

Tyler Zarus Knowlton

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

Publications

Under Review

Perkins, L., **Knowlton, T.**, Williams, A., and Lidz, J. (under review) *Thematic content, not number matching, drives syntactic bootstrapping.*

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

- Gomes, V., **Knowlton, T.**, Papafragou, A., and Trueswell, J. (2022) *Differentiating universal quantifiers by differentiating their domains*. Boston University Conference on Language Development (BUCLD) 47, Boston University.
- 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) *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.
- 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) *Non-conservative quantifiers are unlearnable*. Boston University Conference on Language Development (BUCLD) 47, Boston University.
- 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 [Step-Ahead Mentorship Program](#) 2021-

University of Maryland

Undergraduate mentor, [Project on Children's Language Learning](#) 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, [Project on Children's Language Learning](#) 2019
Responsible for mentoring high school research assistant S. Chervenak and supervising his final paper & science fair poster presentation

Johns Hopkins University

Undergraduate mentor, [Vision and Cognition Lab](#) 2015-16
Responsible for mentoring undergraduate research assistants A. Wong, S. Akmal, A. Vadaparty, I. Perone, & L. Grau and supervising their term papers

Academic Activities

Service

University of Pennsylvania

Host, [Behind the CV: Stories from Faculty](#) 2022-

Workshop Co-organizer (with V. Gomes), 2022-
Language and Observation Revisited in Internalist Semantics (LORIS)

[ELM2](#) Organizing Committee 2021-

MindCORE [Outreach Committee](#) 2021-

University of Maryland

Linguistics Colloquium Committee 2019-21

[Mayfest 2020: Hindsight](#) Organizing Committee (postponed due to COVID-19) 2019-20

Developmental Science Workshop Co-organizer (with Z. Ovens & M. Hirzel), 2018-19
Endless Possibilities: The Development of Possibility and Necessity in Cognition, Language, and Society

Chair, [Language Science Outreach Committee](#) 2018-19

[Winter Storm 10](#) Planning Committee 2017-18

Co-chair (with S. Thivierge), Linguistics Graduate Student Association 2017-18

Career fair coordinator, [Language Science Outreach Committee](#) 2016-18

[Winter Storm 9](#) Planning Committee 2016-17

[SALT27](#) 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

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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
Johns Hopkins University
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Anna Papafragou
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John Trueswell
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