Sentiment Annotation of Historic German Plays: An Empirical Study on Annotation Behavior

Thomas Schmidt (M. Sc.), Media Informatics Group, Regensburg University

Jun.-Prof. Dr. Manuel Burghardt, Computational Humanities Group, Leipzig University

PD Dr. Katrin Dennerlein, Department of German Philology, Würzburg University

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Universität Regensburg

UNIVERSITÄT LEIPZIG

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Structure

- What is Sentiment Analysis?

- Sentiment Analysis in Literary Studies

- Project context

- Annotation Studies

- Recent studies and future plans

Sentiment Analysis – Definition

*„**Sentiment Analysis**, also called opinion mining, is the field of study that **analyzes people's opinions, sentiments, appraisals, attitudes, and emotions** toward entities and their attributes expressed in **written text**."*

(Liu, 2016, p. 1)

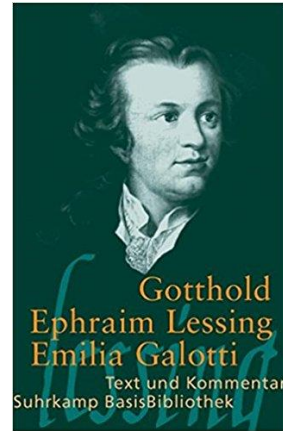People's opinions?

Towards entities?

What is sentiment analysis?
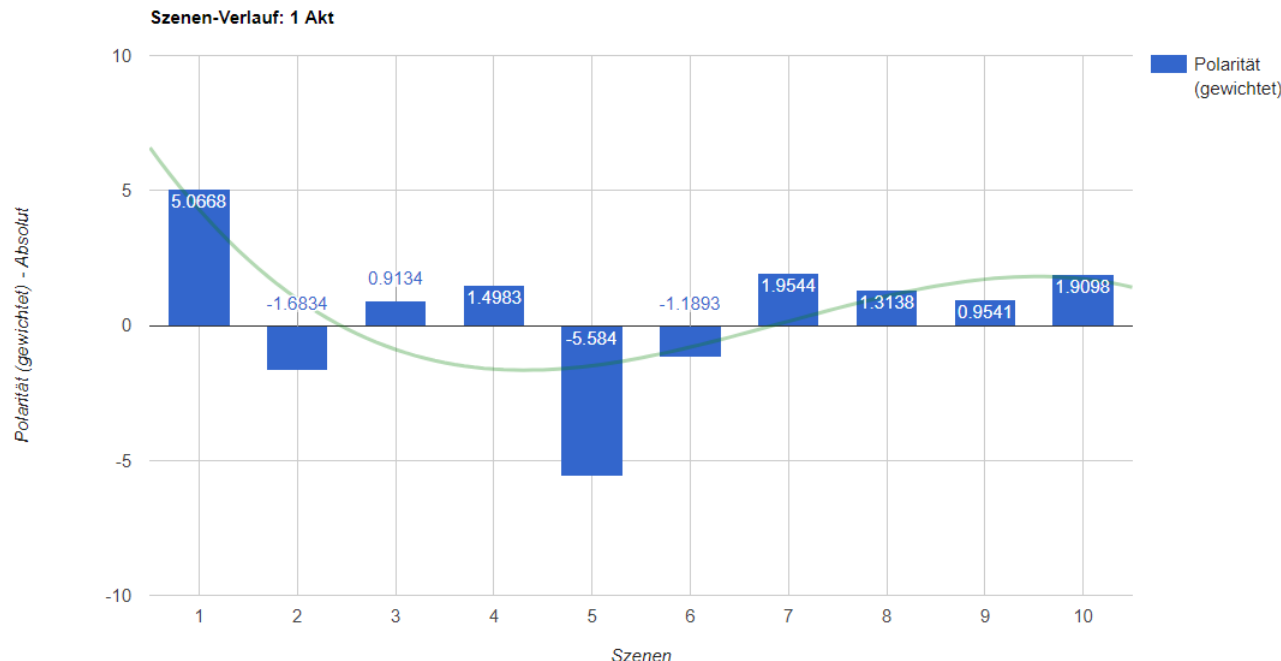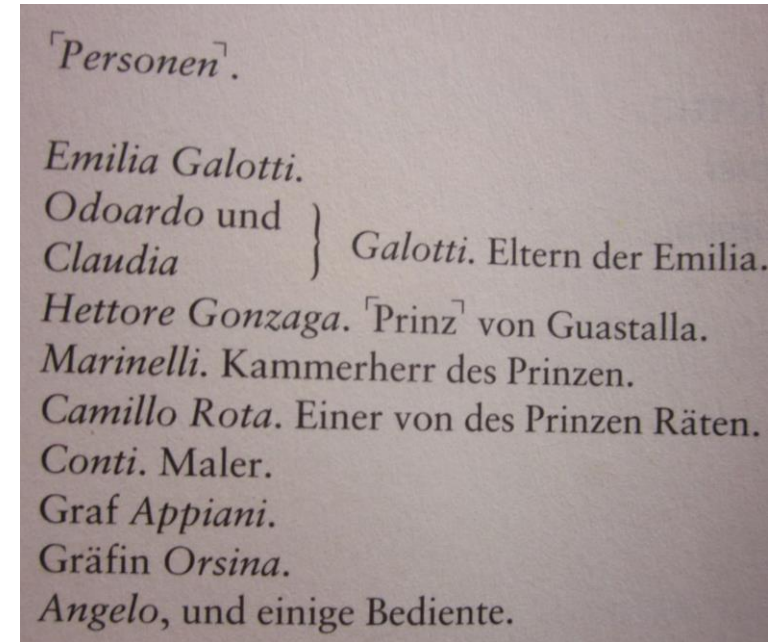
Project Context

Lessing

Drama

Act

Scene

Schmidt, Burghardt & Dennerlein (2018)
Schmidt & Burghardt (2018a)
Schmidt & Burghardt (2018b)

Motivation for sentiment annotation

→ Evaluation

→ Machine Learning

→ Gathering insights about the requirements/theory/guidelines of sentiment annotation in literary texts

Annotation Study

- 5 annotators

- All non-experts (!)

- 200 representative speeches of the Lessing Corpus

Annotation Scheme

ADRAST:

Noch ein Wort! Drohend.

THEOPHAN:

Nunmehr darf ich die Bitte um eine nähere Erklärung doch wohl wiederholen? Ich weiß sie mir selbst nicht zu geben.

ADRAST:

Erklären Sie sich denn gerne näher, Theophan?

Very Negative	Negative	Neutral	Mixed	Positive	Very Positive

Negative	Positive

Anger	Anticipation	Disgust	Fear	Joy	Sadness	Surprise	Trust

Annotation Study

Duration

Annotation Process

Questionnaire

Interview

Annotation Distribution (Polarity)

	negative
	neutral
	mixed
	positive
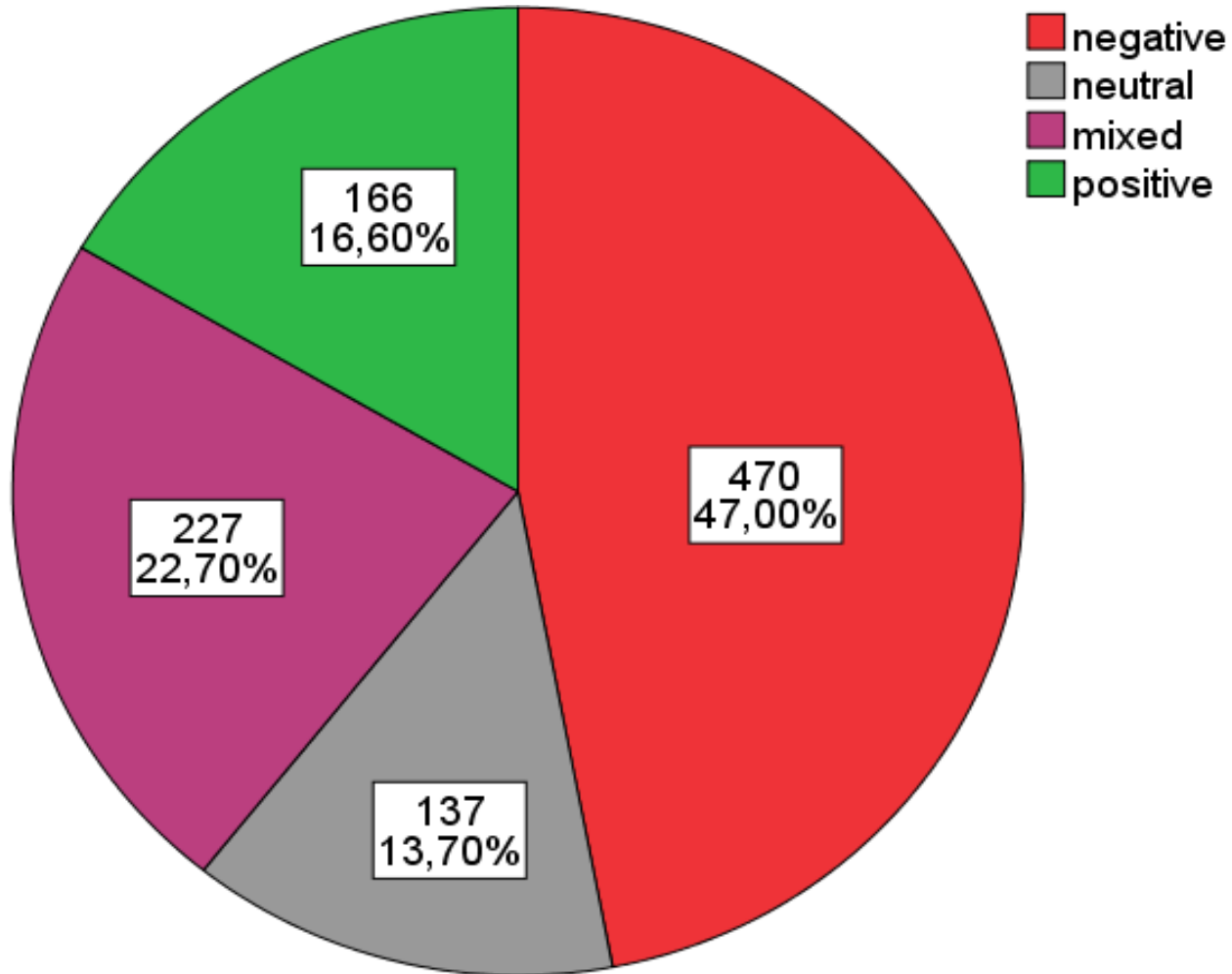
Titel	Genre
Damon oder die wahre Freundschaft	Comedy
Der Freigeist	Comedy
Der junge Gelehrte	Comedy
Der Misogyn	Comedy
Der Schatz	Comedy
Die alte Jungfer	Comedy
Die Juden	Comedy
Emilia Galotti	Tragedy
Minna von Barnhelm	Comedy
Miss Sara Sampson	Tragedy
Nathan der Weise	Dramatic Poem
Philotas	Tragedy

Binary polarity

Polorität Dichotom

negative
positive

335
33,50%

665
66,50%
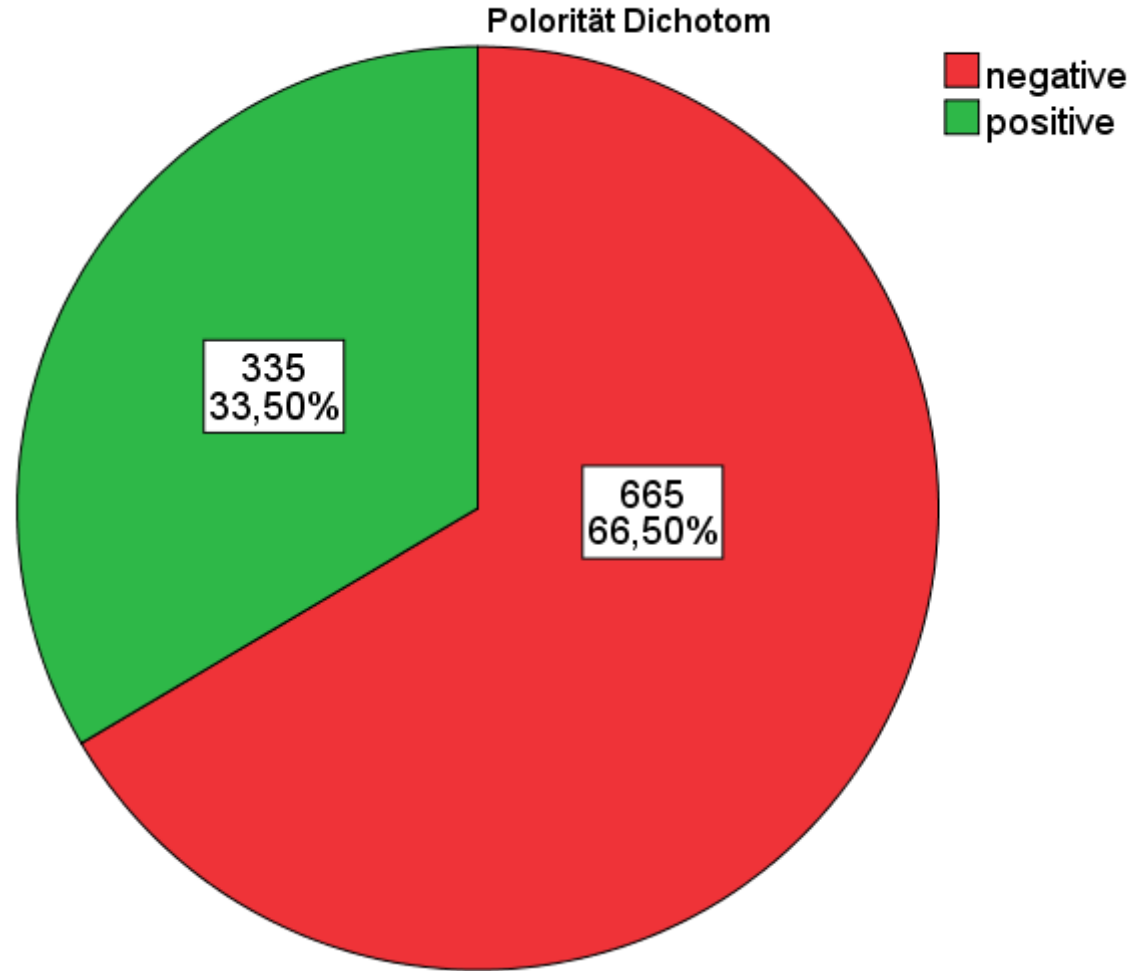
Emotion Distribution
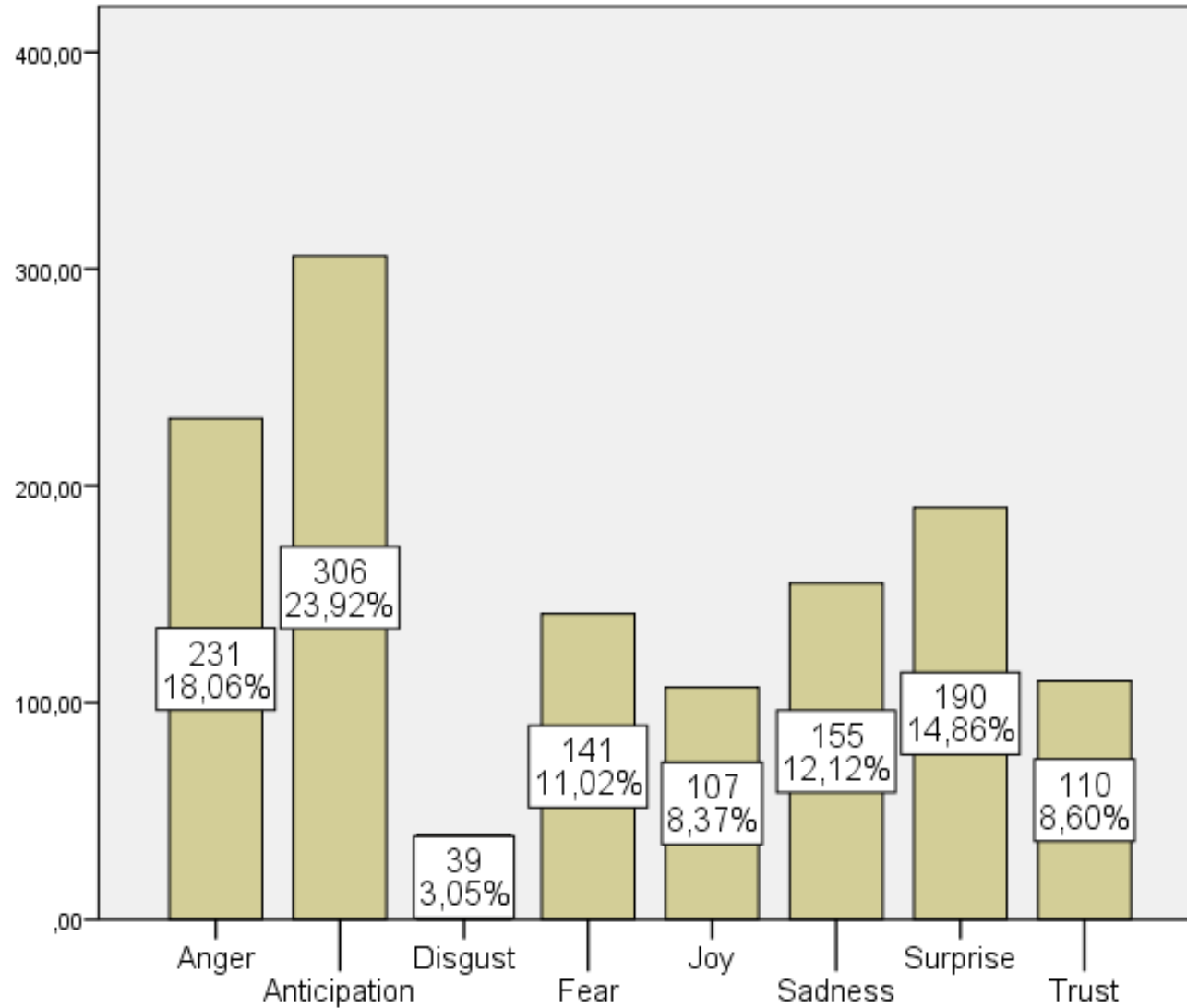
Levels of agreement

Annotation	Krippendorff's α	Percentage of agreement
Polarity differentiated	0.22	40%
Binary polarity	0.47	77%

$\alpha < 0$ = poor

$0 < \alpha < 0.2$ = slight

$0.2 < \alpha < 0.4$ = fair

$0.4 < \alpha < 0.6$ = moderate

$0.6 < \alpha < 0.8$ = substantial

$0.8 < \alpha < 1$ = (almost) perfect

Problems
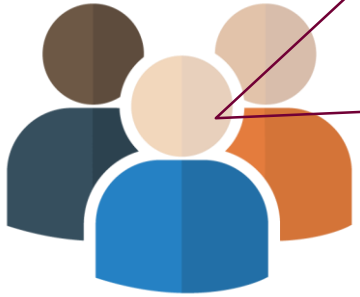
- The annotation is perceived as very difficult and tedious (Overall difficulty: *Med*=6)

- The certainty of the annotation is average (*Med*=3)

- Takes around 5 hours to complete

- Poetic and archaic language

- Content-related overall context

- Irony and sarcasm

- Polarity shifts

Problems

The instruction and the annotation schema are problematic
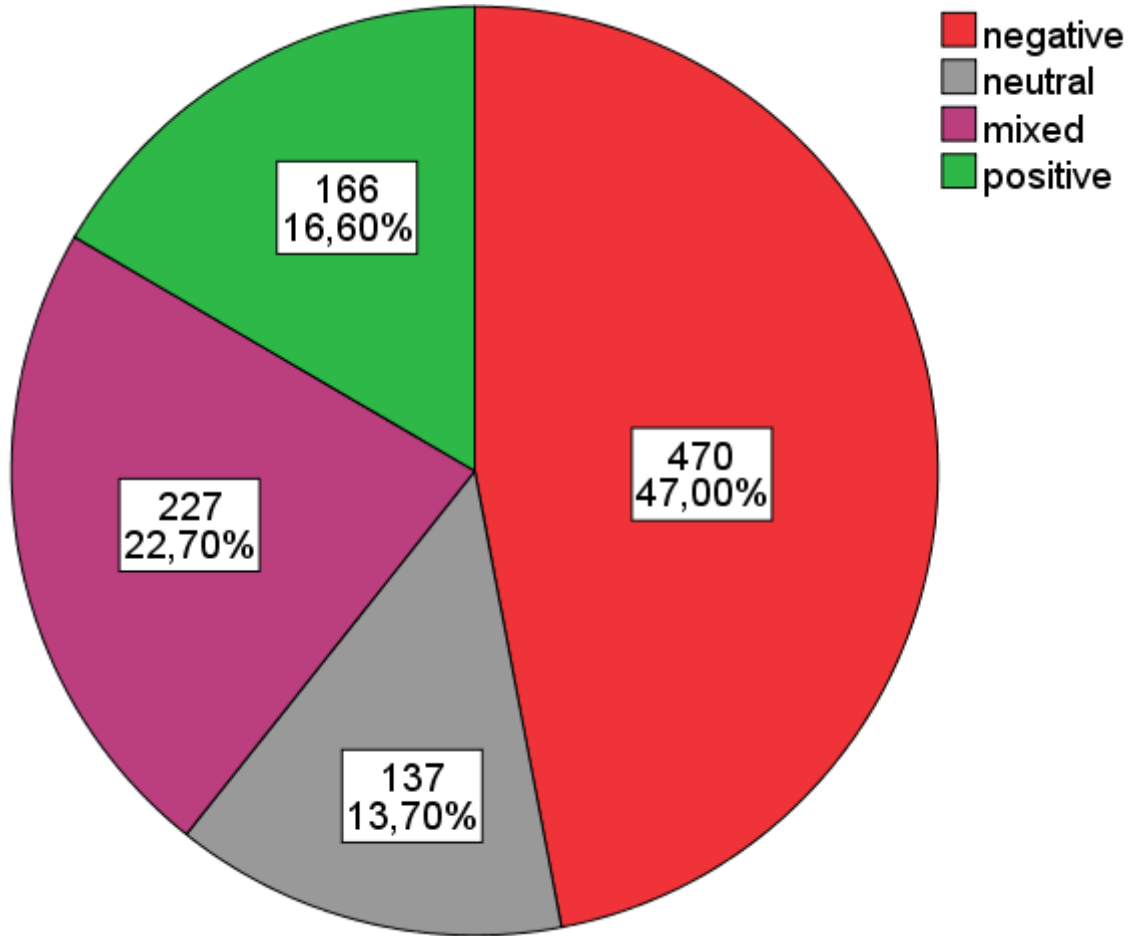
People's opinions?

Towards entities?

Expert annotation

Overall research question: What level of expertise is necessary?

Super-Expert for Lessing

Comparison: polarity annotation

Non-Experts
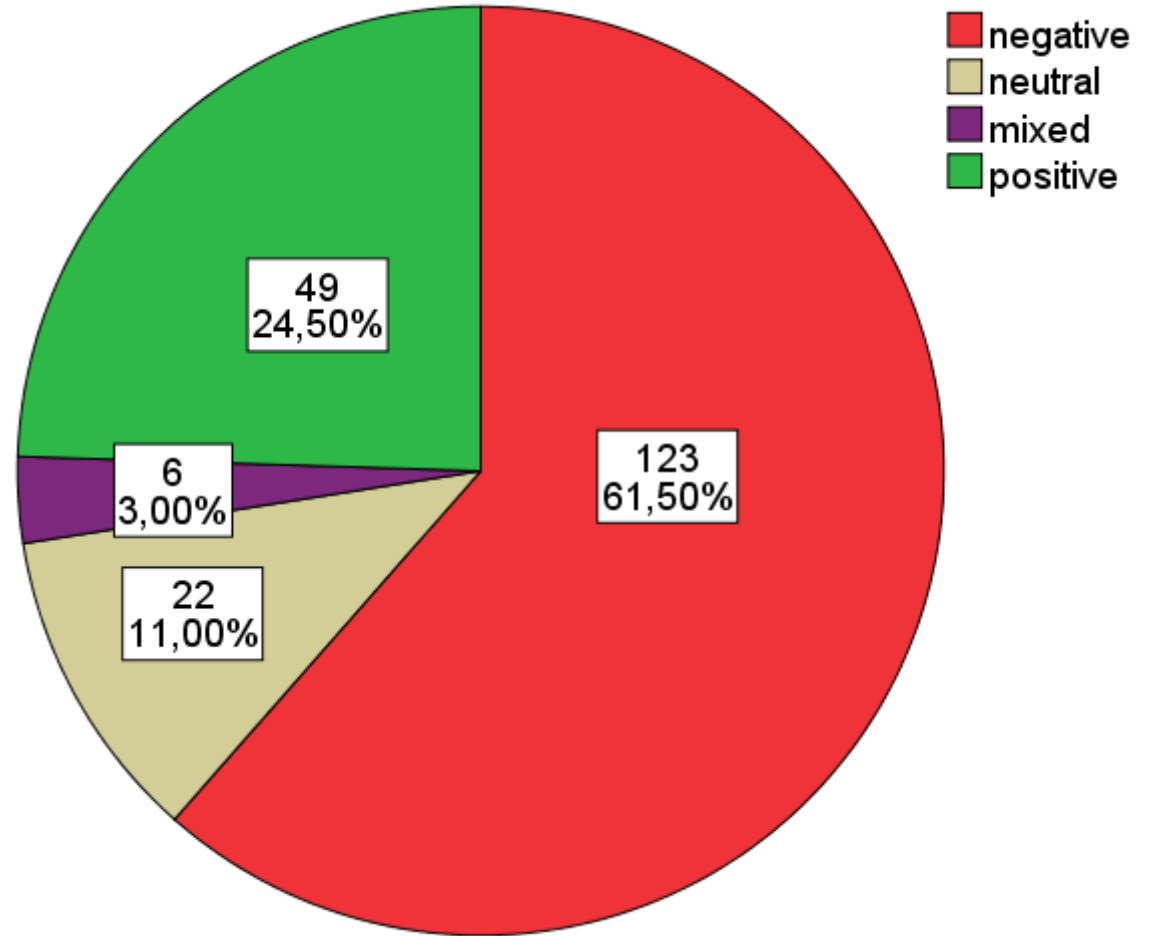
Expert

Expert compared to non-experts

Annotation	Averaged κ values	Averaged Percentage of agreement
Differentiated Polarity	0.19	39%
Binary polarity	0.45	76%

Non-Experts compared to each other

Annotation	Krippendorff's α	Percentage of agreement
Differentiated Polarity	0.22	40%
Binary polarity	0.47	77%

Results

Some problems are resolved (Language, context)

Many problems persist

Overall: Polarity distribution is similar

No differences concerning agreement statistics

Tendency to over-thinking

Takes similar amount of time but is not perceived so tedious and difficult!

What level of expertise is needed?

fx | ID

	ID	Title_of_Play	Position_in_play	Predecessor_Sp	Rated_Speech	Successor_Spee	Majorityannotatic	Annotation1_Pol	Annotation2_Pol	Annotation3_Pol
2	1	Damon, oder die	1.Act, 5.Scene, 8	LEANDER: Ja, Damon, und	DAMON: Sie trauen mir zu	LEANDER: Freund, im Verze	negative	negative	positive	positive
3	2	Damon, oder die	1.Act, 10.Scene,	LEANDER: Lassen Sie mich	DAMON: Ich Ihnen nicht v	LEANDER: Damon – – Urtei	positive	positive	negative	positive
4	3	Damon, oder die	1.Act, 4.Scene, 2	LEANDER: Nein.	LISETTE: Nun, sehen Sie,	LEANDER: Euer Rat ist gut. möchte einmal ei	positive	positive	positive	positive
5	4	Damon, oder die	1.Act, 1.Scene, 5	DIE WITWE: Du hättest dich a	LISETTE: Ja. In einem Ga:	DIE WITWE: Was sie vorstelle	positive	positive	positive	positive
6	5	Damon, oder die	1.Act, 4.Scene, 1	LEANDER: Wenn sie aber n	LISETTE: Hui! ist das der s	LEANDER: Nein.	negative	positive	negative	negative
7	6	Damon, oder die	1.Act, 10.Scene,	ORONTE: Ja, Vetter, ja, ve	LEANDER: Sie, Madam, hal	DIE WITWE: Und diesen Antr	positive	positive	positive	positive
8	7	Der Freigeist	3.Act, 5.Scene, 1	ADRAST: Noch ein Wort! D	THEOPHAN: Nunmehr darf ic	ADRAST: Erklären Sicl	negative	negative	negative	negative
9	8	Der Freigeist	1.Act, 5.Scene, 1	ADRAST: Ich glaube, du s	JOHANN: Ich sollte es Ihne	ADRAST: Gehe mir aus de	negative	negative	negative	negative
10	9	Der Freigeist	3.Act, 2.Scene, 1	ADRAST: Ihre Falschheit,	THEOPHAN: Wir halten uns z	ARASPE: Wenn ich Ihnen	positive	positive	negative	positive
11	10	Der Freigeist	4.Act, 3.Scene, 2	JULIANE: Adrast, Sie betra lernen, daß sie ir	ADRAST: Ach! Juliane, die	JULIANE: Stille, Adrast! Si	negative	positive	negative	negative
12	11	Der Freigeist	4.Act, 7.Scene, 1	ADRAST: Ihre Gelassenhe	THEOPHAN: So könnte Sie w	ADRAST: Wohl! an dieser	negative	negative	negative	negative
13	12	Der Freigeist	2.Act, 1.Scene, 2	JULIANE: Unartige Schwe:	HENRIETTE: Ich seh, man mt	JULIANE: Du hast doch nä	negative	negative	negative	negative

https://tinyurl.com/y8hubfag

Recent studies and future plans

Students of the master program in German literary studies at the University of Würzburg

Experts on one play

About 1800 Annotations

One play annotated from start to finish

Feedback (Questionnaires, Focus Group, Course)

Annotation instruction/guidelines

Very precise and multiple times pretested annotation instruction/guidelines → Goal: no misunderstandings

Other annotation plans

Gather more data

Deriving precise models and research questions

Exploring possibilities of crowdsourcing / Combination with expert annotation

Exploring and developing tools for sentiment annotation

Broaden the scope

Thank you for your attention!

Questions, Feedback, Criticism?

Contact:
thomas.schmidt@ur.de
burghardt@informatik.uni-leipzig.de
katrin.dennerlein@uni-wuerzburg.de

Twitter:
@thomasS_UniR
@8urghardt

References

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