



Pokemania, Threats and Concerns of A Simple Augmented Reality Game

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ABSTRACT The use of virtual and augmented reality technology in medicine to improve psychological and physical health is not new and has an emerging role in the treatment of many disorders. Pokemon Go takes a children's game outdoors in which the real and the virtual collide, and creates an instant global sensation. Even adults today are hunting for monsters. Augmented reality takes a big leap ahead as the fans of Pokemon are in real hunt for monsters. The Pokemon Go has managed to win enthusiasms with its AR set up and simplicity to operate. The people get rewards by discovering new, real world things around areas. The adverse consequences are so clear that many country and states has baned this game. As people in search of their Pokemon often not remember where they are heading towards many times enters in peoples house without their permission such craze is not a good thing for our society.

KEYWORDS Pokemon Go, Augmented reality, Pokemania, Behavioural addiction, Behavioural therapy.

Introduction: Augmented Reality (AR) technology has finally found a 'killer app' and takes a springing leap ahead as Pokemon fans looks for Pokespots in their vicinity. Perhaps the success of the Pokemon Go owes to its challenging the accepted wisdom that gaming is a sedentary, solitary activity. The International Symposium on Mixed and Augmented Reality (ISMAR) have been preoccupied for fourteen long years to find out this 'killer app' on their 15th meeting in the Mexico. Its Japanese parent Nintendo's market capital has doubled to \$ 42 billion within seven days, making it more valuable than Sony or Apple store downloads. The pubmed search on 'Nintendo hallucination' has identified 34 case reports or case series. Injuries and problems ranged from neurological and psychological to surgical. Traditional controllers with buttons were associated with tendinitis of the extensor of the thumb. The joystick on the Nintendo 64 controller was linked to palmar ulceration. The motion sensitive wifi remote was associated with musculoskeletal problems and various traumas. ¹

Those who admire this game have argued that AR can indeed be better than VR (virtual reality) as the users don't have to suspend disbelief and enter an artificial world. The fascinating features unique to Pokemon are shown in Table 1.

Table 1. Unique features of Pokemon which drives its fans to follow.

The mundane reality is augmented by exotic, animated, cute characters.	It provides additional information about what we are seeing in the real world.	The mainstream applications of AR have typically focussed on superimposing textual information.
The users get highly motivated on a real-world artefact or location much like QR code.	It teases users about the existence of creatures in their vicinity.	Spotting a pokemon character is akin to real life experience and the effect is magical.

The animated versions of the creature are moving around the real world but visible only through smartphones.	The rising excitement is quite analogous to the Jungle safari.	Their presence is ghostlike, apparitional- a true mystical experience for those who have grown up on Pokemon cards and videogames.
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Augmented realirt and security threats: Pokemon is not a laughing issue; it has now become a serious threat, not only to the individual who is playing that but also to the security system of our country. The kids are using the camera of their cell phones and picturing the surrounding landmarks. This can be a serious threat to the country as one can follow the land, roads, buildings, offices, residences, transport facilities, shops, malls etc. By looking and managing this data, the enemy can easily formulate the mode and style of the terrorist attack and device the escape routes also. The live coverage of media of 26/11 Mumbai attack in India, helped the terrorists to formulate the planning to defend the commandos. ² The game makers have enchased the popularity of pokemon cartoon with the smartphoine addiction. The chronology of development of Pokemon series has been described in Table 2.

Table 2. The chronology of development of popularity of The Pokemon Go.

The Japanese video game designer Mr Satoshi Tajiri was first to bought out this game which he expertise by his own childhood hobbies of catching insects with his love for video games.	The first pokemon game was launched in 1996 by the designer Ken Sugimōri on Gameboy with the help of Nintendo.	Pokemon Go was developed by Niantic, a san Francisco based Augmented reality start up.
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It was the brainchild of Mr John Hanke, chief executive of Niantic who also developed the Google Earth.	The Pokemon TV series was launched in 1997 and pokemon card game on 1999. There are approximately 19 feature films in the Pokemon franchise, the most recent one being the "Volcanation" and "Exquisite Magearna."	The Pokemon is now on its 7 th Generation which is expected to launch in November 2016 and had 729 species as of now.
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The ground captured by the Smartphone camera is the gaming field and the GPS enables the location of players and that of the Pokemon and Pokeshops (places where the players goes to get more boosters. There is a big difference in between playing videogames and playing Pokemon go in Smartphone version. Its concept can be revealed with its tagline "Gotta catch em' all".³

Table 3: Reported incidences of Pokemania globally.

In Bosnia, players were advised to take care as they may venture into areas where there are hidden landmines.	In Baltimore, a driver slammed into a police car while playing the game and now "Don't Pokemon and drive" is a traffic sign.	In Guatemala, a 18 year old boy was shot dead when he attempted to break into a house when he was searching for a Pokemon character.
An Indian Boy 'raided' the India Gate to capture Rattata' a Pokemon character.	The Cubbon Park in the heart of Bangaluru had witnessed a crowd of approximately 400 to capture this virtual character in a Pokemon Go meet at 6 o'clock in the morning.	A 13 year old boy from Delhi claimed this game as 'healthy' as he had to spent an hour daily and four hours in weekend by walking or cycling which equates approximately 5-6 kms of daily exercises.

The prime cause of the success of this game show is the sense of 'presence'. The presence of these creatures can be felt as they have entered to our 'real world' indirectly rather than we have intruded in their 'virtual world'.⁴

Table 4: Chronology of development of Video Games: The 'Game Changers'.

SPACEWAR: 1961	Steve Russel laid the foundation of this gaming. It pitted two players controlling tiny ships against one another on a computer.
SPACE INVADERS: 1978	It's a shooting game which aims to defeat waves of aliens with laser cannon, brought gaming out of dingy bars and into restaurants.
TETRIS: 1984	This iconic, title matching video game still exists as it started as hand-held gaming revolution.
STREET FIGHTER: 1991	Capcom's 2D, one on one duel, set the tone for many of today's games with highest replayability.
SUPER MARIO BROS: 1985	The sprightly plumber and his conquests in the mushroom kingdom saved the home gaming market.
HALF-LIFE: 1998	A precursor to all shooting games.
THE SIMS: 2000	It got people hooked on to a game for years with one expansion pack after another.
GRAND THEFT AUTO III : 2001	One of the best by DMA design, this action-adventure game was on absolute riot.
ANGRY BIRDS & CANDY CRUSH: 2009	"Serious Gamers" would bulk at the choice but it causes an explosion in mobile gaming.
HALO 2 : 2004	It was a first-person shooting game, probably the weakest in the trilogy but helped Microsoft hike the sale of Xboxes.

Video games and social medias: There is end of era of the most popular video games e.g 'Temple Run' or 'Candy Crush Saga' and youngsters are also not spending time in the chatbox of 'Facebook' as they are now busy in new colourful world of 'Pokemon Go'. It's just as simple as to download this new game from Google's app store for android handset and the madness begins thereafter to search for its famous characters namely 'Pikachu', 'Charmander', 'Meowth' etc. However in a recent report had shown the severely affected childhood in Syria is finding its new rhythm by virtue of Pokemon. Almost 37 lakh children, who born during in the disturbed period and immigrants, are searching the new meaning through 'Pokemon Go'. In recent times, The Revolutionary Force of Syria (RFS) media office has published few posts in the twitter account where the children of Syria have found to stand with posters of Pokemon with tagline 'Save Me' written in the famous character 'Cyn-daquil' or 'Pikachu'. Syed Algin, a famous graphic designer had made a game titled 'Syria go' analogous to 'Pokemon Go' and the charm of this game that all in the backdrop are real including houses, medicines and daily commodities.² On the contrary, Iran has banned Pokemom Go due to security reasons as per BBC news which is probably the biggest action against Ninatic, the developer of this game followed by US Senator Al Franken's concern of using users private security data and NY Governor Andrew Cuomo's call for preventing registered sexual offenders to play this game.^{5,6,7}

The gammification can't be solely explained by the sudden wild popularity. The very antithesis of the Pokemon Go is that it challenges two stereotypes associated with the games and gamers that gameplay is a sedentary habit and gamers are not very social outside the game environment.⁸

Table 5: Ten Psychosocial reasons for popularity of 'Pokemon Go'.

Very large franchise (animated films, cartoon show, card games, figures to collect) with a novel twist by utilizing real world locations.	Easy to play and access and players try to catch Pokemon at specific 'Pokeshops'.
The nostalgia of classic Pokemon characters strengthens approach orientation, enhances optimism, boosts up creativity and kindles prosociality.	Another mode of social networking where likeminded players interact with each other.
The game features 'Augmented Reality' by virtue of which a direct or indirect real world environment is augmented with sound, graphics, video and GPS data.	The game motivates with 'Reward booster' (positive reinforcement) by achieving a goal e.g catching a 'Pikachu'.
The 'Pokemon Mantra' states 'Gotta catch them all' with the concept of two types of collecting e.g 'Aesthetic collecting' and 'Taxonomic collecting'. The pleasure of finding a character can be compared with finding an antique book in the bookstore.	The gaming involves lots of walking in outdoor which gives a breather to sedentary lifestyle and boredom.
It's a non-linear, never ending game and the playing experience varies depending on individual player's geo-location. The FOMO (fear of missing out) drives the players to continue the game.	The reward is analogous to 'random ratio reinforcement schedules' which accentuates the dopamine release in 'reward circuit' causing behavioural addiction.

Discussion: The collection of 'Pokemon' is like 'stamp' or 'coin' collection which involves taxonomy, the process which can end temporarily but continue later.. The original Game Boy games (Pokemon Red & Pokemon Blue) had almost 151 monster species, but the sequels have more than 700 species. A 'Pokemon Go' addict refused treatment when he had been stabbed by a stranger in the midnight at 1:00 am while busy to catch the virtual creatures and bumped on him.⁹

The similarities between drug addiction and 'Pokemon Go' addiction which is considered as behavioural addiction are as follows (Table 6)

Table 6: Similarities between Pokemomn addiction with other modes of behavioural addiction.

Loss of control: By playing 'Pokemon Go' one stays in game for longer time and loses the control of stopping to play it.	Other activities are being neglected: A 'Pokemon addict' spends less time with family and important occupational and social obligations are being grossly neglected.
Risk taking behaviours: An addict had been stabbed, shot while intruding onto private properties of others.	Relationship issues: There are instances of divorce due to 'Internet addiction'. Similarly losing one's significant one due to playing can have a negative impact on relationship.

The proposed seven stage of development of addiction to 'Pokemon Go' is as follows.

Stage 1: Stage of Sarcastic Skepticism: The stage when the game will compel the individual to leave the comfort at home.

Stage 2: Stage of Frustration: As The 'Pokemon Go' is not available to everyone.

Stage 3: Stage of freedom from Boring Virtual Reality: In this stage the individuals are vulnerable of being mugged.

Stage 4: Stage of 'loving the game': The individual will reposition themselves with Pokemon characters as if living in a real world.

Stage 5: Stage of Strong involvement: Here the addict will go anywhere to pursuit of a rare sighting and will spend huge amount of mobile data.

Stage 6: Stage of desperation: When the individual is committed to play despite all technical

Stage 7: Stage of 'life is all about Pokemon Go': When nothing else in socio-occupational and family life of the individual is important other than 'Pokemon Go'.¹⁰

The manufacturer of 'Pokemon Go', Nintendo, serves the software acceptance notice to accept the terms and conditions while downloading the game from the appstore but the legal responsibilities can't be equated to the users alone especially when one opts out from the game. While 'Pokemon Go' can blur the silverline between 'fantasy' and 'reality', there can be real consequences if one step outside the law as a player.¹¹

The Hook Model:

The app designer introduces Nir Eyal's 'Hook Model' which enables repetitive use of gaming behaviour.

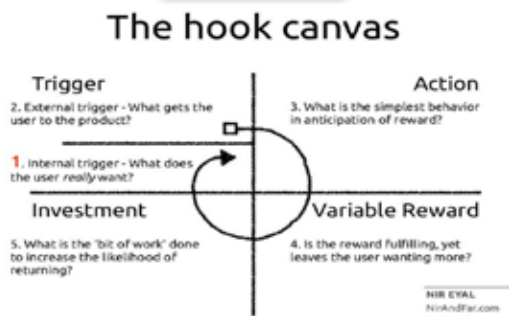


Fig 1: The 'Hook model' to describe neurobiology of Pokemon addiction.

Step 1- The Trigger: It initiates the compulsive behaviour by activating internal trigger as the individuals try to (i) Relive Nostalgia, (ii) Cures boredom and feel connected and (iii) remain physically fit. The external triggers are also very powerful which includes (i) FOMO (Fear of missing out), (ii) Social recognition and (iii) Marketing strategies.

Step 2- The Action: This step is relatively simple which include (i) to find Pokemon outside and (ii) To catch the pokemon with the flick of Pokeball.

Step 3- The Variable Reward: In a day a person checks the smart phone approximately 150 times a day and the psychological principal that can explain is the gratification and shaping of behaviour by 'intermittent variable rewards'.

Step 4-Investment- It's the last and final step of the 'Hook model'. The modern apps are built up in such a way which triggers the cues to come back (relapse) in the various social medias after deactivation of their individual accounts (detoxification).¹²



Fig 2: Some famous Pokemon characters.

Conclusions: The most striking adverse effects are (i) Data Usage has increased because of Pokemon Go, (ii) Crimes have increased, (iii) Car Accidents has been increased due to Pokemon Go, (iv) Stabbings have happened, (v) incidence of Shootings has been increased from Pokemon Go. The Pokemon Go app itself includes a warning in the loading screen asking players to pay attention to their surroundings, but it's clear that some people are getting so excited that they forget to heed it. Niantic, which partnered with the Pokemon franchise to create the game, has some rules of the road for its other major title, "Ingress," that may prove useful. In a statement, The Pokemon Company said, "We are constantly looking at ways to add safety features to Pokémon GO and expect to incorporate some features based on user experience into future builds." The physical injuries are not the only source of worries as this is a risky era of online game player with frequent stories of privacy being violated and security being hacked by third parties. The need of the hour is to intervene in every possible ways by building awareness of this game, restricting use of it, legal action (with recent banning in Gujarat state of India on 10/8/2016) and behavioural therapy, parental counselling with or without pharmacotherapy. Before the 'Pokemania' or 'Pokemon mania' drives individual crazy the sooner the consorted action is taken is the better.^{13,14,15}

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