

The Mechanics of Brain Optimisation through the Game of PUBG



Saranya Narayanan, P. V. Ramanathan

Abstract: *The media is replete with the deleterious effects of action games on the minds of the youth. The recent popular game, Player Unknown's Battlegrounds or PUBG, also finds its place in these stigmas. The news stories tell us about the addiction and aggression created in the minds of the gamers. The spectators remain blinded by this news, and fail to see the positive impact of this genre. Several brain scientists have measured the effects the action games have on the minds of the gamers, and come to the conclusion that, if the energies indulged in gaming is leveraged properly, it can lead to a progressive cognitive and behavioural patterns in the players. The present paper scrutinises the effects of PUBG and how it can optimise the functioning of the brain. According to them the game does help in building positive character strengths in the players, which in turn can lead to betterment of cognitive behavioural patterns. Thus, when put into proper use, the several traits of the action games like that of PUBG, can be used for educational and rehabilitation purposes.*

Keywords: *brain scientists, gaming, PUBG, action games, cognitive behavioural patterns*

I. INTRODUCTION

The action games, first designed with an intention of entertainment, has now become an important area of concern in our contemporary world, the simple reason being that the young as well as the grown up (irrespective of age) have developed equally strong addiction to gaming. *Player Unknown's Battlegrounds* or *PUBG* is one of the most played battle-royale games today. The multi-player online shooter game provides a platform for solo or team play. The players then rummage for weapons, medical supplies and other resources, battling against each other to be the last player standing and getting "Chicken dinner".

This game, even though a favourite to many, has received equal criticism; parents see it as a time-waster and can therefore a thing of corrupting the minds of the children. Some of the psychologist have also raised a concern that the violent games stimulate aggression, reduce pro-social behaviour and empathy in the players.

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Extreme addiction towards anything can lead to deleterious effects but due to this, one must never fail to see the positive vicissitudes that are being caused in the young minds due to this game. "Numerous studies have demonstrated that regularly playing action video games (AVGPs) is associated with increased cognitive performance" (Dale). Thus, the *PUBG* game that has been popularised recently can bring out a positive change in the behavioural pattern of the players, if used within bearable limit.

The brain scientists are interested in how the brain learns and especially focuses on making the brain smarter, better and faster. In this modern world, they are putting together strategies that can change the brain patterns and behaviours, in both children and adults. "Because of their great didactic efficiencies, and because brain plasticity based exercises can improve the performance characteristics of the brain of almost every child, these new game-like tools shall be at the core of a schooling revolution" (Bavelier, 768). They are also trying to break the barriers between educational science and clinical medicine, and thereby incorporate it into cognitive neuroscience, thus formulating tools from gaming platforms to evolve the cognitive pattern of the individuals.

Thus, by scrutinizing the effects of *PUBG* game on the players based on the findings put forward by brain scientists, one will be able to apprehend the advantages gaming has on the minds of the players, and indirectly, their behavioural patterns; as behavioural changes arise from brain changes.

II. BRAIN SCIENTISTS AND THEIR VIEWS

The brain scientists like Daphne Bavelier and C. Shawn Green have always explored the possibilities of action games for the optimisation of brain activities in an individual. The behavioural benefits that are derived from such games are copious, "including enhancements in low-level vision, visual attention, speed of processing and statistical inference, among others" (Bavelier, 763). Thus when an individual begins playing, he or she does not begin with all the required skills. As the saying goes, 'practise makes a man perfect', the perfection is achieved through time. "The ability to improve one's abilities through practice has obvious practical ramifications, from rehabilitation of visual skills in individuals with amblyopia (also known as a 'lazy eye') to the training of surgeons" (Bavelier, 763).

The perfect action games, if used in the right doses, have proved to initiate positive neurological changes in the cognitive dimension of the individuals; games that require actions at greater speed and accurate decisions in a limited time,

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multi-tasking capabilities, and all those that challenges the functioning of the brain systems. As Daphne Bavelier comments,

So it's the same way, like those action video games have a number of ingredients that are actually really powerful for brain plasticity, learning, attention, vision, etc., and so we need and we are working on understanding what are those active ingredients so that we can really then leverage them to deliver better games, either for education or for rehabilitation of patients. (TED, 13:01)

The gaming exercises in individuals, as put forward by the brain scientists, lead to constructive changes in the cognitive capabilities and therefore bring changes in the behavioural patterns of the individuals. The scientists are now working on how to put the energies utilised in gaming for the betterment of the student populations so as to ensure a better academic success.

III. PUBG AND ITS EFFECTS

The PUBG game, like any other video game, has been subjected to wide criticism; lurid claims pointing out the damage caused to the brain, triggering aggressive and violent behaviours in the players has been the chief of them. As Daphne Bavelier and C. Shawn Green point out, "Although the popular media has a strong tendency to produce breathless headlines about the effects (or lack of effects) of video games, it is worth noting that the term 'video games' is far from a single construct and thus, has almost no scientific predictive power"(763).

The player starts the game by parachuting from a plane on to the land. They begin with just the customized cloths, after which they search for weapons, resources and other equipment, in the ghost towns and other virtual settings, which lie scattered on the map. When the player begins, he or she might have to face other players with loaded guns, who might have landed before them. Thus begins their trial; the player has to make sure that he or she is not noticed by other players with the weapon, and therefore find a gun before the others. Thus a high level of anticipation and strategy is required for survival. The player has to calculate the time and distance and therefore move according to the map pictured in his mind. Steven Johnson terms this as "telescoping", which is a sequencing of events, where the player has to focus on his task while the long term objective is imprinted in the mind; "In the game world you are forced to define and execute the task; if your definitions get blurry or are poorly organised, you'll have trouble playing" (55).

Another important task before the players is to keep an eye for the appearance of blue zone; the blue zone gathers all the players around in a circle so as to decide the winners of the game. Staying inside the blue zone, creates an adverse effect on the health of the players. But the trouble lies when the players have to reach the white zone in the suggested time limit, by using the shortest path available on the map, which appears as a dashed line from the centre of the circle to the location of the player. Thus the players develop a situational awareness through the game.

The players also showcase many advantages in terms of attention, the main being mapping or the ability to track

objects around. The players keep a constant watch out for the enemies, at the same time look for ammunitions and resources. Thus the players create a map in their mind to navigate in the virtual world. Daphne Bavelier, the cognitive researcher, points out that, in the labs, brain imaging techniques are used to find the impact of games on the minds of the people. Many changes can be found, out of which the major changes are in the brain networks that control attention. One part is the parietal cortex (controls the orientation of attention), second, the frontal lobe (controls how one sustains attention) and third, the anterior cingulate (how one locates and regulates attention and resolves conflict). "Now when we do brain imaging, we find that all three of these networks are actually much more efficient in people that play action games". (TED, 09:13)

PUBG allows the players choose between two modes; individual and squad. While playing as squads, the player, to ensure his victory must work as a team with his fellow players. Thus team work is another very useful skill that is developed by this game. There are certain situations where the team player can end up "knocked out" during the game; the fellow player can jump in and revive his mate. Thus to a withdrawn or reclusive person, the inevitable achievement would be to shake off his inborn disadvantage to develop tendencies to be gregarious, the skill to associate and team up, etc. – a great leap in pro-social behaviour. As Berni Good, the cyberpsychologist, comments;

One particularly interesting area of research I am looking at with a developer at the moment is the concept of Group Flow, which is really important for social game play and multiplayer games. Researchers from Edge Hill University are studying Group Flow, looking at solo versus group flow dynamics. They suggest that collective competence opportunities are built into the game, so that the group's skills and development are at play. (Good)

The players develop a high level of coordination between the hand and eye, and noticeably improved quickness of action. They have to develop the extra level of attention needed to multi-task: they have to keep track of their virtual co-players, co-ordinate with them, and at the same time synchronize an appreciable level of perfectness in not missing their aim on the enemies to be attacked or got rid of. Another common stigma associated this game is, high screen time affects the vision. But this has also been proved false by Daphne Bavelier and other brain scientists. The individuals who indulge in playing action games for five to fifteen hours per week has shown more better visions that those that actually don't play games at all, "Clearly when it comes to action video games, screen time doesn't make your eyesight worse" (TED, 5:05). Along with this they also develop multi-tasking abilities. As suggested by Doug Hyun Han and Perry F. Renshaw;

There is growing direct evidence that intensive use of video games results in significant generalized improvements in cognitive function.

Video games are controlled training regimens delivered in highly motivating behavioural contexts. The documented gains in processing speed, attentional control, memory, and cognitive and social control that result from playing specific games are expected. Because behavioural changes arise from brain changes, it is also no surprise that performance improvements are paralleled by enduring physical and functional neurological remodelling. (Bavelier, 763)

Decision making is another vital aspect of the whole endeavour. These will have to be clear and quick, while action does not slack. The decisions as to move which way and the direction when an attack or onslaught is being made, or which weapon to choose in between an attack and defence, are all to be made spontaneously and on the spur of the moment in most situations. Undoubtedly, this helps them in their real life situations, directly and indirectly. Bavalier states that games which can fuel stressful events like that found in battle-royale games could be utilised as a training tool for the real life scenarios. Thus our game of *PUBG*, which requires high efficiency and quickness, can train the mind to meet the reality of life.

A recent development of “Positive Psychology” which is more a humanistic movement, researches on people’s personal strength, creativity and positivity. It is the “scientific study of optimal human functioning that aims to discover and promote the factors that allow individuals and communities to thrive” (Seligman, 5). The science of positive psychology is still an emerging field. It focuses mainly on the positive aspects of life and affords the individual with fresh choices in life in terms of new paths, to open up great avenues of hope and optimism. Analysing the game, through the perspective of positive psychology, the players will feel a high sense of satisfaction in them, which in turn creates a new outlook towards life. Barbara Fredrickson, through her *broaden-and-build theory*, comments that the positive emotions that are built in them even through small events, in this case the game of *PUBG*, can broaden the mindset of an individual.

The broaden-and-build theory describes the form and function of a subset of positive emotions, including joy, interest, contentment and love. A key proposition is that these positive emotions broaden an individual’s momentary thought–action repertoire: joy sparks the urge to play, interest sparks the urge to explore, contentment sparks the urge to savour and integrate, and love sparks a recurring cycle of each of these urges within safe, close relationships. The broadened mindsets arising from these positive emotions are contrasted to the narrowed mindsets sparked by many negative emotions (i.e. specific action tendencies, such as attack or flee). (Fredrickson, 217)

While playing *PUBG*, the players have a high level of happiness and satisfaction in them that cannot be achieved through equal hours of work on algebra or Shakespeare; “the action packed shooter games, have quite powerful and positive effects on many different aspects of our behaviour” (TED, 02:53).

The game of *PUBG*, being a difficult and complicated game, the players have to remain alert and keep so many

things in mind at the same time, which can help in improving the cognitive motor skills of the individuals. Thus, by being triumphant in their own realm, they develop in them a high level of self-confidence. This helps in boosting the positivity in them and thereby creating happiness, “Mastering the mechanics of game play and accomplishing achievements via levels or tasks in game play enables this sense of competence, which in turn adds to the feeling of well-being” (Good, 2014).

IV. RESULT ANALYSIS

The most constantly raised stigma against action games, like that of *PUBG*, is that how it can damage the brain. But binging of anything is can lead to adverse effects., “One can no more say what the effects of video games are, than one can say what the effects of food are” (Bavelier, 763). It is very similar to the effect of wine on health; but when consumed at reasonable doses at the right age, as proved scientifically, the presence of certain molecules leads to greater life expectancy. Similarly, in the right measures, playing *PUBG* can and will benefit players positively.

The players experience a high level of emotional satisfaction in their victories, which will lead to their higher level of well-being and self-satisfaction. This can improve their positivity and therefore lead to the achievement of emotional sublimation. Thus by analysing the benefits derived from the game of *PUBG* from the notions put forward by the positive psychologists, the game surely can be utilised for the betterment of individual and society.

V. CONCLUSION

Gaming is a trending industry in the contemporary world, and the current generations spend hours playing them. The brain scientists are working on how the energy utilised in gaming, can be leveraged for a greater cause, “Playing video games is neither good nor bad — existing research shows that they are powerful teaching tools and therefore we need to harness that potential, aiming to maximize the benefits while minimizing the potential harms”(Bavelier,768). Based on several studies conducted by the scientists, the games have found to guide various facets of perceptual processing; when the players scan around for the enemies lurking around their backs, waiting for the right time to attack, they improve their perceptual and attention skills. The game of *PUBG*, an action game, can be therapeutically useful for the treatment of patients suffering from depression, anxiety or rehabilitation.

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REFERENCES

1. Bavelier, Daphne, et al. "Brains on Video Games". *Nature Reviews Neuroscience*. 12, 2011.
2. Dale, Gillian, et al. "Cognitive Abilities of Action Video Game and Role-Playing Video Game Players: Data From a Massive Open Online Course". *Psychology of Popular Media Culture*. 2 May, 2019. ResearchGate, 10.1037/ppm0000237.
3. Fredrickson, Barbara L. "The Broaden-and-Build Theory of Positive Emotions". *Philosophical Transactions of the Royal Society B: Biological Sciences*. 29 Sep.2004. The Royal Society Publishing, <https://doi.org/10.1098/rstb.2004.1512>. 217.
4. Good, Berni. "Psychology of video game play - low hanging fruit!". *gamesindustry.biz*, Gamer Network, 22 Oct. 2014, <https://www.gamesindustry.biz/articles/2014-10-20psychology-of-video-game-play-lowhanging-fruit>.
5. Johnson, Steven. *Everything Bad is Good for You: How Today's Popular Culture Is Actually Making Us Smarter*. New York, Penguin Books, 2006. 55.
6. Seligman, M. E. P., Csikszentmihalyi, M. "Positive psychology: An introduction". *American Psychologist*, 55(1), 2000. 5.
7. Seligman, M. E. P., et al. "Positive psychology progress: Empirical validation of Interventions". *American Psychologist*, 60(5), 2005. ResearchGate, 10.1037/0003066X.60.5.410 . 410.
8. TED. "Your brain on video games". *YouTube*, commentary by Daphne Bavelier, 19.Nov, 2012, <https://www.youtube.com/watch?v=FktsFcoolG8&feature=youtu.be>.

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