Do Diverse Social Interactions Make Us Smile More Often?
Studying Smiles and Diversity Via Social Media Photos

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Motivation

- Photographs → one of the most fundamental ways for human beings to capture social experiences.
  - Provide unique opportunity to study the social phenomena of mixing of different people and the smiles expressed by individuals in these social settings.

  ![Smiles vs Diversity](image)

- Advancing the understanding of phenomena of smiles and diversity of social interactions
  - Scale to millions of individuals, not require human time, and capture the temporal dynamics

Approach

- Collect Instagram images via Instagram’s public API
- Collect Twitter images via Twitter’s Stream API
- Recognize & remove nonfacial and tourist images
- Obtain variables from Face++ API of all individuals
- Validate race detection using Morph dataset
- Validate smile scores using human annotation comparison

- T-test between smile scores for photos with single and multiple people
- OLS Linear Regression model for smile score as a function of demographic (control) variables and diversity
- Obtain the number of face in each image
- Compute smile scores (dep. variable) of each image
- Compute interaction diversity metric (SEAge, SEGender, SERace) for all images

Approach Overview

![Approach Overview Diagram](image)

Our Interpretation of Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td># of males</td>
<td>2</td>
</tr>
<tr>
<td># of females</td>
<td>2</td>
</tr>
<tr>
<td># of Whites</td>
<td>2</td>
</tr>
<tr>
<td># of Blacks</td>
<td>1</td>
</tr>
<tr>
<td># of Asians</td>
<td>2</td>
</tr>
<tr>
<td>&lt;18 Age</td>
<td>0</td>
</tr>
<tr>
<td>18 and &lt;35 Age</td>
<td>0</td>
</tr>
<tr>
<td>&gt;35 Age</td>
<td>3</td>
</tr>
<tr>
<td>Avg. Smile Score</td>
<td>81.47</td>
</tr>
</tbody>
</table>

Results

- **T-test** between smile scores for photos with single and multiple people
  - Results across the two data sets consistently suggest that people tend to smile more in the presence of others.

  ![Results Table](image)

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>Std. Error</th>
<th>Model Significance (p-value)</th>
<th>T-test between the two groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instagram</td>
<td>Multiple</td>
<td>3157</td>
<td>52.80</td>
<td>28.83</td>
<td>0.51</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Single</td>
<td>4036</td>
<td>33.75</td>
<td>23.99</td>
<td>0.52</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>Twitter</td>
<td>Multiple</td>
<td>3688</td>
<td>53.70</td>
<td>27.04</td>
<td>0.46</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Single</td>
<td>4380</td>
<td>33.87</td>
<td>32.10</td>
<td>0.49</td>
<td>&lt;0.001</td>
<td></td>
</tr>
</tbody>
</table>

- **Linear regression** for smile score as a function of demographic (control) variables and diversity variables
  - Results indicate that people smile MORE in DIVERSE social company
  - POSITIVE coefficients observed for MIXING
  - Broad level consistencies between the datasets

Novelty

**What has been done:**
- Understanding diversity in terms of social interactions, not residential address
- Using smile scores to judge emotion

**What has not been done:**
- Computationally (scale, automation) studying the effects of diversity on smiles.

Objectives

- **RQ1**: How can the visual content on social media (photos) be used to study the interconnections between diversity and smiles?
- **RQ2**: What are the effects of presence of others on the smile levels of the individuals in photos?
- **RQ3**: What are the effects of diversity of social interactions in terms of age, race, and gender on the smile levels of individuals in photos?

Limitations

- Posed and shared smiles
- Limited demographic descriptors
- Modest effect sizes

Implications

- Supports experiments in multiple social sciences
- Scalable, automated, lower cost, “in-the-wild”
- Contextual understanding for modeling faces and their dynamics in multimedia systems
- Building blocks to a more smiling, happier society.