EMPATHY IN FAIRY TALES

Göttingen–Hildesheim Workshop

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• Early PhD student in German Philology at the Graduate School of Humanities Göttingen (GSGG)

• Interests in Cognitive Literature and Sentiment Analysis
  • Master thesis: ”Kafka’s Style. A Qualitative Approach”
  • PhD dissertation: ”Empathy in Fairy Tales”
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EMPATHY & EMOTION
Empathy Definitions

- Reactions of one individual to the observed experiences of another (Davis, 1983c)

- The understanding of others’ feelings (Kohler, 1929)
EMPATHY SCALES

- **Perspective Taking** - the tendency to spontaneously adopt the psychological point of view of others

- **Fantasy** - respondents’ tendencies to transpose themselves imaginatively into the feelings and actions of fictitious characters in books, movies, and plays

- **Empathic Concern** - ”other-oriented” feelings of sympathy and concern for unfortunate others

- **Personal Distress** - ”self-oriented” feelings of personal anxiety and unease in tense interpersonal settings
What are the emotions you feel?

Figure 1: Vertigo directed by Alfred Hitchcock (1958).

Figure 2: Blade-Runner directed by Ridley Scott (1982).
• When the protagonist was doing well
  => positive emotions: happiness, pleasure, relief

• When the protagonist’s plans went bad
  => negative emotions: anxiety, anger, frustration

• When the antagonist’s plans were going well
  => negative emotions

• When the antagonist’s plans suffered setbacks
  => positive emotions

Trabasso & Chung, 2004
Positive emotions $\rightarrow$ EMPATHY $\rightarrow$ Willingness to help

Barlett & Desteno, 2006
• **Empathy** is strongly related to altruistic behavior
  
  Eisenberg & Miller, 1987; Batson, Ahmad, Lishner, & Tsang, 2002

• **Perspective taking and emphatic concern** are significant predictors of prosocial behavior
  
  Davis, 1983a/b; Litvak-Miller & McDougall, 1997; Hoffman, 2000
SENTIMENT ANALYSIS TOOLS
WHICH are those clues in a fairy tale that prompt high empathic responses?
How can emotions be identified computationally?

- **Linguistic Inquiry and Word Count (LIWC) software** (Pennebaker, et al., 2007)

- **The NRC Emotion Lexicon** (Mohammad & Yang, 2011)
LIWC2015:

- 80 default dictionaries
- 6,400 words, word stems, and selected emoticons

Detect superficial **linguistic features** of the text:

- positive emotions
- negative emotions (anxiety, anger, sadness)
- social words (family, friends)
- cognitive processes (insight, cause, certainty)
- long words (more than six letters)
- self references (I, me)
- other references (he, they)
NRC Emotion Lexicon:

- The Roget Thesaurus
- 14,182 words types

**Emotions:** (Plutchik, 1980)
- anger
- anticipation
- disgust
- fear
- joy
- sadness
- surprise
- trust

**Sentiments:**
- negative emotions
- positive emotions
"The Queen Bee"

- By the Brothers Grimm, 1857;
- English translation by F. J. Olcott, 1927.\(^1\)

### Table 1: The Distribution of Traditional Dimensions in "The Queen Bee".

<table>
<thead>
<tr>
<th>Traditional LIWC Dimension</th>
<th>The Queen Bee</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-words (I, me, my)</td>
<td>0.4</td>
</tr>
<tr>
<td>Social words</td>
<td>13.8</td>
</tr>
<tr>
<td>Positive emotions</td>
<td>1.1</td>
</tr>
<tr>
<td>Negative emotions</td>
<td>1.0</td>
</tr>
<tr>
<td>Cognitive processes</td>
<td>8.2</td>
</tr>
</tbody>
</table>

### Table 2: The Distribution of Summary Variables in "The Queen Bee".

<table>
<thead>
<tr>
<th>Summary Variables</th>
<th>The Queen Bee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytic</td>
<td>87.3</td>
</tr>
<tr>
<td>Clout</td>
<td>82.5</td>
</tr>
<tr>
<td>Authenticity</td>
<td>40.6</td>
</tr>
<tr>
<td>Emotional tones</td>
<td>27.9</td>
</tr>
</tbody>
</table>
### Table 3: Density of emotion words in novels and fairy tales: number of emotion words in every 10,000 words.

<table>
<thead>
<tr>
<th></th>
<th>anger mean</th>
<th>σ</th>
<th>anticip. mean</th>
<th>σ</th>
<th>disgust mean</th>
<th>σ</th>
<th>fear mean</th>
<th>σ</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEN</td>
<td>746</td>
<td>162</td>
<td>1230</td>
<td>126</td>
<td>591</td>
<td>135</td>
<td>975</td>
<td>225</td>
</tr>
<tr>
<td>FTC</td>
<td>749</td>
<td>393</td>
<td>1394</td>
<td>460</td>
<td>682</td>
<td>460</td>
<td>910</td>
<td>454</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>joy mean</th>
<th>σ</th>
<th>sadness mean</th>
<th>σ</th>
<th>surprise mean</th>
<th>σ</th>
<th>trust mean</th>
<th>σ</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEN</td>
<td>1164</td>
<td>196</td>
<td>785</td>
<td>159</td>
<td>628</td>
<td>93</td>
<td>1473</td>
<td>190</td>
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<tr>
<td>FTC</td>
<td>1417</td>
<td>467</td>
<td>814</td>
<td>443</td>
<td>680</td>
<td>325</td>
<td>1348</td>
<td>491</td>
</tr>
</tbody>
</table>

Mohammad, 2013
Results:

• Mean values for anger and sadness across Corpus of English Novels and Fairy Tale Corpus are not significantly different.

• Fairy tales:
  • higher anticipation, disgust, joy, and surprise densities
  • lower trust word density
  • much larger standard deviation
  • lower number of negative terms
  • higher number of positive words
LIMITATIONS
LIMITATIONS

Emotion

Character

Action
Lack in determining fine-grained distinctions in emotion and in its appraisal types
• Further examine sentiment analysis tools;
• Identify the best-suited approach to detect emotions in fairy tales;
• Run computational analyses on the fairy tales of Brothers Grimm;
• Study the results.
CONTRIBUTION

• Model in detecting emotions in fairy tales;
• Set of fairy tales that augment empathy;
• Social value.
THANK YOU.
QUESTIONS?
Presentation
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REFERENCES


REFERENCES


APPENDIX
Public domain

- Vertigo.

- Blade-Runner.
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