



## Cognitive Therapy Protocol of Understanding Embodiment Metaphorical Expressions in Children with William's Syndrome

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### ARTICLE INFO

**Article type:**  
Original Article

**Article history:**  
Received: 6 June 2017  
Accepted: 24 June 2017  
Available online: 30 June 2017  
CJNS 2017; 3 (9): 79-87

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### ABSTRACT

**Background:** Normal children understand and use embodiment metaphorical expressions since they start learning a language, but children suffering from William's syndrome even in adulthood have little understanding of such expressions and they can hardly use them.

**Objectives:** This study is an attempt to teach embodiment metaphorical expressions of 4.5-5 year old Persian children suffering from William's syndrome.

**Materials and Methods:** Ten 4.5-5 year old Persian children with William's syndrome were studied using dual cards by Bialeka-Pikul in five sessions with required intervals and measuring their amount of their learning through a test of understanding of the Persian language and using such expressions. This method of investigation can be used as a therapeutic protocol in this area. The method used in this study was descriptive-experimental and carried out without making any changes in the variables.

**Results:** Results of this study showed that after five sessions with this therapeutic method, each of the 10 children with William's syndrome moved from level one of relative understanding, which means formation of metaphorical structure, to level two of metaphorical understanding of embodiment expressions. In this group, the metaphor of taste with 2.50 points was the highest and the metaphor of shape in the expression with 0.8 point was the lowest.

**Conclusion:** Control groups in filling the blanks had the highest number of correct answers in the characteristic taste followed by the characteristics smell, speed, and color, and had the least points with metaphorical phrases that reflect the use of minimum idiomatic metaphors.

**Keywords:** Cognitive Therapy; Metaphor; Linguistics

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➤ **Please cite this paper as:**  
Shoja-Razavi S. Cognitive Therapy Protocol of Understanding Embodiment Metaphorical Expressions in Children with William's Syndrome. Caspian J Neurol Sci 2017; 3(9): 79-87.

### Introduction

According to Lakoff *et al.* [1], we human beings have skin that distinguishes us from the rest of the universe and we experience the rest of the world outside our bodies. In fact, this view of the object and semantic structure in cognitive

linguistics is a metaphor that suggests embodiment metaphors. In the cognitive view, the exact position of real and metaphorical language, we have to go through a mental field (using the metaphor) based on conceptualization [2]. In fact, the metaphor is

a cognitive phenomenon in the sense that we understand a series of phenomena according to another set of phenomena [3]. In learning a language, children with their limited knowledge of the environment and vocabulary and their cognitive engagement with the faces can be taught using metaphors. Although understanding of metaphors may vary in children and adults, we seek to correct the outcome by using military metaphors in conceptual and metaphorical structure that meets the child's mind to build metaphors that meets the adult's mind.

Children with William's syndrome, although many attempt to communicate with other people but they can't understand what the metaphorical and idiomatic metaphors used in the word by others, they are confused and misled. They are not like normal children who can understand and use metaphorical expressions. Their speech shows that grammar and language rules are well understood and applied, but their understanding of metaphorical expressions and their applications are unsuccessful.

Thomas *et al.* conducted a study on the metaphorical understanding children with William's syndrome [4]. They compared normal children with children with William's syndrome based on the metaphorical perception. The subjects in the field of understanding the word of metaphorical categorization were studied. They were asked to complete sentences "the sun like..." or "the moon like..." by choosing a word that is similar to the target word. Results showed that people with William's syndrome had difficulty understanding abstract issues.

Comprehension of Sarcasm, Metaphor and Simile in William's Syndrome was studied by Godbee *et al.* [5]. It is suggested that although people with William's syndrome are very

social and have a good general ability to speak, it is difficult for them to understand the meaning of individuals and that there are no facial expressions. The main purpose of this research is to examine the understanding of metaphor, indoctrination and similitude, and another purpose of this research is to examine the understanding of non-literal phrases and other cognitive abilities. In this study, 26 patients with William's syndrome were studied. They heard a story which says a character in the story of ordinary and literal statements other than statements into his work and the subjects were asked about the story and phrases. Results revealed that TDCA (typically developing chronological age-matched controls) people have lower understanding of metaphorical and literal words but a significant difference was observed in TDMA (typically developing children matched for mental age) people.

Another study by Anaz Di *et al.* is entitled (comprehension of metaphor and metonymy in children with William's syndrome). In this study, ten children with William's syndrome and 11 normal children were studied aspect of understanding stories with metaphors and metonyms [6]. Results showed that metaphorical understanding of children with William's syndrome was at a lower level than normal children. But metonyms was at a higher level, metonyms is a part of words and it is recognizable like synonyms for people who suffer from William's syndrome but metaphor belongs to unusual cognitive mechanism and people who suffer from William's syndrome have not clear understanding about it rather than normal children.

Another study conducted by Shoja-Razavi which - compared Persian language children with William's syndrome aged 4.5 to 5 years

with normal children in same age in understanding and application of metaphorical phrases and their rate were measured perfectly [7]. The results showed that children with William's syndrome can understand metaphorical similarities like normal children. These children in the filling blanks expressions had the highest number of correct answers on the characteristics taste followed by the characteristics of touch, movement, color, shape, smell, size, sound, shape, and speed, which have the least points, indicating that minimally used phrases in their speech is metaphorical embodiment. These children by the dual cards test revealed score results showing their metaphorical understanding. We can say that children with William's syndrome aged 4.5 to 5 years have relative understanding to the formation of the first level understanding of metaphor.

The use of metaphors in psychological treatments has a long history, but metaphor therapy with language impairment approach in children is relatively new. This treatment is metaphorical, which can be used in psychological, behavioral and mental disorders and also in children who have limited metaphorical understanding, such as children with autism and William's syndrome. This treatment can be used to teach children the basics of metaphor to understand a language.

As expressions of metaphorical children with Williams syndrome has already been studied, this research aims to study the understanding and use of idiomatic embodiment metaphors of the Persian language by Persian children with Williams's syndrome, allowing understanding their cognitive and mental development by promoting them in mind and helping them in abstract topics.

### ***Theoretical framework***

Cognitive linguistics is the study of language based on our experience of the world and how to understand and conceptualize human's way. In cognitive linguistics, a system of categories is primarily considered the formal structure of language and is not something as independent, but is as an expression of the general conceptual organization, the principles of categorization, mechanism of processing and the effects of experimental and environmental studies [8]. Lakoff *et al.* in their theory of metaphor, also expressed that metaphors are neither something decorative nor a literary device, but they are in our every thought and action [1]. So, our conceptual system in which we think and act by nature is essentially based on metaphors [9].

Lakoff *et al.* also believed that the place of origin of metaphor in general is in the field of language, but it should be conceptualized in terms of a subjective realm. The basic theory of metaphor from the realm of mind mapping specification is realized. This process is observed together with domestic abstract concepts such as time, circumstances and causality. The result is that the mapping between the realm of metaphor and the study of literary metaphor is an extension study of everyday metaphor [2].

Considering the importance of mental and cognitive development in early childhood, psychologists have tried to understand and evaluate metaphorical language of early age children. The concept of the metaphor in present study is the conceptual metaphors that Lakoff *et al.* has raised in his contemporary theory of metaphor [10]: "The mapping between realms in the conceptual metaphor for the process of benchmarking in the area of origin to the destination field of introduction"

[11]. Based on this definition, the following concepts are considered:

- a. The area of origin or the basic concept: a concept that is a more concrete model of its secondary destination where the action takes place.
- b. Target of secondary areas or concept: an abstract notion compared with the basic concept in which the network is modeled on the concept of the territory of origin.

In children, cultural artifacts can be learned more by mental imagery, and the information received can be processed and stored in the memory. Memory can be stored in three types: sensory storage, short-term storage, and long-term storage. Sensory store keeps the trace of an exciter when the exciter is compatible with a pattern and including two separate storage: one is iconic storage which is called iconic memory and another is echoic storage which is called echoic memory [11]. Lakoff *et al.* on the perception of the human body and senses revealed the origin of human knowledge and understanding of environmental phenomena [1,12]. Martha Bialka-Pikal argued that metaphors detected by human senses are called embodiment metaphors. He studied a variety embodiment metaphors and dividing them into five types: color, shape, size, movement, and touch [13]. The aim of this study was to obtain perspective on how education can be effective in understanding and using embodiment metaphors in children with Williams's syndrome.

## Materials and Methods

The method of this study was descriptive-experimental and the population consisted of 4.5-5 year-old children with William's syndrome. The children were randomly selected and examined. Participants were

sampled individually. This research was conducted in the academic year 2016-2017.

Twenty children with William's syndrome from a rehabilitation center in Tehran were studied. The experimental group was trained for five sessions. Embodiment metaphorical expressions used in this study were described in detail for children using dual cards tests. The test study was conducted in two stages. In the first stage, 10 children in the experimental group and 10 in the control group were tested by the dodge. Persian-speaking children in both groups were asked embodiment metaphorical expressions. According to Table 1, answers were recorded and the results were collected, as shown in a study by Shoja-Razavi [7]. The metaphors were characterized by color, shape, size, speed, sound, smell, touch, taste, object, and movement and were asked to children individually.

**Table 1.** Characteristics and blank metaphorical expressions

1. Color characteristic	Red like	Green like
2. Shape characteristic	Spaghetti like	Someone with a hat like
3. Size characteristic	Thin like.	Fat like
4. Speed characteristic	Slow like	Quick like.
5. Sound characteristic	Slow voice like	Loud voice like
6. Smell characteristic	Bad smell like	Good smell like
7. Touch characterized	Soft like	Rough like
8. Taste characteristic	Sweet like	Bitter like
9. Shape characteristic	Smooth like	Vibrating like
10. Movement characteristic	Jumping like	Crawling like

In the second stage, to assess the understanding and use of embodiment metaphorical expressions, questionnaire study constructs by Shoja-Razavi [7] and interview research methods by Bialka-Pikal [13] were used. Pikal based on five characteristics of "color, shape, size, motion, and touch" used 10 embodiment metaphorical expressions in Dutch created and tested in the form of binary images. The spokesman doll by means of a

binary image was presented to the children and was given the privilege to ask them. For example, for the characteristic color of the metaphorical “green frog,” the doll speaker with two cards, one containing pictures of frogs and the other a green Balbas girl, showed the doll to the child saying: “Woe! The green cloths, are you a frog?” The child was examined and forced to answer questions and respond. The difference in this study is that in addition to the five characteristics, five other characteristics of taste, smell, sound, speed, and object were also included. Twenty metaphorical expressions in Persian by means of binary images with the help of a talking doll were asked to children. The children's responses were then examined. Dual cards with metaphorical phrases in Persian were derived from Shoja Razavi [7].

Responses of children were scored in table 2 based on Bialka-Pikal [14]. For example, children were tested with an image of obese children. Afterward, a picture of a barrel was shown. The doll with these two photos showing the children asked “Oh, you're the barrel?” If a child had no response, zero is received. If “This kid is a barrel,” the rating is one. If the child said “The child is obese and the barrel is obese,” the child earned two points because similarity between the two images is found. If they pointed to similarities such as “The kids are like barrels,” they still earned three points because it is not just the metaphorical work. If they said “This kid is like a fat barrel” or “These guys are barrels,” the highest rating of four is realized.

**Table 2. Scoring to responses of children in conception expression metaphor**

Score 0	Score 1	Score 2	Score 3	Score 4
There is no answer (silence)	Subject: this is a kid and that is a barrel	Similar scheme in question (the kid is fat; the barrel is fat)	Incomplete understanding of metaphorical expression (the kids are like barrels)	A complete understanding of metaphorical expression, along with faces (these guys are like fat barrels, this kid is fat)

Given that children benefit from all their senses in obtaining an understanding of the world and the characteristics of the study by Bialka-Pikal [14], results showed that the characteristic related to the sense of hearing, taste, and smell did not exist. We tried to evaluate at least one child from other senses. Vision, hearing, and chemical (taste and smell) senses are human specific and skin sensation (pain, heat, cold, touch) senses are general sub-accounts [15]. A total of 10 funds is examined in this study: 6 ways related to visual characteristics: color, shape, size, motion, speed, and object; and 4 ways related

to characteristics of hearing, touch, taste, and smell.

As previously mentioned, a pair of Persian-speaking children was tested and shown photos of the two categories and various fields. Scoring is based on Bialka-Pikal [13]. For example, as seen in the following photos, children were shown a cactus photo card and a picture of a child's needle-like hair (Figure 1).



**Figure 1.** Sample of photos which have used for metaphor embodiment “The hair of the baby is like cactus spines,”

The doll with these two photos asked the children “Wow, you're a cactus?” The child under test with this question was forced to respond to the question by the doll. He tried to understand why such a doll and asks what is going on in his mind. Children's responses varied reporting and commenting on pictures. For example, “This is a kid. That is cactus.” Or “No, that is a kid. Not a cactus.” Or “needle hair, cactus spines,” or “The hair is like cactus spines,” or “The hair of guys is like a cactus,” or “The hair of the baby is like cactus spines,” or “The hair of the children is

like a blade.” Thus, the answer of every child that represents the knowledge he had of the cards was given points.

## Results

According to children's speech in the blanks answers and comparing the responses of children with William's syndrome in the experimental group and the control group, the following results were obtained: (Table 3)

**Table 3.** comparing the responses of children with William's syndrome in the experimental group and the control group

Characteristics	Blank metaphorical phrase	Correct answer of experimental group children	Wrong answer of experimental group children	Correct answer of control children	Wrong answer of control children
Color characteristic	Red like	7	3	5	5
	Green like	7	3	5	5
Form characteristic	Spaghetti like	6	4	4	4
	Hat on head like	7	3	5	5
Size characteristic	Thin like	6	4	5	5
	Fat like	6	4	5	5
Speed characteristic	Slow like	7	3	5	5
	Quick like	7	3	5	5
Voice characteristic	Slow voice like	6	4	4	6
	Loud voice like	7	3	5	5
Smell characteristic	Bad smell like	6	4	6	4
	Good smell like	6	4	5	5
Touch characteristic	Soft like	6	4	6	4
	Rough like	7	3	4	6
Taste characteristic	Sweet like	8	2	8	2
	Bitter like	6	4	5	5
Shape characteristic	Smooth like	5	5	4	6
	Vibrating like	5	5	3	7
Movement characteristic	Jumping like	6	4	6	4
	Crawling like	6	4	5	5



Children with William's syndrome were taught a variety of metaphors before the test, and showed better responses to dodge phrases with metaphorical embodiment. In other words, these similarities used are more accurate in completing the metaphorical expressions, as seen in the number of correct answers for the characteristics taste, smell, color, and speed and incorrect answers in metaphorical expressions for characteristics shape, sound, smell, and shape.

**Table 4.** Distribution of answers to the two green grass - frog cards

Type	Green-grass					Total	Likert rate
	0 Silence	1 Relative understanding	2 Complete understanding	3 Relative application	4 Complete application		
Experimental	1	1	4	4	0	10	2.1
Control	3	2	1	4	0	10	1.5

As can be seen in the experimental group, one scored zero (silence), one scored one (relative understanding), four scored two (full understanding), four scored three (relative application), and none scored four (complete application). Using the Likert scale, it was found that people who understand and use green as grass metaphorically are two and one-tenth of the four.

In the control group, three scored zero (silence), two scored one (relative understanding), one scored two (full understanding), four scored three (relative

Due to the differences between the responses of children in both groups, the data obtained were analyzed by statistical methods. A frequency table for the metaphor "red dress-roses" is presented here. In addition to describing the frequencies in this table, the Likert scale was used. The Likert method of calculating ranking for the above data is as follows: (Table 4)

application), and none scored four (complete application). Using the Likert scale, it was found that it is one and a half of the four. In other words, people who understand and use the embodiment metaphor green grass color in response to two cards at a tenth of the four are five.

The total average Likert rating of children with William's syndrome in both experimental and control groups is provided in Table 5.

**Table 5.** Average Likert rank of children with William's syndrome in both control and experimental groups

Metaphor	Average of metaphorical understanding and use		
	Control Group	Experimental group	
Color	Red dress - rose	0.7	1.2
	Green clothing - frog	0.80	1.85
Object	Pasta - cream	0.10	1.30
	Hat on head - police	0.6	1.50
Shape	Bend - dough	0.60	1.2
	Smooth - ruler	0.70	1.85
Size	Slim size - pencil	0.60	2.20
	Fat - barrel	0.30	2.10
Speed	Slow - turtle	0.50	1.95
	Fast - wind	0.40	1.45
Movement	Jumping - sparrow	0.80	2.20
	Crawling-worm	0.50	1.30
Touch	Soft - Cat	0.60	1.16
	Spine - Cactus	0.50	1.30
Voice	Ill sound - cock	0.40	1.20
	Scream - horn	1.10	1.90
Smell	Bad smell - garbage	0.50	1
	Good smell - flower	0.40	1.40
Taste	Good taste - sweet	1.60	2.35
	Bad taste - bitter syrup	0.70	1.65

The results in show that, Table 5 in general, the control group has minimal metaphorical sense, that is, the formation of the first level relative understanding of metaphor. In this taste metaphor group (good taste of pastry) with a score of 1.60 is the highest point and shape metaphor in object (hat to head like police) with a score of 0.6 have the lowest point.

The experimental group of children with William's syndrome had more acceptable ratings. The children webmaster of the test group before trying to cooperate provided more reliable answers. In this age group, littered with bad smell metaphor and tasting metaphor (taste good - pastries) with a score of 35.2 had the highest scores of the results. It can be said that the second level of understanding and application have enjoyed relative metaphorical expressions.

## Discussion

This study specifically examined the understanding and use of embodiment metaphors of the Persian language spoken by children with William's syndrome in both the control and experimental groups. In general, the findings of this research indicate that children under study in both groups show their capabilities in understanding metaphoric similarities between two pictures from different grounds. Control groups in filling the blanks had the highest number of correct answers in the characteristic taste followed by the characteristics smell, speed, and color, and had the least points with metaphorical phrases that reflect the use of minimum idiomatic metaphors of their speech. Children with William's syndrome do well in fill in the blanks test after teaching with a little difference from the normal children, whereas in diagnosing metaphorical expressions by the

dual cards test, normal children do better than children with William's syndrome without instruction. Results of this study showed that after five sessions with this therapeutic method, each of the 10 children with William's syndrome moved from level one of relative understanding, which means formation of metaphorical structure, to level two of metaphorical understanding of embodiment expressions. In this group, the metaphor of taste with 2.50 points was the highest and the metaphor of shape in the expression with 0.8 point was the lowest.

The experimental group had better answers to the questions in the exam and achieved better results. These children have had the best answers to the taste metaphor and then, in terms of sound, speed and color, respectively, which can be said that these children have a full understanding and relative application of the metaphorical term. As we can see, this study emphasizes the growing trend of understanding and applying the metaphorical usage of a child with William's syndrome, while studies such as Vosniadou *et al.* show that adults with William's syndrome do not have metaphorical understanding either [16]. Godbee *et al.* believe that metaphorical comprehension and literal sentences for individuals with William syndrome are lower than the TDCA [5]. An overview in metaphorical topics, lack of timely education and the educational method for these children can be the cause of failure to understand and metaphorical application of people with William syndrome. The use of dual cards and training with a childish play and appropriate age of this training can help children with this syndrome. Of course, besides the results which are visible with this method, not all forms of physical metaphors, in some of the children we will see the verbal development and understanding.



## Conclusion

This study used a variety of embodiment metaphors realizing that by learning, children with William's syndrome can understand and use phrases successfully despite their poor training. Comparing trained and untrained children with William's syndrome showed that the ability of the children to communicate with others can help them and that the practice and teaching in the same environment can strengthen their verbal and cognitive intelligence.

## Acknowledgment

I would like to express my special thanks of gratitude to children and parents with William's syndrome from a rehabilitation center in Tehran were studied. Secondly I would also like to thank from a personnel's rehabilitation center in Tehran which also helped me in doing a lot of Research and I came to know about so many new things I am really thankful to them.

## Conflict of Interest

The authors have no conflict of interest.

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