Lexical features in adolescents' writing: Insights from the trilingual parallel corpus SWIKO

Nina Selina HICKS

Institute of Multilingualism
University of Fribourg, Switzerland

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SWIKO – Context & aim

- Shift in FL teaching in Switzerland
  (Council of Europe 2001, 2020; EDK 2011, 2017; Bertschy et al. 2015; Lenz & Wiedenkeller 2019; Peyer et al. 2016)
  - Competence based; action, content & tasks oriented
  - HarmoS: 2 FL mandatory (~ ages 8 + 10), one national language + English, goal = A2.2 overall, A2.1 writing
- Empirically document & analyze learners' interlanguage at the end of mandatory schooling
  - Lexical & grammatical features

Theoretical background & previous work

- Task effects on CAF measures
  (Housen et al. 2012, 2019, Norris & Ortega 2009, Wolfe-Quintero et al. 1998)

- "There is currently no theory of how the myriad design variables interact to affect task complexity."
  (Ellis et al. 2020: 348, emphasis added)

- Previous studies on lexical features
  (e.g., Abdi Tabari et al. 2021, Alexopoulou et al. 2017, Berman 2008, Bi 2020, Eckstein & Ferris 2018, Olinghouse & Wilson 2012, Ong 2014, Qin & Uccelli 2016, 2020, Révész et al. 2017, Vyatkina 2012, Yoon 2017, Yu 2010, Yoon & Polio 2017)
  - Large-scale exams or few (advanced college-level) classes
  - One task characteristic
  - One language and acquisitional context

Research question

How do different task characteristics – rhetorical type, topic familiarity and structure – influence lexical features in Swiss adolescents' low-level written productions…

…in three languages (German, English, French)?

…across two acquisitional contexts (language of schooling L1 vs. foreign language FL)?

SWIKO – Task variation

Task characteristics	Variation	SWI01	SWI02	SWI03	SWI04	SWI05	SWI06	SWI07	SWI08
Rhetorical type	descriptive	x	x			x	x		
	argumentative			x	x			x	x
Topic / familiarity	personal	x		x		x		x	
	academic		x		x		x		x
Structure	more	x	x	x	x				
	less					x	x	x	x

cf. *tasks* in Ellis et al. 2020

Task production conditions:

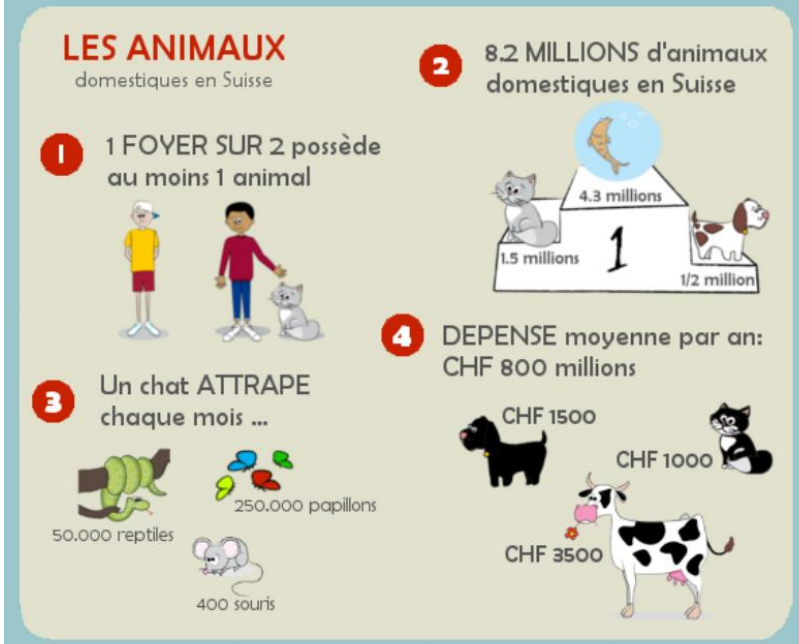
– 3 languages (language of schooling "L1" & 2 foreign languages "FL")
– 2 modes: writing and speaking (Karges, Studer & Hicks 2022)
– 2 types of medium: paper and computer (Karges, Studer & Wiedenkeller 2017, 2020)

SWIKO - Example task SWI02

Sur Internet, tu as trouvé un graphique sur les animaux domestiques en Suisse.

Regarde le graphique et réfléchis. Quelles informations dois-tu donner pour décrire le graphique à un(e) collègue qui ne peut pas voir le graphique ?

Puis, clique sur « Suivant ». Sur la prochaine page, tu enregistreras ton texte.



- Language of schooling (L1): French
- Target language: German FL
- Mode: writing
- Medium: computer-based
- Rhetorical type: descriptive
- Topic: academic
- Structure: more

Suivant

SWIKO - Example task SWI07

SWI07_e

Des politiciens proposent que les cours à l'école secondaire ne commencent qu'à 10 heures du matin. En revanche, les pauses de midi seraient raccourcies et l'école ne finirait qu'à 17h30.

Write in English!

Écris en anglais !

Qu'est-ce que tu penses de cette idée ? Donne des arguments pour et contre.

Écris environ 60-80 mots.

- Language of schooling: French
- Target language: English FL
- Mode: speaking
- Medium: paper-based
- Rhetoric type: argumentative
- Topic: personal
- Structure: less

Example: SWI02 vs. SWI07 (DaF)

SWI02: describe a graph (descriptive, academic, more structured)

Ein katz essen vier Hunden Mause in einen Monate. In die Schweiz, Es gibt 1,5 millionen Katze und ein Katze cost 1000 für zwölf monat.

[A cat eats four hundred mice in a month. In Switzerland, there are 1,5 million cats and a cat costs 1000 for twelve months.]

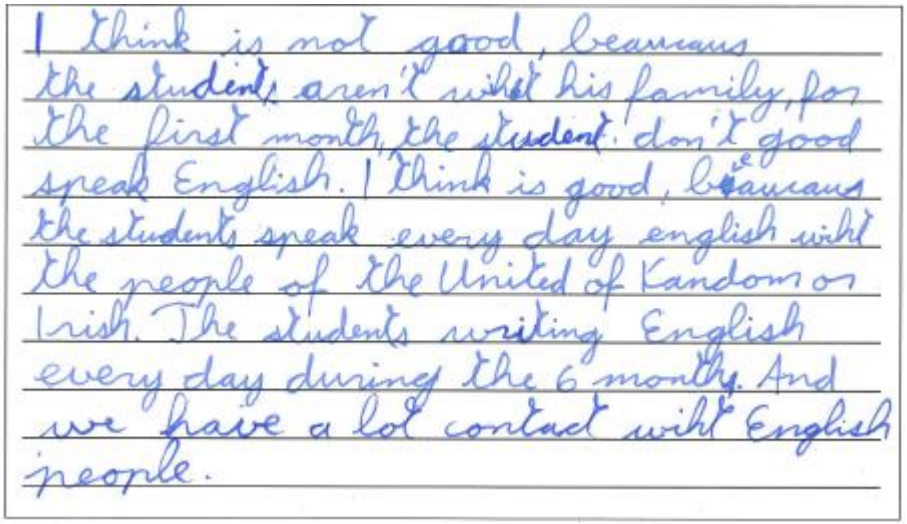
SWI07: discuss later school hours (argumentative, personal, less structured)

Ja, Das ist sehr gut weil, wir habe + schlafen weil, Wir sind sehr müde in die schule. Auch, ich habe 30 minuten minus die Schule normal. Aber, Wir haben finir plus tard in 5.30

[Yes, this is very good because we get more sleep because we are very tired at school. Also, I have 30 minutes less than usually at school. But we have to finish later at 5:30pm.]

SWIKO – Transcription & annotation

The original learner texts…


I think is not good, beaucaus
the students aren't with his family, for
the first month, the student don't good
speak English. I think is good, beaucaus
the students speak every day english with
the people of the United of Kandom or
Irish. The students writing English
every day during the 6 monthy. And
we have a lot contact with English
people.

SWIKO – Transcription & annotation

The original learner texts…

↓

transcribed and normalized manually…

Copyright 2012 project Merlin, http://merlin-platform.eu; adapted for
Transcriber: JBE
Checked by: NMU
Author ID: Mo121
Task ID: SWI08_fE
Medium: p
Original Text:
I think is not good, beaucaus the students aren't whit his family, for the first month, the student don't good speak English. I think is good beaucaus the students speak every day english wiht the people of the United of Kandom or Irish. The students writing English every day during the #6# month. And we have a lot contact wiht English people.

Tagged Text:
I think is not good, [beaucaus because] the students aren't [wiht with] his family, for the first month, the student don't good speak English. I think is good, [beaucaus because] the students speak every day [english English] [wiht with] the people of the United [of Kandom Kingdom]or Irish. The students writing English every day during the #6# months. And we have a lot contact [wiht with] English people.

*In XMLmind with the help of an xml-specification kindly provided by the **MERLIN project**: "MERLIN-Multilingual Platform for European Reference Levels: Interlanguage Exploration in Context" (project number: 518989-LLP-1-2011-1-DE-KA2-KA2MP).*

SWIKO – Transcription & annotation

The original learner texts…

↓

transcribed and annotated structurally…

↓

POS annotated…

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	original	doc_id	token	common.t	en.POS.ta	lemma	lttr	wclass	desc	stop	stem	idx	sntc	tag	markup	comment
2	I	SWI08_fE	I	PRO:PER	PP	I	1	pronoun	NA	FALSE	NA	1	1	NA	NA	NA
3	think	SWI08_fE	think	VER:PRE	VVP	think	5	verb	NA	FALSE	NA	2	1	NA	NA	NA
4	is	SWI08_fE	is	VER:PRE	VBZ	be	2	verb	NA	FALSE	NA	3	1	NA	NA	NA
5	not	SWI08_fE	not	ADV	RB	not	3	adverb	NA	FALSE	NA	4	1	NA	NA	NA
6	good	SWI08_fE	good	ADJ	JJ	good	4	adjective	NA	FALSE	NA	5	1	NA	NA	NA
7	,	SWI08_fE	,	$,	,	,	1	comma	NA	FALSE	NA	6	1	NA	NA	NA
8	beaucaus	SWI08_fE	because	PRP	IN	because	7	preposition	NA	FALSE	NA	7	1	error	NA	NA
9	the	SWI08_fE	the	DET	DT	the	3	determine	NA	FALSE	NA	8	1	NA	NA	NA
10	students	SWI08_fE	students	NN	NNS	student	8	noun	NA	FALSE	NA	9	1	NA	NA	NA
11	aren't	SWI08_fE	are	VER:PRE	VBP	be	3	verb	NA	FALSE	NA	10	1	NA	NA	NA
12	aren't((2))	SWI08_fE	n't	ADV	RB	n't	3	adverb	NA	FALSE	NA	11	1	NA	NA	NA
13	wiht	SWI08_fE	whit	NN	NN	whit	4	noun	NA	FALSE	NA	12	1	NA	NA	NA
14	his	SWI08_fE	his	PRO:POS	PP$	his	3	pronoun	NA	FALSE	NA	13	1	NA	NA	NA
15	family	SWI08_fE	family	NN	NN	family	6	noun	NA	FALSE	NA	14	1	NA	NA	NA
16	,	SWI08_fE	,	$,	,	,	1	comma	NA	FALSE	NA	15	1	NA	NA	NA
17	for	SWI08_fE	for	PRP	IN	for	3	preposition	NA	FALSE	NA	16	1	NA	NA	NA
18	the	SWI08_fE	the	DET	DT	the	3	determine	NA	FALSE	NA	17	1	NA	NA	NA
19	first	SWI08_fE	first	ADJ	JJ	first	5	adjective	NA	FALSE	NA	18	1	NA	NA	NA
20	month	SWI08 fE	month	NN	NN	month	5	noun	NA	FALSE	NA	19	1	NA	NA	NA

by TreeTagger (Schmid 2013), wrapped in the koRpus package (Michalke 2017) in R (R Core Team 2022).

SWIKO – Transcription & annotation

The original learner texts…

↓

transcribed and annotated structurally…

↓

POS annotated…

↓

and imported to EXMARaLDA for further analyses.

	0	1	2	3	4	5	6	7	8	9	10
Mol21 [tok]	I	think	is	not	good	,	beaucaus	the	students	aren't	
Mol21 [ctok]	I	think	is	not	good	,	because	the	students	are	n't
Mol21 [lemma]	I	think	be	not	good	,	because	the	student	be	n't
Mol21 [clemma]											
Mol21 [commonPOS]	PRO:PER	VER:PRE	VER:PRE	ADV	ADJ	$,	PRP	DET	NN	VER:PRE	ADV
Mol21 [lg-specific POS]	PP	VVP	VBZ	RB	JJ	,	IN	DT	NNS	VBP	RB
Mol21 [cpos]											
Mol21 [tag]							error				
Mol21 [markup]											
[comment]											

Schmidt & Wörner 2009

SWIKO – Scope (as of 31.03.2022)

Language	German		French		English		TOTAL
	FL	L1	FL	L1	FL	L1	
Class level	10 & 11	11 & 12	11 & 12	10 & 11	10 - 12	10	
Written							
Originals	524	355	396	426	770	103	**2'574**
Transcripts	499	344	*299*	*149*	475	101	**1'867**
Tokens	*23121*	*23648*	*17208*	*10425*	*33239*	8490	**116'310**
Spoken							
Originals	49	72	57	64	140	28	**410**
Transcripts	42	72	7	0	106	8	**235**
Tokens	2157	13533	174	0	15009	3028	**33'901**

Lexical features

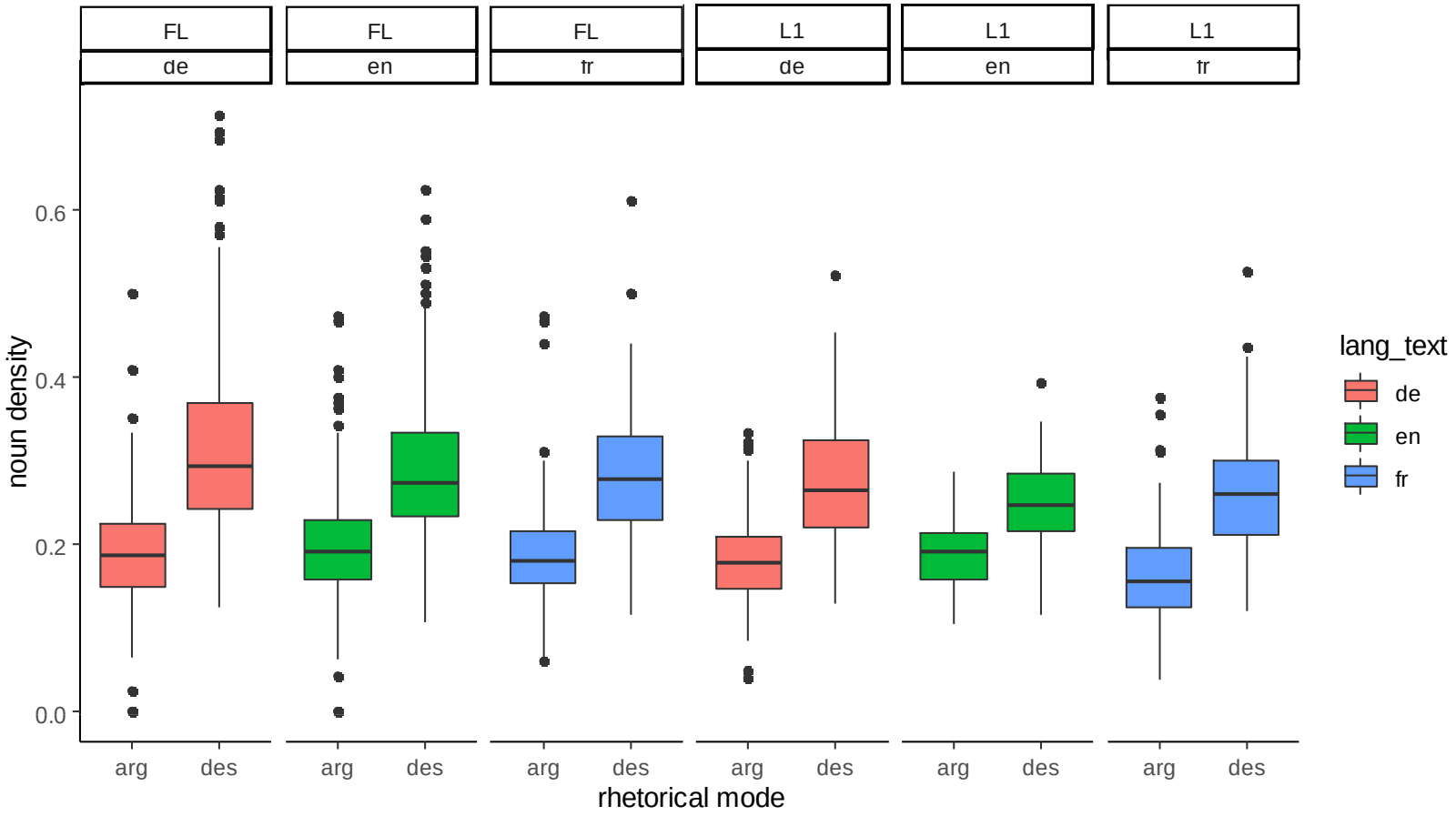
Lexical Richness in Read 2000, *Lexical Complexity* in Bulté & Housen 2012

- Lexical *density* *(Ure 1971)*
- Lexical *diversity* *(Treffers-Daller et al., 2018; McCarthy & Jarvis 2010)*
- Lexical *sophistication* *(Kyle & Crossley 2015)*

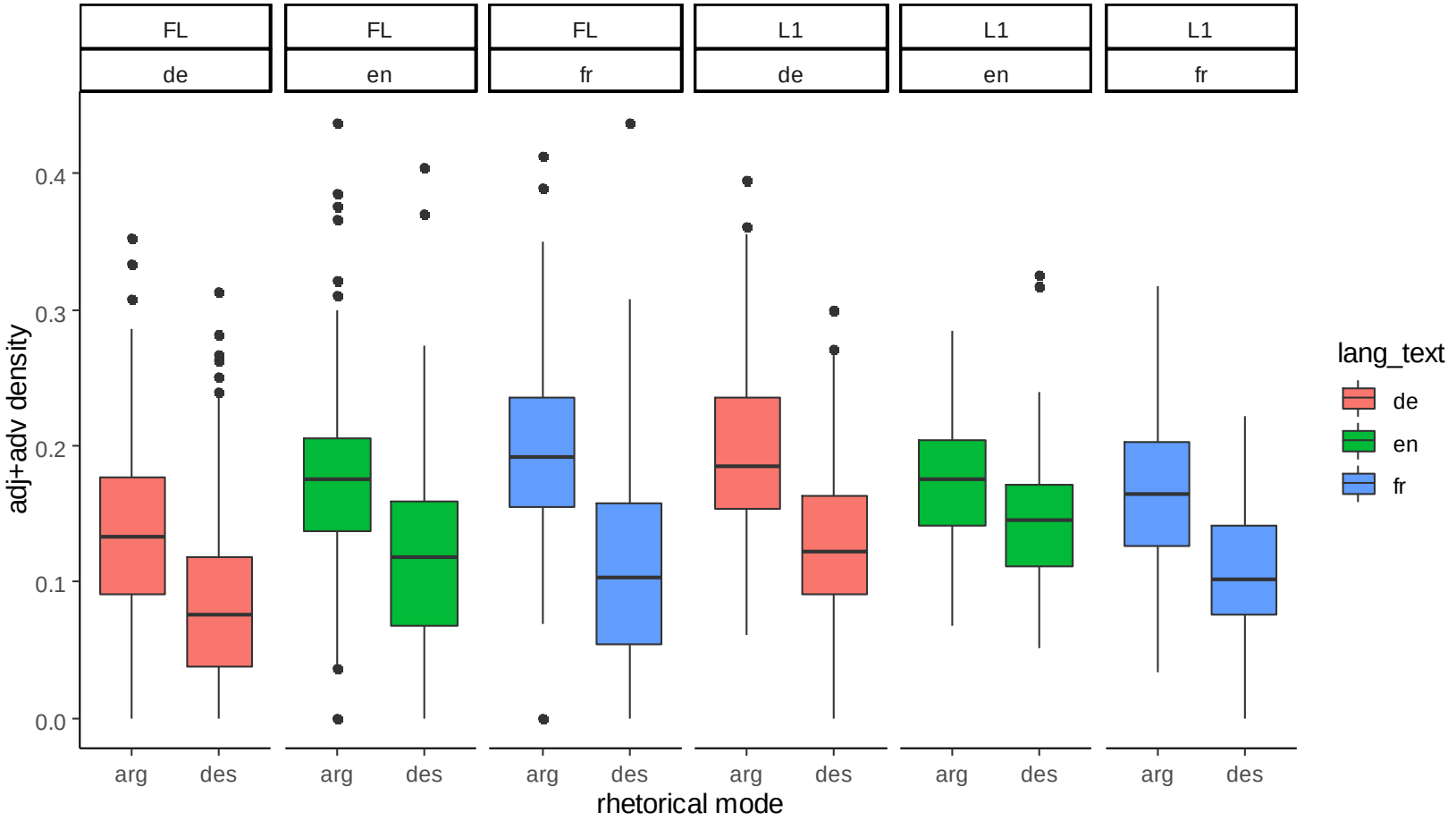
- *Lexical errors*

Analyses using the koRpus package (Michalke 2017) in R (R Core Team 2022)

Noun density by rhetorical type (argumentative vs. descriptive)



Adj + adv density by rhetorical type (argumentative vs. descriptive)



Lexical features

Lexical Richness in Read 2000, cf. *Lexical Complexity* in Bulté & Housen 2012

- Lexical *density* *(Ure 1971)*
  (ratio of content words, i.e., ***nouns***, verbs, adjectives, adverbs)
- Lexical *diversity* *(Treffers-Daller et al., 2018; McCarthy & Jarvis 2010)*
  (Guiraud, HD-D)
- Lexical *sophistication* *(Kyle & Crossley 2015)*
  (frequency based: ratio of lemmas beyond the top 1000 frequent lemmas; reference corpora: CoCa, Lexique, DeReKo)

- *Lexical errors*

Analyses using the koRpus package (Michalke 2017) in R (R Core Team 2022)

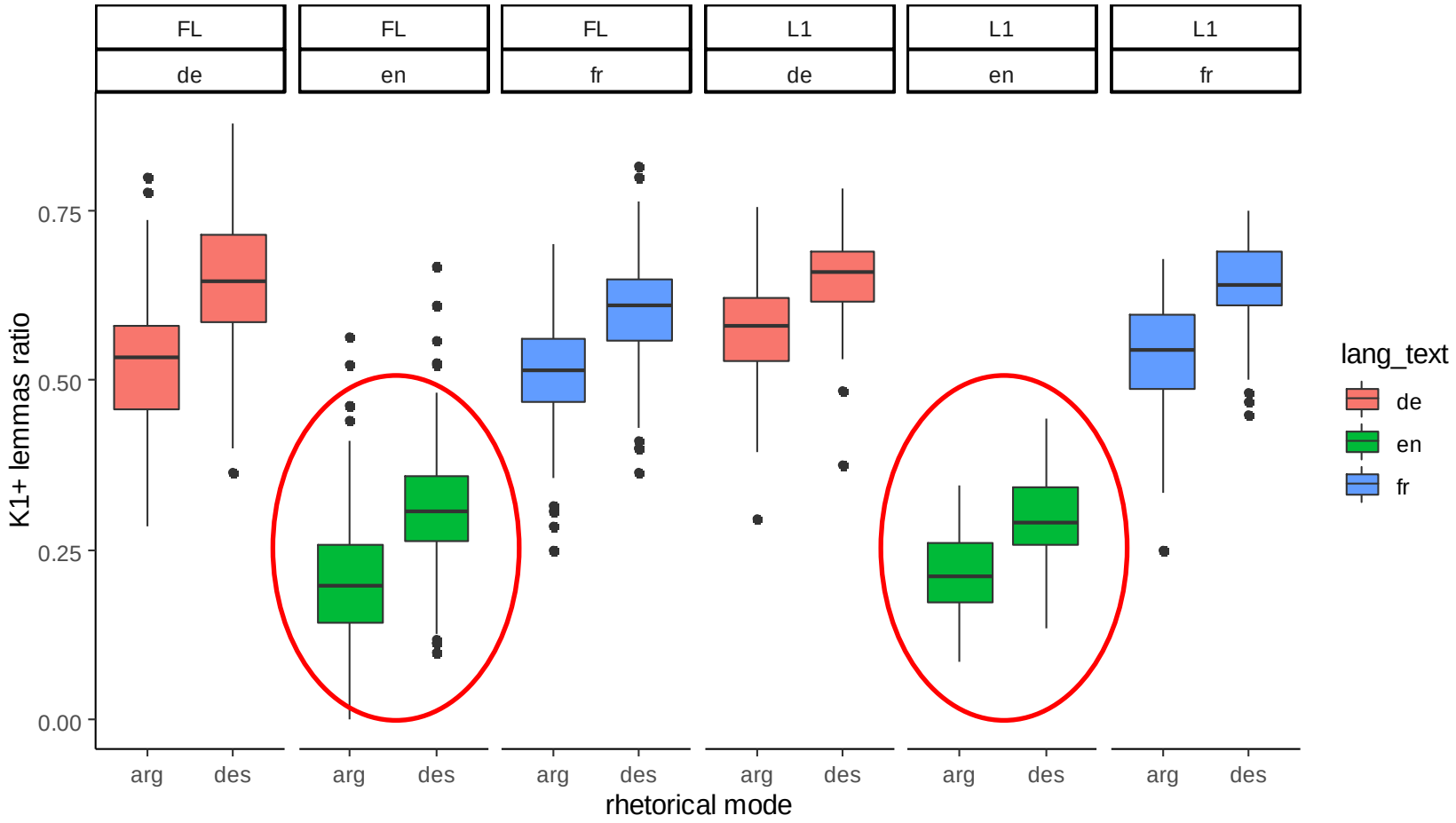
Rhetorical mode (descriptive vs. argumentative)

		density (noun ratio)	diversity (Guiraud/HDD)	sophistication (K1+ ratio)
FL	de	d > a	d > a	d > a
	en			
	fr			
L1	de			
	en			
	fr			

→ Across contexts and languages:
descriptive = more dense & more sophisticated

(e.g., Berman & Nir-Sagiv 2007, Olinghouse & Wilson 2012 for L1; Alexopoulou et al. 2017, Qin & Uccelli 2016, Bi 2020 for L2; Weiss et al. 2022, Yoon & Polio 2017 for both L1 and L2)

Lexical sophistication by rhetorical type



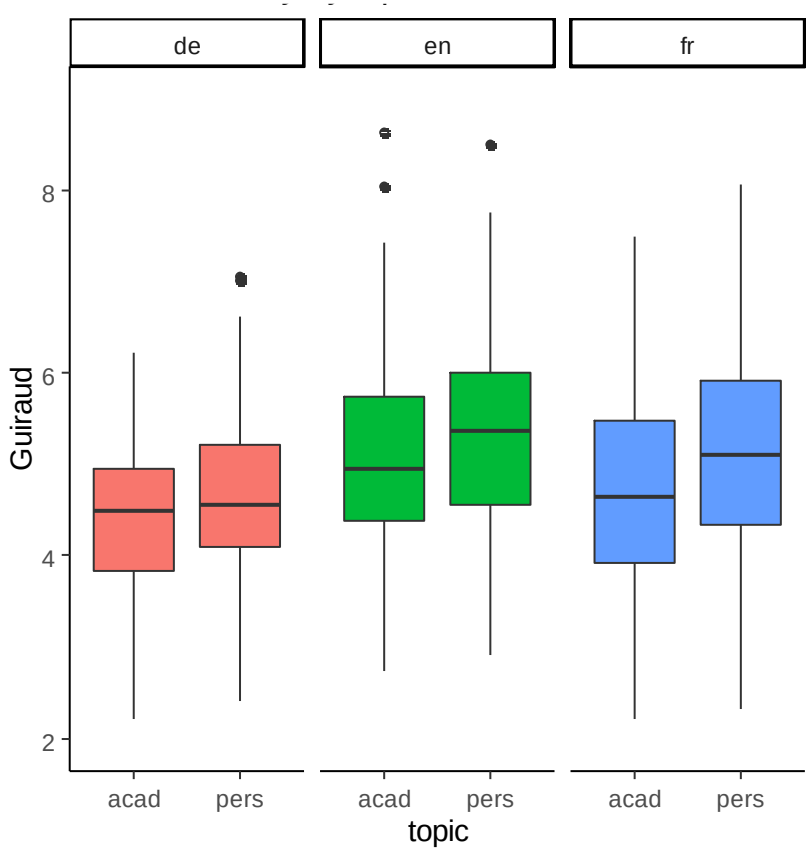
Topic / familiarity (personal vs. academic)

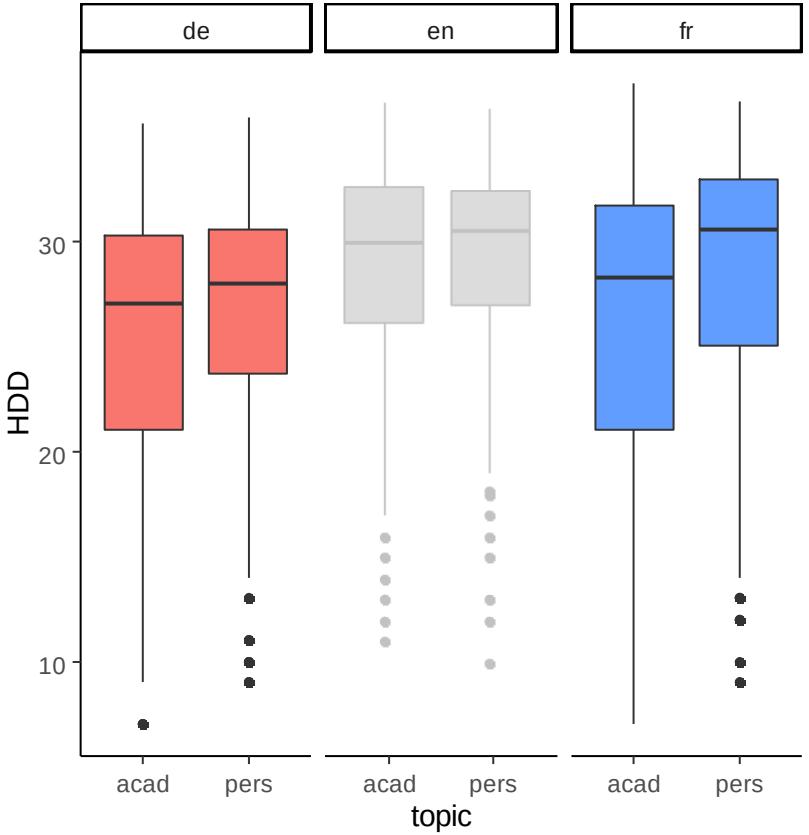
		density (noun ratio)	diversity (Guiraud)	sophistication (K1+ ratio)
FL	de	p < a	p > a	p > a
	en			
	fr			
L1	de	p < a		
	en			
	fr			

→ Foreign languages only:
personal = slightly less dense, more diverse & elaborate

(Abdi Tabari et al. 2021, Qin & Uccelli 2020, Yoon 2017, Yu 2010 for L2)

Lexical diversity by topic familiarity (FL)





Structure (more vs. less)

		density (noun ratio)	diversity (Guiraud)	sophistication (K1+ ratio)
FL	de	m > l		m > l
	en		m < l	
	fr			
L1	de			
	en			
	fr			m > l

→ Across contexts and languages:
more structured = more dense & sophisticated

(«provision of ideas & macro-structure» in Ong 2014, Révész et al. 2017, Yoon 2021 for L2)

Example: SWI02 vs. SWI07 (DaF)

SWI02, Es148: describe a graph (descriptive, academic, more structure)

Ein katz essen vier Hunden Mause in einen Monate. In die Schweiz, Es gibt 1,5 millionen Katze und ein Katze cost 1000 für zwölf monat.

noun ratio 36% Guiraud 3.8 K1+ ratio 39%

SWI07, Es148: discuss later school hours (argumentative, personal, less structure)

Ja, Das ist sehr gut weil, wir habe + schlafen weil, Wir sind sehr müde in die schule. Auch, ich habe 30 minuten minus die Schule normal. Aber, Wir haben finir plus tard in 5.30

noun ratio 9% Guiraud 4.2 K1+ ratio 46%

Summary

- Effects of task characteristics on lexical features
  - Rhetorical type → density & sophistication
  - Topic → density, diversity & sophistication, FL only
  - Structure → density & sophistication
- More effects in FL than L1
- Most differences in German, least in French

Limitations & further directions

- Limitations
  - Short texts → reliability of measures?
  - Task variables: fuzzy boundaries, combinations
  - Not necessarily reflective of text quality
    (cf. Studer & Hicks 2022)

- Outlook
  - Further CAF annotation & analyses (ratings!)
  - Transfer back to school context: SWIKOweb, DDL

Conclusion

- Complex effects of task variables on lexical features in adolescents' writing (SWIKO)
  → relevant for education & research

- Many similar across all three languages, but some observations language-specific
  → widen English focus

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Questions & comments?

Thank you for your attention!

Research Centre on Multilingualism
Institute of Multilingualism
Murtengasse 24
CH-1700 Freiburg

Mail: nina.hicks@unifr.ch

Web: www.institut-plurilinguisme.ch/en