

Mental Health Tracking with NLP



Goal

- Use NLP techniques to get better insight into:
 - My emotional arc
 - How my outward persona changes over time
 - Am I becoming more cheerful?
 - Am I becoming a negative nancy?
 - How did relationships progress?
 - How did my relationships evolve emotionally?
 - Were there warning signs in the data from my previous relationship?

Dataset



➤ ~ 160,000 Facebook chat messages sent/received

➤ ~ 350,000 MSN chat messages sent/received

➤ Spanned over 10 years (~140 msg/day)

➤ ~ 5 million words



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- ~ 5 million words
- Most frequent message:

Dataset



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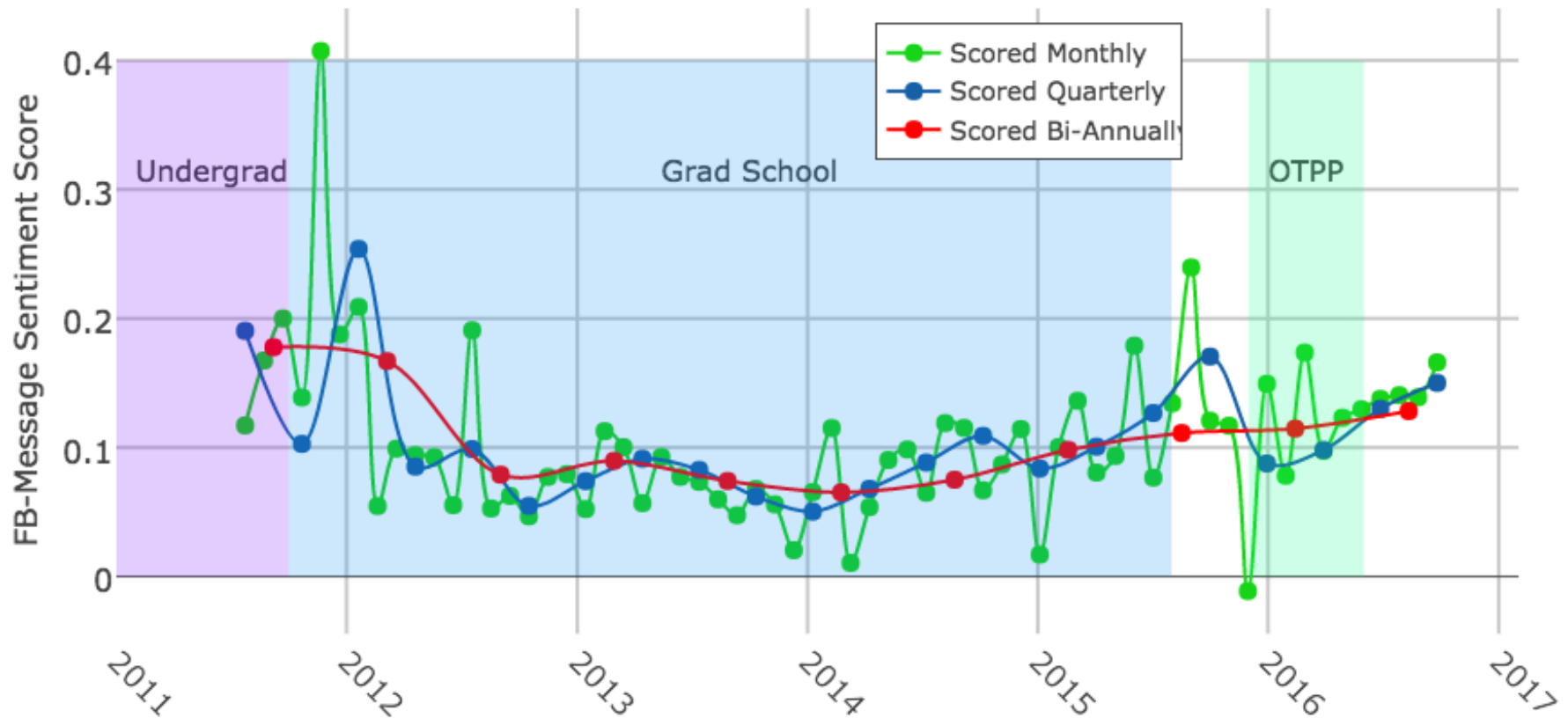


- ~ 5 million words
- Most frequent message:

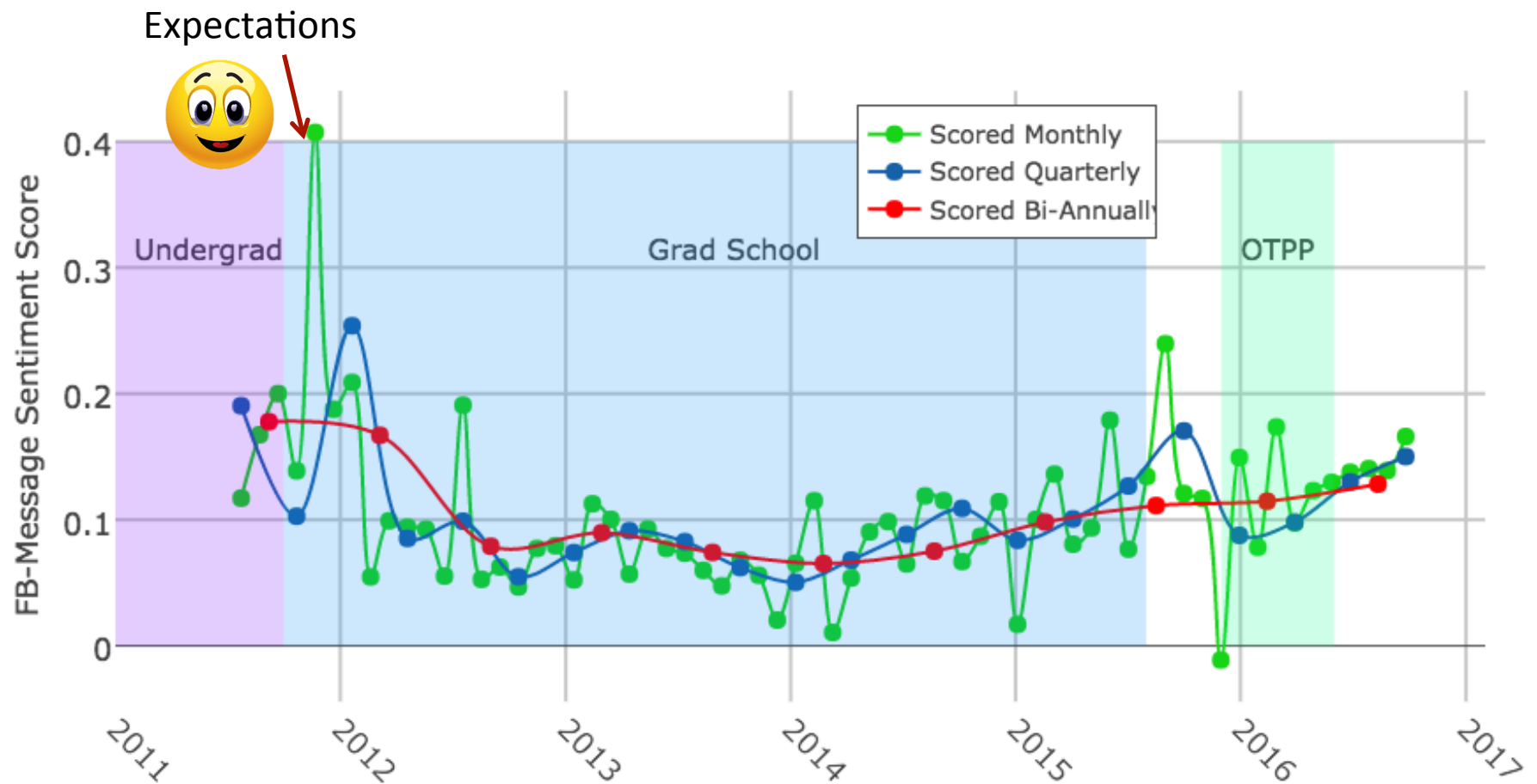
lol

Bob's Emotional Arc

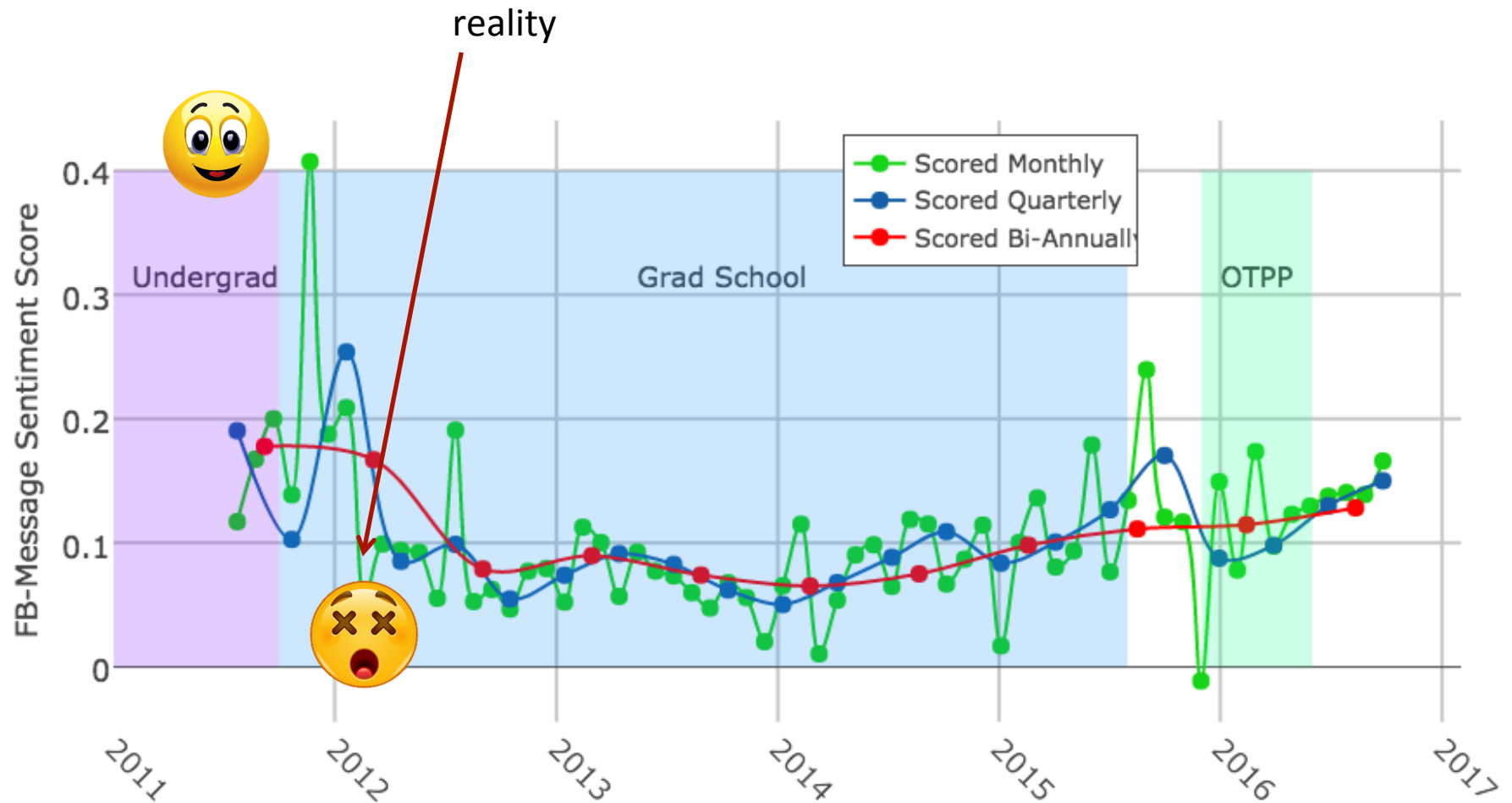
VADER Sentiment Algorithm (NLTK) + Rolling time-window



Bob's Emotional Arc

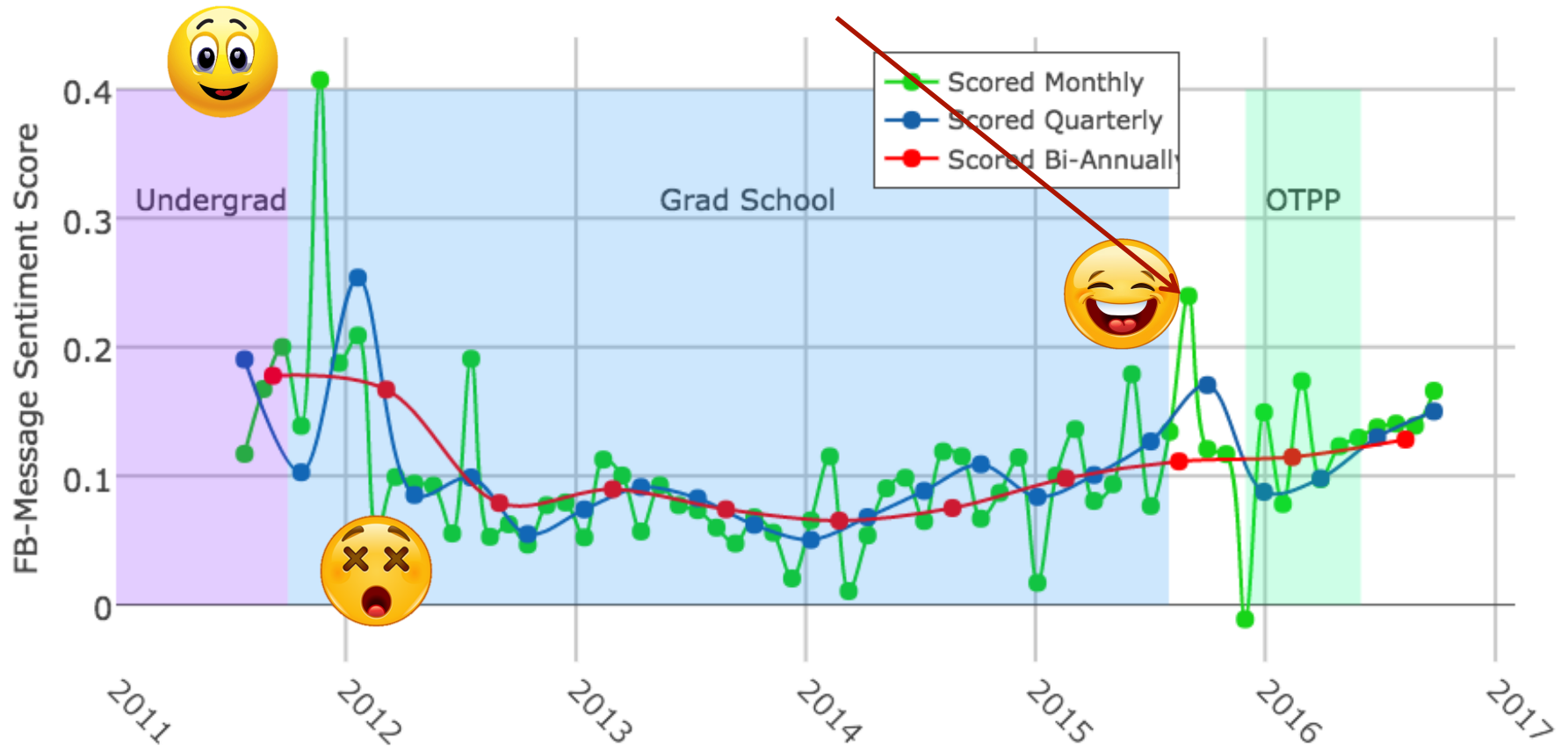


Bob's Emotional Arc

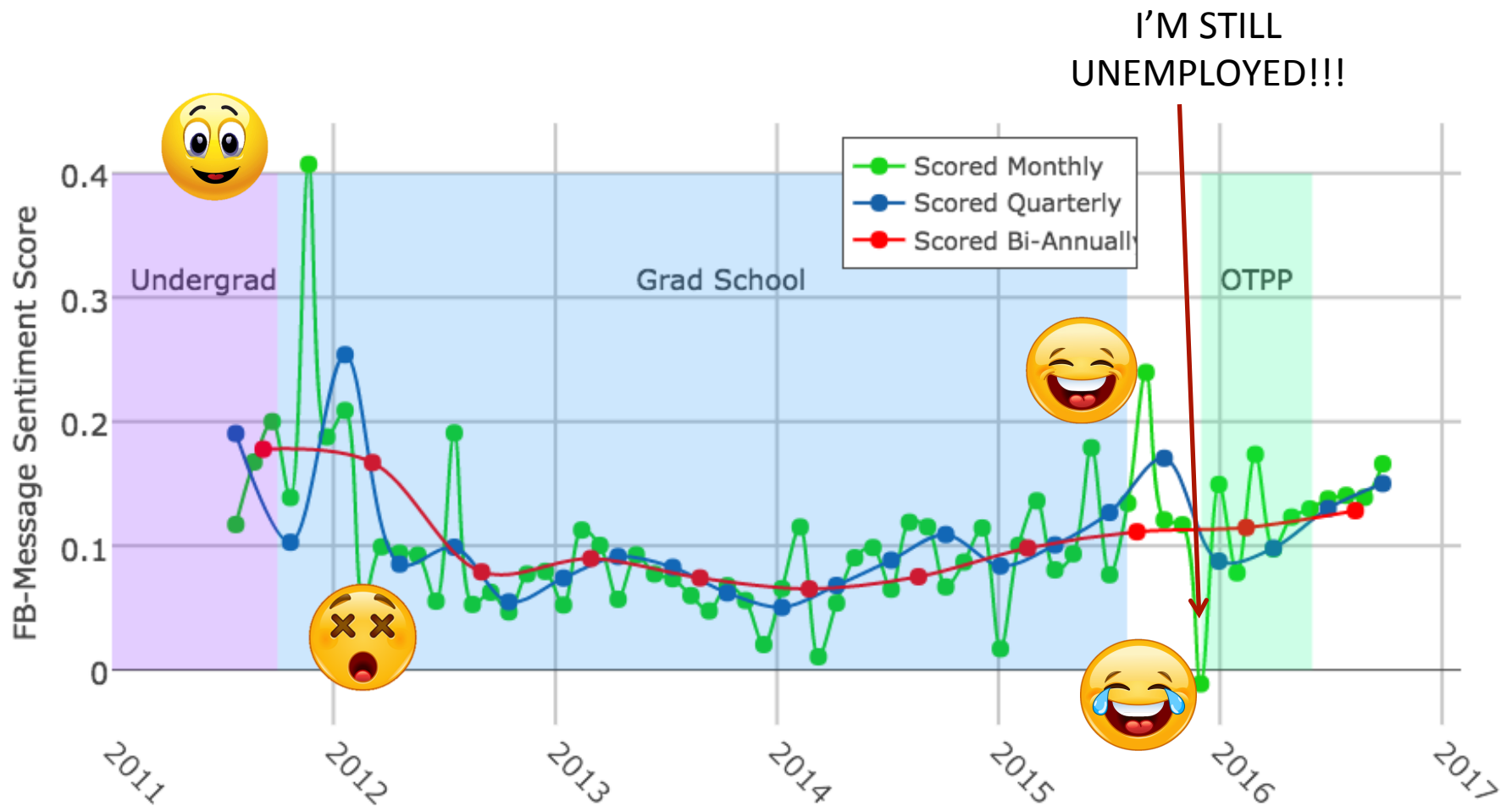


Bob's Emotional Arc

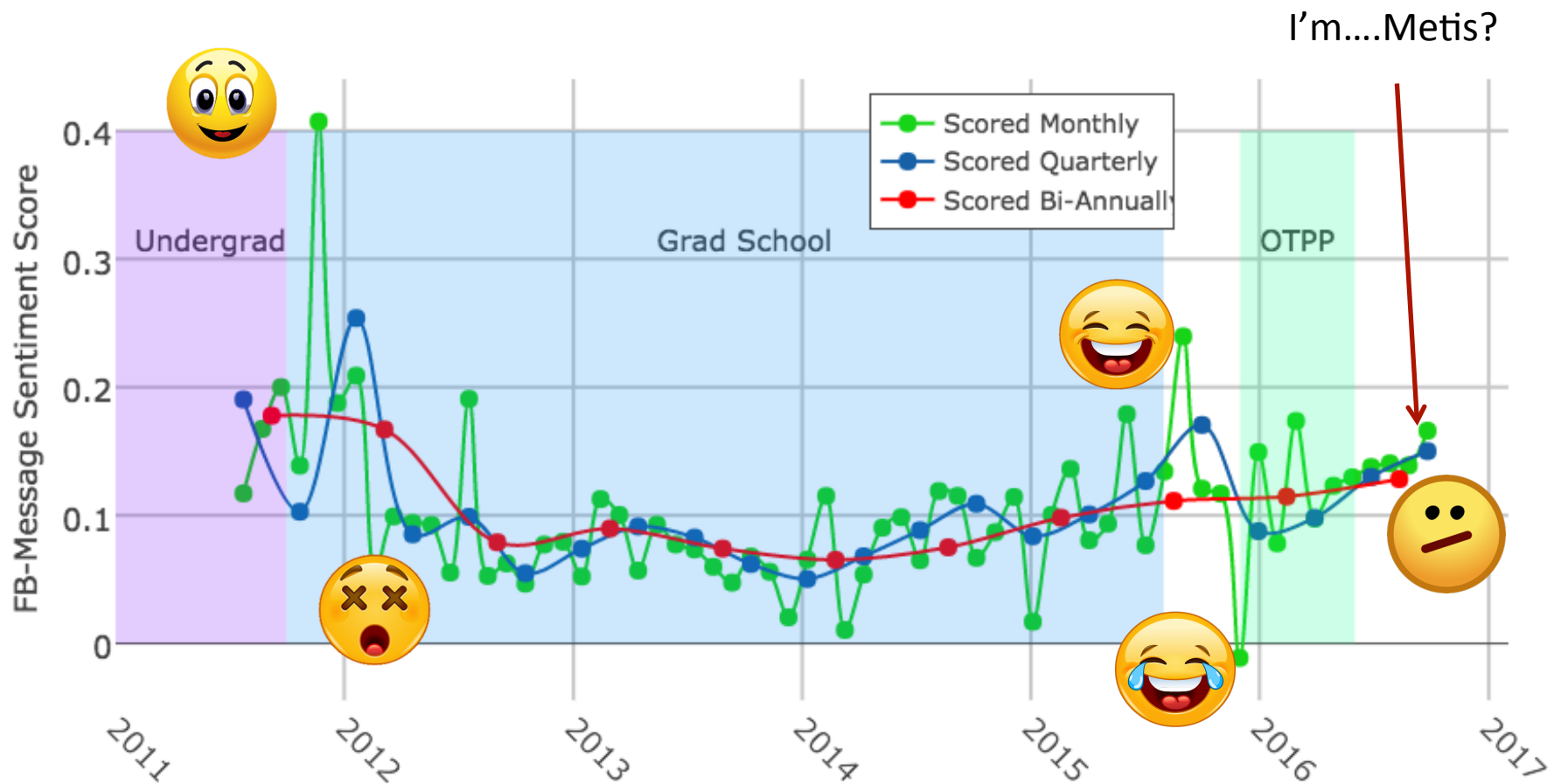
I'M A DOCTOR NOW!!!
CALL ME DOCTOR



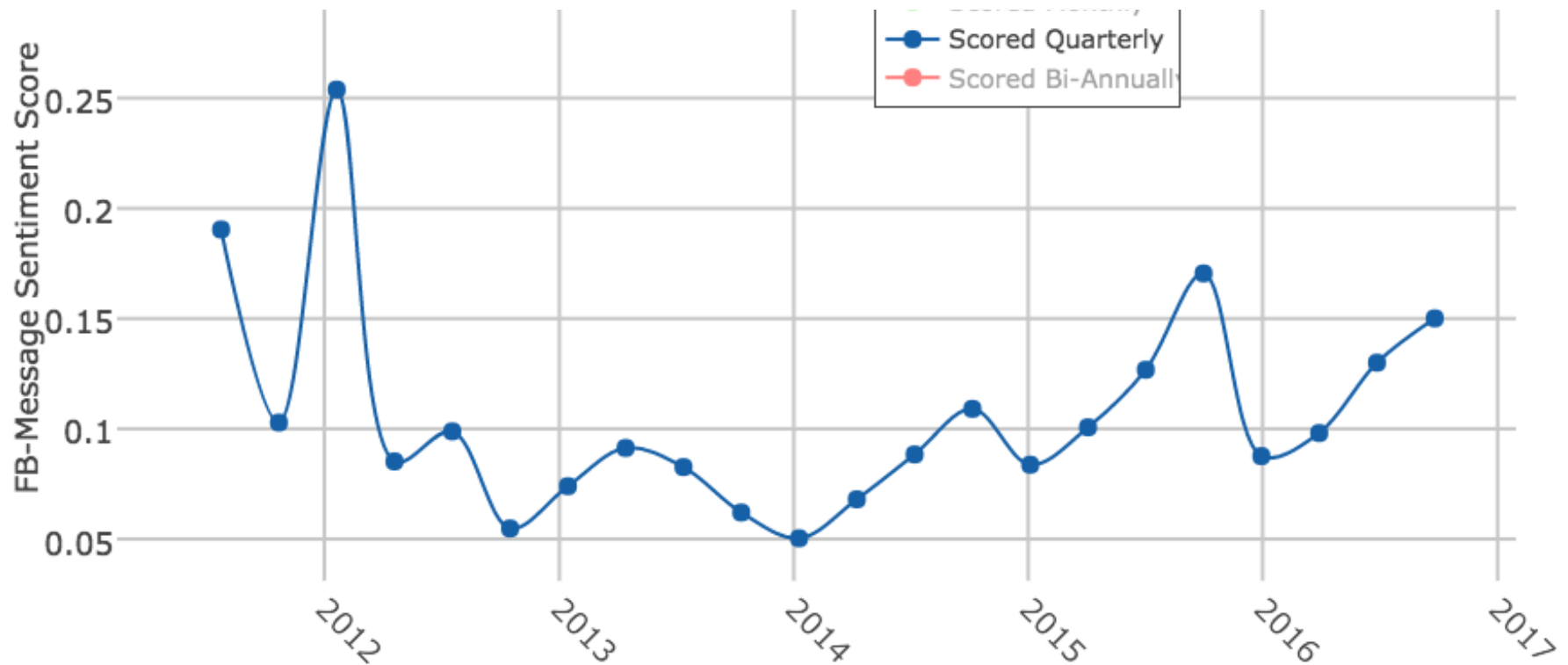
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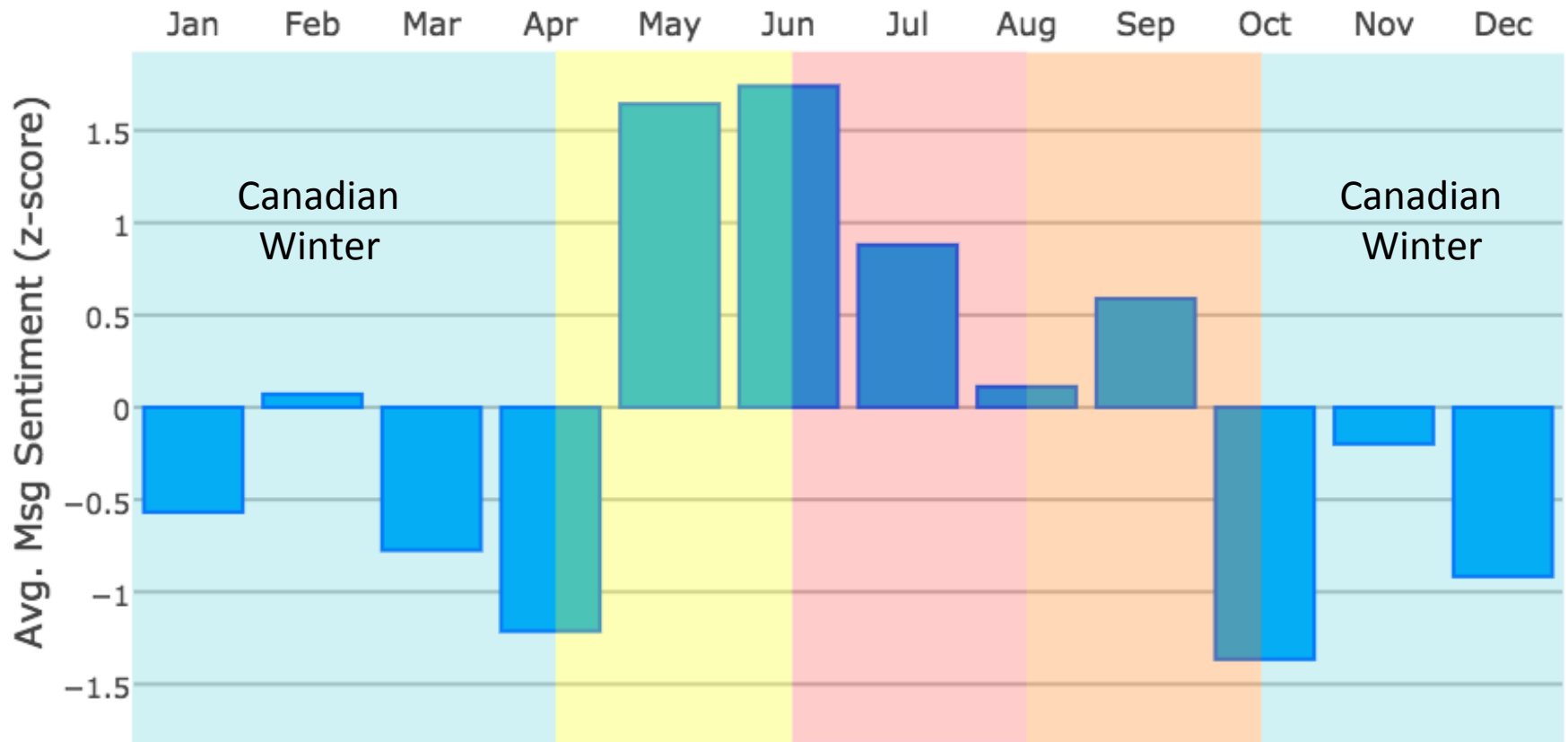


Annual Cycle...but why?



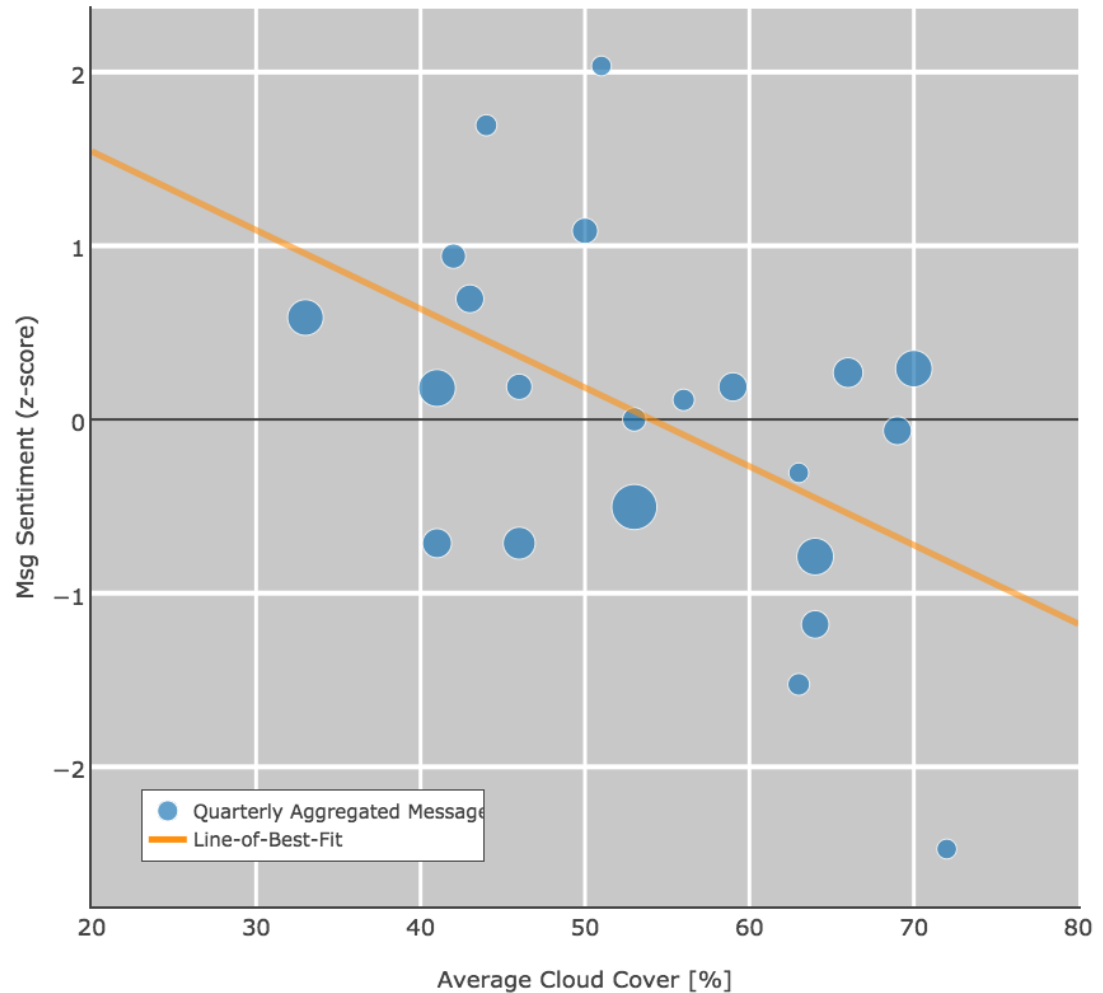
Do I Have SAD?

Message Sentiment Score by Month



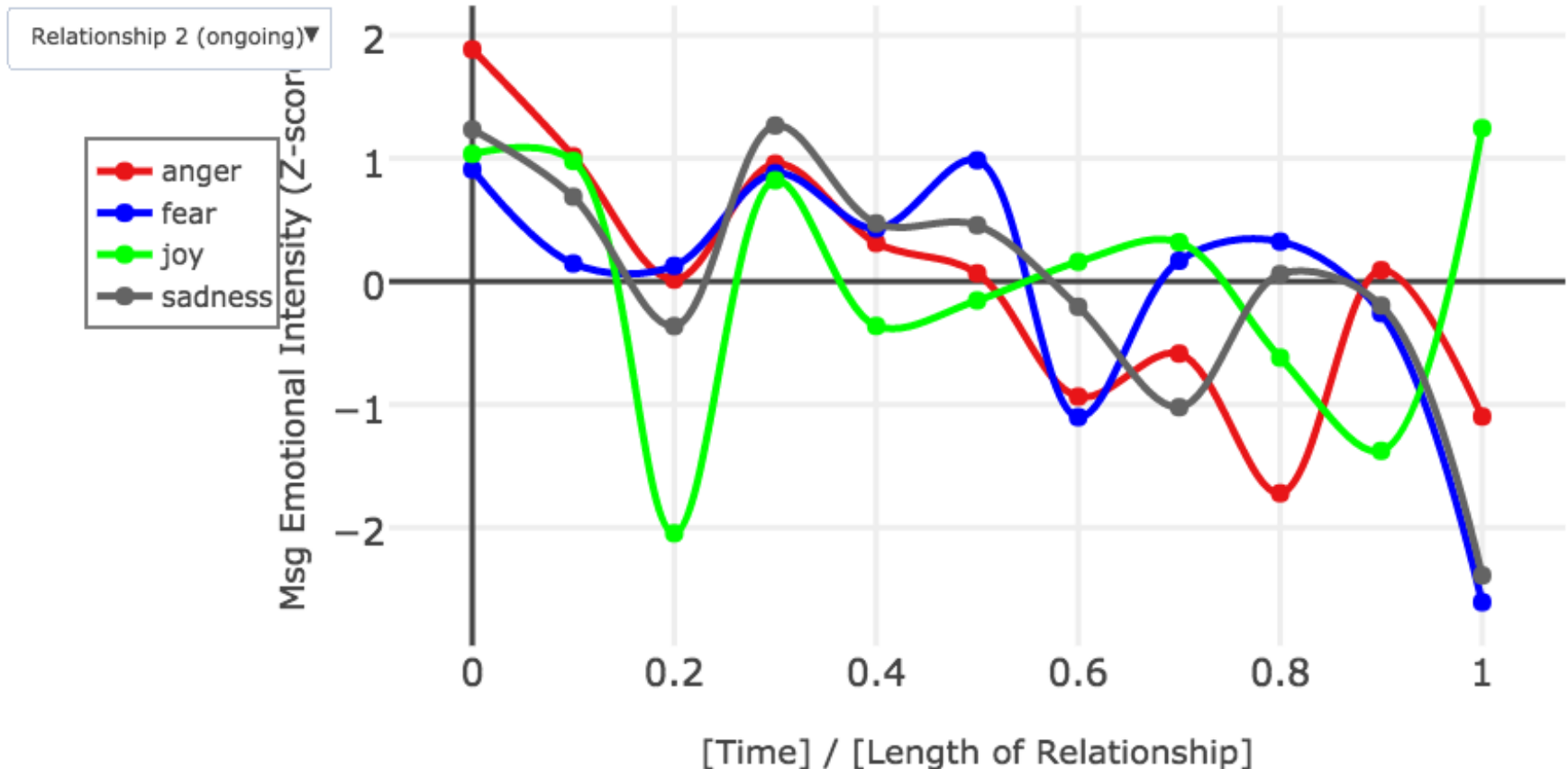
Do I Have SAD?

Sentiment z-score
vs.
Cloud cover



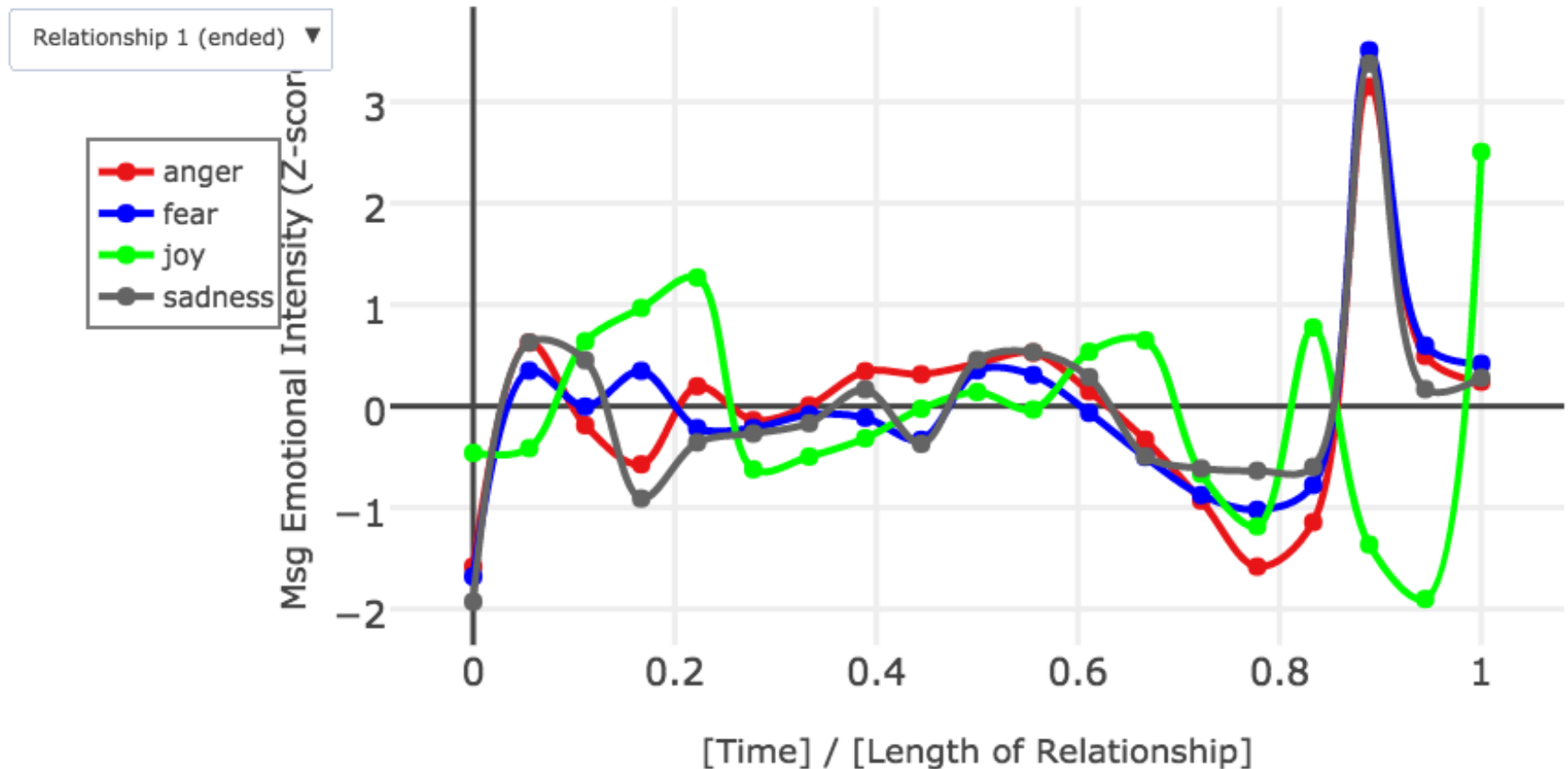
The Tale of Two Relationships

NRC Word-Emotion Association Lexicon



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NRC Word-Emotion Association Lexicon



Applications

- Mental health history tracking for patients
- Extreme event onset detection warnings
 - Suicide risk
 - Anxiety attacks
 - Manic episodes
- Communication coaching/therapy
 - Maybe an app that predicts the onset of fights
 - “I’m sorry Dave, I’m afraid I can’t let you say that to her for your own safety”