

Can 280 Characters Speak for Researchers?

Leveraging Twitter Data for Unobtrusive Measurement of Academics' Occupational Well-Being

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HAPPY
RESEARCHERS ~~WIFE~~
— — — — —
HAPPY
~~LIFE~~ RESEARCH (OUTCOMES)

(Boehm & Lyubomirsky, 2008; Dimaria et al., 2020; Howell et al., 2007; Torrisi, 2013)

PANAS

(Watson et al., 1988)



Positive and Negative Affect Schedule (PANAS)

Instructions:

This scale consists of a number of words that describe different feelings and emotions. Read each item and indicate to what extent you have felt this way during the past week.

	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
1 Interested	1	2	3	4	5
2 Distressed	1	2	3	4	5
3 Excited	1	2	3	4	5
4 Upset	1	2	3	4	5
5 Strong	1	2	3	4	5
6 Guilty	1	2	3	4	5
7 Scared	1	2	3	4	5
8 Hostile	1	2	3	4	5
9 Enthusiastic	1	2	3	4	5
10 Proud	1	2	3	4	5
11 Irritable	1	2	3	4	5
12 Alert	1	2	3	4	5
13 Fatigued	1	2	3	4	5
14 Inspired	1	2	3	4	5
15 Nervous	1	2	3	4	5
16 Determined	1	2	3	4	5

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SWLS

(Diener et al., 1985)



Satisfaction with Life Scale (SWLS)

Instructions:

Below are five statements that you may agree or disagree with. Indicate your agreement with each item by marking the appropriate box, from strongly agree, to strongly disagree. Please be open and honest in your responding.

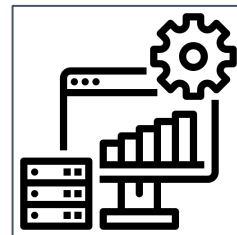
	Strongly agree	Agree	Slightly agree or neutral	Slightly disagree	Strongly disagree
1 In most ways my life is close to my ideal	7	6	5	4	3
2 The conditions of my life are excellent	7	6	5	4	3
3 I am satisfied with my life	7	6	5	4	3
4 If I have given the important things in my life the effort I need to, I have almost everything I could want	7	6	5	4	3
5 If I could live my life over, I would change almost nothing	7	6	5	4	3

Developer Reference:

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, 48, 71-75.
<http://internal.psychology.illinois.edu/~ediener/SWLS.html>

Administer Now

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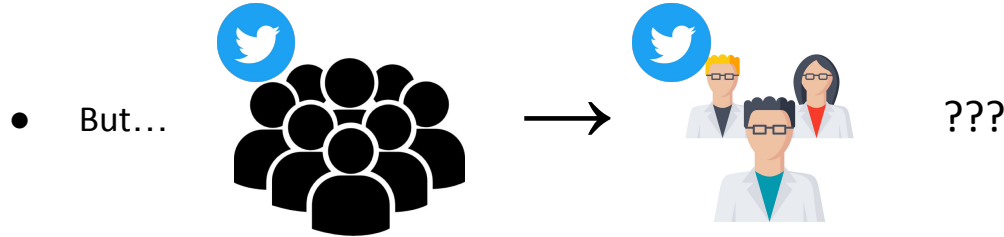


😊 not altered by experimental biases

😊 can arise and be collected continuously

Research Question

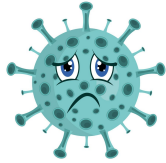
- There are approaches to use unobtrusive methods to measure well-being on a large scale (see Luhmann, 2017 for a review)
- Well-being can be accurately and robustly measured with Twitter data (Jaidka et al., 2020)



RQ: Can Twitter data be used to gain insights into the well-being of the psychological research community?



Well-being derived from literature

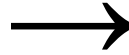


(Alfawaz et al., 2021; KNAW, 2022; LNVH, 2021; Ramos, 2021.; Subramanya et al., 2020)

Evaluation/
Hypotheses



Well-being inferred from Twitter dataset



H1: Well-being scores derived from tweets are lower for the period during the COVID-19 pandemic than before the pandemic [*ME pandemic*].



(Harper et al., 2020; Izquierdo-Useros et al., 2022; KNAW, 2022; Sohrabi et al., 2021)



H2: The effect (H1) is stronger for female researchers than for male researchers [*IA pandemic x gender*].



Emotional Well-being

Methods

Cognitive Well-being





Emotional Well-being

Methods

Cognitive Well-being

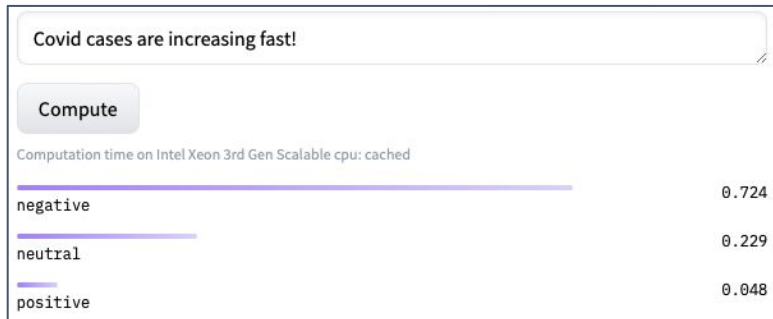


- Jaidka et al. (2020)
 - Can be measured accurately and robustly using ***Sentiment Analysis*** of Twitter data



Emotional Well-being

→ Use the TimeLM-22 model (Luoreiro et al., 2022)
for *Sentiment Analysis*!



```
In [5]: print(scores)  
[0.724, 0.229, 0.048]
```

Methods

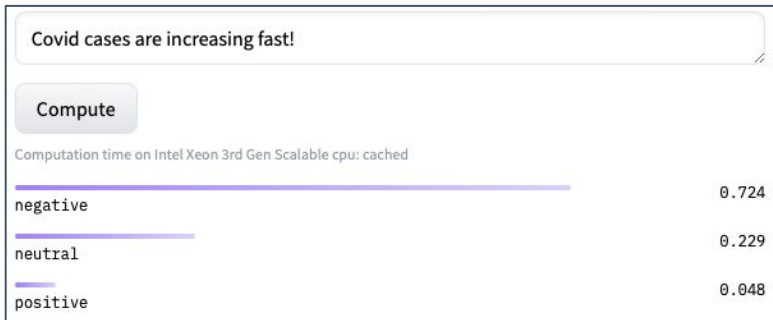
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Methods

Cognitive Well-being

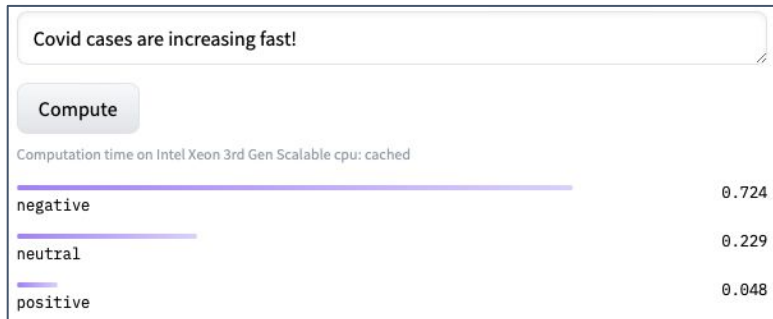


- Schwartz et al. (2013)
 - *Topic Modeling*
 - Word-based *Sentiment Analysis* of the Topics



Emotional Well-being

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for *Sentiment Analysis*!



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Methods

Cognitive Well-being

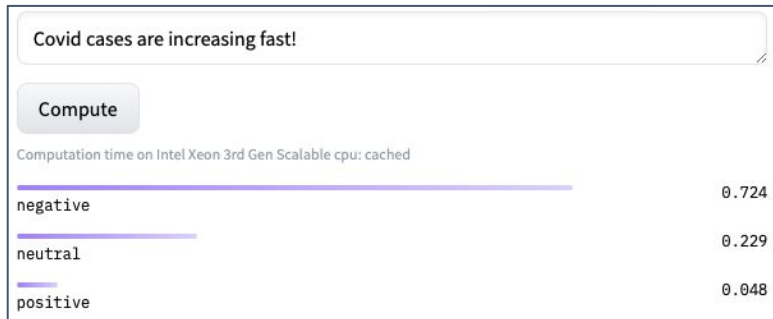


→ Use a combination of
a) *Sentiment Analysis* and
b) *Topic Modeling* (cf. Schwartz et al., 2013)
to analyze how researchers refer to well-being
related topics (cf. PERMA+4 dimensions; Donaldson et al., 2022)!



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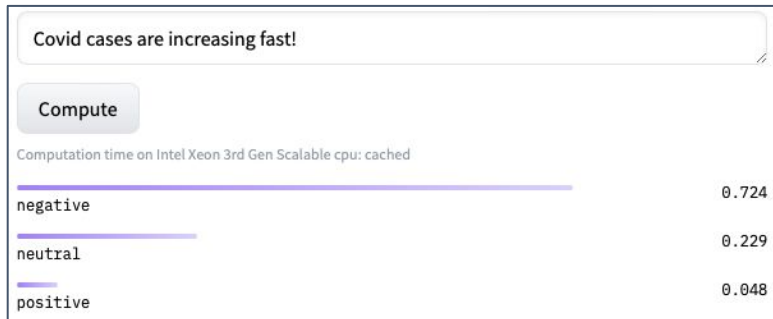


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Methods

Cognitive Well-being



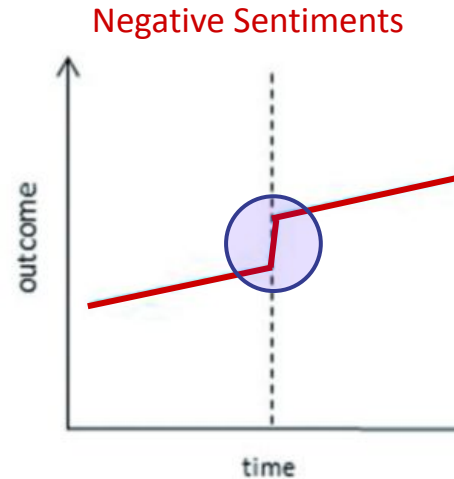
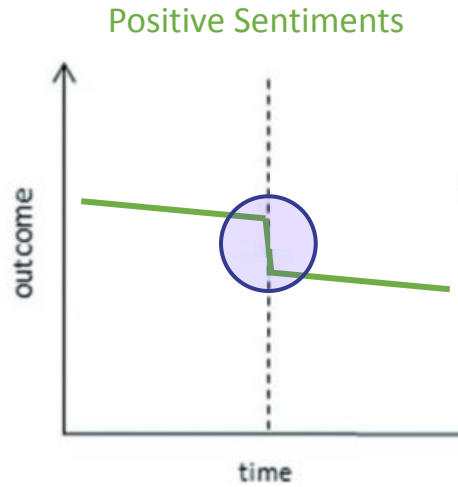
→ Use a combination of
a) *Sentiment Analysis* and
b) **Topic Modeling** (cf. Schwartz et al., 2013)!



Interrupted time series analysis (using ARIMA models)



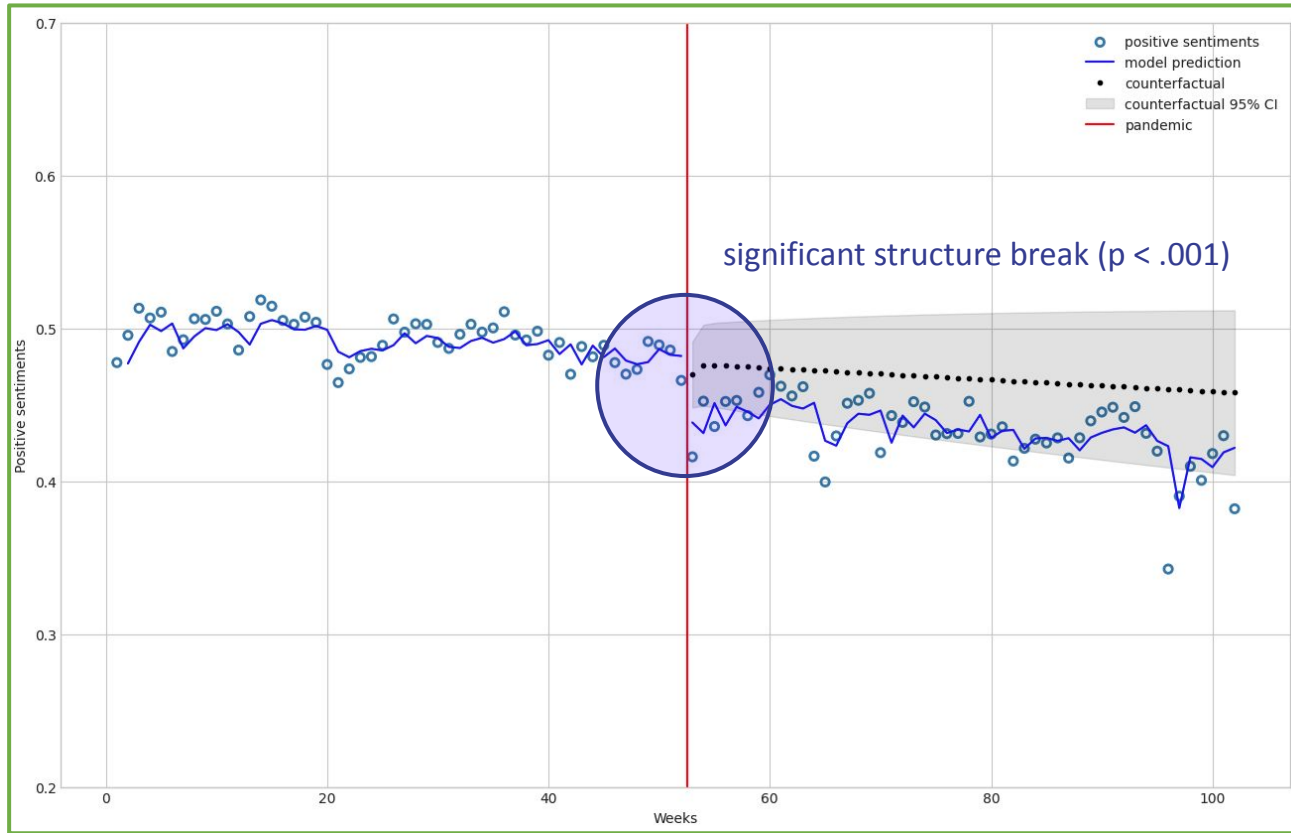
H1: Occupational **well-being scores** derived from tweets are **lower** for the period during the COVID-19 pandemic than before the pandemic.



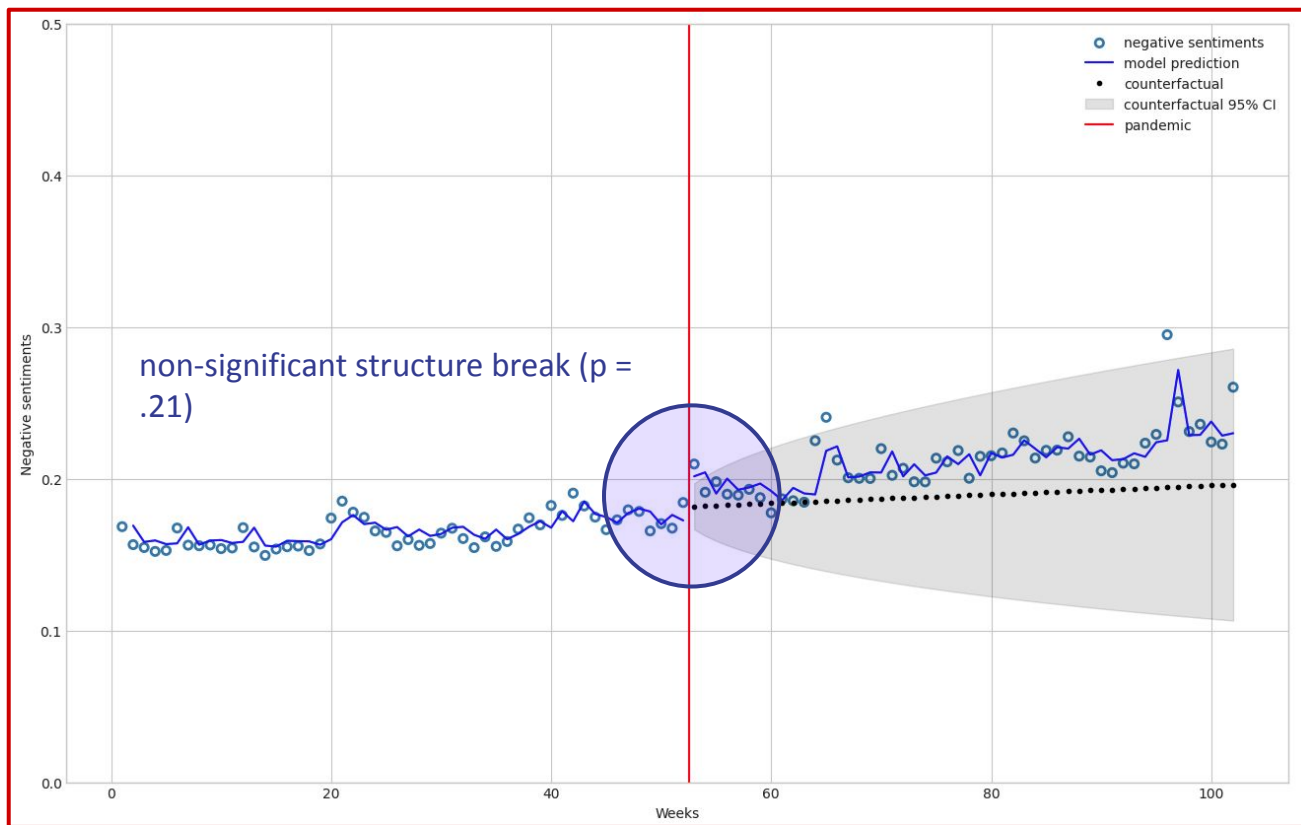
→ We expect significant *level shift* for positive and negative sentiments!

Results: H1

Positive Sentiments

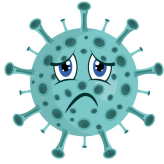


Negative Sentiments





Well-being derived from literature



(Alfawaz et al., 2021; KNAW, 2022; LNVH, 2021; Ramos, 2021.; Subramanya et al., 2020)

Results



Well-being inferred from Twitter dataset



H1: Well-being scores derived from tweets are lower for the period during the COVID-19 pandemic than before the pandemic [*ME pandemic*].



(Harper et al., 2020; Izquierdo-Useros et al., 2022; KNAW, 2022; Sohrabi et al., 2021)

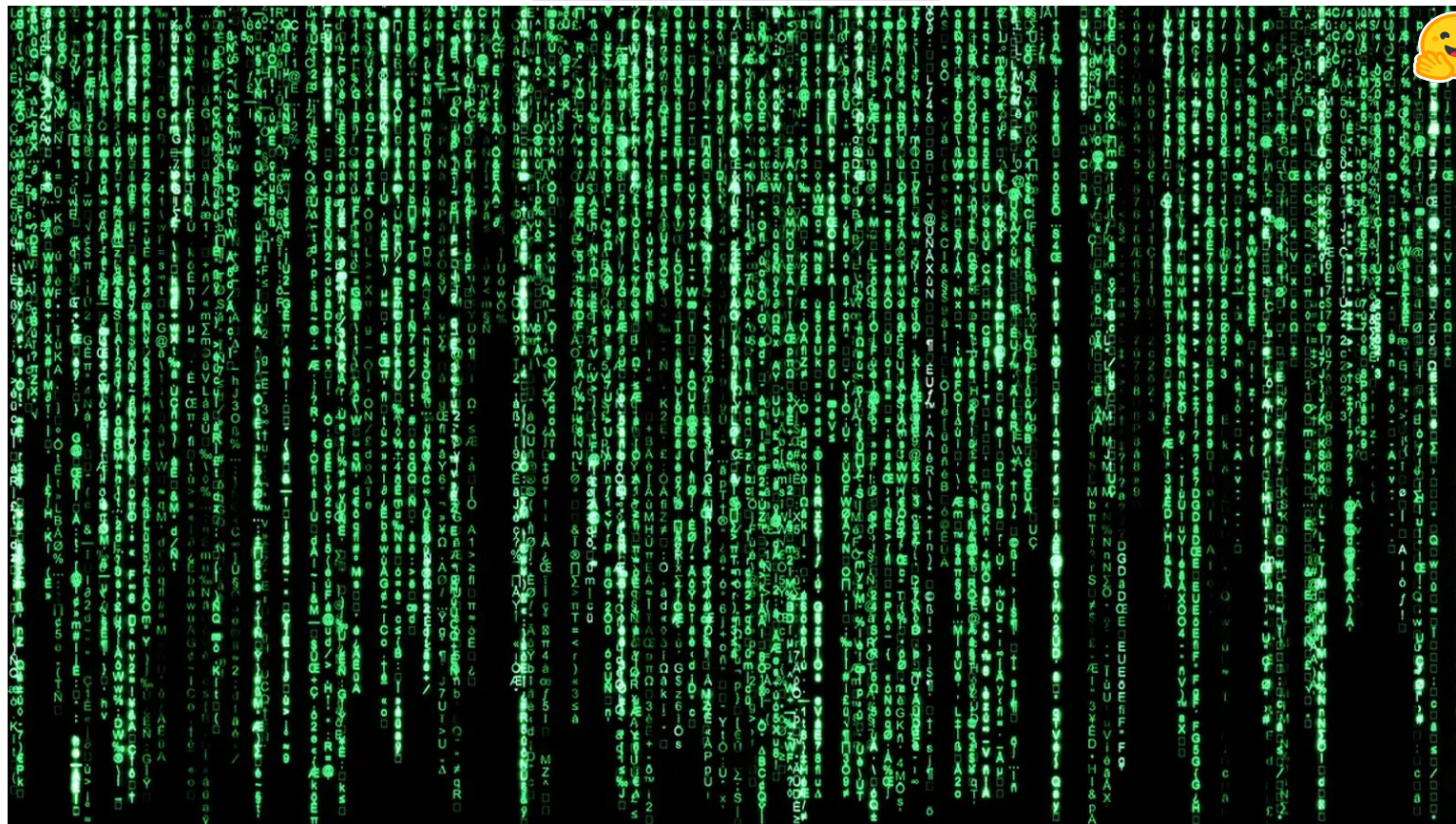


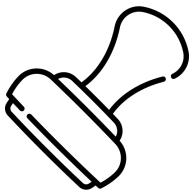
H2: The effect (H1) is stronger for female researchers than for male researchers [*IA pandemic x gender*].

still running...

Exploratory Analysis

BERTopic





Discussion

RQ: *Can Twitter data be used to gain insights into the well-being of the psychological research community?*

- The results do not provide a definitive "yes" or "no" to our RQ
- Instead, they highlight the need for further methodological studies!



LinkedIn





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Images

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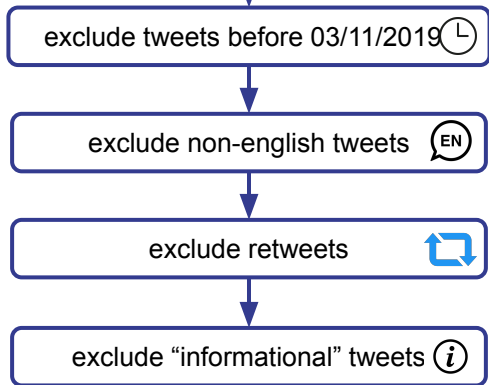
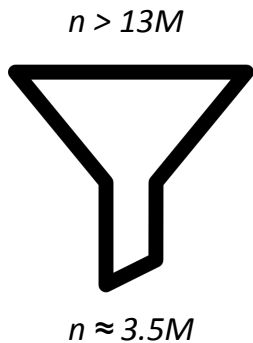


Data



almost 16K psychology researchers on Twitter
with $n > 13M$ tweets in their timelines

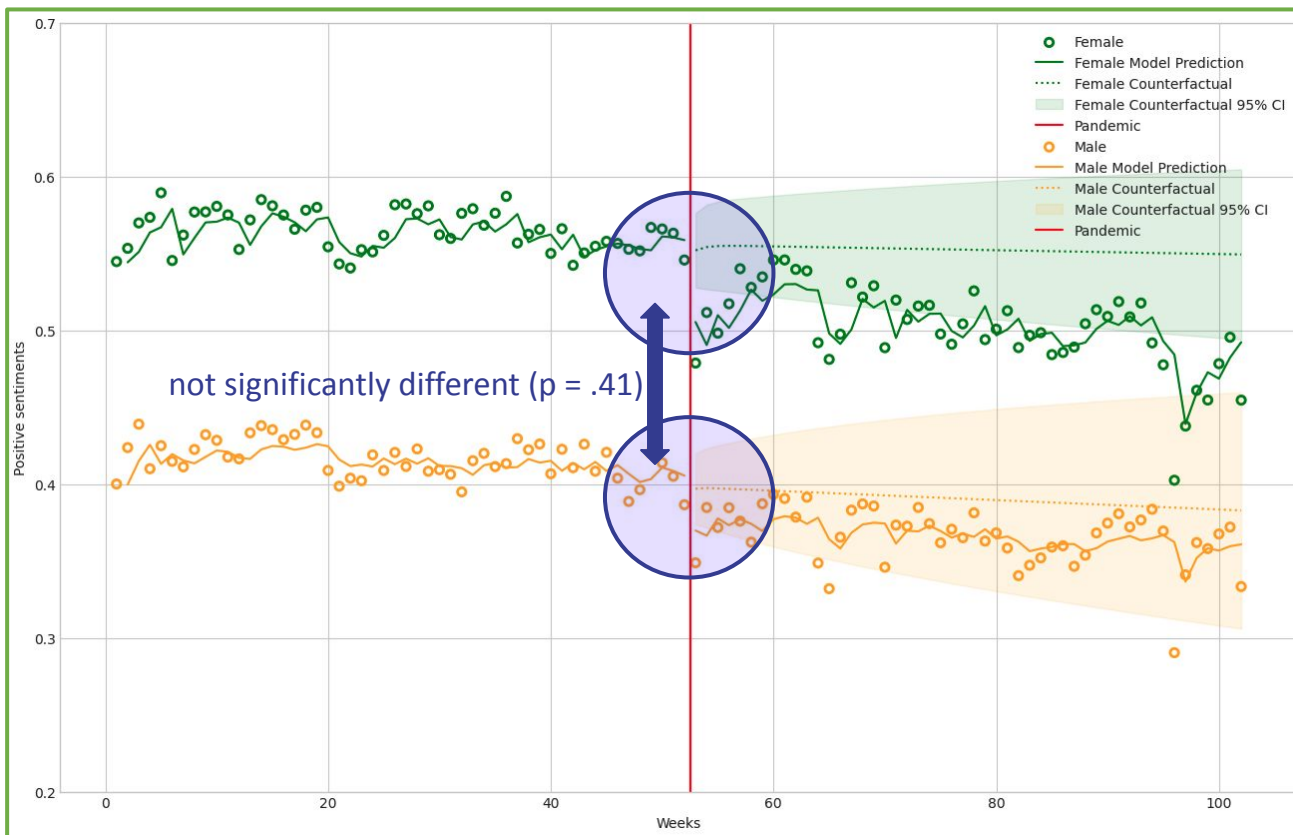
(Bittermann et al., 2021)



} tweets without self-disclosure

Results: H2

Positive Sentiments



Negative Sentiments

