Spatial reference frames in Isthmus Zapotec: variation within a large-scale sample

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Research Question
The role of small-scale culture: how does local community membership influence reference frame use?
A variety of factors have been proposed:
• Language-external factors - Age, Gender, Education, Literacy, Topography, Population geography
• Linguistic factors - First or Second language

Background
Isthmus Zapotec (ZAI): Otomanguean; Isthmus of Tehuantepec; Oaxaca, Mexico

Previous research on reference frame use in discourse: Ball & Chair photo stimuli, MesoSpace (Pérez Báez 2008)

Frame use in 2 communities

<table>
<thead>
<tr>
<th>Community</th>
<th>Direct</th>
<th>Absolute</th>
<th>Undirected</th>
<th>Topographic</th>
<th>Relative</th>
</tr>
</thead>
<tbody>
<tr>
<td>La Ventosa</td>
<td>78</td>
<td>100</td>
<td>68</td>
<td>100</td>
<td>20</td>
</tr>
<tr>
<td>Juchitán</td>
<td>100</td>
<td>46</td>
<td>20</td>
<td>46</td>
<td>0</td>
</tr>
</tbody>
</table>

Secondary strategies

Confirmed preference for absolute frame
Greater use of "secondary strategies" (vs. 2-D stimuli)
• egocentric frames (relative and 'direct' (Danziger 2010))
• landmark-based frames ('projected' in Mishra et al 2003, 'head-anchored' in Bohnemeyer & O'Meara 2012)

Factors influencing frame use: a multivariate analysis

Factors included in Models
• Education level
• Reading and writing frequency
• Frequency of L2 use (Spanish)
• Community membership

Methods
• Generalized linear mixed-effects models (R)
• Lmekt package in R

Models

Dependent Variables
• L2, Education, Reading, Writing, Community membership

Independent Variables
• Reference frame types

Results: Significant Factors
Community membership only significant factor in predicting Geocentric and Absolute

Conclusions & Open Questions
• Reference frame use can not be predicted by any one proposed variable alone; rather, community membership predicts use of some types
• Topography and population geography, as measured by researchers such as MesoSpace, do not differentiate between these communities; a more nuanced measure is needed
• If topography and population geography can be eliminated as factors, significance of community membership would mean a more complex relationship exists between cognition and culture
• Two communities that are very similar except for one environmental factor can differ significantly from one another in their frame use
• I.e. in La Ventosa, the salience of prevailing wind patterns influences frame use in ways unique from Juchitán

Selected References
Bohnemeyer et al. (MesoSpace Team). The linguistic transmission of cognitive practices: Reference frames in and around Mesoeurope, Mississippi. Bohnemeyer et al. (MesoSpace Team), (2010). In search of sexual effects in semantic typology: Reference frames in Mesoamerica. Language Dynamics and Change.

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