presented here to explore how parents can recognize deceptive patterns in children's games. Previous thesis work has provided initial evidence that parents with expertise in gaming may be more competent at handling deceptive design [39], suggesting that we should provide educational tools for parents without a gaming background. One way to achieve this would be the development of an educational game with integrated deceptive patterns, highlighting thereof, and debriefing segments after key gameplay sections to explain these patterns. Likewise, static

sources of information such as web portals (e.g., similar to [46]) could support families in understanding of deceptive design in games.

6. Limitations

There are some limitations to our work that need to be addressed by future research. First, given the exploratory nature of our work, we narrowly focused on a limited sample of games, potentially missing relevant games within the breadth of AAA titles available for children. Here, we want to follow up with a broader (yet less in-depth) analysis of deceptive patterns in children's games based on gameplay videos in the future. Here, future work should improve the game selection process: Relying on online reviews to determine game popularity may have limitations caused by fake reviews. Additionally, our analysis primarily scrutinized games from a single gaming platform, possibly overlooking platform-specific variations in deceptive pattern usage, leaving room for future work to explore deceptive design in children's games on other platforms (e.g. web-based PC and tablet games, and children's mobile games more widely). Finally, there is an opportunity to move beyond analysis at the level of game mechanic and gameplay, instead focusing on player experience. Here, future work should examine how deceptive patterns are perceived by children, and which impact children experience on how they engage with games.

7. Conclusion

Our examination of deceptive patterns revealed prevalent Psychological and Temporal patterns in AAA Nintendo Switch games popular among children. Although Monetary patterns were less frequent, they were notably exploited in the free-to-play game Rocket League. Social patterns facilitated emotional connections through *Parasocial Interactions* in our sample of games. Deceptive patterns were notably more pervasive in Rocket League compared to the full-priced games, influencing player behavior through various means. These findings stress the importance of raising awareness among parents and children about deceptive patterns in children's games, extending beyond mobile gaming to console platforms, and necessitating further research.

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