

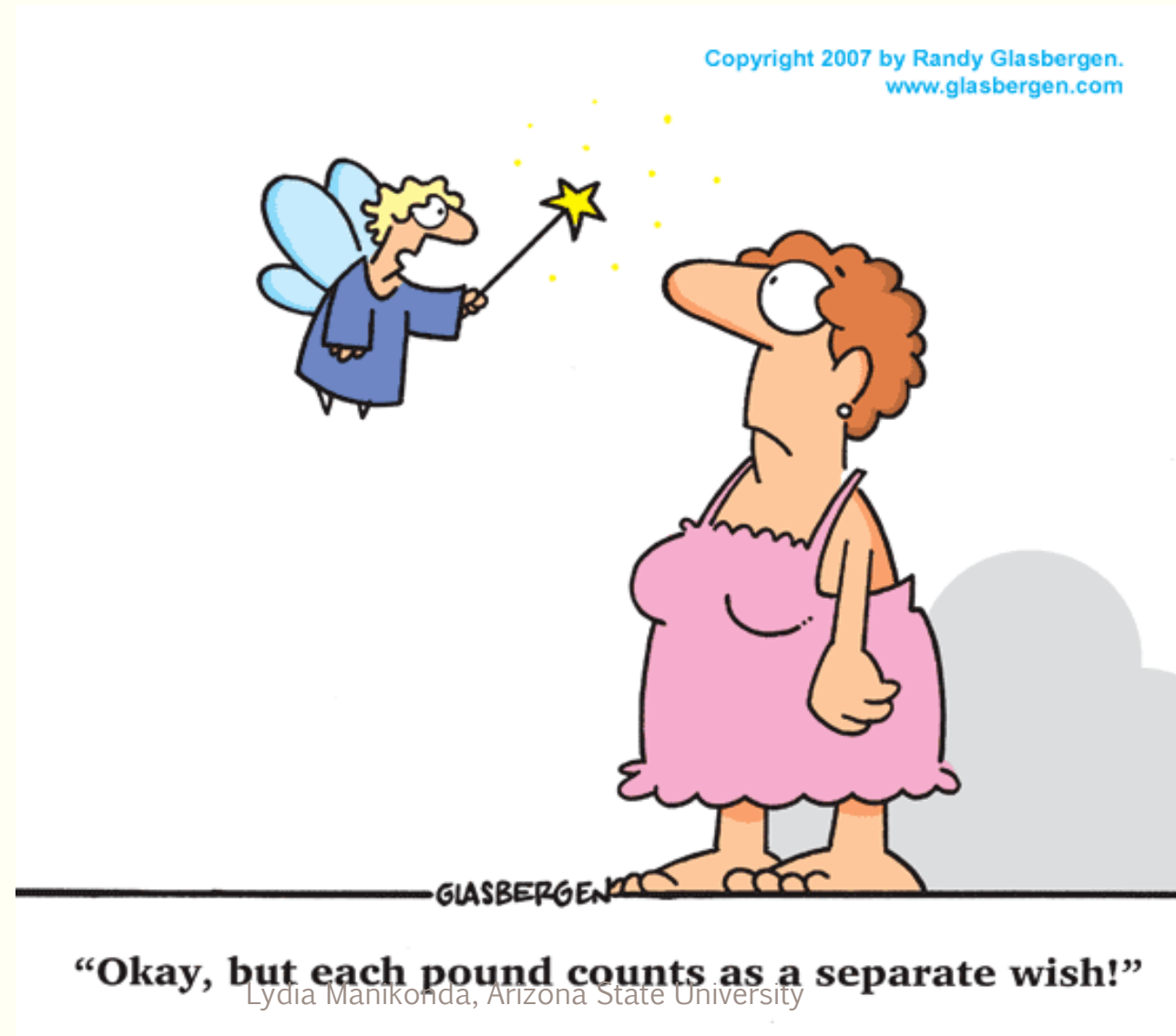


DISCOURSE ANALYSIS OF USER FORUMS IN AN ONLINE WEIGHT LOSS APPLICATION

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Weight Loss



Online Weight-loss Communities

- Online communities increasingly popular for supporting weight loss.
- Connect, Share, Get Support.



Main Goal

Study user's **language** in correlation with their **weight loss dynamics**.

Issues Studied

Questions

Seek
Information

Sentiment

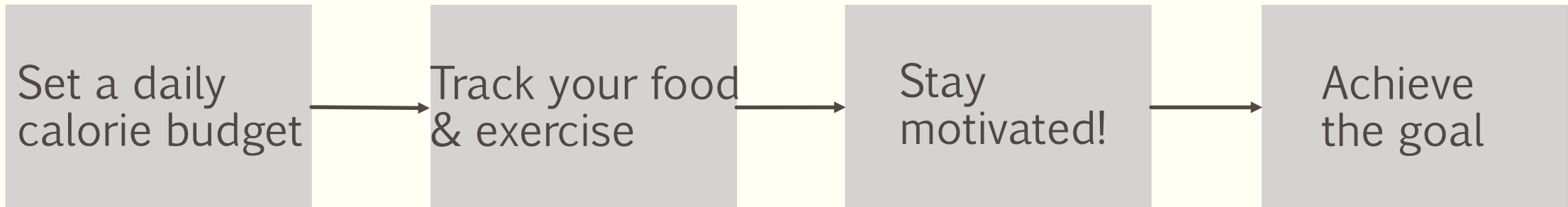
Emotions in
posts

Cohesion

Focus on
the goal

Lose It!

- Weight-loss application



Why is this work interesting?

- Automating the process of language analysis
- NLP aspects
- Weekly check-in weights

Thread Topic – “Someday I will...”

Do a
pull-up
😊



..actually
enjoy
exercising.



Stop
participating
in the lose it
forums, but
obviously not
today.



I hope
you fail
😊



Start of a thread



Thread Topic: “Can’t lose weight”

I gained over 30 lbs in the last year and am stressed about losing it. I eat 1600 calories a day and burn more than that in exercise, but I haven't lost any weight. I am so confused



You've only been a member for less than 2 months. I suggest you relax. Adjust your habits to something you can live with..



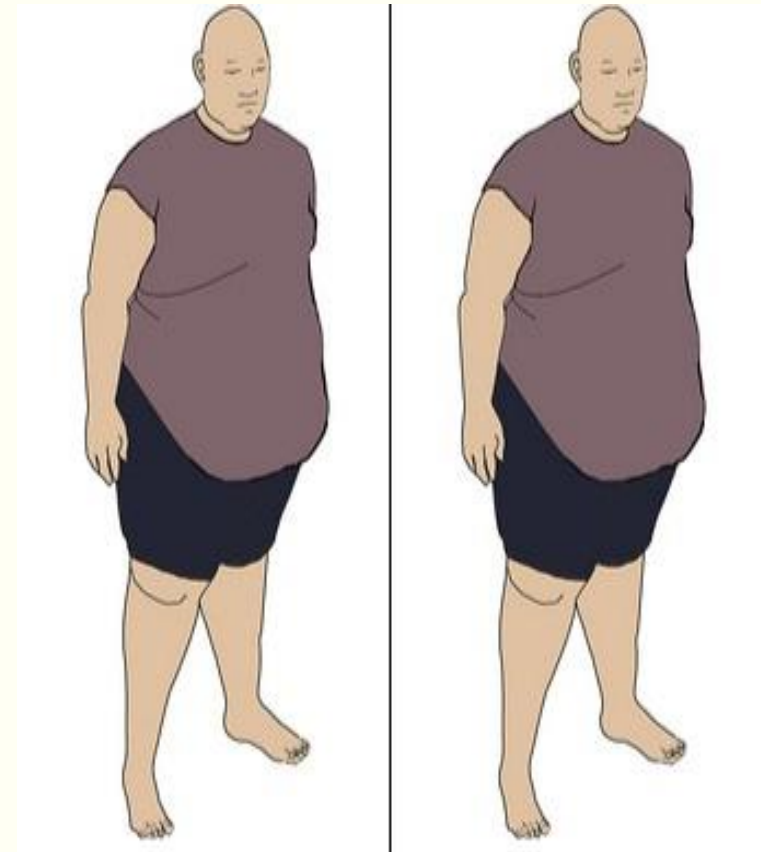
You sound just like me. Try diligently logging everything you consume.



Types of Users based on Weekly Weight Check-in

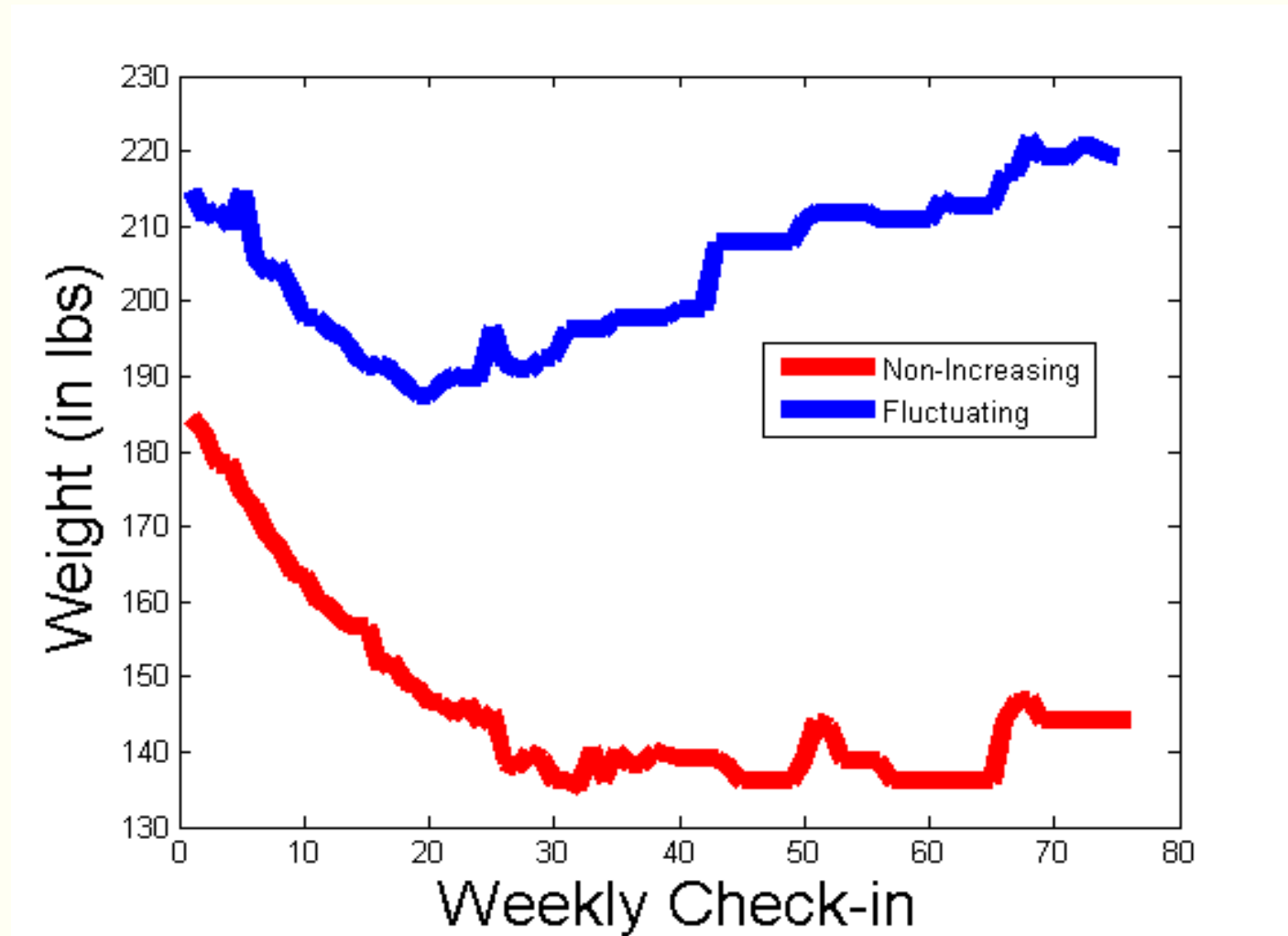


Category-A : Non-increasing



Category-B : Fluctuating

Weekly Weight Check-ins of two individual Users



Statistics of Users and Forum Posts

Weight Pattern

	Category-A	Category-B
#Total Users	1127	1143
#Forum Users	29	68
#Forum Posts	99	1279
Posts per user	3.5	18.2
Words per post	49.1	77.3

Issues Studied

Questions

Seek
Information

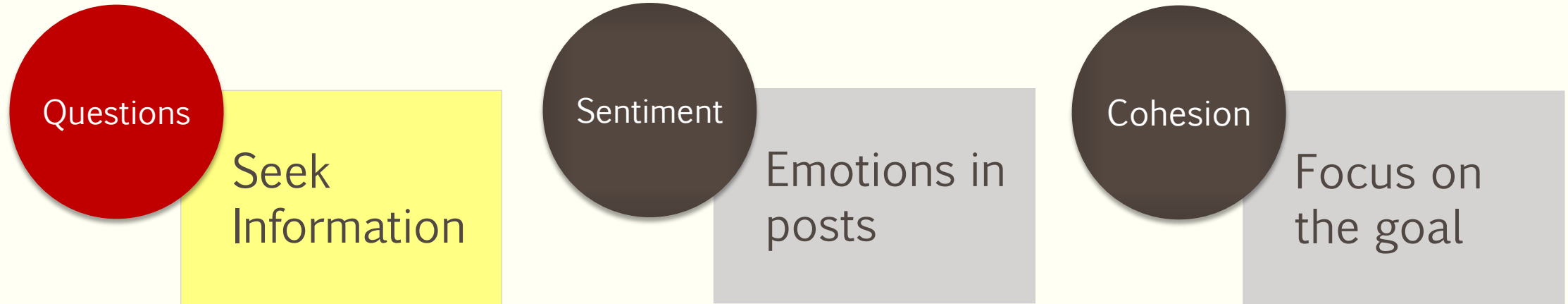
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1st Issue



Asking Questions

People on online health communities mainly engage in two activities:

- Seeking information.
- Getting emotional support.



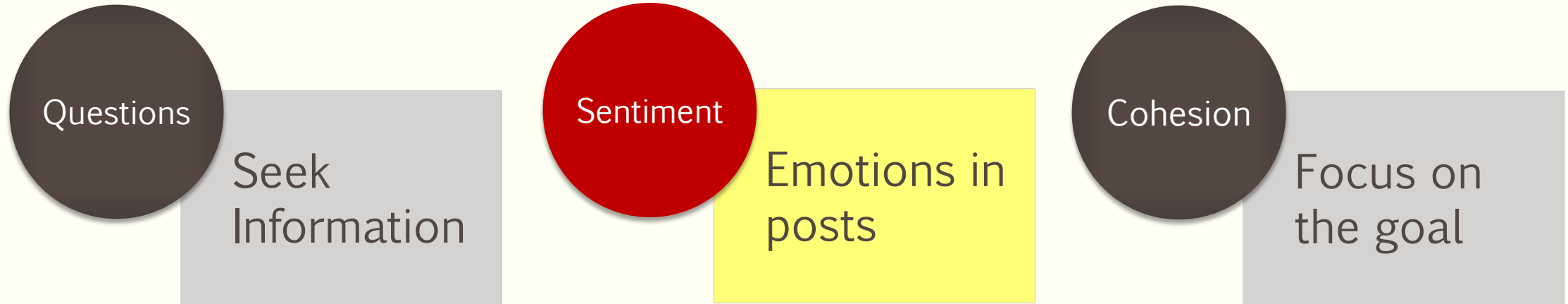
I would appreciate any advice on how to fight the cravings and reduce my sugar intake. Any suggestions for dealing with a sweet tooth?

- Part-of-Speech tagging
- ‘?’ symbol

Question Posts vs User Types

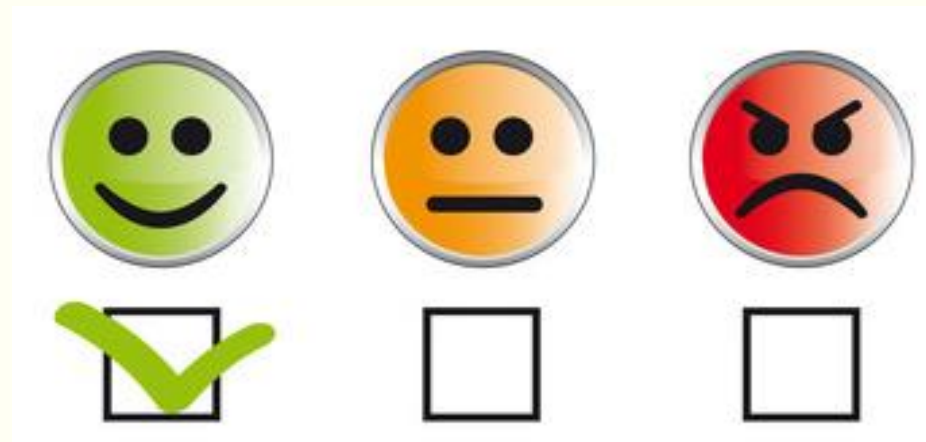
	Category-A (Non-increasing)	Category-B (Fluctuating)
Average Questions per User	32.6%	37.7%
Standard Error	0.061	0.042

2nd Issue

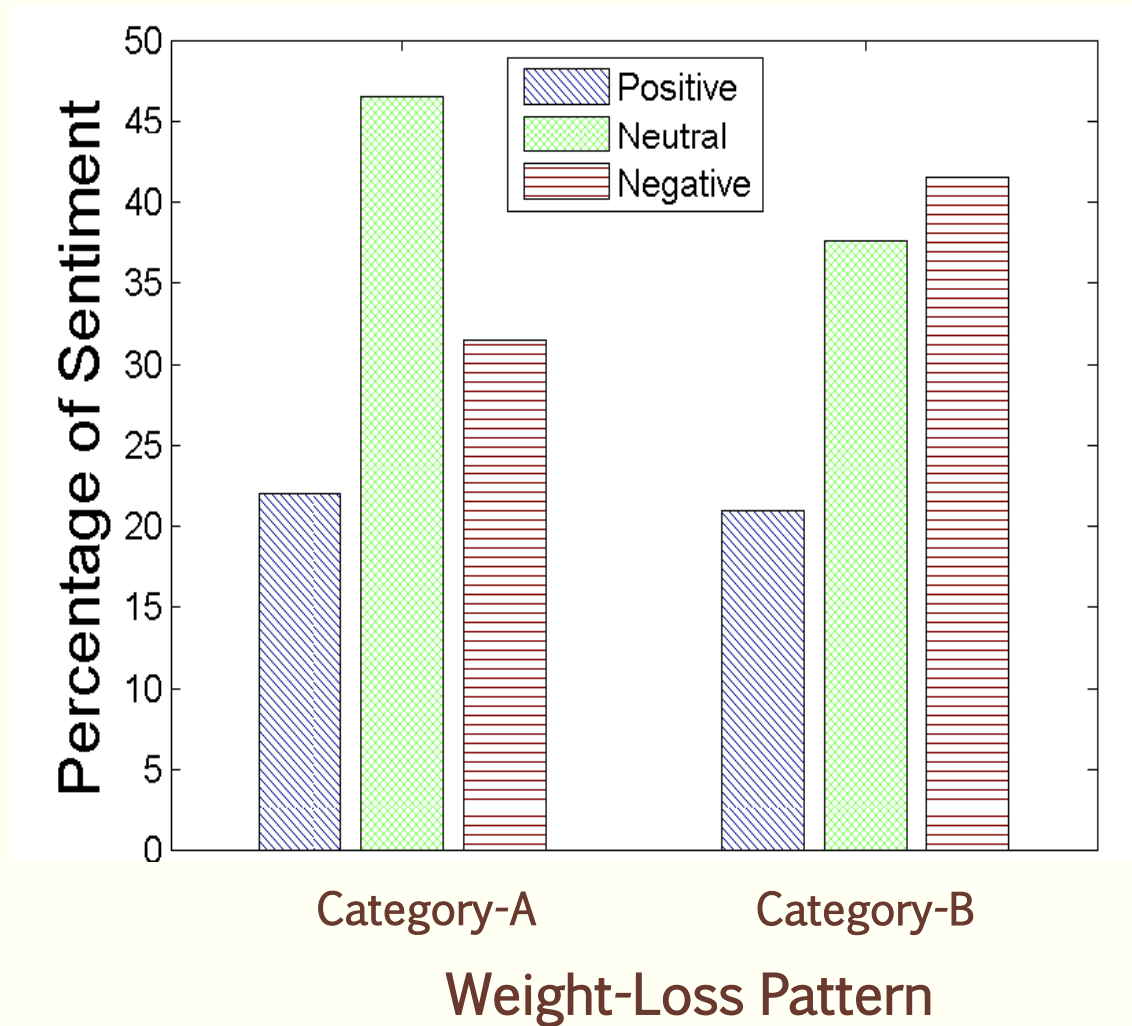


Sentiment of Posts

- To understand if loss of weight impacts the sentiment of user's posts
- Stanford sentiment analyzer
- Three types of sentiment are extracted
 - Positive; Neutral; Negative



Sentiment of Users' Posts

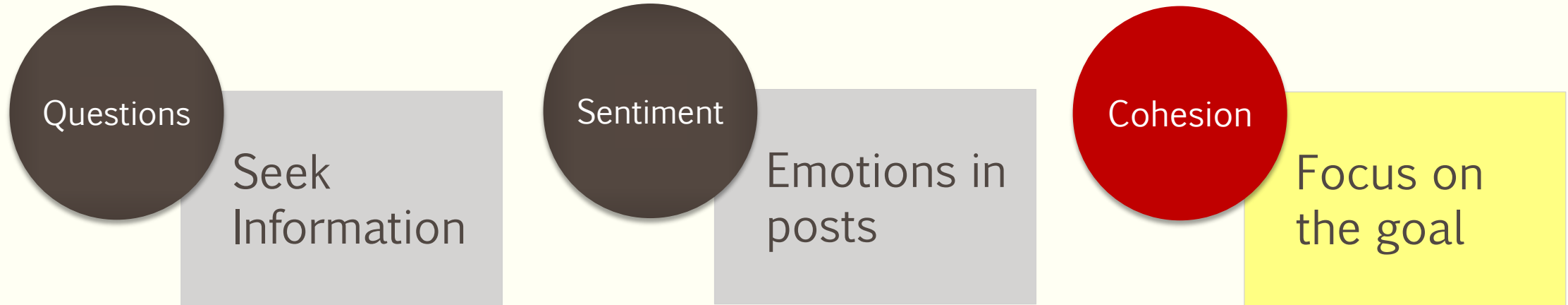


Sentiment Extracted from User's Posts on Lose It! Forums

- Posts of users belonging to category-A are more neutral
- Posts made by users from category-B are of negative sentiment

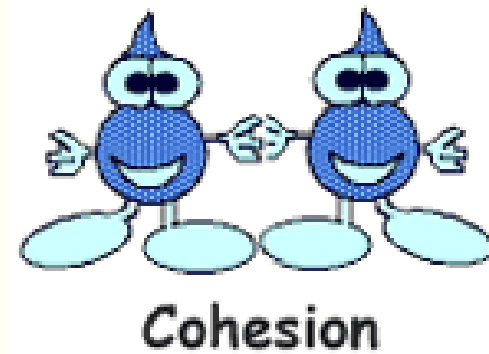
Category-B (fluctuating) users *might* require more emotional support.

3rd Issue

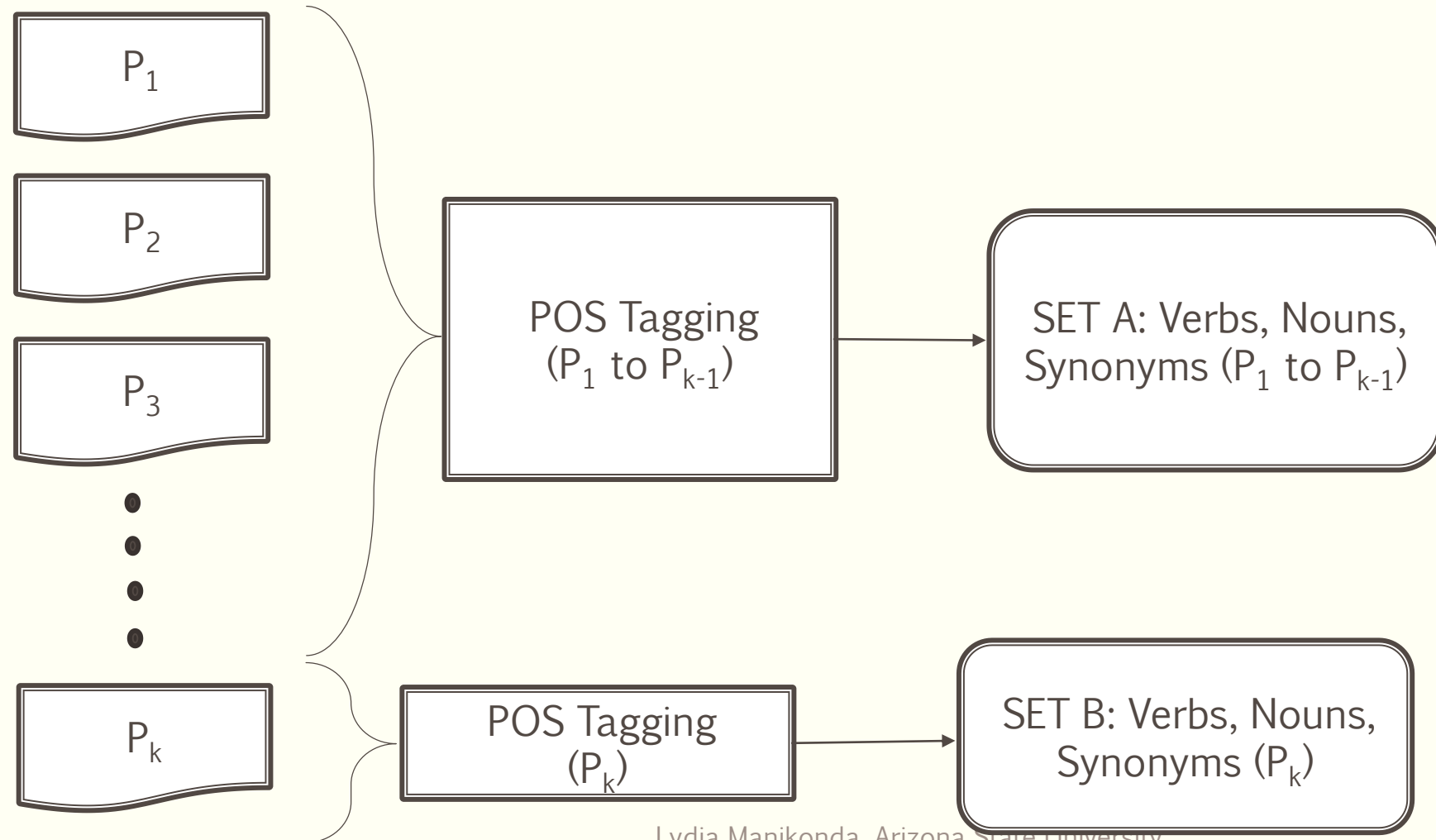


Cohesion with Previous Posts

- Cohesion – Property of well-written document that links sentences to be in the same context.
- Mainly interested in finding if a user's post is similar w.r.t previous posts in a thread.



Measuring Cohesion Score



$$\text{Cohesion Score} = \frac{|A \cap B|}{|B|}$$

Cohesion Score vs User Types

	Category-A (Non-Increasing)	Category-B (Fluctuating)
Average Cohesion Score	0.51	0.42
Standard Error	0.027	0.008

Overall Results

- Question Posts vs User Types

	Category-A (Non-Increasing)	Category-B (Fluctuating)
Average Question Posts	32.6%	37.7%

- Sentiment vs User Types

	Category-A (Non-Increasing)	Category-B (Fluctuating)
Sentiment	21%(+ve); 48% ; 31%(-ve)	19%(+ve); 36%; 45% (-ve)

- Cohesion Score vs User Types

	Category-A (Non-Increasing)	Category-B (Fluctuating)
Average Cohesion Score	0.51	0.42

Summary

- Analysis of language vs weight loss dynamics
- Four main inferences:
 - Category-B actively participate on online discussion forums
 - Category-B users post more questions
 - Category-A contribute to more cohesive posts
 - Category-B users post more number of negative sentiment posts
- Early “Proof of Concept” for providing insights on user behavior in weight loss communities

Category-A: Non-increasing
Category-B: Fluctuating

Thank you!