

Stance Markers, Reddit Thread Structure, and Community

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November 5, 2016

 reddit PERSONALFINANCE comments

394 [UPDATE] My brother's entire financial plan. I hope this doesn't get me in trouble
:P (self.personalfinance)
submitted 4 years ago * by break_free

sorted by: best

[+] thederrek 35 points 4 years ago
This is awesome, thanks for sharing the whole thing!

permalink embed

[+] break_free [S] 23 points 4 years ago
You're welcome! It's fairly specific to him, but the underlying principles are there.
permalink parent

[+] AmpleJar 12 points 4 years ago
Agreed! OP is a good brother!
permalink parent

[+] fluxdrip 32 points 4 years ago
Skimming the plan, I have a sneaking suspicion OP may in fact be a good sister...



reddit

FRUGAL

comments

↑ 1172 Here's the financial plan I made for my brother. He loved it! I thought you might enjoy. (x-post r/PF) (self.Frugal)
↓ submitted 4 years ago * by break_free

↑ [-] trailden 9 points 4 years ago

↓ What about paying down Credit Cards? You suggest paying the minimum each month, but those interest rates KILL. Thoughts?

permalink embed

↑ [-] JimmyHavok 12 points 4 years ago

↓ My own philosophy would be to shift as much debt as possible to the lowest interest possible, then pay as much as possible on the highest interest debt until it is gone, rinse and repeat. Every dollar you take down reduces the drag of compound interest pulling you down.

permalink embed parent

↑ [-] jonny1313 7 points 4 years ago

↓ That's my strategy as well. I have hospital bills, students loans, a dentist bill, and a small time loan. The hospital and dentist bills have no interest on them, so I talked with their financial department and had them reduced to whatever bare minimum they would take. The small time loan comes first (about 400ish) followed by as much as I can feasibly throw at the student loans. I'm set to be debt free within the year. The trick is don't pay anymore than minimum with no interest loans, pay as much as you can towards the higher interest ones; and then snowball effect like usual.

Linguistic Stancetaking

Kiesling (2009):¹ An activity through which discourse participants create and signal **relationship** to their **interlocutors**, the **topic of discussion**, and the **talk** itself.

¹Scott Kiesling. Style as stance. Stance: sociolinguistic perspectives 171 (2009).

Linguistic Stancetaking

Kiesling (2009):¹ An activity through which discourse participants create and signal **relationship** to their **interlocutors**, the **topic of discussion**, and the **talk** itself.

Eg: *how certain the speakers are about their assertions, whether the speakers are friendly or dominating.*

¹Scott Kiesling. Style as stance. Stance: sociolinguistic perspectives 171 (2009).

Linguistic Stancetaking

Stancetaking is characterized in part by an array of linguistic features:

- ▶ Hedges (e.g., *might*, *kind of*)
- ▶ Discourse markers (e.g., *actually*, *I mean*)
- ▶ Back channels (e.g., *yep*, *um*)

We operationalize stancetaking through a multi-dimensional analysis of the occurrences of these features.

Reddit

- ▶ Reddit is an internet discussion forum founded in 2005.
- ▶ Extremely high-traffic (top 25 globally, top 10 in the US).
- ▶ Reddit consists of thematically-organized forums, called **subreddits** (~950K in Oct 2016).
 - ▶ [/r/AskReddit](#): for thought-provoking questions.
 - ▶ [/r/explainlikeimfive](#): for layman-friendly explanations.
 - ▶ [/r/philosophy](#): philosophy related discussions.
 - ▶ [/r/nsfw](#): pornography related discussions.
- ▶ Registered users can submit a new post, comment on others' posts, and vote on posts and comments.



Anatomy of a Reddit Thread

karma for original post

original post content: title, text, author, time...



Things for a college kid to do during the summer? (self.Atlanta)
submitted 21 hours ago by vodoman123

I will be staying in Midtown this summer and was wondering what I could do to have fun.

8 comments source share hide all child comments

all 8 comments subscribe

sorted by: best ▼

navigate by: submitter | moderator | friend | me | admin | highlighted | gilded | IAmA | images | videos | popular | new

[↑] [-] mechukulele [S] 2 points 20 hours ago
[↓] Shoot the hooch

permalink source hide child comments

comments and comment metadata

[↑] [-] vodoman123 [S] 0 points 19 hours ago
[↓] I was looking for things in the city since I do not have a car

permalink source parent

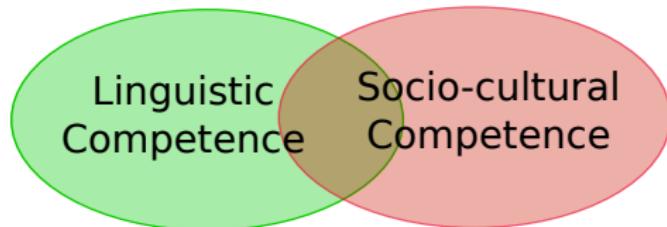
Reddit: Online Multi-Community

- ▶ Subreddits are organized around various topics of interest.
- ▶ Individuals **self-select** to be a member of a subreddit.
- ▶ Subreddits have different norms and practices.

Communicative Competence

Hymes (1972)²: A language user needs to use the language not only **correctly** (based on linguistic competence), but also **appropriately** (based on communicative competence).

Communicative Competence



²Hymes, Dell. "On Communicative Competence." *Sociolinguistics* (1972): 269-293.

RQ1: Are there systematic differences among subreddits in the way they express stances?

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RQ2: Are there any correlations between stance-based linguistic dimensions and interactional properties of subreddits?

RQ1: Are there systematic differences among subreddits in the way they express stances?

Quantitatively Analyze Stancetaking

Coding for stances

- ▶ No single list of stances
- ▶ One stance can be slightly different for different people

Quantitatively Analyze Stancetaking

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Using linguistic features that are indicators of stances

- ▶ Discourse markers (e.g., *actually*, *I mean*)
- ▶ Backchannels (e.g., *yep*, *um*)
- ▶

List of Stance Markers

List of markers from Biber and Finegan (1989)³

- ▶ certainty adverbs (e.g., *actually*, *of course*, *in fact*)
- ▶ affect markers (e.g., *amazing*, *thankful*, *sadly*)
- ▶ hedges (e.g., *kind of*, *maybe*, *something like*)
- ▶

Markers of stance in online writing

- ▶ e.g., *nah*, *um*, *yep*, *oh*

Total: 144 stance markers

³Biber, Douglas, and Edward Finegan. *Styles of stance in English: Lexical and grammatical marking of evidentiality and affect*. Text-interdisciplinary journal for the study of discourse 9.1 (1989): 93-124.

Stance Markers \Rightarrow Stances

?

Multi-dimensional Analysis

Multi-dimensional Analysis

- ▶ Widely used approach in sociolinguistics and corpus linguistics (e.g., Douglas Biber, 1986).
- ▶ Analysis is based on the frequency counts of linguistic features appearing across many texts.
- ▶ **Assumption:** statistical co-occurrence patterns reflect underlying shared communicative functions.

Why Multi-dimensional Analysis?

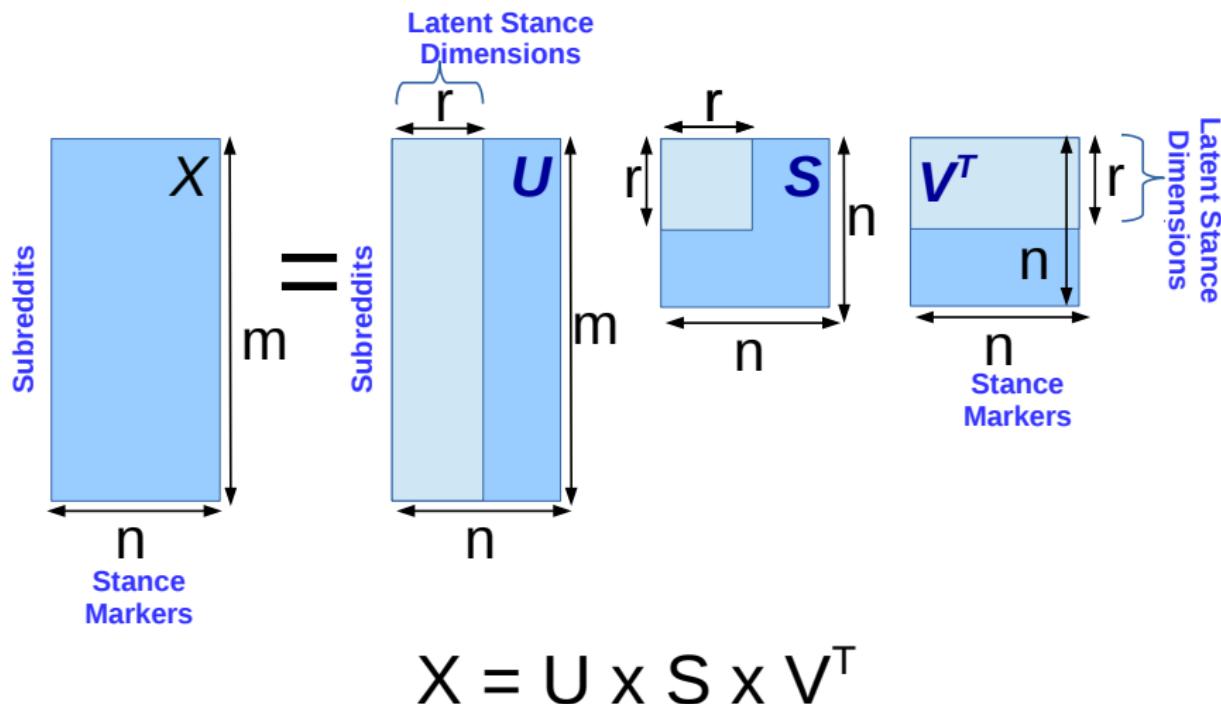
- ▶ No single dimension is sufficient in itself to account for the extent of language variation in large corpora.
- ▶ Multi-dimensional analysis enables distributional analysis of many linguistic features across many texts.
- ▶ Dimensions are continuous scales of variation (vs. dichotomous differences).

Subreddit-Stance Marker Co-occurrence Matrix

		Stance Markers				
		actually	nah	.	.	.
		um	i mean			
/r/askreddit		80	22		18	41
/r/philosophy		65	3		12	5
/r/explainlikeimfive		72	56		10	61
.						
.						
.						
.						
/r/gonewild		24	98		35	141
/r/personalfinance		31	60		11	28

Co-occurrence Count
 $M[\text{/r/philosophy}, \text{actually}] = 65$

Singular Value Decomposition (SVD)



Results: Stance Dimensions

Results: Stance Dimensions

DIMENSION-1

thanks awesome
great hopefully for sure
definitely not bad

in fact legally
obvious necessarily
implies true according to



Results: Stance Dimensions

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Affective Style

r/gonewild
r/photoshopbattles
r/listentothis *r/foodporn*
r/tattoos

Results: Stance Dimensions

DIMENSION-1

thanks awesome
great hopefully for sure
definitely not bad

in fact legally
obvious necessarily
implies true according to

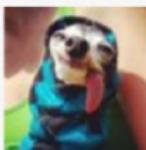


Affective Style

r/gonewild
r/photoshopbattles
r/listentothis *r/foodporn*
r/tattoos

r/philosophy
r/atheism *r/askhistorians*
r/worldnews
r/dataisbeautiful

Eg: Positive Affective Style



PsBattle: This derpy dog with an extremely long tongue. (i.imgur.com)

19

submitted 2 years ago by

9 comments share

[-] Flamingo 8 points 2 years ago

Liftoff

permalink embed

[-] [deleted] 2 points 2 years ago

Welcome! You could have changed the dimensions of the org. ET photo to better fit the dogs original stature, make it seem a bit more legit. But good first edits!

permalink embed parent

[-] Flamingo 1 point 2 years ago

Thanks, but not sure which dimensions I could have changed. Please clarify because I want to learn more about it.

permalink embed parent

[+] [deleted] 1 point 2 years ago (0 children)

[-] [deleted] 1 point 2 years ago

That's awesome! Great work!!!

permalink embed parent

Eg: Positive Affective Style



877

1 Bacon bleu cheese burger with french onion soup [2448x1836][OC]

(imgur.com)

submitted 2 years ago by fl...
36 comments share

all 36 comments

sorted by: best ▾

[+] 2 points 2 years ago

That looks so good that I would bathe in it.

[permalink](#) [embed](#)

[+] 2 points 2 years ago (1 child)

[+] 8 points 2 years ago

Looks great. Where?

[permalink](#) [embed](#)

[+] 2 points 2 years ago

Looks marvelous but I would surely die after consumption.

[permalink](#) [embed](#)

[+] 1 point 2 years ago

I want that in my mouth!!!!

[permalink](#) [embed](#)

[+] 1 point 2 years ago

Wow that looks awesome Great presentation too.

[permalink](#) [embed](#)

[+] 1 point 2 years ago

Looks great. Did you manage to eat it all in one sitting?

Eg: Neutral Affective Style

1760



This kind of stuff really bugs me, especially since my family is very tight on money right now. (imgur.com)

submitted 2 years ago by [redacted]

402 comments

[↑] [-] Anti-Theist 138 points 2 years ago

Looks like money is the real god.

permalink embed

[↑] [-] All_right_in 57 points 2 years ago

I know this isn't a finance blog, but can you imagine if, rather than committing 10+% of their salary to Jeebus, these people committed it to their retirement?

permalink embed parent

[↑] [-] FirstComer 39 points 2 years ago

Or to feeding starving children, or clothing the homeless, or even the economy. I mean the whole point of this is that they're supposed to be helping other not just themselves right? How is giving this money to the church to pay the churches bills going to help anyone else?

[↑] [-] Hurrian_for_Karamazov 3 points 2 years ago

I mean, certainly there can be fraud or deception on top of this, like, if the church says they are going to give 50% to charity and then just pocket the money. Sure, I'd say that's a scam. But if they say exactly what they need the money for and use it for that purpose, there is no scam. And I'd imagine this is how the majority of churches run. In other words, there is nothing inherently scammy about tithing.

As to the fairy tale comment (which is a classic around these parts) the person saying the "fairy tale" believes it to be true. A scam or fraud has a scienter requirement. Namely, that the person doing the scamming knows that the thing he is saying is not true. Obviously not the case for 99% of churches.

Results: Stance Dimensions

DIMENSION-2

generally likely
typically certain
basically possible
necessarily

nah please
oh um kidding
shall excuse me



Results: Stance Dimensions

DIMENSION-2

generally likely
typically certain
basically possible
necessarily

nah please
oh um kidding
shall excuse me



Results: Stance Dimensions

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Results: Stance Dimensions

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Informational vs. Involvement Style

Results: Stance Dimensions

DIMENSION-2

generally likely
typically certain
basically possible
necessarily

nah please
oh um kidding
shall excuse me



Informational vs. Involvement Style

r/askscience

r/askhistorians

r/philosophy r/personalfinance

r/explainlikeimfive

Results: Stance Dimensions

DIMENSION-2

generally likely
typically certain
basically possible
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nah please
oh um kidding
shall excuse me



Informational vs. Involvement Style

r/askscience
r/askhistorians
r/philosophy *r/personalfinance*
r/explainlikeimfive

r/nsfw *r/gonewild*
r/nsfw_gif *r/realgirls*
r/photoshopbattles

Eg: Informational Style

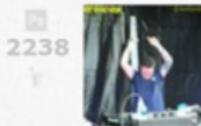
Did ancient (or even pre-industrial) civilizations have modern health issues like diabetes or high and low blood pressure? self.askscience
submitted 2 years ago by 

High blood pressure does not produce short term effects, so it wasn't even diagnosed. But, most probably, it was present. Its worst effect are cardiac disease late in life, and you know... When somebody died people said "his heart stopped, he died of old age", without making relations with his blood pressure 30 years before!

For diabetes it depends. Type 1 diabetes always existed but it was most likely as rare as it is today. Type 2 generally does not onset in most of the people even when they have genetic risk factors

The same can be said for cancer, certain types has been known forever. However the recent "explosion" is due not to worse lifestyle, as for diabetes, but by the fact that people live longer

Eg: Involvement Style



PsB My Brother, getting a bit too excited while DJing.

2238

(i.imgur.com)
submitted 2 years ago by
219 comments share

[–] [] 1 point 2 years ago

are those wrestling midgets?

permalink embed parent

[–] M... 3 points 2 years ago

yes, sir. That they are!

permalink embed parent

[–] S... 19 points 2 years ago

Oh, it hurt all right...

permalink embed parent

[–] [] 12 points 2 years ago

[–] g... 2 points 2 years ago

Haha I think you've win this battle dude and/or dudette

[–] Ro... 15 points 2 years ago

Haha awesome

You don't have to give credit to me though, I'm sure I'm not the first one to think of it, we all just have different take on ideas, and that's called creativity :D

[–] 1 point 2 years ago

Oh cool. That makes sense!

Results: Stance Dimensions

DIMENSION-3

morally
indicates ought
patent legally
assumes largely

i mean honestly
seriously nope likely
basically wrong



Results: Stance Dimensions

DIMENSION-3

morally ought
indicates assumes
 legally
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seriously nope likely
basically wrong



Results: Stance Dimensions

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Results: Stance Dimensions

DIMENSION-3

morally ought
indicates assumes
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i mean honestly
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basically nope
 wrong



Formality vs. Subjective Style

Results: Stance Dimensions

DIMENSION-3

morally
indicates
patent

ought
legally
largely

assumes

i mean
seriously
basically

honestly
nope
likely

wrong



Formality vs. Subjective Style

r/askhistorians

r/history r/philosphy

r/science

r/explainlikeimfive

Results: Stance Dimensions

DIMENSION-3

morally
indicates ought
patent legally
assumes largely

i mean honestly
seriously nope likely
basically wrong



Formality vs. Subjective Style

r/askhistorians
r/history *r/philosphy*
r/explainlikeimfive *r/science*

r/tattoos *r/gonewild*
r/nsfw_gif *r/realgirls*
r/photoshopbattles

Results: Stance Dimensions

DIMENSION-4

please must
correct possible okay
shall no

awesome definitely
pretty good not bad
for sure a little a lot



Results: Stance Dimensions

DIMENSION-4

please must
correct possible okay
shall no

awesome definitely
pretty good not bad
for sure a little a lot



Results: Stance Dimensions

DIMENSION-4

please must
correct possible okay
shall no

awesome definitely
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for sure a little a lot



Results: Stance Dimensions

DIMENSION-4

please	must	okay	awesome	definitely
correct	possible		pretty good	not bad
shall	no		for sure	a little
				a lot



Collaborative vs. Evaluative Style

Results: Stance Dimensions

DIMENSION-4

please	must	okay	awesome	definitely
correct	possible		pretty good	not bad
shall	no		for sure	a little
				a lot



Collaborative vs. Evaluative Style

r/photoshopbattles

r/gonewild

r/listentothis

r/philosophy

r/writingprompts

Results: Stance Dimensions

DIMENSION-4

please must
correct possible okay
shall no

awesome definitely
pretty good not bad
for sure a little a lot



Collaborative vs. Evaluative Style

r/photoshopbattles
r/gonewild
r/listentothis
r/writingprompts

r/malefashionadvice
r/television *r/food*
r/tattoos *r/movies*

Eg: Collaborative Style

136



PSB This man dressed as a garlic handing out medals to children

(kudatotam.ru)

submitted 2 years ago by _avroom_ Ps

13 comments share

[–] _avroom_ 1 point 2 years ago

She does not look pleased.

[permalink](#) [embed](#) [parent](#)

[–] Lardians 1 point 2 years ago

Indeed... In fact, she looks confused. I wonder if it has something to do with the man dressed like garlic...

2820



PSB Howlermonkeys (i.imgur.com)

submitted 2 years ago by Dizzybro

308 comments share

[–] NVL 34 points 2 years ago

May I see the original please?

[permalink](#) [embed](#) [parent](#)

[–] [REDACTED] Ps BEST 5 FEAT 2K 135 points 2 years ago

Of Course! It's called "American Girl in Italy" by Ruth Orkin (1951)

Eg: Evaluative Style



Goatee, Shave, or Beard? (pictures and information inside) (self.malefashionadvice)

submitted 2 years ago by WhatDoesMFASay

[↑] [-] [↓] 1 point 2 years ago

I think the beard looks pretty good. Definitely not the goatee. Clean shaven is always the safe option.

[permalink](#) [embed](#)

[↑] [-] [↓] 1 point 2 years ago

Shave it man...

[permalink](#) [embed](#)

[↑] [-] [↓] 1 point 2 years ago

Definitely the beard. But keep it trimmed.

[↑] [-] / 16 points 2 years ago

Someone on this sub told me not to get these but I got them anyway and I freaking love them. Zara floral espadrilles.

[permalink](#) [embed](#)

[↑] [-] / 3 points 2 years ago

They're definitely nice, I'd just be concerned about how long I'd like them. And for anyone thinking of getting them now, it seems very "me-too" at this point in the floral fashion timeline.

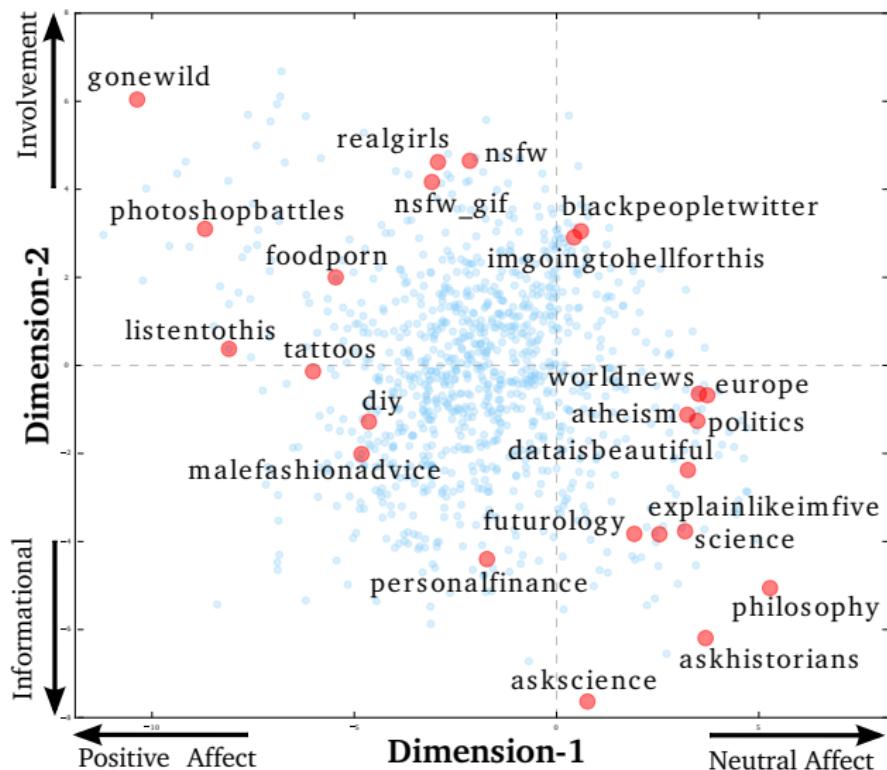
[↑] [-] / 1 point 2 years ago*

Decently, they're a little looser around the midfoot than I would like but for the most part pretty well.

Stance-based Linguistic Dimensions of Subreddits

- ▶ Affective Style (Positive vs. Neutral)
- ▶ Informational vs. Involvement
- ▶ Formality vs. Contextuality
- ▶ Collaborative vs. Evaluative
- ▶ Factual vs. Experiential
- ▶ Hedging

Stance-based Stylistic Characteristics of Subreddits



**RQ2: Are there any correlations between
stance-based linguistic dimensions and
interactional properties of subreddits?**

Sociability Measure: Reciprocity

 [Homemade] Spicy Curry chicken [Homemade]
i.reddit.it user-T
 Submitted 11 hours ago by
20 comments share
[+] user-X • 1 point 6 hours ago
are those Korean Red peppers? is that spinach?
[permalink](#) [embed](#)

[+] user-T • 0 points 6 hours ago
Yes, that is spinach. And no, not korean but cayenne.
[+] user-V • 1 point 9 hours ago
Please share the recipe. It looks really good!
[permalink](#) [embed](#)

[+] user-T • -6 points 5 hours ago
I used chicken breast and fried them beforehand in oil.
Sauce is coconut milk, curry paste and different spices. Also
some tomato, spinach leaves, garlic (I added the whole
cloves, peeled. The taste is awesome when they go softer in
the sauce), chili pepper. Ate it later with rice.
[permalink](#) [embed](#) [parent](#)

[+] user-V • 4 points 5 hours ago
Thank you for sharing your recipe. Will definitely try that.
You said different spices. I'm curious what spices you use
together with carry paste?

Sociability Measure: Reciprocity

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permalink embed parent

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$$\text{Reciprocity} = \frac{\# \text{ OP comments}}{\# \text{ all comments}}$$

Sociability Measure: Reciprocity

↑ 198 ↓

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20 comments share

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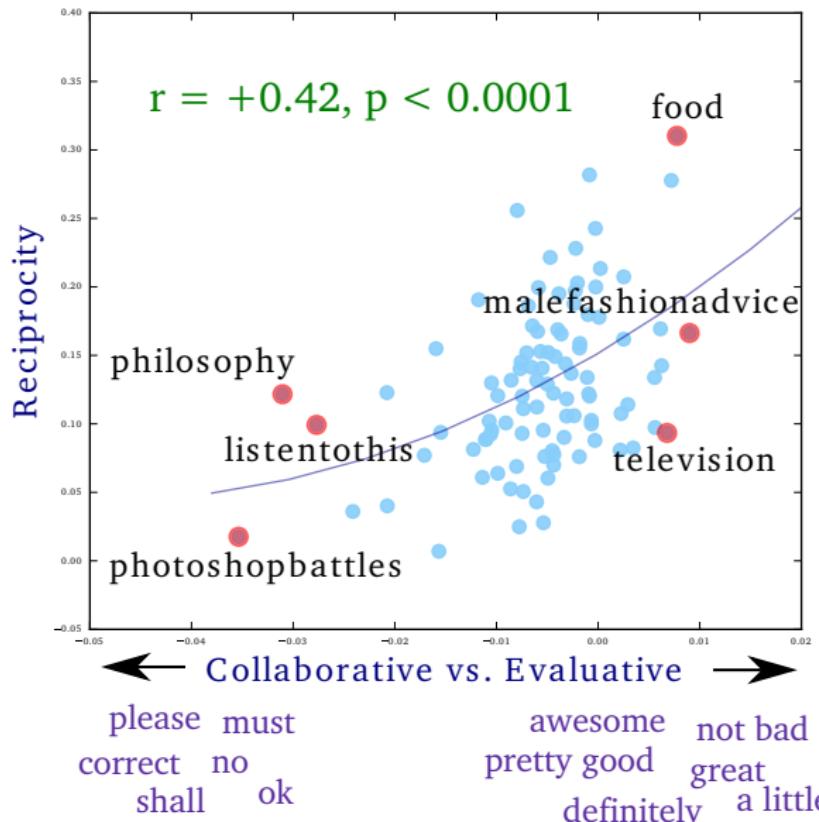
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[permalink](#) [embed](#) [parent](#)

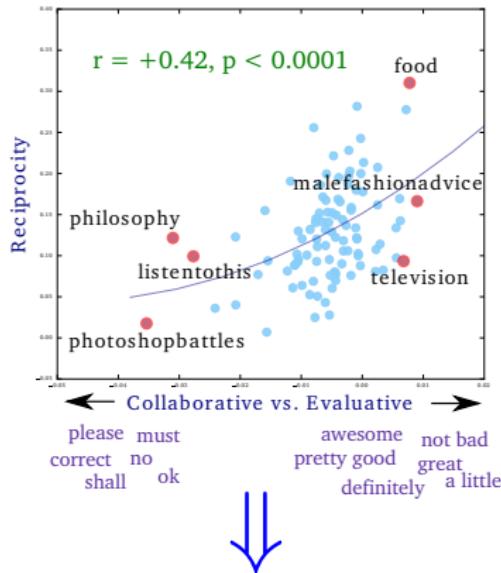
$$\text{Reciprocity} = \frac{2}{20}$$

↑ [-] user-V • 4 points 5 hours ago
Thank you for sharing your recipe. Will definitely try that.
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Sociability Measure: Reciprocity



Sociability Measure: Reciprocity



Original poster engages more to the discussion when the comments are more evaluative.

Sociability Measure: Thread Structure

 **Battle** PsBattle: Two damselflies on a flower (i.imgur.com)
submitted 1 day ago by [Flame](#) **Ps** 3k | 15 comments share

all 15 comments
sorted by: [best](#) ▾

[–] [link](#) 15 points 1 day ago
Damsel Drive
[permalink](#) [embed](#)

[–] [link](#) 5 points 1 day ago
Hold me brother, for I am tripping!
[permalink](#) [embed](#)

[–] [link](#) 4 points 1 day ago
<http://imgur.com/a/BPsa4> Ant Man photo bomb
[permalink](#)

[–] [link](#) 3 points 1 day ago
I tried.
[permalink](#) [embed](#)

[–] [link](#) 2 points 1 day ago
pulp fiction
[permalink](#) [embed](#)

[–] [link](#) 2 points 1 day ago
well if the register is just open might as well
<http://imgur.com/a/0PiGI>
[permalink](#) [embed](#)

 **Mathematics** If i recite a 10 digit number, what are the chances of that sequences being in pi? ([self.askscience](#))
submitted 21 hours ago by [Shmuel](#) **2** | 16 comments share

All 16 Comments
sorted by: [new](#) ▾

[–] [link](#) 7 points 12 hours ago
Computational Plasma Physics
[–] [link](#) 2 points an hour ago
Normality is far too strong for what OP
[–] [link](#) 3 points 10 hours ago
Unknown.
[–] [link](#) 5 points 10 hours ago
Except that would require actually
[–] [link](#) 1 point 49 minutes ago (*last edited 35 minutes ago)
Even though that would require
[–] [link](#) 7 points 11 hours ago
That said, it wouldn't be hard to prove
[–] [link](#) 9 points 10 hours ago
Pi is not random, though. You cannot
[–] [link](#) -1 points 10 hours ago
I know. I'm just saying that I'd

Sociability Measure: Thread Structure

 **Battle** PsBattle: Two damselflies on a flower (i.imgur.com)
submitted 1 day ago by [Flame](#) **Ps** 3k | 15 comments share

all 15 comments

sorted by: [best](#) ▾

[–] [link](#) 15 points 1 day ago

Damsel Drive

[permalink](#) [embed](#)

[–] [link](#) 1k points 1 day ago

Hold me brother, for I am tripping!

[permalink](#) [embed](#)

[–] [link](#) 4 points 1 day ago

<http://imgur.com/a/BPsa4> Ant Man photo bomb

[–] [link](#) 3 points 1 day ago

I tried.

[permalink](#) [embed](#)

[–] [link](#) 1k points 1 day ago

pulp fiction

[permalink](#) [embed](#)

[–] [link](#) 21 points 1 day ago

well if the register is just open might as well

<http://imgur.com/a/0PiGI>

[permalink](#) [embed](#)

Flat Structure

 **Mathematics** If i recite a 10 digit number, what are the chances of that sequences being in pi? self.askscience
submitted 21 hours ago by [Shmuel](#) 22

16 comments share

All 16 Comments

sorted by: [new](#) ▾

Deep Structure

 **Computational Plasma Physics** 7 points 12 hours ago

[–] [link](#) 2 points an hour ago

Normality is far too strong for what OP

[–] [link](#) 3 points 10 hours ago

Unknown.

[–] [link](#) 5 points 10 hours ago

Except that would require actually

[–] [link](#) 1 point 49 minutes ago (*last edited 35 minutes ago)

[–] [link](#) 7 points 11 hours ago

Even though that would require

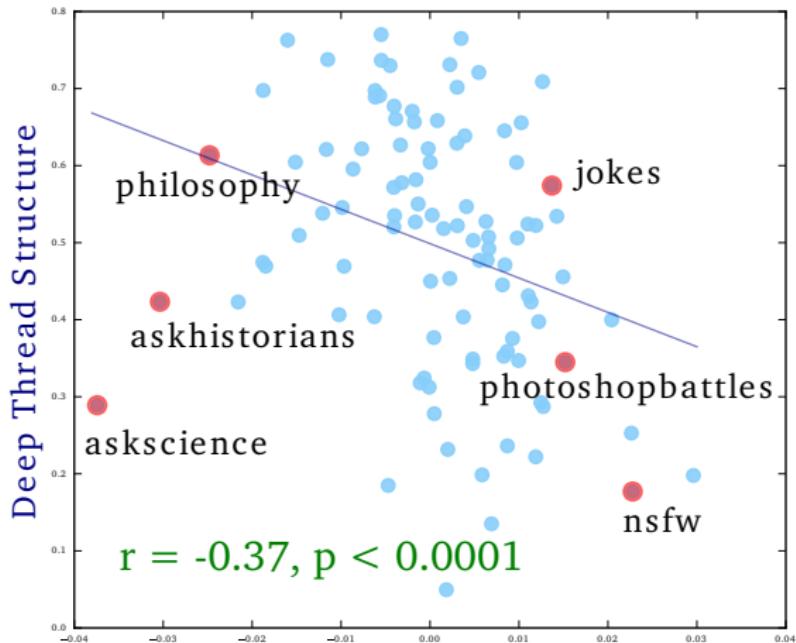
[–] [link](#) 9 points 10 hours ago

Pi is not random, though. You cannot

[–] [link](#) -1 points 10 hours ago

[–] [link](#) I know. I'm just saying that I'd

Sociability Measure: Thread Structure



← Informational vs. Involvement →

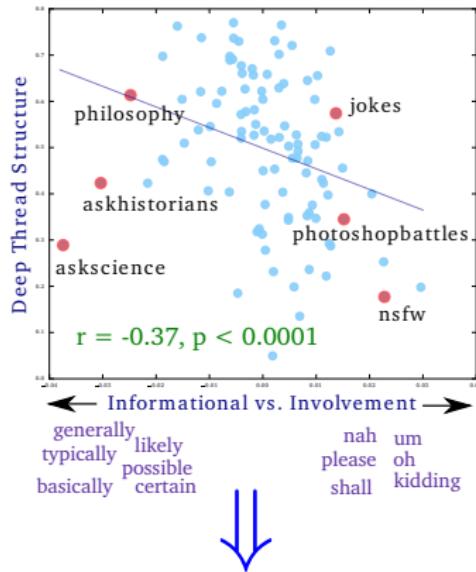
generally
typically
basically

likely
possible
certain

nah
please
shall

um
oh
kidding

Sociability Measure: Thread Structure



Informational subreddits tend to have deep conversational threads.

Conclusions

- ▶ RQ1 ⇒ There are systematic differences among subreddits in the way they express stances.
- ▶ RQ2 ⇒ Stance-based linguistic dimensions are linked to interactional properties of subreddits.
- ▶ Stance can be used in quantitative analyses of interaction to understand the patterning of linguistic variation.

Thank You!

Acknowledgements: This research is supported in part by NSF Grants IIS-1110904 and IIS-1111142.

Questions?

Measure of Association between Stance Markers and Subreddits

- ▶ Variability in the frequency of different stance markers, length and number of comments in each subreddit
- ▶ Raw co-occurrence counts of stance markers are skewed
- ▶ Need a better measure of association between stance markers and subreddits

Point-wise Mutual Information (PMI)

PMI: measures how often two events co-occur, compared with what we would expect if they occur independently.

$$PMI = \log \frac{P(\text{marker}, \text{ subreddit})}{P(\text{marker}) \times P(\text{ subreddit})}$$

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$$PMI = \log \frac{P(\text{marker}, \text{ subreddit})}{P(\text{marker}) \times P(\text{ subreddit})}$$

$$PMI = Z \times \log \frac{\text{Count}(\text{marker}, \text{ subreddit})}{\text{Count}(\text{marker}) \times \text{Count}(\text{ subreddit})}$$

Z is a constant.

Why not Cluster Analysis?

Cluster analysis groups instances into relatively homogeneous groups of clusters.



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SVD groups features (of instances) and extracts common underlying *latent* feature groupings.

