Distinguishing Positive and Negative Aspects of Solitude in Tweets

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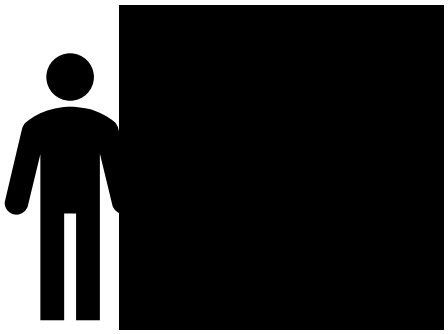
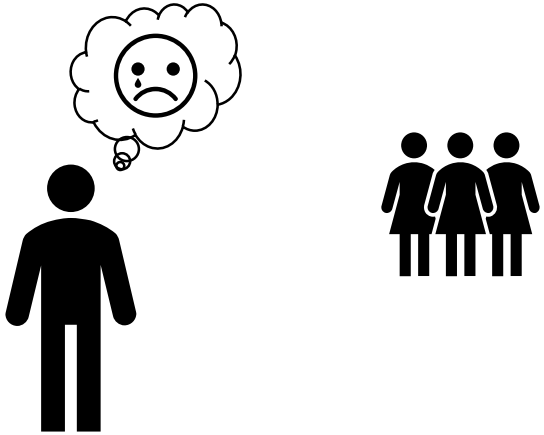
Alone



- Physical/social separation
- Neutral?

Lonely



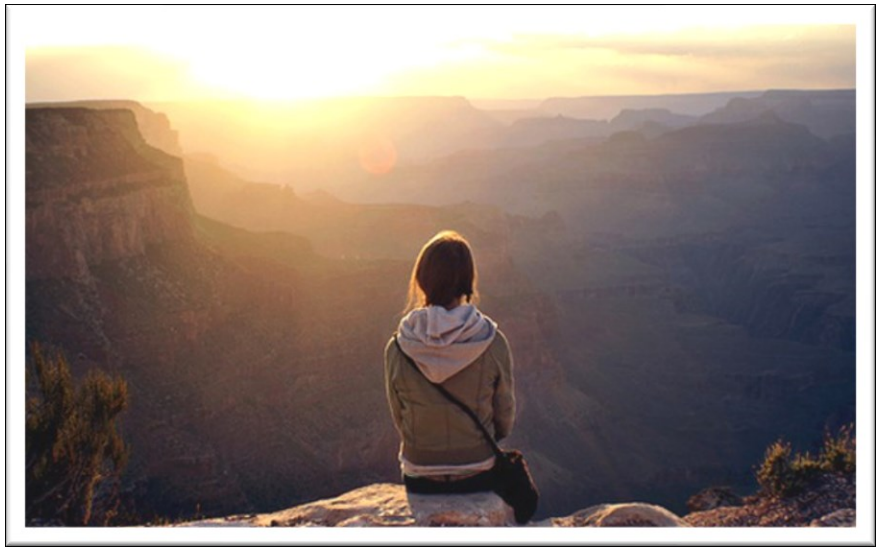
- Negative appraisal
- Stress
- Externally imposed

Solitude

- Positive appraisal
- Deactivating
- Intrinsically motivated

Galanaki (2004); Larson (1990, 1995)

- Dissatisfaction with social relationships.
- Externally imposed.
- Negative consequences (e.g., depression).



- Preference for solitude.
- Intrinsically motivated (SDT).
- Positive consequences (e.g., rejuvenation)?

Chua and Koestner (2008); Goossens (2014); Hawkley & Cacioppo (2010); Nguyen et al. (2018)

N = 19,283,288 tweets containing either 'solitude', 'lonely', 'loneliness', 'lonesomeness', 'alone', 'aloneness'

- Aug. 28, 2018 - Jul. 10, 2019.

"I come home tired hungry. Not a person is here to welcome me… #sad #tired #**lonely**"

"I been enjoying my **solitude** today so much …sweet melodies of soundscapes playing all day. ✨💆☺🧘♀ #InMyZone"

"**Solitude** has it's benefits... ... But being **alone** for a long time can be pretty damaging."

Which words uniquely co-occur with different Solitary Terms?

$$\mathrm{PMI}(x; y) = \log \frac{p(x, y)}{p(x)p(y)}$$

$$\mathrm{PMI}(\mathrm{solitude}; \mathrm{calm}) = \log \frac{p(\mathrm{solitude}, \mathrm{calm})}{p(\mathrm{solitude})p(\mathrm{calm})}$$

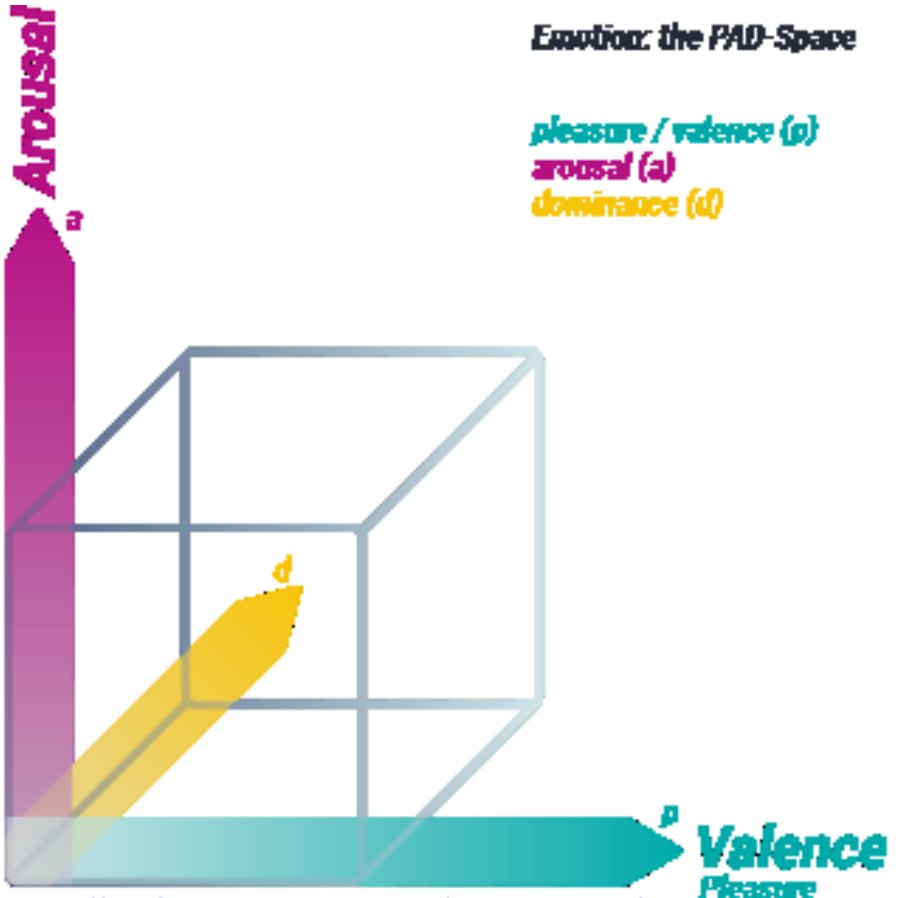
$$\text{PMI difference} = \mathrm{PMI}(\mathrm{solitude}; \mathrm{calm}) - \mathrm{PMI}(\mathrm{lonely}; \mathrm{calm})$$

Church and Hanks (1990)

Affect is 3-Dimensional

- **Valence**: Pleasantness vs. Unpleasantness.
- **Arousal**: Activation vs. Deactivation (e.g., tense vs. calm).
- **Dominance**: Powerful vs. weak (e.g., in control vs. out of control).

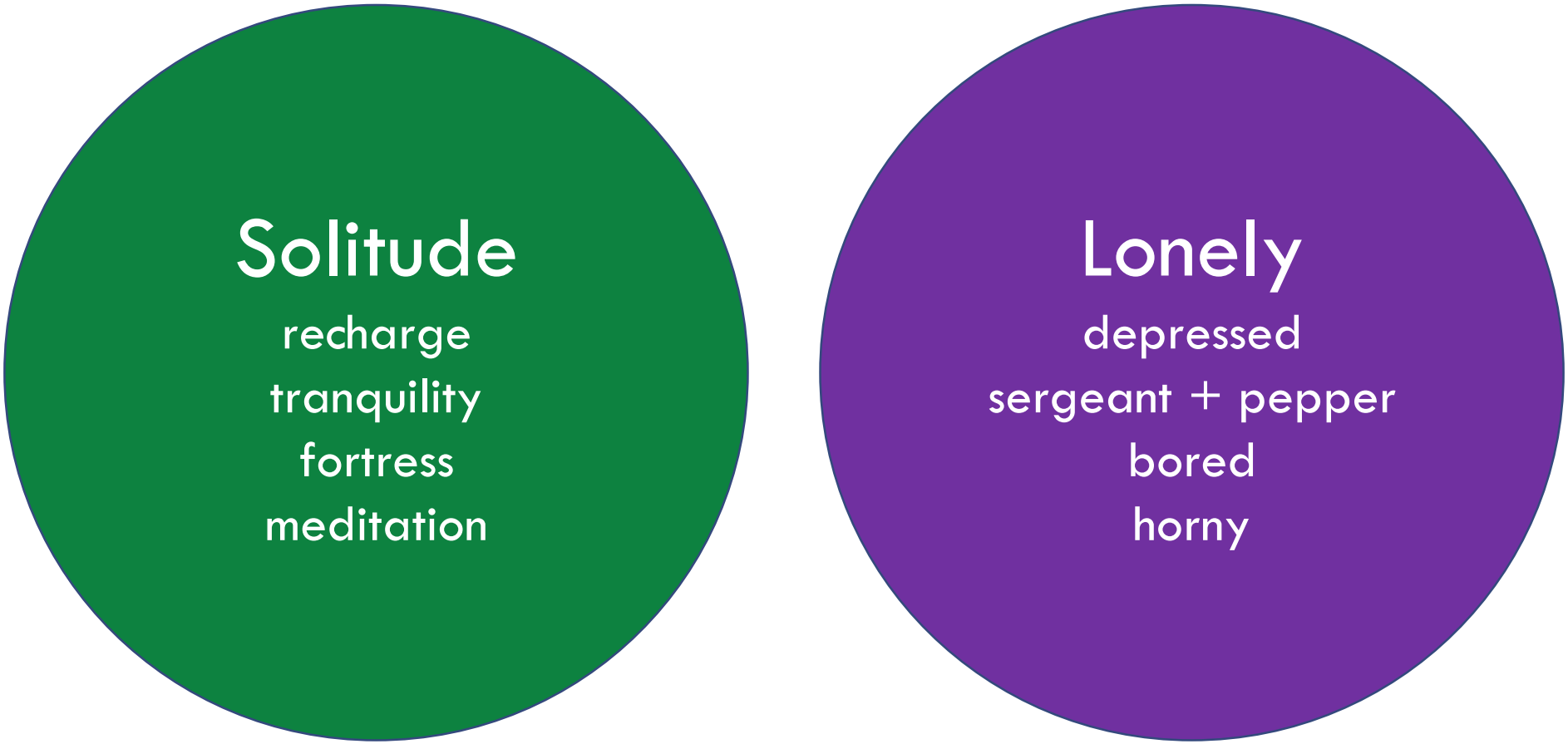
- We used the NRC VAD lexicon[1] to quantify affect for over 20,000 different words.



https://saifmohammad.com/WebPages/nrc-vad.html

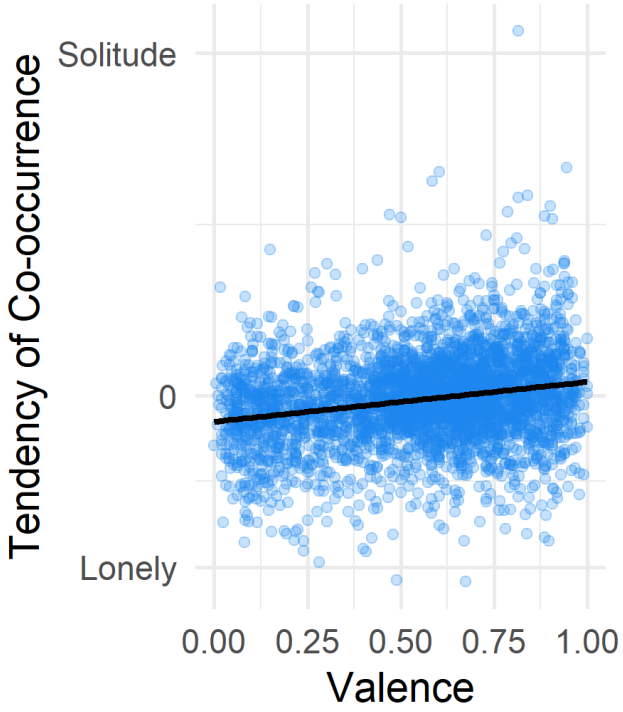
Osgood et al. (1958), Russell (1980, 2003); Mohammad (2018)[1]

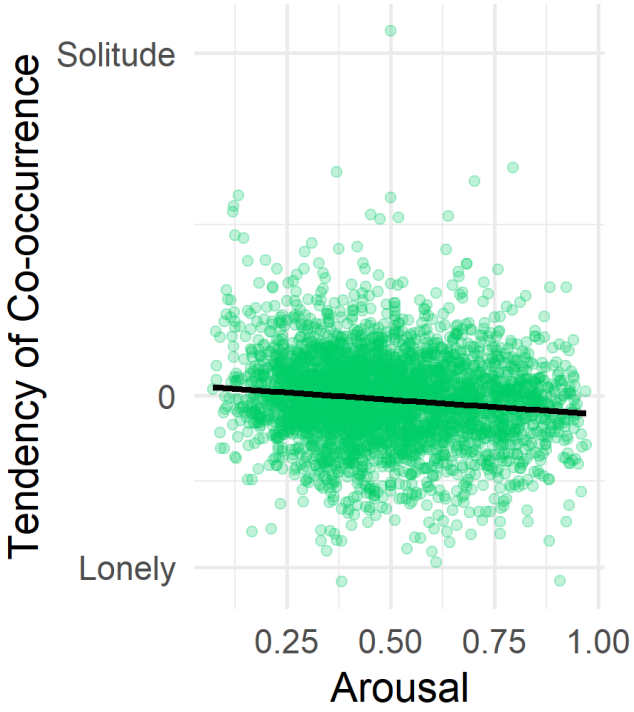
Which Words Co-occur with Solitude or Lonely?



Try our interactive app to play with the results!

whipson.shinyapps.io/Solitude_Tweets/





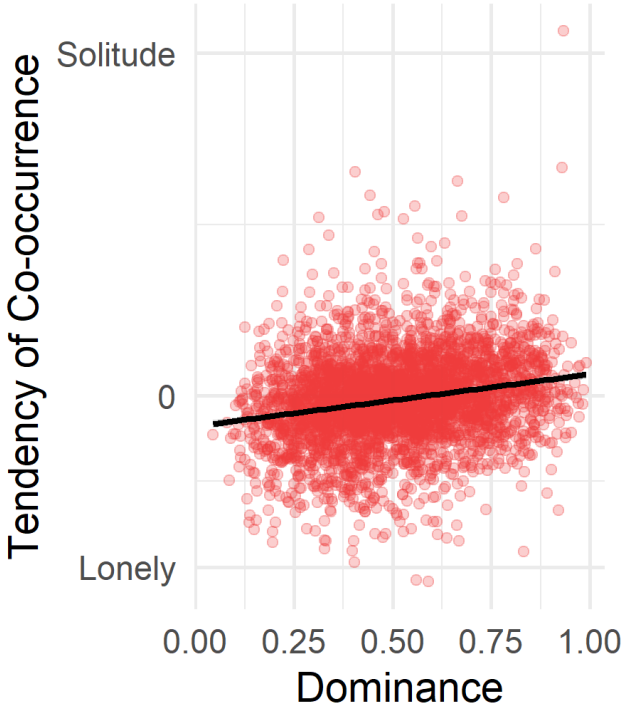
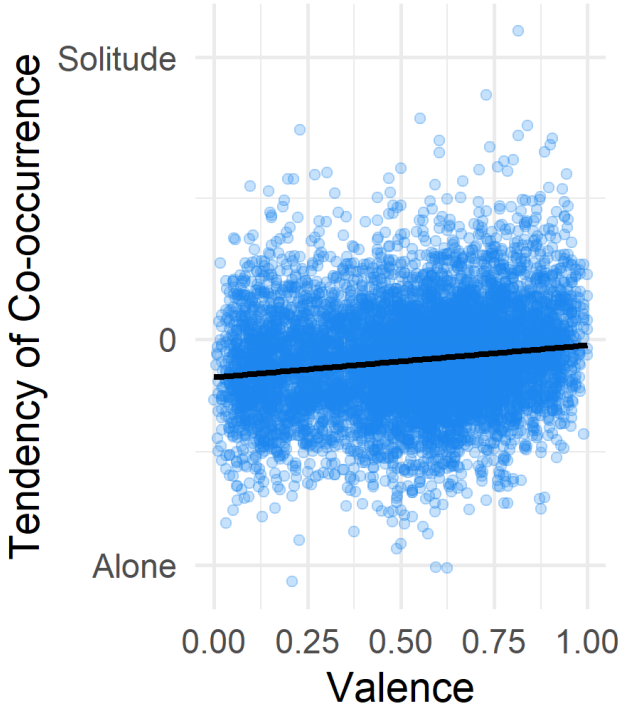
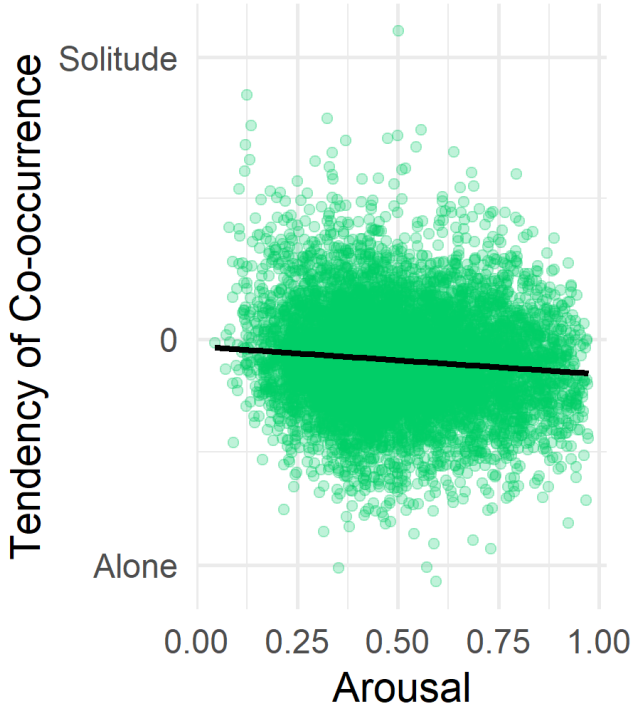


Figure 1. Likelihood of co-occurring with **Solitude vs. Lonely** in relation to Valence, Arousal, and Dominance.
Notes: Using >= 500 occurrences.

β	*p*	*β*	*p*	*β*	*p*
.698	< .001	-.508	< .001	.901	< .001

Interactive version: https://whipson.shinyapps.io/Solitude_Tweets/





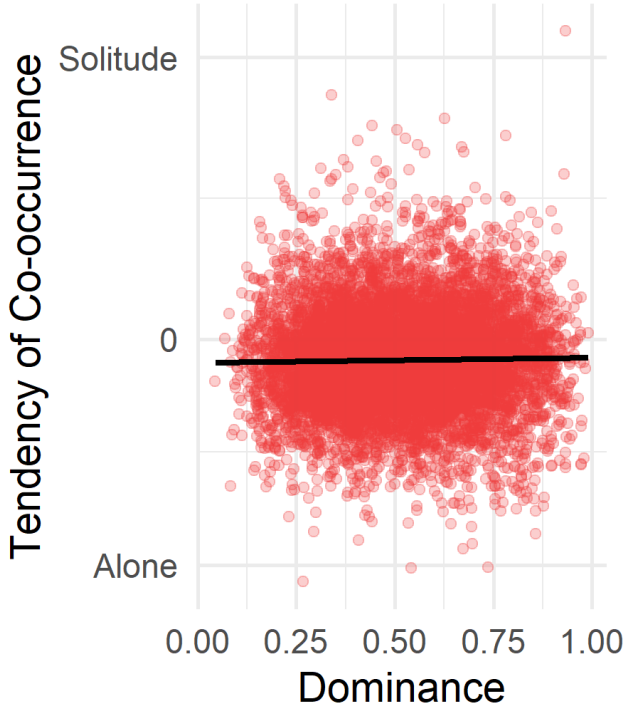
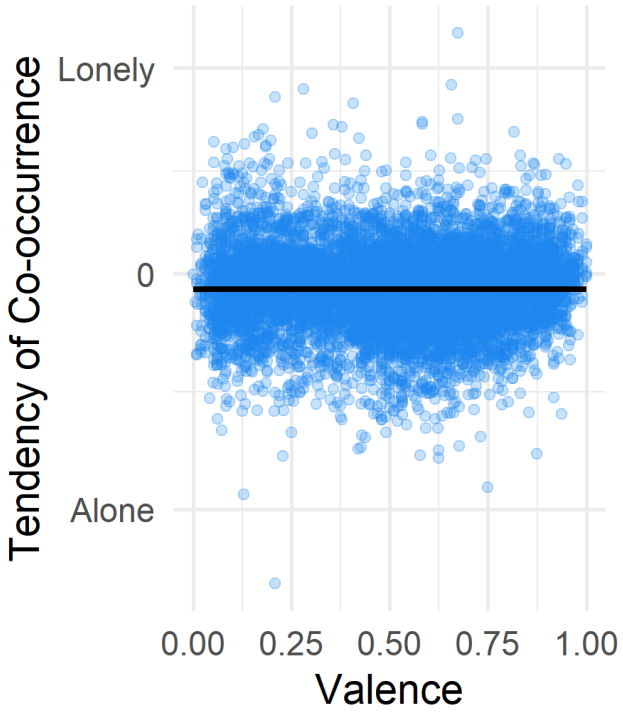
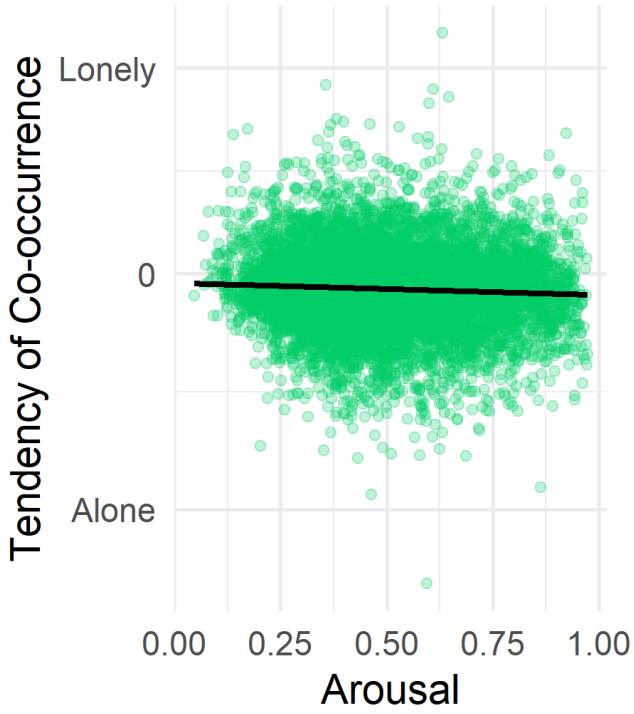


Figure 2. Likelihood of co-occurring with **Solitude vs. Alone** in relation to Valence, Arousal, and Dominance.
Notes: Using >= 500 occurrences.

β	*p*	*β*	*p*	*β*	*p*
.571	< .001	-.491	< .001	.090	.012

Interactive version: https://whipson.shinyapps.io/Solitude_Tweets/





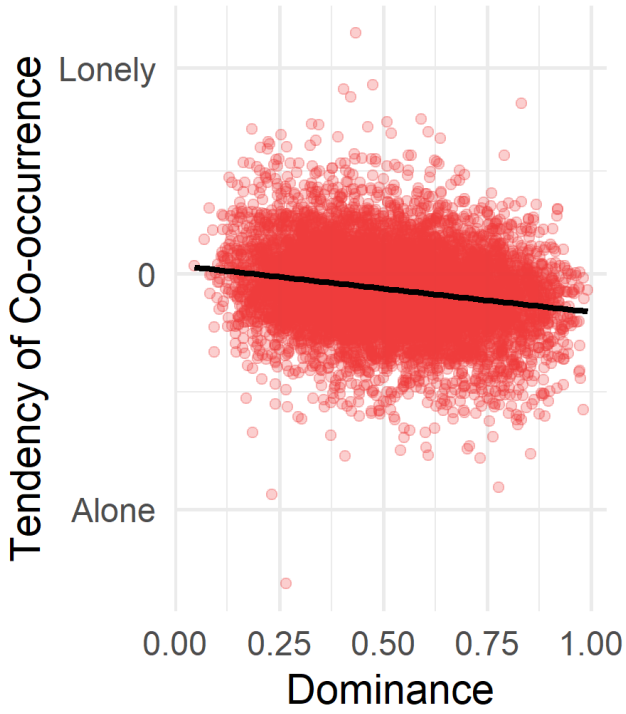


Figure 3. Likelihood of co-occurring with **Lonely vs. Alone** in relation to Valence, Arousal, and Dominance.
Notes: Using >= 500 occurrences.

β	*p*	*β*	*p*	*β*	*p*
-.005	.520	-.204	.001	-.797	< .001

Interactive version: https://whipson.shinyapps.io/Solitude_Tweets/

Solitude occurs in the context of higher valence, lower arousal, and higher dominance words.

- Positive appraisal
- Deactivating
- Intrinsically motivated

Lonely occurs in the context of lower valence, higher arousal, and lower dominance words.

- Negative appraisal
- Stress
- Externally imposed

- *Alone* is somewhere in between *solitude* and *lonely.*

"Sea of **Solitude** is a game I'm SO looking forward to 😍😍😍"

- Context matters!
- NLP doesn't necessarily reflect *felt* emotion.
- Could (should) we use NLP to identify people at risk of loneliness?

Thank you!

Contact

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Slides

https://github.com/whipson/SPSP2020-solitude-tweets

Interactive app

https://whipson.shinyapps.io/Solitude_Tweets/