

## A new look at *-esh*: Eye-tracking a novel Persian agreement marker

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**Background:** In Persian, a new marker *-esh* is optionally added to 3SG past verbs. While some argue that it is a grammaticalized agreement form of the homophonous 3SG object clitic (Rasekh 2017), some claim that it retains some clitic properties like optionality on the verb and blocking subsequent clitics unlike other agreement markers in Persian (Mahootian & Gerbhardt 2019).

In Persian complex verbs, this new marker cannot attach to the non-verbal element as this position is reserved for object clitics co-referring with specific objects only (1a). When it attaches to the verbal element, though, it is forced to be an agreement marker if the object is non-specific (1b) and can co-refer with both the subject or a specific object if the object is specific (1c).

- (1) a. *Ali<sub>i</sub> Sara<sub>j</sub>-ro bus-esh<sub>\*i/j</sub> kard* b. *Ali<sub>i</sub> pesar<sub>j</sub> bus kard-esh<sub>i/\*j</sub>* c. *Ali<sub>i</sub> Sara<sub>j</sub>-ro bus kard-esh<sub>i/j</sub>*  
 Ali Sara-OBJ kiss-esh did Ali boy kiss did-esh Ali Sara-OBJ kiss did-esh  
 ‘Ali kissed Sarah.’ ‘Ali kissed a boy.’ Ali kissed Sara.’

**This study:** To the best of my knowledge, no studies have systematically examined the real-time processing of this marker. In this study, the position of *-esh* in complex verbs and specificity of the object are manipulated while participants’ real-time eye fixations are recorded to determine whether participants process this marker differently when it cannot be an object clitic as in (1b).

**Methodology:** Three types of trials are constructed: Agreement, Clitic, and Test. Each trial consists of a transitive adverbial clause followed by a matrix clause with no reference to entities in the adverbial clause. The embedded subject is always a proper noun that mismatches the object’s gender. In Agreement trials, the object is a non-specific noun followed by a complex verb with *-esh* attaching to the verbal element co-referring with the subject as in (1b). In Clitic trials, *-esh* attaches to the non-verbal element co-referring with the proper noun as in (1a). In Test trials, the embedded object is a proper noun and *-esh* attaches to the verbal element of complex verbs making both embedded subject and the object available as co-referents for *-esh* as in (1c). Participants hear trials while images (visual world paradigm) of the embedded subjects and objects are displayed on screen and an eye-tracker records their eye fixations on each image upon hearing *-esh*.

	Temporal Adverb	Subj.	Obj.	Locative	NonVerbal	Verbal
Agreement Trials:		Proper	NonSpec.			<i>-esh</i>
Clitic Trials:		Proper	Proper		<i>-esh</i>	
Test Trials:		Proper	Proper			<i>-esh</i>

**Results:** Net eye fixations on the subject and object interest areas are calculated in five windows of 300ms after the onset of *-esh*. The results show that in all windows the net fixations are more subject-oriented in Agreement trials than in Clitic and Test trials which are more object-oriented. The difference, however, is statistically significant only in the first three windows. Moreover, net fixations between Clitic and Test trials are not significantly different in any of the windows.

**Discussion and Conclusion:** The significantly higher net fixations on the subject interest area in Agreement trials suggests that native speakers process the agreement *-esh* differently from the clitic *-esh*. Moreover, the non-significant difference in net fixations between Clitic and Test trials reveals that *-esh* is processed as an object clitic when both subject and object are grammatically available. In conclusion, the results confirm that *-esh* is gaining a new agreement function. This can be manifested in the higher net fixations on the subject interest area when it is forced to be an agreement marker. The process of grammaticalization is not complete, though. This can be manifested in the higher net fixations on the object interest area when both subject and object referents are available for *-esh*.

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