Distinguishing Abuse

with
Natural Language Processing and
Logistic Classification

Kenya Chauche
January 2020

*Trigger Warning: contains some graphic language, along with tokens of and references to physical/emotional abuse

20 people/minute

are physically abused by an intimate partner in the US

What is Abuse?

- Physical:
  - Violence, sexual violence
- Psychological:
  - Harassment, humiliation, blame, stalking
- Economical:
  - Employment related, coerced debt
- Only *examples,* abuse can take many forms

The Problem

- Relationship between intimate partner violence and depression and suicidal behavior
  - Spread of trauma
- Inability or difficulty in taking initial action
  - Reticence
  - Intimidation
  - Embarrassment
  - Trauma
- Can often go unrecognized
- Identify language patterns
  - Start by getting more resources to mental health professionals
    - Especially those who interact with clients through text

The Data

- r/Relationships
  - Help with interpersonal relationship advice
  - Ex: cheating, communication problems, sexual challenges, lactose intolerance, etc
  - Posts sampled
    - Past month, previous month, previous to two months
    - At least 100 comments

- r/AbusiveRelationships
  - Community for people who have been in or are currently in an abusive relationship
  - Ex: resource sharing, venting, empathy, support
  - Posts sampled
    - Past month, previous month, previous to two months
    - At least 3 comments

The Model

- Predicting the presence of abuse through text
- Comparison of posts in two subreddits:
  - r/Relationships
  - r/AbusiveRelationships
  - Searching for common words and terms between and distinguishing the two groups
- Natural language processing identifies key words/phrases
  - TFIDFVectorizer
- Logistic Regression classifies post as abuse/nonabuse

92%

Accurate with classifying posts sampled
from r/Relationships and r/AbusiveRelationships

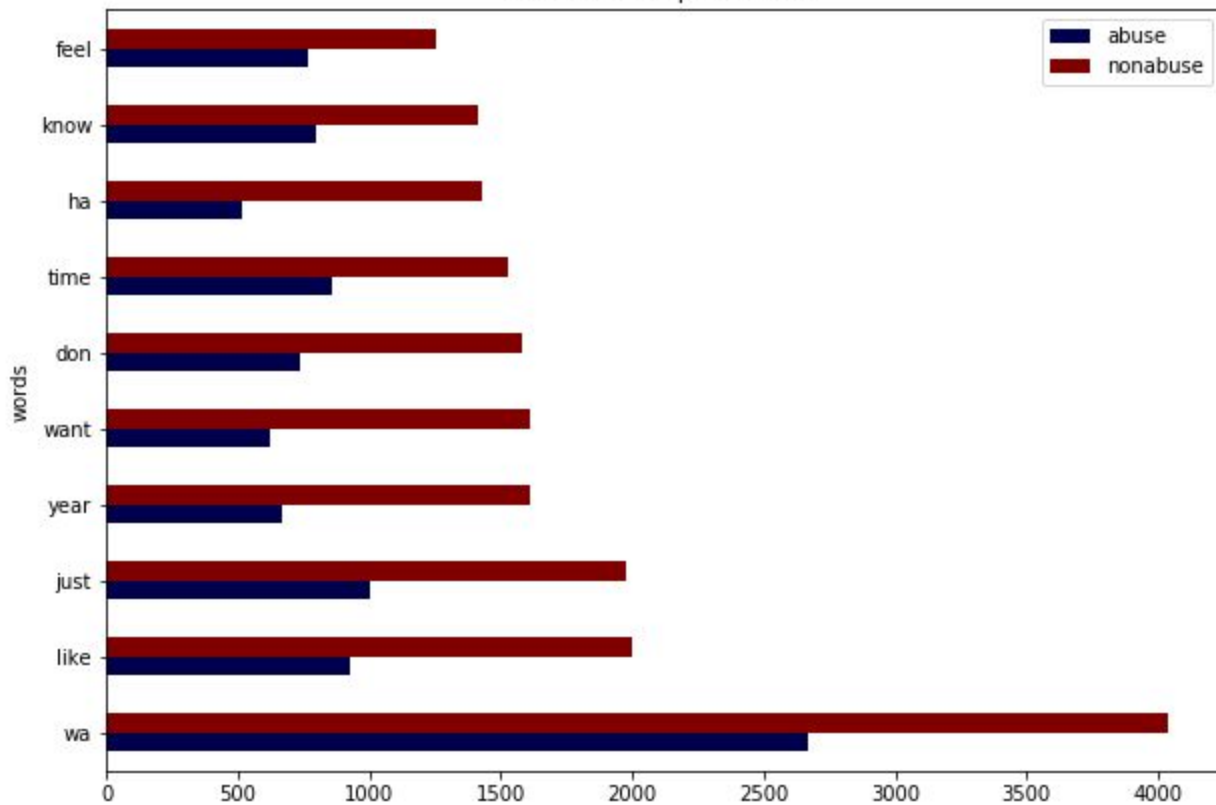# Common Words: No Overlap

- r/Relationships

  dr, tl dr, tl, wife, sister, bf, christmas, daughter, brother, amp x200b, x200b, tldr, spend, gf, basically, marriage, conversation, morning, game, taking, dinner, weekend, group, college, weird, food, fine, use, 10, worried
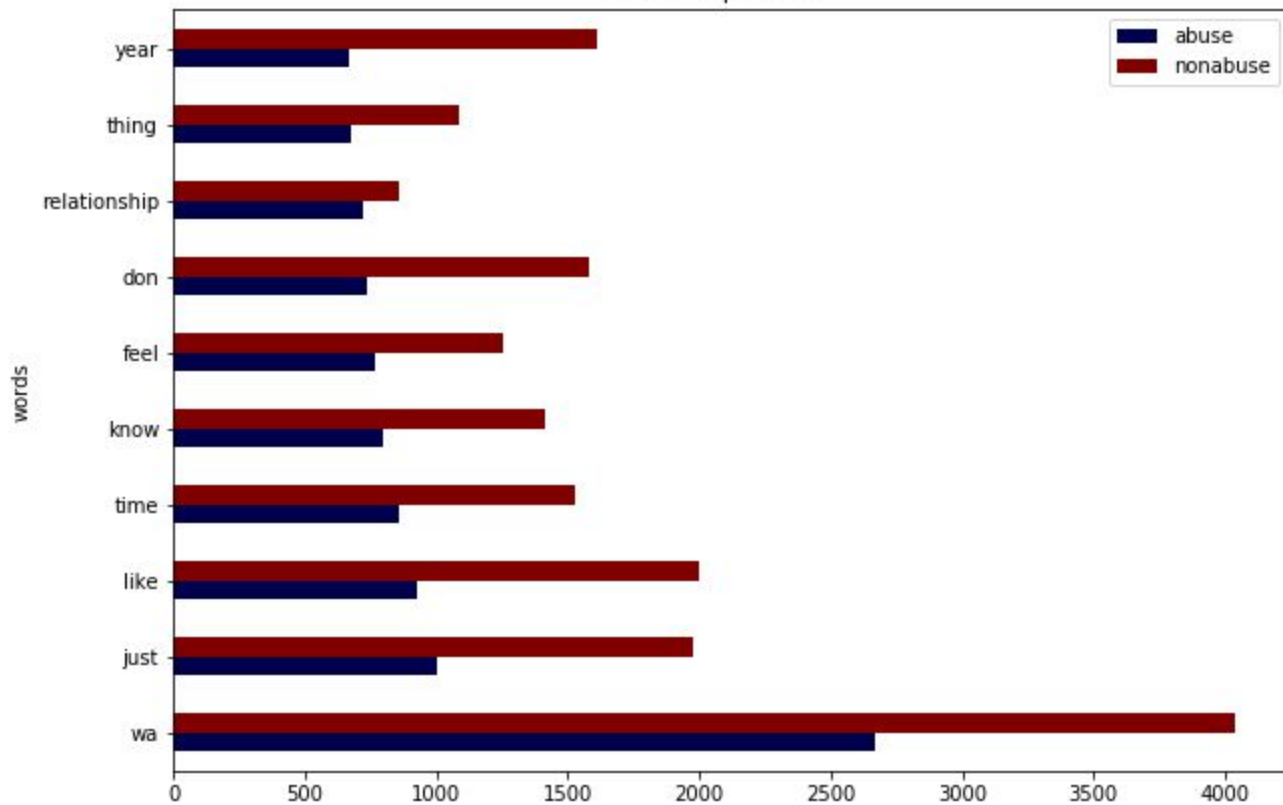
- r/AbusiveRelationships:

  Abusive, abuse, abusive relationship, hit, emotionally, scared, face, abuser, self, kill, fucking, physically, story, dog, fault, physical, anxiety, loved, abused, crazy, argument, afraid, worse, emotional, dont, contact, mental, door, behavior, control

Nonabuse: Top 30 Words

Abuse: Top 30 Words

Conclusion

- Distinguishing is possible, though language is nuanced
  - Combination and presence of words and phrases
  - Organization
  - Sentiment and context
  - Combination approach could be most effective
- Warning signs
  - More obvious warning words: control, abuse, anxiety, afraid, mental, kill, scared, hit, etc
  - Physical signs: conspicuous bruises, sprains, repeat injuries
  - Emotional signs: fear, inconsistent/trouble sleeping, substance abuse, depression, anxiety

https://www.verywellmind.com/signs-someone-is-being-abused-66535

Resources

- Local (Seattle):
  - Advocacy groups, shelters, counseling, etc
    - https://www.seattle.gov/cityattorney/crime-victim-assistance/getting-help
  - Stalking
    - https://www.seattle.gov/cityattorney/crime-victim-assistance/stalking-help
- National Domestic Violence Hotline
  - 1−800−799−7233
  - https://www.thehotline.org/

Sources

https://ncadv.org/statistics

https://assets.speakcdn.com/assets/2497/domestic_violence_and_economic_abuse_ncadv.pdf

https://assets.speakcdn.com/assets/2497/domestic_violence_and_psychological_abuse_ncadv.pdf

https://www.verywellmind.com/signs-someone-is-being-abused-66535

https://www.reddit.com/r/Relationships

https://www.reddit.com/r/AbusiveRelationships