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A Pragma-Semiotic Analysis of Headlight Flashing Used by Drivers in the Jordanian Context

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Abstract. This study investigates the pragmatic functions of headlight flashing (HF) as a gestural signal used and perceived by the drivers of public cars in Jordan. Data are collected from interviews with 60 male drivers of such cars who are asked to report why they use HF in different contexts and how they perceive it on the basis of their actual use and exposure to this signal. The analysis shows that HF has 11 functions viz., drawing attention, catcalling, warning, asking for help, offering a lift, urging (someone to move), instructing pedestrians or street users to go away, giving priority, greeting, thanking, and placing an order. The study reveals that HF is functional and used frequently by drivers for different purposes in the Jordanian context. The study concludes that HF is employed more for positive functions than negative ones.

Keywords: car, gesture, pragmatics, semiotics

Прагма-семиотический анализ сигналов фарами, используемых водителями Иордании

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Аннотация. Темой исследования стали прагматические функции сигналов фарами (HF) как жестового сигнала, используемого и воспринимаемого водителями личного транспорта в Иордании. Данные собраны из интервью с 60 мужчинами-водителями, которых попросили сообщить, почему они используют HF в разных контекстах и как они воспринимают сигналы фарами в их фактическом использовании, а также описать воздействие этого сигнала на внимание водителей в различных ситуациях. Анализ показывает, что HF имеет 11 функций, а именно: привлечение внимания, свист, предупреждение, просьба о помощи, предложение подвезти, побуждение (кого-либо переехать), указание пешеходам или участникам дорожного движения уйти, предоставление приоритета, приветствие, благодарность и готовность подвезти. Исследование показывает, что HF является функциональным и часто используется водителями для разных целей в иорданском контексте. Исследователи приходят к выводу о том, что HF используется больше в положительных контекстах, чем в отрицательных.

Ключевые слова: автомобиль, жест, прагматика, семиотика

Introduction

The need to communicate and socialize drives individuals around the world to employ two modes of communication, namely; verbal which refers to spoken words used to deliver the meaning of the message, and non-verbal which includes any behavior other than verbal language such as facial expressions, eye contact, vocal tone, and body language. Non-verbal communication was also called unspoken dialogue. Burgoon, Manusov and Guerrero [1. P. 3] also define it as "all those messages that people exchange beyond (and alongside) the words themselves". The use of nonverbal communication proves to be significant to support verbal communication, to clarify individuals' intensions and enhance social interaction. Burgoon, et al. [1] highlight the importance of nonverbal cues stating that these elements including body, face, voice, appearance, touch and physical surroundings, play a role in delivering messages. Further, they posit that nonverbal cues precede

the verbal ones in many situations, which provides useful and relevant information to interlocutors involved in a conversation earlier than the stage of speech production.

The importance of nonverbal communication attracted the attention of several scholars in a few early studies. Hall [2] states that 60 percent of human communication is nonverbal. Mehrabian and Ferris [3] and Mehrabian and Wiener [4] confirm that the nonverbal component has a stronger effect than the verbal component in any conversation; their study reveals that 93 percent of all meaning is derived from nonverbal communication, and that the remaining 7 percent comes from verbal communication. More specifically, Mehrabian and Wiener [4] propose the "55-38-7" rule, which states that effective communication, consists of 55 percent body language, 38 percent voice features and seven percent content of the words a speaker uses. Although the previous two claims have been used extensively in the literature, they have been revised by several studies [5–7]. These studies report that these claims have not been supported by empirical data. Even though, this does not rule out the proposal that nonverbal cues are more effective and persuasive than the verbal ones.

Non-verbal communication has proved to be successful in a variety of domains. Dwyer [8] states that if the verbal element of a message does not present a better match with the nonverbal element, then there is a tendency to trust the nonverbal element. Phutela [9] agrees that non-verbal communication can replace verbal communication in different situations. She suggests that individuals involved in any social interaction tend to rely on non-verbal cues to interpret the true meaning of communication rather than the verbal elements.

In an attempt to examine students' perceptions of non-verbal communication in classrooms, several studies show that the use of nonverbal elements, like facial expressions, voice features, gestures and eye contact is functional and helps teachers to check student concentration in class; they also check students' comprehension and encourage their critical thinking [10–13]. Moreover, non-verbal elements can help teachers to elicit vocabulary from the learners and to provide learners with visual cues to corrective feedback. In the same vein, other studies indicate that a teacher who never uses eye contact seems to lack confidence, which gives the students a sense of insecurity [13–15]. In support of this, Cruickshank, Jenkins and Metcalf [16] conclude that nonverbal cues have an influence on teacher's trustworthiness and credibility regardless of a teacher's knowledge, experience, education level, or position.

Gestural communication in driving

Gestures have been widely used as signals to convey several messages, thoughts, expressions or emotions. They are used in all situations while talking, presenting, eating, drinking even while driving. In a more specific domain, driving is a social task that involves drivers and other road users who need to communicate in different ways and situations. This type of communication through gestures is very important to drivers. In actuality, it helps them make their intentions clear, express what they want quickly and easily, and explain otherwise offensive behavior [17].

It is important to highlight that most of driver communications through gestures are conducted when they are inside their vehicles, which may create a physical barrier. This would make it difficult for a driver to capture other drivers or road users' verbal forms; therefore, gestures can be quite productive.

Zhuang and Wu [18] collected 11 proposed pedestrian gestures which were judged by Chinese drivers for visibility, clarity and familiarity. The study showed that the gesture left elbow bent with hands level and palm facing left used by pedestrians significantly increased the drivers' slowing down when passing through. The study also suggested that pedestrians should be trained on how to use road-related gestures and drivers should be trained on how to properly interpret and respond to such gestures. Risto, Emmenegger, Vinkhuyzen, Cefkin and Hollan [19] investigated how drivers and other road users interact in natural traffic interactions. To obtain real data validation, multiple cameras recorded this natural interaction between drivers and other road users. The researchers paid attention to the drivers' responses with the presence of traffic control devices such as stoplights and signs, and how they would change their behavior in the presence of other road users. The study showed that several gestures were deliberately used by drivers to communicate with other road users and that there was a common understanding of the meaning between them. In the same direction, Małecki [20] focused on gesture-based interaction and conducted a survey involving 40 people (drivers and non-drivers) in order to collect their opinions and their knowledge about hand gestures. A set of gestures was established and used to develop six scenarios to be employed in this study. Then experiments using hand gestures were conducted involving 13 participants who were tested on their recognition and interaction with the presented hand gestures. Notably, each hand was used separately to present gestures. The results showed that performance of the left hand was slightly better than that of the right hand. The study revealed that there is an interest in gesture-based systems among participants.

Likewise, drivers in Jordan employ a wide range of gestures. Abu Hatab [21] provided an analysis of 100 taxi drivers' gestures in Jordan. The study revealed that age and education of taxi drivers affected the type and frequency of gestures used. Particularly, young drivers tended to gesture more than old drivers, and old drivers with university education gestured more than those with limited school education.

Gestures are not only motions that are expressed by employing body movements, they are also signs made by tools that serve the intended meaning. In this sense, drivers do not only rely on words or hand gestures to convey messages. There are additional visual cues like lights which play a role in conveying messages to all road users even when drivers are inside their vehicles. Several studies confirmed that lighting systems are necessary for safe drive and road users [22; 23].

The previous studies highlight the effectiveness of non-verbal communication forms including gestures. One of the most frequent gestures which are used by drivers is Headlight Flashing (HF), the focus of the study reported here. It is presented in the following section.

HF as a gestural instrument

In the absence of a well-established definition of HF, we suggest that HF is a gestural instrument which car drivers use while on the road to communicate with each other or with pedestrians in which they present a short and rapid alternation between high beams and low beams. HF can also be termed as headlight blinking as it assimilates with the act of eye blinking which shows semi-automatic rapid closing of the eyelid. In Jordan, this light is called 'lattaʃ' or 'dim', and the act of using it is called 'talti:ʃ' or 'dimming'. It has been widely used as a means of facilitating driver-to-driver or driver-to-pedestrian communication. Some drivers prefer using HF instead of blowing a horn because they think it is less noisy. Such drivers do not prefer using the horn when they drive near houses or schools as it might be a source of nuisance. Further, the use of horns is less effective to grab the attention of drivers who play music loudly while on duty. In addition to these points, some drivers' horns do not work, and this drives them to use HF instead. Few studies are conducted on flashing lights to particularly examine the drivers' perception and interpretation of this signal.

Kersavage, Skinner, Bullough, Garvey, Donnell and Rea [24] investigated drivers' behavior in response to flashing lights. Participants were requested to drive a vehicle approaching the work zone in order to identify whether the direction of the taper's lane was changed either to the right or to the left. The analysis showed that drivers were able to identify the taper from farther away more accurately when the flash pattern was in sequence than when the flash pattern was random; and the presence of a police light bar promoted shorter identification distances.

Chan and Ng [25] and Turner, Wylde, Langham and Morrow [26] reported that road users including drivers interpret flashes with high frequencies i.e., fast repeated flashes, as more «urgent» than slower flash frequencies. More recently, Skinner, LaPlumm and Bullough [27] examined the behavior of drivers toward different flash frequencies (1 Hz and 4 Hz flashing lights). The results revealed that even if drivers are not instructed about the meanings of different flash frequencies, they can interpret flashing lights; they can also make accurate predictions about their meanings.

As is clear, research has tended to focus on light flashing in terms of frequency and predictability of its meaning in some situations. However, to the researchers' best knowledge, the analysis of HF from pragmatic and semiotic perspectives has not been the focus of any study across languages and cultures including Jordan. This, we believe, makes this topic worthy of investigation.
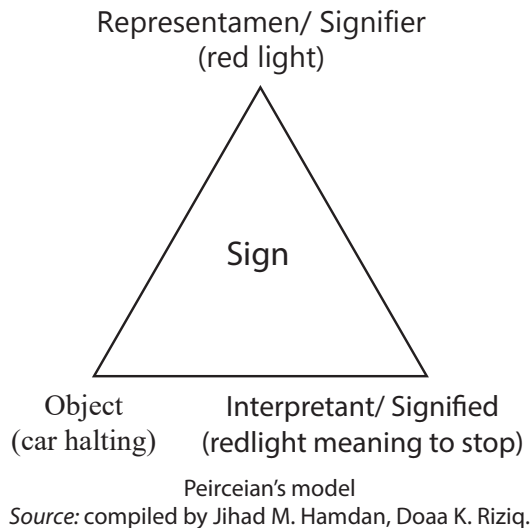
The study proceeds as follows. Section two presents the theoretical framework used to analyze the data of the study. Section three describes the method, and section four presents the findings followed by discussion in section five. Conclusion and recommendations are presented in section six.

Semiotics

Saussure and Peirce are broadly regarded as the co-founders of what is known as semiotics. Saussure (cited in [36; 37]) proposed his dyadic model of a sign, which is represented as the whole that results from the connection between the signifier (i.e., the form that the sign takes) and the signified (i.e., the concept it represents). Peirce [38] highlighted the importance of the active process of interpretation. According to him, meanings are made through the creation and interpretation of signs, which take the form of words, images, sounds, odors, acts or objects. To interpret signs, Peirce (cited in [37]) proposed a dominant triadic model, as presented below:

1. Representamen (signifier): the physical form of the sign;
2. Interpretant (signified): the sense made of the sign;
3. Object: what the sign stands for.

The interaction between the three components of Peirceian's model is denoted by Peirce as a process of semiosis [37]. Peirce [38] provided a straightforward example, relevant to the focus of the study to explain his model. The traffic light that signals stopping consists of a red-light facing traffic at an intersection (the representamen); a car halting (the object) and the idea that a red light indicates that the car must stop (the interpretant) (see the figure).

Representamen/ Signifier
(red light)

Sign

Object
(car halting)

Interpretant/ Signified
(redlight meaning to stop)

Peirceian's model
Source: compiled by Jihad M. Hamdan, Doaa K. Riziq.

Peirce's model of a sign.
Method.
Subjects

The subjects of the study make up a convenient sample that consists of 60 male drivers from Amman, the capital of Jordan. They are native speakers of Jordanian Arabic within an age range of 22–50 years and with a minimum of a five-year driving experience. Amman has grown from a small village like city to the largest urban centre in Jordan over the past 75 years, thanks to the

two huge waves of Palestinian refugees after the 1948 and 1967 wars with Israel in addition to internal immigration form villages and small towns. Thus, it includes citizens from different parts of the country. From a socio-economic perspective, Amman's eastern part is less developed that the western one. However, public car drivers tour all suburbs and quarters of the city, and they use their HF signals with pedestrians and other drivers alike. Apparently, these signals are unambiguously perceived by all concerned parties, an indication that they are part and parcel of the pragma-semiotics of the city. Amman is selected to serve as a representative sample of the broader Jordanian context. This diversity, we believe, contributes to the richness of Amman's social fabric and makes it an ideal location for this study.

Data collection

Data were collected through individual interviews with the target drivers carried out in different areas in Amman. Each interview was divided into two parts. The first part was intended to elicit background information about each participant such as name, age and driving experience. The second part was meant to elicit experience-based information on the use of HF. Each participant was asked to respond to a set of five requests prepared by the researchers. The requests were structured as follows:

1. Report instances in which you found it necessary to employ HF when a vehicle was in front of you.
2. Specify situations where you felt compelled to use HF as a car approached from the opposite direction.
3. Highlight scenarios in which you had to resort to HF when a vehicle sought to cross your path.
4. Outline circumstances that prompted you to utilize HF with individuals or passengers.
5. Elaborate on the source or method through which you acquired knowledge about the use of HF.

The contexts took the form of scenarios. Each interview took around ten minutes, and the subjects' responses were audio-recorded for subsequent qualitative analysis.

Data analysis

The scenarios suggested by the 60 subjects were used as a database to identify and label the pragmatic functions of HF. They were analyzed using insights from Peirce's semiotic model. This pragma-semiotic method is carried out to identify the pragmatic functions of HF in different contexts as well as to describe how interlocutors in a context gesturally construct and perceive this sign.

Findings

The analysis of the collected data showed that HF is used to express 11 pragmatic functions that are realized by the use of this signal in different contexts. Below is a presentation of each function followed by its context. A detailed qualitative pragma-semiotic analysis and interpretation is presented utilizing insights from Peirce's triadic model. For space limitation, only one or two examples are provided under each function. For the sake of clarification, the context is provided in English whereas the meaning of HF is presented in Jordanian Arabic followed by transcription and an English gloss. It should be noted that when two drivers are included in a scenario, they are referred to as driver A and driver B, whilst when one driver is included, he is referred to as driver.

Drawing Attention

[Context] A driver wants to quickly pick up a passenger (upon request) who stands on the sidewalk. While approaching him, he flashes repeatedly, which means:

أنا وصلت
ana wṣilit
'I arrived'

In this context, the driver employs HF to alert the passenger that he has arrived, so that he could quickly jump in. HF is used here as an alternative option to blowing the horn as the former is considered an effective signal to draw one's attention without making noise. Flashing with high frequencies here can be interpreted as urgent, so it is expected that the addressee responds quickly and get into the car as fast as possible, so the car does not block the roadway or affect the free flow speed.

Using Peirce's terminology, the pragma-semiotic analysis of HF (Drawing Attention) is as follows: the fast repeated HF is the representamen, indicating the driver's intention to communicate with the passenger; the act of picking up the passenger is the object while the interpretant is the understanding that the driver wants to draw the passenger's attention.

Catcalling

[Context] A driver sees a woman walking in the street in the opposite direction. He wants to draw her attention; he flashes his headlight frequently, so the woman can see the light, which means:

شو يا حلوة
ʃu: ja: ħilwi
'What a beautiful lady!'

Catcalling is a form of street harassment purposefully performed by male strangers to females who are commonly victims of this type of harassment in public areas. In this context, the driver wants to receive attention from the woman. For this purpose, he in this context uses HF. As mentioned by the subjects, the use of this signal in this context to convey the function of catcalling is more effective when it is accompanied with hand gestures and verbal reaction.

The repeated HF in the catcalling function is the representamen, conveying the message of street harassment. The object, a woman being harassed, represents the real-life situation that the catcalling is referencing. The interpretant, the idea that the driver catcalls the woman, is the message that is derived from the representamen-object relationship.

Warning

Example 1

[Context] Driver A notices that there is something that is worth being passed on to drivers on the other side of road, e.g., an accident blocking the road, cameras, speed traps, traffic officer or radars. He flashes his headlight to driver B who is coming from the other side quickly three to five times, which means:

انتبه
ʔintabih
'Watch out!'

In this context, driver A wants to warn driver B that there is a potential problem/threat because of an accident blocking the road, speed traps, police presence or radars. Once driver A uses HF, the massage is interpreted as warning, so driver B takes action and starts slowing down and driving carefully.

Example 2

[Context] Driver A drives his car with an open boot in front of driver B. He plays music loudly. Driver B notices this and wants to warn driver A, so he flashes his headlight quickly, which means:

سكّر صندوق سيارتك انتبه
sakkir sandu:g- sajja:rtak
'Close the boot of your car'

In this proposed scenario, driver B wants to warn driver A by using HF as the boot of his car is open. HF proves to be powerful especially in this case when music is on. To convey the message clearly, driver B could also have used hand gestures to reinforce HF.

The pragma-semiotic function of HF (Warning) indicates that the fast repeated HF acts as a representamen; the interpretant, in this case, is the sense of urgency conveyed to driver A, and the object is driver A's immediate response and implementation of precautionary measures to avoid potential danger.

Asking for help

[Context] A driver drives his car, and a passenger next to him looks suspicious. The driver is nervous, so he flashes his headlight repeatedly to the traffic officer parking on the road shoulder to indicate that he is in dire for assistance, which means:

وقفني
waggifni:
'Stop me'

The frequent use of HF in such a context is more effective than honking because this signal is silent, so it does not expose the driver's anxiety and fear; neither, does it alert the suspicious passenger. Simply, it is a way to ask for help from the traffic officer parking, so he might stop the car, which gives the driver a chance to unveil his worries.

In this pragma-semiotic analysis, the fast repeated HF can be seen as the representamen, which effectively conveys a message and prompts the traffic officer's understanding. The intended interpretant is the driver's alerting the traffic officer to take action. The object of this communication is the traffic officer to fully comprehend the urgency of the situation and promptly react to it.

Offering a lift

[Context] A driver looks for passengers to fill empty seats. He flashes his headlight to people standing on the sidewalk, which means:

بدك تركب؟
biddak tirkab
'Do you want a ride?'

As is clear, HF is not only used between drivers, but also with pedestrians walking in the street. In this context, the driver uses HF to ask for more passengers to fill empty seats. Some drivers prefer to use the horn for this purpose; they think that the use of HF is not as powerful as the horn. However, other drivers report that it is more effective than using horns especially when they drive in quiet areas.

The representamen in this scenario is HF, which serves as a clear signal to the pedestrians. The object is the pedestrians recognizing the offer of a lift and accepting it. The interpretant is the driver's intention to offer a lift to the pedestrians by using HF.

Urging someone to move

Example 1
[Context] The traffic light is red. Driver A stops his car in front of driver B who is in great haste and wants to pass the traffic light quickly. As soon as the traffic light turns green, driver B flashes his headlight quickly and repeatedly, which means:

تحرّك.
tḥarrak!
'Go!'

As can be seen in this scenario, HF is used to urge the other driver to move. In particular, driver A was urged to speed up or to move away, so driver B can proceed. The use of this signal reduces the effort of verbal communication and conveys a comprehensible message that drivers can understand. Below is another example.

Example 2
[Context] On a high way, on the left lane driver A drives his car slowly in front of driver B who wants to overpass the car; driver B flashes his headlight quickly three to five times, which means one of the following:

ابعد

ʔibʕid

'Clear the way'

Or

روح يمين

ru:ħ yami:n

'Move to the right'

HF is used in this scenario to ask driver A to move away or to move to the right lane, so that he can overpass. In both contexts, different messages are conveyed for the same function which is urging the other driver to act quickly. The use of this signal is very effective in such contexts because the drivers are inside their vehicles, and their facial expressions are probably not comprehensible and their verbal behavior is not audible.

The fast repeated HF in this context is the representamen that conveys a specific message. The interpretant indicates a sense of impatience on the part of driver B, prompting driver A to accelerate or create distance between them. The object is driver A's reaction or immediate response after receiving this signal.

Instructing pedestrians or street users to go away

[Context] A driver drives his car while some kids are playing football in the street without paying attention to the cars passing the road. He flashes his headlight repeatedly, which means:

ابعدوا!

ʔibiʕdu:

'Go away'

This context also shows another example in which HF is used with pedestrians i.e., kids playing in the street in this example. As presented in the context, HF is employed here to instruct these kids to play away from the road. The repetition of the HF serves an urgent purpose, i.e., to make sure that the kids have got the message and acted accordingly. Blowing horns can also be used for the same function, but this may scare the kids and expose themselves to danger.

In this pragma-semiotic analysis, the fast repeated HF is the representamen. The object is the pedestrians' act of moving away from the road after receiving this signal. The interpretant is the idea that the driver instructs the pedestrians and other street users to stay away from the road for their safety.

Giving priority

[Context] When driver A and driver B approach an intersection, driver A flashes his headlight while driving slowly and ends with a stop which means:

خد الطريق.

χud -itari:g

'It is all yours'

Giving priority is another pragmatic function of HF which is employed here to give priority to driver B to take the way and move.

In this scenario, HF is the representamen to deliver a message. The object in this interaction is prompting driver B to take the way. By signaling that driver A is giving propriety to driver B, the interpretant is established, ensuring that driver B understands that he can proceed on the way.

Greeting

[Context] While driving, driver A sees his friend (i.e., driver B) in the opposite direction. He flashes his headlight repeatedly to make sure he gets his friend's attention and conveys greeting:

مرحبا
marħaba
'Hello'

HF is employed here as a signal of greeting which means in this context 'Hello'. However, in daily interaction, it may suggest specific time related forms of greeting. It can be interpreted as 'Hi', 'Good morning', 'Good evening' and 'Good afternoon'.

The pragma-semiotic analysis shows that the representamen in this scenario is the repeated HF. The object is driver B, the recipient of greeting from driver A. The interpretant is that HF signals a friendly greeting between drivers.

Thanking

[Context] When driver A gives driver B the way, driver B flashes his headlight as a thank you gesture:

شكرا
ʃukran
'Thank you'

As shown in this scenario, HF conveys a positive and a polite attitude. It shows gratitude to driver A who gives the way to driver B, so his car can pass.

HF is the representamen in this example. The object is driver B receiving a thank you gesture from driver A and feeling acknowledged and appreciated. The interpretant is formed in the mind of driver B, who understands that HF is a gesture of gratitude from driver A.

Placing an order

[Context] A driver pulls up by a street cafe. He flashes his headlight to the service assistance there, which means:

. تعال و خد الطلب
taʕa:l w χud ittalab
'Come and take the order'

To save more effort and time, HF is used in this context to avoid complete parking, leaving the car and moving toward the coffee shop to order. Instead, the service assistance comes up and takes the order.

In this scenario, HF serves as the representamen, indicating the act of placing an order. The service assistance receiving HF to take the order is the object. The interpretant is the understanding that HF is a signal for ordering service assistance.

Discussion

Analysis of the data reveals that HF as a gestural signal is pragmatically multifunctional in Jordan as it conveys 11 different pragmatic functions, viz., drawing attention, catcalling, warning, asking for help, offering a lift, urging someone to move, instructing pedestrians or street users to go away, giving priority, greeting, thanking and placing an order. As is clear, Jordanian drivers are aware of HF uses and functions. The study also shows that HF is mainly employed to serve more positive pragmatic functions than negative ones. Drawing attention, warning, asking for help, offering a lift, urging someone to move, instructing pedestrians or street users to go away, giving priority, greeting, thanking and placing an order are all positive functions. In contrast, one negative function was attested, namely, catcalling, which is employed to annoy females while walking in the street.

The analysis of data also reveals that the interpretation of HF varies according to different degrees of frequency. When HF is used repeatedly, i.e., at higher degrees of frequency, it demonstrates an urgent case. This high frequency serves as an intensifier and thus is used when the driver wants to make sure that his HF message has been successfully received. This result supports Chan and Ng [25] and Turner et al. [26]. To illustrate, HF is employed when the situation is urgent with greater frequency to serve the following functions: drawing attention, catcalling, warning, asking for help, urging someone to move and instructing pedestrians or street users to go away. Other functions are conveyed with lower degrees of frequency confirming that the situation is less or not urgent.

The reported results suggest that each context brings the meaning of a sign as a response to the interaction between the interlocutors in a context who shape signs and meanings. This is also consistent with Peirce's [38] interpretation of signs. Precisely, the interpretation of HF takes place through the process of semiosis and thus inferences. The study also points out that Peirce's model provides comprehensive frameworks for understanding the underlying meanings and intentions behind symbolic gestures such as HF.

Interviews show that drivers do not learn about the use of this signal from any source. Apparently, the HF practices have a long history and thus shared by the majority of Jordanian drivers. Actually, the driving experience involves them in a variety of situations which brought about the active use of this signal. In addition, the subjects suggest that almost all drivers tend to understand the

different meanings of HF signal; however, the process of perceiving the message conveyed through this signal is still challenging for some other road users. This may suggest that road users should be instructed about the multiple functions of HF.

Summary and recommendations

The present study has investigated the pragmatic functions of HF in the Jordanian context. Interviews were conducted with 60 male drivers to identify the pragmatic functions of HF. The analysis revealed the following 11 functions of HF: drawing attention, catcalling, warning, asking for help, offering a lift, urging someone to move, instructing pedestrians or street users to go away, giving priority, greeting, thanking and placing an order. This demonstrates that HF is pragmatically functional since it evolves in different contexts of communication.

Future research may address pragma-semiotic analysis of HF in other Arab contexts, e.g., Syrian, Egyptian, Algerian, etc. This may unveil the extent to which sub-Arab cultures influence this form of nonverbal communication [39]. It is also valuable to examine whether private and public cars drivers exhibit differences when using and perceiving HF. Additionally, the study highlights the potential for further exploration of Peirce's model in analyzing other types of symbolic gestures beyond HF. Further research may also examine whether HF is influenced by social variables like age, gender and education.

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[1] Here and further, the * sign marks social networks that are part of the Meta Corporation, whose activities have been recognized as extremist and banned in the territory of the Russian Federation since March 2022.

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