

THE SIGNIFICANCE OF WARM COLOUR IN THE QURAN AND ITS ROLES ON MEMORY PERFORMANCE

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ABSTRACT

Colours are mentioned many times in the Holy Qur'an. Some are mentioned as colours in general, and some of them in specific; yellow, white, black, red, green and blue. Each colour has its special connotations in the Holy Qur'an and among these colours, yellow and red are considered as warm colours. This study aimed to find the significance of warm colours in the Holy Qur'an and its relationship to human psychology; focusing on memory performance. This research had used an inductive approach in terms of selecting Quranic verses; in which yellow and red colour were mentioned. These verses were then analysed by referring to the books of exegetical considerations in order to know the implications of these colours' usage, as well as referring to psychology books and scientific articles. The research found that yellow and red colour in the Holy Qur'an mostly indicate attracting attention or pleasing viewers. Some examples included the yellow colour in resemblance to the colour of the cow, attention to decay and destruction such as yellow colour in the withering plants, and attention to resurrection like the red colour resembling scene of the Day of Resurrection. This indication in the Holy Qur'an is consistent with psychologists' discovery; warm colours such as red and yellow are more effective and attractive in the process of transferring information from external to sensory memory, and thus to short-term and long-term memory.

Keywords: Warm Colours, Memory Performance, Yellow, Red.

1. INTRODUCTION

Allah the Almighty mentioned in the Holy Qur'an on colours, the different type of colours, and colours' effects on the soul. In this study, the author discussed the implications of warm colours in the Holy Qur'an, and specific roles of these colours in improving memory performance. The importance of the study is to show the relation between the benefits of colours as mentioned in the Holy Qur'an, and psychologists' theory on human memory performance.

There were several studies that discussed on colours in the Holy Qur'an. A study prepared by A.M. Al-Hashimi¹, "Colours in the Holy Qur'an", stated that the words "colour and its derivatives" is mentioned in the Qur'an in seven verses. The difference of colours is considered a verse of God ﷻ, and the difference of colours appears through the diversity of His ﷻ creatures; in plants, animals, inanimate objects, human and other creatures of God is a testament to the greatness of God ﷻ to those who realize it. He said, "Every person is psychologically affected by colour without noticing, and scientists have inferred a fact or many facts about the reaction caused by colours themselves."

Another study is a scientific article by Ayyad Abd Al-Rahman Amin on the topic "Interpretation of colour in the Holy Qur'an and the noble Hadith."² In the article, he mentioned the significance of colours in the Holy Qur'an and hadiths, and examined the technical and formal aspects of these indications. There are six colours mentioned in the Holy Qur'an: white, black, red, yellow, green and blue. All of these colours have multiple and different indications, and the hadiths generally confirmed these indications.

In a study from Najah Abdel-Rahman Al-Murazaqah, she prepared a master's thesis entitled "Colour and its implications in the Holy Qur'an"³. The writer said that colours have a strong relationship in the field of language, and has different meanings in every narration. It focused a lot on the significance of colours in the Holy Qur'an by referring to the books of exegesis, so it could portray the significance in all Quranic verses. We limited ourselves from mentioning these books, due the enormous number of books. However, these books did not concentrate on warm colours and its relation to human psychology, especially on its impact on the human memory performance.

2. METHODOLOGY

This article used an inductive approach in terms of selecting Quranic verses in which yellow and red colour were mentioned. Then, the author analyzed it by referring to the exegesis book to find the relation between the meaning of these colours in the Holy Qur'an, and the previous researches' findings; related to the role of warm colour in memory performance.

3. RESULTS AND DISCUSSION

Six colours were mentioned in the Holy Qur'an, including white, black, green, blue, yellow and red. The yellow and red colours are considered warm colours, as each of them are mentioned in the Holy Qur'an carrying specific meanings.

3.1 The significance of yellow colour in the Holy Qur'an

¹ A.M. Al-Hasyimi (1990). *Al-Atwan fil Quran al-Karim*. Beirut: Dar Ibn Hazm.

² IAR Amin (2011). Ta'wil al-Lawn fil Quran al-Karim wal Hadith al-Syarif. *Al-Majallah al-akadimiyyah al-Ilmiyyan*, University of Baghdad, 57, pp.75-90.

³N.A. Al-Muzaraqah (2010). *Al-Lawn wa Dilalatuhi fil Quran al-Karim*. Thesis Master. University of Mu'tah.

The word yellow is mentioned in several places in the Holy Qur'an and explained certain issues.

First: The Description of Cow

The word yellow is mentioned in the description of the cow to be slaughtered by the people of Prophet Moses (peace be upon him) as commanded by Allah the Almighty:

قَالُوا ادْعُ لَنَا رَبَّكَ يُبَيِّنْ لَنَا مَا لَوْنُهَا قَالَ إِنَّهُ يَقُولُ إِنَّهَا بَقَرَةٌ صَفْرَاءٌ فَاقِعٌ لَوْنُهَا تَسُرُّ النَّاظِرِينَ [البقرة: ٦٩]

They said, "Call upon your Lord to show us what her colour is." He said, "He says she is a yellow heifer, bright in colour, pleasing to the beholders."

There are two views regarding words (صَفْرَاءٌ) in this verse. Firstly, it means yellow camel which is closer to the meaning of this verse, because the word (yellow) itself appears in the Holy Qur'an. The second view refers to black camel, as it carries the meaning of darkened black. Al-Zamakhshari⁴ also quoted from Al-Hasan Al-Basri: "Yellow is bright, black, very black. Perhaps it is borrowed from the nature of camels because its blackness is more obvious than yellow." The view of yellow camel in this verse is not acceptable as the Holy Qur'an used it metaphorically only in camels. It was said by Al-Qurtubi that in surah al-Mursalat verse 33; Allah the Almighty saying: (As if it is a yellow camel). Thus, in this verse, it brings a meaning of black camels, and not yellow like the first view.

Second: The wind that lead to destruction

The word yellow also appeared in describing natural phenomena, which is stifling winds, as mentioned in the Holy Qur'an;

وَلَيِّنْ أَرْسَلْنَا رِيحًا فَرَأَوْهُ مُصْفَرًّا لَّظَلُّوا مِنْ بَعْدِهِ يَكْفُرُونَ ٥١ [الروم: ٥١]

But if We send a wind, and they see it turning things yellow, they would continue thereafter to disbelieve.

The word (مُصْفَرًّا) in this verse shows the meaning of death and torment, which Allah the Almighty chose word (مصفرًا), not (الأصفر). Al-Qurtubi (1964) said: It was yellowish as it carries the meaning of the situation, and because that was an accident or mishap. It means: "See the yellow clouds."⁵ The indication of the yellow colour in this verse carries a negative meaning, which is an indication of the withering plants. He has made these appearance similar to the nature of the unbelievers who did not thank Allah if He brought them provision and grace. Yet if a calamity befell them, they disbelieved in God the Almighty. This is one of the best and most beautiful description of those who resembles the portrayal, and corresponds to the opinions that

⁴A.Q. Az-Zamakhshari (1986). *Al-Kassiyaf 'an Haqaiq Ghawamidh at-Tanzil*. Beirut: Dar al-Kitab al-A'rabiyy 1/148-153.

⁵ A.A. Al-Qurthubi (1964). *Al-Jami' Li ahkam al-Quran*. Al-Qahirah: Dar al Kutub al-Misriyyah, 14/45.

yellow is the colour of lethargy, depression, fear, loss and torment⁶. In medical science, for example, the yellow colour on the face and the skin is the signal of disease. Hence, this proves the corruption and destruction of plants as what God Almighty has mentioned in this verse.

Third: The annihilation, confusion, and shattering in the implant are similar to the worldly life

The word yellow is used to mention the stage of maturity of the plant. It was mentioned two times in the Holy Qur'an. First:

أَلَمْ تَرَ أَنَّ اللَّهَ أَنْزَلَ مِنَ السَّمَاءِ مَاءً فَسَلَكَهُ يَنْبِيعَ فِي الْأَرْضِ ثُمَّ يُخْرِجُ بِهِ زَرْعًا مُخْتَلِفًا أَلْوَانُهُ ثُمَّ يَهِيغُ فَتَرْتَهُ مُصْفَرًّا ثُمَّ يَجْعَلُهُ حُطْلًا إِنَّ فِي ذَلِكَ لَذِكْرًا لِأُولِي الْأَلْبَابِ [الزمر: ٢١]

Have you not considered how God sends down water from the sky, the He makes it flow into underground wells, then He produces with it plants of various colours, then they wither and you see them yellowing, then He turns them into debris? Surely in this is a reminder for those with understanding.

This verse is the evidence of God Almighty's greatness and His ability in reviving living things after death. The term (مُصْفَرًّا) in this verse carries the exact meaning, as God Almighty spoke about the plantations' stage of ripening; from the descending of rain from the clouds, until there are plants sprouting, and plant comes out of the ground in various types and colours. Finally, in the end He converts all of these to yellow; which is the beginning of their decay and decline.

Second:

أَعْلَمُوا أَنَّمَا الْحَيَاةُ الدُّنْيَا لَعِبٌّ وَلَهُمْ زِينَةٌ وَتَفَاخُرٌ بَيْنَكُمْ وَتَكَاثُرٌ فِي الْأَمْوَالِ وَالْأَوْلَادِ كَمَثَلِ غَيْثٍ أَعْجَبَ الْكُفَّارَ نَبَاتُهُ ثُمَّ يَهِيغُ فَتَرْتَهُ مُصْفَرًّا ثُمَّ يَكُونُ حُطْلًا وَفِي الْآخِرَةِ عَذَابٌ شَدِيدٌ وَمَغْفِرَةٌ مِنَ اللَّهِ وَرِضْوَانٌ وَمَا الْحَيَاةُ الدُّنْيَا إِلَّا مَتَاعُ الْعُرُورِ [الحديد: ٢٠]

Know that the worldly life is only play, and distraction, and glitter, and boasting among you, and rivalry in wealth and children. It is like a rainfall that produces plants, and delights the disbelievers. But then it withers, and you see it yellowing, and then it becomes debris. While in the Hereafter there is severe agony, and forgiveness from God, and acceptance. The life of this world is nothing but enjoyment of vanity.

⁶ IJ. At-Thabari (2008). *Jami' al-Bayan 'an Ta'wil Ayil Quran*. Al-Qahirah: Maktabah Ibnu Taimiyyah. 23/193-194.

In the plants' stage of ripening, it is used as a parable for the disbelievers in this world; who did whatever they want in their life, without thinking the punishment in hereafter. So, this verse shows punishments for disbelievers, and shows the forgiveness of Allah towards believers.⁷

The term "مُصْفَرًا" in this verse carries a real meaning (yellow), and at the same time it metaphorically means a sign of maturity and completeness. This will be a parable of death and destruction, after the world has been abundantly degraded. As a conclusion, the usage of yellow colour in both these verses indicated a negative sign. This is because each of them indicated the meaning of death and decay; either it comes with the true meaning of plants and crops, or metaphorically meaning the death of a person.

Fourth: The scene of fire on the Day of Resurrection

The yellow colour was used in describing the scene of fire on the Day of Resurrection, as it was mentioned in the Almighty's saying:

إِنَّهَا تَرْمِي بِشَرَرٍ كَالْقَصْرِ ۚ كَأَنَّهُ جِمَلَتٌ صُفْرٌ [المسلمات: ٣٢-٣٣]

It shoots sparks as castles. As if they were yellow camels

The word (صُفْرٌ) describe the scene of fire on the Day of Resurrection, as God Almighty equates the sparks of hell with yellow camels. The word (صُفْرٌ) in this verse meant the yellow colour. This analogy is the sequence of hell sparks itself, as mentioned by Imam al-Baidhawi⁸: "it is used as comparison to the structure, colour, abundance, succession, mixing and speed of movement." The other views said that it meant black, as Ibn Katheer said: "God make it similar to the beauty of black camels"⁹.

We are more likely to say that the word (صُفْرٌ) in this verse is yellow colour. Although the second view said that it meant black, but the blackness of camels tends to carry the meaning of yellow as well. As a conclusion, this verse depicts us a manifestation of the torment for the people who dwell in Hell. It resembles a sensual view in the mind, which is the image of the yellow colour of camel, or the black colour that tend to be equated to yellow. The use of yellow colour in this verse intimidates infidels (الترهيب) and also to denote the scene of sparks; relating it to the torment of the people in Hell.

3.2 The significance of red colour in the Holy Qur'an

The red colour was mentioned in the Holy Qur'an in two verses.

First: Colour of mountains

⁷ At-Thabari, *Jami' al-Bayan fi Ta'wil al-Quran*, 23/193-194.

⁸ N.E. Al-Baidhawi (1999). *Anwar at-Tanzil wa asrar at-Ta'wil*. Tahqiq: Muhammad Abdul Rahman. Beirut: Dar Ihya' at-Turath al-A'rabi. 5/276.

⁹ I. Ibnu Kathir (2001). *Tafsir al-Qur'an al-azhim*. Beirut: al-Kitab al-Arabi. 8/304.

أَلَمْ تَرَ أَنَّ اللَّهَ أَنْزَلَ مِنَ السَّمَاءِ مَاءً فَأَخْرَجْنَا بِهِ ثَمَرَاتٍ مُخْتَلِفًا أَلْوَانُهَا وَمِنَ الْجِبَالِ جُدَدٌ بَيْضٌ وَحُمْرٌ مُخْتَلِفٌ أَلْوَانُهَا
وَعَرَابِيٌّ سُودٌ [فاطر: ٢٧]

Have you not seen that God sends down water from the sky? With it We produce fruits of various colours. And in the mountains are streaks of white and red-varying in their hue-and pitch-black.

The red colour in this verse meant the colours of the different mountains, and also meant the colours of the habitats in the mountains¹⁰. Geologists divided the mountains into three main sections. Among the sections are crystalline basal mountains, which are referred in the verse; (وَحُمْرٌ مُخْتَلِفٌ أَلْوَانُهَا)¹¹. Specialists explained that the red mountains mentioned in this verse is "the common occurrence of iron, which is oxidized, and the rock appears in a red colour. Iron is accompanied by other metal minerals, like copper and plumbum, and its percentage of presence is different. Therefore, there are different degrees of red colour."¹²

Second: The scene of the Day of Resurrection

It is used also in the Holy Qur'an by the word "وردة", as in the Almighty's saying:

فَإِذَا أَنْشَقَّتِ السَّمَاءُ فَكَانَتْ وَرْدَةً كَالدِّهَانِ [الرحمن: ٣٧]

When the sky splits apart, and become rose, like paint

The word "وردة" denotes the colour of rose flower, but the linguists did not specify any colour of rose flower. This is because it grows in different colours, as az-Zujaj said that the word "وردة" became the colour of roses. The colour of rose in the winter is different in the summer¹³. It was also mentioned by al-Asfahani: "A word (وردة) was said in the attribute of the sky if it turned to red colour, as it is a sign of the day of resurrection."¹⁴

Interpreters have come to define the word (وردة) as red. Based on Al-Zamakhshari¹⁵: "A (وردة) is red colour, and the word (كالدّهان) is an oil."¹⁶ He used this colour to indicate the scene of the Day of Resurrection, which is the sky splitting phenomena and its inflection. Imam Al-Tabari (2000)¹⁷ said: "If the sky was split and broken, and on the Day of Resurrection, then the colour would be the colour of the parsley rose red." He envisioned to us the sky splitting phenomena on the Day of Resurrection, "then it was red like the colour of roses, like boiling oil, and lead dissolved; for that is the intensity of horror of the Day of Resurrection."¹⁸

¹⁰ M.A. As-Sobuni (2000). *Sofwatu at-Tafasir*. Al-Qaherah: Dar as-Sobuni. 2/572.

¹¹ Fatir: 27.

¹² www.onislam.net

¹³ J. Ibnu Manzhur (n.d). *Lisan al-Arab*. Beirut: Dar Sadir, 3/456.

¹⁴ AR Al-Asfahani (n.d). *Al-Mufradat fi Gharib al-Quran*, Maktabah Nizar Mustafa al-Baz, 1/865.

¹⁵ A.Q. Az-Zamakhshari (1986). *Al-Kassyaf 'an Haqaiq Ghawamid Tanzil*, 4/449, 450.

¹⁶ A.Q. Az-Zamakhshari (1986). *Al-Kassyaf 'an Haqaiq Ghawamid Tanzil*, 4/449-450.

¹⁷ IJ. At-Thabari (2008). *Jami' al-Bayan fi Ta'wil al-Quran*. 23/49.

¹⁸ Ibid, 23/49.

We can see this sun's colour shade just before sunset, where at this time the western horizon is filled with red. Hence, it would be beyond imagination if the whole sky becomes this colour on the Day of Resurrection. There is no doubt that the red colour resembles the colour of fear that befalls creatures on the Day of Resurrection, and it has an indication of terrorization to humans.

After observing the different indications of yellow and red colour, we noticed that yellow colour appeared in five places in the Holy Qur'an, which carries both negative and positive connotations. As for the indications of red colour in the Holy Qur'an, it carries its true meaning which is as red colour. If we refer to the psychological characteristics of the red colour in general, it attracts the eye and the breath is alerted autonomously. It also symbolizes a person in different situations, including arouse of fear and nausea, or in the midst of the fire; escalating terror and panic. Some of them symbolizes red colour as attention and warn about danger, such as red lamps used at the traffic light. The red colour mimicking the scene of the Day of Resurrection indicates raised feelings of fear, horror and terror in the soul of men. It is undoubtedly part of the horror that people will experience on the Day of Resurrection. As mentioned in the Quranic verses; when the sky splits and turns its colour from pictures que blue to the terrifying red colour, it completes the horrors of the Day of Resurrection.¹⁹

3.3 Warm Colour and Memory Performance

In order to address the function of warm colours in improving memory performance, the relationship between memory and the factors that improve it; attention and arousal, must be investigated.

Memory, attention and arousal:

Memory is known as "the mental process in which past experience (staining) is recorded, retained, and retrieved." Therefore, the memory has specific stages and steps in transferring information from external inputs to information stored in the mind. Among the most important models for indicating the stages and steps in memory are the Atkinson & Shiffrin model (1968)²⁰. The most important features of this model are its subdivisions of the structural features and the control process in memory.²¹

Firstly, the structural features of memory would be explained. It consists of three types of memory: (1) Sensory Register, (2) Short Term Memory, and (3) Long Term Store. The first memory is known as Sensory Register, which receives information from stimulus accessible by

¹⁹ Amirah (2009). *I'jaz al-Alwan fil Quran*.

²⁰ RC Atkinson, RM Shiffrin (1968). Human Memory: A Proposed System and Its Control Process. *Psychology of Learning and Motivation*, 2, 89-195.

²¹ Nairne, James, S. & Neath, I. (2013). Sensory and working memory. Retrieved: file:///C:/Users/User/Downloads/2013%20Nairne%20&%20Neath.pdf

the visual senses (iconic), and audio (echoic). This type of memory can record information on a large amount, but it is kept for a second (second) or less²².

Second memory is Short Term Memory, which is capable of storing specific information; as its storage period is about fifteen to thirty seconds. Researchers have shown that the time for storing information in short-term memory is approximately three to twelve seconds. Based on the experiment conducted by Peterson, the participants in his experiment could memorize about eighty percent (80%) after delaying time to two seconds, but the percentage fell to ten percent (10%) after eighteen seconds. Besides, according to Miller's view, the ability to store information in short-term memory is limited to only seven items²³. Thirdly, the Long Term Store is "the long-term retention and storage of information; obtainable due to frequent repetitions of occurrence or encounters."²⁴ The storage of information in this type of memory is unlimited, and it is able to hold the information for a long time²⁵.

There are two factors that affect the success of information transfer from one memory structure to the other memory structures. The first factor is attention, which is considered the most important factor in the process of transferring information from sensory register to the short term store²⁶. James discovered that attention affected the process of selecting available information in the environment.²⁷

In human memory, the most important role of attention is to determine information in the sensory register, and then transfer it to short term memory²⁸. If the information transfer process is successful between them, a rehearsal which is a control process, is required to save the information in the short-term memory²⁹. In the event that attention is lost during this process, it cannot transfer information from the sensory memory to the short term memory; thus leads to information loss. Psychologists have concluded that increasing the degree of attention helps to increase the ability to store information in memory³⁰.

²² Ibid.

²³ RC Atkinson, RM Shiffrin (1968). Human Memory: A Proposed System and Its Control Process. *Psychology of Learning and Motivation*, 2, 89-195.

²⁴ S.M. Mulhim (2006). *Sikulujiyyah at-Ta'allum wa at-Ta'lim*. Amman: Dar alMasirah, 278.

²⁵ RC Atkinson, RM Shiffrin (1968). Human Memory: A Proposed System and Its Control Process. *Psychology of Learning and Motivation*, 2, 89-195.

²⁶ Ibid, 2, 89-195.

²⁷ W James (1901). Memory. *The Principles of Psychology*. As cited M. Faiz (2012). *The Effect of Ground Colour on Memory Performance*. (Master Thesis). International Islamic University Malaysia, p.14.

²⁸ Reed. (2010). Cognition: theories and applications. As cited in M. Faiz (2012). *The Effect of Ground Colour on Memory Performance*. (Master Thesis). International Islamic University Malaysia, p. 12.

²⁹ RC Atkinson, RM Shiffrin (1968). Human Memory: A Proposed System and Its Control Process. *Psychology of Learning and Motivation*, 2, 89-195.

³⁰ MW Eyseck (2009). *Fundamental of Psychology*. London: Psychology Press. As cited in M. Faiz (2012). *The Effect of Ground Colour on Memory Performance*. (Master Thesis). International Islamic University Malaysia, p.14.

Arousal indicates a state of being physically and mentally alert, and it may involve various body systems and hormones that lead to alertness towards information transfer in memory³¹. A definition of arousal includes excitement in the physical, emotional, psychological, and physiological aspects. However, psychologists focused a lot on the relation between emotional arousal and memory, because it is one of the most important factors that contribute to improving memory performance³².

There are a number of studies that show the relationship between excitement and memory. MacKay, for example, has studied about the relationship between emotion and memory. He used two types of words in his experiment. Firstly, taboo words, and secondly, neutral words. Taboo words are forbidden words or known as insulting words, while neutral words are phrases using animal names. The participants were divided into three experimental cases. Firstly: naming the colour, secondly: identifying the place, and thirdly: free recall. They concluded that the participants named the colour and recognized the place in a better way in presence of emotional excitement (forbidden words). This is comparing to the same environment but within neutral emotional settings³³. However, the period of information conservation in presence of emotional excitement is still in dispute and consideration. Some researchers believed that emotional arousal can improve the process of storing information in both short-term and long-term memory. However, there are some researchers who disagree to the proposition.

Another discovery by other researchers has determined that a high degree of excitement leads to higher memory capacity in both short-term and long-term recall³⁴. Based on the study conducted by Corteen, the participants were better in memorizing the words presented to them after twenty minutes. They even came to the same conclusion two weeks later³⁵. Another researcher also conducted an experiment that used single exciting words. It was found that the duration of the recall was expedited (just after it) and postponed (after 30 minutes), compared to situations of using words without excitement³⁶.

³¹ Sternberg, Robert J. Cognitive Psychology. p.169.

³² MC Donald (2004). Relations between Emotion, Memory and Attention: Evidence from Taboo Stroop, Lexical Decision, and Immediate Memory Task. *Memory & Cognition*, 32(3), 474-488.

³³ Mac Kay Donald G. (2004). Relations between Emotion, Memory and Attention: Evidence from Taboo Stroop, Lexical Decision, and Immediate Memory Task. *Memory & Cognition*, 32(3), 474-488.

³⁴ F. Heur, Reisberg (1992). Emotional, Arousal and Memory for Detail. In Christianson, S. A. Handbook of Emotion, Arousal and Memory: Research and Theory. p. 151-158. As cited in M. Faiz (2012). *The Effect of Ground Colour on Memory Performance*. (Master Thesis). International Islamic University Malaysia, p. 15.

³⁵ Ibid. p. 15.

³⁶ Ibid, p. 15.

These studies indicated that a high degree of attention and excitement in information retrieval process, has a significant impact on memory performance, whether in short-term memory or long-term memory³⁷.

Colour and attention

The previous topic explained that attention and arousal are the important elements in memory performance. A study on attention indicates that the degree of attention to stimulus, leads to a high degree of information transmission and storage in memory. Therefore, higher intensity of attention helps to increase the ability of transferring information from stimulus to short-term memory³⁸. In order to do this, stimulus must have certain factors to activate attention in memory. Psychologists have come to the conclusion that colour has a role in attracting attention and activating the visual system. They increase the degree of attention, hence it promotes information transfer and storage in the memory³⁹.

For example, Pan had reached a conclusion in his study on memory and visual attention. In his study, participants were asked to determine whether the two objects shown before them appeared in the same colour or were in the same shape. In the first experiment, all of the two objects presented to the participants were displayed in the same colour, but their shape was different. Meanwhile, in the second experiment, all the two presented objects were displayed in the same shape, but their colour was different. After these two trials, it was found that in both experiments, the participants were more focused in determining the colour difference rather than the difference in shape⁴⁰. The researcher noted that colours have an important role in raising the degree of attention on the human visual system. Psychologists suggested that stimulus of especially warm colours; appear more attractive and draw attention⁴¹.

Colour and arousal

Memory performance could also be improved due to emotional arousal, especially excitement. In the latter explanation, emotional arousal affected memory because it contributes to higher memory performance⁴². In order to stimulate emotional arousal, another component is needed, which is colour. Colour has a role in increasing emotional arousal, and this affects both children

³⁷ M Faiz, MA Dzulkifli (2013). The Influence of Colour on Memory Performance: A Review. *Malays Journal Medical Sciences*, 20(2), 5.

³⁸ Sternberg, Robert, J. (2009). *Cognitive Psychology*. 5th Edition. USA: Wardsworth. As cited in Faiz, M. (2012). The Effect of Ground Colour on Memory Performance. (Master Thesis). International Islamic University Malaysia. p. 14.

³⁹ Y Pan (2010). Attentional Capture by Working Memory Contents. *Canadian Journal of Experimental Psychology*, 64(2), 124-128.

⁴⁰ Ibid. p.124-128.

⁴¹ F Grant (1976). Arousal and Cognition: Memory for Color Versus Black and White Multimedia Presentation. *The Journal of Psychology: Interdisciplinary and Applied*, 94(1), 147-150.

⁴² MC Donald.(2004). Relations between Emotion, Memory and Attention: Evidence from Taboo Stroop, Lexical Decision, and Immediate Memory Task. *Memory & Cognition*, 32(3), 474-488.

and adults. Boyatzis & Varghese did an experiment to achieve a correlation between colour and the passion of a child. Thirty children participated in the study. Before starting the study, the researcher asked the children to mention their favourite colours. He then tested them individually, and randomly presented nine different coloured papers at the same time. Then he asked each of the students about their feelings towards each of the colours shown and their reasons. The result showed that brightness of each colour is associated with specific feelings. Note that the brighter colour is associated with positive feelings, while the dull colours are associated with negative feelings⁴³.

In another study, Hemphill focused on the effect of colour on adult emotions. He used ten different coloured papers (white, pink, red, yellow, purple, green, blue, brown, black and gray). He then presented the coloured papers to the participants and asked a number of questions regarding each of the colours shown to them. It was concluded that the brighter colours such as white, blue, pink, red and yellow, have a strong correlation with positive feelings⁴⁴.

3.4 The roles of warm colours in memory performance

Based on the previous studies, the researchers concluded that colours help to attract attention, and increase the degree of emotional arousal; in order to improve memory performance. If we refer to the indications of warm colours in the Holy Qur'an, we find that yellow and red colour has certain meanings. Therefore, it is appropriate to relate the significance of colours in the Holy Qur'an, with the role of colours in improving the human memory performance. They indicate God Almighty's perfect choice of colours mentioned in the Quranic verses, hence it could benefit mankind in life.

Warm colours like red colour indicate alertness and warning about danger; where in the Holy Qur'an related to the Day of Resurrection. On the other hand, in the Holy Qur'an, yellow colour indicates the destruction of plants and crops, and contradictorily indicates the pleasing colour of the cow in another verse⁴⁵. If we associate these misfortunes with psychology, we find that they are in harmony with psychologists' conclusion. Psychologists concluded that each of these two colours indicate a role in human memory, which is attracting attention and increasing emotional excitement. A number of researchers have presented results of studies that proved warm colours' role in the human memory.

In a study by Farley & Grant, it was concluded that colours have an effect on attention and memory. This is based on their study of correlation between arousal and cognition. They have compared the impacts of colourful multimedia presentation, and the non-coloured

⁴³ CJ Boyatzis, Reenu, Varghese (1994). Children's Emotional Associations with Colors. *The Journal of Genetic Psychology*, 155(1), 77-85.

⁴⁴ M Hemphill (1996). A note on adult's color-emotion associations. *The Journal of Genetic Psychology: Research and Theory on Human Development*, 157(3), 275-280. Available: <http://psycnet.apa.org/psycinfo/1996-01791-004>.

⁴⁵ AAG Hamid (2009). Min Simat al-Jamal fil Quran al-Karim: al-Alwan wa Dilalatiha Namuzajan. *Al-Majallah al-Urduniyyah fid Dirasah al-Islamiyyah*, 5(4), 18.

multimedia presentation on the memory performance. They decided that the colourful multimedia presentation attracted more of the participants' attention, rather than the non-coloured multimedia displays⁴⁶. Likewise, Greene, Bell & Boyer in their study, showed that warm colours; like yellow, red, and orange, are more attractive in comparison to cold colours; like brown and gray⁴⁷.

A study by Muhammad Faiz (2012) focused on the effect of background colour on memory performance. He conducted the experiment upon 90 university students. The experiment was based on three cases: (1) coloured background, (2) non-coloured background, and (3) mixed between coloured and non-coloured background. In the experiment, 50 shapes were used as experimental catalysts; with standard dimensions of 4.74 cm by 3.39 cm for shape, and 19 cm by 25 cm for background. The experiment was carried out in two phases: (1) study phase, and (2) testing phase. In the study phase, participants were provided with 50 shapes. Then, in the testing phase, their memory performance was measured based on the number of shapes that were able to be recalled. The researchers concluded that in terms of memory performance, there were significant differences between the three cases. In the case of a non-coloured background, the recall rate was higher than the recall rate in the other two cases. However, the coloured background is characterized by a slightly higher compatibility rate compared to the case of the non-coloured background⁴⁸.

Based on another study, Ruzaini, an elementary school teacher, studied the effect of red colour in teaching *mad asli* to five weak students. Each of the female students was shown an educational card that contains Quranic verses from Surah *Al-Duha*, *Inshirah*, and *al-Lail*. Each *mad asli* letter in those verses were printed in red to distinguish it from other letters. Based on this experiment, it was concluded that the recruited ability had been increased to 50%. The improvements were evident for both skills of reading and determining the *mad asli* letters in the Quranic verses. This study indicates that red colour helps to attract students' attention towards *mad asli* in Quranic verses, thus it could help in the learning process.⁴⁹

4. CONCLUSION

In conclusion, both yellow and red are warm colours are mentioned in the Holy Qur'an, and each of them carries a significant meaning. Among the most important role of these colours is to attract human attention; such as the pleasing colour of the cow. This indication is consistent with

⁴⁶ F Grant (1976). Arousal and cognition: Memory for Color Versus Black and White Multimedia Presentation. *The Journal of Psychology: Interdisciplinary and Applied*, 94(1), 147-150.

⁴⁷ Pan. (2009). Research on the Content-Based Working Memory-Driven, Capture of Visual Attention and Automatically. Unpublished doctoral dissertation, Zhejiang University. M Faiz, MA Dzulkifli (2013). The Influence of Colour on Memory Performance: A Review. *Malays Journal Medical Sciences*, 20(2), 5.

⁴⁸ M. Faiz (2012). *The Effect of Ground Colour on Memory Performance*. (Master Thesis). International Islamic University Malaysia.

⁴⁹ A Ruzaini (2012). Penggunaan Warna Pada Huruf-huruf Mad Asli Dalam Surah-Surah Bacaan al Quran Tahun Lima. *Koleksi Artikel Penyelidikan Tindakan PISMP Pendidikan Islam amb. Januari 2009*. 59-73.

psychologists' findings. The previous studies shows that warm colours have special functions in elevating attention and arousal; which are the most important factors in improving memory performance. In order to activate attention and arousal in memory, it needs another element which is colour. Colour helps to activate attention, which then contributes to the success of the information transfer process between memory structures. We observed that more studies are needed on warm colours in the Holy Qur'an. Especially on the role of colours in the educational process, such as facilitating non-Arabic speaking students in understanding and memorizing Arabic learning materials.

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