

# The Effect of Different Writing Tasks on Linguistic Style: A Case Study of the ROC Story Cloze Task

Roy Schwartz<sup>1,2</sup>, Maarten Sap<sup>1</sup>, Ioannis Konstas<sup>1</sup>, Li Zilles<sup>1</sup>, Yejin Choi<sup>1</sup> and Noah A. Smith<sup>1</sup>

<sup>1</sup>University of Washington, <sup>2</sup>Allen Institute for Artificial Intelligence

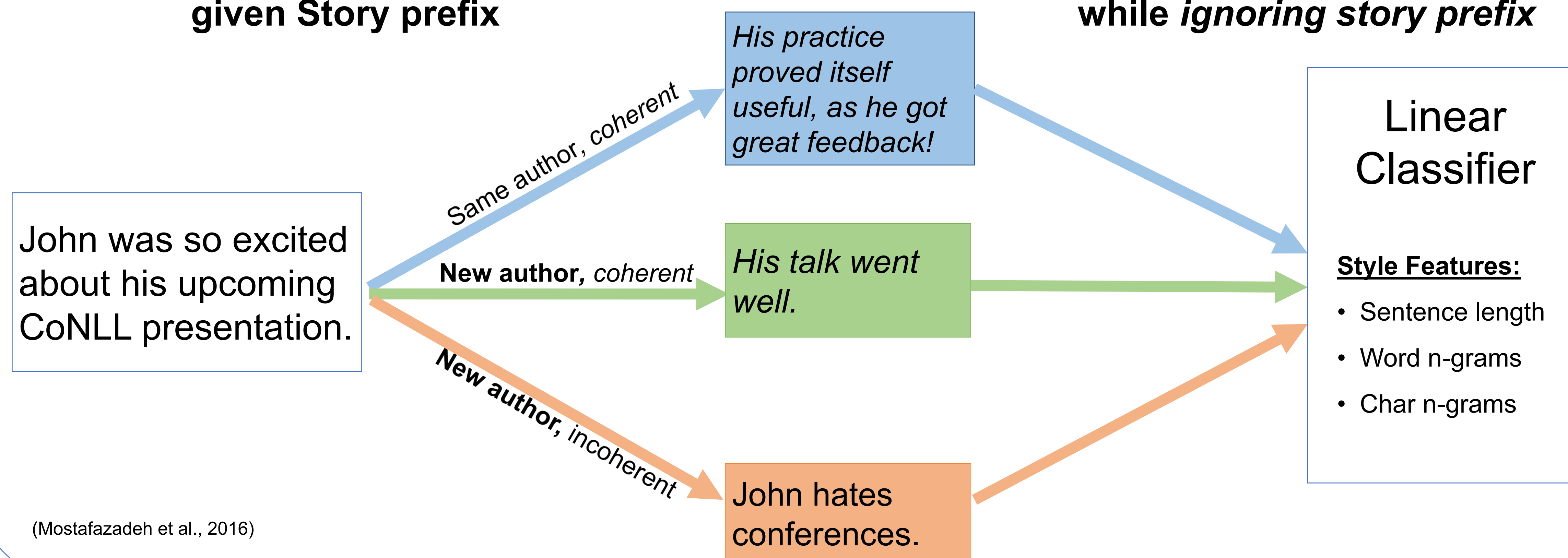
## Abstract

We show how variants of the same writing tasks can lead to measurable differences in writing style. Our experimenting with the story cloze task (Mostafazadeh et al., 2016a) show that a simple linear classifier informed by stylistic features is able to successfully distinguish among different writing tasks. Combining our stylistic features with language model predictions reaches state of the art performance on the story cloze challenge.

## Story Cloze Task as a Style Detection Task

**Original Task: Predict Correct Ending given Story prefix**

**New Task: Predict Correct Ending while ignoring story prefix**



(Mostafazadeh et al., 2016)

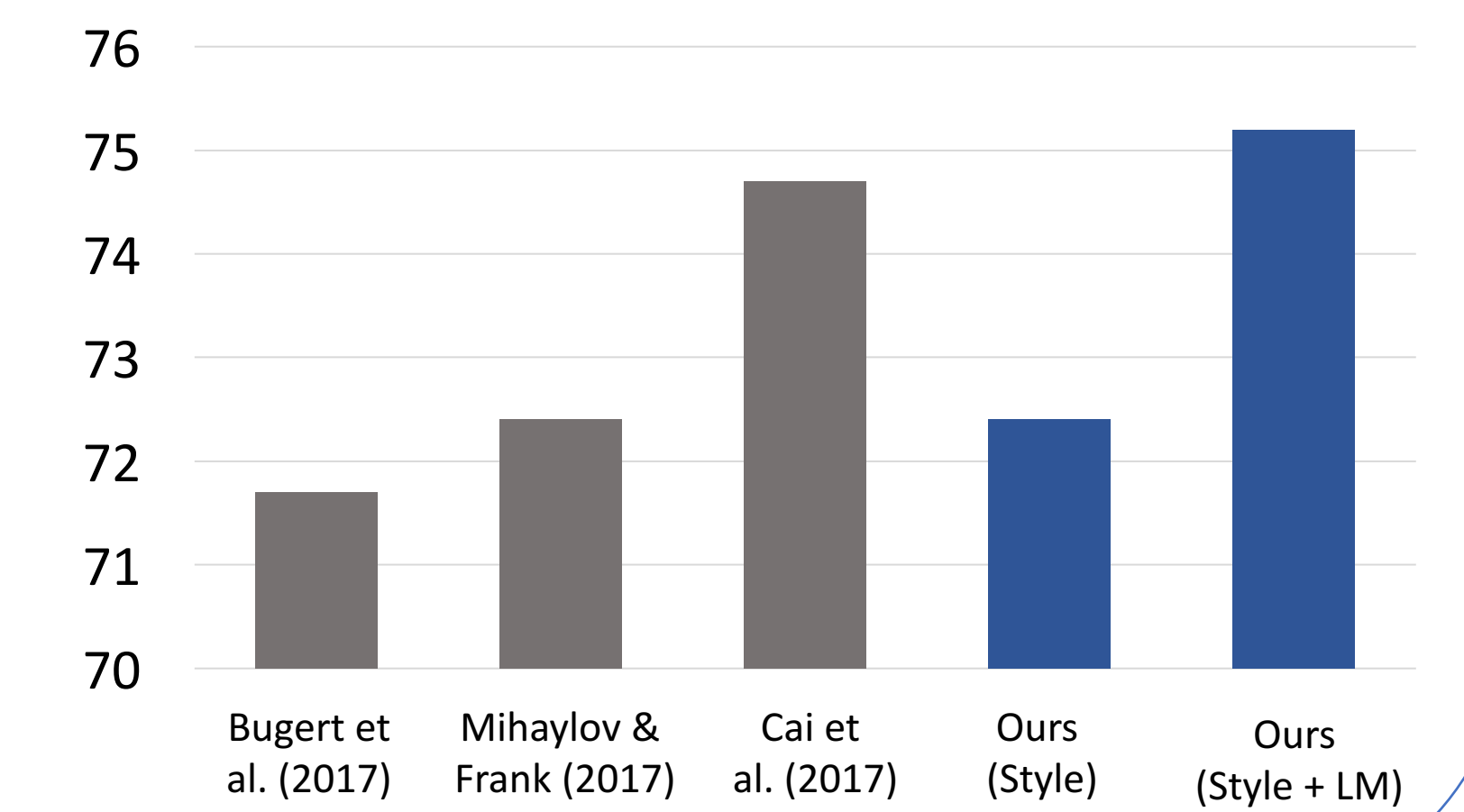
## Style + Content = State-of-the-art

### Language Model Features

$$e^* = \operatorname{argmax}_{e \in \{e_1, e_2\}} \frac{p_{lm}(e|\text{prefix})}{p_{lm}(e)}$$

*The intuition:* controlling for the inherent surprisingness of the words in each ending

### State-of-the-art Results on the Story Cloze Task



## Discussion and Implications

### What Causes These Style Differences?

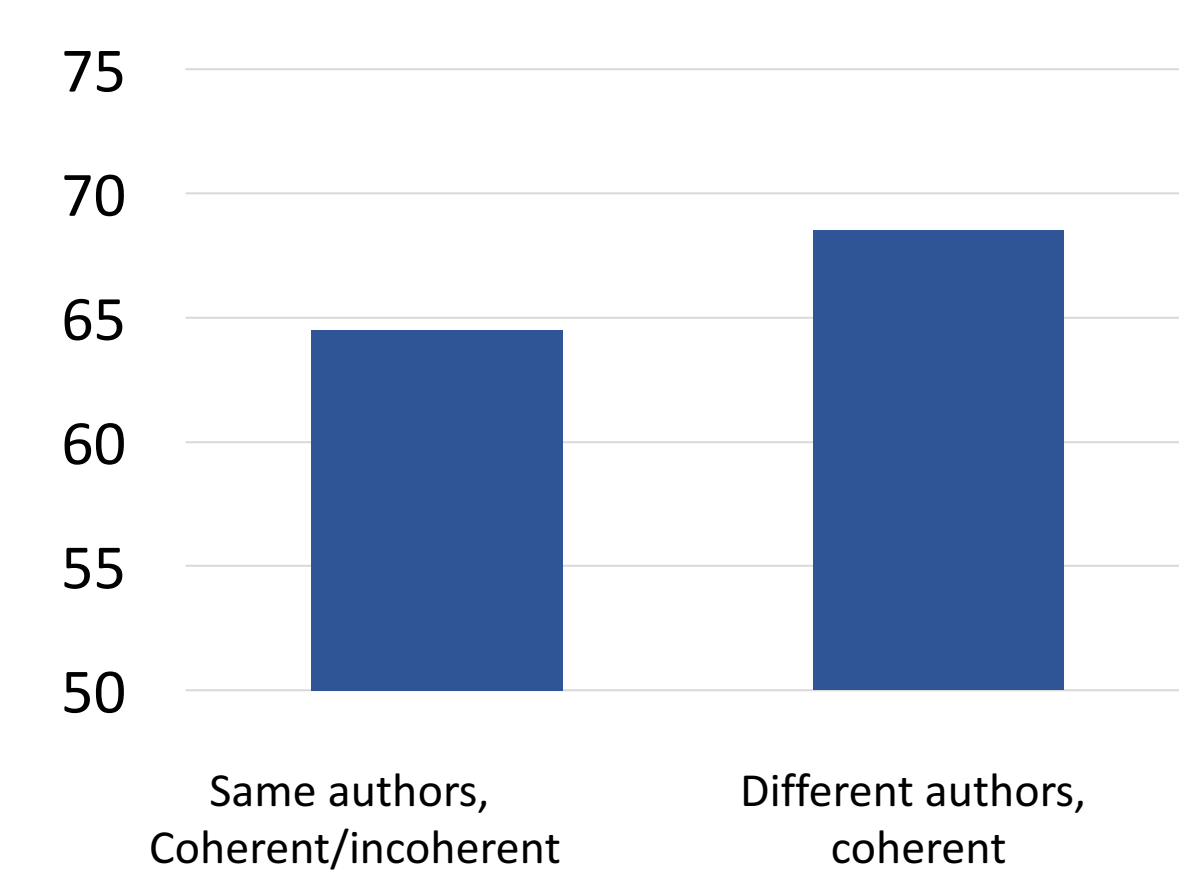
- Writing style can both affect and be affected by **mental state** (Campbell, 2003; Ireland 2014)
- Does the link between different **writing tasks** and **writing style** involves differences in **mental state**?

### Careful Instructions Reduce Style Effects

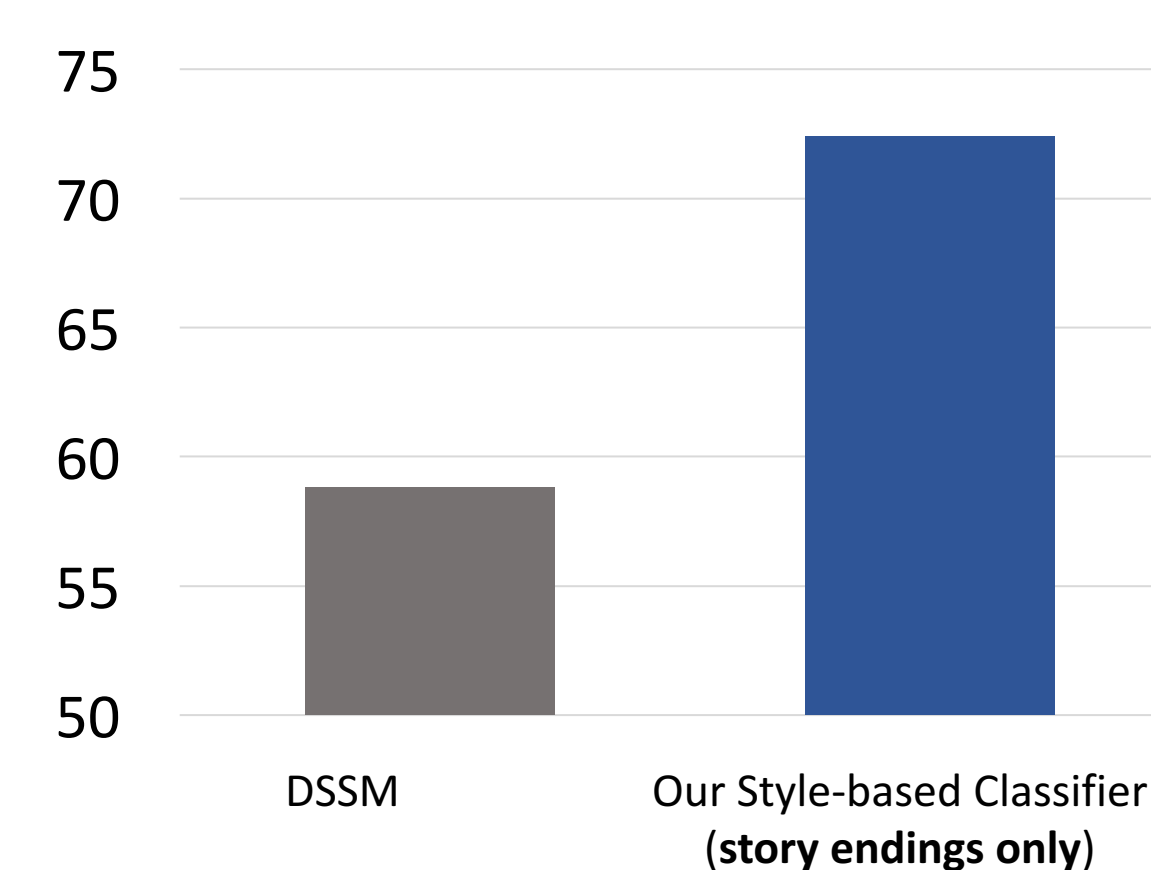
- Negative results of our style-based model on the COPA dataset (Roemmele et al., 2011)
- Possible reason: annotators were asked to be as **brief** as possible and **avoid proper names**

## Writing Instructions Affect Writing Style

### Binary Classification of Story Endings



### Story Cloze Task



### Most Salient Style Features

- Coherent:
  - end with past tense verbs
  - coordinations
  - adjectives
- Incoherent:
  - start with proper nouns
  - end with common nouns
  - negative words ("hate")
- Different author:
  - start with proper nouns
  - end with common nouns
- Same author:
  - are (much!) longer
  - are more enthusiastic ("!")
  - adverbs

## Take Home Messages

- **The task a writer is given to perform will affect their writing style in detectable ways**
- **Careful attention must be paid to instructions given to annotators of NLP tasks**

\* Code available at [https://github.com/roys174/writing\\_style](https://github.com/roys174/writing_style)