Original Research Paper

The Visual ‘Masculinization’ of Moroccan EFL Textbooks: A Social Semiotic Analysis

Driss Benattabou 1 *  
Applied Linguistics and Gender in Education, Faculty of Arts and Humanities, Moulay Ismail University, Meknes, Morocco.

Abstract

The aim of this paper is to examine and assess the portrayal of women and men in the visual contents of Moroccan English as Foreign Language (MEFL, henceforth) textbooks from a social semiotic perspective. Central to the analysis here is Goffman’s (1979) theoretical model of gender display recently heralded as a more powerful technique to unfold the semiotic positioning of women and men in visual images. The analysis of a corpus of photographic data has helped unveil an array of social and cultural misconceptions in discrimination of women. Female characters continue to be linked with submissiveness, absent-mindedness, and socio-psychological vulnerability. They are further presented associated with menial activities, low-status jobs, and oftentimes being positioned in the backstage behind men. The paper ends up presenting the conclusion along with some implications.

© 2021 GATHA COGNITION® All rights reserved.

1 INTRODUCTION

Visual depictions are an indispensable component of the contents of any textbook. They play a vital role in conveying meaning and tend to enhance students’ grasp and understanding of the textual materials they are unavoidably exposed to (Giaschi, 2000; Lee and Collins, 2009; Marefat and Marzban, 2014). Pictures employed in school textbooks; however, are overstuffed with a wide range of biased values, attitudes and hidden ideologies.

Although past research has focused extensively on the examination of visual images in school textbooks, their analyses seem to be either quantitative or qualitative or both. Yet, despite the fact that the analytical tools of content analysis seem to be very compelling, they tend to overlook and seem to lose sight of other central symbolic messages which remain concealed beneath the surface.

The problem with visual images is that they have often represented strong resistance for specialists in the field of gender studies and seem to be too elusive and too arduous to contrive particularly with respect to their latent and symbolic meanings. The paucity of research analyzing the visual discourse of textbooks explains in part the subtlety of the issue of images. The multiplicity of ideologies attached to the symbolic messages of pictorial images has been the concern of very few research specialists in the social sciences pointing towards the importance of social semiotics (Goffman, 1979; Kang, 1997; Kress and Van Leeuwen, 2006; Berger, 1972; Giaschi, 2000; Acevedo et al., 2006; Newfield, 2011; Kordjazi, 2012; Marefat and Marzban, 2014).

Hence the relevance of social semiotics, in addition to content analysis and critical image analysis in contributing to enhance our understanding of how to interrogate and decrypt the symbolic ideologies of visual images, and help us come into grips with the extent to which visual discourses have been deployed to reflect the hidden agendas of the dominant groups in our society. Pierce (1931) succinctly put it: “No sign is arbitrarily chosen. It rather reflects the sign maker’s interests” (Pierce, 1931, cited in Marefat and Marzban, 2014, p.1094).

The above mentioned authors will be referred to throughout our analysis because they have offered a greater impetus for the current study. In view of this new emerging theoretical thrust, social semiotics has been implemented as a more enhanced research instrument that can help account for the symbolic meanings of images that may surely go beyond any superficial perception.

The major goal of this paper therefore is to examine the pictorial portrayal of women and men in MEFL textbooks. This study attempts to adopt a pluralist approach intermingling between social semiotics, content analysis and critical image analysis, as more powerful research tools in disentangling a plethora of covert visual meanings pertaining to the symbolic messages of images. Although the focus of this study is on the relevance of social semiotics in the interpellation of gender bias in MEFL textbooks, recourse will be made to the tools of content analysis and critical image analysis.

2 A THEORETICAL BACKGROUND

Some of the earlier definitions of semiotics are those of Pierce (1955 in Jappy, 2013), Saussure (1983) and Eco (1976, cited in Smith, 1996). Modern semiotics owes a great deal to Pierce’s (1955) first studies of signs he called semiotics. According to Pierce:

“a sign or representamen, is something which stands to somebody for something in some respect or capacity. It addresses somebody, that is, creates in the mind of that person an equivalent sign, or perhaps a more developed sign. That sign which it creates I call the interpretant of the first sign. This sign stands for something, its object” (Pierce, 1955, p. 99, as quoted in Jappy, 2013, p. 3).

Saussure (1983) describes semiotics as the study of the role of signs in understanding meaning. Semiotics, Saussure goes on to argue, is a science “which studies the role of signs as part of social life” (Saussure, 1983, p. 15). The relationship between ‘the signifier’ (it could be a word or a sound) and ‘the signified’ (what does that word or sound refer to in reality) is said to be arbitrary (ibid., p 67). Eco (1976) presents almost a similar view defining semiotics as being “concerned with everything that can be taken as a sign” (p.7, cited in Smith, 1996).

Basing his account on Eco’s definition, Chandler (2007) argues that “semiotics involves the study of not only what we refer to as ‘signs’ in everyday speech, but of anything which ‘stands for’ something else” (2007, p. 2).

The problem with these earlier definitions put forward by Pierce (1955), Saussure (1983) and Eco (1976) is that while they show a burgeoning concern in the study of signs, they referred merely to the meaning of words as signs. They seem to overlook the fact that language is but only one single mode of communication. From a semiotic perspective, Chandler (2007) contends that “signs take the form of words, images, sounds, odors, flavors, acts or objects” (p. 13).

The second problem is that the earlier accounts of the domains of semiotics seem to lose sight of the role of social context in shaping and contributing to meaning. A more developed definition of semiotics is that of social semioticians (Kress and Van Leeuwen, 2006; Van Leeuwen, 2001, 2008; Bezemer and Kress, 2010) who assert that it “ascribes meaning to all modes of communication, including image, writing, typography and layout, and it treats signs of any kind as reflecting the interests of the makers of these signs” (Bezemer and Kress, 2010, p.33).

Chandler (2007) elaborates more on the issue offering an enhanced account of the field of social semiotics:

“In defining realities, signs serve ideological functions. Deconstructing and contesting the realities of signs can reveal whose realities are privileged and whose are supported. The study of signs is the study of the construction and maintenance of reality. To decline such a study is to leave to others the control of the world of meanings which we inhabit” (Chandler, 2007, p. 11).

Fundamental to this discussion is Barthes’ (1977) widely cited book Image, Music, Text. He seems more inclined to broaden Saussure’s vision of semiotics to cover other facets of communication, namely the symbolic meaning of visual images. He contends in this respect that there are different levels of meaning or ‘orders of signification’, to use his terms. The first level of meaning is that of literal or denotative meaning which stands for what the sign refers to in reality. The second order of significance is that of connotative meaning in which case the sign by and large may have other cultural, ideological and social meanings.

Barthes (1977) makes the point further arguing that:

“all these ‘imitative’ arts comprise two messages: a denoted message, which is the analogon itself, and a connoted message, which is the manner in which the society to a certain extent communicates what it thinks of it” (Barthes, 1977, p.17).
Drawing on the same dichotomy of Barthes’ orders of significance, Van Leeuwen and Jewitt (2005) discuss two representational levels of visual images. The meaning of images consists “first of all of a layer of representational or denotative meaning (the layer of who and what are depicted) on which is then superimposed a layer of connotative or symbolic meaning (the layer of what does it all mean)” (Van Leeuwen and Jewitt, 2005, p.2-3). Based on this view, in addition to the relationship between the sign (the signifier) and its referent (the signified), semiotics goes even further to account for whether or not an additional symbolic or second-order meaning exists.

In his essay “Rhetoric of the Image” cited in the same book, Barthes (1977) makes it clear that “all images are polysemous; they imply, underlying their signifiers, a ‘floating chain’ of signified, the reader able to choose some and ignore others” (p. 38-39).

On a somewhat similar note, besides the superficial and apparent content of visual images, there is another second order of meaning which carries by and large hidden ideological messages not obvious to a non-alerted eye. In view of the opaque meaning of visual images “even if a totally ‘naïve’ image were to be achieved, it would immediately join the sign of naivety and be completed by a third - symbolic - message” (Barthes, 1977, p. 42).

Social semiotics, combined with the tools of content analysis and critical image analysis, is seen as being able to probe far much deeper to uncover latent symbolic meanings beyond any superficial interpretation of the data. What makes the study of images too arduous to contrive is that even the so-called ‘naïve’ images seem to display “an absence of meaning full of all the meanings”, and “the denoted image naturalizes the symbolic message; it innocents the semantic artifice of connotation, which is extremely dense, especially in advertising” (Ibid, p. 45).

From a social semiotic perspective, visual images, as any other form of communication, may reflect a multitude of hidden ideologies, social and cultural values and power relations in their second-order representational level. Barthes (1977) makes a cogent contention elucidating that under each apparent image there lays a covert message disseminated through it:

“The more technology develops the diffusion of information (and notably of images), the more it provides the means of masking the constructed meaning under the appearance of the given meaning” (Barthes, 1977, p. 46). The study of signs in social semiotics therefore helps tease out “how meaning and form have been brought together in a relation motivated by the interest of the sign-maker” (Bezemer and Kress, 2008, p. 170).

Although, Barthes (1977) stresses the importance of the socio-cultural milieu in deconstructing the meaning of visual images, Stokes (2001, p. 13) argues that there are “universal symbols or visual images that are globally understood”, and with a conscious awareness one may come to elicit their latent meanings. Stated differently, with the widespread of modern technology in this age of globalization, viewers have been exposed to almost the same visual images diffused at a worldwide level. Local media advertising tends also to reproduce identical replicas of biased images disseminated in western media discourse.

Central to this study of the visual representation of women and men in MEFL textbooks is Goffman’s (1979) social semiotic approach to demystify the symbolic massages underlying the visual discourses of images. Goffman’s (1979) theoretical model seems to offer more powerful and influential semiotic tools along which the hidden ideologies of visual images can be interrogated. Harper (2012) points out in this regard that Goffman’s semiotic framework helps capture “how humans create symbolic meaning in their dress, gestures and other ways of presenting themselves to others” (Harper, 2012, p.119).

In corroboration of the same view, Smith (1996) argues that “the procedure is a powerful persuasive device which makes it difficult for the reader to resist the interpretation Goffman seeks to obtain from the arrays”. Goffman’s social semiotic model, Smith (1996) goes further to sustain the same argument, offers “a fresh understanding of the underlying taken-for-granted features of gender codes”.

The approach of this study attempts to endorse hinges heavily on a more elaborated conception of Goffman’s model, particularly the one established by Kang (1997), Acevedo et al. (2006) and Kordjazi (2012).

Although Goffman (1979), Kang (1997) and Acevedo et al. (2006) have utilized this model to investigate the pictorial representation of women and men in media advertising, Kordjazi (2012) argued for its potential transferability to examine even language teaching programs. She reports in this respect that “Goffman’s insightful analysis can be used as a source for investigating gender representation in pedagogical materials” (Kordjazi, 2012, p.60).

3 PROCEDURES OF ANALYSIS

Social semiotics, critical image analysis and content analysis have been implemented altogether in the examination of the visual depictions deployed in the sampled textbooks. This study adopts a broader perspective of social semiotics which draws some of its research tools from content analysis and critical image analysis as more vital analytical methods in untangling a wide range of latent visual meanings in the examination of images.

According to Leech and Onwuegbuzie (2007), “using more than one type of analysis can strengthen the rigor and trustworthiness of the findings via
methodological triangulation” (p. 575). Similarly, Neuendorf (2011) arguably asserts that other methods of research could also be incorporated to consolidate the procedural techniques of our investigation that may surely lead us to a better interpretation of the data.

This new trend in research design may yield what is referred to as “methodological triangulation”. In view of this, Leech and Onwuegbuzie (2007) make a similar contention pointing out that “researchers need to utilize at least two, if not more, types of data analysis tools in order to triangulate results” (p. 579).

Key to our method of research is Kordjazi’s (2012) study of gender portrayals in the visual depiction of English language learning software programs. This investigation goes beyond two levels of analysis implementing a multimodal design combining between three methods of research altogether, namely content analysis, CDA and social semiotics.

Kordjazi’s (2012) multimodal design offers a more insightful inspiration to the methodological framework of our study of gender representations in the visual contents of MEFL textbooks. On a par with Kordjazi’s (2012) study, the approach proposes to seek a more enhanced vision which may surely dive much deeper to account for both the visible as well as the invisible facets of the iceberg combining between social semiotics, critical image analysis, as a visual outgrowth of CDA, and content analysis. This method of research is not a replication of Kordjazi’s methodology, but attempts to implement other new categories of gender display for the interrogation of gender imbalances in Moroccan textbooks of English.

Multimodal analyses of visual images have been extremely scarce. One major reason for the paucity of these studies might stem, as Smith (1996) postulates, from the subtle issue of the symbolic features of visual images. They have received little and scant attention in content analysis studies. This dearth of research is largely attributed to the subtlety of dealing with the symbolic meaning of images that has often been considered as a stumbling block for researchers (Smith, 1996).

However, there is a scarcity of research in this direction which may presumably be attributed primarily to Goffman’s (1979) more subtle and more challenging model that is “regarded as a hard act to follow” (Smith, 1996). Yet, it seems to have started inspiring “sociologists to become more adept at analyzing the vast repertoires of visual data in postmodern culture” (Ibid).

3.1 The Research Question

Since Goffman’s (1979) first study on gender display in the late seventies where a number of stereotypical depictions were documented and subsequently fought against in some studies and with the recent changes in the status of women, this paper attempts to see if some positive improvements will find room in the visual depictions of women and men within the contents of the current MEFL textbooks.

Drawing on the findings of previous research and taking into account the particularities of the Moroccan context, one major research question has been postulated in this regard:

Have the pictorial representations of women and men undergone any modifications since Goffman’s first study in the late seventies?

3.2 Data Collection Procedures

This paper sets out to examine the semiotic features of women and men along seven categories. A purposive sample of 561 pictures has been culled for the purposes of this study. This sampled data will be analyzed using a tripartite approach encompassing social semiotics, content analysis and critical image analysis. The criteria set for the purposes of this analysis will help illustrate the symbolic patterns characteristic of the visual discourse of MEFL textbooks.

Central to the analysis here is Goffman’s (1979) theoretical model of gender display recently advocated for use as a more powerful technique to unfold the semiotic positioning of women and men in visual images.

It is worth noting that out of the total number of pictures of our corpus, a sample of images will figure in the text for more clarification. All of these pictures have been chosen based on how well they fit into each of the levels of analyses described below. These visual depictions are incorporated in this paper to give clear evidence to the arguments discussed in our visual analysis. They are presented along with their corresponding sources; they figure following the chronological order in which they appear in this paper.

3.3 The Sampled Textbooks

The analysis of sex stereotyping in the pictorial representation of women and men was undertaken for nine current-edition MEFL textbooks published and sponsored by the Ministry of Education in Morocco.

The selection of nine MEFL textbooks was made on the basis of the criteria of purposive sampling. This sampling procedure ordains the selection of a sample with pre-established criteria. The first criterion is that the sampled textbooks are all of them Moroccan textbooks of English and designed after the recommendations of gender bias-free materials put forward by the National Chart of Education in Morocco (Sabir, 2005). They represent almost 100 per cent of the entire range of textbooks currently used for classroom purposes. The teacher guides and the workbooks pertaining to them are excluded from this study. The second criterion is that the textbooks under scrutiny are designed by Moroccan writers and are currently still in use for classroom instructions among secondary school students.
students of English in Morocco (See the sampled textbooks in the reference list).

3.4 Steps for Analysis of Data

In his classification of commercial advertising images, Goffman (1979) employed six categories of gender display along which these pictures have been arranged. The seventh category of ‘image framing’ has been designed by the author of this paper and has been included for more analysis of gender positioning. In view of this, under each category a set of visual images will be closely scrutinized for examination. The pictures which fit into each of the seven categories of gender display will also be referred to in the text to explain clearly to the reader the visual message of each of them.

The stereotypical depictions of women and men will be processed employing Goffman’s (1979) social semiotic model of gender display. It is my contention, though I do not claim originality for this, that social semiotics, critical image analysis, alongside content analysis should be used concurrently altogether to avoid any unbalanced interpretation of the data (Tuna and Freitas, 2012).

With this line of reasoning in mind, this visual analysis of the contents of the sampled textbooks sets out to tackle the problem relying on a multimodal analysis including content analysis, critical image analysis, and Goffman’s (1979) social semiotic model. It is my belief that any attempt to look at sex-stereotyping in textbooks from one single perspective will ineluctably be incomplete and by implication be ineffective as it may leave many aspects of the problem not properly catered for.

Espousing a threefold approach may surely help highlight a host of many subtle issues that would not have been made possible to pin down had we used merely one single approach. It is my conviction also that using such a three-dimensional analysis may undoubtedly prove more effective in giving us better insights into multiple intricacies that might otherwise remain lurking at a subconscious level.

Following Kang (1997), Bell (2001) and Acevedo et al. (2006), an inter-coder reliability index was computed employing Holsti’s (1968) formula. Holsti’s statistical formula yielded an inter-rater agreement index between each pair of coders using the researcher (coder 1) as a basic reference against which each of the two coders’ (coder 2 and 3) independent assessments were examined for coding verification. The overall reliability coefficients have been averaged producing high level of agreement between the three coders with a composite index of 0.92.

3.5 Categories of Analysis

Drawing on the theoretical concepts elicited from social semiotic studies, a number of parameters have been postulated as categories along which the two sex groups are visually presented and compared. This analysis is framed within the perspective of current research interest in Goffman’s (1979) model of gender display. Following the theoretical thrust of Kang (1997), Acevedo et al. (2006), and Kordjazi’s (1912) more enhanced vision of Goffman’s model, this study devised seven categories along which the visual representation of women and men in MEFL textbooks will be analyzed.

Goffman’s (1979) approach to decrypt female and male portrayals in visual images comprises six different but interrelated expressive codes of behavior. This method is time-consuming, painstaking but has far reaching implications for educational purposes, in specific, and for promoting the visual status of women in general. The vigor of this method rests on its techniques of great research significance as it would undoubtedly help disclose myriad hidden messages that will continue to linger at a subliminal level if not pinned down for close scrutiny.

For the purposes of this study, and for more objectivity to avoid any potential obfuscation in the interpretation of the categories under question, the elements characterizing the different classifications of gender display have been closely defined and labeled on the basis of prior research in gender studies. The coding procedures of this study hinge heavily on the following specific cues for each gender display. These criteria are formulated and explained as follows:

3.5.1 Relative Size

Women and men’s differential size, notably their height seems to have a symbolic meaning in visual images as it may carry and convey social hierarchy. The relative size dimension, as is conceived of by Goffman (1979), contributes both to people’s social weight and their status in pictures. There is a tacit assumption that male and female disparity in height is very symbolic and correlates well with disparity in social power. Goffman (1979) elucidates, in this respect, that “biological dimorphism underlies the probability that the male’s usual superiority of status over the female will be expressible in his gender girth and height” (Goffman, 1979, p. 28).

3.5.2 Feminine Touch

With respect to this second parameter, Goffman (1979) contends that pictorial images of women and men in media advertising seem to display dichotomous and divergent ways of touching objects or oneself. Women’s touch is reported to be smoother and quite superficial as they are depicted merely caressing or cradling the objects they possess. Conversely, men’s masculinity is portrayed through the vigor of their firm grasp manipulating with strong confidence the objects around them. The purpose behind this ‘ritualistic touching’, as Goffman (1979) refers to heighten women’s vulnerability and fragility and to serve the subliminal ideology of their social disempowerment (Goffman,
1979; Kang, 1997; Acevedo et al., 2006; Kordjazi, 2012).

3.5.3 Ritualization of Subordination

Women and men’s visual positioning in the picture is also another way deployed in media advertising to exude women’s social inferiority. ‘Ritualization of subordination’ refers to a host of symbolic behavioral codes indicative of women and men’s relative status in society. Women are far more likely to be depicted lowering themselves, bowing, kneeling, sitting or lying physically on a bed, on a sofa or on the floor. This body cowering, according to Goffman (1979), routinely symbolizes women’s subordination and subservience, and may be considered as a conventionalized indication of their vulnerability and social inferiority.

Men, by contrast, are visually represented being on the alert often standing up “holding the body erect and the head high” (Paul and Sheet, 2012, p. 76). They are usually showcased as “physically taking care of females and protecting them extending a priority arm towards them and holding their hands” (Goffman, 1979). This common tendency to portray men standing upright putting their hands on women’s shoulders is pictorially symbolic of their dominance and their social availability to take a protective paternal role.

3.5.4 Licensed Withdrawal

Licensed withdrawal refers to women’s general tendency to be portrayed as being disoriented, disengaged and thoroughly withdrawn from the visual space of the picture. Goffman (1979) delineates a multitude of symbolic ways displaying women’s removal from the social setting they are depicted in. Indicative behaviors expressively echoing this tendency pertain to such body displays as looking off somewhere as if at a loss, looking dreamy and pensive, turning their head or body away from the camera, hiding their face behind objects, or covering it using both hands. Women’s liability to talk over the phone or being overwhelmed with joy displaying an extroverted and an unrestrained laughter are considered also as other dimensions of their physical or psychological withdrawal (Jhally, 1990; Kordjazi, 2012).

This visual positioning is exploited in pictorial images to reinforce the false cultural assumptions that women are powerless, passive participants, irrational, child-like, and lacking in self-confidence. This alienation is an indication that women are “dependent on the protectiveness and the goodwill of others” (Goffman, 1979, p. 57).

3.5.5 Function Ranking

Visual depictions of women and men being juxtaposed to one another in a given social setting can also be very expressive and of greater symbolic significance. The prevailing pattern in pictorial images featuring women and men engaged together in certain activities is that men are portrayed carrying out highly ranked functions including more executive managerial roles. Conversely, women are visually depicted playing merely marginal roles, and being involved in menial, trivial and peripheral activities.

Writing in a similar vein, Paul and Sheet (2012) contend that “function ranking is conveyed when one person is cast in the role of an ‘executor’ or a position of power and respect, while an interactive partner is cast in a secondary role” (2012, p.75). This imbalance in the functional ranking of the two sex groups is echoed through their representation both in domestic and professional settings.

3.5.6 The Family

According to Goffman (1979), family roles tend to perpetuate the same stereotypical views attached to men and women / sons and daughters. The visual representation of women and men in the family context is bound to be reflective of the power relation between husband and wife and the children. The distribution of gender roles inside the family is more likely to emerge from this relation of power and dominance. Children both boys or girls are also more inclined to act and behave according to almost the same biased gender roles like their fathers or mothers, respectively. Daughters in specific are showcased as being analogous to their mothers.

On a similar note, Goffman (1979) argues that the female/male relation in the visual discourse of advertising is reminiscent to child/parent relationship, a process in which women act and behave as little children do, while men seem to take on more powerful and dominant roles and act like parents (Jhally, 1909).

Implementing Goffman’s six categories of gender display to analyze the photographic materials as a corpus poses two very subtle problems for the researcher. First, there seems to be no clear-cut distinction between some of these categories, namely ‘function ranking’ and ‘ritualization of subordination’ as they tend to be not mutually exclusive. The second problem is that a specific picture may sometimes feature some visual traits characteristic of two or more gender displays (Smith, 1996). A more plausible solution has been suggested by Belknap and Leonard (1991) pointing to the use of frequency counts to single out the distribution of occurrence of each of these categories of gender display.

A major methodological step forward has been undertaken by Kang (1997) and Acevedo et al. (2006). Both of these studies have attempted to devise a set of coding operationalization which seems to capture better the elusive nature of Goffman’s (1979) categories of gender display. The persuasive force of this procedural technique lies in its usefulness in identifying the occurrence and the prevalence of each of these categories in photographic materials as data for analysis.

Another problem with the analysis of visual images is that beyond the outward and obvious
messages of a picture (surface structure), there are other latent symbolic meanings entrenched in the visual discourse of pictures (underlying structure). The forcefulness of Goffman’s (1997) gender displays is that they help sensitize researchers to make an “instructed viewing” of visual depictions. Smith (1996) cogently contends in this connection that “our understanding of the features of any given gender display is thus built up through this to-and-fro process of mutual elaboration of surface particular and underlying patterns” (Smith, 1996).

It is very interesting to note here that in addition to Goffman’s (1979) six categories of gender display, it was considered of great research importance to include one more category in the analysis of MEFL textbooks. This seventh category is what could be termed as ‘image framing’. This new gender display has been devised by the author of this paper to extend Goffman’s (1979) general framework for the analysis of visual data.

3.5.7 Image Framing (Foregrounding/Backgrounding)

Foregrounding people and bringing their images to the fore (close-up) seems to be indicative of their high status and more social prominence: “Zooming into a close-up can enhance the perceived importance of a person” (Chandler, 1998, cited in Kordjazi, 2012, p. 67). Foregrounding could also be interpreted as a means to prioritize those who are presented at the forefront. Positioning a character in the backstage of a picture ‘back-grounding’; however, seems to be a symbolic code of social inferiority as it has customarily been connected with the subordinates. In view of this seventh category, Smith (1996) argues that new forms of gender display could be designed to provide a more enhanced interpretation of visual data.

4 RESULTS

Our photographic sample consists of 561 pictorial images which have been selected on the basis of the seven categories of gender display designed for the purposes of this study. The results seem to suggest strong patterns of stereotyping pertaining to the visual discourse of MEFL textbooks. In complete concordance with Goffman’s (1979) study, the image of women in the selected textbooks currently in use in the Moroccan educational system has remained almost the same displaying roughly similar gender displays. According to Goffman (1979), the positioning of women in these biased gender displays is deployed to accentuate their vulnerability, to denigrate their status and to disempower them.

With respect to the overall frequencies of the stereotypical depictions along the seven coding categories, Outlook stands out as being the most biased in terms of its representation of women and men than the other textbooks with 87 images (15.50%). Focus comes second with 86 pictures (15.32%). Third is Ticket-1 with 76 visual depictions (13.54%). Both Gateway-1 and Ticket-2 rank fourth and fifth, with a percentage of 12.12% and 11.94%, respectively (68 and 67 pictures for each of them). Visa is ranked sixth with a total of 47 pictures and a percentage of 8.38%. Gateway-1 comes in the seventh rank with 46 images (8.20%). Insights is in the eighth rank with a percentage of 7.66% (43 pictures). Window has the lowest percentage score with 41 visual depictions (7.30%). It ranks ninth with the least number of biased portrayals regarding its visual discourse.

In order to determine which of the seven categories of gender display has the highest level of frequency of occurrence, the sampled data will be processed differently. Each gender display will be analyzed on the basis of its distribution along the nine textbooks.

As may be elicited from figure 1, ‘Ritualization of subordination’ is found to receive the highest amount of distribution throughout the visual data of the sampled textbooks. There are in total 119 pictures featuring women kneeling, bowing, lying on the floor or sleeping with a 21.21%.

On the opposite extreme, the gender display related to the family stands out as receiving the least frequency of occurrence in the pictorial data under scrutiny. Throughout the nine textbooks, there are only 43 pictures (7.66%) representing women and/or men with the kids displaying different relations within the family context or outdoors.

Among the lowest distributions, as can be gleaned from figure 2, is ‘Function ranking’, which ranks second in the lowest scales after the ‘Family’, with a frequency count of 48 pictures (8.56%). Women in this display are seen doing menial jobs, or just observing what is going on around them. Male characters, by contrast, seem to predominate most of the leadership roles in images. These two gender displays seem to be the lowest in terms of their distribution in the visual content of MEFL textbooks averaging a percentage of only 7.66% and 8.56%, respectively.

Now let us consider the findings of each coding category by itself throughout the selected textbooks. For more convenience, a table of frequencies, a pie graph, and reference to illustrative images are assigned to each gender display.
4.1 Relative Size

Visual images analyzed with respect to this parameter have to meet the criteria set for this gender display. Only pictures featuring female characters juxtaposed to males are taken into consideration. Relative size has been processed in the light of the physical appearance of women and men in visual depictions. Of special reference here is the case when women are displayed shorter and smaller in size than men.

In view of the general results presented in figure 1, there are 95 pictures featuring women in this biased gender display with a frequency of 16.93% of occurrence in the sampled photographic data. ‘Relative size’ is ranked second, and seems therefore to be more prominent regarding its distribution in comparison with the other gender displays.

Concerning the distribution of this category within textbooks, as displayed in figure 5, Outlook and Ticket-1 receive the highest ranks of frequency averaging 21.05% and 18.95, respectively. Gateway-1 and both Visa and Gateway-2 are observed to get less frequencies of distribution.
with a percentage of merely 3.16% and 6.32%, respectively. For an illustration of this gender display see figure 3 and figure 4 in (Ticket-1, p. 8 and p. 33, respectively).

The findings of the study indicate that the sampled textbooks are replete with visual images depicting women being shorter in size if compared to men. Similar research results have been echoed in Goffman (1979), Kang (1997), Acevedo et al. (2006), and Kordjiazi (2012). This gender display, according to Goffman (1979) is usually deployed to accentuate women’s vulnerability and social inferiority. The tendency to depict men higher in size is symbolically suggestive of their paternal control and their dominance over women.

Likewise, women’s miniaturized size has been employed to emphasize their child-like and infantilized status being in continual need of supervision, guidance and assistance. This biased practice in the positioning of women is a token of their submission, and connotes their inferiority rendering them being dominated under the mercy of men.

4.2 Feminine Touch

Of the 561 visual images that were coded, there are also more stereotypical features displaying the parameter of ‘Feminine touch’. There are 88 pictorial representations of women (adults and young girls) either using their fingers or hands to cradle and touch softly the surface of objects they appear to possess.

Based on the findings presented in figure 1, the frequency of occurrence of women being stereotypically portrayed in this gender display reached a percentage of 15.69% of the sampled pictures.

As can be gleaned from figure 8, the distribution of this coding category throughout textbooks, Ticket-2 seems to receive the highest score at 21.59%. Window and Insights receive the lowest percentage of this stereotypical depiction averaging 3.41% and 5.68%, respectively. Pictures in Outlook (p. 92, Figure 6) and Ticket-1 (p. 26, Figure 7) feature women in this visual display.

‘Feminine touch’ is therefore another biased form used in the visual portrayal of women to exaggerate their fragile characteristics. Their frail touch along with their proneness to caress softly either the objects they possess or themselves is very expressive and symbolic of their vulnerability and their helplessness. This pattern in the positioning of female characters is once again maintained to magnify their ‘feminity’, powerlessness and their reluctance to make firm decisions.

Figure 3. The wife is often portrayed being shorter and smaller in shape than her husband

Figure 4. The bridegroom is on his wedding day being taller and larger in size than the bride

Figure 5. The pictorial distribution of ‘Relative size’ throughout the sampled textbooks
Figure 6. The girl’s fingers are barely touching or caressing the object

Figure 7. The woman is typically portrayed biting a pen as a form of ‘self-touching’

Figure 8. The pictorial distribution of ‘Feminine touch’ throughout the sampled textbook

4.3 Function Ranking

Similar to ‘Relative size’, ‘Function ranking’ is processed only through visual depictions displaying women and men together. Only pictures of women and men pictorially cast undertaking an activity have been selected for this category of gender display.

Based on the coding procedures of this category, female characters are depicted being inferior and subordinate to men either just observing or assisting men. Relying on the findings in figure 1, ‘Function ranking’ seems to be the lowest gender display throughout the whole sampled textbooks after the parameter of ‘the Family’. The stereotypical representation of women regarding this gender display is almost non-existent and seems to have disappeared particularly in Gateway-1, Ticket-1 and Window, all having the same score averaging merely 4.17%.

In view of the results outlined in figure 9, Outlook stands out; however, as the most stereotypical textbook regarding this pattern with a frequency of occurrence averaging 22.92%. It is worthy to note also that the distribution of this gender display in comparison with the other textbooks averages merely 8.56%. A good illustration of the pictorial representation of women and men displaying this hierarchical posture, see pictures: figure 10 and figure 11 in (Insights, p. 13 and p. 74, respectively).

Figure 10 (Insights, p. 13), as a case in point, displays an asymmetrical way of positioning between the male speaker depicted sitting more comfortably, crossing his legs and sure of himself in a position of authority conjuring up presumably an iconic image of an authority official. He seems to be taking an active part being a source of information and a source of know-how for the female journalist interviewing him.
Drawing on the same image under interpretation and in addition to the notion of positioning, another more compelling parameter geared to accentuate male dominance is the way the two interlocutors are dressed. The male speaker is dressed in a very formal way fostering an image of an authority official with a suit and a tie. The female journalist is dressed in a casual way exuding an image of inferiority and subordination.

More revealing of this tendency among the sampled textbooks to magnify the supremacy and hegemony of men is figure 11 (Insights, p. 74). Women in this image are sitting being engrossed in their manual labor. A man is positioned standing in a patronizing way behind them presumably supervising their work. His firm statute looking from above at them and taking notes is very symbolic of the dualistic power relations between women and men in the workforce. Males’ supremacy and dominace are brought into spotlight. Women’s powerlessness, submissiveness, and subordination seem also to emerge being more highlighted through comparison with men’s postures. This is indeed another confirmation of the perennial discriminatory practices embedded in the visual discourse of these textbooks.

This is once again another revelation of what Sadiqi and Ennaji (2006) refer to as the ‘masculinization’ of the public space as opposed to the ‘feminization’ of the private space.

According to Goffman (1979), this gender display is again one of the re-occurring patterns deployed in visual images to intensify women’s subordinate role in society. As opposed to men, women are oftentimes visually positioned taking menial and peripheral roles. While men are seen as being active taking a position of power and dominance, women are more inclined to remain inactive, passive and just mere witnesses of what is going on around them.

This is symbolically suggestive of the hierarchical structure where males have to govern and rule the subordinates, the powerless and the most underprivileged classes of society, of which women form a major part. Through this gender display, women are weakened and disempowered perpetuating their traditional and stereotypical image as second-class citizens.
When women and men are visually presented undertaking an activity, it is more common to observe that men tend to carry out more ‘senior’ and ‘executive’ functions, while women continue to preserve their ‘junior’ and subordinate roles. This is symbolically expressive of patriarchal values and ideologies promulgating and perpetuating women’s social inferiority.

### 4.4 Ritualization of Subordination

This is another gender display used extensively in media advertising to perpetuate women’s social inferiority and their dependence on the protectiveness and assistance of men. Visual portrayals featuring women lying down, sitting, sleeping on beds, kneeling, or being physically wrapped up by men serve the criterion of Goffman’s (1979) conception of ‘Ritualization of subordination’.

Regarding the photographic data of this study, this gender display represents the highest demonstration with 119 sampled pictures, averaging a frequency count of 21.21%. The highest distribution of this gendered pattern is found in Outlook and Gateway-2 with a frequency of occurrence reaching 19.33% and 18.49%, correspondingly (Figure 15).

Conversely, Insights and Window seem to be almost bias-free with respect to this gender display as they have received very low frequencies averaging merely 4.20% and 5.04%, respectively. Likewise, the portrayal of this category in these two textbooks stands out as being the least stereotypical. On the whole, the frequency distribution of this gender display seems to be the most stereotypical feature of MEFL textbooks. Illustrative images displaying the positioning of women in this category can be seen through the following images: Figure 12 in Focus, p. 91; Figure 13 in Gateway-1, p. 111; and Figure 14 in Focus, p. 91.

As a matter of fact, ‘Ritualization of subordination’ is observed to be another more pervasive dimension of the visual discourse of the sampled textbooks. With Goffman’s (1979) vision of this gender display in mind, women are portrayed sleeping, sitting, lying down on the floor or on a sofa. This stands for their physical weakness, their victimization and disempowerment. This pose is symbolic of their powerlessness and defenselessness, which may sorely exacerbate their vulnerability rendering them being distressingly in dire need of man’s protection and help. This may also inflict the idea that women, and young girls are no exception to this, are meant to be cared for, supervised and be in command of.

Another symbolic feature of ‘ritualization of subordination’, reported in Goffman (1979), and found to be true with the images of this study is head canting. In Kang’s (1997) words, such an inclination among women to lower their bodies or heads (head and / or body canting postures) may symbolically connote their “acceptance of subordination, an expression of ingratiation, submissiveness and appeasement” (Kang, 1997, p. 46).

More exaggerated forms of ‘ritualization of subordination’ are expressed through such poses as bowing or kneeling in front of a man as is the case with image (Figure 12) in Focus (p. 65) and (Figure 13) in Gateway-1 (p. 111). In picture (Figure 12), for instance, a woman is depicted prostrating and kneeling down as a form of reverence in front of the man stretching her hand towards him as if seeking his mercy or protection. The man in image (Figure 13) is cast in a position of a supervisor standing and looking down over a young woman seated in a chair for disabled people, presumably guiding or instructing her. It is unmistakably true that the power relations of supremacy and hegemony, as conceived of by Goffman (1979) are clearly disseminated to us through this gender positioning of the two sexes. The body pose of the woman is very symbolic and seems to accentuate her powerlessness and vulnerability through her being seated as well as being disabled. This seems to conjure up an image of women’s subordination and powerlessness, and at the same time tends to extol and valorize the status of men through such symbolic postures of reverence and worship.

Figure 12. A male is standing in a firm position looking from above on his wife kneeling down and bowing in a ‘bashful knee-bend’ to play with her daughter

Figure 13. A male is in a powerful position instructing and coaching a woman in difficulty

Figure 14. A female is kneeling down in a powerless and submissive position as a gesture of reverence for the man

---


D. Benattabou
4.5 Licensed Withdrawal

According to Goffman (1979), there is a general tendency in the visual discourse of media advertising to depict women invariably being physically and/or psychologically disconnected from the environment surrounding them. Pictorial representations meeting the criteria of this gender display commonly portray women being dreamy, pensive, mentally drifting, overwhelmed with joy and with an ‘expansive smile’, talking over the phone, or through their eye or head aversion. They are more inclined to turn their head or body away from the focus of the camera. This positioning tends to render women on display for the male gaze. This has been deployed to heighten women’s absent-mindedness and seems to suggest their dependence on “the will of others” for guidance and protectiveness (Goffman, 1979).

In the light of the findings outlined above, almost all MEFL textbooks seem to be heavily fraught with these gendered traits characteristic of ‘licensed withdrawal’. The highest percentage of all gender displays along the sampled textbooks feature ‘Ritualization of subordination’ first (119 pictures), then ‘Relative size’ second (95 images) and ‘Licensed withdrawal’ third with 91 visual images (See Figure 1).

The results presented in figure 16 indicate that Focus has the highest percentage if compared with other textbooks with a frequency of occurrence of 15.38%. Ticket-1, Gateway-1 and Window are ranked second with the same distribution of 14.29% for each of them. Conversely, the least frequency count is observed in Insights and Visa with a percentage of 3.30% and 6.59%, respectively. For an illustration of women in this biased gender display, consider pictures: Figure 17 (Visa, p. 65) and Figure 18 (Gateway-1, p. 141).

As set forth by Goffman (1979), Kang (1997), Acevedo et al. (2006), and Kordijazi (2012), visual images characteristic of mainstream media discourse are more liable to portray women being physically and/or psychologically off place, the subliminal ideology behind which is to heighten their infantilized state of mind. Much emphasis has been made to depict them dreamy, pensive, turning their back to the camera, hiding themselves, or covering their faces as if unable to face and confront reality.

Equally important, there are many instances in the sampled data portraying women as if non-oriented, or being thoroughly thoughtless making telephone conversations. This gender display may accentuate the hidden ideology that women are alienated from the entire world surrounding them, which may connote, according to Goffman (1979), women’s susceptibility to be immature, irrational, uncertain about their acts, and being left under the control and protection of men.

4.6 The Family

With regard to this category, the findings of this analysis point out a number of pictures displaying men and women inside the family or playing a specific role with their children. There are on the whole 43 pictorial images displaying this feature.

Women are shown taking care of their children, offering meals, cooking, shopping with their kids or playing with them. There are also instances of women instructing their little daughters how to cook, how to take care of their brothers, or how to become good housewives in the future.
Male characters are also represented with the members of their family playing the role of fathers, instructors, making decisions and taking active roles. Additionally, male characters are depicted visually teaching their sons male-oriented activities and jobs. They are portrayed sharing the same interests either in terms of hobbies or sport activities.

*Focus* has the highest percentage of pictorial images displaying women and men as members of their family (Figure 19). There are 13 pictures with a percentage of 30.23%. The least distribution of appearance of women and men in these contexts is observed to be the case with *Gateway-1* and *Insights*. Their corresponding percentages are at 2.33 %, and 4.65 %, respectively. For model pictures featuring this dimension, see figure 20 (*Window*, p. 76).

According to Goffman (1979), family roles projected through visual images tend also to perpetuate the stereotypical views attached to women and men. The analysis of the textbooks contents for evidence of visual stereotyping of both women and men with respect to domestic life has yielded very intriguing messages. There is a general tendency to frame women in the home context far more often than men. For images which substantiate this biased tendency among the textbooks under consideration, see figure 21 (*Outlook*, p. 58), figure 22 (*Visa*, p. 19), and figure 23 (*Window*, p. 101).
4.7 Foregrounding and Back-grounding

Although this gender display has not been given any due consideration in previous studies geared towards the analysis of the visual portrayal of women and men either in media advertising or in textbooks, this study contributes in this direction by proving through evidence that this parameter is once again another more important and recurrent aspect of visual sexism. The use of this gendered pose makes this study differs from previous research in this area, and makes of it unique in itself.

Like with ‘Relative size’ and ‘Function ranking’, ‘Foregrounding / back-grounding’ is processed only through visual images displaying women and men in the vicinity of each other. Only images of women pictorially cast in the background behind men have been culled for this category of gender display. It is often the case that people positioned in visual depictions at the forefront of the picture are assigned higher status and more social prominence.

This gender display designed for the purposes of this study presupposes that women are back-grounded and therefore made almost unseen to viewers.
Foregrounding is a feature expected to prioritize and place persons at the front line, and thus accord them more visibility and more magnitude.

Regarding the findings of this study, this gender display is observed to be another more common feature of MEFL textbooks. There is more inclination among the sampled textbooks to prioritize and foreground male characters and to relegate women to a secondary position through back-grounding.

This pictorial pattern in the positioning of women and men is found to exist in 77 pictures representing a frequency of occurrence of 13.73%. This turns out to be higher in its distribution if compared with some of Goffman’s (1979) gender categories (See figure 1).

In view of our results, the category of ‘Foregrounding/back-grounding’ is more frequent than Goffman’s conceptions of ‘Function ranking’, and ‘the Family’. These two last categories figure in the data under study with less frequencies of occurrence averaging merely 8.56% and 7.66%, respectively.

Considering its distribution along the sampled textbooks, Gateway-2, and Outlook stand out as being more biased in foregrounding men and placing women in a back-grounded position in 11 pictures representing a percentage of 14.28% for each one of them (Figure 24). The least stereotypical depictions featuring this tendency have been found only in Window averaging a frequency count of 3.90%. It is worth noting also that the distribution of this gender category in the remaining textbooks is almost the same averaging 12.99% for Ticket-2, 11.69% for Ticket-1 and Gateway-1; and 10.39% for all of Insights, Visa and Focus. For an illustration of this gender display, consider the following pictures: Figure 25 (Gateway-2, p. 136), Figure 26 (Outlook, p. 56), and Figure 27 (Outlook, p. 22).

This posture seems to be very symbolic and evocative of the ideological tendencies of mainstream media discourse to accentuate women’s secondary role and to spotlight their inability to break the gender barriers. This is found to be another predominant trend in our photographic data. People positioned in a background stage are seen as subordinates, while those sitting or standing at the forefront of the image are accorded higher status. Despite the wide spread circulation of such expressions as ‘ladies first’, these are visual reminders for women to remain eternally inactive and in a perpetual position of staying back. This seems once again to over-emphasize women’s stereotypical status as ‘second-class citizens’.

![Figure 24. The pictorial distribution of ‘Foregrounding/back-grounding’ throughout the sampled textbooks](image)

![Figure 25. A graduate male student is jumping in the air being positioned at the forefront of the image](image)

![Figure 26. A woman is backgrounded while the man is foregrounded taking a larger space in the picture](image)

![Figure 27. A male is in full size taking a larger space than the female](image)
In view of the overall frequencies of the seven categories of gender display throughout the sampled textbooks, Outlook and Focus stand out as the most stereotypical textbooks. The numbers of visual depictions included in the contents of these textbooks reach 87 images representing 15.51% for Outlook, and 15.32% for Focus with 86 pictures. Ticket-1, Gateway-2 and Ticket-2 come next with 76, 68 and 67 pictures each one of them averaging a frequency count of 13.54%, 12.12% and 11.94%, respectively. Visa and Gateway-1 are ranked six and seven in the scale with 47 and 46 pictures each representing a frequency count of 8.37% and 8.19%, in that order. Insights and Window seem to be the only MEFL textbooks receiving the least stereotypical representation of images with a percentage of merely 7.66% (43 images), and (41 images), respectively.

5 DISCUSSION

The pictorial images of MEFL textbooks have been analyzed to determine their unfairness in depicting visually female and male characters utilizing seven semiotic categories of gender display.

The findings regarding the pictorial representation of women and men along the seven categories of gender display seem to reinforce the same stereotypical patterns characteristic of the old past. There is a wide range of images which continue to depict women as submissive, subservient, shorter in size, being dependent on the assistance and protectiveness of men, and being active only in peripheral and marginal roles. These results seem to echo to a great extent the findings reported in Goffman (1979), Kang (1997), Acevedo et al. (2006), Kordiazi (2012) and Mathuvi et al. (2012). These findings do also resonate well with other research studies exploring the visual discourses of the same textbooks (Benattabou, 2020; 2021).

Drawing on Goffman’s (1979) social semiotic analysis, women are still depicted visually shorter and smaller in size than men. They are also depicted being docile, socially inferior, and deferential to men. More leadership and managerial roles are assigned to men. Women are cast undertaking merely menial or peripheral jobs. Inside the family context, women have no other preoccupation other than being mere submissive and subservient mothers and housewives.

Men, by contrast, are given the privilege to enjoy more dominant roles. The same gendered roles have been transmitted to both girls and boys as future women and men, respectively. Men are also given the prerogative right to be more fore-grounded in the frame of pictures than women.

Two major methodological problems deserve mention here. Firstly, as discussed earlier, the problem with visual depictions is that sometimes an image may project more than one of Goffman’s (1979) categories of gender display. Figure 11 (Insights, p. 74), alluded to earlier as a case in point, calls to mind both Goffman’s (1979) vision of ‘Function ranking’ (women doing clerical and/or menial work while men undertake more senior roles), and ‘Ritualization of subordination’ (women positioned sitting, bowing, prostrating, or lying down).

Secondly, although the Moroccan society is different in tremendous ways from the prevailing practices of western cultures, the results of this study of the visual discourse of these textbooks are in complete harmony with Goffman’s (1979) gender displays. Two possible interpretations may explain this. First, the widespread of multi-media means, of which social media networks like ‘Facebook’, ‘Youtube’ and ‘Twitter’ constitute a fundamental part, have impregnated the Moroccan culture through the vast circulation of streams of analogous images. The second explanation finds true expression in Sadiqi’s (2008 b, p. 166) cogent observation that “compared to many other Arab countries in the Middle East or even in North Africa, Morocco is more open to cross-cultural exchanges, including a European mainstream perception of gender roles” (2008 b, p. 166).

This secondary and subservient occupational position female characters have oftentimes been relegated to may not have only short term side effects, but may also have long-lasting pernicious effects on female language learners, in particular, affecting not only the development of their personality, but their professional careers as well. Continuous exposure to such biased pictorial images may also obfuscate language learners’ understanding of what it means to be a future woman or man in society (Sunderland, 1994; Lee and Collins, 2010; Good et al., 2010).

When considering the nature of the population under investigation, there is a significant overrepresentation of visual images featuring people of white color, and having a westernized Outlook. Amazigh people with their traditional clothing as well as people of black color, or people with disabilities have been almost thoroughly excluded from the visual discourse of MEFL textbooks except with very few cases. These textbooks seem to fail in reflecting the cultural and ethnic plurality of the Moroccan society.

Although this invisibility and marginalization was not the concern of the present study, it would perhaps be very intriguing to assess if the same patterns of bias prevail in other school textbooks used for educational purposes. By veering away from such stereotypical images, we are more likely to open more social opportunities for all foreign language students, regardless of their gender, cultural or ethnic diversity.

6 CONCLUSION

Goffman’s (1979) social semiotic approach of gender display, along with content analysis and critical image analysis, seems to have enhanced our understanding of a
multitude of symbolic ideologies in discrimination of women. The image of women in the selected textbooks currently in use in the Moroccan educational system has not changed much since Goffman’s Gender Advertisement in 1979. The pictorial representation of women has not been subject to any alteration from the stereotypical image of a mother, a housewife, subordinate, absent-minded, powerless and fragile towards a more enhanced and realistic vision of women who are active, independent, equal to men and competent enough both in professional and leadership roles.

Although women comprise half of the population of Morocco, and despite the substantial strides they have made in an array of social and professional domains, they are still subject to a number of social and cultural misconceptions which continue to consider them as inferior, subordinate, submissive and perpetually in dire need of man’s control.

MEFL textbooks may do a great disservice to female students in particular mainly those who may identify themselves with the model characters of the visual content. Textbook designers and teachers alike may go beyond the confines of such stereotypical attitudes of the past, and should endeavor to weed out and eliminate any aspect of sexism and prejudice that may perhaps be conducive to a lowering of the educational standards among Moroccan students. The road towards more equality of opportunity will undoubtedly remain stiff and tough as long as these sexist values and biased views will continue lurking in the visual discourse of these textbooks.

ABBREVIATIONS

MEFL: Moroccan English as a Foreign Language.

CONFLICT OF INTEREST

This paper has no conflict of interest.

REFERENCES


---