Not all passives are processed equal: verb voice and word order in idiom comprehension

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It is commonly assumed that passivizing a non-compositional idiomatic phrase mostly hinders its figurative reading due to the extraction of the noun to the preverbal position [1] (e.g. *John kicked the bucket* vs *The bucket was kicked by John*). Previous studies have never considered that two word orders are grammatical in Italian passives, either with a preverbal (PASSIVE I, Tab.1) or a postverbal subject (PASSIVE II). If an idiom in the Passive II form, which preserves the verb-noun surface order of the active citation form, turned out to enjoy a processing advantage over an idiom in the Passive I form, this could suggest that a core issue in processing passive idioms is actually the violation of its canonical order and adjacency, as shown for other passive constructions [2]. As regards broader-scope sentence processing models, this finding would at least partially tie in with good-enough theories [3], which suggest that speakers do not always engage in a deep syntactic analysis of utterances, but can also resort to shallower features such as linear word order. In this study, 60 Italian verb-determiner-noun idioms were rated for familiarity, meaning knowledge, semantic transparency and literal plausibility (i.e. how plausible and frequent the literal use of a string is) by 70 native subjects. To create pragmatically felicitous and unambiguous contexts for both idiomatic passive conditions, two-line dialogues were then prepared (Tab.1), where speaker A introduces the idiom-related topic and speaker B replies with a corrective cleft sentence containing a de-focalized passive. Dialogues with the 2 passive conditions were also created for 60 literal phrases obtained by replacing the idiom nouns with frequency- and length-matched nouns. 40 Italian native speakers rated the naturalness of the 4 conditions (Idiomatic vs Literal, Pass I vs Pass II; Fig.1) from 1 to 7. While passive literals were judged as more natural than passive idioms [F(1,59)=32.19,p<.001], no significant difference emerged between literal Passive I (M=4.75,SD=1) and II (M=4.89,SD=8.77;n.s.). In line with our predictions, idiomatic Passive II was rated as significantly more natural (M=4.23,SD=0.99) than idiomatic Passive I (M=3.60,SD=1.15,p<.01). To further investigate if preserving verb-noun order in Passive II could facilitate access to the idiomatic meaning in on-line sentence processing, other 30 subjects took part in an eye-tracking reading experiment with the 2 idiomatic conditions only. A preliminary cloze task (24 subjects) on the idiom final word showed Passive II to be completed as idiomatic significantly more often (M=69.58,SD=28.74) than Passive I (M=54.86,SD=33.52;p<.01). Analyses of the reading data via linear mixed models confirmed idiomatic Passive I to be read significantly more slowly than idiomatic Passive II [first pass: t=2.86; total time: t=3.69], with a facilitation from Familiarity [first pass: t=-2.32; total time: t=-3.51] and Transparency [total time: t=-2.55]. When processing a passivized non-compositional phrase, speakers are thus helped in accessing its figurative meaning if the canonical word order of the active form is preserved, in addition to a preceding context that makes Passive II pragmatically natural. A Literal Plausibility*Syntax interaction in first pass time [t=-2.90] (Fig.2) suggests that, while high Literal Plausibility slows down Passive II reading, probably by bringing into play some competition between a possible literal or figurative reading, on the other hand it speeds up Passive I early processing. Moreover, a Transparency*Syntax interaction in total time [t=-2.20] (Fig.3) shows that, when word order is swapped around in Passive I, the possibility to independently map parts of the string to parts of the idiomatic meaning helps integrating the passive idiom into the context. By contrast, Transparency plays a smaller role once a string has already been recognized as an idiom in early processing due to the verb-noun order being kept (Passive II) and to the presence of an apt idiomatic context. A Familiarity*Syntax interaction in go-past time [t=-2.03] (Fig.4) reveals Familiarity to cause less reanalysis of the previous context in Passive I, when the reversed idiom is easier to retrieve if it is more familiar. Flipping verb-noun order in Passive I seems thus to call for a slower, more compositional analysis, that is initially facilitated by high literal plausibility and is then sped up by a more transparent internal semantic structure.

Table 1. Example items in the 2 idiomatic conditions.

| PASSIVE I	A: *Quale dei brani suonati all'esibizione di ieri sera ha impressionato di più la platea secondo te? Il quartetto di archi?* 'Which piece do you think has impressed the audience the most last night at the concert? The string quartet?' B: *No, è stato con il concerto per due pianoforti che <u>il segno è stato lasciato</u> nel pubblico, a giudicare dalle reazioni degli spettatori.* 'No, it is with the concert for two pianos that <u>the mark was left</u> in the audience, judging from the reaction of the public'.
PASSIVE II	A: *Quale dei brani suonati all'esibizione di ieri sera ha impressionato di più la platea secondo te? Il quartetto di archi?* B: *No, è stato con il concerto per due pianoforti che <u>è stato lasciato il segno</u> nel pubblico, a giudicare dalle reazioni degli spettatori.* 'No, it is with the concert for two pianos that (lit.) <u>was left the mark</u> in the audience, judging from the reaction of the public'.

Figure 1
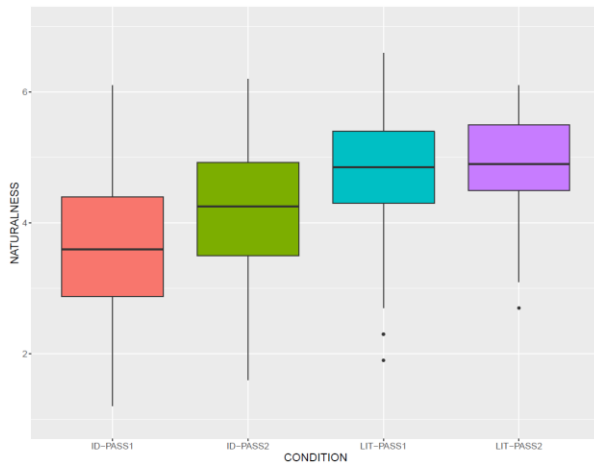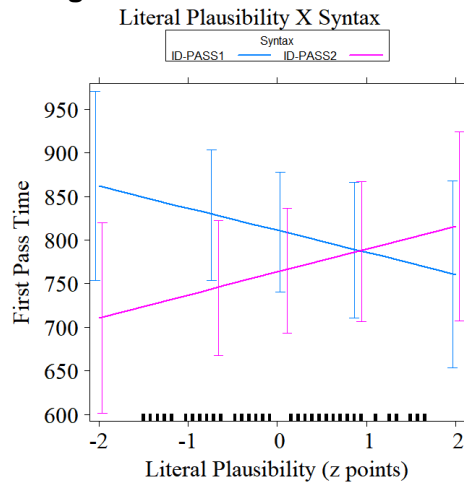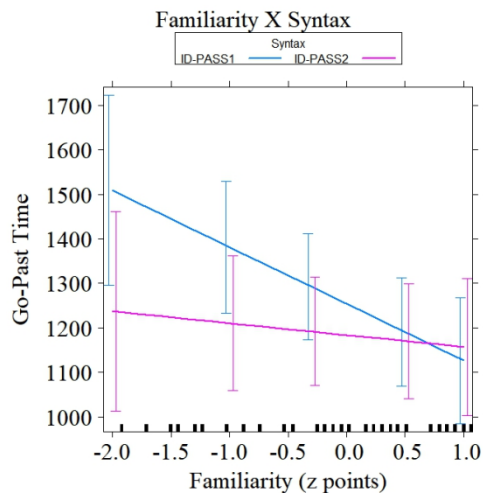

Figure 2
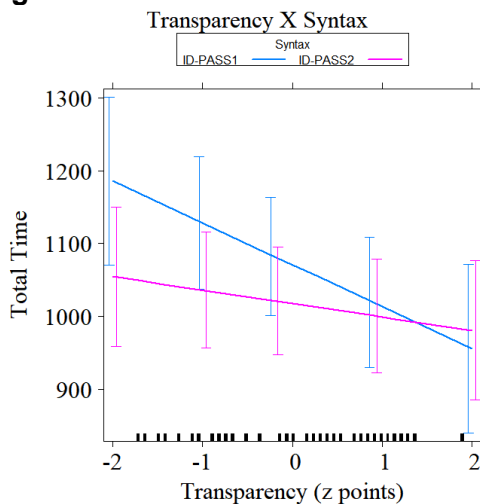
Figure 3

Figure 4

References
[1] Fraser, B. (1970). Idioms within a transformational grammar. *Foundations of language.* 22-42
[2] Dörre, L. & Smolka, E. (2016), When the Pig is Bought in a Poke-The Influence of Transitivity and Constituent Adjacency on the Processing of Passivized Idiomatic Sentences, *AMLaP 2016.*
[3] Ferreira, F. (2003). The misinterpretation of noncanonical sentences. *Cognitive psychology*, 47(2), 164-203.