

## A Study on Color Art Therapy based Serious Games

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**Abstract.** In this study, an art psychotherapy game was intended to be suggested through color and Mandala technique that are a part of art psychotherapy in dealing with attentive concentration, hyperactivity and impulsiveness of child with ADHD. First, it is assumed that blue, red, yellow, green colors and white color-based ground color being used in game would decrease stress and relieve tension of user, therapeutic effect would be achieved by relaxing control on attentive concentration, impulsiveness and hyperactivity and enhancing concentration through circle of Mandala and additionally, sustainability would be provided through a game without temporal, spatial limitation of art therapy.

**Keywords** Color psychology, Serious Games, Art Therapy

### 1 Introduction

ADHD is an acronym of Attention Deficiency Hyperactivity Disorder and it is usually called as attention deficit and hyperactivity disorder. ADHD is frequently occurred during childhood and psychological deficit such as difficulty in self-control, behavioral disorder, emotional disturbance, learning disability is accompanied. As a therapeutic method of ADHD, diversified therapeutic programs including medication, behavioral therapy and cognitive behavioral therapy are available. Art therapy gives change in emotion, problematic behavior and social adaptation training increasingly. Color, in particular, among art therapy significantly acts on human sensibility and emotion and Mandala art activity among art therapy techniques makes people have a positive ego in inter-personal relation by eliminating aggressiveness and anxiety through self-insight by experiencing self-confidence and tranquility by way of being immersed in one's own inner state and expressing self-integration and inner self positively.

Art therapy utilizing a game increases involvement of child with ADHD together with a game having trait requiring short concentration and distraction as a new task and it provides ADHD children with diversity by reducing their repulsion as they could be positively involved regardless of any subject and their attentive concentration is created. Using functional game increases association between art therapy and psychological therapy.

## 2 ADHD and art psychotherapy

### 2.1 ADHD art psychotherapy and its concept

ADHD is frequently represented in early childhood due to cognitive developmental disability having features of attention deficiency, impulsive behavior and hyperactivity and it is continued to be represented in adulthood as the most common neuroethologic disease having features of high heredity. When observing neurological element among causes of ADHD, complex brain damage occurred by brain infection, trauma, injury or factors of pregnancy and parturition period is considered to be a major cause of ADHD syndrome and its cause has not been determined yet and several academic circles opined that ADHD is taken place by several factors in complex form.

### 2.2 ADHD art psychotherapy

Art psychotherapy reduces self-repulsiveness when a client makes self-expression by using a medium called art and a client who does not expose self-emotion is able to make self-expression by a language and communicate through a picture. ADHD child who received art therapy is able to satisfy both of positive desire and negative impulse symbolically without fear of actual result through art activity and by experiencing thinking and emotion being expressed through art activity, such child is also able to learn how to control real world (reality).

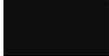
### 2.3 Color psychology and Mandala

Through color psychology, it could be seen that when observing nature of colors selected by child, it has relation with living environment and it is affected by psychological sensibility and emotion. Mind of child who uses bright and clean color is stabilized and that of child who uses dark color is unstable and such child has a tendency of dissatisfaction and defiance. Like this, in color psychology, what could well express child psychology is not an expression of line and form but color expression and color selection among pictures expressed by child, in particular, could be interpreted as physiological, emotional expression.

**Table 1.** Color psychology analysis of Al-Schuller and Hedwig

<i>Colors</i>	<i>Psychological analysis of the use of color</i>
	Not put the mind to norms to free personality to act, to Ivan manner society feel, there is coordination, friendship deserves to circle.
	Is large growing needs in an attempt to fit well to adult rules and appeared well when the big anxiety and fear.
	

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	I will be well adapted to the meaning attention of cheerful personality. Dependence is strong, looking at mental development, it has been somewhat delayed, behavior also is influenced by emotions, children often use the yellow is highly ties with other children.
	Self-control is too often a careful complacent nature, and to visualize the proper expression, it is possible to restrain the urge.
	Some of the favorite children of brown, you can receive a too early defecation Funhyon, excessively and have grown children often in an environment that forced the cleanliness habits.
	Favorite of children of purple is only a few, homely and the unfortunate case a lot, it can be seen from a child susceptible to bullying other children
	It can be seen in children who grew up in the fear and the deficient home environment by people aired their feelings from is often used in children fear and anxiety that experience the freedom is insufficient.

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### 3 Serious Games

#### 3.1 Game idea and its objective

Material of this game is based on memory game using its Mandala technique and art therapy. Art therapy technique of this game is a technique of art psychotherapy technique through color and Mandala technique and it shows the most significant effectiveness in art psychotherapy by adding game characteristic of functional game through convergence of color and art psychotherapy of Mandala technique with memory game. Mandala art therapy technique and memory game would be significantly effective in psychotherapy by using mental concentration and Mandala color. Child with ADHD affects not only itself but also its parents. The objective of this game is to have such child cultivate memory and attentive concentration and to overcome ADHD through a game by enhancing an ability of being able to control oneself of its own accord against hyperactivity and impulsive behavior.

#### 3.2 Motivation of game

In functional game, effectiveness of art therapy using color of art psychotherapy and Mandala technique has been proved through several theses or clinical test. This functionality is that if art therapy should be performed through a game among the elements that may provide therapy without limitation of space and time, a client could receive therapy interestingly without feeling any burden. Idea of this game development study was designed by aiming at memory game and art therapy and through this idea, a therapeutic effect of a client could be achieved regardless of

temporal, spatial limitation as such client could feel interest in the game by participating in it.

#### 4 Design and method of Serious game

Based on color psychology and a theoretical background of Mandala, a function game was intended to be designed by using 4 colors including blue, yellow, red and green. Green color symbolizes stability and comfortableness as it makes mind to be relaxed and calmed down. At every stage, game is provided from level 1 through level 10 and when clearing a stage, game is progressed to next stage. In this process, child with ADHD suppresses impulsiveness by repeating success and failure and enhances power of self-control through game rules. In this game, color is randomly coming out from each circle and as level is increased, count and shape of color become diversified. This game is a form of clicking color matching with color order by memorizing color and order. In other words, by enhancing attentive concentration and memory through color, attention of distracted child with ADHD is made to be enhanced by having such child control hyperactivity and impulsiveness through circle and background color.

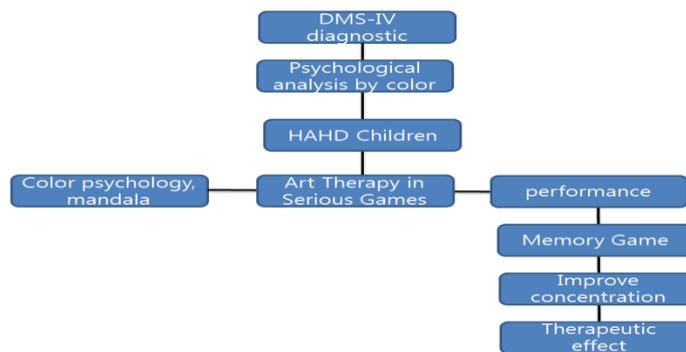


Fig.1. int of the art psychological treatment

#### 5 Conclusion

According to existing preceding study, it was reported that Mandala art therapy technique is significantly effective for child with ADHD but only when art therapy should be continuously carried out, its effectiveness could be verified. It takes time and effort for child with ADHD to receive art therapy. It is expected that as smart

mobile game could be played ubiquitously by carrying smart phone always without limitation of space and time, it would steadily provide therapeutic sustainability. In this study, a functional game and healing game for psychotherapy of child with ADHD and its contents development and research are hereby suggested.

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