

# Tyler Zarus Knowlton

## Current Address

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## Contact Information

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## Research Interests

**Broad:** psycholinguistics, language acquisition, semantics, the language-thought relationship  
*Specific:* quantification, conservativity, lexical decomposition, syntactic bootstrapping, argument structure, numerical and event concepts, the language-vision interface, natural logic

## Employment

Postdoctoral Research Fellow 2021-  
[MindCORE](#) (Center for Outreach, Research, and Education)  
**University of Pennsylvania**, Philadelphia, PA

## Education and Training

Ph.D. in Linguistics 2016-21  
*Thesis:* [The psycho-logic of universal quantifiers](#)  
*Advisors:* [Jeffrey Lidz](#) and [Paul Pietroski](#)  
**University of Maryland**, College Park, MD

Lab Manager, Vision and Cognition Lab 2015-16  
PI: [Justin Halberda](#)  
**Johns Hopkins University**, Baltimore, MD

B.A. in Cognitive Science (with honors) 2011-15  
Minors in Linguistics, Philosophy, and Psychology  
**Johns Hopkins University**, Baltimore, MD

## Grants, Fellowships, and Awards

[NSF Doctoral Dissertation Improvement Grant](#), “Doctoral Dissertation Research: The mental representation and acquisition of the universal quantifiers” 2020  
(NSF #BCS-2017525) (with [Jeffrey Lidz](#))

[Graduate Student Service Award](#) 2020  
University of Maryland, College of Arts and Humanities

[Howard Lasnik Award for Distinguished Teaching by a Graduate Student](#) 2020  
University of Maryland, Linguistics Department

[Jerrold J. Katz Young Scholar Award](#) 2019  
CUNY Conference on Human Sentence Processing

[Jacob K. Goldhaber Travel Grant](#) 2018  
University of Maryland

Fellow, <a href="#">NSF-NRT Training Program</a> , “NRT-DESE: Flexibility in Language Processes and Technology: Human- and Global-Scale” (NRT #1449815)	2017
Phi Beta Kappa Johns Hopkins University	2015
<a href="#">Provost’s Undergraduate Research Award</a> Johns Hopkins University	2014

## Publications

### Under Review

**Knowlton, T.**, Halberda, J., Pietroski, P., and Lidz, J. (under review) *Individuals versus ensembles and “each” versus “every”: Linguistic framing affects performance in a change detection task.*

### Published

**Knowlton, T.**, Trueswell, J., and Papafragou, A. (2022) *A mentalistic semantics explains “each” and “every” quantifier use.* Proceedings of the Annual Meeting of the Cognitive Science Society.

**Knowlton, T.** and Gomes, V. (2022) *Linguistic and non-linguistic cues to acquiring the strong distributivity of “each”.* Proceedings of the Linguistic Society of America.

**Knowlton, T.**, Pietroski, P., Halberda, J., and Lidz, J. (2021) *The mental representation of universal quantifiers.* Linguistics and Philosophy.

**Knowlton, T.**, Hunter, T., Odic, D., Wellwood, A., Halberda, J., Pietroski, P., and Lidz, J. (2021) *Linguistic meanings as cognitive instructions.* Annals of the New York Academy of Sciences.

**Knowlton, T.** and Lidz, J. (2021) *Genericity signals the difference between “each” and “every” in child-directed speech.* Proceedings of the 45th annual Boston University Conference on Language Development.

**Knowlton, T.**, Pietroski, P., Williams, A., Halberda, J., and Lidz, J. (2021) *Determiners are “conservative” because their meanings are not relations: evidence from verification.* Proceedings of Semantics and Linguistic Theory 30.

## Presentations

### Conference Talks

Cesana-Arlotti, N., **Knowlton, T.**, Lidz, J., and Halberda, J. (2022) *Universal quantification without language? Ten-month-old infants represent the exhaustivity of a relation in visually presented events.* Symposium on The Language of Thought, 3rd Joint Conference of

the Society for Philosophy and Psychology and the European Society of Philosophy and Psychology (SPP/ESPP), Milan, Italy.

**Knowlton, T.**, Trueswell, J., and Papafragou, A. (2022) *A mentalistic semantics explains “each” and “every” quantifier use*. 44th Annual Meeting of the Cognitive Science Society (CogSci), Toronto, Canada.

Cesana-Arlotti, N., **Knowlton, T.**, Lidz, J., and Halberda, J. (2022) *On the origins of universal quantification: 10-month-old infants represent the exhaustivity of multi-agent intentional actions*. XXIII International Congress of Infant Studies (ICIS) Biennial Congress, Ottawa, Canada.

**Knowlton, T.** and Gomes, V. (2022) *Linguistic and non-linguistic cues to acquiring the strong distributivity of “each”*. Linguistic Society of America (LSA) Annual Meeting, Washington, DC.

**Knowlton, T.**, Halberda, J., Pietroski, P., and Lidz, J. (2021) *Evaluating “each”- (but not “every”-) sentences encourages encoding individual properties*. 34th CUNY Conference on Human Sentence Processing, University of Pennsylvania.

**Knowlton, T.** and Lidz, J. (2021) *Bootstrapping universal quantifiers: the role of genericity*. Linguistic Society of America (LSA) Annual Meeting, San Francisco, CA.

**Knowlton, T.** and Lidz, J. (2020) *Genericity signals the difference between “each” and “every” in child-directed speech*. Boston University Conference on Language Development (BUCLD) 45, Boston University.

**Knowlton, T.**, Pietroski, P., Williams, A., Halberda, J., and Lidz, J. (2020) *Memory for cardinality supports a non-relational account of conservativity*. Experiments in Linguistic Meaning (ELM) 1, University of Pennsylvania.

Cesana-Arlotti, N., **Knowlton, T.**, Lidz, J., and Halberda, J. (2020) *An investigation of the origins of logical quantification: infants’ (and adults’) representations of exhaustivity in collective or individual complex actions*. Symposium on Learning ‘hard words’, XXII International Congress of Infant Studies (ICIS) Biennial Congress, Glasgow, Scotland.

**Knowlton, T.**, Pietroski, P., Williams, A., Halberda, J., and Lidz, J. (2020) *Conservative meanings with only one set: evidence from verification*. 33rd CUNY Conference on Human Sentence Processing, University of Massachusetts at Amherst.

**Knowlton, T.**, Pietroski, P., Halberda, J., and Lidz, J. (2019) *The mental representation of universal quantifiers: evidence from verification*. 32nd CUNY Conference on Human Sentence Processing, University of Colorado Boulder.

**Knowlton, T.**, Halberda, J., Pietroski, P., and Lidz, J. (2018) *Acquiring the universal quantifiers: every part together or each part on its own?* Boston University Conference on Language Development (BUCLD) 43, Boston University.

## Invited Talks

**Knowlton, T.** (2022) *Every universal is first-orderizable, but only “each” is first-orderized*. Cognitive Semantics and Quantities Workshop, University of Amsterdam.

**Knowlton, T.** (2021) *The psycho-logic of “each” and “every”*. LingLangLunch, Brown University.

**Knowlton, T.** (2021) *The psycho-logic of universal quantifiers*. Linguistics Colloquium, University of Southern California.

- Knowlton, T.** (2019) *The psychological treatment of (universal) quantification*. Integrated Language Sciences and Technology Seminar, University of Pennsylvania.
- Knowlton, T.** (2018) *Are natural language quantifiers first- or second-order?* McDonnell Network Focused Workshop on “The Development of Set and Quantifier Representations”, Johns Hopkins University.

## Conference Posters / Lightning Talks

- Knowlton, T.**, Trueswell, J., and Papafragou, A. (2022) *A psycho-semantic explanation of “each” and “every” quantifier use*. Experiments in Linguistic Meaning (ELM) 2, University of Pennsylvania.
- Cesana-Arlotti, N., **Knowlton, T.**, Lidz, J., and Halberda, J. (2022) *Universal quantification without language? Ten-month-old infants represent the universality of visually presented properties*. Experiments in Linguistic Meaning (ELM) 2, University of Pennsylvania.
- Knowlton, T.**, Trueswell, J., and Papafragou, A. (2022) *Psycho-semantic representations explain “each” and “every” quantifier use*. 35th Annual Conference on Human Sentence Processing (HSP), University of California, Santa Cruz.
- Cesana-Arlotti, N., **Knowlton, T.**, Lidz, J., and Halberda, J. (2021) *An investigation of the origins of logical quantification: infants’ (and adults’) representations of exhaustivity in collective or individual complex actions*. Society for Philosophy and Psychology (SPP) 47th Annual Meeting, Princeton University.
- Cesana-Arlotti, N., **Knowlton, T.**, Lidz, J., and Halberda, J. (2021) *Representing the exhaustivity of collective and individual actions: an investigation of universal quantification in adults and infants*. 12th Dubrovnik Conference on Cognitive Science, Virtual.
- Knowlton, T.**, Pietroski, P., Williams, A., Halberda, J., and Lidz, J. (2020) *Determiners are ‘conservative’ because their meanings are not relations: evidence from verification*. Semantics and Linguistic Theory (SALT) 30, Cornell University.
- Cesana-Arlotti, N., **Knowlton, T.**, Lidz, J., and Halberda, J. (2020) *An investigation of the origin of logical quantification: infants’ and adults’ representations of collective and distributive actions in complex visual scenes*. 42nd Annual Meeting of the Cognitive Science Society, Virtual.
- Cesana-Arlotti, N., **Knowlton, T.**, Lidz, J., and Halberda, J. (2020) *Who’s chasing whom? Adults’ and infants’ engagement of quantificational concepts (“each” and “all”) when representing visual chasing events*. Vision Sciences Society (VSS) 20th Annual Meeting, Virtual.
- Cesana-Arlotti, N., **Knowlton, T.**, Lidz, J., Pietroski, P., and Halberda, J. (2019) *Concepts of universal quantification (“each” and “all”) may support infant and adult understanding of collective and distributive actions*. Cognitive Development Society (CDS) 2019 Biennial Meeting, Louisville, KY.
- Knowlton, T.**, Halberda, J., Pietroski, P., and Lidz, J. (2019) *A novel memory task reveals early understanding of quantifier meanings*. Society for Research in Child Development (SRCD) 2019 Biennial Meeting, Baltimore, MD.
- Knowlton, T.**, Pietroski, P., Halberda, J., and Lidz, J. (2019) *Representational format and universal quantifiers*. Linguistic Society of America (LSA) Annual Meeting, New York, NY.
- Perkins, L., **Knowlton, T.**, Williams, A., and Lidz, J. (2018) *Matching number vs. linking roles: using 3-participant scene percepts to understand infants’ bootstrapping*. Boston University Conference on Language Development (BUCLD) 43, Boston, MA.

- Knowlton, T.**, Perkins, L., Williams, A., and Lidz, J. (2018) *Getting a grip on infants' event representations: participant number in TAKE and PICK-UP*. XXI International Congress of Infant Studies (ICIS) Biennial Congress, Philadelphia, PA.
- Knowlton, T.**, Wong, A., Halberda, J., Pietroski, P., and Lidz, J. (2018) *Different determiners, different algorithms: two majority quantifiers in Cantonese bias distinct verification strategies*. 31st CUNY Conference on Human Sentence Processing, University of California, Davis.
- Knowlton, T.**, Halberda, J., Pietroski, P., and Lidz, J. (2017) *Sentences, centers, and sets: set selection and the meanings of more and most*. Cognitive Development Society (CDS) Biennial Meeting, Portland, OR.
- Knowlton, T.**, Halberda, J., Pietroski, P., and Lidz, J. (2017) *Distinguishing first- from second-order specifications of each, every, and all*. Mid-Atlantic Colloquium of Studies in Meaning (MACSIM) 7, Georgetown University.
- Knowlton, T.**, Halberda, J., Pietroski, P., and Lidz, J. (2017) *Set selection and storage reflect differences in quantifier meanings*. McDonnell Network Plenary Workshop on "The Ontogenetic Origins of Combinatorial Thought", University of California, San Diego.
- Perkins, L., **Knowlton, T.**, Hirzel, M., Dudley, R., Williams, A., and Lidz, J. (2017) *Linguistic and conceptual structure in verb learning*. McDonnell Network Plenary Workshop on "The Ontogenetic Origins of Combinatorial Thought", University of California, San Diego.

## Teaching and Mentorship

### Teaching Experience

#### *University of Maryland*

Instructor, Language and Thought (LING449T)	Spring 2020
Designed and taught 11-student seminar	
TA, Grammar and Meaning (LING410; Instructor: Valentine Hacquard)	Fall 2019
Duties: grading, office hours, reviewing p-sets in class, once teaching ~25 student lecture	
TA, Child Language Acquisition (LING444; Instructor: Jeffrey Lidz)	Spring 2019
Duties: grading, office hours, helping write exams, once teaching ~20 student lecture	
TA, Language and Mind (LING240; Instructor: Tonia Bleam)	Fall 2018
Duties: grading, office hours, review sessions, twice teaching ~50 student lecture	
TA, Introductory Linguistics (LING200; Instructor: Tonia Bleam)	Spring 2018
Duties: weekly discussion section of ~30 students, grading, office hours	

### Mentorship Experience

#### *University of Pennsylvania*

MindCORE <a href="#">Step-Ahead Mentorship Program</a>	2021-
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#### *University of Maryland*

Undergraduate mentor, <a href="#">Project on Children's Language Learning</a>	2018-21
Responsible for mentoring undergraduate research assistants M. Lauchman, M. Aiyad, D. Lahori, T. Hudson, M. Griffith, S. Deshpande, & A. Boyer and supervising their end-of-term poster presentations	

High school summer intern mentor, <a href="#">Project on Children's Language Learning</a> Responsible for mentoring high school research assistant S. Chervenak and supervising his final paper & science fair poster presentation	2019
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*Johns Hopkins University*

Undergraduate mentor, <a href="#">Vision and Cognition Lab</a> Responsible for mentoring undergraduate research assistants A. Wong, S. Akmal, A. Vadaparty, I. Perone, & L. Grau and supervising their term papers	2015-16
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## Academic Activities

### Service

*University of Pennsylvania*

Host, <a href="#">Behind the CV: Stories from Faculty</a>	2022-
Workshop Co-organizer (with V. Gomes), <i>Language and Observation Revisited in Internalist Semantics (LORIS)</i>	2022-
<a href="#">ELM2</a> Organizing Committee	2021-
MindCORE <a href="#">Outreach Committee</a>	2021-

*University of Maryland*

Linguistics Colloquium Committee	2019-21
<a href="#">Mayfest 2020: Hindsight</a> Organizing Committee (postponed due to COVID-19)	2019-20
Developmental Science Workshop Co-organizer (with Z. Ovens & M. Hirzel), <i>Endless Possibilities: The Development of Possibility and Necessity in Cognition, Language, and Society</i>	2018-19
Chair, <a href="#">Language Science Outreach Committee</a>	2018-19
<a href="#">Winter Storm 10</a> Planning Committee	2017-18
Co-chair (with S. Thivierge), Linguistics Graduate Student Association	2017-18
Career fair coordinator, <a href="#">Language Science Outreach Committee</a>	2016-18
<a href="#">Winter Storm 9</a> Planning Committee	2016-17
<a href="#">SALT27</a> Organizing Committee	2016-17

### Ad Hoc Reviewing

*Manuscripts*

Cognitive Science  
Journal of Memory and Language (x2)  
Language Learning and Development  
Natural Language Semantics  
PLOS One

*Conference Abstracts/Papers*

Penn Linguistics Conference (2022)  
Experiments in Linguistic Meaning (2022)  
Annual Conference on Human Sentence Processing (2022)  
Annual Meeting of the Cognitive Science Society (2020, 2021, 2022)

### Professional Memberships

Cognitive Science Society	2020-
Society for Research in Child Development	2019-
International Congress of Infant Studies	2017-
Cognitive Development Society	2017-
Linguistic Society of America	2015-

### References

Jeffrey Lidz  
Professor of Linguistics & Distinguished Scholar-Teacher  
University of Maryland  
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Paul Pietroski  
Distinguished Professor of Philosophy & Cognitive Science  
Rutgers University  
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Justin Halberda  
Professor of Psychological and Brain Sciences  
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Anna Papafragou  
Professor of Linguistics  
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