



Augmented Reality Video Games: A Commentary on What All Parents and Doctors Should Know

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Abstract

This commentary highlights the risks and benefits associated with an increasingly popular video game format, the augmented-reality video game (ARG). ARGs are different from typical video games in that they combine live views of the real world with the computer generated video game into one interface. Despite the recent popularity of one ARG in particular, Pokémon GO, relatively little information has yet been provided to pediatricians and parents about the benefits and dangers that ARGs can offer to children. This article aims to illuminate the potential harms and benefits of this type of video game in order to best protect the safety of its young users.

Keywords: Pokémon GO; Augmented reality games; Adolescents

Short Commentary

The newly popular video game format, augmented reality video games (ARG), offers both unique risks and benefits to child safety. ARGs are different from typical video games in that they combine live views of the real world with the computer generated video game into one interface. An augmented reality game called Pokémon GO is now the most popular mobile game in United States history, especially among children and adolescents. Within a week after its release, Pokémon GO amassed 21 million daily active users, or about 6% of the US population [1]. Despite its popularity, relatively little information has yet been provided to pediatricians and parents about the dangers and potential benefits that Pokémon GO and other ARGs can offer to children. This article aims to illuminate the negative as well as the positive aspects of this type of game in order to protect the safety of its young users.

The premise of Pokémon GO is simple: while using the mobile application, players encounter and capture virtual Pokémon, or fantasy animal-like characters, in real world locations. The game is classified as an ARG because the Pokémon in the game are overlaid onto the phone camera's field of view, creating the illusion of Pokémon existing in the real world. The primary objective of the game is to capture as many different types of Pokémon as possible to fill up the user's Pokédex, the in-game catalogue of Pokémon. Encountering new Pokémon is contingent on player movement; walking around is the only way to collect a large number and variety of Pokémon. Therefore, the game presents a powerful incentive for players to explore new areas in their neighborhoods, communities, or beyond. While this location-based format encourages increased physical activity among users, it poses a concomitant threat to youth who may go wandering without adult supervision, placing themselves at risk for physical injury and encounters with strangers.

There are three GPS map-based elements in the current version of Pokémon GO that enhance the potential risk of children encountering strangers while using the app: PokéStops, Lure Modules, and Pokémon Gyms. PokéStops are real world locations marked on the in-game player maps that provide useful digital items to players, like Potions or PokéBalls. These locations serve as points of attraction, especially in places where PokéStops are relatively scarce, thus facilitating interactions between players who travel to the same PokéStops. Lure Modules are items that players can pay for that temporarily increase the rate at which players encounter Pokémon around PokéStops; these newly enhanced PokéStops are so desired by players that there have been multiple reports nationally of criminals using Lure Modules at PokéStops to lure players into isolated locations to rob them [2]. The third map-based element, Pokémon Gyms, are real world locations where players can battle their Pokémon against those of other players to both vie for control of the Gyms and strengthen their Pokémon. These battles do not occur live; instead, they are simulated by the computer software. Although physical contact between players is not required, a Pokémon Gym can simultaneously attract multiple players, enhancing the risk of children interacting with strangers. These interactions can be especially dangerous because children may believe that the strangers they meet playing Pokémon GO are less threatening due to the shared interest in the game. In response to these concerns, multiple public interest organizations, including the California nonprofit Common Sense Media and the UK National Society for the Prevention of Cruelty to Children (NSPCC), have since called for improved "security and reporting functions" to better protect children against the undue risk that Pokémon GO may present to its younger audience [3]. Regardless of how Pokémon GO's publisher Niantic Labs responds to these requests for increased security, younger children should always be supervised by adults while playing the game.

While Niantic Labs faces pressure to address public safety concerns, this scrutiny may not extend to third-party applications that are designed to supplement Pokémon GO. Shortly after Pokémon GO was

released, an independently developed application called “Poké Radar for Pokémon GO” also found its way into the Apple App Store. Poké Radar allows Pokémon GO players to crowdsource Pokémon location data by marking on a real world map where and when they have encountered certain Pokémon. People with malicious intent may falsely report a sighting of a rare Pokémon to lure children to a specific isolated location. Other auxiliary apps include multiple Pokémon GO “messengers” that allow you to view the locations of nearby players and chat with them. These chat rooms pose the same threats to naïve children of typical online chat rooms, but the dangers are significantly increased because the locations of users can be publically viewed. Thus, pediatricians should advise parents to monitor their children’s usage of both Pokémon GO and its associated third-party applications.

The popularity of Pokémon GO even has the potential to alter consumer behavior. Niantic partnered with McDonald’s in Japan, turning store locations into PokéStops and PokéGyms to attract customers [4], leading to a 27% increase in sales in the month following the deal [5]. Increased consumption of energy-dense, nutrient-poor fast food is consistently associated with negative health outcomes [6]. However, advertisement through the game is not limited to formal partnerships between Niantic and various companies. Any type of store can informally attract players by paying to place a Lure Module within the store. Businesses might use the Lure Module to attract the adult gamer population, however, children may also be inadvertently drawn into stores where content is inappropriate. In addition to inadvertent advertising to children, many stores could purposefully attract a younger audience using Lure Modules. Younger children are an important marketing target because they can directly make purchases themselves, as well as influence their parents’ purchasing decisions. Consequently, advertisers often target younger audiences to establish brand loyalty early and influence many years of consumer behavior [7,8]. This inexpensive form of advertising through ARGs could potentially usher in an era of unchartered and unregulated advertising strategies that permanently alter children’s purchasing patterns.

Despite these risks, the unique format of ARG should not be unilaterally labeled as harmful. ARGs, and Pokémon Go specifically, offer many potential benefits to players. In order to advance in the game, players have to physically walk around, partaking in more physical activity than required by a typical video game. Active playing translates into increased energy expenditure, as shown in a 2006 study by Lanningham-Foster et al. [9]. Players who play more of Pokémon GO instead of other video games might experience an increase in physical activity. Alternatively, playing Pokémon GO might displace more exercise-intensive activities, like team sports, reducing overall physical activity. Further research should examine which activities are displaced by playing ARGs. The purported exercise benefits of Pokémon GO might also be negated by the game’s incentives to purchase calorically dense and unhealthy food. The net effect of ARGs on adolescent health with respect to change in physical activity and increased incentive to consume fast food should be explored in future research.

In addition to the potential physical benefits, the game promotes socialization between players who compete to maintain control of Pokémon Gyms. Friends can work together and explore the game in groups. Players can also meet new people by interacting with others playing nearby. As discussed above, this incentive to socialize can put vulnerable children at risk, but this risk is not without potential benefit. The game might motivate individuals with special needs or psychological conditions to leave the house, an activity that might otherwise be difficult or overwhelming. Pokémon GO facilitates exploration of local neighborhoods by rewarding players who visit PokéStops, which are often cultural landmarks like churches or historical sites. The game even provides information about these places when players come upon them. The format of augmented reality games offers many potential benefits for children, especially as an alternative to the more typical, sedentary style of video games. However, these benefits and potential risks should be substantiated and quantified.

According to Niantic Labs’ CEO John Hankes, future versions of the game will allow players to trade Pokémon, though he does not specify whether trading will occur in person, online, or both. He also envisions more ways for players to collaborate at PokéStop locations and Gyms. In the long term, Hankes hints that Pokémon GO may be made compatible with dedicated augmented reality hands-free devices like Google Glass that can project images into your field of view [10]. While it is still too early to predict what effects such updates will have on the safety of children and adolescents, it is critical that pediatricians advocate for strict rules and supervision of children playing the game and encourage parents to keep updated on the future evolutions of Pokémon GO and other augmented reality video games.

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