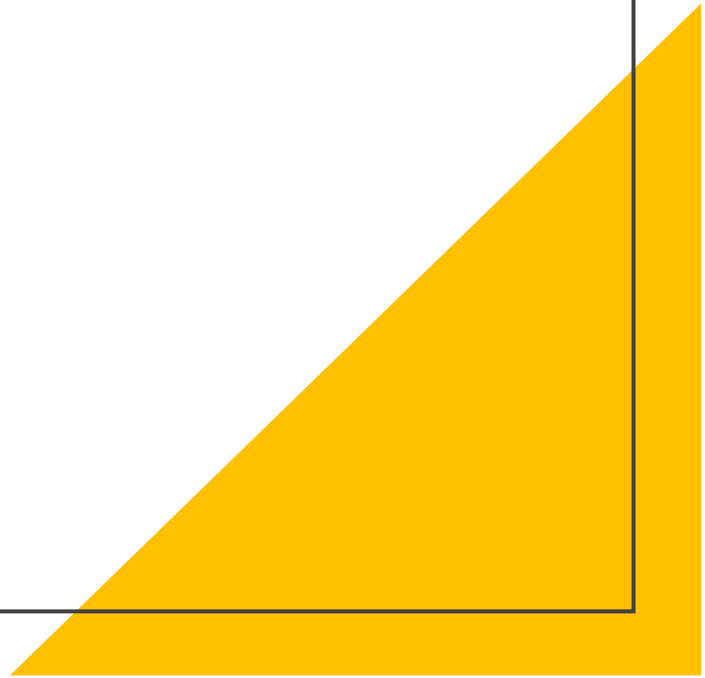


MEASURE PHRASES AS MODIFIERS OF NEGATIVE ADJECTIVES

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MEASURE PHRASES (MPs)

(1) five feet tall

(Schwarzschild, 2005, p. 208)

(2) This rope is sixty feet long.

(Hofstetter, 2013, p. 183)

- MPs combine numeral and measure (e.g., height, length)
- MPs typically modify gradable adjectives, but this does not apply to all adjectives

(3) *five dollars expensive

(Schwarzschild, 2005, p. 209)

ANTONYMS AND POLARITY

- Gradable adjectives divide into pairs of antonyms with opposite meaning (e.g., *tall* – *short*, *long* – *short*, *expensive* – *cheap*)
- Antonyms refer to same measurement scale but differ in terms of polarity (positive vs. negative)

(4) height: 0 ----- *tall(a)* ----- • ----- *short(a)* -----> ∞ (Kennedy, 2001, p. 57)

MPs AND POLARITY

- MPs are incompatible with negative adjectives according to seminal papers (Kennedy, 2001; Schwarzschild, 2005)

- (5) a. ?‘The Dream of a Ridiculous Man’ is 21 pages short. (Kennedy, 2001, p. 59)
b. ‘The Dream of a Ridiculous Man’ is 21 pages long.

NEGATIVE MP CONSTRUCTIONS

(6) Greta Thunberg ist 18 Jahre jung und die Ikone der Fridays for Future-Bewegung.

- **Is there empirical evidence of negative MP constructions in German and English?**
- **To which extent do previous approaches to semantic analysis need to be revised? What are the premises for future models?**

HOFSTETTER (2013)

- Empirical study (acceptability judgement task) with English and German participants provides evidence that MP constructions are generally available in both languages
- German participants accept negative MP constructions vs. English participants does not accept negative MP constructions

(7) a. One of his brothers is at least six feet tall. (Hofstetter, 2013, p. 199)

b. *The woman I dated yesterday was five feet short.

(8) An dieser Stelle fehlt noch ein drei Zentimeter schmales Brett.

METHODS

- Corpus: Deutsches Referenzkorpus (DeReKo), Corpus of Contemporary American English (COCA)
- Items: MP constructions by Hofstetter (2013)
- Query: *measure /+w/ adjective* (DeReKo), *measure adjective* (COCA)

(10) Dazu sind ein paar Punkte gut zu wissen.
(Nürnberger Nachrichten, 21/11/2020)

(11) a. Ich war sechseinhalb Jahre alt (Zeit Christ und Welt, 28/05/2020)
b. Er ist 47 Jahre alt und hat Haare verloren (Zeit Wissen, 08/12/2020)

RESULTS

negMPC	f ≥ 400	f ₁	f ₂	MI
<i>Jahre jung</i>	15.288	8.368.988	524.790	5,146
<i>Grad kalt</i>	1.850	570.222	201.770	7,353
<i>Minuten kurz</i>	842	2.236.867	2.746.348	0,479
<i>Gramm leicht</i>	535	202.050	1.387.887	4,278
<i>Meter klein</i>	440	1.929.509	767.808	1,595
Mean	3.791	2.661.527	1.125.721	3,77
SD	6.451	3.305.824	1.004.747	2,76

posMPC	f	f ₁	f ₂	MI
<i>Jahre alt</i>	754.685	8.368.988	1.308.312	9,453
<i>Grad warm</i>	6.886	570.222	154.004	9,639
<i>Minuten lang</i>	70.413	2.236.867	2.106.534	7,247
<i>Gramm schwer</i>	6.087	202.050	1.796.761	7,414
<i>Meter groß</i>	52.728	1.929.509	1.460.524	7,572
Mean	178.160	2.661.527	1.365.227	8,27
SD	323.523	3.305.824	744.167	1,18

negMPC	f ≥ 15	f ₁	f ₂	MI
<i>minutes early</i>	443	214.660	262.536	2,977
<i>years young</i>	122	1.032.375	296.619	-1,325
<i>feet short</i>	94	150.058	151.943	2,046
<i>feet short</i>	94	150.058	151.943	2,046
<i>minutes short</i>	18	214.660	151.943	-0,855
Mean	154	352.362	202.997	0,98
SD	166	381.509	70.939	1,93

posMPC	f	f ₁	f ₂	MI
<i>minutes late</i>	1.134	214.660	187.951	4,815
<i>years old</i>	48.506	1.032.375	425.734	6,788
<i>feet tall</i>	3.557	150.058	39.643	9,226
<i>feet long</i>	2.388	150.058	583.172	4,773
<i>minutes long</i>	504	214.660	583.172	2,012
Mean	11.218	352.362	363.934	5,52
SD	20.878	381.509	242.943	2,68

RESULTS

- (12) a. Nächstes Jahr wird sie 60 Jahre alt, mit den Hunden hat sie ihr halbes Leben verbracht. (Zeit Wissen, 08/12/2020)
b. Beethoven ist knapp 22 Jahre jung, als er im November 1792 nach Wien kommt. (Zeit Geschichte, 24/03/2020)
- (13) a. By the time I was ten years old, I began to help him on the farm after school. (<http://blog.agcocorp.com/2012/11/growing-up-on-the-farm-by-elias-a/>, 2012)
b. Cervi, who is 86 years young, is coming out of retirement for an appearance at RetroRama Classic Collectibles Con, for what promoters call "his first ever convention appearance!" (Detroit Free Press, 12/10/2010)

DISCUSSION

- Corpus study indicates that MPs can be compatible with negative adjectives in both English and German
- **Semantic analysis must not reject negative MP constructions a priori as ungrammatical!**
- Corpus study shows high number of misclassifications, statistical analysis not feasible (e.g., is German less restrictive than English in terms of compatibility of MPs and negative adjectives?)

(14) The ball flies the green which leads to a testing chip, which comes up three-and-a-half feet short. (The New York Times, 23/09/2018)

STATE OF RESEARCH

- Kennedy (2001)
 - Schwarzschild (2005)
- } Positive MP constructions
-
- Doetjes (2012)
 - Hofstetter (2013)
- } Positive and negative MP constructions

KENNEDY (2001)

- Incompatibility of negative MP constructions directly results from adjective scale and is based on degree sort mismatch (i.e., negative adjectives denote half-open intervals vs. MPs only refer to closed intervals)

(4) height: 0 ----- *tall(a)* ----- • ----- *short(a)* ----- > ∞ (Kennedy, 2001, p. 57)

X Incompatibility of negative MP constructions conflicts with corpus study

SCHWARZSCHILD (2005)

- Incompatibility of negative MP constructions due to half-open intervals that cannot be licensed by Homonym rule (cf. Kennedy, 2001)

(15) Homonym Rule: from degrees to intervals. (Schwarzschild, 2005, p. 216)

If A has meaning A' that relates individuals to degrees then A has a secondary meaning relating individuals to sets of degrees (intervals).

The secondary meaning is given by:

(16) Homonym Rule applies to *tall, wide, deep, thick, old, long, high*.

X Incompatibility of negative MP constructions conflicts with corpus study

DOETJES (2012)

- Compatibility of positive and negative MP constructions in Dutch
 - Negative MP constructions presuppose deviation below adjective standard (i.e., evaluative vs. neutral reading of positive MP constructions) for attributive adjectives
- X Only Dutch data (acceptability varies compared to English or German)

HOFSTETTER (2013)

- Based on Schwarzschild (2005), positive and negative adjectives show a second lexical entry in MP constructions
 - Negative MP constructions presuppose deviation below adjective standard for attributive and predicative adjectives
- X Incompatibility of negative MP constructions in English conflicts with corpus study

ENTAILMENT VS. IMPLICATURE

(12) b. Beethoven ist knapp 22 Jahre jung, als er im November 1792 nach Wien kommt. (Zeit Geschichte, 24/03/2020)

- Negative MP constructions are entailments according to defeasibility and reinforcement test (Coppock & Champollion, 2021)

(18) a. #Beethoven ist 22 Jahre jung, als er nach Wien kommt, aber er ist nicht jung.
b. #Beethoven ist 22 Jahre jung, als er nach Wien kommt, und er ist jung.

ENTAILMENT VS. PRESUPPOSITION

- Negative MP constructions are entailments according to projection test (Coppock & Champollion, 2021)

- (19) a. Beethoven ist nicht 22 Jahre jung, als er nach Wien kommt.
⇒ Beethoven ist jung.
- b. Falls Beethoven 22 Jahre jung ist, als er nach Wien kommt, dann ist er vermutlich kaum bekannt.
⇒ Beethoven ist jung.
- c. Vielleicht ist Beethoven 22 Jahre jung, als er nach Wien kommt.
⇒ Beethoven ist jung.

SEMANTIC ANALYSIS

(19) a. Beethoven ist 22 Jahre alt, als er nach Wien kommt.

⇒ Beethoven ist alt, als er nach Wien kommt.

b. Beethoven ist 22 Jahre jung, als er nach Wien kommt.

⇒ Beethoven ist jung, als er nach Wien kommt.

- Neutral reading of positive MP constructions vs. evaluative reading of negative MP constructions ('below adjective standard')
- Truth-conditional analysis of negative MP constructions vs. pragmatic inferences (implicatures, presupposition)?

PROBLEM

(20) Jetzt wird er 90 Jahre jung. Das bringt viele zum Staunen, man schätzt ihn jünger ein. (Niederösterreichische Zeitung, 11/09/2020)

(21) a. ?Jetzt wird er 90 Jahre jung, aber er ist nicht jung.
b. ?Jetzt wird er 90 Jahre jung und er ist jung.

(22) Jetzt wird er 90 Jahre jung.
 ↷ Jetzt wird er 90 Jahre alt, aber er wirkt noch (sehr) jung.

- **Potential implicatures of negative MP constructions require future research!**

CONCLUSION

1. Is there empirical evidence of negative MP constructions in German and English?
 2. To which extent do previous approaches to semantic analysis need to be revised? What are the premises for future models?
- Corpus study attests negative MP construction in German and English
 - Semantic analysis must not reject negative MP constructions as ungrammatical, but most approaches do
 - Future research needs to investigate (truth-conditional) entailments vs. implicatures of negative MP constructions

THANK YOU!

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Corpus	Measure	negAdj	posAdj	Corpus size	f(measure)	f(negAdj)	f(posAdj)	f(negMPC)	f(posMPC)	MI(negMPC)	MI(posMPC)
DeReKo	Jahre	jung	alt	10168809012	8368988	524790	1308312	15288	754685	5,145541278	9,453049795
DeReKo	Grad	kalt	warm	10168809012	570222	201770	154004	1850	6886	7,353224887	9,639109659
DeReKo	Minuten	kurz	lang	10168809012	2236867	2746348	2106534	842	70413	0,478977026	7,247498039
DeReKo	Gramm	leicht	schwer	10168809012	202050	1387887	1796761	535	6087	4,278015243	7,413627404
DeReKo	Meter	klein	groß	10168809012	1929509	767808	1460524	440	52728	1,594602972	7,571856345
DeReKo	Meter	kurz	lang	10168809012	1929509	2746348	2106534	344	49194	-0,599188936	6,9433843
DeReKo	Meter	flach	tief	10168809012	1929509	76598	565307	266	28762	4,193892657	8,066830667
DeReKo	Zentimeter	dünn	dick	10168809012	347733	92281	157784	85	4082	4,751456126	9,563280282
DeReKo	Euro	billig	teuer	10168809012	8858275	117414	381032	73	2372	-0,486583044	2,837172968
DeReKo	Grad	gerade	gebogen	10168809012	570222	3655148	7999	65	17	-1,656863089	5,244126396
DeReKo	Zentimeter	schmal	breit	10168809012	347733	36591	290747	44	4618	5,136041602	8,859458884
DeReKo	Meter	niedrig	hoch	10168809012	1929509	122466	1538509	40	66692	0,783535673	7,835753966
DeReKo	Euro	arm	reich	10168809012	8858275	272911	501589	38	91	-2,645306194	-2,263514232
DeReKo	Kilometer	nah	weit	10168809012	1294984	209595	2236415	29	19858	0,119665044	6,123605038
DeReKo	Prozent	unwahrscheinlich	wahrscheinlich	10168809012	8811291	124008	731580	27	512	-1,992676483	-0,308146425
DeReKo	Dezibel	leise	laut	10168809012	22878	158263	3253842	18	268	5,659718868	5,194134773
DeReKo	Punkte	ruhig	aggressiv	10168809012	1412134	308706	96600	18	3	-1,251962894	-2,160786965
DeReKo	Stundenkilometer	langsam	schnell	10168809012	33714	562695	2143356	16	2462	3,100377863	8,436546465
DeReKo	Punkte	schlecht	gut	10168809012	1412134	806850	6978433	15	1508	-2,901064266	0,63793513
DeReKo	Minuten	verfrüht	verspätet	10168809012	2236867	19103	31555	9	982	1,098797019	7,14438183
DeReKo	Quadratmeter	winzig	riesig	10168809012	413556	16696	78113	3	8	2,143456109	1,332433444
DeReKo	Kilogramm	dünn	dick	10168809012	257131	92281	157784	2	4	-0,222458378	0,003696248
DeReKo	Grad	stumpf	spitz	10168809012	570222	50868	46145	1	1	-1,512203261	-1,371619223
DeReKo	Punkte	hässlich	schön	10168809012	1412134	21762	1094940	0	45		-1,756581186
DeReKo	Einheiten	schwach	stark	10168809012	165740	177979	1830664	0	41		0,458485777
DeReKo	Stundenkilometer	schwach	stark	10168809012	33714	177979	1830664	0	6		-0,01660161
DeReKo	Lux	dunkel	hell	10168809012	37695	151270	98534	0	4		3,453012111
DeReKo	Amprere	schwach	stark	10168809012	3158	177979	1830664	0	4		2,814700619
DeReKo	IQ-Punkte	dumm	intelligent	10168809012	257	98846	45196	0	0		
DeReKo	Punkte	rückschrittlich	fortschrittlich	10168809012	1412134	700	10109	0	0		

Corpus	Measure	negAdj	posAdj	Corpus size	f(measure)	f(negAdj)	f(posAdj)	f(negMPC)	f(posMPC)	MI(negMPC)	MI(posMPC)
COCA	minutes	early	late	1001610938	214660	262536	187951	443	1134	2,976988369	4,815189078
COCA	years	young	old	1001610938	1032375	296619	425734	122	48506	-1,325374754	6,788422204
COCA	feet	short	tall	1001610938	150058	151943	39643	94	3557	2,045932533	9,226181103
COCA	feet	short	long	1001610938	150058	151943	583172	94	2388	2,045932533	4,772539561
COCA	minutes	short	long	1001610938	214660	151943	583172	18	504	-0,855264465	2,011699215
COCA	feet	low	high	1001610938	150058	140790	397119	12	2311	-0,813708473	5,279604049
COCA	pounds	light	heavy	1001610938	43157	214853	70128	4	6	-1,210622281	0,989627653
COCA	pounds	thin	thick	1001610938	43157	41646	37143	3	3	0,741440302	0,906527892
COCA	feet	narrow	wide	1001610938	150058	31316	73748	1	1493	-2,230097961	7,078196513
COCA	inches	flat	deep	1001610938	36973	39902	112975	1	524	-0,558682852	6,973269558
COCA	inches	thin	thick	1001610938	36973	41646	37143	1	458	-0,620399727	8,383891651
COCA	percent	unlikely	likely	1001610938	357478	27372	189201	1	15	-3,288233088	-2,170489449
COCA	degrees	cold	warm	1001610938	39757	108743	59380	1	2	-2,10980921	-0,236935674
COCA	dollars	cheap	expensive	1001610938	86692	33782	50790	1	0	-1,547903292	
COCA	light years	remote	distant	1001610938	1481	23558	23259	0	12		8,446780201
COCA	dollars	poor	rich	1001610938	86692	121423	84501	0	2		-1,870616964
COCA	units	weak	strong	1001610938	33206	36422	152005	0	2		-1,333240504
COCA	degrees	straight	bent	1001610938	39757	89754	17925	0	1		0,491068301
COCA	points	bad	good	1001610938	142632	286811	1130305	0	1		-7,330543779
COCA	square feet	small	large	1001610938	5424	323442	227507	0	0		
COCA	miles per hour	slow	fast	1001610938	3204	66678	95078	0	0		
COCA	lux	dark	bright	1001610938	681	127422	50787	0	0		
COCA	decibels	quiet	loud	1001610938	715	59290	33962	0	0		
COCA	degrees	obtuse	acute	1001610938	39757	743	10823	0	0		
COCA	amperes	weak	strong	1001610938	44	36422	152005	0	0		
COCA	miles per hour	weak	strong	1001610938	3204	36422	152005	0	0		
COCA	IQ points	stupid	intelligent	1001610938	105	66673	20710	0	0		
COCA	points	ugly	beautiful	1001610938	142632	23973	120762	0	0		
COCA	points	calm	aggressive	1001610938	142632	37870	26818	0	0		
COCA	points	reactionary	progressive	1001610938	142632	2063	20389	0	0		