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Review Article

Virtual Reality Judgment Abilities in Typically Developing Children

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Abstract

This study explores the development of reality judgment abilities in typically developing children aged 3-6 years. Reality judgment, encompassing both character and action ability perception, is crucial for a child's accurate perception of the world. Existing research on reality judgment often stems from Western contexts, and the study addresses the need for cultural sensitivity in investigating these abilities. Using a sample of 30 participants divided into different age groups (4-5 years and 6-7 years), the study employs a reality judgment task with GIF stimuli to assess participants' discernment between realistic and unrealistic actions.

Results indicate significant age-related differences in reality judgment abilities, with the older age group outperforming the younger ones. The stimulus sets, comprising both realistic and unrealistic GIFs, further highlight the nuanced nature of children's judgments. The study employs non-parametric statistical tests, revealing a significant overall difference among the age groups. Group comparisons through Mann Whitney U tests confirm the disparities between each pair of age groups.

The findings underscore the developmental trajectory of reality judgment abilities in typically developing children. Younger participants struggle with accurately discerning realistic actions, often providing inconsistent justifications. In contrast, older children exhibit improved performance but still face challenges in articulating reasons for labeling stimuli as incorrect. The study contributes valuable insights into the age-related progression of reality judgment, emphasizing the importance of considering cultural influences and utilizing engaging stimuli, such as GIFs, in future research on children's perceptual development.

Keywords: GIF; Reality Judgement; Perception

Introduction

Reality judgment refers to the ability of an individual to judge if the state of thing actually exists in reality. The concept of reality judgment emerged from the concept of ontological principle, which deals with the philosophical reality. The terms real entity and virtual entity is often used in describing ontological principle. The term real entity refers to the ability to identify if a character actually exists in reality, virtual entity on the other hand refers to the ability to identify if a character is just confined to virtual word or exists in reality.

These abilities are known to develop with age. Cheng, Huag and Vang (2015) opined that the ability to differentiate real entity with a virtual entity would develop by 5 years. A child who is about 5 to 6 years old will be able to discriminate based on the 'world' they exist. The term world refers to environment in real. Once they develop clarity about the real environment, it becomes easier for them to identify the characters portraying virtual reality. The ability to judge is important for perception. The perception becomes more realistic and concrete once reality judgment is developed.

Action ability judgment is another dimension of reality judgment. Action ability perception refers to the ability to judge if the action carried out by agents is real or not. Shadish (2014) examined the action ability perception judgement in typically developing children by using action cards and found that the children develop this ability by 6-7 years. Younger children see cartoons and consider their favourite cartoon characters as real (Howard & Gutworth, 2020). The actions carried out by these characters is also

perceived real. The action ability judgment is known to follow the reality judgment pertaining to characters. In other words, based on the characters, action ability judgment is initiated.

These two dimensions (character judgment and action ability judgment) are often explored in typically developing children. The abilities are known to mature with age, however the individual variability is accounted in such studies. The development of these abilities is important for the development of perception and it is also known to induce readiness for a person to get ready to confront the real word. These abilities can be explored in children with abilities as these children would manifest difficulty in judgment. In order to understand about these abilities in children with autism, understanding on when and how the abilities develop in typically developing children is important, this necessitated the present study.

Need for the study: As explained above, reality judgment is important for children to gain a better perception. Most of the studies have been carried out in Western context, as the reality ability judgment is sensitive too cultural background, the findings from western studies cannot be generalised. Most of the western studies have used action pictures to tap action ability perception in children. GIF stimulus can be used to test the action ability perception ability and is more attractive and would impose more load on the participants.

Aim of the study: To investigate reality judgment abilities in typically developing children

Methods

30 participants were included for the study. The children were divided into three groups. Group 1 comprised of 10 children studying in the age range of 4-5 years, while group 2 consisted of 10 children in the age range of 4-5 years and group 3 consisted of 10 children in the age range of 6-7 years. Reality judgment task was administered on the participants.

Stimulus: The stimulus consisted of 30 pictures presented in gif format. The pictures are also called as action pictures as they represent some action through movement. The pictures further were divided into two sets. The first set comprised of 15 realistic gif stimuli. Pictures in this set comprised of actions which were realistic like cow eating grass. While the second set consisted of unrealistic gif stimulus. The unrealistic gif stimulus was unreal. Example for a unreal gif stimulus included that of a man with wings, flying with birds. The gif stimulus was collected directly from internet sources. Pictures from set 1 and set 2 were randomised and presented as power point presentation.

Procedure: The participants were asked to say 'Yes' to denote a response , which they felt was realistic. The participants were asked to say 'No' to denote a response, which they felt was unrealistic. If the response was no, the participants were asked to justify their responses. This was carried out to counteract the false positive response, which may arise from guessing. A correct response was given 1, while the incorrect response was given a score of 0. The maximum score was 30. The responses secured by participants of each of the groups were tabulated separately and analysed.

Results and Discussion

Group 1 participants secured a mean score of 14, group 2 participants secured a score of 21 and group 3 participants secured a mean score of 27. In order to verify if there any statistically significant differences between the three groups, Kruskal Wallis test was employed. Kruskal Wallis test a non parametric test was used as the data did not abide by the properties of normal distribution.

The X2 value obtained was 3.44 and corresponding p value showed significant difference between the three groups ($p<0.05$). The groups were compared in pairs by using Mann Whitney U test. The Z score obtained by comparing group 1 with group 2, group 2 with group 3 and group 1 with group 3 was 3.88, 2.24 and 3.12 and the corresponding p values showed significant difference for all three comparisons.

Group 1 children were young and the reality judgement abilities were poor in these children, it was cross verified if they understood the instructions, by imposing questions. They understood the task but were not able to give the right judgments. They said yes for stimuli such as the dog driving a car, an elephant drawing a picture etc. They had confusions for identifying the correct response as well as ruling out the incorrect response, The justification was not convincing in some occasions

Group 2 children were able to perform the task better compared to group 1. They understood the instructions easily; they performed better in identifying the correct responses. They often failed to give a correct explanation for the stimuli, which they felt were incorrect. Group 3 children performed better compared to the other two groups. However the scores did not reach the maximum. It was observed that these children were not able to list down the correct justification after calling a stimulus as incorrect in some occasion., this would have reduced the score.

Conclusion

The study was carried out with the aim of investigating reality judgment abilities in typically developing children between 3-6 years. Children were divided into three groups based on their age. 15 correct and 15 incorrect GIF stimuli was randomised and presented to the participants. The participants were asked to carry out a judgment task. Group 1 children performed poorly compared to group p2 children. Group 3 children performed better compared to the other two groups. The participants failed to identify an incorrect GIF stimulus and state the reason for labelling the response as incorrect.

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