

A Multimodal Analysis of Selected American and Egyptian Coronavirus Cartoons

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Abstract

Multimodal communication has recently become popular. Multimodality is concerned with the way the different semiotic modes (e.g. color, gesture, gaze, etc.) are combined with a sociocultural domain to create a semiotic product or event (Kress and van Leeuwen, 2001). A visual mode can be found in multimodal texts such as magazines, newspapers, advertisements, textbooks, cartoons, etc. Cartoons, as multimodal texts, are found in newspapers, social networks, and magazines. Data for the study comprise six purposively selected online Coronavirus cartoons (3 Egyptian and 3 American cartoons). The present study aims to analyze the verbal and the non-verbal modes that contribute to meaning making in the selected Egyptian and American Coronavirus cartoons. The researcher adopts Kress and van Leeuwen's (2006) theory of social semiotics to analyze the data under investigation on the verbal and the non-verbal levels. Kress and van Leeuwen's theory is based on Halliday's (1985) Systemic Functional Grammar (SFG) and its three metafunctions. One conclusion confirms that the visual modes, along with verbal ones, used in the Egyptian and American cartoons about the coronavirus enable the cartoon viewers to visualize the epidemiological status and increase public awareness as regards the COVID-19 pandemic. Moreover, one can confirm that understanding the three metafunctions in visual social semiotic approach is essential for a cartoon viewer to fully grasp meanings conveyed in the coronavirus cartoons in the selected data.

Key words: Multimodality, Egyptian Cartoons, American Cartoons, and Visual Social Semiotics.

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1.0 Introduction

Cartoons, a journalistic genre, are used as a medium through which the American and Egyptian cartoonists fight against Covid-19 and express their views on Coronavirus pandemic to increase the public awareness on the Coronavirus threat. Cartoons, as multimodal texts, involve verbal and non-verbal modes, integrated to construct meanings, in the American and Egyptian cartoons dealing with COVID-19. However, the visual cues in both cases are not always explicit; that's why, the cartoons readers may provide different inferences for the cartoons. The present study aims to analyze the verbal and the non-verbal modes that contribute to the meaning making in the selected Egyptian and American cartoons in terms of Kress and van Leeuwen's (2006) theory of visual social semiotics, reveal which types of processes, in Kress and van Leeuwen's (2006) theory, are prevalent in the data under investigation, and reveal the organizational patterns the cartoonists adopt for the meaning-making process.

1.1 Objectives of the Study

The present study has the following aims:

1.To analyze the verbal and the non-verbal modes that contribute to the meaning making in the selected Egyptian and American cartoons in terms of Kress and van Leeuwen's (2006) visual social semiotics.

2.To reveal which types of processes, in Kress and van Leeuwen's (2006) theory, are prevalent in the data under

investigation, and reveal the organizational patterns the cartoonists adopt for the meaning-making process.

1.2 Research Questions

1. How does the application of the three metafunctions by Kress and van Leeuwen (2006) convey commonalities and differences between the American and Egyptian cartoons in the selected Coronavirus cartoons?
2. How does the application of the three metafunctions by Kress and van Leeuwen (2006) convey the implicit messages inherent in the cartoons under investigation?

1.3 Methodology

1.3.1 Data Collection

Data for the study comprise six Egyptian and American Coronavirus cartoons purposively selected from the following websites: <https://www.almasryalyoum.com>, <https://tomatocartoon.com>, <https://www.usnews.com>, <https://www.usatoday.com>, and <https://www.almasryalyoum.com>.

1.3.2 Research Design

As for the research design, the study uses an explanatory sequential research design, i.e. a qualitative-quantitative design. The qualitative analysis relies on the visual social semiotics by Kress and Van Leeuwen (2006). Secondly, the quantitative analysis employs Mann-Whitney U and Kruskal-Wallis to compare between American Cartoons and Egyptian Cartoons published during the vaccine distribution.

1.3.3 Rationale for Data Selection and Classification

As for the criteria used for data selection, the data selected for the analysis of are COVID-19 cartoons published during the vaccine distribution in the Egyptian and American societies. The discovery of vaccine against COVID-19 was considered a turning point in dealing with the pandemic. Therefore, the researcher tends to analyze the cartoons published during the vaccination period. In spite of the importance of the vaccine development, people's reactions to getting the vaccination are different, like anti-vaccination campaign cartoons and pro-vaccination cartoons. The researcher selects cartoons reflecting such various views about the vaccine.

2. Theoretical framework

2.1 Kress and van Leeuwen's (2006) Visual Social Semiotics

2.1.1. Interpretative Metafunctions of Visual Semiotics

Gunther Kress and Theo van Leeuwen (1996) have extended Halliday's (1985) Systemic Functional Grammar idea of metafunctions, dedicated to the study of language, to images analysis. To illustrate, Kress and van Leeuwen (1996) argue that the visual modes can also fulfill three metafunctions: representational meaning, interactive meaning and compositional meaning. Their grammar is called Visual Grammar. The following subsections briefly illustrate these three metafunctions.

I. Representational Metafunction

Kress and van Leeuwen (1996) assume that the representational metafunction is parallel to the ideational metafunction in Halliday's SFG because it may visually express

specific experience or represent actions or events, to which Kress and van Leeuwen refer as participants, and it reveals the internal relationship between the participants in an image. For Kress and van Leeuwen (2006), there are two types of participants in any semiotic act: interactive participants and represented participants (Kress & van Leeuwen , 2006). On the one hand, interactive participants refer to both the image producer and viewer or the speaker and listener. On the other hand, (represented participants) are "the participants about whom or which we are speaking or writing or producing images" (Kress & van Leeuwen , 2006, p.48). Through Halliday's (1985) functional semiotic theory, we can identify both the image participants and their semantic functions (Kress & van Leeuwen, 2006, p.49). The terms (Actor, Goal, and Transaction) are used in functional linguistics; such terms are semantic functional terms that enable us to identify the roles played by participants and the grammatical structures that constitute the meaning of the picture (Kress & van Leeuwen, 2006, p.50). Diagrams as well as naturalistic images can be analyzed into participants and processes, and internal relation between represented participants is revealed through two patterns: narrative or conceptual structures. The existence of a vector can help in distinguishing the two processes. The representational metafunction falls into two basic structures: narrative and conceptual processes.

1. Narrative Metafunction

Narrative structures in images "allow viewers to create a story about the REPRESENTED PARTICIPANTS because the

images include vectors of motion" (Harrison, 2003, p.51). Narrative processes are characterized by the use of vectors that come from one of the represented participants, and the existence of a vector is an indicator that the participants are doing things to each other (Kress & van Leeuwen, 2006). Arrows, pointing fingers, extended arms, and limbs are examples of vectors existing in images. According to Kress and van Leeuwen (2006, p.63), narrative structures are carried out, "on the basis of the kinds of vector and the number and kind of participants involved" through "action processes" or "reactional processes".

A. Action Process

"The actor is the participant from which the vector emanates, or which itself, in whole or part, forms the vector. In images they are often also the most salient participants, through size, place, in the composition" (Kress and van Leeuwen, 2006, p.63). There are two categories of action process: non-transactional action process and transactional action process. On the one hand, in a non-transactional action process, we have an actor, but there is no goal; therefore, the action is directed towards nothing. It is quite similar to the intransitive verb in language. On the other hand, the transactional process occurs when an image contains two participants: actor and goal. For Kress and van Leeuwen (2006), the goal is "the participant at whom or which the vector is directed" (p.64). The transactional action process is equivalent to the transitive verb in the language.

B. Reactional Process

Reactional ones-as Kress and van Leeuwen (2006) assume-are encoded by eyelines or the direction of glance of one of the represented participants (Kress & van Leeuwen, 2006). In the reactional process, we have the terms 'Reactors' and 'Phenomena'. The reactor is the represented participant that looks and must be a human or a human-like animal (i.e. a creature with visible eyes). The Phenomenon is "formed by another participant" and is defined as "the participant at whom or which the reactor is looking" (Kress & van Leeuwen, 2006, p.67). In the non- transactional reactional process, there is no phenomenon while in the transactional reactional process, the phenomenon exists.

Kress and van Leeuwen (2006) assume that there are three types of narrative processes in which a special vector exists: conversion process, speech and mental process, and verbal process. As for conversion, it is defined as "a process in which a participant, the Relay, is the Goal of one action and the Actor of another. This involves a change of state in the participant" (Kress & van Leeuwen, 2006, p.75). Conversion process is commonly used in natural events representation or sometimes in human beings' interaction when represented as natural. According to Kress and van Leeuwen (2006), in speech and mental processes, a thought balloon (Phenomenon) is connected to a represented participant (Sensor) through a vector; such a process occurs in automatic telling machines screens, comic strips, and quotes in school textbooks. The same occurs in verbal

process; a dialogue (an utterance) is connected to a participant (Sayer) by a vector.

2. Conceptual Process

Secondly, conceptual processes do not involve any vectors, but rather "represented participants tend to be grouped together to present viewers with the "concept" of who or what they represent" (Harrison, 2003, p.51). According to Kress and van Leeuwen (2006), the conceptual structures include three sub-processes: classificational, analytical, and symbolic processes.

First of all, as for the classificational process (kind of), it "relate(s) participants to each other in terms of a kind of relation, a taxonomy: at least one set of participants will play the role of Subordinates with respect to at least one other participant, the Superordinate" (Kress & van Leeuwen, 2006, p.79). According to Kress and van Leeuwen (2006), there are two types of taxonomy within the classificational process: covert taxonomy and overt taxonomy. In covert taxonomy, the Superordinate is not explicitly shown but inferred either from the similarities between the Subordinates or from the accompanying verbal text. In covert taxonomy the subordinates, who have the same size or the same class or group, are of equal distance with neutral background. However, in the case of 'overt taxonomy', in which the Superordinate and Subordinates exist, the name of the Superordinate is explicitly stated (verbally or visually) and put above in a tree structure and the subordinates are below. Additionally, "overt taxonomies are "chained" in the sense that an intermediate

participant becomes Superordinate to one participant and subordinate to another.

Secondly, concerning the analytical process (part of), represented participants may have a part-whole relationship. In an analytical process, there are two types of participants: a 'carrier' (the whole) and the 'possessive attributes' (its parts) (Kress & van Leeuwen, 2006, p.87). In a specific context, the image producer focuses on specific attributes of the carrier while ignoring others. Examples of photographs involving analytical processes are ads, fashion shots, politicians, school textbooks, etc. (Kress & van Leeuwen, 2006, p.89).

Thirdly, "the symbolic processes are about what a participant means or is" (Kress & van Leeuwen, 2006, p.105). The symbolic process lies in two subcategories: symbolic attributive and symbolic suggestive processes. On the one hand, the symbolic attributive involves two participants: the Carrier and the Symbolic Attribute that forms the identity of the Carrier (Kress & van Leeuwen, 2006). To represent the meaning or identity of the Carrier, the Symbolic Attributes are "made salient in the representation in one way or another; for instance, by being placed in the foreground, through exaggerated size", and they are usually "associated with symbolic values" (Kress & van Leeuwen, 2006, p.105). As for the human participants, in the symbolic attributive process, they are not involved in any action; they just "display themselves to the viewer"(Kress & van Leeuwen, 2006, p.106). On the other hand, the Symbolic Suggestive Process has only one participant- the Carrier.

In the Symbolic Suggestive Process, meaning and identity are derived from the qualities of the Carrier, whereas meaning and identity are granted to the Carrier in the Symbolic Attributive Process (Kress & van Leeuwen, 2006).

II. Interactive Metafunction

It is parallel to the interpersonal metafunction in Halliday's Systemic Functional Grammar. For Kress and van Leeuwen (2006, pp.114-116), images involve three kinds of relations: between the represented participants (people, places, and entities depicted in images), between interactive participants and represented participants, and between interactive participants (the image producer and viewers). Three dimensions determine the interactive meanings in images: image Act and gaze (demand or offer), social distance and intimacy, and perspective (horizontal or vertical).

1. Image Act and Gaze

According to Kress and van Leeuwen (2006), "there is a fundamental difference between pictures from which represented participants look directly at the viewer's eyes, and pictures in which this is not the case" (p.117). To illustrate, images in which the represented participant looks directly at the viewer's eyes are called "demand", and the represented participant's direct gaze at the viewer creates some sort of engagement/relation between both the represented participant and the viewer. Such a relation is signified either by the represented participant's facial expression (e.g. the represented participant's smile) or his/her gestures as a represented participant's hand pointing at the viewer. A demand picture,

according to Kress and van Leeuwen (2006), has two functions: "it creates a visual form of direct address. It acknowledges the viewers explicitly, addressing them with visual 'you'. In the second place it constitutes an 'image act'" (p.117). It is called a demand because the image is used by its creator to affect the viewer, and the viewer is supposed to enter into a relationship with the participant. Demand is found in TV news readings and magazine covers.

On the contrary, when the represented participant doesn't look directly at the viewer, this is called an 'offer' image. "Offer" occurs when the represented participant's looks are directed towards something in the picture, so the represented participants become "items of information, objects of contemplation" (Kress & van Leeuwen, 2006, p.119). We find offer images in films, drama, and scientific illustration. In these genres, the represented participant pretends that he is not looked at. To conclude, choosing a picture to be an offer or a demand must be made to make people either detached from the viewer or engaged with him.

2. Size of Frame and Social Distance

"In Everyday interaction, social relations determine the distance (literally and figuratively) we keep from one another" (Kress & van Leeuwen, 2006, p.124). Similarly, in images, size of the frame, whether the represented participants are close or far from the viewer, is the second element that suggests the relationship between the represented participants and image viewers. For instance, the intimate distance shows only the represented participant's head and face while the close personal distance includes

head and shoulders. At a far personal distance, we see the represented participant's body from the waist up. At a close social distance, we see the whole figure. In images with far social distance, the whole figure emerges with a space around it while public distance suggests that the image includes several people.

3. Perspective

The Perspective selection of an angle for viewing represented participants in an image is the third way that determines the relation between the represented participants and the viewers (Kress & van Leeuwen, 2006). Therefore, selecting angles in images is often subjective. It expresses subjective attitudes. In Western culture, there are two kinds of images: subjective and objective (Kress & van Leeuwen, 2006). In subjective images, the viewer is shown the represented participants from only one particular view while the objective image reveals everything about the represented participants.

A. Involvement & horizontal angle: oblique and frontal

"The horizontal angle encodes whether or not the image-producer (and hence, willy-nilly, the viewer) is 'involved' with the represented participants or not" (Kress & van Leeuwen, 2006, p.136). There are two angles through which an image can be horizontally presented: oblique and frontal. The oblique angle suggests viewer's detachment with the represented participants while frontal angle suggests the viewer's involvement with the represented participants.

B. Power & vertical angle: high and low angle

"A high angle, it is said, makes the subject look small and insignificant, a low angle makes it look imposing and awesome" (Kress & van Leeuwen, 2006, p.140). That's to say, a high-angle image presents the represented participant as having power over the viewer while the low-angle image suggests that the image viewer has power over the represented participant.

III. Compositional Metafunction

Compositional metafunction is parallel to the textual metafunction in Halliday's SFG. It resembles syntax in verbal communication. Kress and van Leeuwen (2006) defines it as "the way in which the representational and interactive elements are made to relate to each other, the way they are integrated in a meaningful whole" p.176). Such a function is realized through three systems: information value, salience, and framing.

1. Information Value

First of all, as regards information value, it is concerned with "the placement of the elements endows them with specific informational values attached to the various zones of the image: left and right, top and bottom, Centre and Margin"(Kress & van Leeuwen, 2006, p.177). represented participants placed on the left are "Given", information known by the reader, while those that are put on the right are referred to as "New" to which the viewer should pay his/her attention. Another element in the information value of an image is the top/bottom position of the represented participants. If the represented participants are at the top, they are encoded to be

"Ideal", and the represented participants placed at the bottom have the value of being "Real" (Kress & van Leeuwen , 2006); an idealized component is marked as the most salient part in the visual while the Real gives down-to-earth or practical information. The Ideal and Real, for Kress and van Leeuwen (2006) can play an important role in structuring image-text relations. To elaborate, if the upper section of a visual composition contains a verbal text and the lower part has an image, then the verbal text plays the major role in conveying meaning and the image is secondary to it and vice versa. The third element in the information value of an image is the Centre and Margins. "For something to be presented as Centre means that it is presented as the nucleus of the information to which all the other elements are in some sense subservient. The margins are these ancillary, dependent elements" (Kress & van Leeuwen, 2006, p.196).

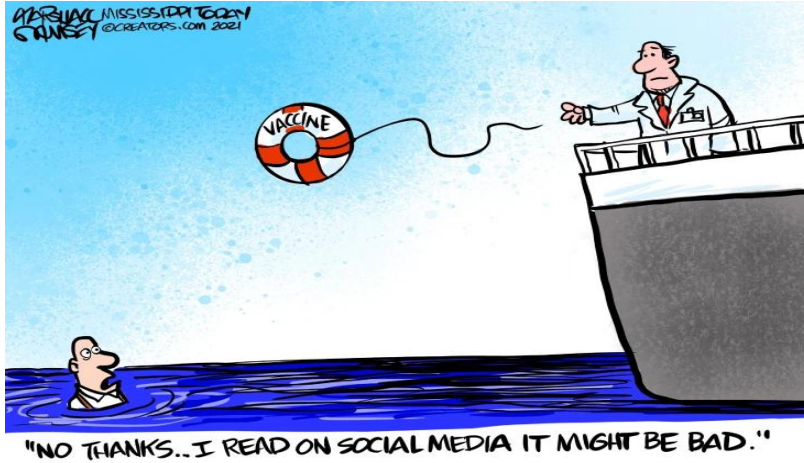
Secondly, concerning salience, as Harrison (2003) claims, it is "the ability of a represented participant to capture the viewer's attention" (p.57). Salience includes elements such as the size of the represented participants, the color used for their depiction, and their foreground/background position.

Finally, for Kress and van Leeuwen (2006), framing refers to the existence or absence of boundaries among represented participants in both spatially integrated texts and temporally integrated texts. Framing is realized in spatially integrated texts by the existence of rhythm. Similarly, in temporally integrated texts, framing is realized by presenting represented participants as either

connected or separate; "the absence of framing stresses group identity; its presence signifies individuality and differentiation" (Kress & van Leeuwen, 2006, p.203).

3. Analysis of the data on the multimodal level

A. Qualitative Analysis of the American data



Cartoon no.1 (U.S. Covid vaccine skeptics, *The Week*)

1. The Representational Meaning

As for the representational meaning of the cartoon, there is an action process created by the use of vectors such as a life jacket and the doctor's extended hand. So the doctor is the Actor as he throws the life jacket/ vaccine which emanates from him to save the man(Goal) who is about to drown. The suggested setting of the cartoon under investigation is on the sea in which the citizen is about to drown and the doctor stands on the deck of a ship. The man who is about to drown is also a Sayer of a speech process in which he tells the doctor offering him the vaccine that the vaccine might be bad as he read this on social media.

Moreover, there is a conceptual meaning in the cartoon as there is a symbolic attributive process with the doctor- the Carrier- and the white coat, lifejacket/vaccine and the ship in which he is standing are the Attributes.

2. The interactive Metafunction

A. Image Gaze & Act

The doctor does not look directly at the cartoon viewers, but his eye line is directed towards the man on the sea, so it is a gaze of offer; it offers the viewers the chance to see how the doctor cares about saving the man's life by urging him to take the vaccination. As a result, the represented participants become objects of contemplation.

B. Social Distance & Intimacy

As for the man, there is an intimate distance showing only his head and face to indicate that he is about to drown unless he is vaccinated. On the contrary, as for the doctor, he is shown at the far personal distance as we can see his body from the waist up. That's to say, the viewer can see his white coat and then identify his identity.

A. Perspective

The size of frame is a medium-shot, allowing the cartoon readers to see the doctor's gaze of worry about the man's life, his facial expressions, and his extended arm. Moreover, the cartoon has a horizontal angle that shows the doctor, the ship, the doctor's extended arm, the vaccine and the man on the sea. It is noticed here that there is no intimate distance between the doctor and the man, so

there is lack of understanding between both of them as each has different background about the vaccine.

3. The Compositional Metafunction

A. Information Value & Salience

As far as the information value is concerned the man on the left represents the Given (information that the viewer is familiar with) while the doctor in the right side of the cartoon is the New information, a solution to the man's problem of drowning. Concerning the salience, the doctor's size is large and he is higher than the man, so he captures the viewer's attention and thus is considered the most salient represented participant in cartoon no.1. In addition, being in the middle position of the cartoon, the vaccine/life jacket thrown by the doctor is considered the Centre to stress the importance of getting the coronavirus vaccination to save people's lives. That's why, it is considered the nucleus information to which the surrounding represented participants are secondary, i.e. Margins.



Cartoon no. 2. (Anti-vaxxers and Covid-19 deaths, *U.S. News*)

1. The Representational Metafunction

A man on the left of cartoon no.2, wearing a T-shirt on which the slogan of anti-vaccination campaign is printed, is engaged in a non-transactional actional process of raising his hand up as a sign of unity. On the right of the cartoon, a doctor at a morgue is an Actor in a transactional actional process as he covers the face of a dead man (Goal) using a blanket (Vector). We notice here that the dead man, whom the doctor covers his face, is the same anti-vaxxer on the left of the cartoon under investigation. Moreover, there is another doctor who holds a pen and a notebook in which he registers the total number of anti-vaxxers coronavirus deaths. Therefore, he also performs an actional process in which the pen is the Vector and the notebook is the Goal.

Both of the anti-vaxxer and the doctor are involved in a speech process in which arrow- like vectors connect Sayers (the anti-vaxxer/ the doctor) with their utterances/dialogue balloons. On one hand, the anti-vaxxer shouts asking his fellows to be united and counted in order to stop the vaccination process and the restrictions imposed by the government. On the other hand, the doctor declares the number of Covid-19 deaths of the anti-vaxxers.

As regards the conceptual meaning in cartoon no.2, there is an analytical process because the hand wearing medical gloves refers to the doctor who writes down the details of the deaths of covid-19, i.e. part-whole structure. In addition, the cartoon shows another analytical process with part- whole structure in which the doctor is the Carrier and his blue suit, his head cap, his sunglasses, his medical gloves, and his medical mask are Possessive Attributes. In addition, the morgue bed is a symbol of death. The no syringe sign is a symbol of the anti-vaccination campaign.

2. The Interactive Metafunction

A. Image Act & Gaze

The cartoon represented participants don't look directly at the cartoon viewer, so it is an offer image; the viewer is not expected to enter into any kind of relation with the represented participants, rather to look closely at the catastrophe occurred to the anti-vaxxer who refused the coronavirus vaccine.

B. Social Distancing &Intimacy

Both of the doctor and the dead are shown at a far personal distance as we can see them from the waist up to make the cartoon

identify the identities of the cartoon participants. In contrast, the anti-vaxxer is shown from a far social distance as we see his whole huge strong body with a space around him.

C. Perspective

As for the horizontal angle, cartoon no.2 is depicted from a frontal angle inviting the cartoon viewers to get involved in the actions of the represented participants. Concerning the vertical angle, cartoon no.2 is depicted from a medium angle to indicate equal power between the target viewer and the represented participants.

3. The Compositional Metafunction

As for the information value in the cartoon under investigation, the anti-vaxxer is positioned on the left of the cartoon, so he is the Given element as the viewer has previous knowledge about the anti-vaccination campaign. The doctor at a morgue is positioned in the right, so he is the New element as the cartoon surprisingly poses the problem of the anti-vaxxers who die of covid-19 pandemic and still refuse to get vaccinated. The dead anti-vaxxer is almost put in the center of cartoon no.2; therefore, he is the nucleus of information in the cartoon under investigation. As far as salience in cartoon no.2 is concerned, the anti-vaxxer in the left part of the cartoon is large in size implying his physical strength and power; however, he is shown dead at a morgue in the right part of the cartoon, so the idea of his power is destroyed.



Cartoon no.3 (Enthusiasm for getting coronavirus vaccine, USA Today)

1. The Representational Metafunction

Starting with the representational meaning of cartoon no.3, it is noteworthy to mention that the gentleman/fiancé is the only Actor engaged in a transactional actional process in which he asks for his beloved's hand (here the vaccine syringe) in marriage. The vaccine syringe is the Goal while the red flowers (which create celebration and romance) and the red velvet ring box, which the young man carries in his hands as a sort of celebrating marriage proposal, are the Vectors.

As for the conceptual dimension of the representational meaning of cartoon no.3, the cartoon shows one analytical and one symbolic process. Starting with the analytical process, the young man/bride groom is the Carrier with significant Possessive Attributes that refer to the event of marriage proposal, i.e. his semi-formal blue

shirt, his navy blue pants, his red tie, his black dress shoes, the red flowers, and the red velvet ring. Moving to the symbolic process, the syringe is a symbol of COVID-19 vaccination while the red flowers symbolize romance and celebration and the red velvet is symbol of love. Moreover, the two surgical masks symbolize the young man's awareness and feeling of the crisis.

2. The Interactive Metafunction

A. Image Act & Gaze

Cartoon no.3 is an offer image as the only represented participant gives the cartoon viewer an indirect gaze. What is offered is the confirmation that the young man strongly wishes to get the vaccination.

A. Social Distancing & Intimacy

The young man appears in a far social distance and is shown with a space around him in order that the viewer can identify that the young man as a fiancé engaged in a proposal event.

B. Perspective

The cartoon under investigation is shown in a frontal angle in order to get the cartoon viewer involved in the cartoon.

3. The Compositional Metafunction

A. Information Value

As for the information value in cartoon no.3, the young man in the left is the Given information as the cartoon viewer is familiar with the marriage proposal arrangements. The coronavirus vaccination syringe in the right is the New information representing the solution to the coronavirus pandemic.

B. Salience

Compared to the young man's size, the COVID-19 vaccination syringe is large to indicate its importance for ending the pandemic that threatens people's lives.

B. Qualitative Analysis of the Egyptian Coronavirus Cartoons and Discussion



Cartoon no.4 (vaccination, *Al-Masry Al-Youm*)

1. The Representational Metafunction

The suggested setting of the cartoon under investigation is perhaps a hospital or a vaccination room in which there are two represented participants: a doctor and a man. As for the representational meaning of the cartoon, there is an action process created by the use of vectors such as the doctor's back and his hand. Therefore, the doctor is the Actor as he is pushing the man (the Goal) to enter the vaccination room, yet the man refuses to enter the

vaccination room by strongly clinging to the door that is shattered by his repeated attempts not to enter the room. Both represented participants are Sayers in Speech processes in which both of them produce utterances. There is an analytical process in which the doctor is a carrier of a Possessive Attribute, i.e. his blue suit.

2. The Interactive Metafunction

A. Image Act and Gaze:

Regarding the interactive metafunction, both the doctor and the citizen don't look directly at the cartoon viewers, so it is a gaze of offer; it offers the viewers the chance to see how the doctor cares about saving the man's life by urging him to take the coronavirus shot. As a result, the represented participants become objects of contemplation.

B. Social Distance

As for the man, there is a far social distance as we can see the whole figures of the man and the doctor with space around them to visualize how the doctor is trying to convince the man by force to get vaccinated.

C. Perspective

The size of frame is a medium and frontal angle, allowing the cartoon readers to see the doctor's doing his best to urge the man to enter the hospital, and this is reflected in his frown face and his broken tooth, how the man is trying to stop the doctor by clinging to the door, and this is clear in their facial expressions and the broken door. It is noticed here that there is an intimate distance between the

doctor and the man, and this reflects the clash of opinions and misunderstanding between them as regards the coronavirus vaccine.

3. The Compositional Metafunction

As far as the information value is concerned, the doctor in the left represents the Given information; this reflects the great efforts the doctors exert to convince people of the vaccine's importance. On the contrary, the citizen on the right is presented as the New information; this is an indication of the strength of anti-vaccine campaign. The citizen is located nearly the center of the cartoon, so he is considered the Centre while other represented participants are Margins. Concerning the salience in the cartoon under investigation, the man's size is large and he is higher than the doctor, so he captures the viewer's attention as regards the anti-vaxxers hesitation and skepticism in spite of the high number of death cases because of the Omicron variant.



Cartoon no.5 (Anti-vaxxers, *Tomato Cartoon*)

1. The Representational Metafunction

Starting with the narrative aspect of the representational meaning of cartoon no.5, there are two healthcare workers (Actors) carrying a coronavirus patient (Goal) on a stretcher (Vector) for receiving medical care at a hospital. The patient is an Actor of a transactional actional process of raising the no-syringe sign (Goal) with his right hand, a vector.

As for the symbolic dimension of the representational meaning, cartoon no.5 shows one analytical and one symbolic process. The two health care workers represent the Carrier with a significant Possessive Attribute, i.e. their white coats which make viewers identify their identities. The no-syringe sign is a symbol of anti-vaccination campaign to which the patient belongs.

2. The Interactive Metafunction

A. Image Act and Gaze:

All represented participants don't look directly at the cartoon viewer, so it is an offer image; they become objects of contemplation.

B. Social Distance& Intimacy :

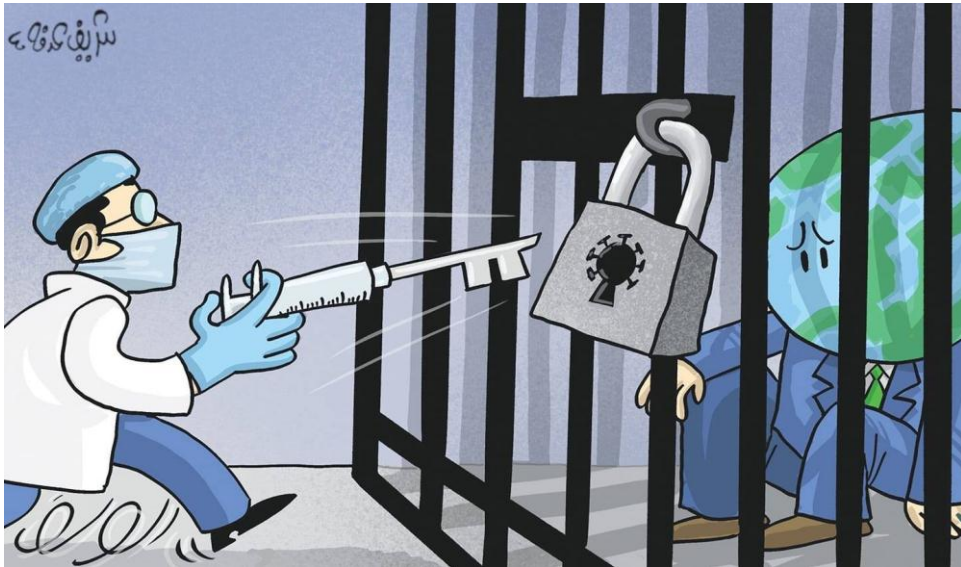
The represented participants are shown at a public distance in order to recognize the identities of the represented participants and carefully watch out their actions.

C. Perspective

Cartoon no.5 is shown from an eye-level angle so as to objectively display the event without any initiative of forging any relationship with the cartoon viewer.

3. The Compositional Metafunction

As regards information value in the cartoon under investigation, the COVID-19 patient/anti-vaxxer carrying the no-vaccine sign is located in the center of cartoon no.5, so he is considered the Centre, i.e. the nucleus of information to which the other represented participants are Margins. In the cartoon under investigation, there is a problem that needs contemplation or a solution. To illustrate, although the anti-vaxxer suffers from coronavirus epidemic and is carried to receive medical treatment, he still refuses to get vaccinated despite its medical safety, effectiveness, and lifesaving. As for salience in cartoon no.5, the anti-vaxxer carried on a stretcher is the most salient because he occupies most of the cartoon's size.



(Cartoon no.6 , Coronavirus vaccine and the world, *Tomato Cartoon*).

1. The Representational Metafunction

The analysis of the narrative meaning of cartoon no.6 shows that the doctor is an Actor of a transactional actional process using the coronavirus vaccine syringe (Vector) to open the lock of a prison (Goal) in order that the world can go out of that prison. The Globe (personification of a prisoner) is a reactor of a non-transactional reactional process; the globe seems to be sad of the coronavirus pandemic which obliged the whole world to be locked, i.e. the coronavirus lockdown.

As for the conceptual process, there is an analytical process and a symbolic one. The doctor is the Carrier in an analytical process with important Possessive Attributes, such as his white coat, his surgical face mask, sunglasses, his blue suit, and his head cap. The Syringe is a symbol of the coronavirus vaccine, and the door lock and the prison bars symbolize the lockdown that is caused by the epidemic.

A. The Interactive Metafunction

A. Image Act& Gaze

Cartoon no.6 is considered an offer image as the cartoon represented participants look away from the cartoon viewers.

B. Social Distance& Intimacy:

Both the doctor and the prisoner are depicted at a far social distance for the viewer to contemplate.

C. Perspective

As for the vertical angle, the cartoon has a frontal angle implying a symbolic relation of equality between the cartoon viewer and the represented participants. As regards the horizontal angle,

cartoon no.6 is shown in an eye-level angle to objectively introduce the action.

B. The Compositional Metafunction

A. Information value

The doctor is placed at the left position, so he is the presented as the Given element, i.e. something familiar to the cartoon viewer. The prisoner is placed in the right position to be the New element as an indication of a problem that needs a solution. Being in the middle position of the cartoon, the COVID-19 vaccine syringe/the key is considered the Centre while the other represented participants are Margins. To illustrate, the vaccine shot is the nucleus information to which the cartoon viewer should pay attention.

B. Salience

The coronavirus vaccine syringe/key is large in size; therefore, it is the most salient element in cartoon no.6. Although the prison lock is large, the key fits the size of the lock and will open. This indicates that the vaccine will solve the problem that threatens the world (i.e. the coronavirus pandemic) and will end the lockdown soon.

3.3 Quantitative Analysis of the Selected Data

I. Descriptive Statistics of Representational Metafunction in the American and Egyptian cartoons:

Items:	American	Egyptian
Actional Process	1.00	1.00
Reactional process	0.00	0.33
Speech Process	0.67	0.00
Total of Narrative	1.67	1.33

Classificatory	0.00	0.00
Analytical	0.33	1.00
Symbolic	1.00	0.67
Total of Conceptual	1.33	1.67
Total of Representational Metafunction	3.00	3.00

(Table 1, Descriptive Statistics of Representational Metafunction in the American and Egyptian cartoons)

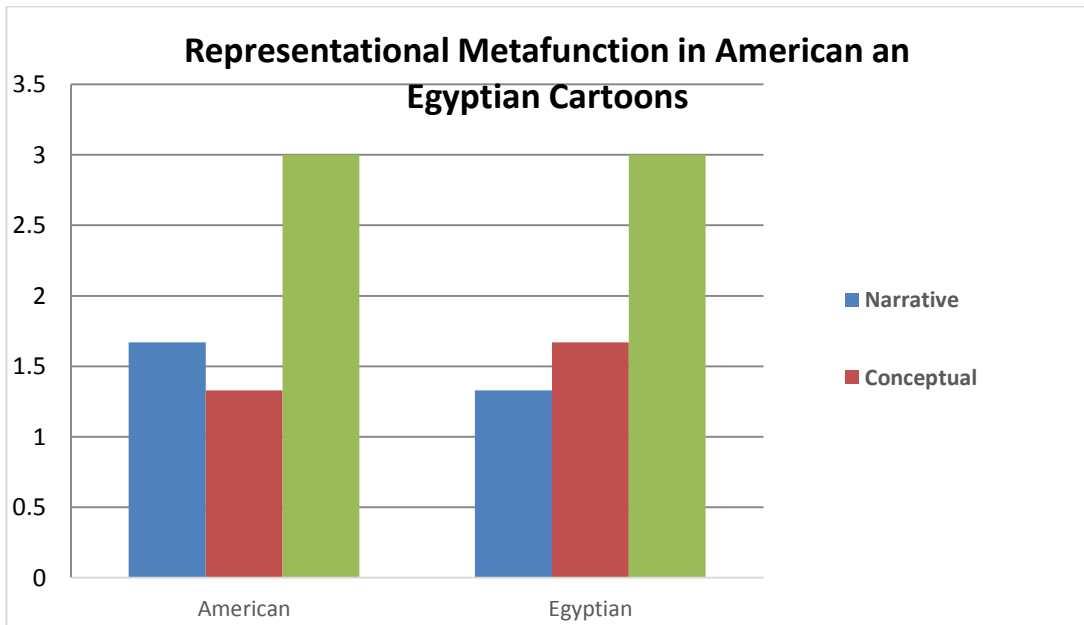


Figure 1, Descriptive Statistics of Representational Metafunction in the American and Egyptian cartoons

As figure 1 shows, the average of the representational metafunction in the American and Egyptian cartoons is equal in the second stage.

A. Representational Metafunction

The representational metafunction proves to reveal the internal relations among represented participants and the actions

they perform through the use of narrative and conceptual processes. Each dimension in the representational metafunction is adequately illustrated by examples of Egyptian and American cartoons in the second period:

1. Narrative Process

Regarding the narrative process, it can be divided into three sub-processes: actional, reactional and speech and mental processes. First, as for the narrative process used in the cartoons during the vaccine distribution period, actional process is used in all the Egyptian and American cartoons (no. 1, no.2, no.3, no.4, no.5, and no.6) while reactional process is absent from the cartoons in the second period except for cartoon no. 6. The use of actional processes in all the cartoons during the vaccination period refers to the actions the represented participants perform either to get the vaccine (as in cartoons no.3, no.4, and no.6), or to refuse it as in cartoons no.1, no.2, and no.5. However, it is noticed that there is a lack of using the reactional process except in cartoon no.6 in which the globe gives the doctor a sad look expressing its bad condition because of the pandemic. However, speech processes are only used in the American cartoons no.1 and no.2 in which both anti-vaxxers verbally express their view points about the coronavirus vaccine while other cartoons lack the existence of speech processes. Therefore, an important conclusion is that the cartoon viewer- via actional processes-is visually shown the represented participants engaged in performing actions of supporting or opposing the vaccine.

2. Conceptual process

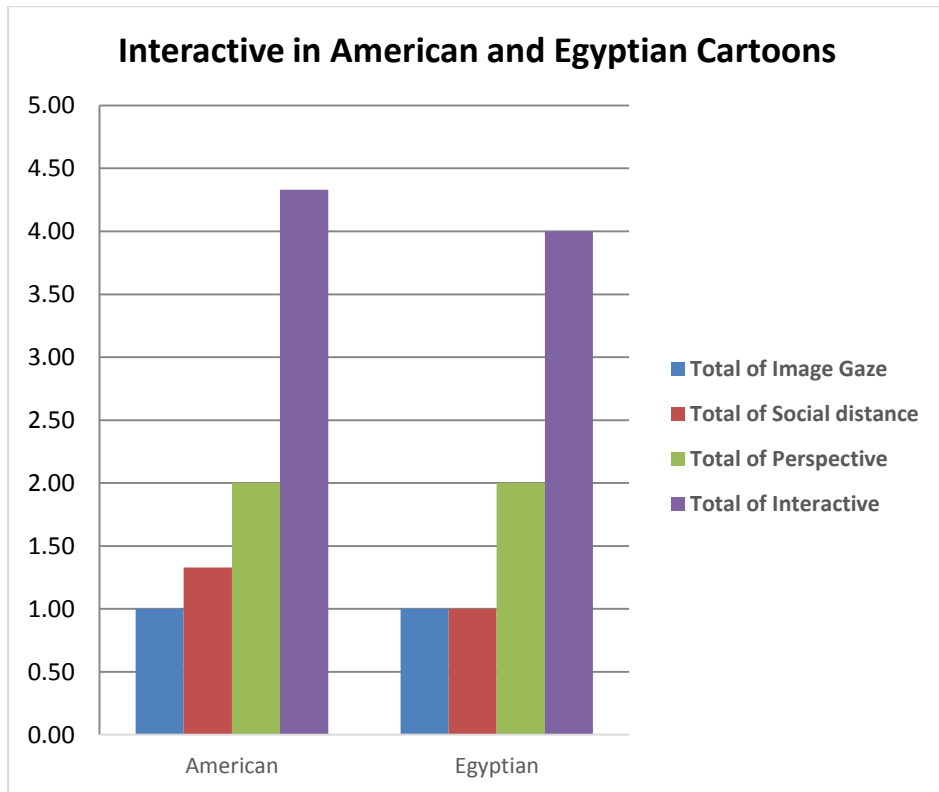
The conceptual process helps the reader identify the represented participants in terms of taxonomy, structure, or meaning. There are three categories of conceptual processes: classificational, analytical, and symbolic. First of all, it is noteworthy that the cartoons in the second period lack the use of classificational process in which the represented participants are related to each other using taxonomy- because there was no superordinate-subordinates relation between represented participants, and thus there is a relationship of equality between the represented participants. Secondly, while the analytical process, which relates represented participants in a part-whole structure, is used in only one American cartoon (no.2), it is utilized in all the Egyptian cartoons in the second period (no.4, no.5, and no. 6). Analytical process shows the Possessive Attributes that enable the reader identify the identity of the represented participant (the Carrier of these attributes). For example, in cartoon no.6, the doctor is the Carrier in an analytical process with important Possessive Attributes, such as his white coat, his surgical face mask, sunglasses, his blue suit, and his head cap.

Thirdly, the symbolic process, that shows either the meaning of the represented participant or what such a participant symbolizes, is used in all the American cartoons in the second period (no.1, no.2, and no.3) while it is used in the Egyptian cartoons (no.5 and no.6). Therefore, the symbolic process is used in 83% of the cartoons during the vaccination period (as shown in the statistical analysis).

II. Descriptive Statistics of Interactive:

Cartoon	Items:										Total of Interactive
	Demand	Offer	Total of Image Gaze	Close shot	Medium shot	Long shot	Total of Social distance	Horizontal angle	Vertical angle	Perspective	
American	0	1	1	0.67	0.67	0	1.33	1	1	2	4.33
Egyptian	0	1	1	0	1	0	1	1	1	2	4

(Table 2, Descriptive Statistics of Interactive Metafunction)



(Figure 2, Descriptive Statistics of Interactive Metafunction)

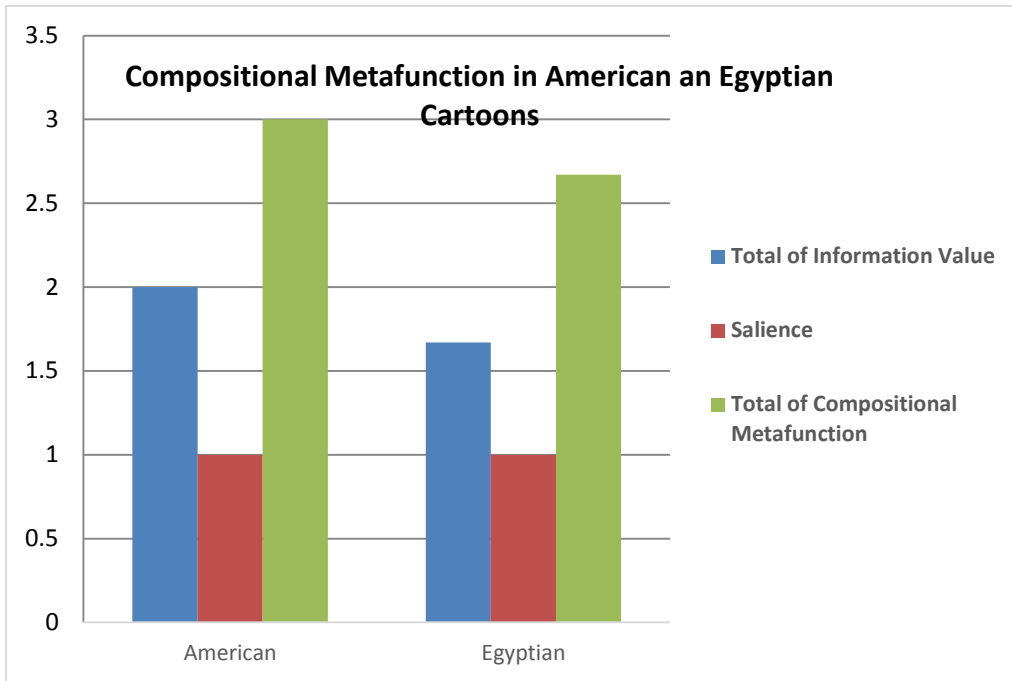
As figure 2 shows, the interactive metafunction in the American cartoons is slightly higher than the Egyptian ones.

III. Descriptive Statistics of Compositional Metafunction:

Items:	The first period/ before the vaccine		The second period/ during the vaccination		The third period/ after the vaccine		Total	
	American	Egyptian	American	Egyptian	American	Egyptian	American	Egyptian
Left/Right alignment	1.00	1.00	1.00	0.67	0.67	1.00	0.89	0.89
Top/Bottom alignment	0.00	0.33	0.33	0.00	0.67	0.00	0.33	0.11
Centre/Margin	1.00	0.67	0.67	1.00	1.00	0.33	0.89	0.67
Total of Information Value	2.00	2.00	2.00	1.67	2.33	1.33	2.11	1.67
Saliency	0.00	0.33	1.00	1.00	1.00	0.67	0.67	0.67
Total of Compositional Metafunction	2.00	2.33	3.00	2.67	3.33	2.00	2.78	2.33

(Table 3, Descriptive Statistics of Compositional Metafunction)

(Figure 3, Compositional Metafunction in American and Egyptian Cartoons)



As figure 3 shows, the American cartoons are greater than the Egyptian ones in using tools of the compositional metafunction: information value and saliency.

1. Information Value

First of all, as for the information value, the horizontally oriented composition of the American cartoons no.1, no.2, and no.3 employs the Given-New structure (left/right alignment) to criticize the anti-vaxxers' refusal of getting the vaccine and stress the importance of getting vaccinated. The use of Given-New structure in the data selected helps the cartoonist present the Given element (something known to the viewer) in the left position and the New element (the key information to which the viewer is to pay attention) in the right position. For example, in cartoon no.1, the anti-vaxxer is presented as the Given element, and the doctor offering him the

vaccine as the New, a solution to the problem of the anti-vaxxer who is about to drown. Similarly, the Egyptian cartoons no.4 and no.6 use left/right alignment to urge the Egyptian reader get the vaccine.

Another aspect of information value, employed by the American cartoons (1 and 2) and Egyptian ones (as in no.4, no.5 and no.6) in the second period, is the Centre-Margins structure. For example, the vaccine (Centre) in cartoon no.1 is placed at the heart of the cartoon to show its importance while other represented participants (the anti-vaxxer and the doctor) are Margins. On the other hand, only one American cartoon (no.1) employs the top/bottom alignment.

2. Salience

Salience is another tool employed in the compositional metafunction to arrange the represented participants inside an image. It is noteworthy that salience is utilized in all the Egyptian and American cartoons (1, 2, 3, 4, 5, and 6) in the second period; cartoonists aim at drawing the attention of the viewers to specific element in the cartoon by putting such an element in the foreground, using large size, or putting him/her in a central position. The selected cartoons published during the vaccination period either shed light on the vaccine, aiming at raising public awareness as regards the shot's importance in combating the COVID-19 pandemic, or criticize the anti-vaccination campaign members.

Hypothesis Testing

1. Comparing between American Cartoons and Egyptian

Cartoons during the vaccination:

H₀: $\mu_{\text{American}} = \mu_{\text{Egyptian}}$

H_a: $\mu_{\text{American}} \neq \mu_{\text{Egyptian}}$

The Study uses Mann-Whitney U is utilized to compare between American Cartoons and Egyptian Cartoons during the vaccination (shown below):

Items:	Mann-Whitney U	Z	Asymp. Sig. (2-tailed)
Narrative	3.000	-.745	.456
Conceptual	3.000	-.745	.456
Representational Metafunction	4.500	.000	1.000
Image	4.500	.000	1.000
Social distance	3.000	-1.000	.317
Perspective	4.500	.000	1.000
Interactive	3.000	-1.000	.317
Information Value	3.500	-.471	.637
Salience	4.500	.000	1.000
Compositional Metafunction	3.500	-.471	.637

(Table 4, comparison between American Cartoons and Egyptian Cartoons during the vaccination period)

As table 4 indicates that there are no statistically significant differences between Egyptian and American cartoons in the second stage. This means accepting the zero hypothesis:

H₀: $\mu_{\text{American}} = \mu_{\text{Egyptian}}$

5.3 Findings and Conclusion

The present study aims to analyze the verbal and the non-verbal modes that contribute to the meaning making in the selected Egyptian and American Coronavirus cartoons in terms of Kress and van Leeuwen's (1996/2006) theory of visual social semiotics. Our results confirm that the visual modes, along with verbal ones, used in the Egyptian and American cartoons about the coronavirus enable the cartoon viewers to visualize the epidemiological status and increase public awareness as regards the COVID-19 pandemic. Moreover, one can confirm that understanding the three metafunctions in visual social semiotic approach is essential for a cartoon viewer to fully grasp meanings conveyed in the coronavirus cartoons in the selected data. In addition, the researcher concludes that the representational metafunction is utilized, in the COVID-19 cartoons to show the relations among the represented participants through the use of actional, reactional, and/or speech and mental processes. This basic finding is consistent with Chen and Gao's (2014) paper in which it is argued that the representational meaning is used to examine the internal relationship of represented participants in movie posters.

As for the image act of the interactive metafunction in the selected data, the analysis shows that offer images are dominant throughout the coronavirus cartoons. Perspective is another important tool in the interactive metafunction as it determines the represented participants/cartoon viewers relationships. As far as the

horizontal angle, the analysis shows that all the analyzed COVID-19 cartoons during the vaccine distribution are depicted at a frontal angle in order that the cartoon viewers get involved with the represented participants. As regards the vertical angle, medium-shot is utilized throughout all the cartoons, implying an imaginary relation of symbolic equality between the represented participants and the cartoon viewer. As table 4 indicates, there are no statistically significant differences between the selected Egyptian and American cartoons.

5.4 Limitations and Points of Strength of the Study:

Because the study uses a mixed method design (i.e. qualitative- quantitative) and analyzes a small number of the COVID-19 cartoons, it is difficult to generalize the study findings to all kinds of cartoons; therefore, a further purely quantitative research needs to be conducted to draw generalizations. The researcher analyzes the Egyptian and American Coronavirus cartoons published during the vaccination period. The data are classified according to the availability of the vaccine because the discovery of vaccine against the COVID-19 that was considered a turning point in dealing with the pandemic. Therefore, future multimodal research could study the coronavirus cartoons in order to examine the characteristic features across the four waves. However, the study has the following contributions:

1. By examining the semiotic resources employed in the American and Egyptian COVID-19 cartoons, the present study may enhance the cartoons readers' interpretative

strategies, i.e. their understanding of the cartoonists' predetermined messages as regards the coronavirus pandemic.

2. It contributes to the research on the Egyptian and American cartoons by opening a new dimension through analyzing the semiotic resources employed in the cartoons under investigation by employing a visual social semiotic theory devised by Kress and van Leeuwen (2006).

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ملخص

لقد أصبح الاتصال متعدد الوسائط شائعاً في الآونة الأخيرة؛ إذ تهتم الوسائط المتعددة بالطريقة التي يتم بها دمج الأنماط السيميائية المختلفة (مثل اللون والإيماءات والنظرة وغيرها) في إطار اجتماعي ثقافي لإنشاء منتج أو حدث سيميائي (كريس وفان لووفن، ٢٠٠١) ، وبالنسبة للنمط المرئي، فإنه يوجد في النصوص متعددة الوسائط مثل: المجلات والصحف والإعلانات والكتب المدرسية والرسوم الكاريكاتيرية، وما إلى ذلك. وتوجد الرسوم الكاريكاتيرية- كنصوص متعددة الوسائط- في الصحف وشبكات التواصل الاجتماعي والمجلات .

وتضم بيانات الدراسة ستة كاريكاتيرات تم اختيارها عبر الإنترنت (ثلاثة كاريكاتيرات مصرية و ثلاثة رسماً أمريكياً) و نُشرت أثناء فترة تلقي اللقاح. وتهدف الدراسة المقترحة إلى تحليل الأنماط اللفظية، وغير اللفظية التي تؤدي إلى التوصل إلى المعاني التي تتضمنها الرسوم المصرية، والأمريكية المختارة، وتبني الباحثة نظرية التحليل السيميائي الاجتماعي لـ (جانتر كريس و ثيو فان لووفن، ٢٠٠٦) لتحليل البيانات قيد الدراسة على المستويين: اللفظي وغير اللفظي، وتعتمد هذه النظرية في الأساس علي نظرية النحو الوظيفي لـ (مايكل هاليدي، ١٩٨٥). ويؤكد أحد الاستنتاجات أن الأساليب المرئية، إلى جانب الأساليب اللفظية المستخدمة في الرسوم الكاريكاتورية المصرية والأمريكية حول فيروس كورونا، تمكن مشاهدو الكارتون من تصور الوضع الوبائي وزيادة الوعي العام فيما يتعلق بجائحة كوفيد-١٩. علاوة على ذلك تؤكد إحدى نتائج الدراسة أن فهم الوظائف الثلاث في النهج السيميائي البصري الاجتماعي لـ (جانتر كريس و ثيو فان لووفن، ٢٠٠٦) أمر ضروري لمشاهدي الرسوم الكاريكاتيرية لفهم معانيها بشكل كامل.

كلمات مفتاحية: رسوم كاريكاتيرية مصرية، رسوم كاريكاتيرية أمريكية، نظرية التحليل السيميائي الاجتماعي