

The Role of Awareness Advertising Message Included in ADHD Children's Interactive Clothing in Improving their Psychomotor Disorders

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Abstract:

(ADHD) is a chronic condition that affects millions of children and often persists into adulthood. ADHD Children are always looking for things to interact with. In addition, awareness advertising message lack the interactivity and engagement factors, especially when the target audience are ADHD children. Therefore, Employing the awareness advertising message in interactive clothes is suitable for this group and helps them improve the psychomotor disorders they suffer from, because it modifies the behavioral patterns of them to reduce the negative psychological effects of the disease and to control their behavioral health patterns.

The aim of this study is to help children with ADHD overcome the negative effects they are experiencing psychologically and socially. The research methodology is a combination of descriptive study and statistical analytical study, and the result of the research appears by studying the role of creating interactive clothes that attract children with ADHD and enriching its design with an awareness message and how it can help them interact with society and break social phobia. Followed by a statistical analysis of four practical designs of clothes that were designed as an interactive game and the addition of an awareness message that helps children with ADHD on psychological and emotional balance by feeling comfortable and adding the possibility of interacting with clothes and playing through them, helped to get out of the state of boredom that (ADHD) child usually feels, as well as making him/her distinguished in the society, and able to make new friendships.

Keywords

Attention deficit hyperactivity disorder (ADHD), ADHD children clothing, awareness advertising message, interactive cloth, Psychomotor Disorders.

الملخص

هو حالة مزمنة تؤثر على ملايين الأطفال وغالبًا ما تستمر (ADHD) اضطراب فرط الحركة ونقص الانتباه عادةً عن أشياء للتفاعل معها. بالإضافة إلى ذلك، تفتقر الرسالة الإعلانية (ADHD) حتى مرحلة البلوغ حيث يبحث أطفال التوعوية إلى عوامل التفاعل والمشاركة خاصةً عندما يكون الجمهور المستهدف من الأطفال المصابين باضطراب فرط الحركة ونقص الانتباه. لذلك فإن توظيف الرسالة الإعلانية التوعوية في الملابس التفاعلية يناسب هذه الفئة ويساعدهم على

تحسين الاضطرابات النفسية الحركية التي يعانون منها لأنها تُعدل من أنماطهم السلوكية لتقليل الآثار النفسية السلبية للمرض وضبط أنماط صحتهم السلوكية.

الهدف من هذه الدراسة هو مساعدة الأطفال المصابين باضطراب فرط الحركة ونقص الانتباه في التغلب على الآثار السلبية التي يعانون منها نفسياً واجتماعياً. منهج البحث هو مزيج من الدراسة الوصفية والدراسة التحليلية الإحصائية، ونتيجة البحث تظهر من خلال دراسة دور ابتكار ملابس تفاعلية يجذب إليها الأطفال المصابون باضطراب فرط الحركة ونقص الانتباه وإثراء تصميمها برسالة توعوية وكيف يمكن مساعدتهم على التفاعل مع المجتمع وكسر الرهاب الاجتماعي. يليها تحليل احصائي لأربعة نماذج تصميمية لملابس تم تصميمها كلعبة تفاعلية وإضافة رسالة توعوية تساعد أطفال اضطراب فرط الحركة ونقص الانتباه على التوازن النفسي والعاطفي من خلال الشعور بالراحة وإضافة إمكانية التفاعل مع الملابس واللعب من خلالها ساعد على الخروج من حالة الملل التي يشعر بها طفل (ADHD) كما تجعله مميزاً في مجتمعه قادراً على تكوين صداقات جديدة.

الكلمات المفتاحية

اضطراب فرط الحركة ونقص الانتباه، ملابس أطفال فرط الحركة ونقص الانتباه، الرسالة الاعلانية التوعوية، الملابس التفاعلية، الاضطرابات النفسية الحركية

Introduction:

Attention deficit hyperactivity disorder (ADHD) is a chronic disorder of childhood and adolescence characterized by a pattern of extreme pervasive, persistent, and debilitating inattention, overactivity, and impulsivity [1]. It is a common childhood behavioral disorder [2], estimated to affect around 11 percent of children ages (4 through 17) [3], and it is a neurocognitive behavioral developmental disorder that is characterized by a persistent pattern of inattention or hyperactivity-impulsivity [4].

Children with Attention Deficit and Hyperactivity Disorder (ADHD) experience a deficit in cognitive processes responsible for purposeful goal-directed behaviors, known as executive functioning (EF) [5].

Children diagnosed with this disorder have worse academic grades because of their behavior and inattentive problems. This fact makes families, teachers and psychologists be concerned about the development of children that suffer ADHD and deal with them in order to search for a solution with the aim of giving to these children the same possibilities as the others.

It was in 2002 when Dr. Russell Barkley wrote the International Consensus Statement on ADHD and professionals from different areas that participate in the ADHD study signed it. It postulates that ADHD is not a benign disorder and for those it afflicts, ADHD can cause devastating problems [6].

As Children with ADHD are more likely than their peers to experience educational underachievement, social isolation, and antisocial behavior during the school years and to go on to have significant difficulties in the post-school years.[1] The process of designing children's clothing requires a designer who studies the psychological aspects and motor motives of the child and what suits each category, especially ADHD children.

Interactivity through clothing is one of the most important reasons why interactive awareness advertising is a huge tool compared to other traditional awareness advertisements. It is an innovative and creative way that embraces and provides necessary health ideas and information for members of society with diseases such as ADHD.

The research problem is to find out the role played by the inclusion of the awareness advertising message in the ADHD interactive children's clothing in improving their negative psychological behavior and their Psychomotor Disorders. In addition, considering it a tool that provides an engagement tool that may help change attitudes, behaviors, and ideas of the audience about ADHD child behaviors.

Literature review:

1. ADHD children clothing:

During the first years of a child's life, especially from the age of (- ٣12) years children wear different clothes based on their socio-economic condition, locality, season, festivals, tradition, and culture. children like to wear more colorful and noticeable apparel. They like to select their apparels themselves. They wear apparels according to their parents' choices until they get knowledge about clothing, color, and tradition. After getting into school and having friends they start to choose their apparel according to color, brand, cost, tradition. Parents allow their children's choice for clothing according to their affordance ability and culture.[7] And at this age; cloths fall into the category of physiological needs and fulfill the fundamental need of protection for ADHD children.[8]

Clothing plays a significant role in childhood. Careful selection of clothes of a young child can satisfy his important needs, help him get more attention from peer group and identification of sex. Because pre-school clothing is expensive and only worn for a short time, it can become a significant financial burden for families. It should help in better child development, self-reliance, practice, increased social skills and interaction with peers. Garments should be flexible, comfortable, convenient for frequent movement, adjustable to the rapidly growing body and attractive in design and fabric.[9] (ADHD) can make shopping for clothes difficult and tedious.

2. ADHD children Interactive clothing:

Interactive clothes are clothes that help ADHD children to experiment and discover the surrounding environment and its elements, satisfy their motor and emotional senses, as well as express their need to play and communicate with members of the society, express themselves and give them self-confidence by wearing distinctive and innovative clothes for their peers.

Interactive fashion design allows consumer involvement directly, as the interactive cloth improves social skills, focus, and foster better child-care provider interactions.[10]

Researchers and designers have difficulties while creating interactive clothing because this type of collaboration is still relatively new and not included in conventional fashion design education.[11] Interactive textile designers will experiment with many types of fabric printing, dyeing, and painting processes to alter the surfaces of materials while keeping an eye toward sustainability and utilizing dyes that are readily available in the area. Students will study the

concepts of repetition, pattern, scale, and geometry while using these techniques to produce unique textiles with their very own motifs and patterns.[12]

3. Factors to consider in ADHD clothes:

a) Fabrics of the cloth:

Fabric is one of the crucial factors to consider in making ADHD children apparel, there are factors that affect the choice of the type of fabric, including:

- Fabrics that are soft, and absorbent contribute in creating comfort, Non-flammable, Lightweight, Non-irritating, organic fibers and allow quick transmission of sweat from skin to environment.
- ADHD children favor soft materials with an uneven texture because touch is a powerful sense in children with hyperactivity and attention, and tactile stimulation enhances the extent of attention and the capacity to remember information.[13]
- Most ADHD kids find tight-fitting layer undergarments comfortable. Performance clothing is snug and applies pressure and stimulation to calm ADHD children. The two-sided fabric channels heat away from a child's sweatiest body parts to keep him cool and comfortable throughout the day.

b) Design of the cloth:

- Pullover t-shirts and slacks with an elastic waist are simpler to put on. ADHD children prefer shirts, sweaters, and jeans that are one size larger than child typically wears and does not require the stimulation that tight clothing provides on the skin. It will be simpler to slip into them.
- Tactile hypersensitivity, or a strong reaction to garment and fabric textures, affects some children with ADHD. [14]
- Practitioners frequently advise deep pressure to assist kids control these urges. Deep pressure intends to offer youngsters a tight, steady feeling on their arms or trunk that will help them redirect their attention on whatever job is at hand. Additionally, there is a decline in the propensity for fidgeting or other impulsive actions. Often, a weighted vest will provide this deep pressure.[15]
- ADHD kids prefer long opening of one-piece garment and do not prefer large buttons, that makes a child more independent and self-confident.
- ADHD children love having lots of pockets and things to interact with, such as buttons, zippers, and embroideries.
- Comfort features in ADHD clothing are garment size, garment not-too-tight, and seasonally appropriate clothing, and shoes stockings of correct size. [9]

4. ADHD Awareness message in interactive clothes:

ADHD awareness advertising is a message aims to adapt the behaviors and attitudes of recipients of ADHD children, their families, and health care providers, to persuade them to accept the disease, understand its causes, methods of dealing with it, understand how to treat it, through a specific organization wishing to amend the current health situation.[16]

a) Importance of ADHD Awareness message in interactive clothes:

The importance of awareness advertisements for ADHD is determined by the importance of what it seeks to achieve as following:

- Awareness advertisements create a common ground for exchanging concepts about the nature of ADHD, its symptoms, characteristics, and ways to deal with it.
- Persuading the target group to make gradual adjustments in their attitudes towards the disease and focus on achieving health and social goals using simple and acceptable awareness messages.
- Awareness ADHD advertisement contributes to health education processes for the recipient and provide the target group with the necessary information about ADHD disease to change their lifestyle and encourages them to understand what the disease is, its causes and methods of treatment.
- Raising awareness of ADHD and highlighting its negative psychological, social, and physiological effects on patients and their families.[17]
- In addition to raising awareness and change in behavior, ADHD awareness ads aim also at creating healthy norms, especially by changing the attitudes to ADHD disease.[18]

b) Characteristics of ADHD awareness advertisements in interactive clothing:

The delivery of awareness messages through interactive clothing as a mean of communication cannot be traditional and it has characteristics that are almost unique and depend on many variable factors. However, in general, we tend to highlight the distinctive characteristics of health awareness advertisements in interactive clothing. **Among the most prominent are the following:**

- Awareness advertising in interactive clothes requires the highest levels of attention in terms of design, image, movement, and the awareness advertising message. It must be interesting to be able to attract attention and then easily deliver it to the target group.
- The use of visual effects in Awareness advertising allows recipients to quickly understand the health awareness message.
- The ability of Awareness advertising integrated into interactive clothing to deliver a large amount of necessary information about ADHD that transcends time and place and from multiple sources.
- Awareness advertising in interactive clothing can break down the boundaries between the advertised health authorities and the recipient of ADHD patients, their families, or even their health care providers.
- The ability of the Awareness advertisement to attract the attention of the recipients, and then the ease of understanding the awareness message that includes the necessary medical information that patients need to know. [19]

Methodology:

The researchers seek to study the role of awareness advertising messages in Enhancing potency of ADHD children interactive clothing. This systematic review focuses on children within age group from (3-9) years with a closed questionnaire given to sixty respondents randomly. The survey questionnaire was distributed to mothers and fathers of ADHD children online. The questionnaire aims to determine the role of employing awareness messages in interactive clothes for ADHD children by measuring four basic criteria, which are the Interactive, Behavioral, Design, and Awareness standards for each proposed design, then followed by a statistical study to measure the success of the proposed design models in establishing their effectiveness through the basic criteria.

1. Practical designs:



Fig (1): First practical design

Table (1): Description of the design idea of the first applied design

<p>Interactive idea</p>	<p>A cotton T-shirt with a puzzle interactive Game made from felt fabric. The puzzle interactive game is designed in a rhombic geometric shape hollowed out in the middle in the shape of a heart, and the shape is divided into four small squares with attractive colors, each square can be removed separately and placed again.</p>
<p>Awareness message</p>	<p>The idea of the awareness message is to encourage the children surrounding ADHD kid to play with him. With the use of the slogan</p>

“play with me” and emphasizing the idea that despite the many movements of the ADHD child, he enjoys his time and loves to share his playing time with others.



Fig (2): Second practical design

Table (2): Description of the design idea of the second applied design

<p>Interactive idea</p>	<p>A cotton T-shirt with an interactive pop-it Game made from felt fabric. The pop it interactive game is designed in a heart shape as a pocket in the middle of the t-shirt, the prominent balls of the heart. The balls can be protruding outwards or recessed inwards by the movement of the child's hands.</p>
<p>Awareness message</p>	<p>The idea of the awareness message is to encourage those around ADHD child to show their love and feelings towards him, and despite the continuous behavior that may disturb those around him, he deserves to receive love from others.</p>

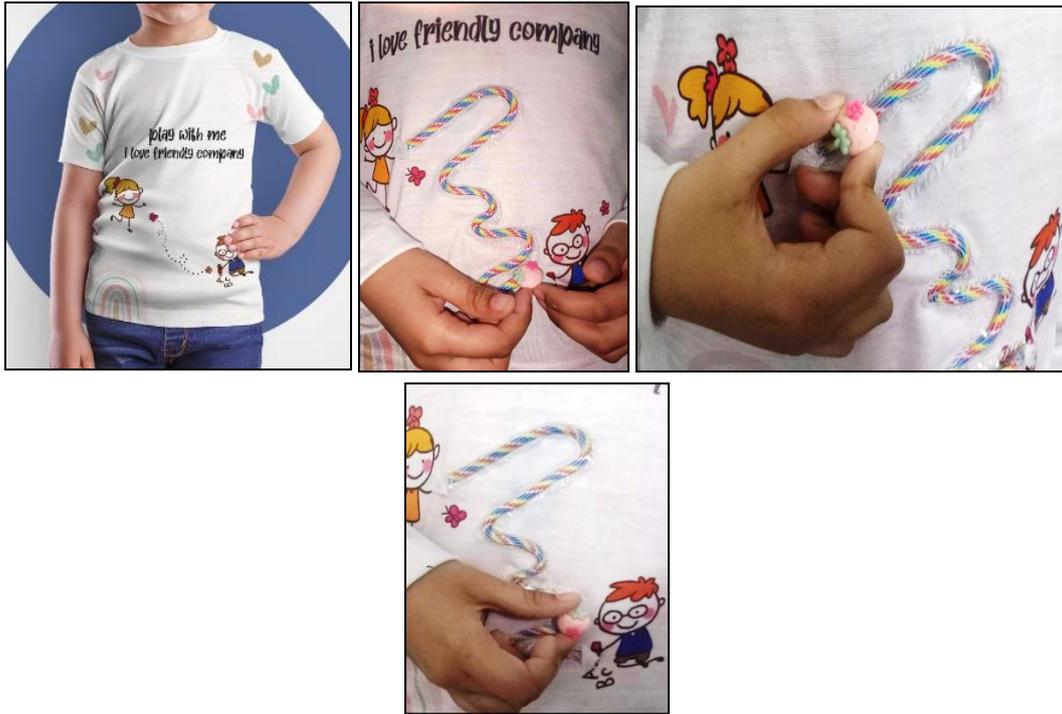


Fig (3): Third practical design

Table (3): Description of the design idea of the third applied design

<p>Interactive idea</p>	<p>A t-shirt with an interactive maze game made of transparent material. PVC fabric and a rope of colors made of thick thread and there is a small toy attached to a ring inside this thread that moves from the top for the little girl and down for the little boy in a zigzag motion.</p>
<p>Awareness message</p>	<p>The idea of the awareness message is to encourage children to play with ADHD child because he loves company and does not prefer to play alone to help him make friends, which in turn improves his behavior positively.</p>



Fig (4): Fourth practical design

Table (4): Description of the design idea of the fourth applied design

Interactive idea	A t-shirt with an interactive beads game made of transparent material PVC fabric. The letters of the word ADHD are embroidered with transparent PVC and colored beads, where the child can move the beads from the beginning of the letter to the end.
Awareness message	The idea here is to make it clear that the child who wears the T-shirt is an ADHD child, but the interaction was employed in a gentle and positive way to accept the child and deal with him in a way that suits his health condition.

2 Statistical results of a questionnaire entitled "A questionnaire to measure the effect

of interactive clothing on the behavior of ADHD children from 3/9 years"

The opinions of the research sample consisted of fathers and mothers were analyzed according to a three-graded scale as follows:

Scale "(I agree, To some extent, Don't agree)" with weights (3, 2, 1) respectively, and the range was calculated by subtracting the smallest weight from the highest weight in the scale ($3 - 1 = 2$), then dividing the range (2) over (3) in order to determine the actual length of each level, and it was ($2 \div 3 =$ approximately 0.67), and this means that the "Do not agree" level is between the value (1) and less than ($1 + 0.67$), and the "To some extent" is between (1.67) and less than ($1.67 + 0.67$), and "I agree" is between (2.34) to (3.0).

Thus, the weights of the answers for each of the statements is as follows:

Table (5): weights of the answers for each of the statements.

I agree	٣ – ٢,٣٤
To some extent	٢,٣٣ – ١,٦٧
Do not agree	١ ١,٦٦ –

A. Evaluation of proposed designs in terms of interactive standards:

Table (6): Arithmetic means, standard deviations, relative weights, and the results of the "Ca2" test to indicate the differences between the levels of opinions of the research sample for each of the proposed designs in terms of interactive criteria.

Designs	Mean	SD	Percent (%)	Agreement level	Chi-square		Ranked
					c ²	P-value	
First design	2.70	0.54	89.88%	I agree	43.32	0.001	1
Second design	2.57	0.68	85.71%	I agree	31.00	0.001	2
Third design	2.30	0.76	76.79%	To some extent	7.75	0.021	4
Fourth design	2.34	0.90	77.98%	I agree	24.68	0.001	3

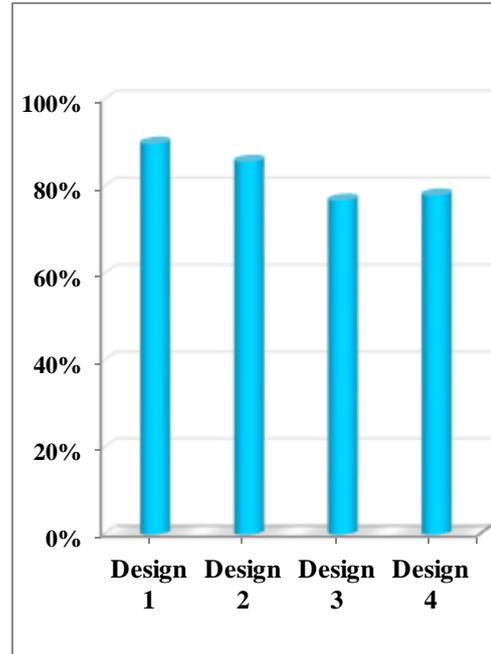


Fig (5): Shows the proposed designs in terms of interactive criteria according to their relative weights.

The researchers calculated the arithmetic mean, standard deviation, and relative weight, and used the "Ca2" test to denote the differences between the levels of opinions of the research sample members for each of the proposed designs in terms of interactive criteria, according to a three-graded scale. The results were as shown in Table (6).

It is clear from Table (6) and Chart (5) that there are statistically significant differences between the levels of opinions of the research sample members for each of the proposed designs in terms of interactive criteria, as the values of "Ka2" for the proposed designs ranged between (7.75 - 43.32). They were all statistically significant, and the opinions of the research sample fell at the level of "I agree" for the designs (1, 2, 4), where the arithmetic mean values for these designs were (2.70, 2.57, 2.34). The relative weights were (89.88%, 85.71%, 77.98%), respectively, and the opinions fell at the level of "To some extent" for Design No. (3), with an arithmetic mean of (2.30) and a relative weight of (76.79%). Design No. (1) was the best, with an arithmetic mean (2.70) and a relative weight (89.88%) in terms of interactive criteria.

B. Evaluation of the proposed designs in terms of behavioral standards:

The researchers calculated the arithmetic mean, standard deviation, and relative weight, and used the "Ca2" test to denote the differences between the levels of opinions of the research sample members for each of the proposed designs in terms of behavioral standards, according to a three-graded scale. The results were as shown in Table (7).

Table (7): Arithmetic means, standard deviations, relative weights, and the results of the "Ca2" test to indicate the differences between the levels of opinions of the research sample for each of the proposed designs in terms of behavioral criteria.

Designs	Mean	SD	Percent (%)	Agreement level	Chi-square		Ranked
					c ²	P-value	
First design	2.70	0.60	89.88%	I agree	48.25	0.001	1
Second design	2.57	0.66	85.71%	I agree	29.18	0.001	2
Third design	2.55	0.66	85.12%	I agree	26.82	0.001	4
Fourth design	2.63	0.65	87.50%	I agree	37.54	0.001	3

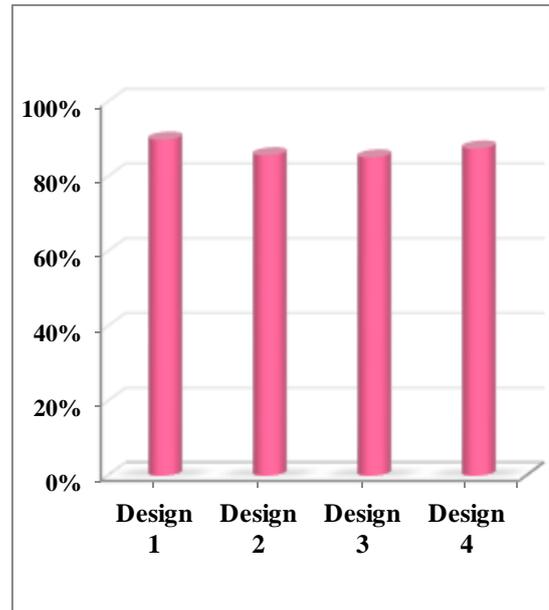


Fig (6): Shows the proposed designs in terms of behavioral standards according to their relative weights.

It is clear from Table (7) and Chart (6) that there are statistically significant differences between the levels of opinions of the research sample members for each of the proposed designs in terms of behavioral criteria, where the values of "Ka 2" for the proposed designs ranged between (26.82 - 48.25). All of them were statistically significant, and the opinions of the research sample members fell at the level of "I agree" for all designs. Where the values of the arithmetic mean for the designs ranged between (2.55 - 2.70), and the relative weights ranged between (85.12% - 89.88%). Design No. (1) was the best, with an arithmetic mean of (2.70) and a relative weight of (89.88%) in terms of behavioral criteria.

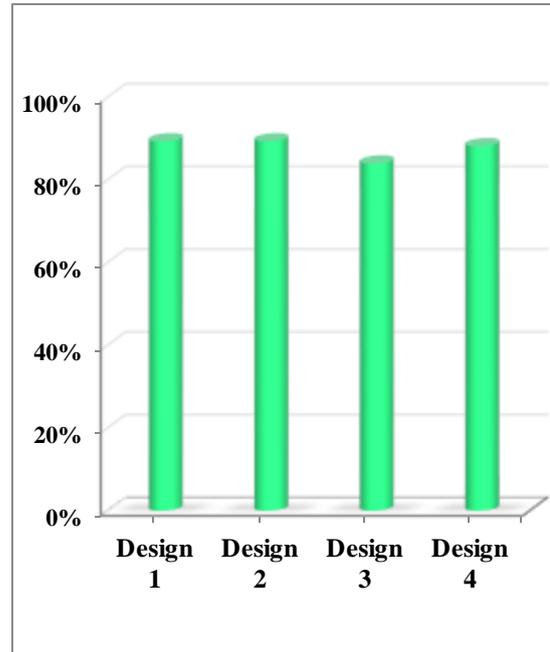
C. Evaluation of proposed designs in terms of design standards:

The researchers calculated the arithmetic mean, standard deviation, and relative weight, and used the "Ca2" test to denote the differences between the levels of opinions of the research sample members for each of the proposed designs in terms of design criteria, according to a three-graded scale, and the results came as shown in Table (8).

Designs	Mean	SD	Percent (%)	Agreement level	Chi-square		Ranked
					c ²	P-value	

First design	2.68	0.64	89.29%	I agree	47.82	0.001	1
Second design	2.68	0.64	89.29%	I agree	47.82	0.001	1 Rep.
Third design	2.52	0.71	83.93%	I agree	25.11	0.001	4
Fourth design	2.64	0.64	88.10%	I agree	40.75	0.001	3

Table (8): Arithmetic means, standard deviations, relative weights, and the results of the "Ca2" test to indicate the differences



between the levels of opinions of the research sample for each of the proposed designs in terms of design criteria.

Fig (7): shows the proposed designs in terms of design criteria according to their relative weights.

It is clear from Table (8) and Chart (7) that there are statistically significant differences between the levels of opinions of the research sample members for each of the proposed designs in terms of design criteria. Where the values of "Ka 2" for the proposed designs ranged between (25.11 - 47.82), and all of them were statistically significant. The opinions of the research sample fell at the level of "I agree" for all designs. The arithmetic mean values for the designs ranged between (2.52 - 2.68), and the relative weights ranged between (83.93% - 89.29%). The two numerical designs (1 and 2) were the best with an arithmetic mean of (2.68) and a relative weight of (89.29%) for each of them in terms of design criteria.

D. Evaluation of the proposed designs in terms of awareness standards:

The researchers calculated the arithmetic mean, standard deviation, and relative weight, and used the "Ca2" test to denote the differences between the levels of opinions of the research sample members for each of the proposed designs in terms of awareness standards, according to a three-graded scale. The results were as shown in Table (9).

Table (9): Arithmetic means, standard deviations, relative weights, and the results of the "Ca2" test to indicate differences between the levels of opinions of the research sample for each of the proposed designs in terms of awareness standards.

		SD		Chi-square	
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Designs	Mean	SD	Percent (%)	Agreement level	c ²	P-value	Ranked
First design	2.59	0.65	86.31 %	I agree	31.75	0.001	3
Second design	2.61	0.68	86.90 %	I agree	37.00	0.001	1 Rep.
Third design	2.46	0.66	82.14 %	I agree	18.25	0.001	4
Fourth design	2.61	0.62	86.90 %	I agree	32.71	0.001	1

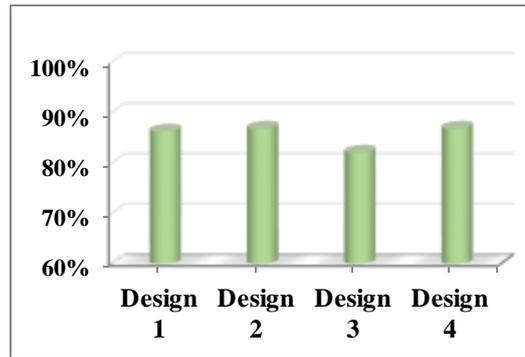


Fig (8): Shows the proposed designs in terms of awareness standards according to their relative weights.

It is clear from Table (9) and Chart (8) that there are statistically significant differences between the levels of opinions of the research sample members for each of the proposed designs in terms of awareness standards. Where the values of "Ka 2" for the proposed designs ranged between (18.25 - 37.0), and all of them were statistically significant, and the opinions of the research sample fell at the level of "I agree" for all designs. Where the values of the arithmetic mean for the designs ranged between (2.46 - 2.61), and the relative weights ranged between (82.14% - 86.90%). The two numeric designs (4, 2) were the best, with an arithmetic mean of (2.61) and a relative weight of (86.90%) for each of them in terms of awareness standards.

E. Overall evaluation of the proposed designs:

The researchers calculated the arithmetic mean, standard deviation, and relative weight, and used the "Ca2" test to denote the differences between the levels of opinions of the research sample members for each of the proposed designs in terms of total education, according to a three-graded scale. The results were as shown in Table (10).

Table (10): Arithmetic means, standard deviations, relative weights, and the results of the "Ca2" test to indicate the differences between the levels of opinions of the research sample for each of the proposed designs in terms of the overall evaluation.

Designs	Mean	SD	Percent (%)	Agreement level	Chi-square		Ranked
					c ²	P-value	
First design	2.66	0.64	88.69 %	I agree	44.18	0.001	1
Second design	2.61	0.68	86.90 %	I agree	37.00	0.001	2
Third design	2.46	0.71	82.14 %	I agree	18.68	0.001	4
Fourth design	2.57	0.71	85.71 %	I agree	33.46	0.001	3

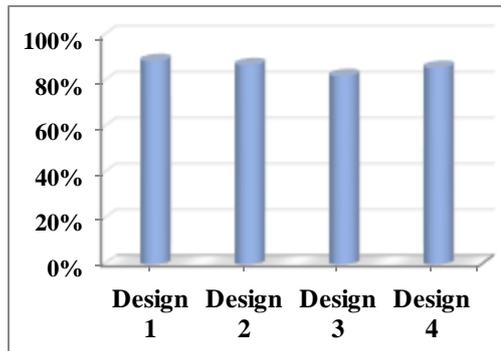


Fig (9): shows the proposed designs in terms of overall evaluation according to their relative weights.

It is clear from Table (10) and Chart (9) that there are statistically significant differences between the levels of opinions of the research sample members for each of the proposed designs in terms of the overall evaluation, as the values of "Ka 2" for the proposed designs ranged between (18.68 - 48.18). They were all statistically significant, and the opinions of the research sample fell at the level of "I agree" for all designs, as the arithmetic mean values for the designs ranged between (2.46 - 2.66). The relative weights ranged between (82.14% - 88.69%), and the first practical design was the best with an arithmetic mean (2.66) and a relative weight (88.69%) in terms of the overall evaluation.

Results & discussions:

Awareness of ADHD disease through advertisements in interactive clothing contributes to ridding the recipient of negativity in receiving the awareness message and makes him more interactive, emotionally involved, and reaching the desired effect is not an easy process as it includes many innovative aspects that can express the idea adopted by the advertisement awareness in a way that can convince the recipient to accept awareness message more positively.

Therefore, we note the growing trend to use advertisements in interactive clothing as a means of communicating with the target group to achieve multiple goals by adopting a more complex, more permeable, and widespread system that is more capable of increasing awareness of the recipient's health and achieving a higher degree of interactivity and understanding.

Conclusion:

ADHD includes a combination of problems, such as difficulty sustaining attention, hyperactivity, and impulsive behavior. ADHD Children are more susceptible to psychological and emotional disorders, so it is necessary to create their cloth designs that are suitable for them and help them improve their psychological condition.

Awareness advertising embedded in interactive clothing helps the target group of patients to solve their health problems by highlighting ADHD by using interactive advertising features as a type of innovative and proven advertising method .Awareness messages included in interactive ADHD children clothing makes a change in the health awareness of recipients to understand ADHD disease characteristics and improve ADHD children's Psychomotor Disorders positively.

Researchers should do more research to identify causes generating ADHD disease and its effects, what needs to be changed in the awareness of the society, how this change can be implemented by using both advertising and interactive clothing.

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