

# Adjectives and Telicity – An Empirical Study of Resultative Adjective Constructions in German

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(1) The sink emptied.

(2) She drank the juice.

(3) Sie trank aus.  
She drank up

**(4) Sie trank den Saft leer.**  
She drank the juice empty

- ❑ **Theoretical background**
- ❑ **Previous experimental findings for German**
- ❑ **Our study: Interpretation of resultative adjective constructions by German-speaking adults**
- ❑ **Discussion**

# Background: Semantic and pragmatic telicity

## Semantic telicity

Culmination point is entailed and entailment cannot be cancelled

(3) She drank up.

(4) Sie trank den Saft leer, ... # aber sie ließ etwas übrig.

She drank the juice empty, ... # but she left a sip.

→ Only telic interpretation possible

(Filip, 2008; Filip 2014; Talmy, 1991; van Hout, 1998; Wechsler, 2005)

# Background: Semantic and pragmatic telicity

## Pragmatic telicity

Telic interpretation arises via conversational implicature of culmination point (which is cancellable)

- (1) The sink emptied, ... but not entirely.
- (2) She drank the juice, ... but she left a sip.

→ Telic and atelic interpretation possible

(Hay et al., 1999; Filip, 2008; Filip 2014; Kennedy, 2012; Krifka, 1989; Piñón, 2008; Talmy, 1991)

# Background: Measure of change function

## Measure of change function

measures degree to which an object changes relative to a scalar dimension over course of an event (Kennedy/Levin, 2008)

### Degree achievement verbs

- (1) a. The sink emptied. → telic and atelic interpretation  
 b. The gap widened. → atelic interpretation

Interpretation related to scalar properties of adjectival base

- Maximal endpoint for upper closed scale adjectives (*empty*)  
 → Culmination point implicated
- No endpoint for open scale adjectives (*wide*)  
 → No culmination point available

(Deo et al., 2013; Hay et al., 1999; Winter, 2006)

# Background: Measure of change function

## Measure of change function

measures degree to which an object changes relative to some scalar dimension over course of an event (Kennedy & Levin, 2008)

### **Incremental theme objects** (Kennedy, 2012)

- (2) a. She drank the juice. → telic and atelic interpretation  
b. She drank juice. → atelic interpretation

Interpretation related to nominal reference

- Quantized NPs (e.g. specific definite) denote objects with precise limits  
→ **Culmination point implicated**
- Non-quantized NPs do not specify quantized amount  
→ **Event description can hold for subevents**

(Hay et al., 1999; Krifka, 1989; Kennedy, 2012; Piñón, 2008; Rappaport Hovav & Levin, 2002)

# Background: Measure function

## Measure function

assigns a unique degree to individuals (e.g., Cresswell, 1976; Kennedy & McNally, 2005; Solt, 2016)

## Gradable adjectives

(4) Sie trank den Saft **leer**. → telic interpretation

She drank the juice empty

Interpretation triggered by scalar properties of adjective:  
upper closed scale adjectives (*empty*) encode maximal endpoint  
as part of lexical meaning

→ Culmination point entailed

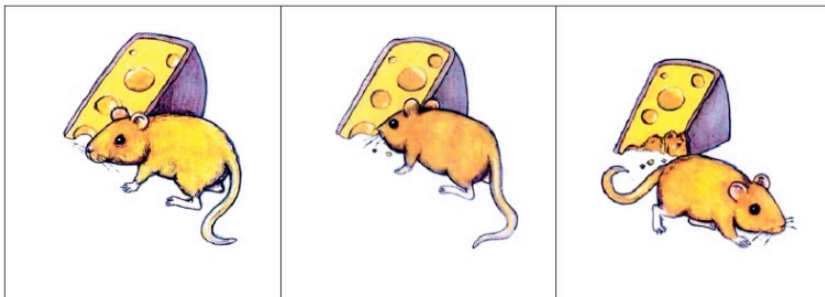
(Haider, 2016; Wechsler, 2005a/b)



# Experimental findings: semantic telicity

## Resultative particles in German (Schulz/Penner, 2002)

### Non-culminating event



*Hat die Maus gegessen?*

‘Did the mouse eat?’

**Yes**

*Hat die Maus **auf**gegessen?*

‘Did the mouse eat up?’

**No**

### Results

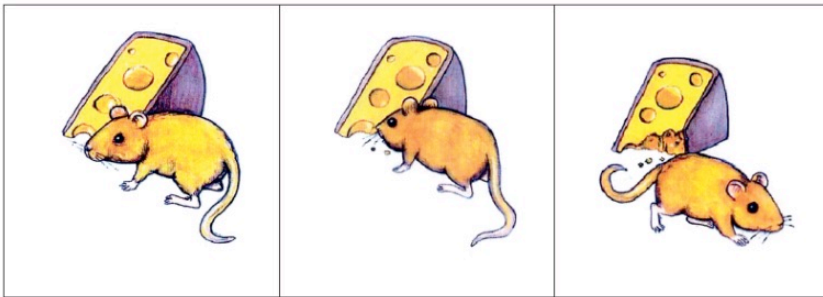
- ❖ Verbs of consumption: 100% yes-responses
  - ❖ Verbs of consumption + resultative particle: 2.1% yes-responses
- Adults assign semantically telic interpretation to resultative particles

(see van Hout, 2018; Martin et al., 2020 for cross-linguistic comparison)

# Experimental findings: pragmatic telicity

## Specific definite NPs in German (Schulz/Penner, 2002; Schulz/Ose, 2008)

### Non-culminating event



*Hat die Maus **den Käse** gegessen?*  
‘Did the mouse eat the cheese?’

## Results

Verbs of consumption + specific definite NPs: 52% to 73% yes-responses

→ Adults assign pragmatically telic interpretation to definite NPs

(see van Hout, 2018; Martin et al., 2020 for cross-linguistic comparison)

## Empirical question:

How do adults interpret resultative adjective constructions?

## Theoretical question:

What is the relation between measure functions encoded by upper closed scale adjectives and measure of change functions encoded by incremental theme objects?

(Q1) Do German-speaking adults assign a semantically telic interpretation to resultative adjective constructions?

(Q2) Do German-speaking adults assign a pragmatically telic interpretation to incremental theme verbs + specific definite NP?

# Experimental design

## Participants

21 German-speaking monolingual adults ( $\text{mean}_{\text{age}} = 25$  years) with no linguistic background

## Truth Value Judgment Task

- Two factors: Event Type (culminating/non-culminating) and Structure (adjective/no adjective)

*Hat er den Saft **leer** getrunken?*

has he the juice empty drunk

*Hat er den Saft getrunken?*

has he the juice drunk

- Data analysis: number of yes-answers (acceptance)

# Example item



# Expected answers

Event type	Structure	
	Adjective	No Adjective
Culminating	Yes	Yes
Non-Culminating	No	?

# Materials

- Four incremental theme verbs:  
*wischen* ‘wipe’, *föhnen* ‘blow-dry’, *trinken* ‘drink’, *bügeln* ‘iron’
- Four upper closed scale adjectives:  
*sauber* ‘clean’, *trocken* ‘dry’, *leer* ‘empty’, *glatt* ‘flat’
- Five different objects per verb (= 20 different scenarios each in culminating and non-culminating version)  
→ 5 experimental lists (latin-squared, pseudo-randomized)



## Individual testing with video software

### A. Pretest

8 items depicting the adjectives used in the task  
(„*Is this A?*“, all answers correct)

### B. Practice phase

2 items

### C. Test phase

16 items (4 per condition) +  
6 filler items (4 *no*/2 *yes*, all answers correct)

## Mean percentage of yes-answers per condition (SD)

Event type	Structure	
	Adjective	No Adjective
Culminating	98.8 (5.5)	98.8 (5.5)
Non-Culminating		

Event Type/Structure	Adjective	No Adjective
Culminating	yes	yes
Non-Culminating	no	?

# Group results

Generalized linear mixed effects model (*lme4*; Bates et al., 2021)

Fixed effects: event type, structure; random effects: participants, items

	Estimate	Pr(> z )
Intercept	2.1328	< .001
Structure	-2.2104	.039
Event type	-6.3428	< .001
Structure*Event type	-4.4208	.039

✓ **Main effect of structure**

Lower acceptance of adjective-structures than of structures w/o adjective

✓ **Main effect of event type**

Lower acceptance of non-culminating than of culminating events

✓ **Interaction structure\*event type**

Sig. difference between structures w/ and w/o adjective for non-culminating events ( $p = .002$ ) (pairwise comparisons, *emmeans*; Lenth et al., 2021)

# Individual results: non-culminating events

## Adjective structures

Number of yes-answers (max = 4)	Number of participants
0 (= consistent telic interpretation)	14
1	6
2	1
3	0
4 (= consistent atelic interpretation)	0

*Nein, sie hat ihn  
glatter gebügelt*  
No, she ironed it  
flatter

→ Most participants exhibit consistent telic interpretation

## Structures w/o adjectives

Number of yes-answers (max = 4)	Number of participants
0 (= consistent telic interpretation)	1
1	3
2	3
3	6
4 (= consistent atelic interpretation)	8

→ Variation *wrt* telic interpretation across and within participants

(Q1) Do German-speaking adults assign a semantically telic interpretation to **resultative adjective constructions**?

## YES

- ✓ Culminating events: telic interpretation (98.8% *yes*-answers)
- ✓ Non-culminating events: telic interpretation (91.5% *no*-answers)
- ✓ Inter- and intraindividual consistency regarding telic interpretations

(Q2) Do German-speaking adults assign a pragmatically telic interpretation to incremental theme verbs + specific definite NP?

## YES

- ✓ Culminating events: telic interpretation (98.8% *yes*-answers)
- ✓ Non-culminating events: telic (30% *no*-answers) and atelic (70% *yes*-answers)  
→ Telicity implicature often cancelled
- ✓ Inter- and intraindividual variation regarding telic interpretations

## Our results for German-speaking adults

... are in line with theoretical analyses & previous experimental findings:

- Incremental theme verbs do not lexicalize measure of change functions
- Specific definite NPs implicate culmination point (= weak telicity marker)



# Conclusions

## Our results for German-speaking adults

... provide first empirical evidence that:

- upper closed scale adjectives (*sauber* ‘clean’, *trocken* ‘dry’, *leer* ‘empty’, *glatt* ‘flat’) entail culmination point (= strong telicity marker)



**Entailed meaning overrides implicated meaning:**  
if a measure function (via the adjective) and a measure of change function (via the quantized NP) are available, the former dominates the latter

## The next steps...

### Regarding the experimental results

- Which role do verb classes (e.g., consumption, surface contact) play for the telic interpretation of predicates with quantized NPs?
- To what extent are the results influenced by the tense and aspect properties in German (imperfective use or perfect and simple past, see Martin et al., 2020)?

### Regarding child acquisition

- Do children recognize that upper closed scale adjectives are strong telicity markers as early as verb particles? (see overviews in Schulz, 2018, van Hout, 2018)
- What is children's initial representation of pragmatically telic structures?

## Frankfurt Language Acquisition Lab

# Thank you!



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@daz\_lab

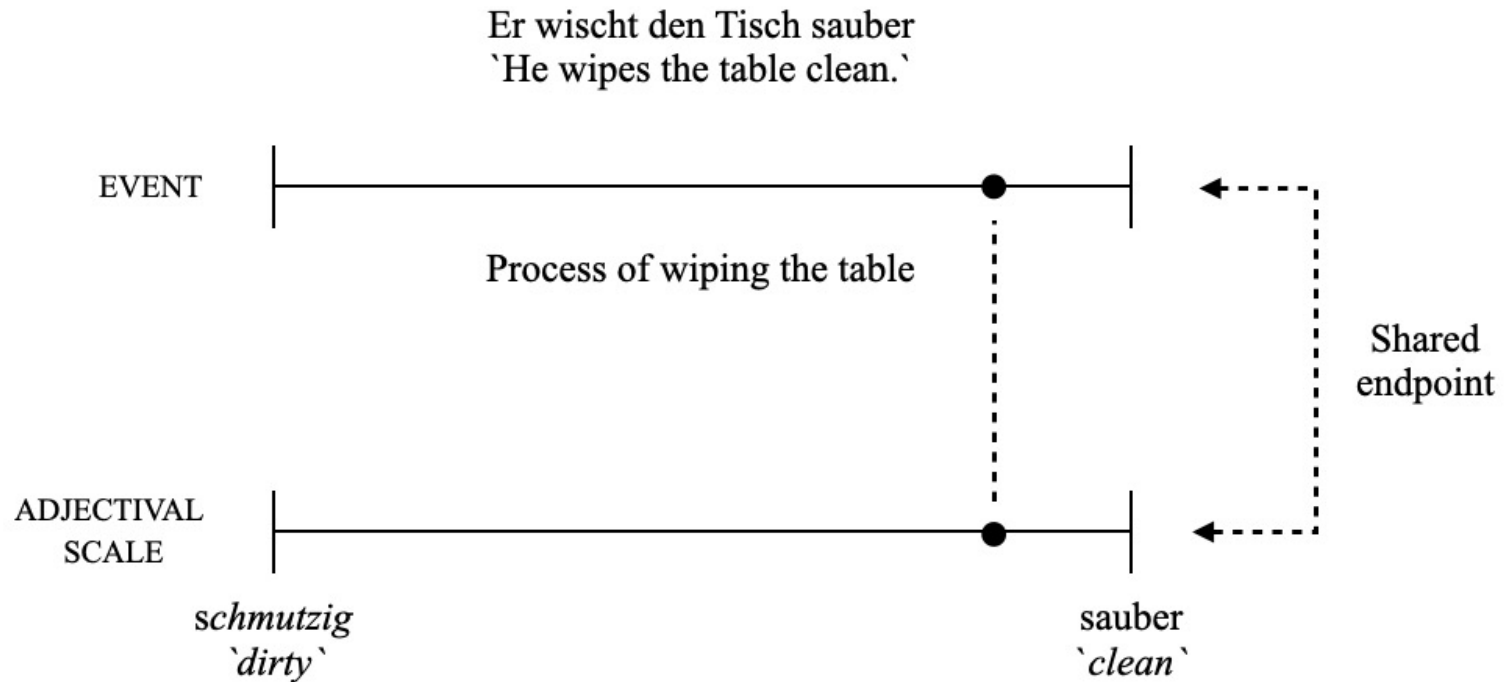
[tinygu.de/DaZ-Lab](https://tinygu.de/DaZ-Lab)

- Cresswell, M. (1976). The semantics of degree. In B. Partee (Ed.), *Montague grammar* (pp. 261-292). New York: Academic Press.
- Deo, A., Francez, I., Koontz-Garboden, A. (2013). From change to value difference. In T. Snider (ed.), *Proceedings of Semantics and Linguistic Theory 23* (pp. 97-115). Ithaca, NY: CLC Publications.
- Filip, H. (2008) Events and maximalization: The case of telicity and perfectivity. In S. Rothstein (ed.), *Theoretical and crosslinguistic approaches to the semantics of aspect*, (pp. 217-156), Amsterdam: John Benjamins.
- Filip, H. (2014). *Weak and strong telicity via maximization Delimit Event*. Presentation at Workshop on Identification and Delimitation of Events. Université Paris 7, March, 2014.
- Haider, H. (2016). On predicting resultative adjective constructions. Unpublished manuscript, Universität Salzburg.
- Hay, J., Kennedy, C. & Levin, B. (1999). Scale structure undelies telicity in ‘degree achievements’. In T. Matthews & D. Strolovitch (eds.), *Proceedings of Semantics and Linguistic Theory 9* (pp. 127-144). Ithaca, NY: CLC Publications.
- van Hout, A. (1998). On the role of direct objects and particles in learning telicity in Dutch and English. In A. Greenhill, M. Hughes, H. Littlefield, & H. Walsh (eds.), *Proceedings of BUCLD 22* (pp. 397-408). Somerville, MA: Cascadilla Press.
- van Hout, A. (2018). On the acquisition of event culmination. In K. Syrett & S. Arunachalam (eds.), *Semantics in Language Acquisition*, Amsterdam: John Benjamins.
- Kennedy, C. (2012). The composition of incremental change. In V. Demonte & L. McNally (eds), *Telicity, Change, State: A Cross-categorical View of Event Structure* (pp. 103-121). Oxford: Oxford University Press.
- Kennedy, C. & Levin, B. (2008). Measure of change: The adjectival core of degree achievements. In L. McNally & C. Kennedy (eds.), *Adjectives and adverbs: Syntax, semantics and discourse* (pp. 156-182). Oxford: Oxford University Press.
- Kennedy, C., & McNally, L. (2005). Scale structure, degree modification, and the semantics of gradable predicates. *Language*, 81 (2), 345-381.
- Krifka, M. (1989). Nominal reference, temporal constitution, and quantification in event semantics. In R. Bartsch, J. van Benthem & P. van Emde Boas (eds.), *Semantics and Contextual Expression* (pp. 75-115). Dordrecht: Foris.
- Martin, F., Demirdache, H., García del Real, I., van Hout, A. & Kazanina, N. (2020). Children’s non-adultlike interpretations of telic predicates across languages. *Linguistics*, 1-54.

- Piñón, C. (2008). Aspectual composition with degrees. In L. McNally & C. Kennedy (eds.), *Adjectives and adverbs: Syntax, semantics and discourse* (pp. 183-219). Oxford: Oxford University Press.
- Rappaport Hovav, M. & Levin, B. (2002). Change of State Verbs: Implications for Theories of Argument Projection. In *Proceedings of the 28<sup>th</sup> Annual Meeting of the Berkeley Linguistics Society* (pp. 269-280).
- Schulz, P. (2018). Telicity in typical and impaired acquisition. In K. Syrett & S. Arunachalam (eds.), *Semantics in Language Acquisition*, (pp. 123-150), Amsterdam: John Benjamins.
- Schulz, P. & Ose, J. (2008). *Semantics and pragmatics in the acquisition of telicity*. Paper presented at 29. Jahrestagung der Deutschen Gesellschaft für Sprachwissenschaft, Bamberg, Februaray 2008.
- Schulz, P. and Penner, Z. (2002). How you can eat the apple and have it too: Evidence from the acquisition of telicity in German. In J. Costa & M.J. Freitas (eds.), *Proceedings of the GALA 2001 conference on language acquisition* (pp. 246-254).
- Solt, S. (2016). Ordering subjectivity and the absolute/relative distinction. In N. Bade, P. Berezovskaya, & A. Schöller (Eds.), *Proceedings of Sinn und Bedeutung 20* (p. 676-693).
- Talmy, L. (1991). Path to realization: A typology of event integration. In L.A. Sutton, C. Johnson & R. Shields (eds.), *Proceedings of the 17th Annual Meeting of the Berkeley Linguistics Society* (pp. 480-519).
- Wechsler, S. (2005). Resultatives under the 'event-argument homomorphism' model of telicity. In N. Erteschik-Shir & T. Rapoport (eds.) *The Syntax of Aspect*, (pp. 255–273). Oxford: Oxford University Press.
- Winter, Y. (2006). Closure and telicity across categories. *Semantics and Linguistic Theory*, 16, 329-346.

# Resultative adjectives

## 'Event-Argument Homomorphism' Model of Telicity (Wechsler, 2005)



# Appendix

	Estimate	SE	z	Pr(> z )
Intercept	2.1328	0.5695	3.745	< .001
Structure	-2.2104	1.0714	-2.063	.039
Event type	-6.3428	1.2260	-5.174	< .001
Strcuture*Event type	-4.4208	2.1428	-2.063	.039

## Child data (N = 5, age between 4;03 – 5;11)

Mean number of yes-answers per condition (max = 4):

Event type	Structure	
	Adjective	No Adjective
Culminating	4 (100 %)	4 (100 %)
Non-Culminating	0.8 (20 %)	1.8 (45 %)

Total number of yes-answers per condition:

Event type	Structure	
	Adjective	No Adjective
Culminating	20/20	20/20
Non-Culminating	4/20	9/20