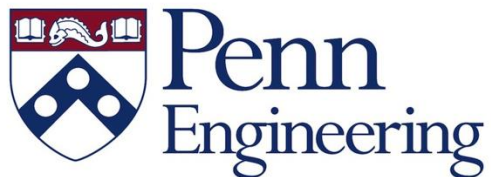


Analyzing Real-World Language Reveals Norm Differences

from Bollywood to Hollywood & Everyday Life



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How to analyze social and cultural norms?

Communities have been analyzed using survey and questionnaire based-methods.



But... traditional survey methods don't scale well. Can we use **natural language processing (NLP) techniques** instead?

Language reveals a lot about people!

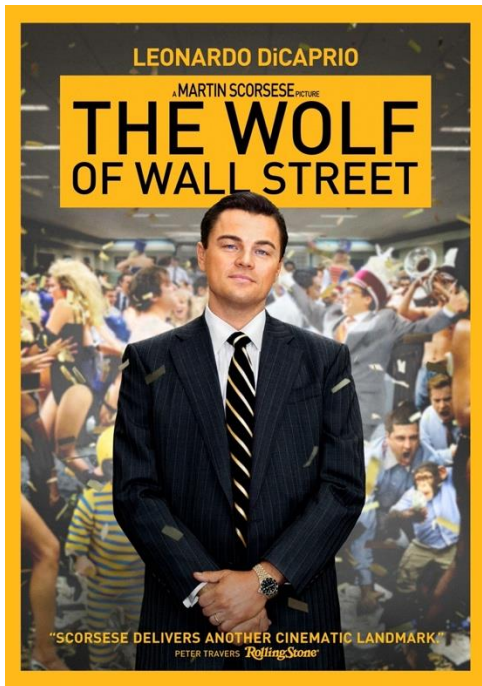
Online language (social media data, movie transcripts, etc.) is

- A readily available sample of communities
- Realistic everyday language (not in a survey setting)



Language reveals a lot about people!

Implicit social and cultural norms can be extracted from language



"There's no nobility in poverty. I've been rich and I've been poor, and I choose rich every time. "

Extracted Norm: **Living in poverty is shameful**

Language reveals a lot about people!

By analyzing **geolocated data**, we can extract and compare norms across cultures and communities.



"There's no nobility in poverty. I've been rich and I've been poor, and I choose rich every time. "

American Norm: **Living in poverty is shameful**



"Sister-in-law! Big brother has started working!
Now you will have a place of pride in this family!"

Indian Norm: **An employed husband invokes pride**

Comparing norms across countries & counties

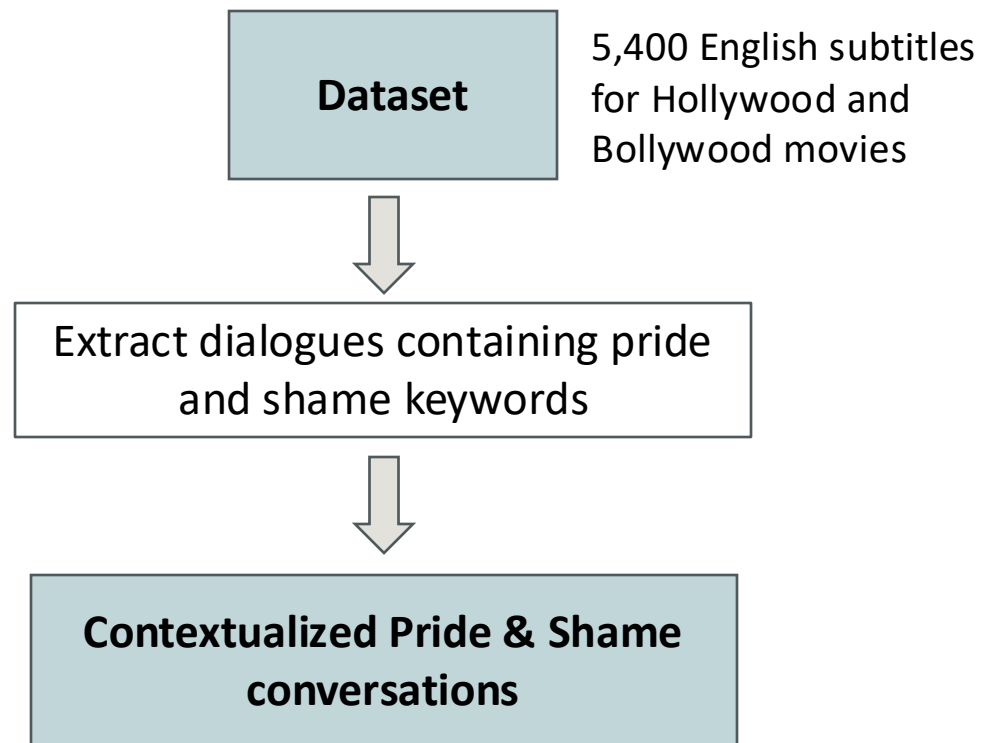
1. Social norms surrounding **shame and pride** in **Hollywood vs. Bollywood**¹
2. Levels of **individualism and collectivism** across **counties within the United States**²



¹ Rai, S., Zilesh Zaveri, K., Havaladar, S., Nema, S., Ungar, L., & Guntuku, S. C. (2024). Social Norms in Cinema: A Cross-Cultural Analysis of Shame, Pride and Prejudice. *To appear in NAACL 2025*.

² Havaladar, S., Giorgi, S., Rai, S., Talhelm, T., Guntuku, S. C., & Ungar, L. (2024). Building Knowledge-Guided Lexica to Model Cultural Variation. *NAACL 2024*.

Pride and shame in movie subtitles: **Dataset Creation**



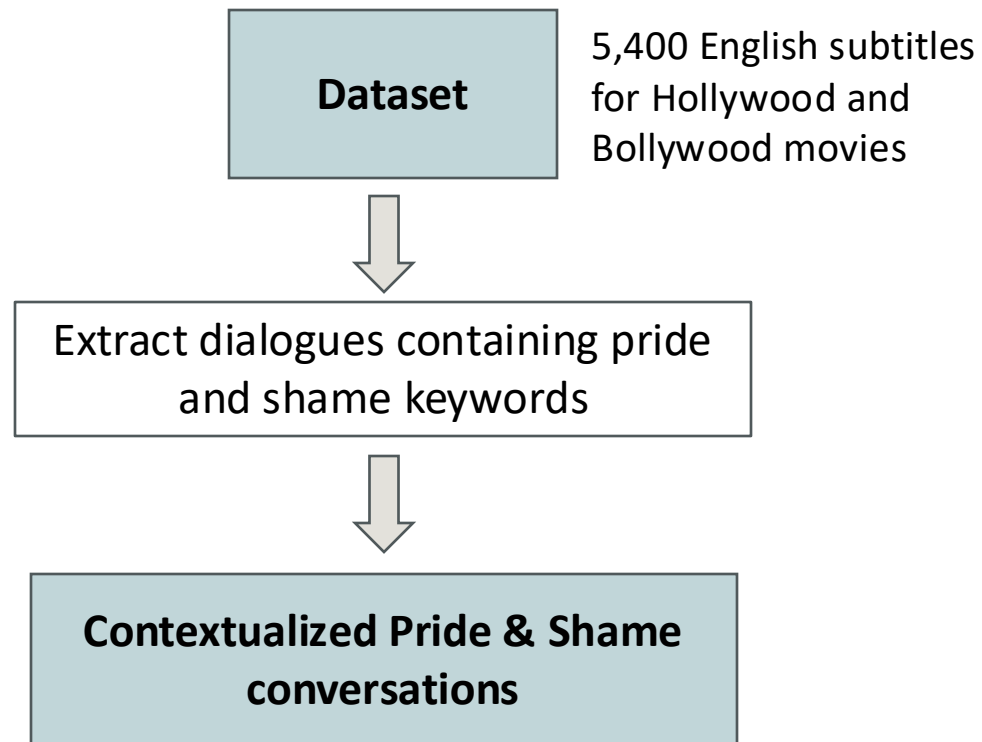
And should we bow before others,
begging them to marry our
daughters?

This shall not happen. Neither
will the girls be alive here nor
shall we be ashamed of
ourselves.

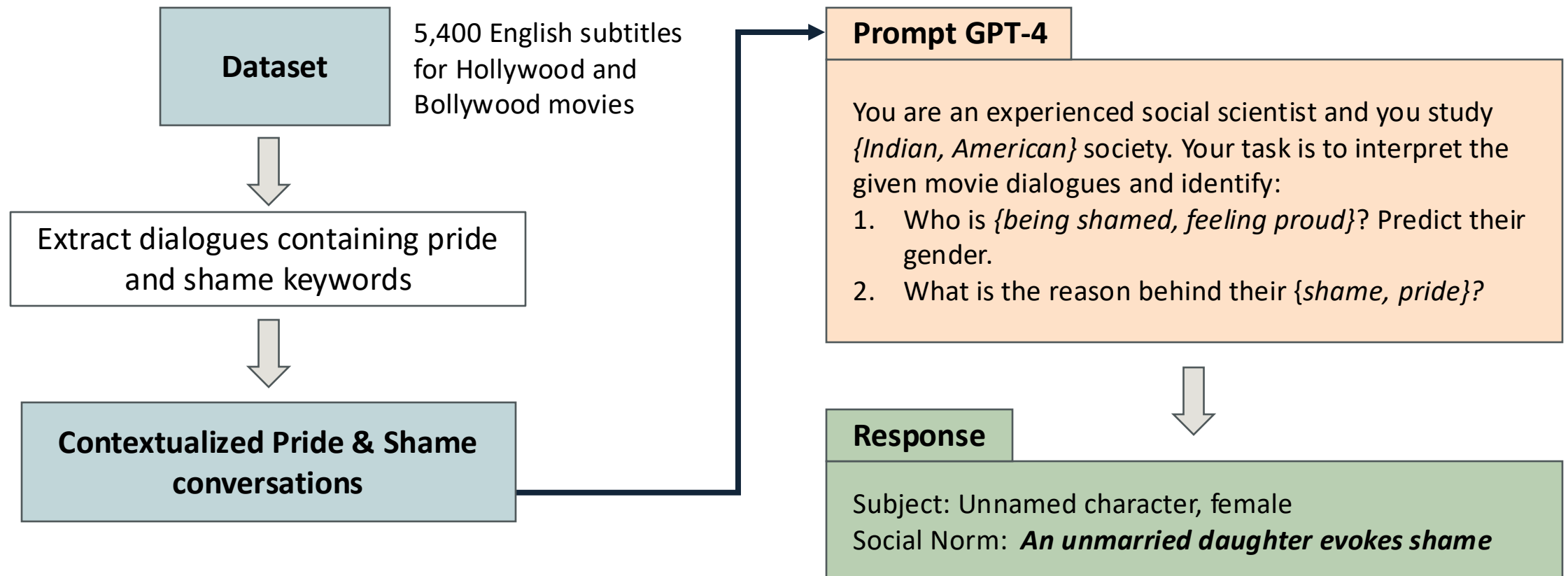
You cannot kill the life which
God has given. I won't let you
commit the sin.

*A shame-related movie conversation from a
Bollywood movie*

Pride & shame in movie subtitles: **Norm Extraction**



Pride & shame in movie subtitles: Norm Extraction



Pride and shame in movie subtitles: **Norm Clustering**

Prompt GPT-4

You are an experienced social scientist and you study *{Indian, American}* society. Your task is to interpret the given movie dialogues and identify:

1. Who is *{being shamed, feeling proud}*? Predict their gender.
2. What is the reason behind their *{shame, pride}*?

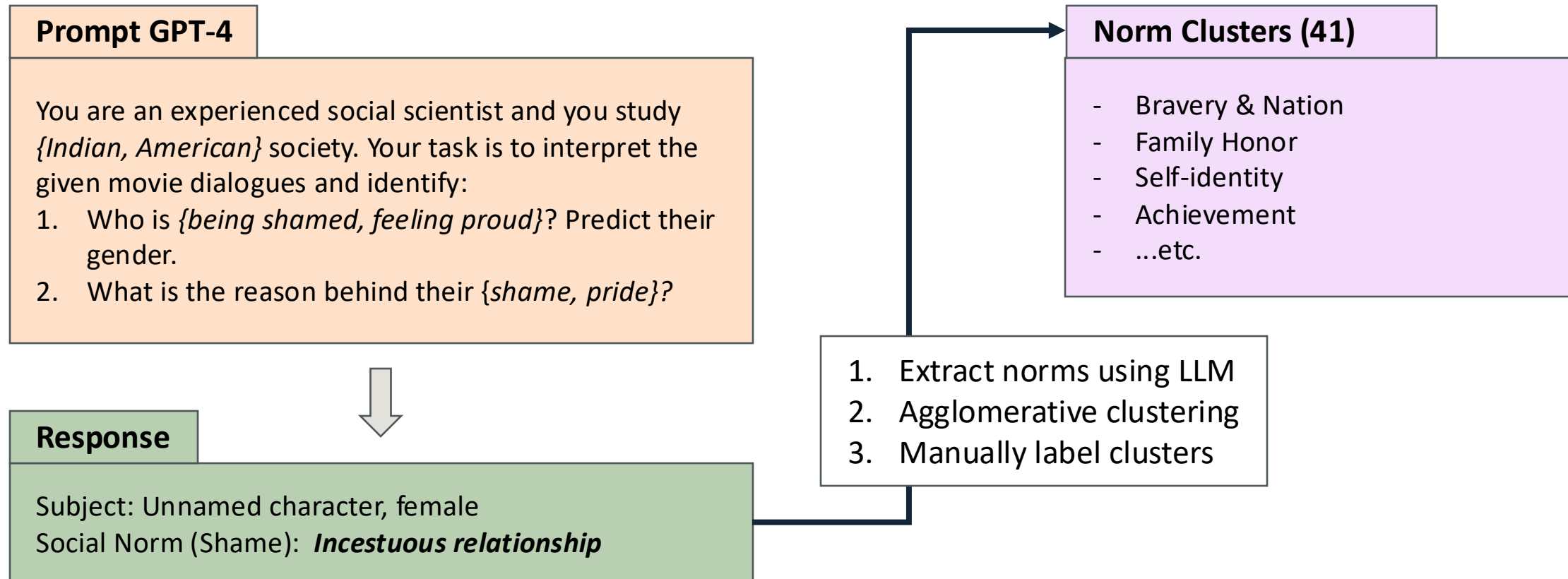


Response

Subject: Unnamed character, female

Social Norm (Shame): ***Incestuous relationship***

Pride and shame in movie subtitles: **Norm Clustering**



10,000+ culture-specific social norms

Bollywood

mastering a trick
fulfilling father's dreams
provide care for old parents
fiancee's physical appearance
his wealth

Hollywood

for being a hard worker regardless of the task
being a brilliant student
winning olympic gold
achievements and growth
coming out as queer

PRIDE related norms

Bollywood

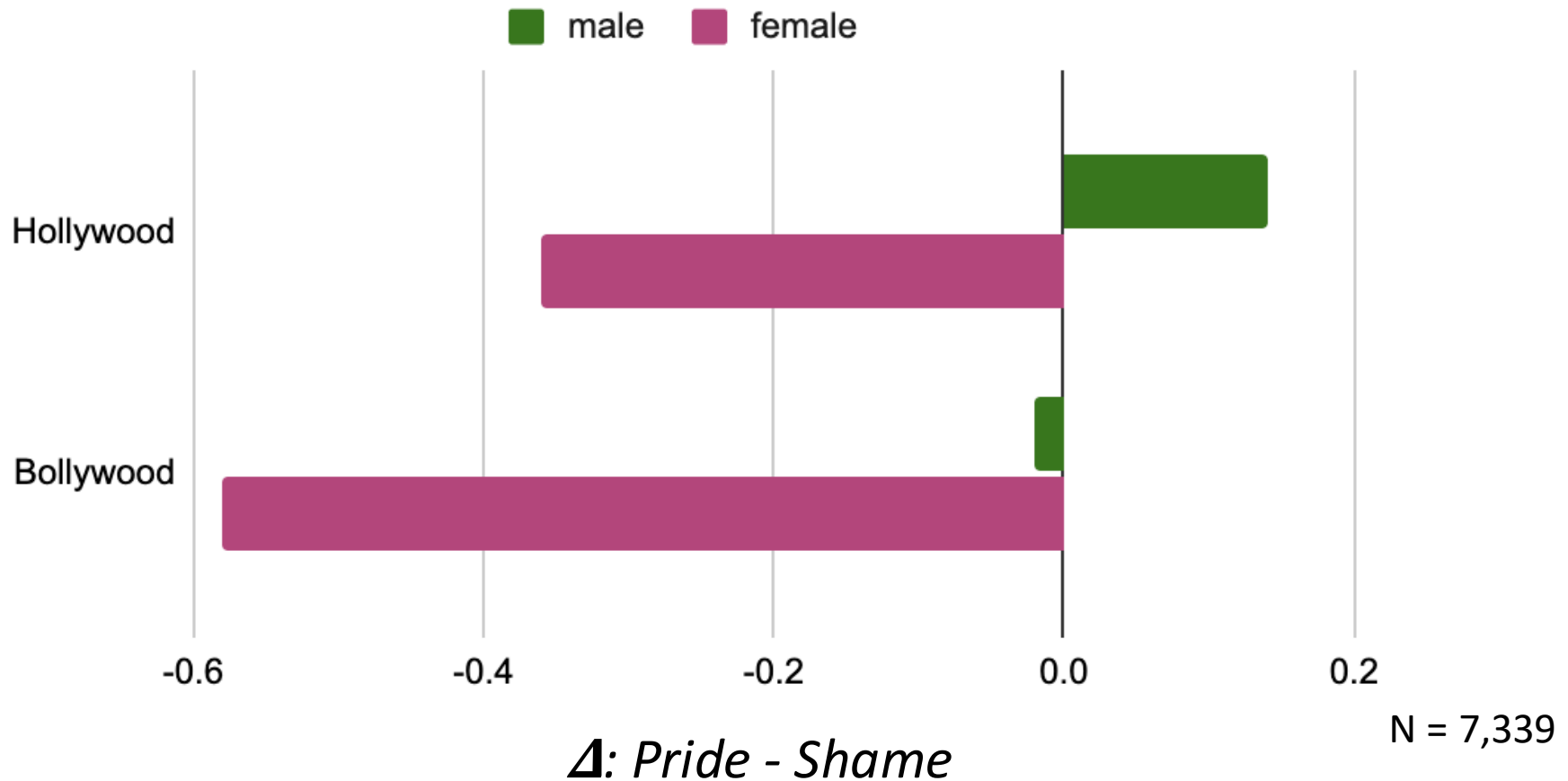
eavesdropping on private conversation
expressing love for a man
Incestuous relationship
giving birth to a girl child
Poor academic performance

Hollywood

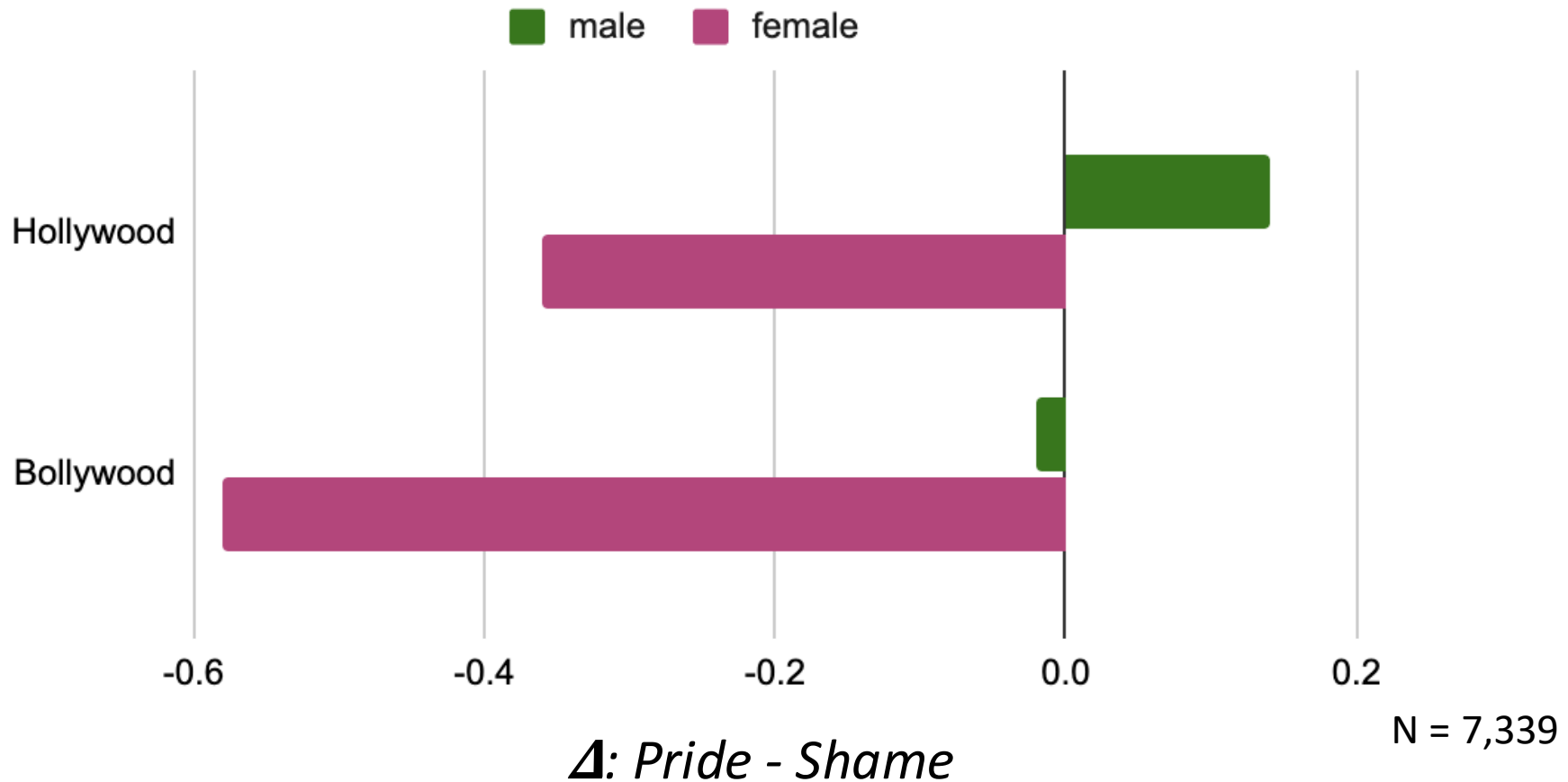
not living up to expectations
hiding/avoiding confrontation
not returning calls after intimacy
mistreatment of a woman
offering poor quality goods for sale

SHAME related norms

1. Women are shamed more than men



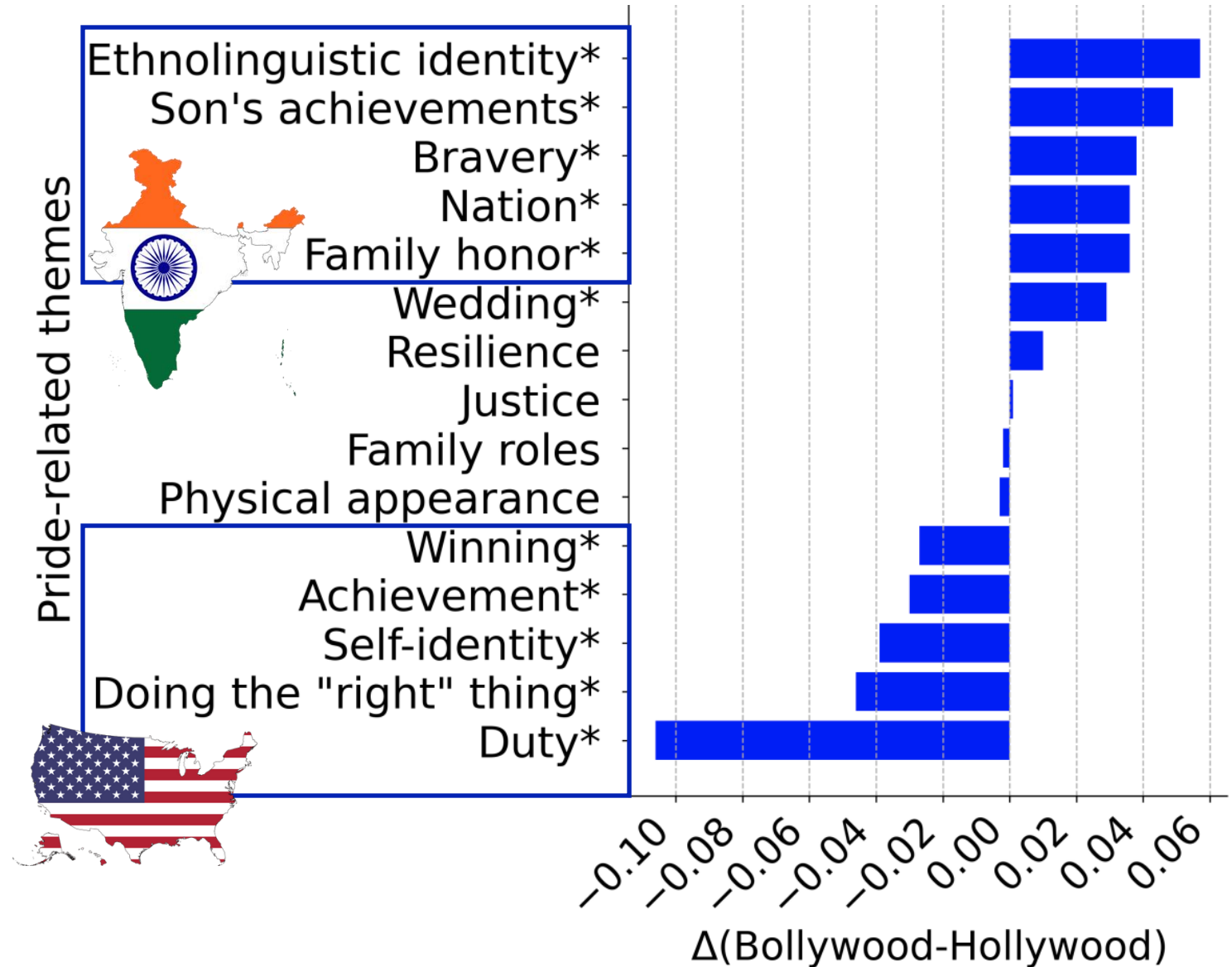
2. Bollywood has more shame than Hollywood



Differences in Pride

Hollywood: individual
success

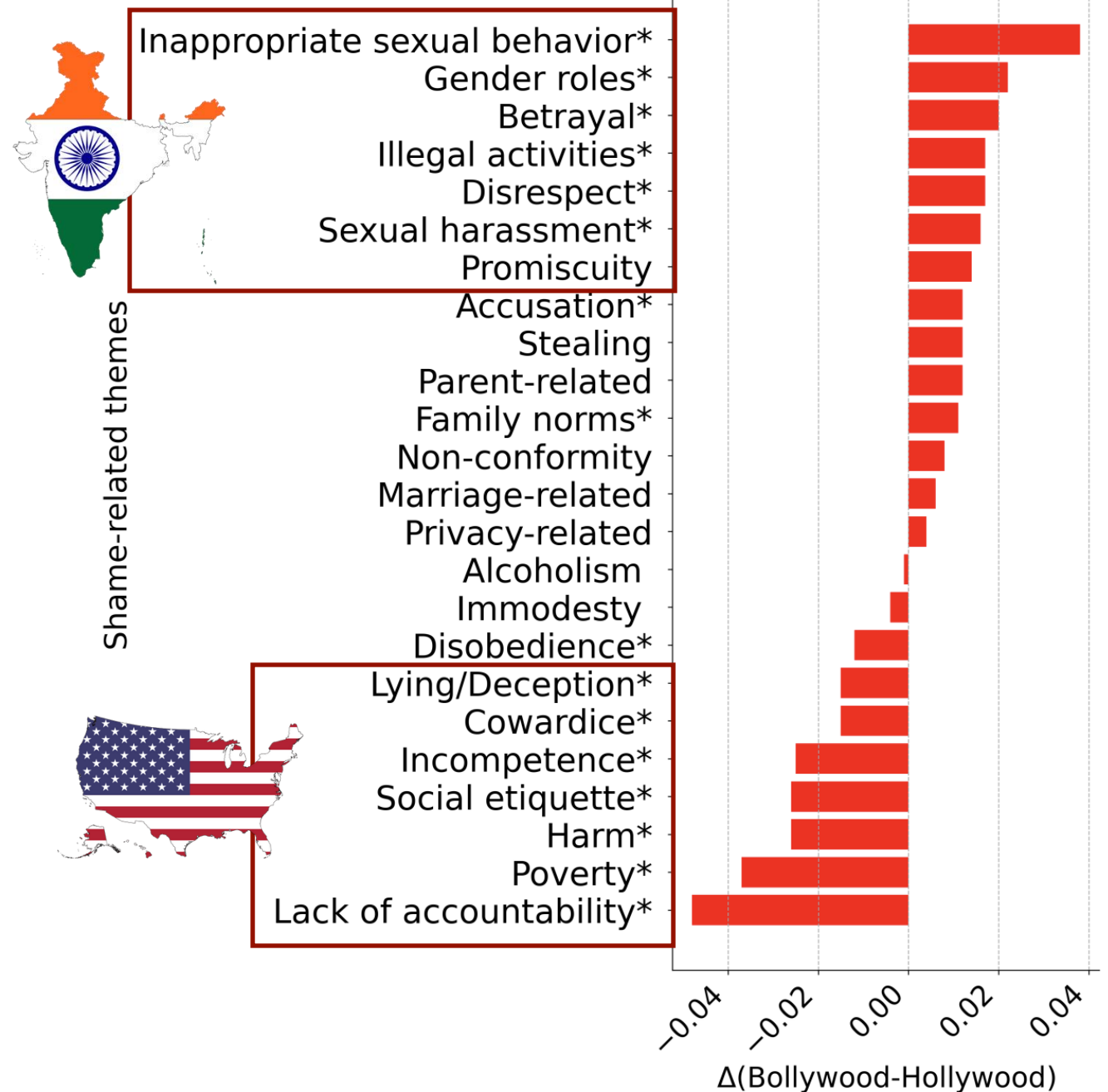
Bollywood: family
accomplishments



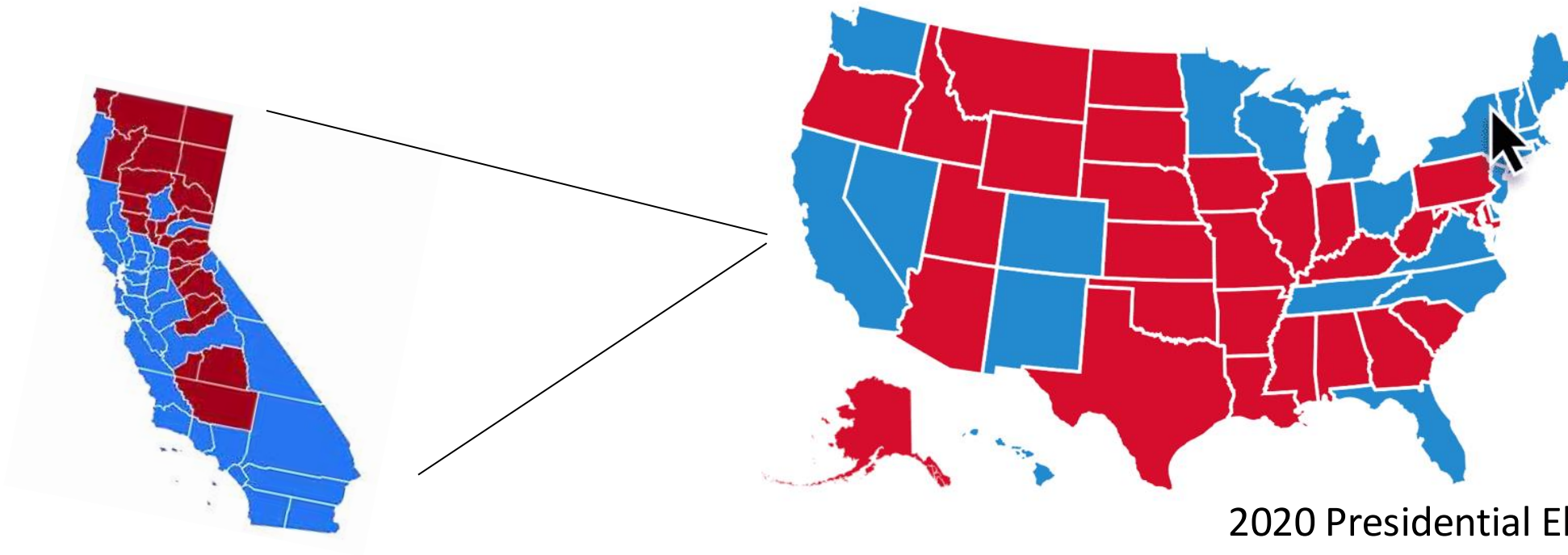
Differences in Shame

Hollywood: personal character, individual failure

Bollywood: sexual violations, loss of family honor



Culture is not homogenous! It has **variation**

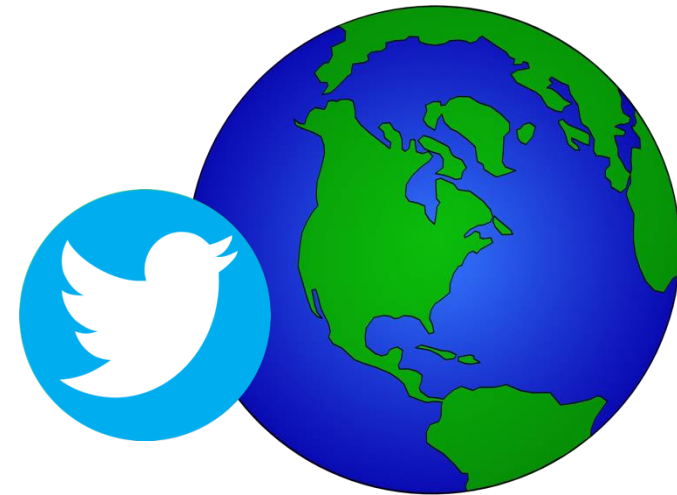


2020 Presidential Election map
Trump (red) vs. Biden (blue)

LLM-based methods are not always best for massive datasets

Measuring *variation* in culture requires a lot of data. But...

1. The cost of querying an LLM adds up
2. Labelling data + training models at scale is expensive
3. Not all language is culturally relevant

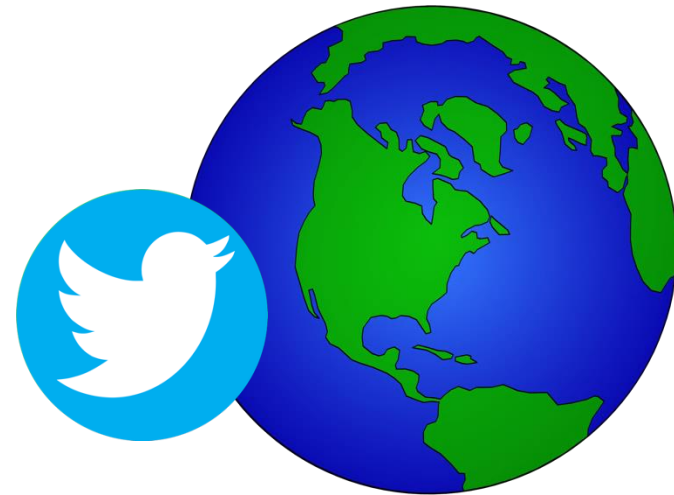


Example massive dataset:
~**1.5 billion** geolocated Tweets
from **6 million users** in the US

Knowledge-guided lexica: A *scalable* way to measure regional variation in culture

We generate sets of words (lexica) that characterize a cultural construct

- No need to label data
- Computationally inexpensive
- Can utilize a massive dataset
- Inherently interpretable



Using this method, we can analyze ~1.5 billion Tweets in **20 minutes!**

A pipeline for automatic lexicon creation

1. Curated seed words from a domain expert
2. Embedding-based expansion
 - a) Improves **recall** – finds missing words that should be included
3. Lexicon Purification
 - a) Improves **precision** – removes erroneous words that muddy results

We will apply this method to measure variation in individualism/collectivism across the United States

Curated seed words to measure individualism and collectivism

Collectivism stresses the importance of the **community**, while **individualism** is focused on the rights and concerns of **each person**.

Humanity *Cooperation*
Worldwide *Identity*
Global *Guilt*
Equity *Diversity*

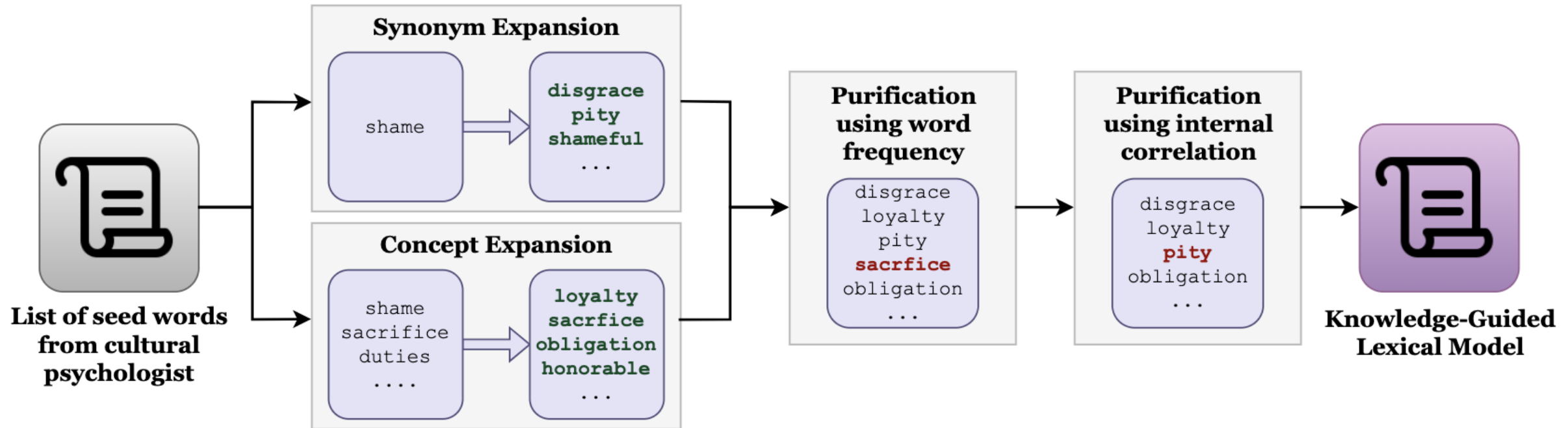
Individualism*

Shame *Duties*
Rules *Responsibilities*
Honor *Community*
Obedience *Sacrifice*

Collectivism*

**From Thomas Talhelm's responsibilism work*

Expansion & Purification



8 seed words → ~200 word weighted lexical model



Individualism Lexicon



Collectivism Lexicon

Applying lexical model to Tweets



I hate my job, but I feel an **obligation** to help **mankind**. I want to be free of this **responsibility** and stop making **sacrifices** and just enjoy being a **human**!

1. Get tweet-level individualism and collectivism scores

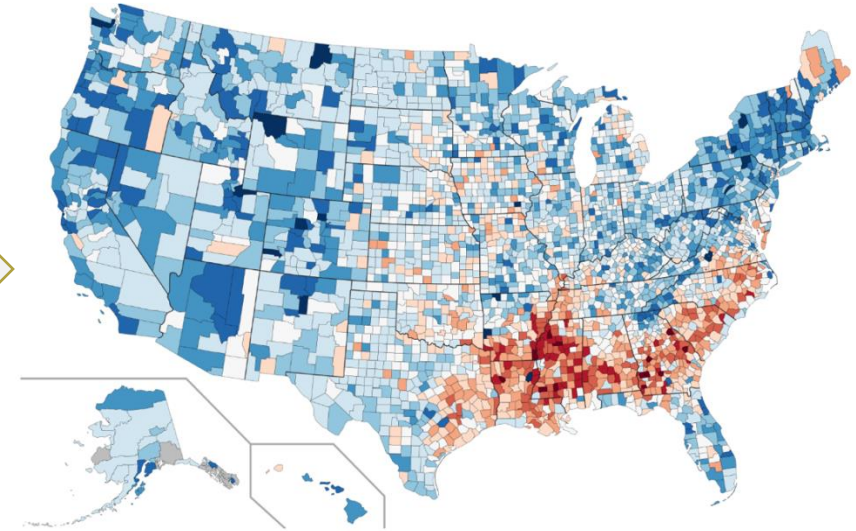
- Individualism Score = $\text{num}(\text{indv}) / \text{total words} = 2/30$
- Collectivism Score = $\text{num}(\text{coll}) / \text{total words} = 3/30$

2. Aggregate tweet-level scores across counties

universality world
co-operation
solidarity **humankind**
societal **global** oneness
interdependence diversity unity world-wide
humanity communal **universal**
cooperation **mankind**
interconnectedness human-race pan-human
mutual **collective** mutuality
worldwide **human** humans

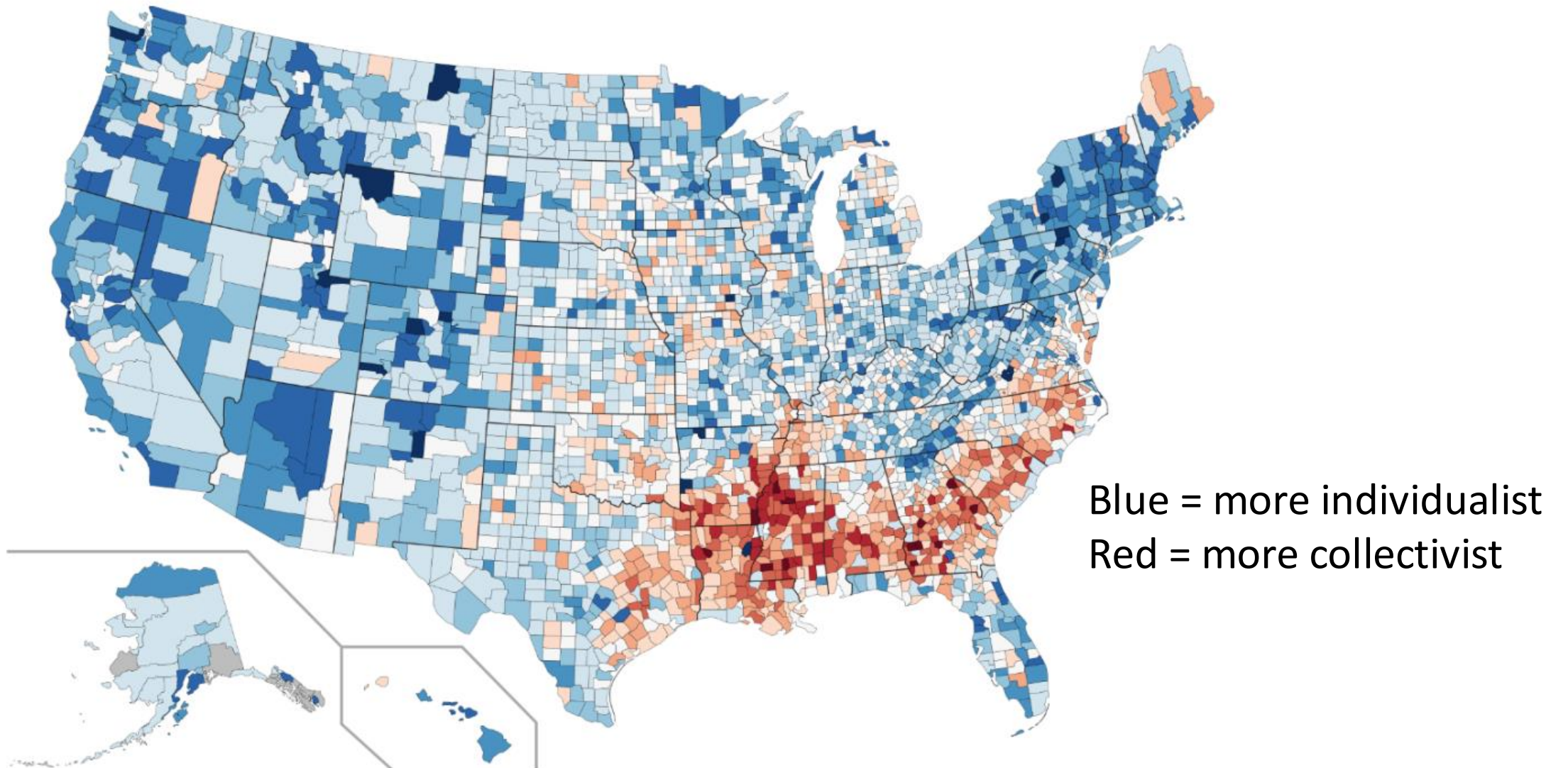
commitment
obligations
sacrifice **duties** obligation
responsibilities **respect** loyalty
loyal **duty** fealty
obedience **responsibility** uphold
responsibilities
responsibility honour
responsibility commitments
sacrifices **honor** allegiance
devotion deference

Knowledge-guided
lexical models

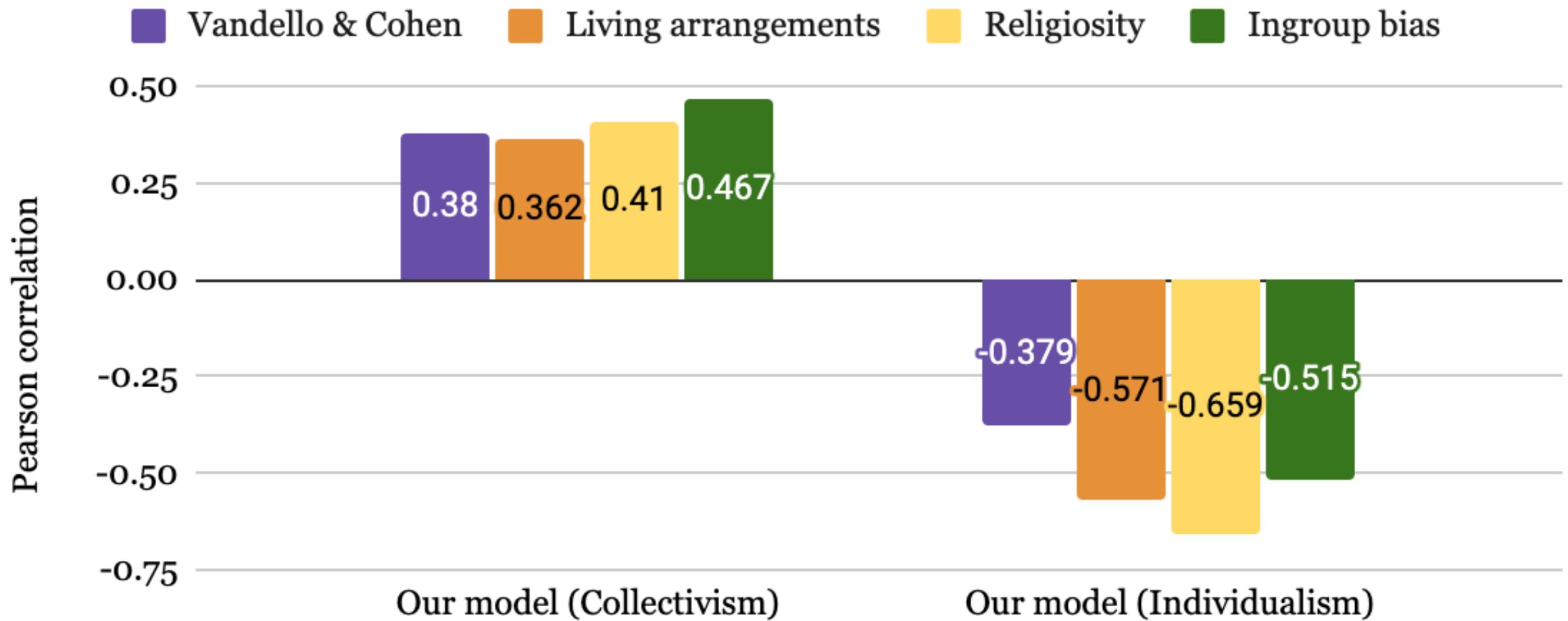


1.5 billion Tweets from
6 million geolocated
Twitter users

County-level
individualism and
collectivism scores

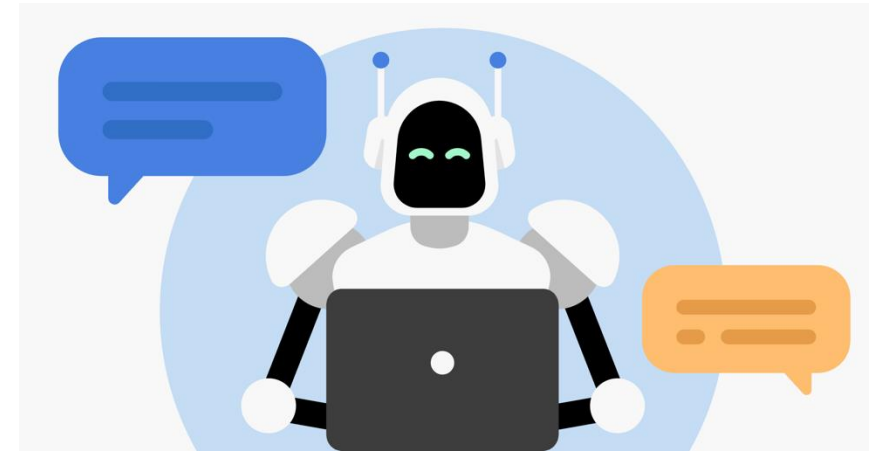


Correlation with validated indicators of collectivism



Key Takeaways + Future Work

- NLP-based methods can extract cultural norms and constructs from real-world text
 - Small dataset (~100k): use LLMs!
 - Big dataset (~100M): use knowledge-guided lexica!



Use to better understand people + communities
and build culturally adaptable LLMs

Our Team!



Shreya Havaladar, Salvatore Giorgi, Sunny Rai, Jeffrey (Young Min) Cho,
Thomas Talhelm, Sharath Chandra Guntuku, Lyle Ungar



Social Norms in
Cinema: A Cross-
Cultural Analysis of
Shame, Pride and
Prejudice



Building
Knowledge-Guided
Lexica to Model
Cultural Variation



My website!!