

## HYPOTHESIS

There is evidence that (1) Left inferior frontal gyrus (LIFG) is more active during comprehension of nonliteral language than literal language<sup>1,2,3,4,5,6</sup>, and (2) LIFG is involved in the selection of relevant conceptual information<sup>7,8</sup>.

We hypothesize that LIFG is involved in metaphor comprehension insofar as it must **select the conceptual properties that are relevant to the metaphor**.

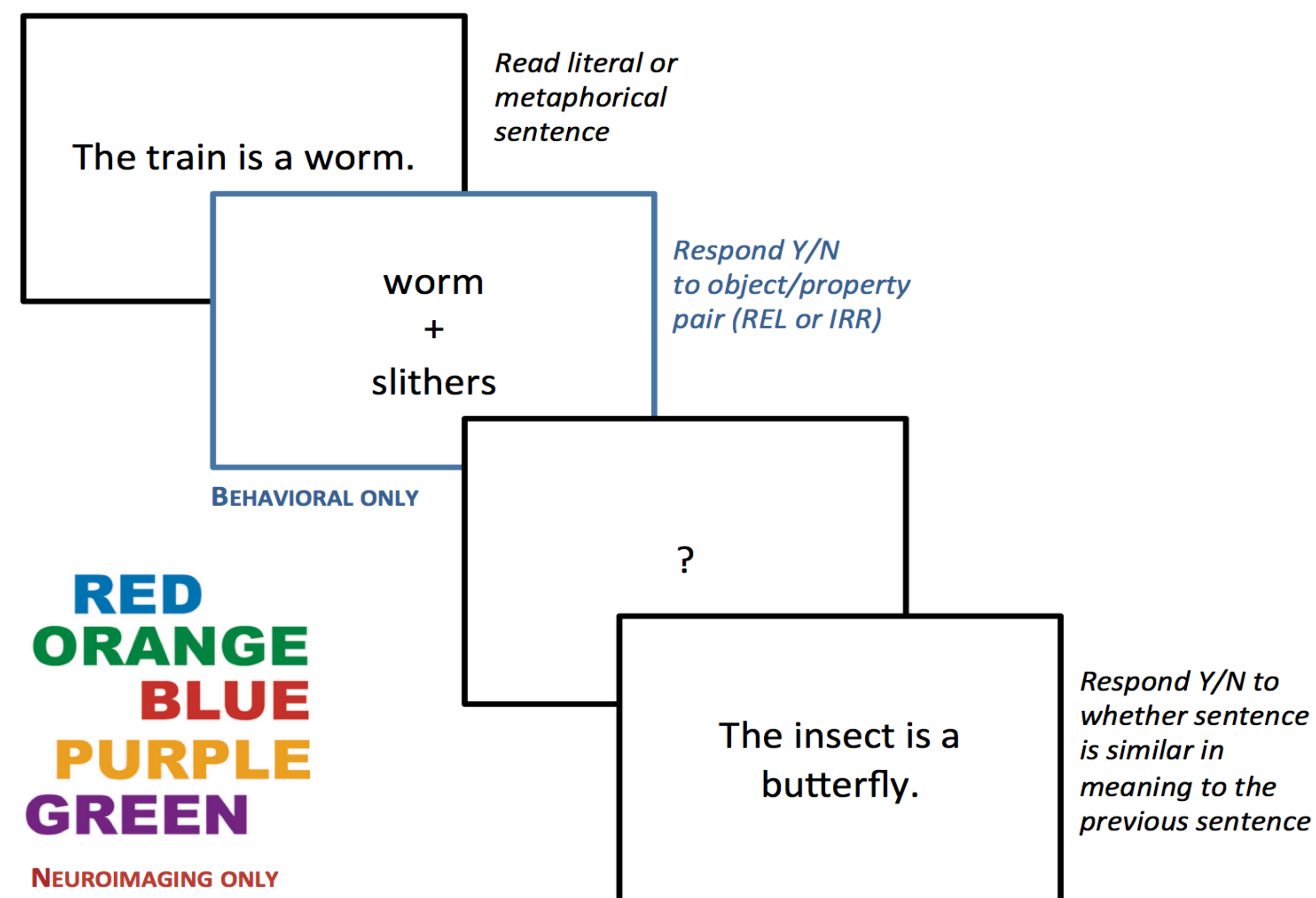
## STIMULI

We constructed 48 pairs of literal & metaphorical sentences, such that the vehicle of the metaphor (TERM) was in the McRae (2005) norms<sup>9</sup>, and a metaphor-relevant (REL) property was listed in the TERM'S entry. We also chose a property from the database that was irrelevant to the metaphor (IRR)

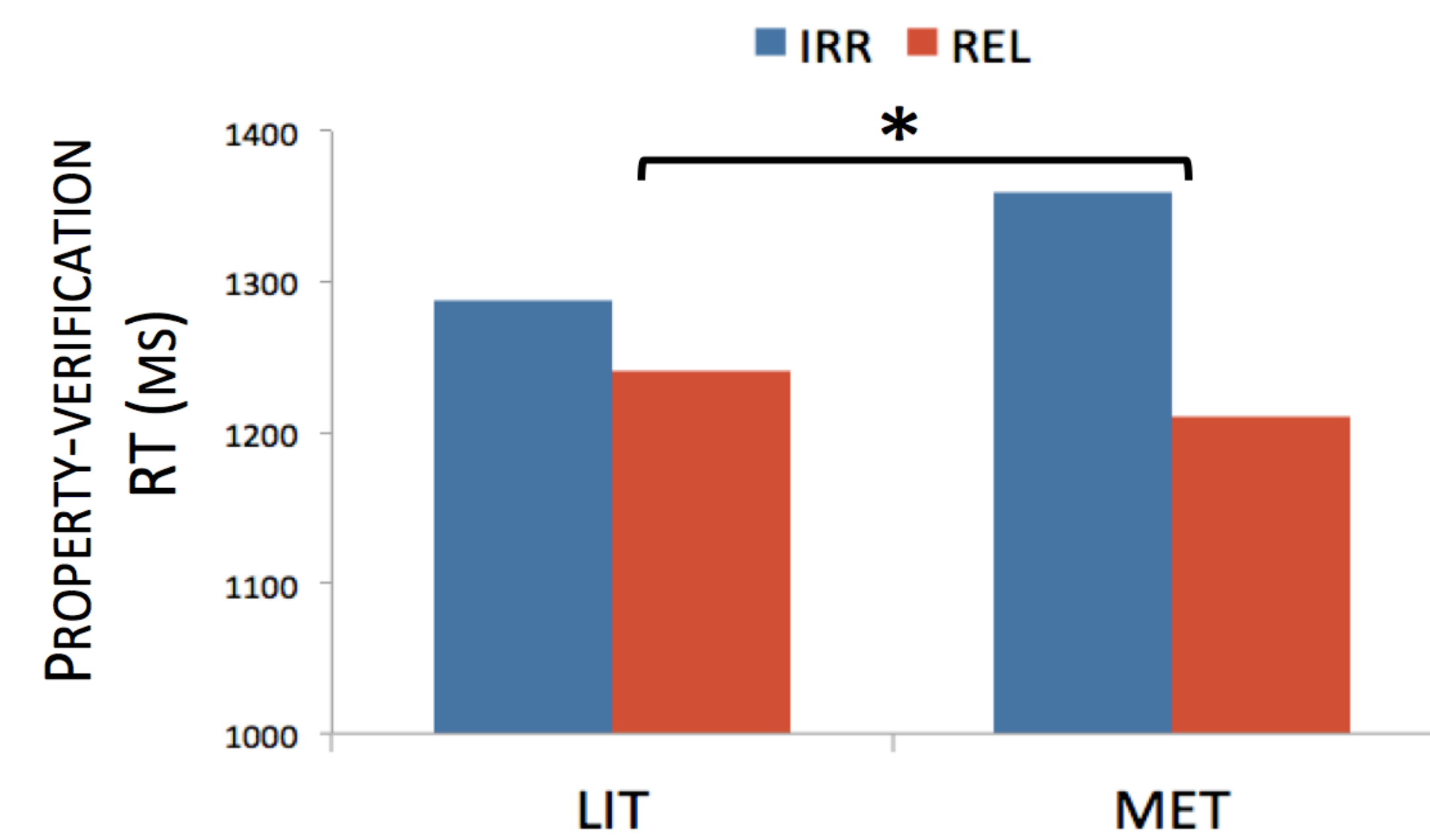
### EXAMPLE

The creature is a worm. (LIT) slithers (REL)  
The train is a worm. (MET) slimy (IRR)

## METHODS

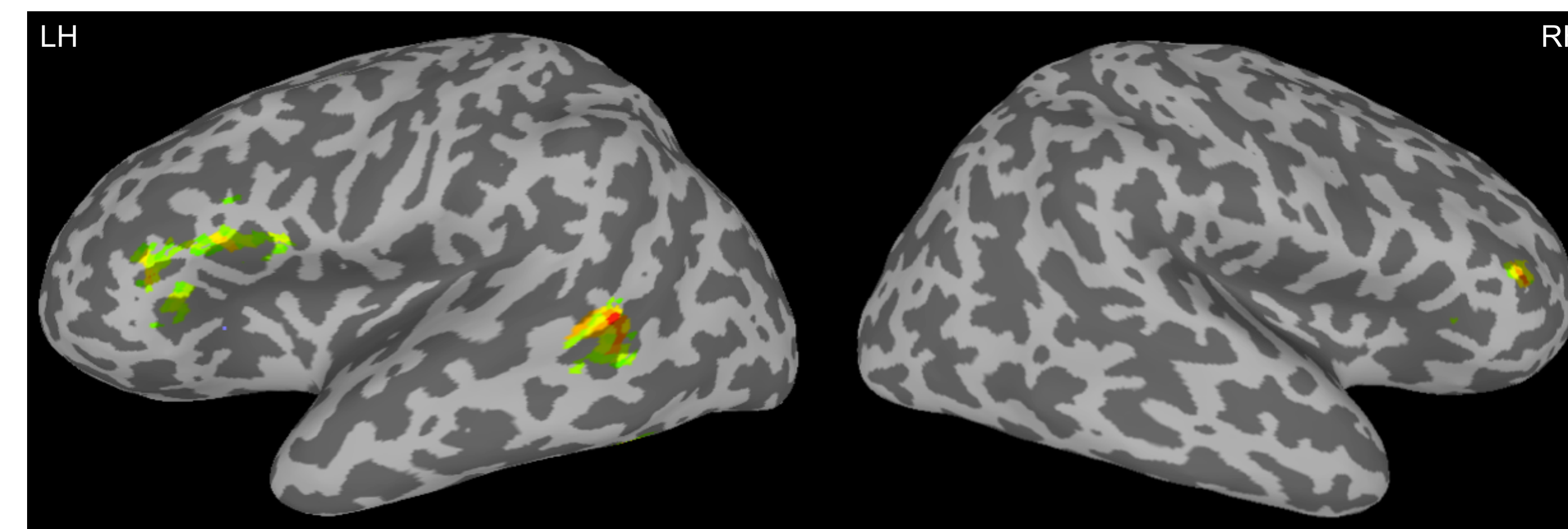


## BEHAVIORAL RESULTS



After MET sentences, RT is faster for verifying the REL property, and slower for verifying the IRR property ( $p < 0.03$ ). We calculated this **interaction effect for each item**, and used it to predict LIFG activity during metaphor comprehension.

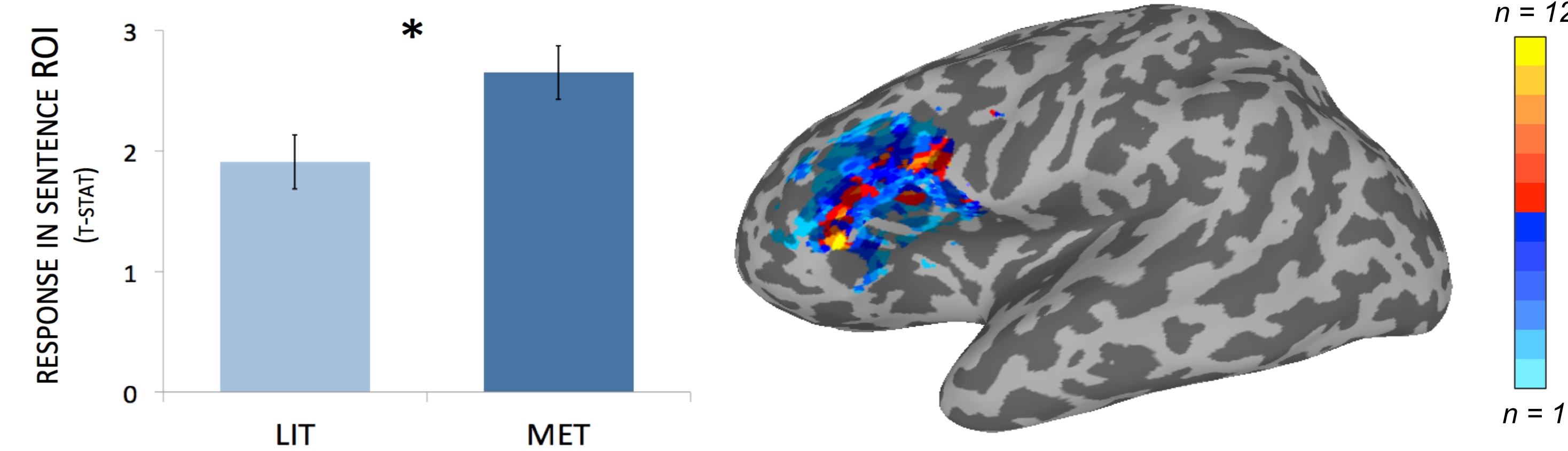
## WHOLE BRAIN RESULTS



### MET > LIT REGIONS

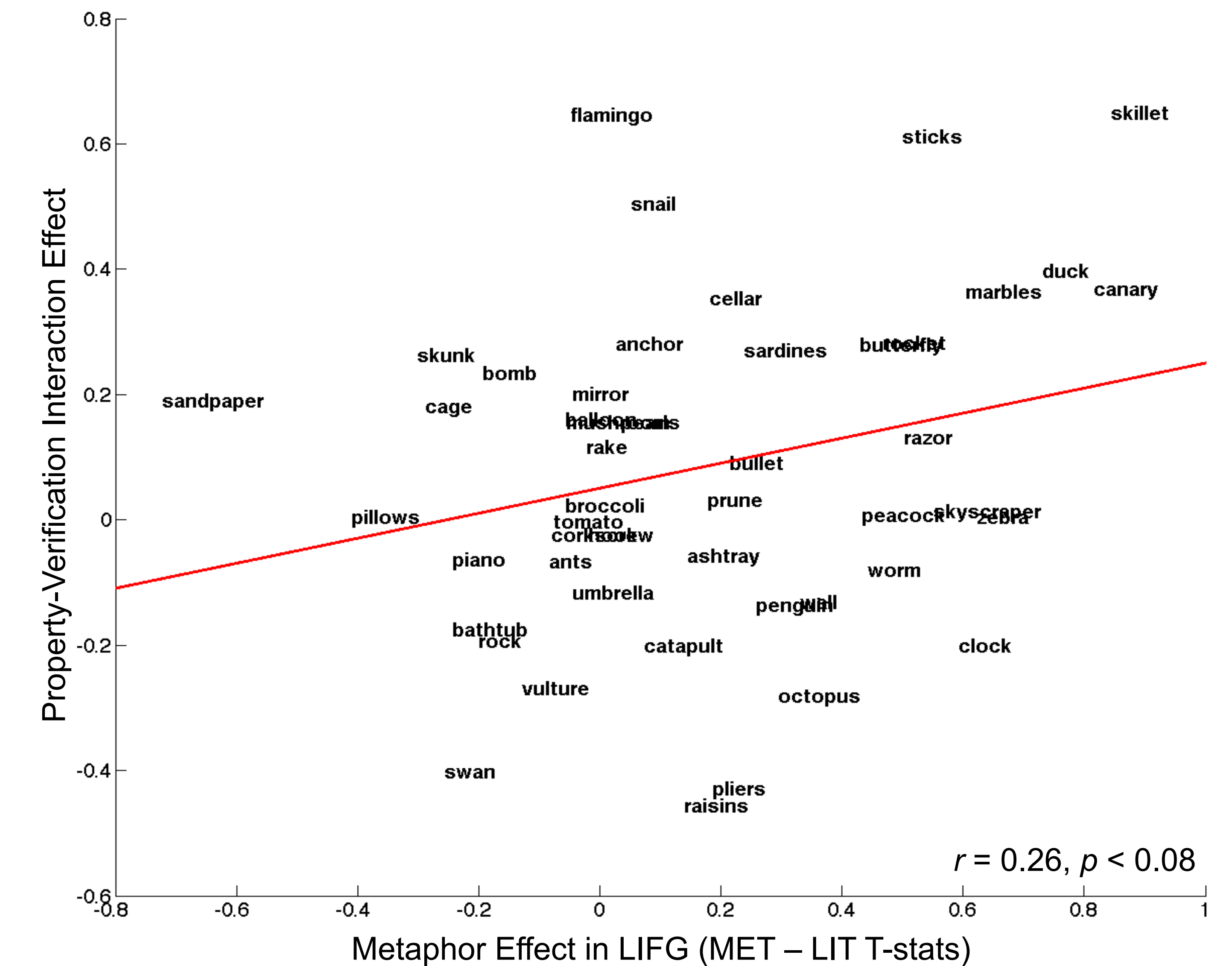
Uncorrected at  $p < 0.05$  (no clusters significant). At this threshold, regions sensitive to the contrast are LIFG, Left Medial Frontal Cortex, Left MTG, Left Fusiform Gyrus, and Right IFG.

## SENTENCE ROI



We selected the top 150 voxels in LIFG sensitive to sentences overall, on a subject-specific basis (overlap of these ROIs on the right). In these ROIs, MET resulted in more activation than LIT (left) ( $p < 0.005$ ). These voxels were also sensitive to Stroop conflict ( $p = 0.02$ ).

## PREDICTING LIFG RESPONSE



LIFG activation during metaphor reading predicts the extent to which people are faster at verifying MET-REL properties and slower at verifying MET-IRR properties.

## CONCLUSIONS

- Reading a metaphor versus a literal sentence makes it easier to verify conceptual properties relevant to the metaphor, and harder to verify properties irrelevant to the metaphor
- The extent to which LIFG activity is increased by metaphors (in a separate group of subjects) predicts these property-verification RT measures
- This suggests that comprehending metaphors involves the selection and/or suppression of conceptual properties, and that this mechanism might be what drives LIFG involvement in metaphor comprehension

## ACKNOWLEDGEMENT

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## REFERENCES

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