

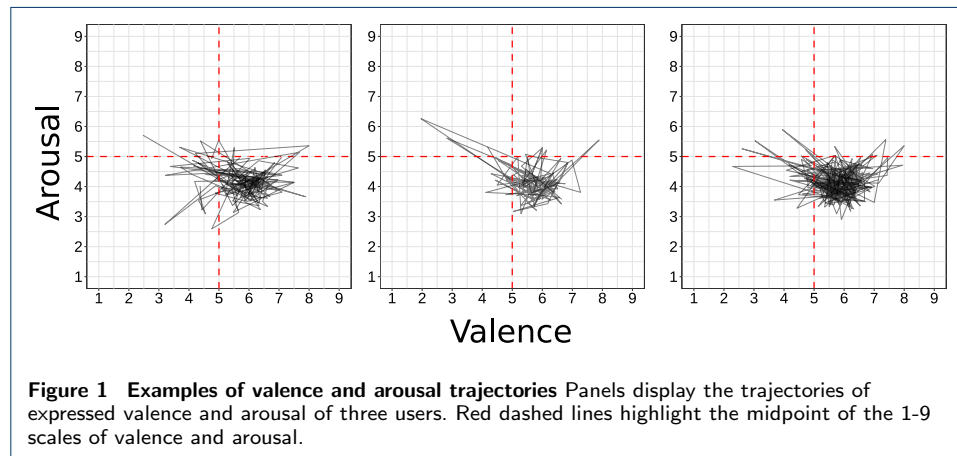
Dynamics of affective expression in social media: Supplementary materials

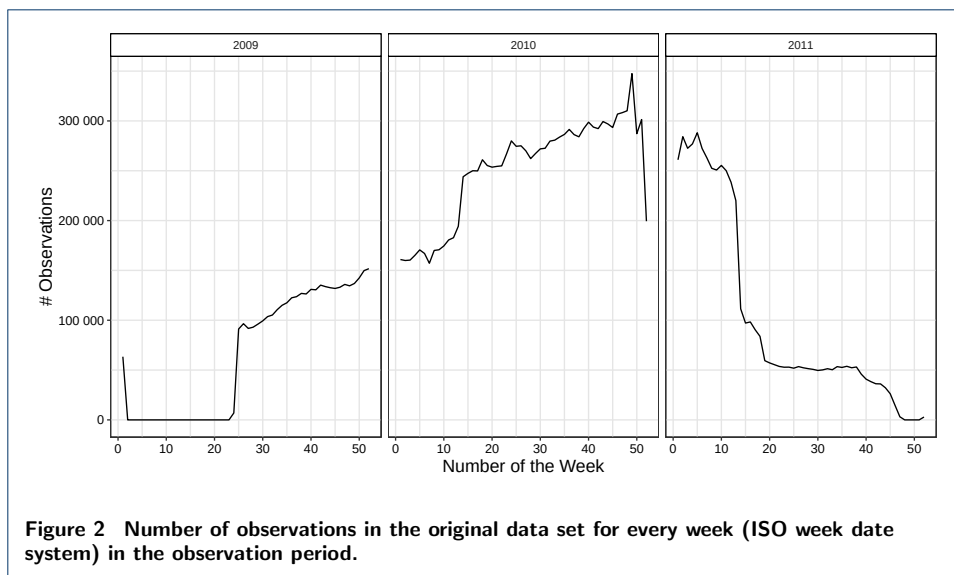
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Descriptive figures

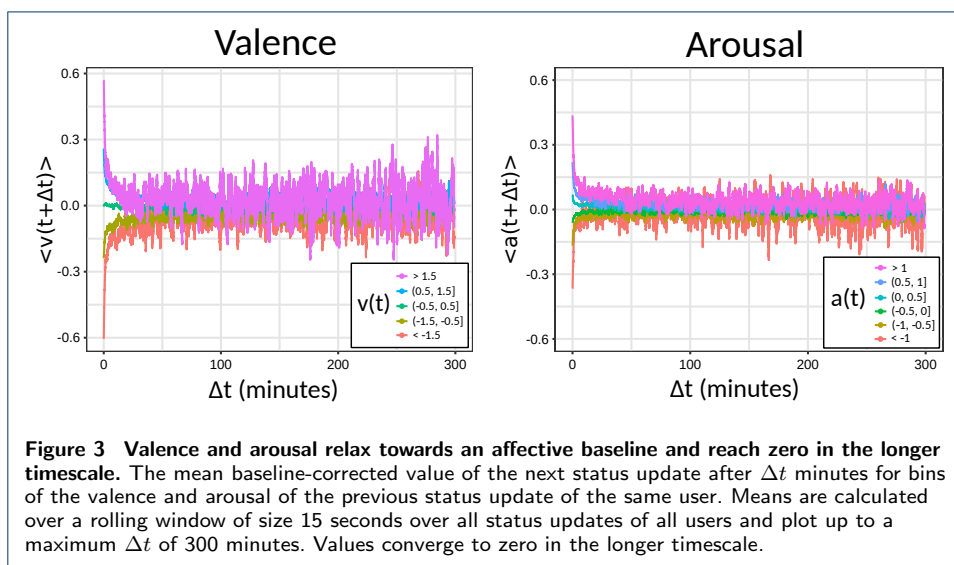
The trajectory of the expressed valence and arousal of three individuals in the dataset can be seen in Figure 1. Their baselines of expressed emotions are above the midpoint of the valence and below the midpoint of the arousal scale. They display the typical dynamics of valence and arousal as observed through self reports in previous research [1]: emotions can be excited to states of extreme arousal and valence, but they tend to come back over time to a baseline of positive valence and moderate arousal.





Longer time scales

We plot the relaxation of valence and arousal for a time interval of up to 5 hours.



NRC-VAD Lexicon

We repeat the analysis from the main text with the NRC-VAD lexicon [2] and report the results in Figure 4 & 5 and in Table 1.

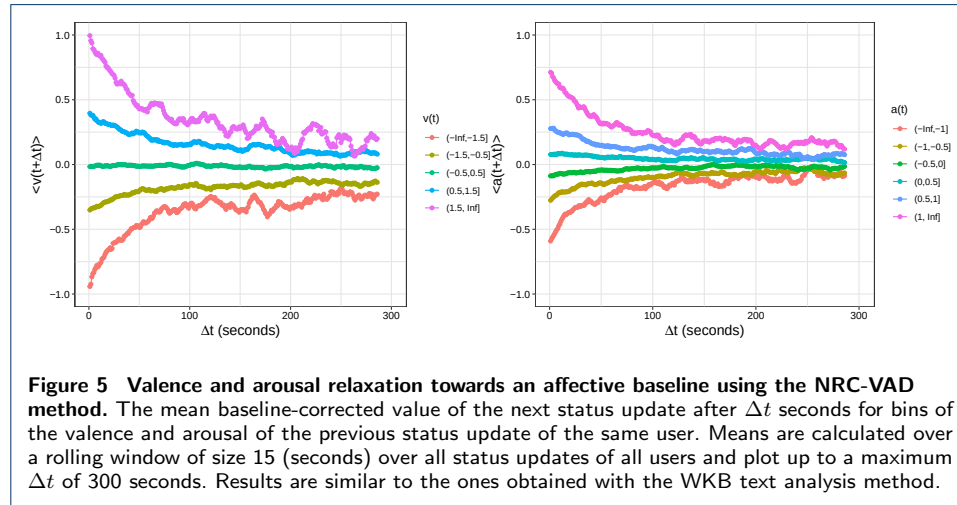
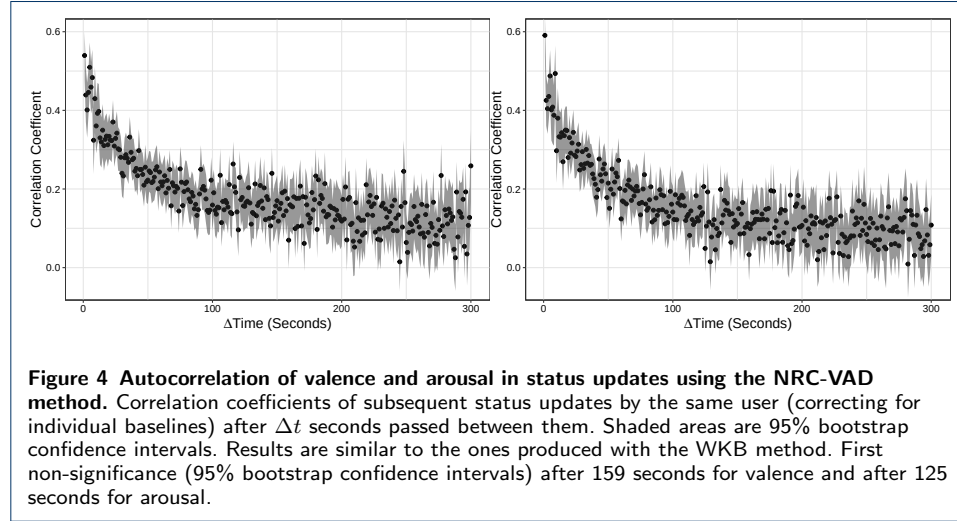


Table 1 Regression results using the NRC-VAD method.

	Valence Model NRC-VAD			Arousal Model NRC-VAD		
	Coef.	CI	p-Value	Coef.	CI	p-Value
k	0.368	[0.363, 0.374]	$p < 10^{-16}$	0.425	[0.419, 0.432]	$p < 10^{-16}$
gamma	0.0049	[0.0047, 0.0051]	$p < 10^{-16}$	0.0093	[0.0089, 0.0096]	$p < 10^{-16}$
N	17,732,043			17,732,043		

Week correction

We follow the "ISO week date system" [3] to map the time stamps of status updates to the corresponding week. To exclude the effect of phenomena like holiday greetings, we compute weekly baselines (Figure 6 & 7) and rerun analysis with a weekly baseline correction. Results are robust to this change (Figure 8 and Table 2).

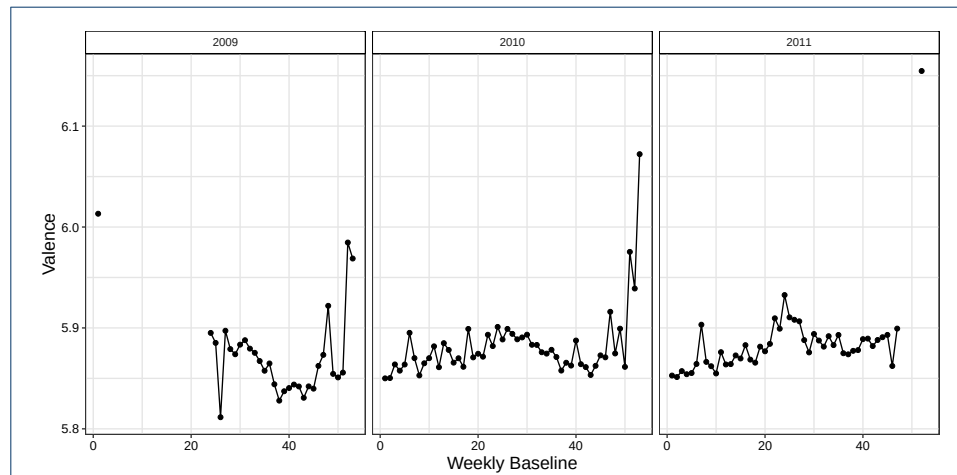


Figure 6 Weekly baseline for valence over all users for all weeks in the data set. Note the increase in valence towards the end of the year (Christmas, New Year's Eve).

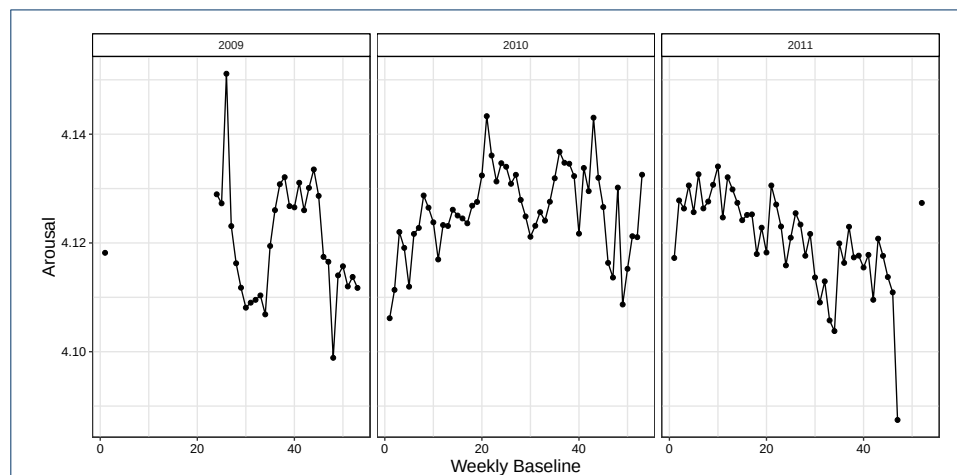


Figure 7 Weekly baseline for arousal over all users for all weeks in the data set.

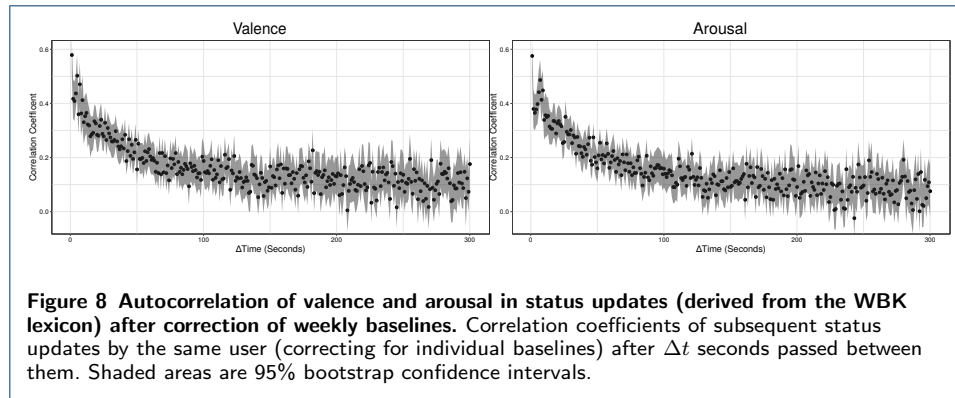
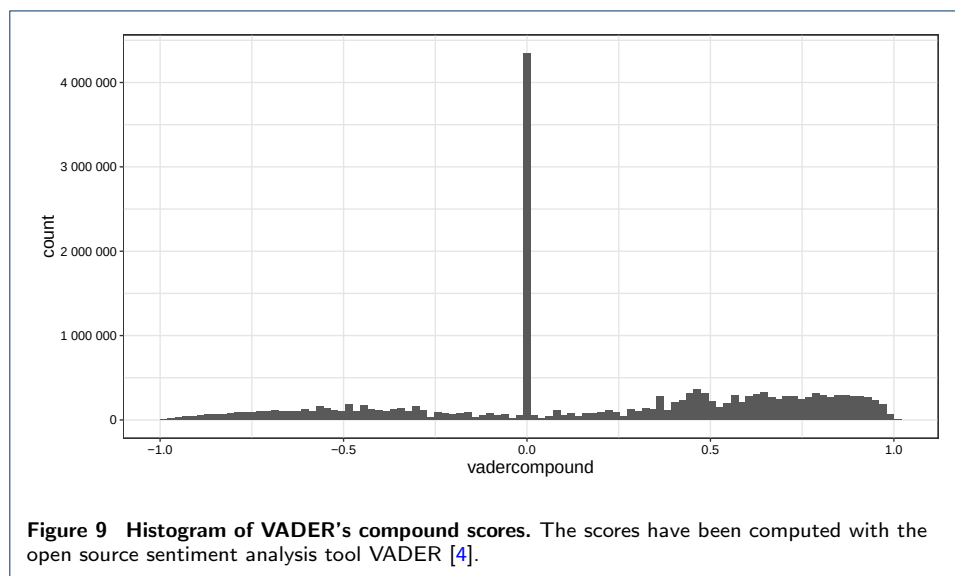


Table 2 Regression results using the WBK lexicon and values corrected for the corresponding weekly baseline.

	Valence Model			Arousal Model		
	Coef.	CI	p-Value	Coef.	CI	p-Value
k	0.385	[0.379, 0.392]	$p < 10^{-16}$	0.449	[0.442, 0.456]	$p < 10^{-16}$
gamma	0.0068	[0.0065, 0.0072]	$p < 10^{-16}$	0.0105	[0.0102, 0.0109]	$p < 10^{-16}$
N	16,863,066			16,863,066		

VADER

We also considered using the tool VADER [4] for sentiment analysis. A VADER compound value of 0 does not only refer to neutral sentiment in a tweet but also to "not detected". Therefore, it is advised to follow the example of the authors and classify the scale into "negative", "neutral" and "positive" "... with classification thresholds set at -0.05 and $+0.05$..." [4, p. 224]. The histogram of VADER scores in our dataset can be seen on Figure 9. The trimodality of scores shows that VADER was calibrated with ternary sentiment data.



Author details

References

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4. Hutto, C.J., Gilbert, E.: Vader: A parsimonious rule-based model for sentiment analysis of social media text. In: ICWSM '14 (2014)