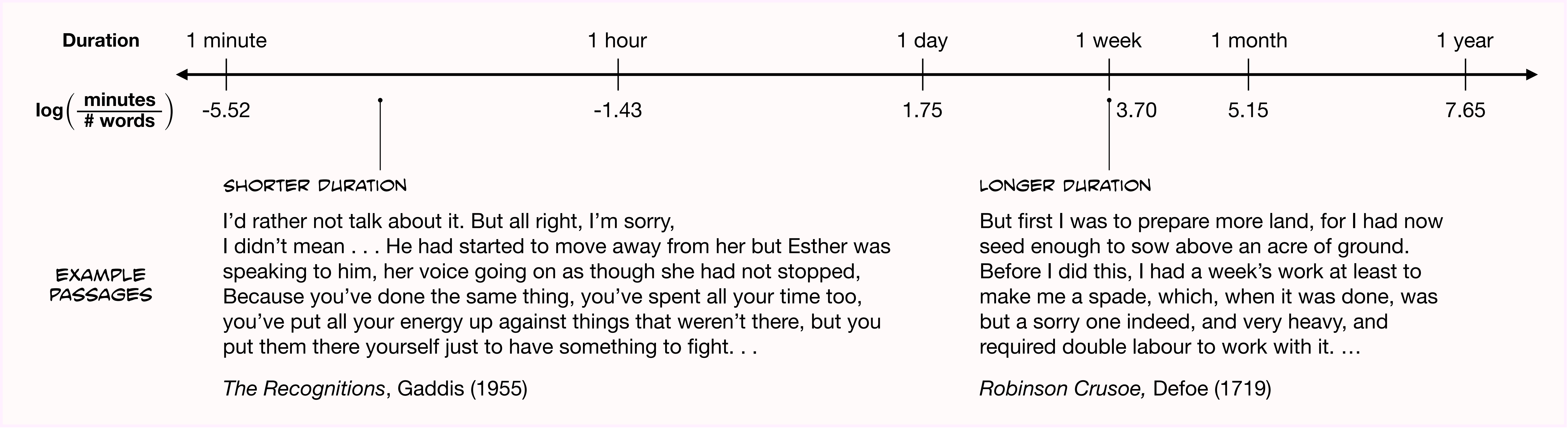


# Computational Prediction of Elapsed Narrative Time

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## Datasets

	# Novels	# Passages	Labeled?
[Underwood 2018]	108	1,765	✓
Newly labeled	7	56	✓
HathiTrust	53,539	14,986,501	x

## Predicting elapsed narrative time

### Linear regression

**Input:** unigram features for one passage

**Output:**  $\log\left(\frac{\text{minutes}}{\# \text{ words}}\right)$

**Training:** [Underwood 2018]

**Test:** Newly labeled dataset



## Example predictions

*The Recognitions*, Gaddis (1955):

Labeled: 5 minutes (-3.91)      Predicted: 6 minutes (-3.72)

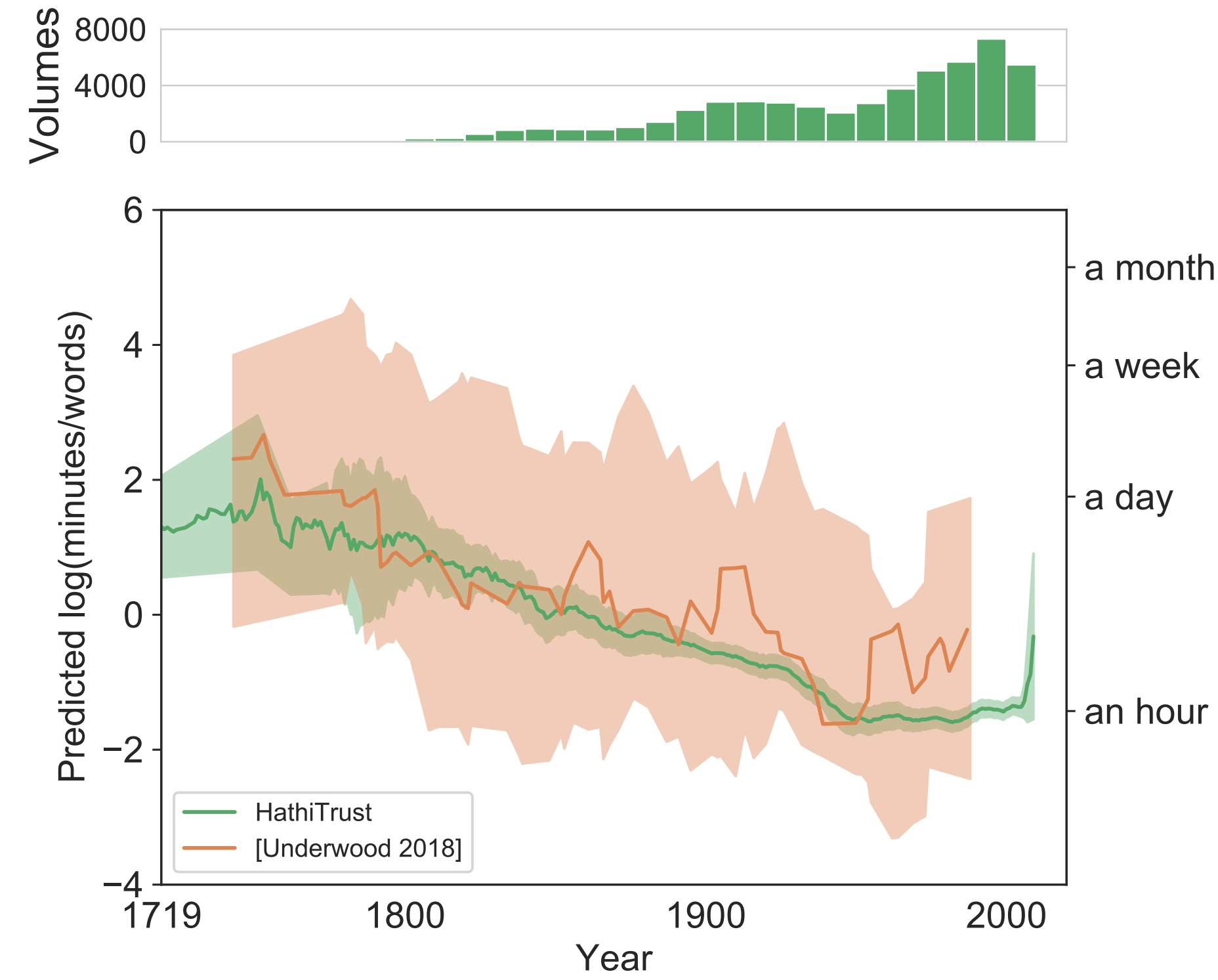
—But, and then, you're all right? —I'd rather not talk about it. —But all right, I'm sorry, I didn't mean . . . He had started to move away from her but Esther was speaking to him, her voice going on as though she had not stopped, —Because you've done the same thing, you've spent all your time too, you've put all your energy up against things that weren't there, but you put them there yourself just to have something to fight . . . —Esther ... —So you wouldn't have to fight the real things. She spoke with great rapidity at him. —And now you say you're tired? At your age, because you've been trying to make negative things do the work of positive ones . . . —I wish I was an old man! he burst out at her, and then lowered his eyes again, his pale hand inside his coat holding the thick packet there. —Because . . . damn it, this being young, it's like he said it was, it's like a tomb, this youth, youth, this thing in America, this accent on youth, on everything belongs to the young, and we, look at us, in this tomb, like he told me it could be, like he said it was . . . And Otto raised his eyes to see nothing moving in her face. —Yes, you came here for him, didn't you, she said quietly. —You only wanted to see him, didn't you. And

*Frankenstein*, Shelley (1818):

Labeled: 1 day (1.75)      Predicted: 6 days (3.60)

narrower as I approached my native town. I discovered more distinctly the black sides of Jura, and the bright summit of Mont Blanc. I wept like a child. “Dear mountains! my own beautiful lake! how do you welcome your wanderer? Your summits are clear; the sky and lake are blue and placid. Is this to prognosticate peace, or to mock at my unhappiness?” I fear, my friend, that I shall render myself tedious by dwelling on these preliminary circumstances; but they were days of comparative happiness, and I think of them with pleasure. My country, my beloved country! who but a native can tell the delight I took in again beholding thy streams, thy mountains, and, more than all, thy lovely lake! Yet, as I drew nearer home, grief and fear again overcame me. Night also closed around; and when I could hardly see the dark mountains, I felt still more gloomily. The picture appeared a vast and dim scene of evil, and I foresaw obscurely that I was destined to become the most wretched of human beings. Alas! I prophesied truly, and failed only in one single circumstance, that in all the misery I imagined and dreaded, I did not conceive the hundredth part of the anguish I was destined to endure. It was completely dark when I arrived in the environs of Geneva; the gates of the town were already shut; and I was obliged to pass the night at Secheron, a village at the distance of half

## Elapsed narrative time has changed over the 18<sup>th</sup>-20<sup>th</sup> centuries



## Duration-associated words

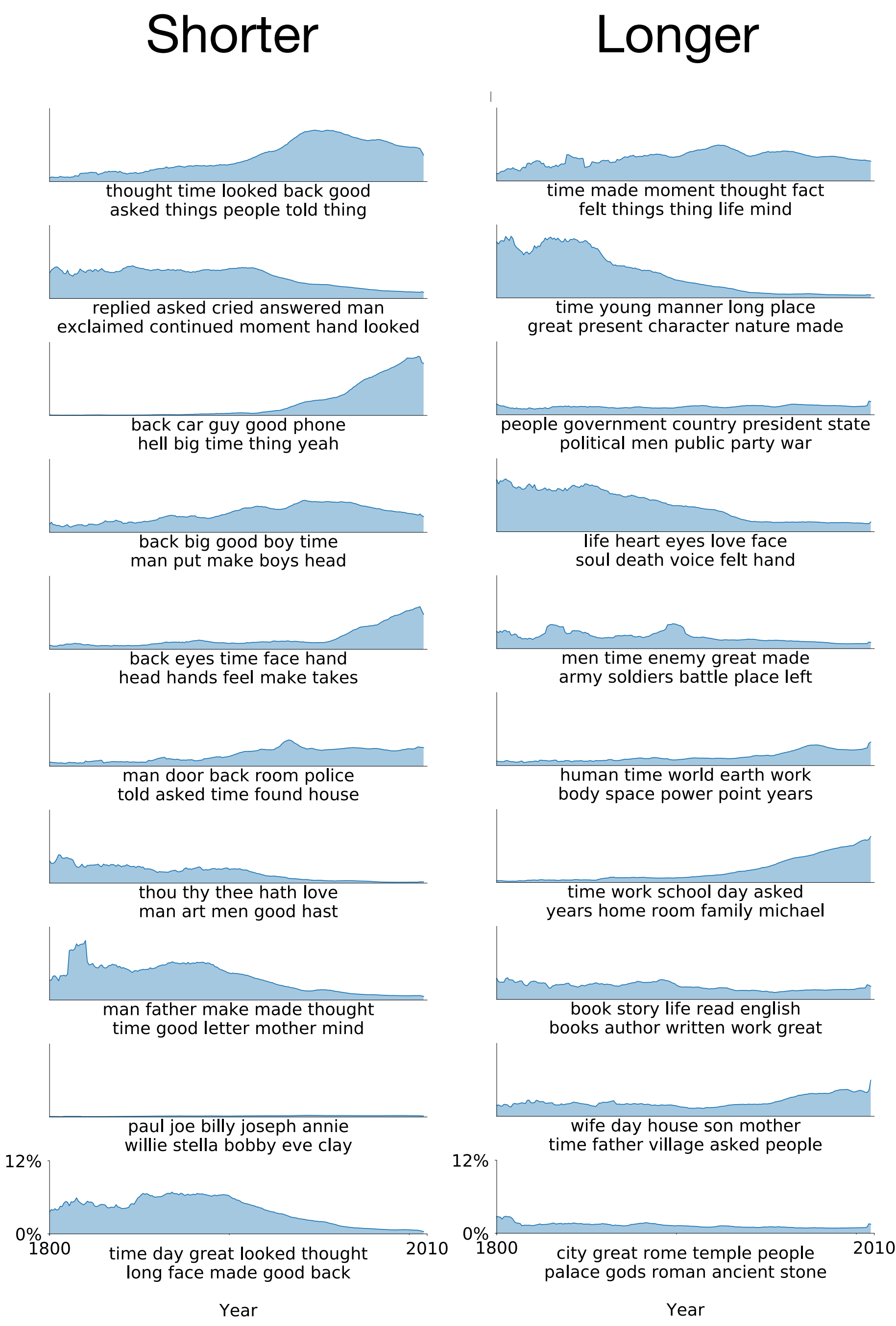
**Shorter duration:**

replied (-0.65), moment (-0.49), wish (-0.45), struck (-0.43), thou (-0.43), room (-0.42), pocket (-0.42), best (-0.42), black (-0.42), woman (-0.40)

**Longer duration:**

years (0.73), life (0.61), return (0.59), family (0.51), failure (0.50), history (0.49), wrote (0.48), during (0.47), nor (0.43), aunt (0.43)

## Topics correlate with elapsed time



## $\ell_1$ -regularization shows word importance

Shorter	Longer
you	of
said	in
it	to
he	had

## Ranking

**Input:** unigram features for two passages

**Output:** time of passage 1 > time of passage 2

**Training:** [Underwood 2018]

**Test:** Newly labeled dataset

