Exploring Cultural Differences in Language Usage: The Case of Negation
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BACKGROUND
• Prior research suggests that speakers of Asian languages are more likely to use negation than English-speakers (Leung, A. K.-Y., & Cohen, D., 2011; Triandis, H.C., 1994)
• Our goal is to explore this theory using empirical data from news stories
• We used natural language processing to compare negation usage in two newspapers: the New York Times and Xinhua News (English Edition)

Our hypothesis was that negation would be more common in articles from Xinhua News than in articles from the New York Times.

DATA
The data for this project comes from the AQUAINT Corpus of English Language News Texts, which covers the period 1998-2000.

<table>
<thead>
<tr>
<th>Source</th>
<th>Number of sentences</th>
<th>Number of articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York Times</td>
<td>16,923,893</td>
<td>313,291</td>
</tr>
<tr>
<td>Xinhua News (English)</td>
<td>3,431,663</td>
<td>290,243</td>
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</tbody>
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METHODS
• Sentences were preprocessed and parsed using the Stanford Natural Language Parser (v.3.2)
• The parser generates typed dependencies: grammatical features of a sentence and their relationships
• Data was loaded into an Oracle SQL Developer (v. 3.2.20.09) database
• Normalized word tables were generated

RESULTS
• 9.28% of sentences and 86.56% of articles in the New York Times contain one or more instances of negation
• In Xinhua News, 3.33% of sentences and 24.94% of articles in Xinhua News contain one or more instances of negation
• Negation represents 0.55% of typed dependencies in the New York Times (versus 0.18% in Xinhua News)
• Negation is roughly 3 times more common in the New York Times than in Xinhua News

CONCLUSIONS AND NEXT STEPS
The prevalent theory suggests that Chinese authors use negation more frequently than American authors. Our empirical results show that this theory does not hold in news texts.
Directions for future research:
• Examine how negation functions in these texts and in what contexts it appears
• Apply these methods to additional texts and compare uses of negation in other genres

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