



Innovative Designs for One-Piece Clothing Inspired by the Textures and Color of Macrame and Carpet Stitches

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Abstract

One-piece clothing for adolescents is receiving a lot of researchers' attention because of the changes it includes, both physiologically and psychologically as a result of the interaction of many factors. Adolescent Clothing is one of the important factors in satisfying emotional and social needs, especially the adolescent's keen interest in his external appearance. Where clothing directly affects the mood of adolescents and assures them of a sense of self-confidence if their appearance harmonizes with the peer group, and this requires certain patterns of designs that take into account the satisfaction of the critical changes of this stage. From this came the research problem, which is how to satisfy psychological and physiological needs in adolescence through designs suitable for one piece inspired by textured structures and color of macrame and carpet stitches, and conducting an experimental study to reach the best designs and tools to suit the adolescence stage and satisfy the physiological, psychological, social and clothing needs? The research assumed that there were statistically significant differences between the proposed designs and the trend of modern fashion lines. The research adopted experimental and analytical methods. The results of the research confirmed the existence of differences between the proposed designs according to modern fashion trends and according to the opinions of different experts.

Keywords: One-piece clothing, adolescence, textured structures, macrame.

Introduction

Creative thinking has many methods associated with solving problems in the design process, transforming ideas into innovation, and breaking down barriers to creativity. [1] The interest in the subject of creativity has begun to increase, because creativity in various types of knowledge, whether in science, art, literature, or language, is the direct cause of the discoveries, research, studies, and beautiful arts that humanity enjoys today, which contribute to the development of tastes, and help people enjoy life and enjoyment out. Any creative work is preceded by several stages represented in thinking and then the design process, which is the basis and source of creativity, the design process depends on unfamiliar innovation, especially in the direction of artistic work. [2, 3] Whenever work is associated with the era, the work must be a reflection of the components of his era. Every age has its interest, as many scientific discoveries have

appeared in our time, and the method has become following science in the use of innovative processes. [4, 5]

Textile design is a dual process in which the designer combines reason and conscience. It starts with coordinating a set of ideas and then implementing them using a set of materials and techniques to satisfy his desire for a sense of beauty to reach a good textile design.

As for the textile design of textile structures, it is an artistic formation of the systems and mechanisms of interweaving between the threads and the distribution of spaces, and it depends on the technical treatments in the plastic relations using the interconnection between the design elements consisting of threads, spaces, shape, floor, colors, and texture, to help in building the textile design and enriching the resulting textile works which give it a set of aesthetic values and foundations for design, such as [6]

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- The shadow
- The light
- Transparency
- The Rhythm
- The unity with diversity
- The depth
- The three dimensions (3D)
- The void

The design is the nucleus or the structural basis upon which the success of any artwork depends. The artwork cannot be produced without design, but it must be preceded by a tight planning process to organize the vocabulary of the artwork within the framework of the function, plastic values, and aesthetics that govern the structural process of design. Design is defined as the process of synthesis and arrangement of elements such as shapes, stereoscopic bodies, colors, and different textures, which by their union become an integrated work. [7, 8]

The design nature of textiles is defined as the thin-thick bodies that consist of interlacing, overlapping, or some bonding of filaments, fibers or threads, whether this bonding is thermal, mechanical, chemical or otherwise. These thin bodies must be suitable for traditional textile uses such as clothing, upholstery and curtains. And carpets or kilims and other modern uses. This special nature varies depending on some factors, the most important of which is the structural composition of the woven, where it may be filaments or natural fibers only, or purely synthetic, or a mixture in varying proportions of the two types of filaments, and the structural components may be of thin, thick or twisted threads and this composition may be from intermarriage. Warp and weft threads (woven fabric) and the installation may be the result of the intertwining of warp and weft threads (knitted fabric).

There are many ways of linking the threads, such as braided, knotted, twined, and others, and thus the difference of these structures between textiles may play a key role in the aesthetic formation of the textile design. Among the other influencing factors are the surface appearance of the tissue structure in terms of deep, prominent and texture, the overlap of the threads and their movement with each other, as well as their color tone. [8, 9]

Movement is present in nature in all of the Creator's creatures, visible or latent within his cells, and even the fixed elements change with time and provide a sense of movement when exposed to factors and influences such as wind or rain. Movement is a divine gift, if used well by the

designer, it presents him with an integrated design that carries the characteristics of flexibility and sustainability. [10] It is considered the language of design adaptation that enables the designer to reach a realistic design that is aware of functional, aesthetic and technological aspects. It also has dimensions and other philosophical and cognitive values that are still unclear despite its strong influence on design. [11] The artistic movement of weaving is about creativity in constructively dealing with materials and tools in line with the development in the fields of arts, as it is characterized by a rapid change in its artistic form and intellectual content. [6]

Color is the surface appearance that makes us distinguish things from one another. Color is a language of dialogue between the artist and the connoisseur of the artwork. From a scientific point of view, color means those colored rays resulting from the analysis of light, or it is the interaction that occurs between a form and the light rays falling on it, so any form can only be perceived as a color. The success of any artistic work depends on the extent of success in employing-colored light spaces and subjecting them to achieving design goals such as the presence of color in a balanced and balanced manner.[12]

Color is one of the important fine elements in the design, as it gives an aesthetic appearance in any artistic field in general and in the textile field in particular. It plays an important role in improving the surface appearance of the fabric and giving it an aesthetic appearance. [13] Despite the complexity of the elements that make up the fabric, color is considered one of the most confusing elements that are difficult to deal with. The color is not seen alone, but is always affected by the textile structures and is linked to the colors of the threads. The space is occupied by the color, its shape, and the lighting control it. Also, color is one of the factors that help achieve transparency, through which color spaces can merge and overlap with each other in the overlapping texture levels. This means that when more than one transparent texture level of one color is overlaid, silhouettes of this color can be obtained, ranging from light to dark. other colors. [13] The use of different colors of warp and weft threads with creativity in their color arrangement with the use of certain textile structures whose lengths correspond to the widths of the color arrangements of the threads leads to the emergence of unique decorative effects. [6, 8]

The texture is defined as one of the design elements that enter into the construction of the artwork. [14] It is also considered one of the aesthetic values achieved through the use of certain materials or technical methods within the artwork. The texture is a natural characteristic that distinguishes each material from the other. It also

refers to the visible and tangible characteristics of the woven surfaces in terms of smoothness or roughness, such as the distinction between velor and linen, sunken and prominent, as well as the distinction between the effects of pile and goblin.[13] Also, the thicknesses and twists of the warp or weft threads achieve different linear values. Therefore, the twisting factor of these fibers may affect the general appearance of the fabric because of its linear and tactile values, resulting from the increase or decrease in the number of twists in the unit of measurement.[15, 16]

Fabric is a flexible material consisting of a network of threads or fibers that are natural such as wool, linen, cotton and silk, or synthetics such as nylon and acrylic, and are formed by weaving processes. Textiles have many uses, some of which are domestic, such as carpets and curtains, and some of them are technical and are used in industrial processes. The carpet industry is one of the old, renewable industries, as it is old with its patterns and threads made of wool and silk, and new in its modern style and patterns, and its overlapping colors and blending, and its synthetic threads and arts. The kilim is a carpet-like fabric used for floors or artistic paintings on the wall. It is produced from longitudinal threads called the warp, which is usually of cotton and wool. The difference between carpets and kilims is that carpets are made on a vertical loom and need sorting after manufacturing, while kilims are made on a horizontal loom and need sorting also after manufacturing.

Macramé art is one of the ancient arts that must be taken care of with its aesthetics, as it can change and shape its products by using different types of stitches, the final form of which depends on the use of different types of threads and the formation of different binding processes that affect the shape of the stitches. [17] One of the beautiful handicrafts that people have been interested in. Nearly every culture uses decorative knots, including macramé, however, these nations' manifestations of this technique might vary. It is possible to take advantage of knitting and knotting the threads in different ways that add beauty to the formation of decorative pieces to enrich the aesthetic and functional aspect of the university student's clothes (casual), macramé is closely associated with the fashionable youth so using it in the fashion industry has been phenomenal and dominant among the youth in the making of sandals, bags, and jewelry.[18] as young people at that stage prefer excellence and innovation. For the adoption process in product development, macramé has come to be recognized as a viable, adaptable, trendy craft that may complement other fashionable accessory products and have socioeconomic advantages as well as a sustaining culture. The macramé technique is dynamic, adaptive, and inquisitive, and it lends

itself to processing and handling in a variety of ways during the creation of products. [17, 19]

Clothing is one of the important factors in satisfying emotional and social needs, as clothing directly affects mood and self-confidence. This requires certain patterns of designs to suit the age group of each stage. One-piece designs are innovative and renewable entities in their lines, colors, and various materials, through which the designer tries to translate the elements of composition into an innovative design that matches reality. For the individual in the end to obtain a uniform that makes him feel harmonious and connects him with the society in which he lives. In its production, it enjoys a great deal of accuracy and cares due to the quality of performance and appearance that is commensurate with its use.[20]

Design Experiments

Design Experiment (I)

Elements used in design experiment No. (I)




Textile structures of elements used in this design experiment which are presented in

Table 1 tend to stitch macrame, which is manual and not mechanical work that depends on the prominent and the recesses and the linear relationships between them, (elements A, B, C) with color overlaps that affected the elements.

Technical Analysis of design experiment No. (I)

The idea of the design relied on the interdependence and harmony between the stitches of non-woven fabric structures (macrame) and the use of different types of threads such as wool and cotton and their repetition to achieve balance in the artistic work, taking into account the diversity in the movement of stitches to enrich the artwork and attract attention, and create a kind of irregular rhythm through the color contrast by repeating the color distribution in different proportions, which helped to determine the formal relationships and direct the paths of their movement, in addition to the overlap and overlap within the units used and the use of horizontal and curved lines, which gives enrichment to the artistic work, and also led to the work giving a measure of vitality and diversity among the stitches of the textile structures. Alternate designs for design experiment No. (I) are illustrated in **Figure 1**.

Table 1: Analysis and description of elements used in design experiments No. (I)

Code	Elements Analysis and description
Element A	 <p>The element is characterized by the presence of curved and oblique yarns in addition to the diversity in directions, which gave flexibility in movement, in addition to dividing the element with oblique horizontal yarns and linking them with the various engineering spaces and vertical yarns, the latest kind of harmony and interdependence in the design</p>
Element B	 <p>The element was divided into more than one non-typical horizontal area, evident in the upper part of the successive vertical lines. After this, the intersection of a horizontal line appeared, integrating all the yarns, and the emergence of repeated geometric areas, then the emergence of yarns in a vertical form to cut the stereotype, as well as curved yarns for the occurrence of movement in the element</p>
Element C	 <p>The element is characterized by an irregular overlap between curved yarns, different geometric spaces and horizontal yarns to give a sense of spatial depth</p>

Color analysis

This design experiment (I) is based on six different colors



Figure 1: Design experiment No. (I) with some of its color ideas


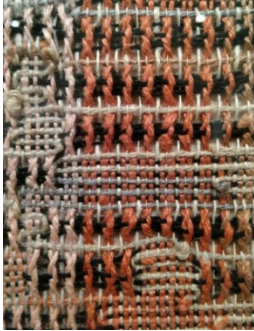
Design Experiment (II)

Elements used in design experiment No. (II)

Textile structures of elements used in this design experiment was presented in

Table 2. The diversity in the raw materials used, such as acrylic wool materials, in addition to the use of non-woven materials such as sisal, in addition to the use of the “Brooks Bouqllet” method of packing the warp threads, helped create voids in the element, which gave mesh surfaces with an open structural structure.

Table 2: Analysis and description of elements used in design experiments No. (II)

Code	Elements Analysis and description
Element D	 <p data-bbox="336 779 764 992">.Vertical and horizontal yarns appear combined through the used tones, which give a sense of movement, the yarns sometimes gather and diverge sometimes with gradual and continuous lighting to achieve a sense of kinetic rhythm and harmony</p>
Element E	 <p data-bbox="336 1330 764 1570">The element is characterized by the atypical distribution of spaces by distributing horizontal and vertical yarns and merging them in some places, especially in the left part, and repeating them in other places, creating a balanced and regular rhythm</p>

Color analysis

This design experiment (II) is based on six different colors



Technical Analysis of design experiment No. (II)

The surface effect resulted from the distribution of warp and weft threads in a linear diversity between continuous and discontinuous with their different movement. The phenotypic

diversity of the distribution of threads and tapes in the colors of the used thread was achieved, which achieved a kind of transparency. Volumetric diversity also led to a partial diversity despite the orderly repetition of units, but it achieved an exchange It attracts the visual vision and the diversity in the directions between the prominent and the recessed. It achieved a tactile and aesthetic richness resulting from the embodiment and depth, as well as the decorative effect of the traditional lattice represented in the warped head, which achieved balance with the stitching of the wefts, which resulted in decorative elements, which added a chromatic diversity to the effect resulting from the textile structures.

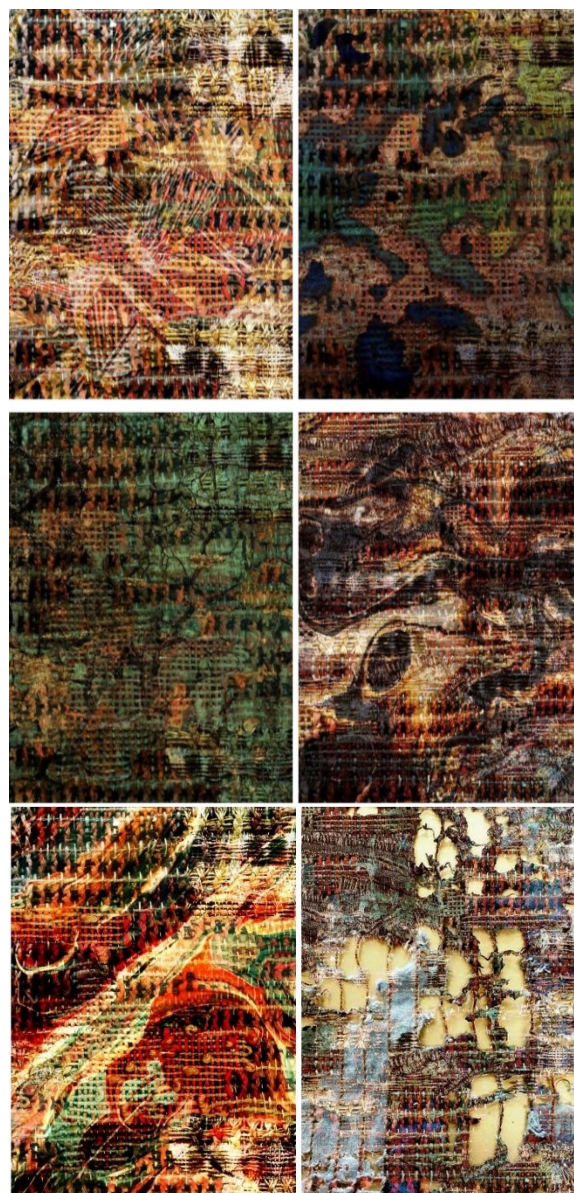


Figure 2: Design experiment No. (II) with some of its color ideas

Design Experiment (III)

Elements used in design experiment No. (III)

Textile structures of elements used in this design experiment which are presented in **Table 3** tend to stitch macrame, which are manual and not mechanical works that depend on the prominent and the recessed, and the difference in twisting the threads in each element works to create effects that affect the surface appearance of each of them, in addition to the linear relationships between them, and the oblique and curved lines gave movement to the elements, (**Element F**, **Element G**, and **Element H**) It has color overlaps that affected the elements.

Color analysis

This design experiment (III) is based on seven different colors



Technical Analysis of design experiment No. (III)

There is a linear rhythm in the work due to the diversity of lines and the multiplicity of their directions, the difference in levels between high and low led to visual harmony, and the repetition between the units created harmony and interdependence between the units of the design and achieved rhythm and balance as a result of this repetition, and the effects of touch appear resulting from the diversity of threads and the irregular movement of threads helped to give An appreciative movement along with a sense of spatial depth. The design is characterized by many techniques and textile structures that contributed to the diversity of threads in giving the design superficial values, artistic richness, and aesthetic dimensions in textile design.




The color harmony was achieved through the distribution of light and dark in the design, and the use of brown in its various degrees created harmony in the design.

Design Experiment (IV)

Elements used in design experiment No. (IV)

Textile structures of elements used in this design experiment which presented in **Table 4**. The use of real lattice structures in **Element I** worked on the richness of the textile surface with artistic and aesthetic values, and the diversity of texture in the fabric worked on creating formal variables in the surface of the element, which gave a diversity of light reflections as in **Element K**.

Table 3: Analysis and description of elements used in design experiments No. (III)

Code	Elements Analysis and description
Element F	 <p>The element is characterized by repeating the group of yarns radially in more than one direction and linking them with the curved yarns, which gave a sense of movement</p>
Element G	 <p>The element is characterized by the combination of a group of curved yarns with a group of horizontal and vertical yarns, which led to harmony in all parts of the element, in addition to the use of brown and yellow shades that gave color harmony</p>
Element H	 <p>The use of curved, similar and interconnected yarns created a kind of irregular rhythm, in addition to the overlap and overlap between the yarns used and each other, creating a sense of spatial depth by emphasizing movement within the artwork</p>

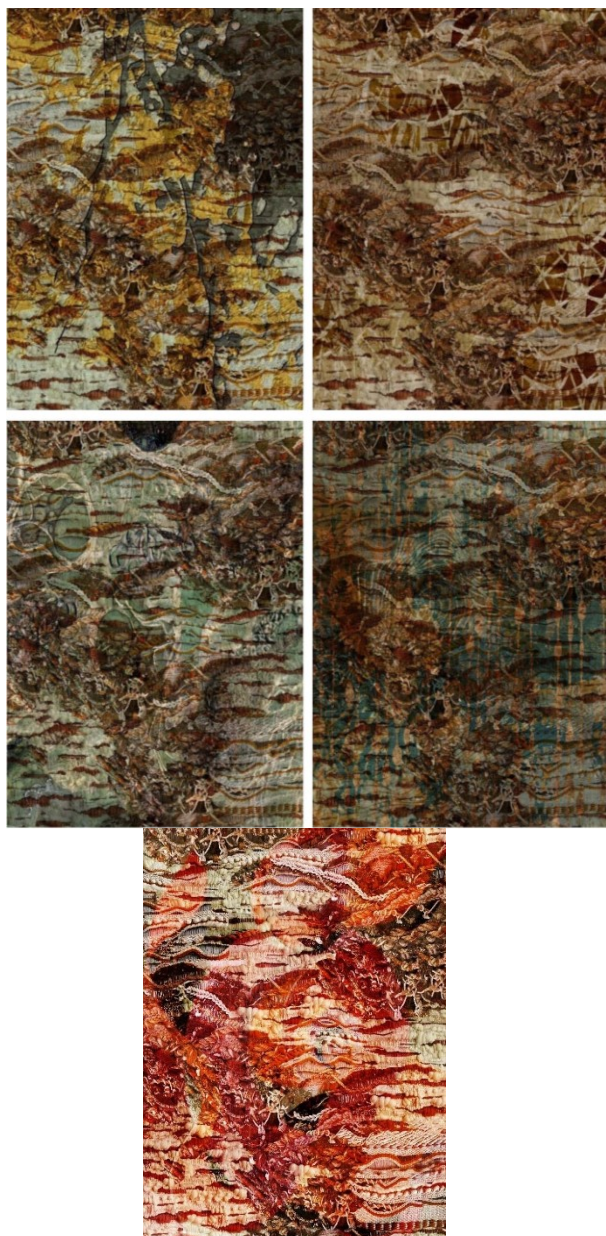


Figure 3: Design experiment No. (III) with some of its color ideas

Color analysis

This design experiment (IV) is based on seven different colors






Technical Analysis of design experiment No. (IV)

The effect of the traditional lattice appeared in the design, as some threads were distributed in a grid system, which showed transparency in these spaces, as well as the correlation between the numerical condensation of the interweaving of the threads and the interconnectedness in other places, as well as the

diversity of the threads in thickness, color and direction, and their effective role in achieving overlap, construction, spacing and convergence in every part of the design. In addition to the color harmony between green and blue in their gradation

Table 4: Analysis and description of elements used in designs experiments No. (IV)

Code	Elements Analysis and description
Element I	 <p>The interconnection of the vertical yarns units with each other in different positions gave an aesthetic sense by emphasizing the appearance of the prominent and the recessed, and the repetition of the interconnection in some places with vertical and horizontal rhythms emphasized the depth within the artwork</p>
Element J	 <p>The element is characterized by the presence of horizontally curved yarns and their irregular distribution, in addition to the repeated overlay of different dimensions between the prominent and submerged yarns, and the interconnection and harmony between them emphasized the synthesis</p>
Element K	 <p>The element is characterized by the presence of curved yarns overlapping the details and coiling with each other in some amakals, which gave a measure of irregular rhythm, balance and transparency.</p>

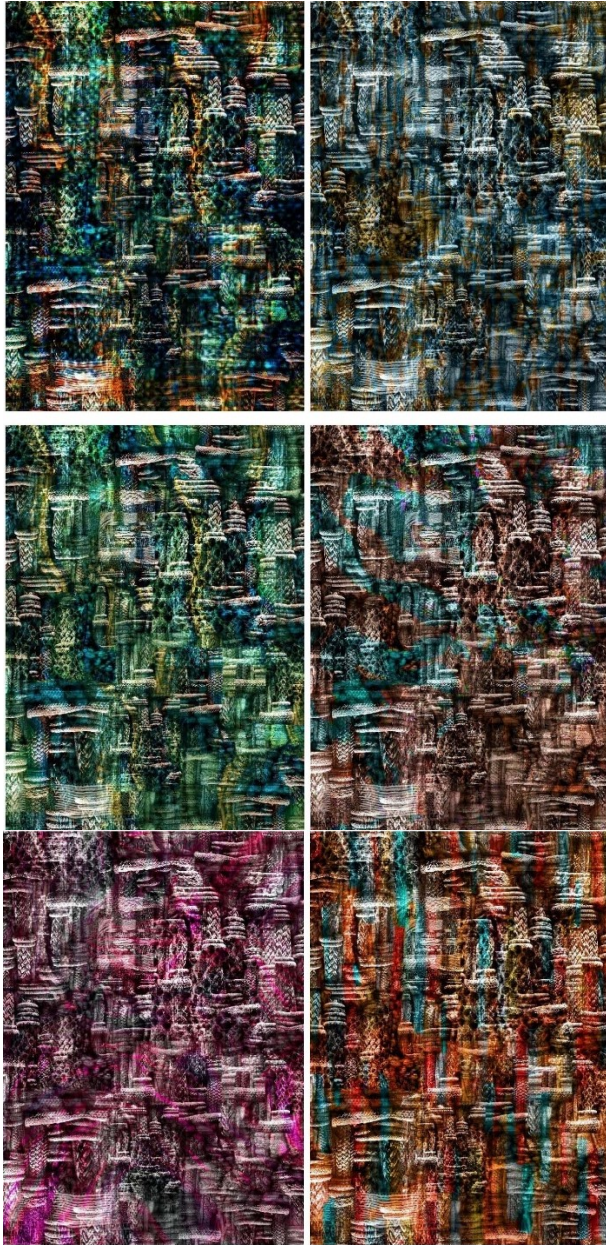


Figure 4: Design experiment No. (IV) with some of its color ideas




Design Experiment (V)

Elements used in design experiment No. (V)

Textile structures of elements used in this design experiment which are presented in **Table 5** tend to stitch macrame, which are manual and not mechanical works that depend on the relief and the recess and the linear relationships between them.

Vertical lines appear in a single image as in **Element L** and almost disappear in **Element N**, the three elements do not have twisting overlaps that depend only on the color of the thread and the different stitches.

Table 5: Analysis and description of elements used in design experiment No. (V)

Code	Elements Analysis and description
Element L	 <p>The element is characterized by the movement caused by the curved yarns in the design. It is also characterized by the coherence and harmony of the fusion of the vertical yarns with the horizontal curved lines and the repetition of the interconnection in the element with an irregular movement that works on the events of balance and harmony in the artwork</p>
Element M	 <p>It is clear in the artwork the balanced rhythm through oblique and curved horizontal yarns and their repetition with the intertwining of vertical lines in some areas led to the occurrence of interconnection and in other areas, the intertwining of the warp yarns with the weft led to the emergence of an irregular harmony between the areas of the artistic work</p>
Element N	 <p>The irregular rhythm prevails between the areas of the yarns, whether they are tilted or curved, and also the verticals of different types, thicknesses and movements led to the events of a balancing movement in the artwork</p>

Color analysis

This design experiment (V) is based on eight different colors



Technical Analysis of design experiment No. (V)

The idea of the design experiment relied on mixing stitches with non-woven fabric structures (macrame). these overlaps in the different types of stitches showed an aesthetic appearance that results in harmony and contrast in the overall formal relationship of the design and creates a kind of proportion and attraction between those stitches and their repetition in a coordinated and balanced manner with the change in their shape and sizes, which it created a harmonious rhythm that worked to generate a sense of depth. The use of curved stitches in the design gave a sense of freedom of movement and achieved a kind of cohesion and harmony. The places where the threads gathered in places and the presence of voids in other places gave the appearance of a prominent and recessed feeling. The simplicity is noted through the highly precise compositions that varied in the form of exponential, horizontal and curved to express movement and mass, which gave the artwork a kind of dynamism and richness. Alternate designs for design experiment No. (V) are illustrated in **Figure 5**.





Figure 5: Design experiment No. (V) with some of its color ideas

Design Experiment (VI)

Elements used in design experiment No. (VI)

Textile structures of elements used in this design experiment which are presented in **Table 6** tend to explore that, the density of the threads affects the texture of the surface of the element, in addition to creating a kind of rhythmic harmony resulting from the diversity in texture as a result of the regular or irregular repetition of these different densities, in addition to the color effect resulting from the use of warp threads of one color and weft threads of different colors as in element **Element P**.

Table 6: Analysis and description of elements used in design experiments No. (VI)

Code	Elements Analysis and description
Element O	 <p>The idea of the design unit relied on creating a kind of attraction and proportionality between the spaces, which created a rhythm through repetition and repetition in different images between the interspaces of the curved lines, and an earthy color group was used, characterized by rich color</p>
Element P	 <p>The element is characterized by the presence of horizontal and condensing strings extending in one direction, which creates a rhythm through irregular repetition on different dimensions</p>

Color analysis

This design experiment (VI) is based on eight different colors



Technical Analysis of design experiment No. (VI)

There is a linear rhythm for the diversity of the threads, their denial, and their different levels, which led to the diversity giving kinetic rhythms to the vision, and the shadows that lie on each other gave depth and embodiment, and the difference in techniques and their multiplicity resulted in a clear tactile effect that enriched the design, and this appeared through the use of the texture composition (hanikum) and the textured composition besides Diversity in the types of warp and weft threads, where the use of wool threads in the warp and flax threads in the wefts, and color harmony was achieved between the threads and some of them.




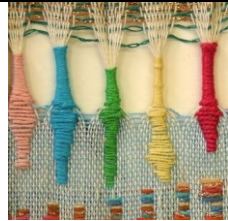
Figure 6: Design experiment No. (VI) with some of its color ideas

Design Experiment (VII)

Elements used in design experiment No. (VII)

Textile structures of elements used in this design experiment which are present in **Table 7** tend to illustrate the chipping in the weft lines in **Element Q** gave an overall effect in addition to the effects caused by the difference in the type, thickness, and shape of the thread affecting the surface appearance of the element, which results in variation and various levels in the element as in **Element R**.

Table 7: Analysis and description of elements used in design experiments No. (VII)

Code	Elements Analysis and description
Element Q	 <p>The use of curved vertical yarns and their intersection with the regular geometric floor created a rhythm and visual harmony with the use of a strong color group that gave a sense of stability and stability</p>
Element R	 <p>The element was distinguished by the presence of vertical lines with longitudinal and transverse lines, which confirmed the association of shapes with the ground, which worked to create divisions and small spaces in the element to help clarity and show movement</p>

Color analysis

This design experiment (VII) is based on eight different colors



Technical Analysis of design experiment No. (VII)

Emphasize the sense of movement through the direction of the longitudinal and transverse warp threads, as well as the movement of the corrugated lines in the background, its integration with the longitudinal lines in the front parts, and the tactile richness in the design as a result of the diversity of techniques such as the chef used in the weft threads and the diversity in the quality of the threads used such as silk and cotton threads and the use of appropriate spinning methods for production The design resulted in various surface effects, and the techniques varied to show the units of the design and were echoed to achieve chromatic harmony. There is a linear rhythm in the work to differ and diversify the directions of the lines, and leaving invisible parts of the warp added an aesthetic dimension, and the accuracy and nature of the existing threads and voids helped the design gain one of the constitutive values, which is transparency The various linear relationships and the color effects of the threads added other aesthetic dimensions.






Figure 7: Design experiment No. (VII) with some of its color ideas

Design Experiment (VIII)

Elements used in design experiment No. (VIII)

Textile structures of elements used in this design experiment which are presented in **Table 8** tend to sew macrame, which are manual works, not mechanical, depend on the protruding and deep, and the linear relationships between them, and the use of more than one technique to implement the stitches worked to strengthen the elements, and the introduction of different non-woven materials such as beads on the macrame threads enriched the elements with aesthetic strength as in **Element S**, **Element T**, and **Element U** have color interferences that affected the elements.

Table 8: Analysis and description of elements used in design experiment No. (VIII)

Code	Elements Analysis and description
Element S	 <p>The movement in the element is evident by distributing the yarns in a vertical form and also merging the intertwined yarns in an oblique form with the curved yarns to connect the different spaces in the element.</p>
Element T	 <p>The element is characterized by the presence of vertical straight yarns with curved yarns, the use of non-woven elements, and the interconnection between them and the yarns used, the latest morphological relationships and rhythms that worked on the richness of the element</p>
Element U	 <p>The element is characterized by the presence of oblique yarns that link them to the various geometric spaces and vertical yarns, which created a kind of harmony and diversity in the movement</p>

	of the element.
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Color analysis

This design experiment (VIII) is based on nine different colors



Technical Analysis of design experiment No. (VIII)


The technical unity was achieved through the interconnected and balanced network basis, and the relationship between vertical and diagonal straight lines was also achieved. The difference and multiplicity of techniques resulted in a clear tactile effect that enriched the design. The addition of stereoscopic threads prominent above the surface that was woven using textures and techniques, while they are damaged and assembled in this art form, achieves an aesthetic appearance. In addition to the presence of the circular parts and their interrelation with the rest of the design parts, it added an aesthetic dimension to the design. Alternate designs for design experiment No. (VIII) are illustrated in **Figure 8**.

Design Experiment (IX)

Elements used in design experiment No. (IX)

Textile structures of elements used in this design experiment which are presented in **Table 9** tend to stitch macrame, which is manual and not mechanical work that depends on the prominent and the recesses and the linear relationships between them, (**Element V**, and **Element W**) with color overlaps that affected the elements.

Table 9: Analysis and description of elements used in design experiments No. (IX)

Code	Elements Analysis and description
Element V	 <p>The element is characterized by a mixture of horizontal and vertical yarns, repetition in the element's structure through spaces, and the repetition of color distribution in a system that suggests stability and color harmony, as it was distributed in a balanced manner that achieved the regular rhythm.</p>


Element W	 <p>The element is characterized by the diversity of the colors of the yarns used and the overlap between them and the floor in some parts, and the diversity between them gives the feeling of trims, warps, and weft in an atypical way</p>
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Figure 8: Design experiment No. (VIII) with some of its color ideas

Color analysis

This design experiment (IX) consists of eight different colors



Technical Analysis of design experiment No. (IX)


The sense of comprehensive unity was achieved through a group of harmonious linear rhythms within the work, and the convergence of the vertical and horizontal lines in the work led to a sense of balance and then cut the sharpness of those lines with curved coiled parts, which resulted in various new relationships as a result of the convergence of the curves with the straights, and the tactile richness resulting from the various techniques Used for spaces, and the use of repetition between the compositions and some of them created a kind of attraction and show the artistic and aesthetic value. Color harmony is also achieved through the use of different color values for one color, which is navy, and the degree of color in the work ranged between light and dark for the floor and the threads.

Design Experiment (X)

Elements used in design experiment No. (X)

Textile structures of elements used in this design experiment were presented in **Table 10**. Textile structures of plain weaving as in **Element X**, are mechanical works that depend on the tops in the weft threads, which work to create effects that affect the surface appearance of each element in addition to the linear relationships. In **Element Y** there are color interferences that affected the elements

Table 10: Analysis and description of elements used in designs experiments No. (X)

Code	Elements Analysis and description
Element X	 <p>The element is characterized by the presence of horizontal and vertical yarns, which are repeated in the element in the same size, but with different color effects, which created a kind of irregular formal rhythm that led to harmony and balance in the artwork</p>


Element Y	 <p>The element is characterized by the presence of overlapping groups of condensed color geometric lines on the background space, in addition to the diversity in the areas of the horizontal yarns, which are linked to some of the prominent and submerged vertical yarns, which created depth in some parts of the element</p>
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Figure 9: Design experiment No. (IX) with some of its color ideas

Color analysis

This design experiment (X) is based on ten different colors



Technical Analysis of design experiment No. (X)

The use of diversity in textile structures, including plain (crepe) and corrugated, in addition to the patterns in weft threads, gave the design a different aesthetic appearance and a distinctive linear, rhythmic, and color harmony as a result of the design's reliance on the color overlap, and the repetition of colors achieved a chromatic rhythm. The tabby helped in different styles Weaving and shaping with the different thicknesses and thicknesses of the threads in the design gains, a tactile diversity that enriched the design, morphologically and aesthetically, and how the design is characterized by the balance in terms of the distribution and density of threads, and the contrast between the spaces woven in one color and more than one color, which contributed to achieving a formal vision through which the aesthetics of the design became clear.

Virtualization of designs in clothes

Fashion is a provocative and inspiring idea worthy of being exhibited for society's approval that makes us even more instinctual rather than an ambitious projected image of are interpreted as good old values to achieve some purpose or agenda comparable. Fashion trends come and go, but a society's values are created and constantly changing by its ideas and culture. Today's young determines the lifespan of a fashion trend because of their strong propensity to shop, explore, try new things, and experiment.[21] Fashion is becoming more widely accepted on a social and international level in many spheres of human thought and activity. Changing styles, colors, fabrics, and designs are considered a fashion trend. Fashion trends are frequently influenced by social, political, and sporting events. People typically adapt to the fashion trends they observe. [22]

All prepared designs were Recruitment of designs in girls' clothes as illustrated in **Figure 11** to **Figure 18**.

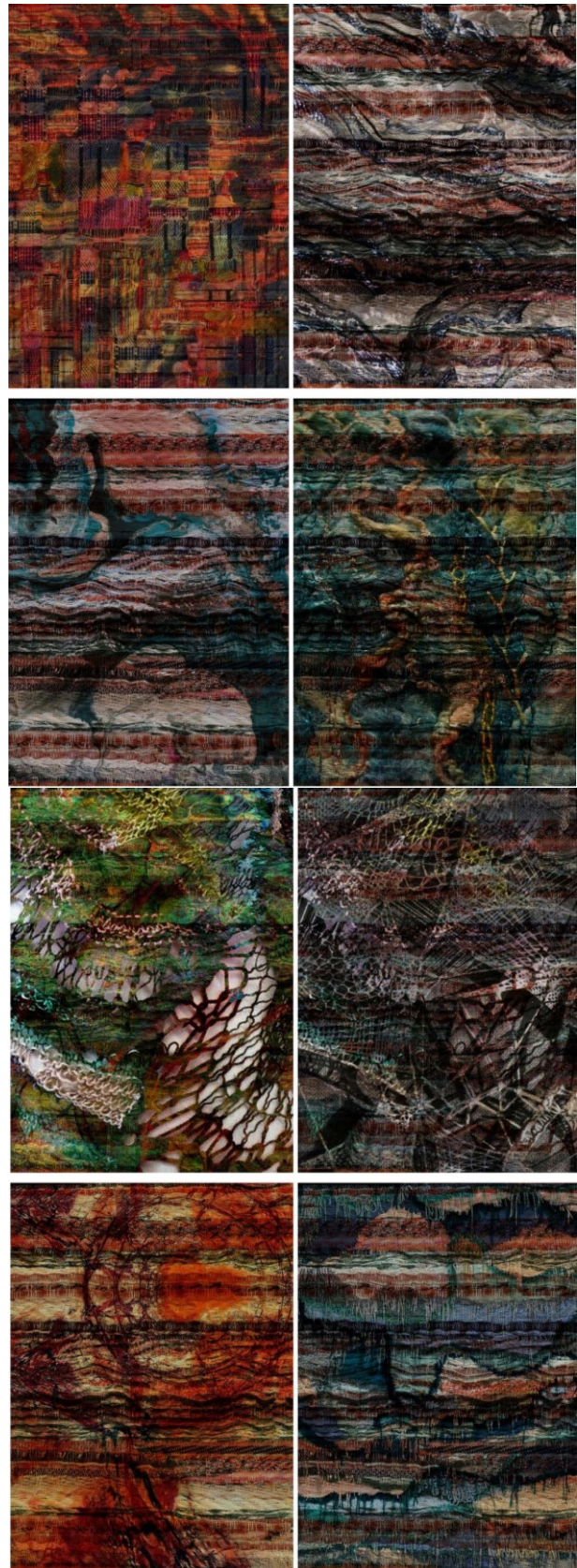


Figure 10: Design experiment No. (X) with some of its color ideas



Figure 11: Virtualization of designs experiment No. (I) in clothes



Figure 13: Virtualization of designs experiment No. (III) in clothes

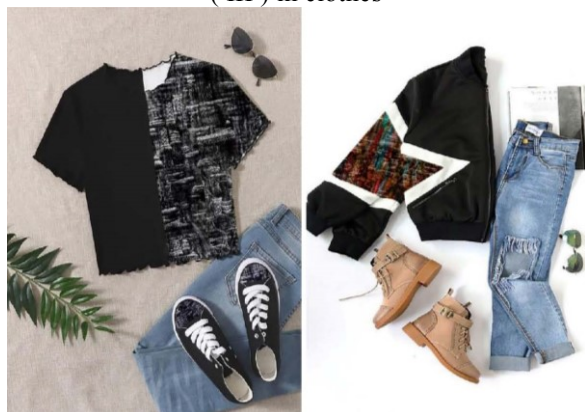


Figure 14: Virtualization of designs experiment No. (IV) in clothes

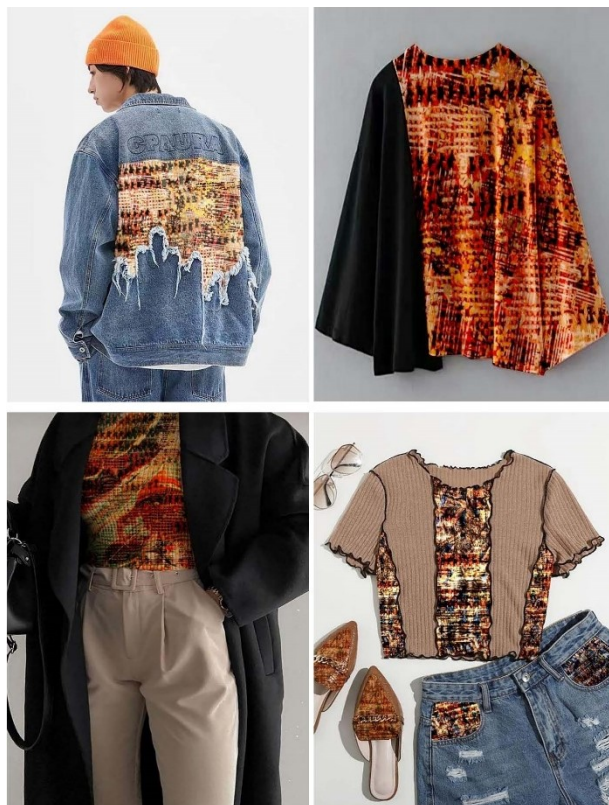


Figure 12: Virtualization of designs experiment No. (II) in clothes

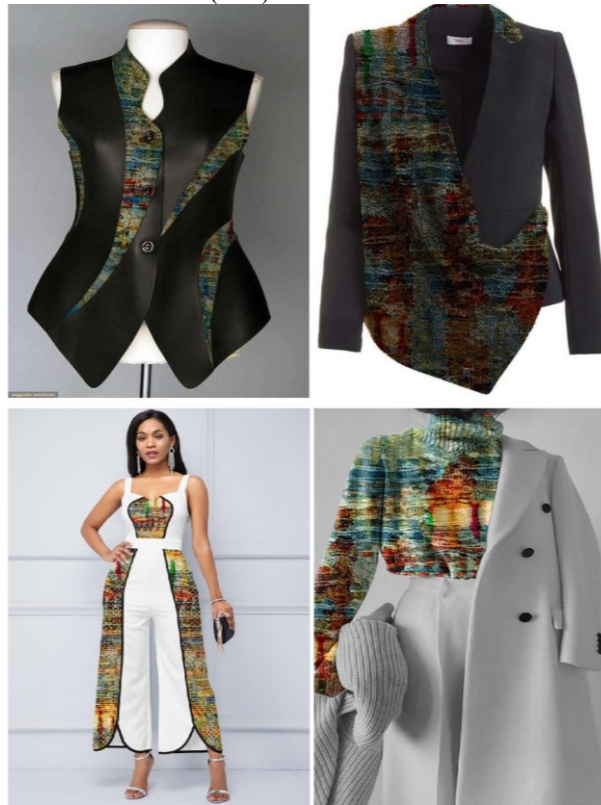


Figure 15: Virtualization of designs experiment No. (VII) in clothes



Figure 16: Virtualization of designs experiment No. (V) in clothes

Figure 17: Virtualization of designs experiment No. (VI) in clothes



Figure 18: Virtualization of designs experiment No. (VIII) in clothes



Figure 19: Virtualization of designs experiment No. (IX) in clothes



Figure 20: Virtualization of designs experiment No. (X) in clothes

Statistical analysis

To evaluate the designs Statistical evaluation was applied according to the following steps:

- Preparing a questionnaire addressed to specialists in the field of fashion and clothing design, see questionnaire templet in **Figure 21**.
- The designs quoted have been judged by specialists, and they are (10) specialists in the field of fashion and clothing design (see **Table 11** for expert names).
- Data were entered to perform statistical processing and extract results

Table 11: Names list of the experts who were surveyed for the designs implemented

Name	Job
Prof. Dr. Yasser Mohamed Eid	Professor in the department of ready-made garments, Helwan University

Hassan	
Assis. Prof. Dr. Abeer Farouk Ibrahim	Assistant Professor, Department of Textile Printing, Dyeing and Finishing, Higher Institute of Applied Arts, Fifth Settlement
Prof. Dr. Jihan Mohamed El-Gamal,	Professor of women's textile printing design
Assis. Prof. Dr. Shaimaa Abd el Aziz Ahmed shaker	Department of Textile Printing, Applied Arts, Helwan University
Ms. Mai Maher	Designer oriental weavers
Reham Mohamed Abdel Salam	Teacher at the Faculty of Applied Arts, Helwan University
Muhammed Shafiq Judeh Abu Tabel	Design Engineer at Oriental Carpet Weavers Group
Prof. Dr. Mohamed Mahmoud Mohamed Afifi	Design, Department of Textile Printing - Faculty of Applied Arts - Helwan University
Prof. Dr. Haba Abdel Aziz Shalaby	Head of Spinning, Weaving and Knitting Department, Faculty of Applied Arts, Benha University
Eng. Mohamed Safi El Din Abdel Hamid Zayed	Creative & Art Director - Atum Egypt

Statistical procedures

The validity coefficient was calculated in which the correlation coefficients are calculated between the total score for each of the questionnaire axes, and the reliability coefficient of the questionnaire axes and the questionnaire as a whole is calculated using the “Cronbach’s Alpha” method.

The validity of the questionnaire

The truth factor and stability factor have been calculated by Cronbach's alpha method for each axis of the questionnaire axes to ensure that questionnaire answers are the real answer.

Table 12 shows the link between each axis result and the total result of the questionnaire.

It is clear from **Table 12** that all the correlation coefficients function at the level (0.05) because they are close to one. This indicates the validity and consistency of the questionnaire’s axes. So, the questionnaire is related to real answers.

Table 12: Values of the correlation coefficients between the total score for each axis and the total score for the questionnaire

Axes	Link to the total result	Function α
Axis (1)	0.93	0.05

Axis (2)	0.94	0.05
Axis (3)	0.9	0.05

Questionnaire
Suggested designs questionnaire form for the master's thesis in the
Department of Textile Printing, Dyeing and Finishing
Faculty of Applied Arts, Benha University
Ms. Fatma Mamdouh
entitle
Creative insights from the tentative structures of the tentacles of the arctic
seam on the squiggly sections with typographical veneers

In order to evaluate the designs (.....) designs through the axes and items that have been approved and agreed upon by specialists, with five ratings (excellent - very good - good - acceptable - poor) for each item of the axes of each designed to derive the general assessment of each design from the point of view of each arbitrator from the professors under supervision:
 Prof. Dr. Hanan Ali Othman
 Prof. Dr. Maysa Reda
 Dr. Heba Atef Abdel Aziz
 The details of the witness are as follows:

	Rating				
	Excel lent	Very good	Good	Acce ptable	Poor
The first axis: the aesthetics of textile structures as a fine element and its impact on the designs of the unit piece printing					
The extent to which the creative and aesthetic values of some diverse forms of textile compositions are used to create one-piece printing designs					
Keeping up with the design of modernity and innovation					
The second axis: the aesthetic elements of innovative one-piece printing designs					
The different relationship between the submerged and the prominent in the design units					
The extent to which balance is achieved in the design elements					
Matching the structural linear relationships of the design to each other					
Effects resulting from the intertwining of color groups and threads					
The third axis: methods of experimentation, implementation and employment					
The extent to which the design keeps pace with fashion and suits the Egyptian taste					
The suitability of employment with the age group					
The appropriateness of using computer software techniques in creating a design for one-piece printing					

Name: _____
 Signature: _____

Figure 21: Suggested designs questionnaire

Persistence of the questionnaire

It is clear from the previous table that all the values of the stability coefficients: the alpha coefficient is a function at the 0.05 level, which indicates the stability of the questionnaire.

Cronbach's alpha factor is > 0.6 at $\alpha=0.05$ for all cases which indicates the stability of questionnaire results if repeated in the same conditions.

Statistical processing

For first Axis

Based on **Table 15**, the homogeneity assumption is accepted which indicates that the results for each design are close to each other. That is because the value of $F = 2.03$ is lower than the

expected value at level $\alpha = 0.05$. Which indicates that all designs are performing above expectations.

Table 15: The homogeneity assumption for the first axis

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	28.800	1	28.800	2.031	.171
Within Groups	255.200	18	14.178		
Total	284.000	19			

For second Axis

Based on **Table 16**, the homogeneity assumption is accepted which indicates that the results for each design are close to each other. That is because the value of $F = 0.142$ is lower than the expected value at level $\alpha = 0.05$. Which indicates that all designs are performing above expectations.

Table 16: The homogeneity assumption for the second axis

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.500	3	1.167	0.142	.934

Error! Reference source not found. shows the average for each axis and the total average of all axes according to the opinions of the arbitrators

Analysis of variance (ANOVA) Was calculated for each axis of the questionnaire. The results are declared as follows.

Table 13: Values of the reliability coefficient for the questionnaire axes

Axes	Alpha method

Table 14: The average for each axis and the total average of all axes

Axes	Question	Design 1	Design 2	Design 3	Design 4	Design 5	Design 6	Design 7	Design 8	Design 9	Design 10
Axis (1)	Q1	90	94	92	98	96	96	94	96	98	88
	Q2	84	88	92	96	94	94	90	96	96	88
	Average	87	91	92	97	95	95	92	96	97	88
Axis (2)	Q1	94	92	98	96	96	96	92	92	98	90
	Q2	94	92	94	96	92	96	94	94	96	88
	Q3	92	96	92	96	94	98	94	94	92	90
	Q4	92	88	96	96	96	94	94	98	98	88
	Average	93	92	95	96	94.5	96	93.5	94.5	96	89
Axis (3)	Q1	90	90	84	94	100	96	72	90	78	88
	Q2	92	88	84	90	100	96	76	90	82	86
	Q3	98	92	96	98	100	92	86	94	92	90

Within Groups	296.400	36	8.233		
Total	299.900	39			

For third Axis

Based on **Table 17**, The homogeneity assumption is accepted which indicates that the results for each design are close to each other. That is because the value of $F = 2.231$ is lower than the expected value at level $\alpha = 0.05$. Which indicates that all designs are performing above expectations.

Table 17: The homogeneity assumption for the third axis

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	201.867	2	100.933	2.231	0.127
Within Groups	1221.600	27	45.244		
Total	1423.467	29			

Axis (1)	0.9
Axis (2)	0.768
Axis (3)	0.899
All questionnaire	0.792
The questionnaire as a whole	0.892

	Average	93.33	90	88	94	100	94.67	78	91.33	84	88
All Axes Average (%)	91.11	91	91.67	95.67	96.5	95.22	87.83	93.94	92.33	88.33	
Design Rating	7th	8th	6th	2nd	1st	3rd	10th	4th	5th	9th	

For first Axis

Based on **Table 15**, the homogeneity assumption is accepted which indicates that the results for each design are close to each other. That is because the value of $F = 2.03$ is lower than the expected value at level $\alpha = 0.05$. Which indicates that all designs are performing above expectations.

	Squares	df	Square	F	Sig.
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Table 17: The homogeneity assumption for the third axis

	Sum of	df	Mean	F	Sig.

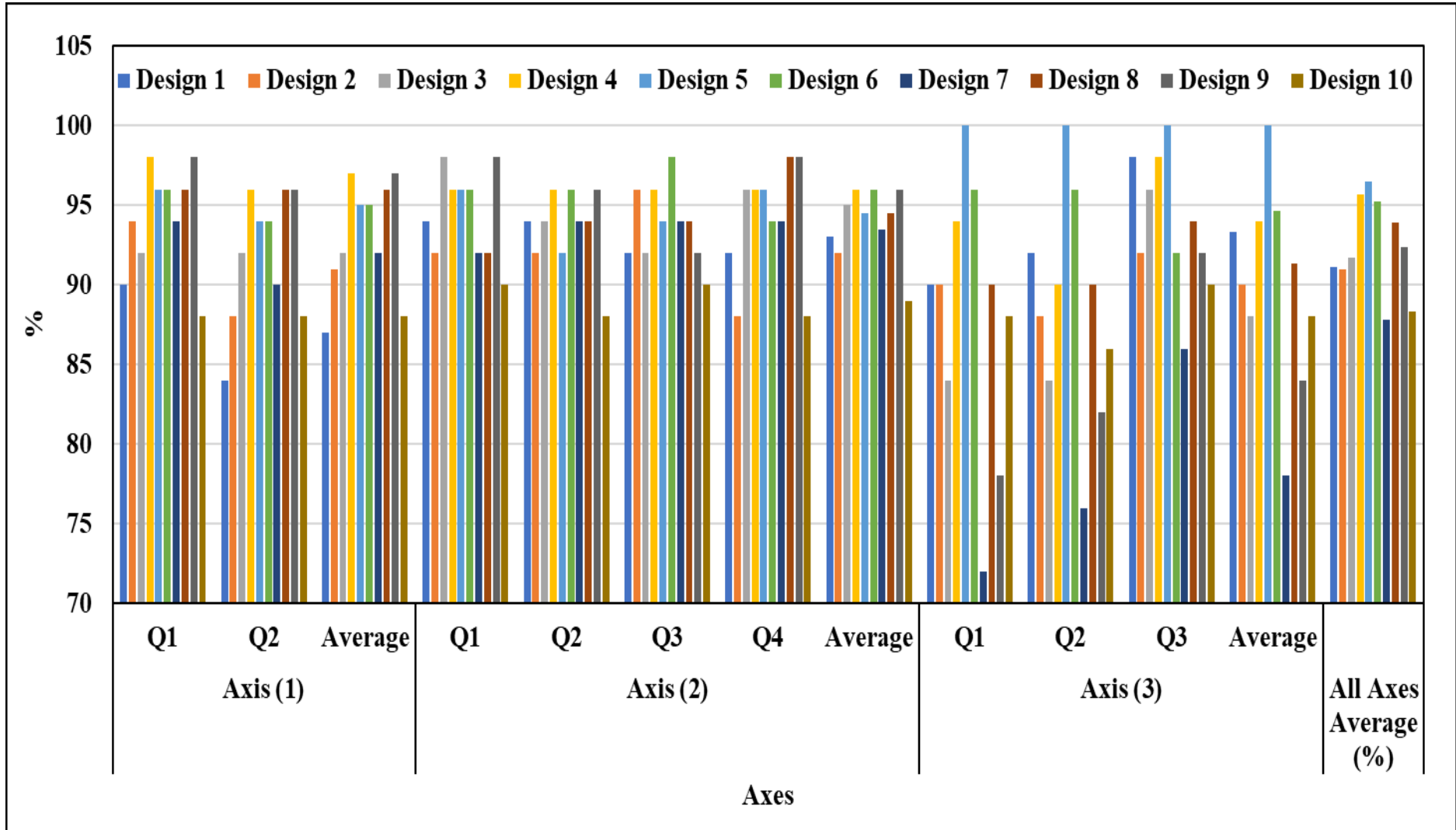


Figure 22: The average result for each axis and the total average of all axes

Conflict of interest

The authors declare that there is no conflict of interest

Acknowledgments

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تصميمات مبتكرة لملابس القطعة الواحدة المستلهمة من تأثيرات ولون غرز المكروية والسجاد

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المخلص

تحتل الملابس ذات القطعة الواحدة للمراهقة باهتمام كبير من الباحثين بسبب التغييرات التي تتضمنها ، سواء من الناحية الفسيولوجية أو النفسية نتيجة تفاعل العديد من العوامل. ملابس المراهقين من العوامل المهمة في إشباع الحاجات العاطفية والاجتماعية وخاصة اهتمام المراهق الشديد بمظهره الخارجي. حيث تؤثر الملابس بشكل مباشر على مزاج المراهقين ، وتؤكد لهم الشعور بالثقة بالنفس في حال انسجام مظهرهم مع مجموعة الأقران ، وهذا يتطلب أنماطاً معينة من التصميمات التي تراعي إشباع التغييرات الحاسمة لذلك. المسرح. من هنا جاءت مشكلة البحث وهي كيفية إشباع الحاجات النفسية والفسيولوجية في مرحلة المراهقة من خلال تصميمات مناسبة لقطعة واحدة مستوحاة من الهياكل المنسوجة ولون مكروية و غرز السجاد ، وإجراء دراسة تجريبية للوصول إلى أفضل التصميم والأدوات التي تناسبها. مرحلة المراهقة وإشباع الحاجات الفيزيولوجية والنفسية والاجتماعية والملابس؟ افتراض البحث وجود فروق ذات دلالة إحصائية بين التصميم المقترحة واتجاه خطوط الموضة الحديثة. اعتمد البحث المنهج التجريبي والتحليلي. وأكدت نتائج البحث وجود اختلافات بين التصميم المقترحة وفق اتجاهات الموضة الحديثة وحسب آراء مختلف الخبراء.

الكلمات الرئيسية: ملابس من قطعة واحدة ، مراهقة ، هياكل مزخرفة وسجاد ومكروية