

# THE IMPACT OF ONLINE COMPUTER GAMES ON MENTAL HEALTH OF CHILDREN WITH HEARING LOSS OR AUTISM

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## Abstract

This study examined the role of online computer games in mental health and relationships skills for children with Autism Spectrum Disorder (ASD) or Hearing Loss (HL) compare to typical developing children (TD). This study approached the role of these games on social relations, social skills development, and mental health and well-being.

## Introduction

Children with ASD or HL have relationship challenges and difficulties and/or mental health difficulties due to functional disturbance affecting social interaction, learning, and communication. This study examined the role of online computer games to facilitate learning relationships skills and to help improve mental health concerns of children with ASD and HL. Minecraft (MC) were chosen as the focus of this study due to their popularity, accessibility, and the co-operative, rather than competitive, gameplay characteristics.

## Methods

This investigation recruited parents of children and children in the United Kingdom (UK) and the Kingdom of Saudi Arabia (KSA). It employed mixed methods data collection. It consisted of two parts: an exploratory questionnaire (n= 244) and some observations and interviews. Subjects for the questionnaire were parents of primary school children aged 8 and over from two groups: children with ASD(n= 121) with HL (n=11) TD children(n=123).

## Results

Minecraft is a popular game among children with ASD, especially in the UK sample. Positive associations were observed between children's Minecraft gameplay and the quality of those children's friendships and peer relationships, as well as home life skills. Adverse associations were observed between mental health difficulties and the ability to develop good relationships with others through Minecraft play. Minecraft gameplay for children with ASD that may be considered for incorporation into educational pedagogy or psychological support.



|     | Gender |    | Conditions and Type of Play |                 |                 |     |                 |                 |     |                 |                 | Age |    |    |    |    |       | n=  |
|-----|--------|----|-----------------------------|-----------------|-----------------|-----|-----------------|-----------------|-----|-----------------|-----------------|-----|----|----|----|----|-------|-----|
|     | M      | F  | ASD                         |                 |                 | HL  |                 |                 | TD  |                 |                 | 8   | 9  | 10 | 11 | 12 | 13-14 |     |
|     |        |    | OCG                         | MC Singleplayer | MC Multiplayers | OCG | MC Singleplayer | MC Multiplayers | OCG | MC Singleplayer | MC Multiplayers |     |    |    |    |    |       |     |
| UK  | 103    | 28 | 5                           | 10              | 47              | 0   | 1               | 5               | 14  | 13              | 32              | 34  | 26 | 23 | 18 | 11 | 19    | 131 |
| KSA | 102    | 22 | 24                          | 13              | 17              | 4   | 1               | 0               | 15  | 14              | 28              | 41  | 15 | 30 | 17 | 5  | 16    | 124 |

Table 1 Summary of participants details Online computer Games (OCG). Minecraft (MC).

## Preference of play

In order to know whether there is a difference of plying online computer games and Minecraft among people with ASD compare to TD, we run the Chi-Square Tests for the playing group vs. the conditions. We can see on the table below that  $X^2(2) = 7.433$ ,  $p = .024$  in the UK sample, which tells us that there is statistically significant association between the diagnostic conditions and Preferred type of play, that children with ASD preferred plying MC in the multiplayers mode. This is not true for the KSA sample, where there is no statistically significant association between  $X^2(2) = 4.725$ ,  $p = .094$ .

| Chi-Square Tests |                              |                    |    |                       |
|------------------|------------------------------|--------------------|----|-----------------------|
| Country          |                              | Value              | df | Asymp. Sig. (2-sided) |
| UK               | Pearson Chi-Square           | 7.433 <sup>a</sup> | 2  | .024                  |
|                  | Likelihood Ratio             | 7.622              | 2  | .022                  |
|                  | Linear-by-Linear Association | 7.369              | 1  | .007                  |
|                  | N of Valid Cases             | 121                |    |                       |
| KSA              | Pearson Chi-Square           | 4.725 <sup>b</sup> | 2  | .094                  |
|                  | Likelihood Ratio             | 4.768              | 2  | .092                  |
|                  | Linear-by-Linear Association | 4.664              | 1  | .031                  |
|                  | N of Valid Cases             | 111                |    |                       |

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.26.

b. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 13.14.

## Associations with Social Emotional, Behavioral Outcomes

The Strength and Difficulties Questionnaire (SDQ) is used to determine the social, emotional and behavioural outcomes. The SDQ presents five outcomes: emotional symptoms; conduct problems; hyperactivity/inattention; peer relationship problems; prosocial behaviour and total difficulties scores. Spearman correlation was run to see whether the score of online computer games intensity and the intensity of playing Minecraft have an associations with the SDQ outcomes (Table 2). Three significant associations were observed among TD children in the KSA sample with the online computer games intensity and Total difficulties (.345\*\*); Emotional symptoms problems (.403\*\*); and Conduct problems scores (.274\*). Therefore, it can be indicated that the more TD children in the KSA play online computer games, the more Total difficulties, Emotional symptoms problems, and Conduct problems scores they may have. However, no correlations was identified with the Minecraft intensity.

Spearman's rho Correlation Coefficient

| Country | Intensity factor    | Total difficulties | Emotional symptoms | Conduct problems | Hyperactivity/inattention | Peer relationship problems | Prosocial behaviour |       |
|---------|---------------------|--------------------|--------------------|------------------|---------------------------|----------------------------|---------------------|-------|
| UK      | ASD                 | Playing OCG        | -.076              | -.107            | .058                      | -.097                      | -.024               | .099  |
|         | Minecraft intensity |                    | .047               | .112             | .076                      | -.004                      | -.024               | .242  |
| TD      | Playing OCG         |                    | -.052              | -.017            | -.168                     | -.097                      | -.016               | .151  |
|         | Minecraft intensity |                    | -.163              | -.183            | -.193                     | -.161                      | -.128               | .042  |
| KSA     | ASD                 | Playing OCG        | .112               | .118             | .218                      | .159                       | -.158               | -.047 |
|         | Minecraft intensity |                    | .118               | .149             | .239                      | -.018                      | .007                | .149  |
| TD      | Playing OCG         |                    | .345**             | .403**           | .274*                     | .189                       | .214                | .000  |
|         | Minecraft intensity |                    | -.130              | -.184            | -.195                     | -.077                      | -.040               | -.139 |

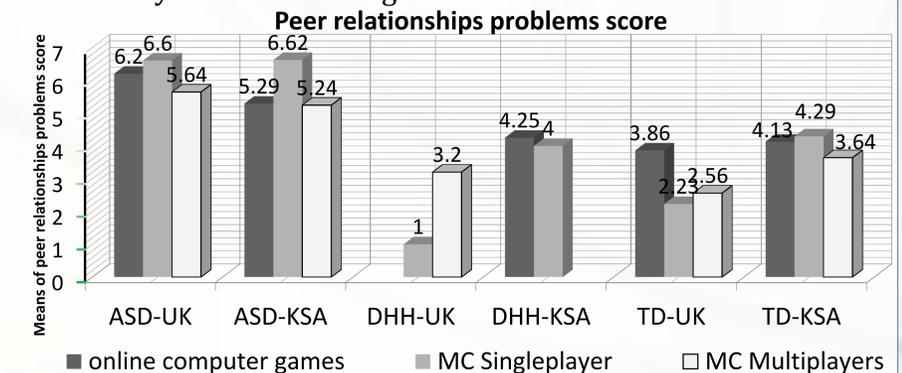
\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

Table 2: Associations with Social Emotional, Behavioral Outcomes

## Impact on Peer Relationship problems

The following graph shows the differences in the mean of peer relationship problems scores of SDQ among groups of conditions and type of play. Higher mean means abnormal outcomes compare to typically developing sample. Here we can see that children with ASD who play Minecraft in a Multiplayers mode from both countries sample showed lower score means. This indicate that Minecraft and Autcraft may have an advantage for children with ASD.



## Parents' statements

Parents stated that Minecraft has a special feature for children with ASD and "has helped [their] development too" "Without it [he/she] would be socially isolated", "provides him with a common interest with his peers" and "is significantly more social since playing minecraft, especially with other children". Parents stated that Minecraft keep their children "calm", "relaxed" and "happy." However, some concerns were stated such as "can get upset if things go wrong" and "express bad feelings and show negative reactions".