

# Bibliography

Note: Numbers in square brackets denote the chapter in which an entry is cited.

- Abbeell, P., and A. Y. Ng. 2004. Apprenticeship Learning via Inverse Reinforcement Learning. In: Proc. 21st Intl. Conf. on Machine Learning. Banff: ACM. [17]
- Aggarwal, J. K., and M. S. Ryoo. 2011. Human Activity Analysis: A Review. *ACM Comput. Surv.* **43**:16. [9]
- Aguiar, A., and R. Baillargeon. 1999. 2.5-Month-Old Infants' Reasoning About When Objects Should and Should Not Be Occluded. *Cogn. Psychol.* **39**:116–157. [16]
- Akgun, B., M. Cakmak, J. W. Yoo, and A. L. Thomaz. 2012. Trajectories and Keyframes for Kinesthetic Teaching: A Human-Robot Interaction Perspective. In: Human-Robot Interaction (HRI), Proc. 7th ACM/IEEE Intl. Conf., pp. 391–398. New York: ACM. [9]
- Albacete, P. L., and K. VanLehn. 2000. Evaluation of the Effectiveness of a Cognitive Tutor for Fundamental Physics Concepts. In: Proc. 22nd Annual Conf. of the Cognitive Science Society, ed. L. R. Gleitman and A. K. Joshi, pp. 25–30. Mahwah: Erlbaum. [11]
- Aleven, V., E. A. McLaughlin, R. A. Glenn, and K. R. Koedinger. 2016. Instruction Based on Adaptive Learning Technologies. In: Handbook of Research on Learning and Instruction, ed. R. E. Mayer and P. Alexander, pp. 522–560. New York: Routledge. [11]
- Alexandrova, S., M. Cakmak, K. Hsaio, and L. Takayama. 2014. Robot Programming by Demonstration with Interactive Action Visualizations. In: Proc. Robotics: Science and Systems X [7]
- Alexandrova, S., Z. Tatlock, and M. Cakmak. 2015. RoboFlow: A Flow-Based Visual Programming Language for Mobile Manipulation Tasks. In: 2015 IEEE Intl. Conf. on Robotics and Automation (ICRA), pp. 5537–5544. Seattle: Institute of Electrical and Electronics Engineers. [9, 15]
- Allen, J. F., N. Chambers, G. Ferguson, et al. 2007. Plow: A Collaborative Task Learning Agent. In: Proc. 22nd AAAI Conference on Artificial Intelligence, vol. 2, pp. 1514–1519. Vancouver: AAAI Press. [3, 17]
- Allen, J. F., and C. R. Perrault. 1980. Analyzing Intention in Utterances. *Artif. Intell.* **15**:143–178. [8]
- Al-Moadhen, A., R. Qiu, M. Packianather, Z. Ji, and R. Setchi. 2013. Integrating Robot Task Planner with Common-Sense Knowledge Base to Improve the Efficiency of Planning. *Procedia Comput. Sci.* **22**:211–220. [9]
- Altmann, G. T. M., and Y. Kamide. 1999. Incremental Interpretation at Verbs: Restricting the Domain of Subsequent Reference. *Cognition* **73**:247–264. [16]
- Amaral, L., and D. Meurers. 2007. Conceptualizing student models for ICALL. In: User Modeling 2007, ed. C. Conati et al., pp. 340–344. Heidelberg: Springer. [13]
- Anders, G. 1956/1979. *The Obsolescence of Man (Die Antiquiertheit Des Menschen)*, 5th edition. Munich: C. H. Beck. [18]
- Anderson, J. R. 1982. The Acquisition of Cognitive Skill. *Psychol. Rev.* **89**:369–406. [12]
- . 1987. Skill Acquisition: Compilation of Weak-Method Problem Solutions. *Psychol. Rev.* **94**:192–210. [4, 10]

- Anderson, J. R. 1990. *The Adaptive Character of Thought*. Hillsdale: Erlbaum. [4]
- . 2002. Spanning Seven Orders of Magnitude: A Challenge for Cognitive Modeling. *Cogn. Sci.* **26**:85–112. [4]
- . 2007. *How Can the Human Mind Occur in the Physical Universe?* New York: Oxford Univ. Press. [6, 15]
- Anderson, J. R., D. Bothell, M. D. Byrne, et al. 2004. An Integrated Theory of the Mind. *Psychol. Rev.* **111**:1036. [3, 4]
- Anderson, J. R., and K. Gluck. 2001. What Role Do Cognitive Architectures Play in Intelligent Tutoring Systems? In: *Cognition and Instruction: Twenty-Five Years of Progress*, ed. D. Klahr and S. M. Carver, pp. 227–262. Hillsdale: Erlbaum. [4]
- Anderson, J. R., and C. Lebiere. 1998. *The Atomic Components of Thought*. Mahwah: Erlbaum. [4]
- Anzai, Y., and H. A. Simon. 1979. Theory of Learning by Doing. *Psychol. Rev.* **86**:124–140. [10]
- Argall, B. D., S. Chernova, M. Veloso, and B. Browning. 2009. A Survey of Robot Learning from Demonstration. *Rob. Auton. Syst.* **57**:469–483. [9, 17]
- Arnold, M. 1914. *Essays in Criticism*. London: Macmillan. [14]
- Arnold, T., and M. Scheutz. 2017. Beyond Moral Dilemmas: Exploring the Ethical Landscape in HRI. In: *Human-Robot Interaction (HRI)*, Proc. 12th ACM/IEEE Intl. Conf., pp. 445–452 New York: ACM. [18]
- Aukrus, V. G., ed. 2007. *Learning and Cognition*. Amsterdam: Elsevier. [14]
- Azaria, A., J. Krishnamurthy, and T. M. Mitchell. 2016. Instructable Intelligent Personal Agent. In: *Proc. 30th AAAI Conf. on Artificial Intelligence*, pp. 2681–2689. Phoenix: AAAI Press. [3, 17]
- Baars, B. J. 1997. In the Theatre of Consciousness: Global Workspace Theory, a Rigorous Scientific Theory of Consciousness. *J. Conscious. Stud.* **4**:292–309. [6]
- Bahrack, L. E., R. Lickliter, and R. Flom. 2004. Intersensory Redundancy Guides Infants' Selective Attention, Perceptual, and Cognitive Development. *Curr. Dir. Psychol. Sci.* **13**:99–102. [11]
- Baillargeon, R., E. S. Spelke, and S. Wasserman. 1985. Object Permanence in Five-Month-Old Infants. *Cognition* **20**:191–208. [16]
- Baillargeon, R., and S. H. Wang. 2002. Event Categorization in Infancy. *Trends Cogn. Sci.* **6**:85–93. [16]
- Baisero, A., Y. Mollard, M. Lopes, M. Toussaint, and I. Lütkebohle. 2015. Temporal Segmentation of Pair-Wise Interaction Phases in Sequential Manipulation Demonstrations. In: *2015 IEEE/RSJ Intl. Conf. on Intelligent Robots and Systems* pp. 478–484. Hamburg: IEEE. [9]
- Baker, M. 2016. Is There a Reproducibility Crisis? *Nature* **533**:452–454. [10]
- Ball, J., S. Rodgers, and K. Gluck. 2004. Integrating ACT-R and Cyc in a Large-Scale Model of Language Comprehension for Use in Intelligent Agents. In: *Papers from the AAAI Workshop*. Palo Alto: AAAI Press. [4]
- Bangerter, A., and H. H. Clark. 2003. Navigating Joint Projects with Dialogue. *Cogn. Sci.* **27**:195–225. [8]
- Barto, A. G., G. Konidaris, and C. Vigorito. 2013. Behavioral Hierarchy: Exploration and Representation. In: *Computational and Robotic Models of the Hierarchical Organization of Behavior*, ed. G. Baldassarre and G. Mirolli, pp. 13–46. Berlin: Springer. [3]
- Baumeister, R. F., D. G. Hutton, and K. J. Cairns. 1990. Negative effects of praise on skilled performance. *Basic Appl. Soc. Psychol.* **11**:131–148. [12]

- Bausell, R. B., W. B. Moody, and F. H. Walzl. 1972. A Factorial Study of Tutoring versus Classroom Instruction. *Am. Educ. Res. J.* **9**:591–597. [12]
- Beck, K., M. Beedle, A. Van Bennekum, et al. 2001. Manifesto for Agile Software Development. <https://agilemanifesto.org/> (accessed Jan. 11, 2019). [11]
- Bengio, Y. 2009. Learning Deep Architectures for AI. *Found. Trends Mach. Learn.* **2**:1–127. [13]
- Benjamin, A. S., and J. Tullis. 2010. What Makes Distributed Practice Effective? *Cogn. Psychol.* **61**:228–247. [11]
- Bereiter, C. 2002. Education and Mind in the Knowledge Age. Abingdon, UK: Taylor and Francis. [14]
- Best, B. J., N. Gerhart, and C. Lebiere. 2010. Extracting the Ontological Structure of OpenCyc for Reuse and Portability of Cognitive Models. In: 19th Annu. Conf. on Behavior Representation in Modeling and Simulation 2010. Charleston: BRiMS Committee. [4]
- Best, B. J., and C. Lebiere. 2006. Cognitive Agents Interacting in Real and Virtual Worlds. In: *Cognition and Multi-Agent Interaction: From Cognitive Modeling to Social Simulation*, ed. R. Sun, pp. 186–218. New York: Cambridge Univ. Press. [4]
- Beuls, K. 2013. Towards an Agent-Based Tutoring System for Spanish Verb Conjugation. Ph.D. thesis, Artificial Intelligence Lab, Vrije Univ. Brussel. [13]
- . 2014. Grammatical Error Diagnosis in Fluid Construction Grammar: A Case Study in L2 Spanish Verb Morphology. *Comput. Assist. Lang. Learn.* **27**:246–260. [13]
- Bidet-Ildei, C., E. Kitromilides, J.-P. Orliaguet, M. Pavlova, and E. Gentaz. 2014. Preference for Point-Light Human Biological Motion in Newborns: Contribution of Translational Displacement. *Dev. Psychol.* **50**:113–120. [16]
- Biswas, G., J. R. Segedy, and K. Bunchongchit. 2016. From Design to Implementation to Practice: A Learning by Teaching System: Betty’s Brain. *Int. J. Artif. Intel. Educ.* **26**:350–364. [3]
- Blokpoel, M. 2015. Understanding Understanding: A Computational-Level Perspective. PhD thesis, Radboud Univ. Nijmegen, The Netherlands. [8]
- Bloom, B. S. 1984. The 2 Sigma Problem: The Search for Methods of Group Instruction as Effective as One-to-One Tutoring. *Educ. Res.* **13**:4–16. [12]
- Bodkin, H. 2017. “Inspirational” Robots to Begin Replacing Teachers within 10 Years. *The Telegraph*, Sept. 11. [14]
- Boesch, C. 2003. Is Culture a Golden Barrier between Human and Chimpanzee? *Evol. Anthropol.* **12**:82–91. [7]
- Bögels, S., K. H. Kendrick, and S. C. Levinson. 2015a. Never Say No...How the Brain Interprets the Pregnant Pause in Conversation. *PLoS One* **10**:e0145474. [7, 8]
- Bögels, S., L. Magyari, and S. C. Levinson. 2015b. Neural Signatures of Response Planning Occur Midway through an Incoming Question in Conversation. *Sci. Rep.* **5**:12881. [8]
- Boydston, J., ed. 2008. *The Later Works of John Dewey, vol. 7, 1925–1953: 1932, Ethics*. Carbondale, IL: Southern Illinois Univ. Press. [14]
- Boyer, K. E., R. Phillips, M. Wallis, M. Vouk, and J. C. Lester. 2008. Balancing Cognitive and Motivational Scaffolding in Tutorial Dialogue. In: *Intelligent Tutoring Systems. Its 2008. Lecture Notes in Computer Science*, ed. B. P. Woolf et al., vol. 5091, pp. 239–249. Heidelberg: Springer. [12]
- Bratman, M. E. 1992. Shared Cooperative Activity. *Philos. Rev.* **101**:327–341. [7]

- Brenton, H., M. Yee-King, A. Grimalt-Reynes, et al. 2014. A Social Timeline for Exchanging Feedback About Musical Performances. Proc. 28th Intl. BCS Human Computer Interaction Conf. Southport: BCS Learning and Development Ltd. [14]
- Brown, J. S., and K. VanLehn. 1980. Repair Theory: A Generative Theory of Bugs in Procedural Skills. *Cogn. Sci.* 4:379–426. [7]
- Brown, P., and S. C. Levinson. 1987. Politeness: Some Universals in Language Usage. Cambridge: Cambridge Univ. Press. [8]
- Bruce, V., and A. Young. 1986. Understanding Face Recognition. *Br. J. Psychol.* 77:305–327. [3]
- Cade, W. L., J. L. Copeland, N. Person, and S. K. D’Mello. 2008. Dialogue Modes in Expert Tutoring. In: Intelligent Tutoring Systems. Its 2008. Lecture Notes in Computer Science, ed. B. P. Woolf et al., vol. 5091, pp. 470–479. Heidelberg: Springer. [12]
- Cakmak, M., C. Chao, and A. L. Thomaz. 2010. Designing Interactions for Robot Active Learners. *IEEE Trans. Auton. Ment. Dev.* 2.2:108–118. [9]
- Cakmak, M., and A. L. Thomaz. 2012. Designing Robot Learners That Ask Good Questions. In: Human-Robot Interaction (HRI), Proc. 7th ACM/IEEE Intl. Conf., pp. 17–24. New York: ACM. [9]
- Caliskan, A., J. J. Bryson, and A. Narayanan. 2017. Semantics Derived Automatically from Language Corpora Contain Human-Like Biases. *Science* 356:183–186. [3]
- Callaghan, T. C., H. Moll, H. Rakoczy, et al. 2011. Early Social Cognition in Three Cultural Contexts. *Monogr. Soc. Res. Child Dev.* 76:1–142. [7]
- Cameron-Faulkner, T., A. Theakston, E. Lieven, and M. Tomasello. 2015. The Relationship between Infant Holdout and Gives and Pointing. *Infancy* 20:576–586. [7]
- Cangelosi, A., M. Schlesinger, and L. B. Smith. 2015. Developmental Robotics: From Babies to Robots. Cambridge, MA: MIT Press. [15, 16]
- Cantrell, R., K. Talamadupula, P. Schermerhorn, et al. 2012. Tell Me When and Why to Do It! Run-Time Planner Model Updates via Natural Language Instruction. In: Human-Robot Interaction (HRI), Proc. 7th ACM/IEEE Intl. Conf., pp. 471–478. New York: ACM. [9]
- Card, S. K., T. P. Moran, and A. Newell. 1983. The Psychology of Human-Computer Interaction. Mahwah: Erlbaum. [15]
- Casler, K., and D. Kelemen. 2005. Young Children’s Rapid Learning About Artifacts. *Dev. Sci.* 8:472–480. [15]
- Cepeda, N. J., H. Pashler, E. Vul, J. T. Wixted, and D. Rohrer. 2006. Distributed Practice in Verbal Recall Tasks: A Review and Quantitative Synthesis. *Psychol. Bull.* 132:354–380. [11]
- Chai, J. Y., R. Fang, C. Liu, and L. She. 2016. Collaborative Language Grounding Towards Situated Human-Robot Dialogue. *AI Mag.* 37:32–45. [7, 9]
- Chang, F. 2002. Symbolically Speaking: A Connectionist Model of Sentence Production. *Cogn. Sci.* 26:609–651. [16]
- Chang, F., G. S. Dell, and K. Bock. 2006. Becoming Syntactic. *Psychol. Rev.* 113:234–272. [16]
- Chao, C., M. Cakmak, and A. L. Thomaz. 2010. Transparent Active Learning for Robots. In: Human-Robot Interaction (HRI), Proc. 5th ACM/IEEE Intl. Conf. New York: ACM. [9]
- . 2011. Towards Grounding Concepts for Transfer in Goal Learning from Demonstration. In: Proc. 2011 IEEE Intl. Conference on Development and Learning, vol. 2, pp. 1–6. Frankfurt: IEEE. [4, 9, 17]

- Chao, C., and A. L. Thomaz. 2013. Controlling Social Dynamics with a Parametrized Model of Floor Regulation. *J. Hum. Robot. Interact.* **2.1**:4–29. [7]
- Chase, C. C., D. B. Chin, M. A. Oppezzo, and D. L. Schwartz. 2009. Teachable Agents and the Protégé Effect: Increasing the Effort Towards Learning. *J. Sci. Educ. Technol.* **18**:334–352. [11]
- Chase, C. C., J. Marks, D. Bennett, M. Bradley, and V. Alevan. 2015. Towards the Development of the Invention Coach: A Naturalistic Study of Teacher Guidance for an Exploratory Learning Task. In: *Artificial Intelligence in Education*, ed. C. Conati et al., pp. 558–561. AIED 2015. Lecture Notes in Computer Science, vol. 9112. Cham: Springer. [12]
- Chase, W. G., and H. A. Simon. 1973. The Mind’s Eye in Chess. In: *Visual Information Processing*, ed. W. G. Chase, pp. 215–281. New York: Academic Press. [3]
- Chein, J. M., and W. Schneider. 2005. Neuroimaging Studies of Practice-Related Change: fMRI and Meta-Analytic Evidence of a Domain-General Control Network for Learning. *Cogn. Brain Res.* **25**:607–623. [15]
- Chi, M. T. H. 2009. Active-Constructive-Interactive: A Conceptual Framework for Differentiating Learning Activities. *Top. Cogn. Sci.* **1**:73–105. [11, 12]
- Chi, M. T. H., M. Bassok, M. Lewis, P. Reimann, and R. Glaser. 1989. Self-Explanations: How Students Study and Use Examples in Learning to Solve Problems. *Cogn. Sci.* **15**:145–182. [12]
- Chi, M. T. H., N. de Leeuw, M. H. Chiu, and C. LaVancher. 1994. Eliciting Self-Explanations Improves Understanding. *Cogn. Sci.* **18**:439–477. [12]
- Chi, M. T. H., and M. Menekse. 2015. Dialogue Patterns in Peer Collaboration That Promote Learning. In: *Socializing Intelligence through Academic Talk and Dialogue*, ed. L. B. Resnick et al., pp. 263–274. Washington, D.C.: AERA. [11]
- Chi, M. T. H., M. Roy, and R. G. M. Hausmann. 2008. Observing Tutorial Dialogues Collaboratively: Insights About Human Tutoring Effectiveness from Vicarious Learning. *Cogn. Sci.* **32**:301–342. [12]
- Chi, M. T. H., S. Siler, and H. Jeong. 2004. Can Tutors Monitor Students’ Understanding Accurately? *Cogn. Instr.* **22**:363–387. [12]
- Chi, M. T. H., S. Siler, H. Jeong, T. Yamauchi, and R. G. Hausmann. 2001. Learning from Human Tutoring. *Cogn. Sci.* **25**:471–533. [12]
- Chi, M. T. H., and R. Wylie. 2014a. The ICAP Framework: Linking Cognitive Engagement to Active Learning Outcomes. *Educ. Psychol.* **49**:219–243. [11, 14]
- . 2014b. ICAP: A Hypothesis of Differentiated Learning Effectiveness for Four Modes of Engagement Activities. *Educ. Psychol.* **49**:219–243. [12]
- Cho, B.-I., J. A. Michael, A. A. Rovick, and M. W. Evens. 2000. An Analysis of Multiple Tutoring Protocols. In: *Intelligent Tutoring Systems. Its 2000*. Lecture Notes in Computer Science, ed. G. Gauthier et al., vol. 1839, pp. 212–221. Heidelberg: Springer. [12]
- Clark, H. H. 1996. *Using Language*. Cambridge: Cambridge Univ. Press. [2, 15, 17]
- Clark, H. H., and S. E. Brennan. 1991. Grounding in Communication. In: *Perspectives on Socially Shared Cognition*, ed. L. B. Resnick et al., pp. 127–149. Washington, D.C.: American Psychological Association. [3, 11, 15]
- Clegg, J. M., and C. H. Legare. 2016. A Cross-Cultural Comparison of Children’s Imitative Flexibility. *Dev. Psychol.* **52**:1435–1444. [8]
- Cockburn, A., C. Gutwin, J. Scarr, and S. Malacria. 2014. Supporting Novice to Expert Transitions in User Interfaces. *ACM Comput. Surv.* **47**:1–36. [10]

- Cole, M. W., P. Laurent, and A. Stocco. 2013. Rapid Instructed Task Learning: A New Window into the Human Brain's Unique Capacity for Flexible Cognitive Control. *Cogn. Affect. Behav. Neurosci.* **13**:1–22. [15]
- Coles, A., S. Edelkamp, D. Magazzeni, and S. Sanner, eds. 2017. Proc. of the 26th Intl. Conf. on Automated Planning and Scheduling. Palo Alto: AAAI Press. [5]
- Collins, A. 1977. Processes in Acquiring Knowledge. In: *Schooling and the Acquisition of Knowledge*, ed. R. C. Anderson et al., pp. 339–363. Hillsdale: Erlbaum. [12]
- Collins, A., J. S. Brown, and S. E. Newman. 1989. Cognitive Apprenticeship: Teaching the Craft of Reading, Writing and Mathematics. In: *Knowing, Learning and Instruction: Essays in Honor of Robert Glaser*, ed. L. B. Resnick, pp. 453–494. Hillsdale: Erlbaum. [12]
- Collins, A., and A. Stevens. 1982. Goals and Strategies for Inquiry Teachers. In: *Advances in Instructional Psychology*, ed. R. Glaser, vol. 2, pp. 65–119. Hillsdale: Erlbaum. [12]
- Corbett, A. T., and J. R. Anderson. 1995. Knowledge Decomposition and Subgoal Reification in the ACT Programming Tutor. In: *Proc. AI-ED 1995*. Charlottesville: AACE. [4]
- Cordeschi, R. 2002. *The Discovery of the Artificial: Behavior, Mind and Machines Before and Beyond Cybernetics*. New York: Springer. [14]
- Cordova, D. I., and M. R. Lepper. 1996. Intrinsic Motivation and the Process of Learning: Beneficial Effects of Contextualization, Personalization, and Choice. *J. Educ. Psychol.* **88**:715–730. [12]
- Core, M. G., J. D. Moore, and C. Zinn. 2003. The Role of Initiative in Tutorial Dialogue. In: *Proc. 10th Conf. of the European Chapter of the Association for Computational Linguistics*, ed. A. Copestake and J. Hajic, vol. 1, pp. 67–74. Stroudsburg, PA: Assn. of Computational Linguistics. [12]
- Couper-Kuhlen, E. 2014. What Does Grammar Tell Us About Action? *Pragmatics* **24**:623–647. [8]
- Craft, A. 2001. *An Analysis of Research and Literature on Creativity in Education*. Report for the Qualifications and Curriculum Authority. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.508.3210&rep=rep1&type=pdf> (accessed Oct., 19, 2017). [7]
- Crangle, C., and P. Suppes. 1994. *Language and Learning for Robots*, Centre for the Study of Language and Communications. Stanford Univ. Lecture Notes No. 41. Stanford: CSLI [17]
- Csibra, G., and G. Gergely. 2009. Natural Pedagogy. *Trends Cogn. Sci.* **13**:148–153. [7, 8, 15]
- Csibra, G., G. Gergely, S. Biró, O. Koós, and M. Brockbank. 1999. Goal Attribution without Agency Cues: The Perception of Pure Reason in Infancy. *Cognition* **72**:237–267. [16]
- Dabrowska, E., and E. Lieven. 2005. Towards a lexically specific grammar of children's question constructions. *Cogn. Ling.* **16**:437–474. [13]
- Davis, R., H. Shrobe, and P. Szolovits. 1993. What Is a Knowledge Representation? *AI Mag.* **14**:17–33. [3]
- de Boer, P. T., D. P. Kroese, S. Mannor, and R. Y. Rubinstein. 2005. A Tutorial on the Cross-Entropy Method. *Ann. Oper. Res.* **134**:19–67. [10]
- Dehaene, S., M. Kerszberg, and J. P. Changeux. 1998. A Neuronal Model of a Global Workspace in Effortful Cognitive Tasks. *PNAS* **95**:14529–14534. [6]
- DeJong, G., and R. Mooney. 1986. Explanation-Based Learning: An Alternative View. *Mach. Learn.* **1**:145–176. [17]

- Dell, G. S., and F. Chang. 2014. The P-Chain: Relating Sentence Production and Its Disorders to Comprehension and Acquisition. *Phil. Trans. R. Soc. B* **369**:20120394. [16]
- de Ruiter, J. P., A. Bangerter, and P. Dings. 2012. The Interplay between Gesture and Speech in the Production of Referring Expressions: Investigating the Tradeoff Hypothesis. *Top. Cogn. Sci.* **4**:232–248. [8]
- de Ruiter, J. P., M. Noordzij, S. Newman-Norlund, et al. 2010. Exploring the Cognitive Infrastructure of Communication. *Interact. Stud.* **11**:51–77. [8]
- Destefano, M. 2010. The Mechanics of Multitasking: The Choreography of Perception, Action, and Cognition over 7.05 Orders of Magnitude. PhD Thesis, Rensselaer Polytechnic Institute, Troy, NY. [10]
- Destefano, M., and W. D. Gray. 2008. Choreographing Cognition, Perception, and Motor Control over 7.03 Orders of Magnitude. In: 13th Annual ACT-R Summer Workshop. Pittsburgh: Carnegie Mellon Univ. [10]
- . 2016. Where Should Researchers Look for Strategy Discoveries during the Acquisition of Complex Task Performance? The Case of Space Fortress. In: Proc. 38th Annu. Conf. of the Cognitive Science Society, ed. A. Papafragou et al., pp. 668–673. Austin: Cognitive Science Society. [10]
- Dewey, J. 1896. The Reflex Arc Concept in Psychology. *Psychol. Rev.* **3**:357–370. [14]
- . 1897. My Pedagogic Creed, Article Two: What the School Is. *School J.* **54**:77–80. [14]
- . 1916. *Democracy and Education: An Introduction to Philosophy of Education*. London: Macmillan. [14]
- . 1934. Having an Experience. In: *Art as Experience*, pp. 36–59. New York: Perigee Books. [14]
- Dewey, J., A. W. Moore, H. C. Brown, et al. 1917. *Creative Intelligence: Essays in the Pragmatic Attitude*. New York: Henry Holt. [14]
- Diehl, J. J., L. M. Schmitt, M. Villano, and C. R. Crowell. 2012. The Clinical Use of Robots for Individuals with Autism Spectrum Disorders: A Critical Review. *Res. Autism Spectr. Disord.* **6**:249–262. [8]
- Dingemans, M., S. G. Roberts, J. Baranova, et al. 2015. Universal Principles in the Repair of Communication Problems. *PLoS One* **10**:e0136100. [7, 8]
- D’Inverno, M., and A. Still. 2014. Creative Feedback: A Manifesto for Social Learning. In: EDM 2014 Extended Proc. 7th Intl. Conf. Educational Data Mining, ed. S. Gutiérrez-Santos and O. C. Santos, pp. 192–199. London: CEUR-WS. [14]
- Dominey, P. F., and C. Dodane. 2004. Indeterminacy in Language Acquisition: The Role of Child Directed Speech and Joint Attention. *J. Neuroling.* **17**:121–145. [11]
- Donchin, E. 1995. Video Games as Research Tools: The Space Fortress Game. *Behav. Res. Methods Instrum. Comput.* **27**:217–223. [10]
- Drew, P. 1997. “Open” Class Repair Initiators in Response to Sequential Sources of Troubles in Conversation. *J. Pragmat.* **28**:69–101. [7]
- Drew, P., and E. Couper-Kuhlen, eds. 2014. *Requesting in Social Interaction. Studies in Language and Social Interaction*, vol. 26. Amsterdam: John Benjamins. [8]
- Durkheim, E. 1912. *Les Formes Élémentaires de la Vie Religieuse*. Paris: Aldrun. [8]
- Ekvall, S., and D. Kragic. 2008. Robot Learning from Demonstration: A Task-Level Planning Approach. *Int. J. Adv. Robot. Syst.* **5**:223–234. [9]
- Eliasmith, C., T. C. Stewart, X. Choo, et al. 2012. A Large-Scale Model of the Functioning Brain. *Science* **338**:1202–1205. [6]
- Emerson, R. 1837/1962. *The American Scholar*. In: *The Portable Emerson*, ed. M. Van Doren, pp. 23–46. Middlesex: Penguin Books. [14]

- Endsley, M. R. 1995. Toward a Theory of Situation Awareness in Dynamic Systems. *Human Factors* 37:32–64. [4]
- Engell, J. 1981. *The Creative Imagination: Enlightenment to Romanticism*. Cambridge, MA: Harvard Univ. Press. [14]
- Ericsson, K. A., R. R. Hoffman, A. Kozbelt, and A. M. Williams, eds. 2018. *The Cambridge Handbook of Expertise and Expert Performance*, 2nd edition. Cambridge: Cambridge Univ. Press. [10]
- Ericsson, K. A., and A. C. Lehmann 1996. Expert and exceptional performance: Evidence of maximal adaptation to task constraints. *Annu. Rev. Psychol.* 47:273–305. [12]
- Evens, M., and J. Michael. 2006. *One-on-One Tutoring by Humans and Machines*. Mahwah: Erlbaum. [12]
- Eysenck, H. J. 1995. Creativity as a Product of Intelligence and Personality. In: *International Handbook of Personality and Intelligence*, pp. 231–247. New York: Plenum. [14]
- Fan, L., M. Scheutz, M. Lohani, M. McCoy, and C. Stokes. 2017. Do We Need Emotionally Intelligent Artificial Agents? First Results of Human Perceptions of Emotional Intelligence in Humans Compared to Robots. Proc. 17th Intl. Conf. on Intelligent Virtual Agents, pp. 129–141. New York: Springer. [18]
- Fang, R., M. Doering, and J. Y. Chai. 2015. Embodied Collaborative Referring Expression Generation in Situated Human-Robot Dialogue. In: *Human-Robot Interaction (HRI)*, Proc. 10th ACM/IEEE Intl. Conf., pp. 271–278. New York: ACM. [9]
- Feldman, R. 2007. Parent–Infant Synchrony and the Construction of Shared Timing. Physiological Precursors, Developmental Outcomes and Risk Conditions. *J. Child Psychol. Psychiatry* 48:329–354. [7]
- Fischer, K., K. Foth, K. J. Rohlfing, and B. Wrede. 2011. Mindful Tutors: Linguistic Choice and Action Demonstration in Speech to Infants and Robots. *Interact. Stud.* 12:134–161. [11]
- Fischer, R., and F. Plessow. 2015. Efficient Multitasking: Parallel versus Serial Processing of Multiple Tasks. *Front. Psychol.* 6:1366. [8]
- Fitts, P. M. 1964. Perceptual-Motor Skill Learning. In: *Categories of Human Learning*, ed. A. Melton, pp. 243–285. New York: Academic Press. [10]
- Fitts, P. M., and M. I. Posner. 1967. *Human Performance*. Belmont, CA: Brooks/Cole. [12]
- Floyd, S., E. Manrique, G. Rossi, and F. Torreira. 2016. Timing of Visual Bodily Behavior in Repair Sequences: Evidence from Three Languages. *Discourse Process.* 53:175–204. [8]
- Fonseca, B., and M. T. H. Chi. 2011. The Self-Explanation Effect: A Constructive Learning Activity. In: *The Handbook of Research on Learning and Instruction*, ed. R. E. Mayer and P. Alexander, pp. 296–321. New York: Routledge. [12]
- Forbes, M., and Y. Choi. 2017. Verb Physics: Relative Physical Knowledge of Actions and Objects. In: Proc. 55th Annual Meeting of the Association for Computational Linguistics, pp. 266–276. Vancouver: ACL. [9]
- Forbus, K. 2011. Qualitative Modeling. *Wiley Interdiscip. Rev. Cogn. Sci.* 2:374–391. [3]
- Forbus, K., M. Chang, M. McLure, and M. Usher. 2017. The Cognitive Science of Sketch Worksheets. *Top. Cogn. Sci.* 9:921–942. [11]
- Forbus, K., and D. Gentner. 1997. Qualitative Mental Models: Simulations or Memories? In: Proc. 11th Intl. Workshop on Qualitative Reasoning, pp. 97–104. Cortona, Italy: AAAI Press. [3]



- Fox, B. A. 1991. Cognitive and Interactional Aspects of Correction in Tutoring. In: Teaching Knowledge and Intelligent Tutoring, ed. P. Goodyear, pp. 149–172. Norwood, NJ: Ablex. [7, 12]
- . 1993. The Human Tutorial Dialogue Project: Issues in the Design of Instructional Systems. Hillsdale: Erlbaum. [7, 12]
- Fox, M., and D. Long. 2003. Pddl 2.1: An Extension to Pddl for Expressing Temporal Planning Domains. *J. Artif. Intell. Res.* **20**:61–124. [9]
- Fox, R., and C. McDaniel. 1982. The Perception of Biological Motion by Human Infants. *Science* **218**:486–487. [16]
- Frank, M. J., B. Loughry, and R. C. O’Reilly. 2001. Interactions between Frontal Cortex and Basal Ganglia in Working Memory: A Computational Model. *Cogn. Affect. Behav. Neurosci.* **1**:137–160. [15]
- Frankenhuis, W. E., B. House, H. Clark Barrett, and S. P. Johnson. 2013. Infants’ Perception of Chasing. *Cognition* **126**:224–233. [16]
- Frederiksen, N., J. Donin, and M. Roy. 2000. Human Tutoring as a Model for Computer Tutors: Studying Human Tutoring from a Cognitive Perspective. In: Modelling Human Teaching Tactics and Strategies: Workshop W1 of ITS’2000, ed. B. du Boulay. Heidelberg: Springer. [12]
- Friedman, N., L. Getoor, D. Koller, and A. Pfeffer. 1999. Learning Probabilistic Relational Models. In: Proc. 16th Intl. Joint Conf. on Artificial Intelligence (IJCAI-99), vol. 2, pp. 1300–1307. San Francisco: Morgan Kaufmann. [5]
- Fu, W.-T., and J. R. Anderson. 2006. From Recurrent Choice to Skill Learning: A Reinforcement-Learning Model. *J. Exp. Psychol. Gen.* **135**:184–206. [4]
- Fu, W.-T., and W. D. Gray. 2004. Resolving the Paradox of the Active User: Stable Suboptimal Performance in Interactive Tasks. *Cogn. Sci.* **28**:901–935. [10]
- Gao, Q., M. Doering, S. Yang, and J. Y. Chai. 2016. Physical Causality of Action Verbs in Grounded Language Understanding. In: Proc. 54th Annual Meeting of the Association for Computational Linguistics. Berlin: ACL. [9]
- Gao, T., G. E. Newman, and B. J. Scholl. 2009. The Psychophysics of Chasing: A Case Study in the Perception of Animacy. *Cogn. Psychol.* **59**:154–179. [16]
- Garrod, S., and M. J. Pickering. 2004. Why Is Conversation So Easy? *Trends Cogn. Sci.* **8**:8–11. [7]
- Gaskins, S. 1999. Children’s Daily Lives in a Mayan Village: A Case Study of Culturally Constructed Roles and Activities. In: Children’s Engagement in the World: Sociocultural Perspectives, ed. A. Göncü, pp. 25–61. Cambridge: Cambridge Univ. Press. [8]
- Genesereth, M., and M. Thielscher. 2014. General Game Playing. In: Synthesis Lectures on Artificial Intelligence and Machine Learning, ed. R. Brachman and S. Stone, vol. 8. San Rafael, CA: Morgan and Claypool Publ. [3]
- Gergely, G., H. Bekkering, and I. Király. 2002. Rational Imitation in Preverbal Infants. *Nature* **415**:755. [7]
- Gergely, G., and G. Csibra. 2003. Teleological Reasoning in Infancy: The Naive Theory of Rational Action. *Trends Cogn. Sci.* **7**:287–292. [16]
- Gibson, E. J., and A. S. Walker. 1984. Development of Knowledge of Visual-Tactual Affordances of Substance. *Child Dev.* **55**:453–460. [14]
- Giese, M. A., and T. Poggio. 2003. Cognitive Neuroscience: Neural Mechanisms for the Recognition of Biological Movements. *Nat. Rev. Neurosci.* **4**:179–192. [16]
- Gisladottir, R. S., D. Chwilla, and S. C. Levinson. 2015. Conversation Electrified: ERP Correlates of Speech Act Recognition in Underspecified Utterances. *PLoS One* **10**:e0120068. [8]

- Glas, D. F., T. Minato, C. T. Ishi, T. Kawahara, and H. Ishiguro. 2016. ERICA: The ERATO Intelligent Conversational Android. In: 25th IEEE Intl. Symp. on Robot and Human Interactive Communication (Ro-Man), pp. 22–29. New York: IEEE [8]
- Glass, M. S., J. H. Kim, M. Evens, J. Michael, and A. Rovick. 1999. Novice vs. Expert Tutors: A Comparison of Style. In: Proc. 10th Midwest Artificial Intelligence and Cognitive Science Conf. (MAIS-99). Bloomington: AAAI Press. [12]
- Glenberg, A.M., A. Wilkinson, and W. Epstein. 1982. The illusion of knowing: Failure in the self-assessment of comprehension. *Mem. Cogn.* **10**:597–602. [12]
- Glendenning, K., T. Wischgoll, J. Harris, R. Vickery, and L. Blaha. 2016. Parameter Space Visualization for Large-Scale Datasets Using Parallel Coordinate Plots. *J. Imaging Sci. Technol.* **60**:10406–10401–10406–10408(10408). [10]
- Gluck, K. A., and J. Harris. 2008. Mindmodeling@Home. In: Proc. 30th Annual Conf. of the Cognitive Science Society, ed. B. C. Love et al., p. 1422. Cognitive Science Society. [10]
- Gluck, K. A., T. Jastrzembski, and K. Krusmark. 2019. Prospective Comments on Performance Prediction for Aviation Psychology. In: Advances in Aviation Psychology, ed. M. A. Vidulich and P. S. Tsang. Boca Raton: CRC Press, in press. [11]
- Gobet, F., and H. A. Simon. 1996. Recall of Rapidly Presented Random Chess Positions Is a Function of Skill. *Psychonomic Bulletin & Review* **3**:159–163. [10]
- Goffman, E. 1959. The Presentation of Self in Everyday Life. Edinburgh: Univ. of Edinburgh Social Sciences Research Centre. [8]
- Goldman, S., J. Pellegrino, and J. D. Bransford. 1993. Assessing Programs That Invite Thinking. In: Technology Assessment: Estimating the Future, ed. H. F. O’Neil and E. L. Baker, pp. 199–230. Hillsdale: Erlbaum. [12]
- Goldstone, R. L., and G. Lupyan. 2016. Discovering Psychological Principles by Mining Naturally Occurring Data Sets. *Top. Cogn. Sci.* **8**:548–568. [10]
- Golinkoff, R. M., H. L. Chung, K. Hirsh-Pasek, et al. 2002. Young Children Can Extend Motion Verbs to Point-Light Displays. *Dev. Psychol.* **38**:604–614. [16]
- Gonzalez, C., F. J. Lerch, and C. Lebiere. 2003. Instance-Based Learning in Dynamic Decision Making. *Cogn. Sci.* **27**:591–635. [4]
- Gopnik, A., and L. Schulz. 2007. Causal Learning: Psychology, Philosophy, and Computation. Oxford: Oxford Univ. Press. [15]
- Gorman, J. C., N. J. Cooke, and P. G. Amazeen. 2010. Training Adaptive Teams. *Human Factors* **52**:295–307. [11]
- Graesser, A. C. 2009. Inaugural Editorial for Journal of Educational Psychology. *J. Educ. Psychol.* **101**:259–261. [14]
- Graesser, A. C., N. Person, and J. Magliano. 1995. Collaborative Dialog Patterns in Naturalistic One-on-One Tutoring. *Appl. Cogn. Psychol.* **9**:359–387. [12]
- Gratch, J., D. DeVault, G. Lucas, and S. Marsella. 2015. Negotiation as a Challenge Problem for Virtual Humans. In: Intelligent Virtual Agents, ed. W. P. Brinkman et al., pp. 201–215. Cham: Springer. [9]
- Grauman, K., and B. Leibe. 2011. Visual Object Recognition. In: Synthesis Lectures on Artificial Intelligence and Machine Learning, ed. R. J. Brachman and T. G. Dietterich, vol. 5, pp. 1–181. Williston, VT: Morgan and Claypool Publ. [9]
- Gray, W. D. 2017. Plateaus and Asymptotes: Spurious and Real Limits in Human Performance. *Curr. Dir. Psychol. Sci.* **26**:59–67. [7, 10]

- Gray, W. D., and M. Destefano. 2016. Searching Not under the Lightpole but Where We Dropped Our Keys: Using Change-point Detection to Shine the Light on Periods of Strategy Invention and Change. Paper presented at the 57th Annual Meeting of the Psychonomics Society <http://homepages.rpi.edu/~grayw/pubs/papers/2016/gray-16psychonomics.pdf> (accessed Jan. 31, 2019). [10]
- Gray, W. D., B. E. John, and M. E. Atwood. 1993. Project Ernestine: Validating GOMS for Predicting and Explaining Real-World Task Performance. *Human-Comput. Interact.* **8**:237–309. [3]
- Gray, W. D., and J. K. Lindstedt. 2017. Plateaus, Dips, and Leaps: Where to Look for Inventions and Discoveries During Skilled Performance. *Cogn. Sci.* **41**:1838–1870. [7, 10]
- Gray, W. D., C. R. Sims, W.-T. Fu, and M. J. Schoelles. 2006. The Soft Constraints Hypothesis: A Rational Analysis Approach to Resource Allocation for Interactive Behavior. *Psychol. Rev.* **113**:461–482. [10]
- Green, C. S., and D. Bavelier. 2012. Learning, Attentional Control, and Action Video Games. *Curr. Biol.* **22**:R197–R206. [16]
- Grice, H. P. 1957. Meaning. *Philos. Psychol.* **67**:377–388. [8]
- . 1975. Logic and Conversation. In: *Syntax and Semantics, Speech Arts*, vol. 3, ed. P. Cole and J. L. Morgan, pp. 41–58. New York: Academic Press. [8, 15]
- Griffiths, T. L. 2015. Manifesto for a New (Computational) Cognitive Revolution. *Cognition* **135**:21–23. [10]
- Grimminger, A., K. J. Rohlfing, and P. Stenneken. 2010. Do Mothers Alter Their Pointing Behavior in Dependence of Children’s Lexical Development and Task-Difficulty? Analysis of Task-Oriented Gestural Input Towards Typically Developed Children and Late Talkers. *Gesture* **10**:251–278. [11]
- Grosz, B., and C. L. Sidner. 1986. Attention, Intentions, and the Structure of Discourse. *Comput. Linguist.* **12**:175–204. [9]
- Guha, A. I. 2016. Towards Meaningful Human-Robot Collaboration on Object Placement. Undergraduate thesis, Dept. of Computer Science, Brown Univ. [9]
- Guizzo, E., and E. Ackerman. 2012. How Rethink Robotics Built Its New Baxter Robot Worker. *IEEE Spectrum* Sept. 18, 2012. [9]
- Hacking, I. 1983. Nineteenth Century Cracks in the Concept of Determinism. *J. Hist. Ideas* **44**:455–475. [14]
- Hamlin, J. K., K. Wynn, and P. Bloom. 2007. Social Evaluation by Preverbal Infants. *Nature* **450**:557–559. [16]
- Harpstead, E., C. J. MacLellan, V. Alevan, and B. A. Myers. 2015. Replay Analysis in Open-Ended Educational Games. In: *Serious Games Analytics: Methodologies for Performance Measurement, Assessment, and Improvement*, ed. C. S. Loh et al., pp. 381–399. Cham: Springer. [3]
- Hattie, J., and H. Timperley. 2007. The Power of Feedback. *Rev. Educ. Res.* **77**:81–112. [11, 12]
- Hayes, B., and J. Shah. 2017. Improving Robot Controller Interpretability and Transparency through Autonomous Policy Explanation. In: *Human-Robot Interaction (HRI), Proc. 12th ACM/IEEE ACM/IEEE Intl. Conf.*, pp. 303–312. New York: ACM. [7, 9]
- Hayes-Roth, B. 1985. A Blackboard Architecture for Control. *Artif. Intell.* **26**:251–321. [6]
- Hegel, F., M. Lohse, and B. Wrede. 2009. Effects of Visual Appearance on the Attribution of Applications in Social Robotics. In: *The 18th IEEE Intl. Symp. on Robot and Human Interactive Communication*, pp. 64–71. IEEE. [11]

- Heller, V., and K. Rohlfing. 2017. Reference as an Interactive Achievement: Sequential and Longitudinal Analyses of Labeling Interactions in Shared Book Reading and Free Play. *Front. Psychol.* **8**:139. [11]
- Henderlong, J., and M. R. Lepper. 2002. The Effects of Praise on Children's Intrinsic Motivation: A Review and Synthesis. *Psychol. Bull.* **128**:774–795. [12]
- Hinrichs, T., and K. Forbus. 2013a. X Goes First: Teaching Simple Games through Multimodal Interaction. In: Proc. 2nd Conf. on Advances in Cognitive Systems, ed. M. Klenk and J. E. Laird, pp. 205–218. Baltimore: Cognitive Systems Foundation. [17]
- . 2013b. Beyond the Rational Player: Amortizing Type-Level Goal Hierarchies. In: Goal Reasoning: Papers from the ACS Workshop, pp. 34–42. College Park: Univ. of Maryland, Dept. of Computer Science. [15]
- Hirsh-Pasek, K., and R. M. Golinkoff. 1996. The Origins of Grammar: Evidence from Early Language Comprehension. Cambridge, MA: MIT Press. [11]
- Hollan, J., E. Hutchins, and D. Kirsch. 2000. Distributed Cognition: Toward a New Foundation for Human-Computer Interaction Research. *ACM Trans. Comput. Hum. Interact.* **7**:174–196. [8]
- Holroyd, A., C. Rich, C. L. Sidner, and B. Ponsler. 2011. Generating Connection Events for Human-Robot Collaboration. In: 2011 Ro-Man, pp. 241–246. Atlanta: IEEE [9]
- Hömke, P., J. Holler, and S. C. Levinson. 2017. Eye Blinking as Addressee Feedback in Face-to-Face Conversation. *Res. Lang. Soc. Interact.* **50**:54–70. [8]
- Huang, J., and M. Cakmak. 2017. Code3: A System for End-to-End Programming of Mobile Manipulator Robots for Novices and Experts. In: Human-Robot Interaction (HRI), Proc. 12th ACM/IEEE Intl. Conf., pp. 453–462. New York: ACM. [9]
- Hudson, L. 1966. *Contrary Imaginations*. London: Methuen. [14]
- Huffman, S. B., and J. E. Laird. 1995. Flexibly Instructable Agents. *J. Artif. Intell. Res.* **3**:271–324. [17]
- Hume, G., J. Michael, A. Rovick, and M. Evens. 1996. Hinting as a Tactic in One-on-One Tutoring. *J. Learn. Sciences* **5**:23–49. [12]
- Hutchins, E. 1995. *Cognition in the Wild*. Cambridge, MA: MIT Press. [8]
- Indefrey, P. 2011. The Spatial and Temporal Signatures of Word Production Components: A Critical Update. *Front. Psychol.* **2**:255. [8]
- Jacob, P. 2003. Intentionality. In: *The Stanford Encyclopedia of Philosophy*. Stanford Metaphysics Research Lab, Stanford Univ. [14]
- James, W. 1890. *The Principles of Psychology*. New York: Henry Holt. [16]
- . 1975. *Pragmatism*. Cambridge, MA: Harvard Univ. Press. [14]
- Janciauskas, M., and F. Chang. 2018. Input and Age-Dependent Variation in Second Language Learning: A Connectionist Account. *Cogn. Sci.* **42**:519–554. [16]
- Janssen, C. P., and W. D. Gray. 2012. When, What, and How Much to Reward in Reinforcement Learning Based Models of Cognition. *Cogn. Sci.* **36**:333–358. [10]
- Jeong, H., S. Siler, and M. T. H. Chi. 1997. Can Tutors Diagnose Students' Understanding? In: Proc. 19th Annu. Conf. of the Cognitive Science Society, ed. M. G. Shafto and P. Langley, p. 959. Mahwah: Erlbaum. [12]
- Johansson, G. 1973. Visual Perception of Biological Motion and a Model for Its Analysis. *Percept. Psychophys.* **14**:201–211. [16]
- . 1976. Spatio-Temporal Differentiation and Integration in Visual Motion Perception: An Experimental and Theoretical Analysis of Calculus-Like Functions in Visual Data Processing. *Psychol. Res.* **38**:379–393. [16]
- Johnson, M., J. M. Bradshaw, P. J. Feltovich, et al. 2014. Coactive Design: Designing Support for Interdependence in Joint Activity. *J. Hum. Robot. Interact.* **3**:43–69. [3]

- Johnson, W. L., and S. B. Zaker. 2012. The Power of Social Simulation for Chinese Language Teaching. [https://www.alelo.com/wp-content/uploads/2014/06/TCLT7\\_Presentation\\_Johnson\\_Zakar\\_May2012.pdf](https://www.alelo.com/wp-content/uploads/2014/06/TCLT7_Presentation_Johnson_Zakar_May2012.pdf) (accessed Oct. 4, 2017). [9]
- Juel, C. 1996. What Makes Literacy Tutoring Effective? *Read. Res. Q.* **31**:268–289. [12]
- Jurafsky, D., and J. Martin. 2008. *Speech and Language Processing: An Introduction to Natural Language Processing, Computational Linguistics, and Speech Recognition*, 2nd edition. Upper Saddle River, NJ: Prentice-Hall. [9]
- Kaelbling, L. P., M. L. Littman, and A. W. Moore. 1996. Reinforcement Learning: A Survey. *J. Artif. Intell. Res.* **4**:237–285. [9]
- Katz, S., D. Allbritton, and J. Connelly. 2003. Going Beyond the Problem Given: How Human Tutors Use Post-Solution Discussions to Support Transfer. *Int. J. Artific. Intel. Educ.* **13**:79–116. [12]
- Kendrick, K. H. 2015. Other-Initiated Repair in English. *Open Linguist.* **1**:164–190. [8]
- Kendrick, K. H., and J. Holler. 2017. Gaze Direction Signals Response Preference in Conversation. *Res. Lang. Soc. Interact.* **50**:12–32. [8]
- Kenreck, T. 2012. “League of Legends” Players Log 1 Billion Hours a Month. NBC News, Oct. 12, 2012. <https://www.nbcnews.com/tech/tech-news/league-legends-players-log-1-billion-hours-month-fna1C6423906> (accessed Nov. 1, 2018). [10]
- Keysar, B., D. J. Barr, J. A. Balin, and J. S. Brauner. 2000. Taking Perspective in Conversation: The Role of Mutual Knowledge in Comprehension. *Psychol. Sci.* **11**:32–38. [7]
- Keysar, B., D. J. Barr, and W. S. Horton. 1998. The Egocentric Basis of Language Use: Insights from a Processing Approach. *Curr. Dir. Psychol. Sci.* **7**:46–49. [15]
- Kieras, D. E., and D. E. Meyer. 1997. An Overview of the Epic Architecture for Cognition and Performance with Application to Human-Computer Interaction. *Human-Comput. Interact.* **12**:391–438. [3]
- Kim, J. H., H. M. Chae, and M. S. Glass. 2005. Expert and Novice Algebra Tutor Behaviors Compared. Proc. 27th Annual Conf. of the Cognitive Science Society, ed. B. G. Bara et al., p. 2499. Mahwah: Erlbaum. [12]
- Kirk, J. R., and J. E. Laird. 2014. Interactive Task Learning for Simple Games. *Adv. Cog. Syst.* **3**:13–30. [4]
- . 2016. Learning General and Efficient Representations of Novel Games through Interactive Instruction. In: Proc. 4th Conf. on Advances in Cognitive Systems, ed. K. Forbus et al., pp. 1–14. Evanston: Cognitive Systems Foundation. [15, 17]
- Kirk, J. R., A. Mininger, and J. E. Laird. 2016. Learning Task Goals Interactively with Visual Demonstrations. *Biol. Inspired Cogn. Arch.* **18**:1–8. [9, 17]
- Kirkpatrick, J., R. Pascanu, N. Rabinowitz, et al. 2017. Overcoming Catastrophic Forgetting in Neural Networks. *PNAS* **114**:3521–3526. [16]
- Klein, W., and C. Perdue. 1997. The Basic Variety (Or: Couldn’t Natural Languages Be Much Simpler?). *Second Language Research* **13**:301–347. [7]
- Kluger, A. N., and A. DeNisi. 1996. The Effects of Feedback Intervention on Performance: A Historical Review, a Meta-Analysis and a Preliminary Feedback Intervention Theory. *Psychol. Bull.* **112**:254–284. [12]
- Knoblich, G., S. Butterfill, and N. Sebanz. 2011. Psychological Research on Joint Action: Theory and Data. In: *Psychology of Learning and Motivation: Advances in Research and Theory*, ed. B. H. Ross, vol. 54, pp. 59–101. [10]
- Knoblock, C. 2004. Building Software Agents for Planning, Monitoring, and Optimizing Travel. In: *Information and Communication Technologies in Tourism 2004: Proc. of the 11th Intl. Conf. on Information Technology and Travel*, ed. A. J. Frew, pp. 1–15. New York: Springer. [3]

- Koedinger, K. R., J. L. Booth, and D. Klahr. 2013. Instructional Complexity and the Science to Constrain It. *Science* **342**:935–937. [11]
- Koedinger, K. R., A. Corbett, and C. Perfetti. 2012. The Knowledge-Learning-Instruction (KLI) Framework: Bridging the Science-Practice Chasm to Enhance Robust Student Learning. *Cogn. Sci.* **36**:757–798. [11, 12]
- Kordjamshidi, P., D. Roth, and H. Wu. 2015. Saul: Towards Declarative Learning Based Programming. *IJCAI 2015*:1844–1851. [15]
- Kress-Gazit, H., G. E. Fainekos, and G. J. Pappas. 2007. From Structured English to Robot Motion. In: 2007 IEEE/RSJ Intl. Conf. on Intelligent Robots and Systems pp. 2717–2722. San Diego: IEEE. [9]
- Krishnamurthy, J., and T. Kollar. 2013. Jointly Learning to Parse and Perceive: Connecting Natural Language to the Physical World. *Trans. Assoc. Comput. Linguist.* **1**:193–206. [9]
- Kuehne, S., K. Forbus, D. Gentener, and B. Quinn. 2000. SQL: Category Learning as Progressive Abstraction Using Structure Mapping. In: Proc. 22nd Annual Meeting of the Cognitive Science Society, ed. L. R. Gleitman and A. K. Joshi, pp. 770–775. Philadelphia: Cognitive Science Society. [15]
- Lagemann, E. C. 1989. The Plural Worlds of Educational Research. *Hist. Educ. Q.* **29**:183–214. [14]
- Laird, J. E. 2012. The Soar Cognitive Architecture. Cambridge, MA: MIT Press. [6, 17]
- Laird, J. E., K. Gluck, J. Anderson, et al. 2017a. Interactive Task Learning. *IEEE Intell. Syst.* **32**:6–21. [11, 17]
- Laird, J. E., C. Lebiere, and P. S. Rosenbloom. 2017b. A Standard Model of the Mind: Toward a Common Computational Framework across Artificial Intelligence, Cognitive Science, Neuroscience, and Robotics. *AI Mag.* **38**:13–26. [3, 4]
- Laird, J. E., P. S. Rosenbloom, and A. Newell. 1986. Chunking in Soar: The Anatomy of a General Learning Mechanism. *Mach. Learn.* **1**:11–46. [3, 6]
- Langley, P., N. Trivedi, and M. Banister. 2010. A Command Language for Taskable Virtual Agents. In: Proc. 6th Conf. Artificial Intelligence and Interactive Digital Entertainment. Stanford: AAAI Press. [17]
- Larsson, S., and D. R. Traum. 2000. Information State and Dialogue Management in the Trindi Dialogue Move Engine Toolkit. *Nat. Lang. Eng.* **6**:323–340. [9]
- Lazowski, R. A., and C. S. Hulleman. 2016. Motivation Interventions in Education: A Meta-Analytic Review. *Rev. Educ. Res.* **86**:602–640. [12]
- Lebiere, C. 1999. The Dynamics of Cognitive Arithmetic. *Kognitionswiss.* **8**:5–19. [4]
- Lebiere, C., R. Gray, D. Salvucci, and R. West. 2003. Choice and Learning under Uncertainty: A Case Study in Baseball Batting. In: Proc. 25th Annual Meeting of the Cognitive Science Society, pp. 704–709. Mahwah: Erlbaum. [4]
- Lebiere, C., F. Jentsch, and S. Ososky. 2013a. Cognitive Models of Decision Making Processes for Human-Robot Interaction. In: Virtual, Augmented and Mixed Reality: Designing and Developing Augmented and Virtual Environments. Proc. 5th Intl. Conf. VAMR, Part 1, ed. R. Shumaker. Lecture Notes in Computer Science. Heidelberg: Springer. [4]
- Lebiere, C., P. Pirolli, R. Thomson, et al. 2013b. A Functional Model of Sensemaking in a Neurocognitive Architecture. *Comput. Intell. Neurosci.* Article ID 921695. [4]
- Lebiere, C., and D. Wallach. 2001. Sequence Learning in the ACT-R Cognitive Architecture: Empirical Analysis of a Hybrid Model. In: Sequence Learning: Paradigms, Algorithms, and Applications, ed. R. Sun and L. Giles, pp. 188–212. Lecture Notes in Artificial Intelligence 1828, G. Goos et al., series ed. Heidelberg: Springer. [4]

- Lec, S. J. 1962. Unfrisierte Gedanken (Unkempt Thoughts), J. Galazka, series ed. New York: St. Martin's Press. [10]
- Lehman, J. F., and J. G. Carbonell. 1989. Learning the User's Language: A Step Towards Automated Creation of User Models. In: *User Models in Dialog Systems*, ed. A. Kobsa and W. Wahlster, pp. 163–194. Berlin: Springer. [3]
- Lehman, J. F., J. Van Dyke, and R. Rubinoff. 1995. Natural Language Processing for IFORs: Comprehension and Generation in the Air Combat Domain. In: *Collected Papers of the Soar/IFOR Project*, Research Report, Spring 1995, pp. 33–41. Marina del Rey, CA: USC Information Sciences Institute. [3]
- Lenat, D. B. 1995. CYC: A Large-Scale Investment in Knowledge Infrastructure. *Commun. ACM* **38**:33–38. [15]
- Lepper, M. R., and M. Woolverton. 2002. The Wisdom of Practice: Lessons Learned from the Study of Highly Effective Tutors. In: *Improving Academic Achievement: Impact of Psychological Factors on Education*, ed. J. Aronson, pp. 135–158. New York: Academic Press. [12]
- Lepper, M. R., M. Woolverton, D. L. Mumme, and J.-L. Gurtner. 1993. Motivational Techniques of Expert Human Tutors: Lessons for the Design of Computer-Based Tutors. In: *Computers as Cognitive Tools*, ed. S. P. Lajoie and S. J. Derry, pp. 75–105. Hillsdale: Erlbaum. [12]
- Lerch, F. J., C. Gonzalez, and C. Lebiere. 1999. Learning under High Cognitive Workload. In: *Proc. 21st Conf. of the Cognitive Science Society*, pp. 302–307. Mahwah: Erlbaum. [4]
- Leslie, A. M. 1984. Spatiotemporal Continuity and the Perception of Causality in Infants. *Perception* **13**:287–305. [16]
- Leslie, A. M., O. Friedman, and T. P. German. 2004. Core Mechanisms in “Theory of Mind.” *Trends Cogn. Sci.* **8**:528–533. [15]
- Leslie, A. M., and S. Keeble. 1987. Do Six-Month-Old Infants Perceive Causality? *Cognition* **25**:265–288. [16]
- Leslie, A. M., F. Xu, P. D. Tremoulet, and B. J. Scholl. 1998. Indexing and the Object Concept: Developing What and Where Systems. *Trends Cogn. Sci.* **2**:10–18. [16]
- Levinson, S. C. 1995. Interactional Biases in Human Thinking. In: *Social Intelligence and Interaction*, ed. E. N. Goody, pp. 221–260. Cambridge: Cambridge Univ. Press. [8]
- . 2006. On the Human Interaction Engine. In: *Roots of Human Sociality: Culture, Cognition and Interaction*, ed. N. J. Enfield and S. C. Levinson, pp. 39–69. Oxford: Berg. [8]
- . 2013a. Action Formation and Ascription. In: *The Handbook of Conversation Analysis*, ed. T. Stivers and J. Sidnell, pp. 103–130. Malden, MA: Wiley-Blackwell. [8]
- . 2013b. Recursion in Pragmatics. *Language* **89**:149–162. [8]
- . 2016. Turn-Taking in Human Communication, Origins and Implications for Language Processing. *Trends Cogn. Sci.* **20**:6–14. [7, 8]
- . 2017. Speech Acts. In: *Oxford Handbook of Pragmatics*, ed. Y. Huang, pp. 199–216. Oxford: Oxford Univ. Press. [8]
- Levinson, S. C., and F. Torreira. 2015. Timing in Turn-Taking and Its Implications for Processing Models of Language. *Front. Psychol.* **6**:731. [8]
- Lew-Williams, C., and A. Fernald. 2007. Young Children Learning Spanish Make Rapid Use of Grammatical Gender in Spoken Word Recognition. *Psychol. Sci.* **18**:193–198. [16]

- Li, N., N. Matsuda, W. Cohen, and K. R. Koedinger. 2015. Integrating Representation Learning and Skill Learning in a Human-Like Intelligent Agent. *Artif. Intell.* **219**:67–91. [11, 17]
- Lieto, A., C. Lebiere, and A. Oltramari. 2018. The Knowledge Level in Cognitive Architectures: Current Limitations and Possible Developments. *Cogn. Syst. Res.* **48**:39–55. [4]
- Liszkowski, U., P. Brown, T. Callaghan, A. Takada, and C. De Vos. 2012. A Prelinguistic Gestural Universal of Human Communication. *Cogn. Sci.* **36**:698–713. [7]
- Litman, D., and S. Pan. 2002. Designing and Evaluating an Adaptive Spoken Dialogue System. *User Model. User-adapt. Interact.* **12**:111–137. [7]
- Liu, C., and J. Y. Chai. 2015. Learning to Mediate Perceptual Differences in Situated Human-Robot Dialogue. In: Proc. 29th AAAI Conf. on Artificial Intelligence, pp. 2288–2294. Austin: AAAI Press. [9]
- Liu, C., S. Yang, S. Saba-Sadiya, et al. 2016. Jointly Learning Grounded Task Structures from Language Instruction and Visual Demonstration. In: EMNLP ‘08 Proc. Conf. on Empirical Methods in Natural Language Processing, ed. M. Lapata and T. H. Ng, pp. 1482–1492. Stroudsburg, PA: ACL. [7, 9]
- Lloyd, P., L. Camaioni, and P. Ercolani. 1995. Assessing Referential Communication Skills in the Primary School Years: A Comparative Study. *Br. J. Dev. Psychol.* **13**:13–29. [7]
- Lohan, K. S., K. J. Rohlfing, K. Pitsch, et al. 2012. Tutor Spotter: Proposing a Feature Set and Evaluating It in a Robotic System. *Int. J. Soc. Robot.* **4**:131–146. [11]
- Lorenzet, S. J., E. Salas, and S. I. Tannenbaum. 2005. Benefiting from Mistakes: The Impact of Guided Errors on Learning, Performance, and Self-Efficacy. *Human Res. Devel. Q.* **16**:301–322. [7]
- Love, N., T. Hinrichs, D. Haley, E. Schkufza, and M. Genesereth. 2008. General Game Playing: Game Description Language Specification. Technical Report No. LG-2006-01. Stanford: Stanford Univ. [3]
- Lumsdaine, A. A., and R. E. Glaser, eds. 1960. Teaching Machines and Programmed Learning: A Source Book. Dept. of Audio-Visual Instruction, Natl. Education Assn. Washington, D.C.: GPO. [14]
- Luo, Y. 2011. Three-Month-Old Infants Attribute Goals to a Non-Human Agent. *Dev. Sci.* **14**:453–460. [16]
- Luo, Y., and R. Baillargeon. 2005. Can a Self-Propelled Box Have a Goal? Psychological Reasoning in 5-Month-Old Infants. *Psychol. Sci.* **16**:601–608. [16]
- . 2010. Toward a Mentalistic Account of Early Psychological Reasoning. *Curr. Dir. Psychol. Sci.* **19**:301–307. [16]
- Lyons, D. E., A. G. Young, and F. C. Keil. 2007. The Hidden Structure of Overimitation. *PNAS* **104**:19751–11975. [15]
- MacLellan, C. J., K. R. Koedinger, and N. Matsuda. 2014. Authoring Tutors with SimStudent: An Evaluation of Efficiency and Model Quality. In: Intelligent Tutoring Systems, ed. S. Trausan-Matu et al., pp. 551–560. Lecture Notes in Computer Science. Cham: Springer. [3]
- Mandler, G. 1995. Origins and Consequences of Novelty. In: The Creative Cognition Approach, pp. 9–25. Cambridge, MA: Massachusetts Institute of Technology. [14]
- Mané, A., and E. Donchin. 1989. The Space Fortress Game. *Acta Psychol.* **71**:17–22. [10]
- Mani, N., and F. Huettig. 2012. Prediction during Language Processing Is a Piece of Cake—but Only for Skilled Producers. *J. Exp. Psychol. Hum. Percept. Perform.* **38**:843–847. [16]



- Marston, D., S. L. Deno, D. Kim, K. Diment, and D. Rogers. 1995. Comparison of Reading Intervention Approaches for Students with Mild Disabilities. *Except. Child.* **62**:20–37. [12]
- Matsuda, N., W. W. Cohen, J. Sewall, G. Lacerda, and K. R. Koedinger. 2007. Predicting Students' Performance with SimStudent That Learns Cognitive Skills from Observation. In: Proc. of the Intl. Conf. on Artificial Intelligence in Education, ed. R. Luckin et al., pp. 467–476. Amsterdam: IOS Press. [3]
- Matsuda, N., E. Yarzebinski, V. Keiser, et al. 2013. Cognitive Anatomy of Tutor Learning: Lessons Learned with SimStudent. *J. Educ. Psychol.* **105**:1152–1163. [11]
- Matthews, D., E. Lieven, A. Theakston, and M. Tomasello. 2006. The Effect of Perceptual Availability and Prior Discourse on Young Children's Use of Referring Expressions. *Appl. Psycholinguist.* **27**:403–422. [7]
- Matuszek, C., L. Bo, L. Zettlemoyer, and D. Fox. 2014. Learning from Unscripted Deictic Gesture and Language for Human-Robot Interactions. In: Proc. 28th AAAI Conf. on Artificial Intelligence, pp. 2556–2563. Quebec: AAAI Press. [9]
- McArthur, D., C. Stasz, and M. Zmuidzinis. 1990. Tutoring Techniques in Algebra. *Cogn. Instr.* **7**:197–244. [12]
- McCarthy, J. 1968. Programs with Common Sense. In: Semantic Information Processing, ed. M. Minsky, pp. 403–418. Cambridge, MA: MIT Press. [17]
- McClelland, J. L., B. L. McNaughton, and R. C. O'Reilly. 1995. Why There Are Complementary Learning Systems in the Hippocampus and Neocortex: Insights from the Successes and Failures of Connectionist Models of Learning and Memory. *Psychol. Rev.* **102**:419–457. [16]
- McCorduck, P. 2004. *Machines Who Think*. Natick, MA: A. K. Peters. [3]
- Menekse, M., G. S. Stump, S. Krause, and M. T. H. Chi. 2013. Differentiated Overt Learning Activities for Effective Instruction in Engineering Classrooms. *J. Engineer. Educ.* **102**:346–374. [11, 12]
- Meriçli, C., S. D. Klee, J. Papanian, and M. Veloso. 2014. An Interactive Approach for Situated Task Specification through Verbal Instructions. In: Proc. 13th Intl. Conf. on Autonomous Agents and Multi-Agent Systems, pp. 1069–1076. Paris: Intl. Foundation for Autonomous Agents and Multiagent Systems. [17]
- Merrill, D. C., B. J. Reiser, S. K. Merrill, and S. Landes. 1995. Tutoring: Guided Learning by Doing. *Cogn. Instr.* **13**:315–372. [12]
- Merrill, D. C., B. J. Reiser, M. Ranney, and J. G. Trafton. 1992. Effective Tutoring Techniques: A Comparison of Human Tutors and Intelligent Tutoring Systems. *J. Learn. Sciences* **2**:277–306. [12]
- Merritt, M. 1976. On Questions Following Questions (on Service Encounters). *Lang. Soc.* **5**:315–357. [8]
- Michotte, A. 1963. *The Perception of Causality*, vol. 12. Oxford: Basic Books. [16]
- Mininger, A., and J. E. Laird. 2016. Interactively Learning Strategies for Handling References to Unseen or Unknown Objects. In: Proc. 4th Conf. on Advances in Cognitive Systems, ed. K. Forbus et al., pp. 1–16. Evanston: Cognitive Systems Foundation. [4, 17]
- . 2018. Interactively Learning a Blend of Goal-Based and Procedural Tasks. In: Proc. of the 32nd AAAI Conf. on Artificial Intelligence, AAAI Press. [http://soar.eecs.umich.edu/pubs/mininger\\_aai18.pdf](http://soar.eecs.umich.edu/pubs/mininger_aai18.pdf) (accessed April 10, 2018). [17]
- Misra, D. K., J. Sung, K. Lee, and A. Saxena. 2016. Tell Me Dave: Context Sensitive Grounding of Natural Language to Manipulation Instructions. *Int. J. Rob. Res.* **35**:281–300. [9]

- Mitchell, T. M. 1977. Version Spaces: A Candidate Elimination Approach to Rule Learning. *Proc. 5th Intl. Conf. on AI*, vol. 1, pp. 305–310. Cambridge, MA: IJCAI.
- . 1997. *Machine Learning*. New York: McGraw-Hill. [13]
- Mitchell, T. M., R. M. Keller, and S. V. Kedar-Cabelli. 1986. Explanation-Based Learning: A Unifying View. *Mach. Learn.* 1:47–80. [3]
- Mitchell, T. M., P. Utgoff, and R. Banerji. 1983. Learning by Experimentation: Acquiring and Refining Problem-Solving Heuristics. In: *Machine Learning*, ed. J. G. Carbonell et al., pp. 163–190. Heidelberg: Springer. [13]
- Mnih, V., K. Kavukcuoglu, D. Silver, et al. 2015. Human-Level Control through Deep Reinforcement Learning. *Nature* 518:529–533. [3, 16]
- Mohan, S., and J. E. Laird. 2014. Learning Goal-Oriented Hierarchical Tasks from Situated Interactive Instruction. In: *Proc. 28th AAAI Conf. on Artificial Intelligence*, pp. 387–394. Quebec: AAAI Press. [4, 7, 9, 15, 17]
- Mohan, S., A. Mininger, J. R. Kirk, and J. E. Laird. 2012. Acquiring Grounded Representation of Words with Situated Interactive Instruction. *Adv. Cog. Syst.* 2:113–130. [9, 17]
- Mohseni-Kabir, A., C. Li, V. Wu, et al. 2018. SLHAP: Simultaneous Learning of Hierarchy and Primitives for Complex Robot Tasks. *Auton. Robots* April: 1–16. doi.org/10.1007/s10514-018-9749-y. [5, 9]
- Mohseni-Kabir, A., C. Rich, S. Chernova, C. Sidner, and D. Miller. 2015. Interactive Hierarchical Task Learning from a Single Demonstration. In: *Human-Robot Interaction (HRI)*, *Proc. 10th ACM/IEEE Intl. Conf.*, pp. 205–212. New York: ACM. [5, 7]
- Mollard, Y., T. Munzer, A. Baisero, M. Toussaint, and M. Lopes. 2015. Robot Programming from Demonstration, Feedback and Transfer. In: *2015 IEEE/RSJ Intl. Conf. on Intelligent Robots and Systems* pp. 1825–1831. Hamburg: IEEE. [9]
- Mooney, R. 2008. Learning to Connect Language and Perception. In: *Proc. 23rd AAAI Conf. on Artificial Intelligence*, pp. 1598–1601. Chicago: AAAI Press. [9]
- Morency, L.-P., I. Kok, and J. Gratch. 2008. Predicting Listener Backchannels: A Probabilistic Multimodal Approach. In: *Intelligent Virtual Agents*, ed. H. Prendinger et al., pp. 176–190. *Lecture Notes in Computer Science*, vol. 5208. Berlin: Springer. [7]
- Morgan, T. J. H., N. T. Uomini, L. E. Rendell, et al. 2015. Experimental Evidence for the Co-Evolution of Hominin Tool-Making Teaching and Language. *Nat. Commun.* 6:6029. [8]
- Narciss, S. 2007. Feedback strategies for interactive learning tasks. In: *Handbook of Research on Educational Communications and Technology*, 3rd edition, ed. J. M. Spector et al., pp. 125–144. Mahwah: Erlbaum. [12]
- Nehaniv, C. L., and K. Dautenhahn, eds. 2007. *Imitation and Social Learning in Robots, Humans and Animals: Behavioural, Social and Communicative Dimensions*. New York: Cambridge Univ. Press. [11]
- Newell, A. 1973a. Production Systems: Models of Control Structure. In: *Visual Information Processing*, ed. W. G. Chase, pp. 526–547. New York: Academic Press. [4]
- . 1973b. You Can’t Play 20 Questions with Nature and Win: Projective Comments on the Papers of This Symposium. In: *Visual Information Processing*, ed. W. G. Chase, pp. 283–231. New York: Academic Press. [3, 4]
- . 1982. The Knowledge Level. *Artif. Intell.* 18:82–127. [3]
- . 1990. *Unified Theories of Cognition*. Cambridge, MA: Harvard Univ. Press. [3, 4, 6]

- . 1991. Reasoning, Problem Solving and Decision Processes: The Problem Space as a Fundamental Category. In: Attention and Performance VIII, ed. R. S. Nickerson, pp. 693–718. Hillsdale: Erlbaum. [17]
- Newell, A., and P. S. Rosenbloom. 1981. Mechanisms of Skill Acquisition and the Law of Practice. In: Cognitive Skills and Their Acquisition, ed. J. R. Anderson, pp. 1–55. Hillsdale: Erlbaum. [10]
- Niekum, S., S. Osentoski, G. D. Konidaris, et al. 2015. Learning Grounded Finite-State Representations from Unstructured Demonstrations. *Int. J. Rob. Res.* **34**:131–115. [9]
- Nikolaidis, S., P. Lasota, R. Ramakrishnan, and J. Shah. 2015. Improved Human–Robot Team Performance through Cross-Training, an Approach Inspired by Human Team Training Practices. *Int. J. Rob. Res.* **34**:1711–1730. [11]
- Nomikou, I., M. Koke, and K. J. Rohlfing. 2017. Verbs in Mothers’ Input to Six-Month-Olds: Synchrony between Presentation, Meaning, and Actions Is Related to Later Verb Acquisition. *Brain Sciences* **7**:52. [11]
- Noordzij, M., S. E. Newman-Norlund, J. P. De Ruiter, et al. 2009. Brain Mechanisms Underlying Human Communication. *Front. Hum. Neurosci.* **3**:14. [8]
- Norman, D. A. 1981. Categorization of Action Slips. *Psychol. Rev.* **88**:1. [7]
- Ohlsson, S., B. Di Eugenio, B. Chow, et al. 2007. Beyond the Code-and-Count Analysis of Tutoring Dialogues. In: Artificial Intelligence in Education, ed. R. Luckin et al., pp. 349–356. Amsterdam: IOS Press. [12]
- Oltramari, A., and C. Lebiere. 2012. Using Ontologies in a Cognitive-Grounded System: Automatic Action Recognition in Video-Surveillance. In: Proc. 7th Intl. Conf. on Semantic Technologies for Intelligence, Defense, and Security, ed. P. C. G. da Costa and K. B. Laskey, pp. 20–27. CEUR Workshop Proc. 966. Fairfax: CEUR. [4]
- . 2013. Knowledge in Action: Integrating Cognitive Architectures and Ontologies. In: New Trends of Research in Ontologies and Lexical Resources: Ideas, Projects, Systems, ed. A. Oltramari et al., pp. 135–154. Heidelberg: Springer. [4]
- O’Neil, C. 2016. Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy. New York: Crown. [3]
- Onishi, K. H., and R. Baillargeon. 2005. Do 15-Month-Old Infants Understand False Beliefs? *Science* **308**:255–258. [16]
- Orseau, L., and S. Armstrong. 2016. Safely Interruptible Agents. In: Proc. 32nd Conf. on Uncertainty in Artificial Intelligence, pp. 557–566. Arlington: AUA Press. [18]
- Osborn, A. F. 1948. Your Creative Mind. New York: Charles Scribner. [14]
- Özyürek, A., R. M. Willems, S. Kita, and P. Hagoort. 2007. On-Line Integration of Semantic Information from Speech and Gesture: Insights from Event-Related Brain Potentials. *J. Cogn. Neurosci.* **19**:605–616. [8]
- Palinscar, A. S., and A. L. Brown. 1984. Reciprocal Teaching of Comprehension-Fostering and Comprehension-Monitoring Activities. *Cogn. Instr.* **1**:117–175. [12]
- Pardowitz, M., S. Knoop, R. Dillmann, and R. D. Zollner. 2007. Incremental Learning of Tasks from User Demonstrations, Past Experiences, and Vocal Comments. *IEEE Trans. Syst. Man Cybern. B Cybern.* **37**:322–332. [9]
- Pavlik, P. I., Jr., and J. R. Anderson. 2005. Practice and Forgetting Effects on Vocabulary Memory: An Activation-Based Model of the Spacing Effect. *Cogn. Sci.* **29**:559–586. [11]
- Peirce, C. S. 1902/1935. Logic as Semiotic: The Theory of Signs. In: Philosophical Writings, ed. J. Buchler. New York: Dover. [14]
- Pejsa, T., D. Bohus, M. F. Cohen, et al. 2014. Natural Communication About Uncertainties in Situated Interaction. In: Proc. 16th Intl. Conf. on Multimodal Interaction, pp. 283–290. New York: ACM. [9]

- Perera, I., and J. Allen. 2014. What Is the Ground? Continuous Maps for Symbol Grounding. *Proc. Annu. Conf. Cogn. Sci. Soc.* **36**:1156–1161. [3]
- Pew, R., and A. Mavor, eds. 1998. Modeling Human and Organizational Behavior: Application to Military Simulations. Washington, D.C.: National Academies Press. [17]
- Phillips, E., D. Ullman, M. M. A. de Graaf, and B. F. Malle. 2017. What does a robot look like? A multi-site examination of user expectations about robot appearance. *Proc. Hum. Factors Ergon. Soc.* **61**:1215–1219. [18]
- Phillips, M., V. Hwang, S. Chitta, and M. Likhachev. 2016. Learning to Plan for Constrained Manipulation from Demonstrations. *Auton. Robots* **40**:109–124. [9]
- Pitsch, K., A. Vollmer, and M. Mühlrig. 2013. Robot Feedback Shapes the Tutor’s Presentation: How a Robot’s Online Gaze Strategies Lead to Micro-Adaptation of the Human’s Conduct. *Interact. Stud.* **14**:268–296. [11]
- Pitsch, K., A. Vollmer, K. Rohlfing, J. Fritsch, and B. Wrede. 2014. Tutoring in Adult-Child Interaction: On the Loop of the Tutor’s Action Modification and the Recipient’s Gaze. *Interact. Stud.* **15**:55–98. [11]
- Polya, G. 1945. How to Solve It. Princeton: Princeton Univ. Press. [13]
- Putnam, R. T. 1987. Structuring and Adjusting Content for Students: A Study of Live and Simulated Tutoring of Addition. *Am. Educ. Res. J.* **24**:13–48. [11, 12]
- Pylyshyn, Z. W., and R. W. Storm. 1988. Tracking Multiple Independent Targets: Evidence for a Parallel Tracking Mechanism. *Spat. Vis.* **3**:179–197. [16]
- Quine, W. V. O. 1960. Word and Object: An Inquiry into the Linguistic Mechanisms of Objective Reference. New York: Wiley. [7]
- Raaijmakers, J. G. W. 2003. Spacing and Repetition Effects in Human Memory: Application of the SAM Model. *Cogn. Sci.* **27**:431–452. [11]
- Rakoczy, H. 2008. Taking Fiction Seriously: Young Children Understand the Normative Structure of Joint Pretense Games. *Dev. Psychol.* **44**:1195–1201. [16]
- Rakoczy, H., and M. Tomasello. 2006. Two-Year-Olds Grasp the Intentional Structure of Pretense Acts. *Dev. Sci.* **9**:557–564. [16]
- Rakoczy, H., M. Tomasello, and T. Striano. 2004. Young Children Know That Trying Is Not Pretending: A Test of the “Behaving-as-If” Construal of Children’s Early Concept of Pretense. *Dev. Psychol.* **40**:388–399. [16]
- Ramakrishnan, R., C. Zhang, and J. Shah. 2017. Perturbation Training for Human-Robot Teams. *J. Artif. Intell. Res.* **59**:495–541. [11]
- Reason, J. 1990. Human Error. Cambridge: Cambridge Univ. Press. [7]
- Reesink, G., R. Singer, and M. Dunn. 2009. Explaining the Linguistic Diversity of Sahul Using Population Models. *PLoS Biology* **7**:e1000241. [7]
- Reynolds, J. R., J. M. Zacks, and T. S. Braver. 2007. A Computational Model of Event Segmentation from Perceptual Prediction. *Cogn. Sci.* **31**:613–643. [16]
- Rich, C. 2009. Building Task-Based User Interfaces with ANSI/CEA-2018. *IEEE Computer* **42**:20–27. [5]
- Rich, C., B. Ponsler, A. Holroyd, and C. L. Sidner. 2010. Recognizing Engagement in Human-Robot Interaction. In: Human-Robot Interaction (HRI), Proc. 5th ACM/IEEE Intl. Conf., pp. 375–382. Piscataway, NJ: IEEE Press. [9]
- Rich, C., and C. L. Sidner. 1998. Collagen: A Collaborative Manager for Software Interface Agents. *User Model. User-adapt. Interact.* **8**:315–350. [9]
- Rickel, J., and W. L. Johnson. 2000. Task-Oriented Collaboration with Embodied Agents in Virtual Worlds. In: Embodied Conversational Agents, ed. J. Cassell et al., pp. 95–122. Cambridge, MA: MIT Press. [9]

- Robinson, P., and N. C. Ellis, eds. 2008. *Handbook of Cognitive Linguistics and Second Language Acquisition*. New York: Routledge. [13]
- Rochat, P., J. G. Querido, and T. Striano. 1999. Emerging Sensitivity to the Timing and Structure of Protoconversation in Early Infancy. *Dev. Psychol.* **35**:950. [7]
- Rogers, C. R. 1954. Toward a Theory of Creativity. *Etc* **11**:249–260. [14]
- Rogoff, B., R. Paradise, R. M. Arauz, M. Correa-Chavez, and C. Angelillo. 2003. Firsthand Learning through Intent Participation. *Annu. Rev. Psychol.* **54**:175–203. [8]
- Rohlfing, K. J., J. Fritsch, B. Wrede, and T. Jungmann. 2006. How Can Multimodal Cues from Child-Directed Interaction Reduce Learning Complexity in Robots? *Adv. Robotics* **20**:1183–1199. [11]
- Rohlfing, K. J., and J. Tani. 2011. Grounding Language in Action. *IEEE Trans. Auton. Ment. Dev.* **3**:109–112. [11]
- Rosch, E. H. 1973. Natural Categories. *Cogn. Psychol.* **4**:328–350. [3]
- Rose, C. P., D. Bhembe, S. Siler, R. Srivastava, and K. VanLehn. 2003. The Role of Why Questions in Effective Human Tutoring. In: *Artificial Intelligence in Education*, ed. U. Hoppe et al. Amsterdam: IOS Press. [12]
- Rosenbloom, P. S., J. Laird, and A. Newell. 1986. Meta-Levels in Soar. In: *Meta-Level Architectures and Reflection*, ed. P. Maes and D. Nardi, pp. 227–239. Amsterdam: Elsevier. [13]
- Rubin, R. D., P. D. Watson, M. C. Duff, and N. J. Cohen. 2014. The Role of the Hippocampus in Flexible Cognition and Social Behavior. *Front. Hum. Neurosci.* **8**: [3]
- Runco, M. A. 2007. To Understand Is to Create: An Epistemological Perspective on Human Nature and Personal Creativity. In: *Everyday Creativity and New Views of Human Nature*, ed. R. Richards, pp. 91–107. Washington, D.C.: American Psychological Association. [14]
- Russell, S., and P. Norvig. 1995. *Artificial Intelligence: A Modern Approach*. Upper Saddle River, NJ: Prentice-Hall. [3]
- Rybski, P. E., K. Yoon, J. Stolarz, and M. M. Veloso. 2007. Interactive Robot Task Training through Dialog and Demonstration. In: *Human-Robot Interaction (HRI), Proc. 2nd ACM/IEEE Intl. Conf.*, pp. 49–56. New York: ACM. [9]
- Sacks, H., E. A. Schegloff, and G. Jefferson. 1974. A Simplest Systematics for the Organization of Turn-Taking for Conversation. *Language* **50**:696–735. [7]
- Salvucci, D. D. 2013. Integration and Reuse in Cognitive Skill Acquisition. *Cogn. Sci.* **37**:829–860. [17]
- . 2014. Endowing a Cognitive Architecture with World Knowledge. In: *Proc. Annu. Meeting of the Cognitive Science Society*, ed. P. Bello et al., vol. 36, pp. 1353–1358. Quebec: Cognitive Science Society. [4]
- Sanner, S., J. R. Anderson, C. Lebiere, and M. C. Lovett. 2000. Achieving Efficient and Cognitively Plausible Learning in Backgammon. In: *Proc. 17th Intl. Conf. on Machine Learning*, pp. 823–830. San Francisco: Morgan Kaufmann. [4]
- Saon, G., T. Sercu, S. Rennie, and H.-K. J. Kuo. 2016. The IBM 2016 English Conversational Telephone Speech Recognition System. <https://arxiv.org/pdf/1604.08242.pdf> (accessed Oct. 5, 2017). [9]
- Sargano, A. B., P. Angelov, and Z. Habib. 2017. A Comprehensive Review on Handcrafted and Learning-Based Action Representation Approaches for Human Activity Recognition. *Applied Sci.* **7**:doi:10.3390/app7010110. [9]
- Schaefer-Simmern, H. 1961. *The Unfolding of Artistic Activity*. Berkeley and Los Angeles: Univ. of California Press. [14]

- Schegloff, E. A. 1982. Discourse as an Interactional Achievement: Some Uses of “Uh Huh” and Other Things That Come between Sentences. In: *Analyzing Discourse: Text and Talk*, ed. D. Tannen, pp. 71–93. Washington, D.C.: Georgetown Univ. Press. [7]
- . 2007. *Sequence Organization in Interaction*. Cambridge: Cambridge Univ. Press. [8]
- Schegloff, E. A., G. Jefferson, and H. Sacks. 1977. The Preference for Self-Correction in the Organization of Repair in Conversation. *Language* **53**:361–382. [7]
- Schelling, T. 1960. *The Strategy of Conflict*. Cambridge, MA: MIT Press. [8]
- Scheutz, M. 2014. Teach One, Teach All: The Explosive Combination of Instructible Robots Connected via Cyber Systems. In: *4th Annu. IEEE Intl. Conf. on Cyber Technology in Automation, Control, and Intelligent*, pp. 43–48. Hong Kong: IEEE. [18]
- Scheutz, M., J. Harris, and P. Schermerhorn. 2013. Systematic Integration of Cognitive and Robotic Architectures. *Adv. Cog. Syst.* **2**:277–296. [3]
- Schroder, M., E. Bevacqua, R. Cowie, et al. 2012. Building Autonomous Sensitive Artificial Listeners. *IEEE Trans. Affect. Comput.* **3**:165–183. [7]
- Schulman, J., J. Ho, C. Lee, and P. Abbeel. 2016. Learning from Demonstrations through the Use of Non-Rigid Registration. In: *Robotics Research*, ed. M. Inaba and P. Corke, pp. 339–354. Springer Tracts in Advanced Robotics 114. Cham: Springer. [3]
- Schultz, W., P. Dayan, and P. R. Montague. 1997. A Neural Substrate of Prediction and Reward. *Science* **275**:1593–1599. [15]
- Scruggs, T. E., and L. Richter. 1985. Tutoring Learning Disabled Students: A Critical Review. *Learn. Disab. Q.* **8**:286–298. [12]
- Sebanz, N., H. Bekkering, and G. Knoblich. 2006. Joint Action: Bodies and Minds Moving Together. *Trends Cogn. Sci.* **10**:70–76. [7, 8]
- Sebanz, N., and G. Knoblich. 2009. Prediction in Joint Action: What, When, and Where. *Top. Cogn. Sci.* **1**:353–367. [10]
- Sebanz, N., G. Knoblich, and W. Prinz. 2003. Representing Others’ Actions: Just Like One’s Own? *Cognition* **88**:B11–B21. [8]
- Seligman, M. E. P., and J. L. Hager. 1972. *Biological Boundaries of Learning*. New York: Appleton-Century-Crofts. [14]
- Shah, F., M. Evens, J. Michael, and A. Rovick. 2002. Classifying Student Initiatives and Tutor Responses in Human Keyboard-to-Keyboard Tutoring Sessions. *Discourse Process.* **33**:23–52. [12]
- Shanahan, T. 1998. On the Effectiveness and Limitations of Tutoring in Reading. *Rev. Res. Educ.* **23**:217–234. [12]
- She, L., and J. Y. Chai. 2017. Interactive Learning of Grounded Verb Semantics Towards Human-Robot Communication. In: *Proc. 55th Annual Meeting of the Association for Computational Linguistics*, pp. 1634–1644. Vancouver: ACL. [9]
- She, L., S. Yang, Y. Cheng, et al. 2014. Back to the Blocks World: Learning New Actions through Situated Human-Robot Dialogue. In: *Proc. SIGDIAL 2014*, pp. 89–97. Philadelphia: ACL. [9]
- Shuell, T. 1990. Teaching and Learning as Problem Solving. *Theory. Pract.* **29**:102–108. [13]
- Shute, V. J. 2008. Focus on formative feedback. *Rev. Educ. Res.* **78**:153–189. [12]

- Sibert, C., and W. D. Gray. 2017. The Tortoise Only Wins When the Race Is Long: How the Task Environment Changes the Behavior of Tetris Models. Poster Presented at the 39th Annual Conference of the Cognitive Science Society. <http://homepages.rpi.edu/~grayw/pubs/papers/2017/sibert17csc.paper.poster.pdf> (accessed Aug. 23, 2017). [10]
- . 2018. The Tortoise and the Hare: Understanding the Influence of Sequence Length and Variability on Decision-Making in Skilled Performance. *Comput. Brain Behav.* **1**:215–227. [10]
- Sibert, C., W. D. Gray, and J. K. Lindstedt. 2017. Interrogating Feature Learning Models to Discover Insights into the Development of Human Expertise in a Real-Time, Dynamic Decision-Making Task. *Top. Cogn. Sci.* **9**:374–394. [10]
- Siler, S., and K. VanLehn. 2015. Investigating Micro-Adaptation in One-to-One Tutoring. *J. Experiment. Edu.* **83**:344–367. [11, 12]
- Simon, H. A. 1975. The Functional Equivalence of Problem Solving Skills. *Cogn. Psychol.* **7**:268–288. [10]
- . 1989. The Scientist as Problem Solver. In: *Complex Information Processing: The Impact of Herbert A. Simon*, ed. D. Klahr and K. Kotovsky, pp. 375–398. Hillsdale: Erlbaum Associates. [10]
- . 1992. What Is an “Explanation” of Behavior? *Psychol. Sci.* **3**:150–161. [10]
- . 1996. *The Sciences of the Artificial*, 3rd edition. Cambridge, MA: MIT Press. [3, 13]
- Simon, H. A., and W. G. Chase. 1973. Skill in Chess. *American Scientist* **61**:394–403. [10]
- Simon, H. A., and K. Gilmarin. 1973. A Simulation of Memory for Chess Positions. *Cogn. Psychol.* **5**:29–46. [10]
- Simonton, D. K. 2003. Scientific Creativity as Constrained Stochastic Behavior: The Integration of Product, Person, and Process Perspectives. *Psychol. Bull.* **129**:475. [14]
- Sleeman, D., A. E. Kelly, R. Martinak, R. D. Ward, and J. L. Moore. 1989. Studies of Diagnosis and Remediation with High School Algebra Students. *Cogn. Sci.* **13**:551–568. [11, 12]
- Slovan, A., and M. Scheutz. 2002. A Framework for Comparing Agent Architectures. In: *Proc. UKCI’02: UK Workshop on Computational Intelligence*. Birmingham: Univ. of Birmingham. [3]
- Smith, N. V. 1982. *Mutual Knowledge*. London: Academic Press. [2]
- Spangenberg, M., and D. Henrich. 2015. Grounding of Actions Based on Verbalized Physical Effects and Manipulation Primitives. In: *2015 IEEE/RSJ Intl. Conf. on Intelligent Robots and Systems S* pp. 844–851. Hamburg: IEEE. [9]
- Spelke, E. S. 1990. Principles of Object Perception. *Cogn. Sci.* **14**:29–56. [16]
- Spelke, E. S., K. Breinlinger, J. Macomber, and K. Jacobson. 1992. Origins of Knowledge. *Psychol. Rev.* **99**:605–632. [16]
- Spelke, E. S., R. Kestenbaum, D. J. Simons, and D. Wein. 1995. Spatiotemporal Continuity, Smoothness of Motion and Object Identity in Infancy. *Br. J. Dev. Psychol.* **13**:113–142. [16]
- Steels, L. 1990. Components of Expertise. *AI Mag.* **11**:30–49. [13]
- . 2017. Basics of Fluid Construction Grammar. In: *Verb Phrase and Fluid Construction Grammar. Constructions and Frames*, ed. L. Steels and K. Beuls, vol. 9, pp. 178–225. Amsterdam: John Benjamins. [13]
- Steels, L., and M. Hild, eds. 2012. *Language Grounding in Robots*. New York: Springer. [13]
- Steels, L., and M. Tokoro, eds. 2003. *The Future of Learning*. Amsterdam: IOS Press. [13]

- Stevens, A., and A. Collins. 1977. The Goal Structure of a Socratic Tutor. In: Proc. Natl. ACM Conf., pp. 256–263. New York: ACM. [12]
- Stevens, A., A. Collins, and S. E. Goldin. 1979. Misconceptions in Student’s Understanding. *Int. J. Man Mach. Stud.* **11**:145–156. [12]
- Stivers, T., N. J. Enfield, P. Brown, et al. 2009. Universals and Cultural Variation in Turn-Taking in Conversation. *PNAS* **106**:10587–10592. [7, 8]
- Stocco, A., C. Lebiere, and J. R. Anderson. 2010. Conditional Routing of Information to the Cortex: A Model of the Basal Ganglia’s Role in Cognitive Coordination. *Psychol. Rev.* **117**:541–574. [6]
- Stocco, A., C. Lebiere, R. C. O’Reilly, and J. R. Anderson. 2012. Distinct Contributions of the Caudate Nucleus, Rostral Prefrontal Cortex, and Parietal Cortex to the Execution of Instructed Tasks. *Cogn. Affect. Behav. Neurosci.* **12**:611–628. [15]
- Suchanek, F. M., G. Kasneci, and G. Weikum. 2007. YAGO: A Core of Semantic Knowledge. In: Proc. 16th Intl. Conf. on World Wide Web, pp. 697–706. Banff: ACM. [15]
- Taatgen, N. A. 2013. The Nature and Transfer of Cognitive Skills. *Psychol. Rev.* **120**:439–471. [6]
- Taatgen, N. A., D. Huss, and J. R. Anderson. 2006. How Cognitive Models Can Inform the Design of Instructions. In: Proc. 7th Intl. Conf. on Cognitive Modeling, pp. 304–309. Trieste, Italy: Edizioni Goliardiche. [4]
- Taatgen, N. A., D. Huss, D. Dickison, and J. R. Anderson. 2008. The Acquisition of Robust and Flexible Cognitive Skills. *J. Exp. Psychol. Gen.* **137**:548. [3]
- Taatgen, N. A., and F. J. Lee. 2003. Production Compilation: A Simple Mechanism to Model Complex Skill Acquisition. *Human Factors* **45**:61–76. [3]
- Tellex, S., T. Kollar, S. Dickerson, et al. 2011. Understanding Natural Language Commands for Robotic Navigation and Mobile Manipulation. In: Proc. 25th AAAI Conf. on Artificial Intelligence, pp. 1507–1514. San Francisco: AAAI Press. [9]
- Tellex, S., P. Thaker, J. Joseph, and N. Roy. 2014. Learning Perceptually Grounded Word Meanings from Unaligned Parallel Data. *Mach. Learn.* **94**:151–167. [9]
- Tennie, C., J. Call, and M. Tomasello. 2009. Ratcheting up the Ratchet: on the Evolution of Cumulative Culture. *Phil. Trans. R. Soc. B* **364**:2405–2415. [7]
- Tenorth, M., and M. Beetz. 2009. KNOWROB—Knowledge Processing for Autonomous Personal Robots. In: 2009 IEEE/RSJ Intl. Conf. on Intelligent Robots and Systems pp. 4261–4266. St. Louis: IEEE. [9]
- Thomason, J., S. Zhang, R. Mooney, and P. Stone. 2015. Learning to Interpret Natural Language Commands through Human-Robot Dialog. In: Proc. 24th Intl. Joint Conference on Artificial Intelligence (IJCAI), pp. 1923– 1929. Palo Alto: AAAI Press/IJCAI. [9]
- Thomaz, A. L., and C. Breazeal. 2006. Transparency and Socially Guided Machine Learning. *IEEE Trans. Auton. Ment. Dev.* **2**:108–111. [9]
- . 2008. Teachable Robots: Understanding Human Teaching Behavior to Build More Effective Robot Learners. *Artif. Intell.* **172**:716–737. [17]
- Thomson, R., C. Lebiere, J. R. Anderson, and J. Staszewski. 2015. A General Instance-Based Learning Framework for Studying Intuitive Decision-Making in a Cognitive Architecture. *J. Appl. Res. Mem. Cogn.* **4**:180–190. [3, 4]
- Thorndike, E. L. 1898. Animal Intelligence: An Experimental Study of the Associative Processes in Animals. *Psychol. Rev.* **8**:109. [14]
- . 1901. The Evolution of the Human Intellect. *Pop. Sci. Monthly* **60**:58–65. [14]
- . 1913. Educational Psychology Vol II: The Psychology of Learning. New York: Teachers College, Columbia Univ. [10, 14]



- Tiles, M. 1984. Mathematics: The Language of Science? *Monist* 67:3–17. [14]
- Tomasello, M. 1990. Cultural Transmission in the Tool Use and Communicatory Signaling of Chimpanzees? In: “Language” and Intelligence in Monkeys and Apes: Comparative Developmental Perspectives, ed. S. Parker and K. Gibson. Cambridge: Cambridge Univ. Press. [7]
- . 2003. Constructing a Language: A Usage-Based Approach to Child Language Acquisition. Cambridge, MA: Harvard Univ. Press. [7]
- . 2008. Origins of Human Communication. Cambridge, MA: MIT Press. [7]
- Torreira, F., and E. Valtersson. 2015. Phonetic and Visual Cues to Questionhood in French Conversation. *Phonetica* 72:20–42. [8]
- Torrey, L., and M. Taylor. 2013. Teaching on a Budget: Agents Advising Agents in Reinforcement Learning. In: Proc. of the Intl. Conf. on Autonomous Agents and Multi-Agent Systems, pp. 1053–1060. St. Paul: IFAAMAS. [5]
- Truit, E. R. 2015. Medieval Robots. Philadelphia: Univ. Pennsylvania Press. [8]
- Van Eecke, P., and K. Beuls. 2017. Meta-Layer Problem Solving for Computational Construction Grammar. In: Proc. of AAAI Spring Symp. on Computational Construction Grammar and Natural Language Understanding, Tech. Report SS-17-02, ed. L. Steels and J. Feldman. Palo Alto: AAAI Press. [13]
- VanLehn, K. 1988. Student Modeling. In: Foundations of Intelligent Tutoring Systems, ed. M. Polson and J. Richardson, pp. 55–78. Hillsdale: Erlbaum. [12, 13]
- . 1996. Cognitive Skill Acquisition. *Annu. Rev. Psychol.* 47:513–539. [12]
- . 1999. Rule Learning Events in the Acquisition of a Complex Skill: An Evaluation of Cascade. *J. Learn. Sciences* 8:179–221. [12]
- . 2008. Intelligent Tutoring Systems for Continuous, Embedded Assessment. In: The Future of Assessment: Shaping Teaching and Learning, ed. C. A. Dwyer, pp. 113–138. New York: Erlbaum. [12]
- . 2011. The Relative Effectiveness of Human Tutoring, Intelligent Tutoring Systems and Other Tutoring Systems. *Educ. Psychol.* 46:197–221. [12]
- . 2016. Regulative Loops, Step Loops and Task Loops. *Int. J. Artif. Intel. Educ.* 26:107–112. [11, 12]
- VanLehn, K., S. Siler, C. Murray, T. Yamauchi, and W. B. Baggett. 2003. Human Tutoring: Why Do Only Some Events Cause Learning? *Cogn. Instr.* 21:209–249. [12]
- Van Rooij, I., J. Kwisthout, M. Blokpoel, et al. 2011. Intentional Communication: Computationally Easy or Difficult? *Front. Hum. Neurosci.* 5:1–18. [8]
- Veenman, M. V. J., H. A. M. Van Hout-Wolters, and P. Afflerbach. 2006. Metacognition and Learning: Conceptual and Methodological Considerations. *Metacogn. Learn.* 1:3–14. [13]
- Vesper, C., E. Abramova, J. Bütepage, et al. 2016. Joint Action: Mental Representations, Shared Information and General Mechanisms for Coordinating with Others. *Front. Psychol.* 7:2039. [8]
- Vesper, C., L. Schmitz, N. Sebanz, and G. Knoblich. 2009. Joint Action Coordination through Strategic Reduction of Variability. In: Proc. 31st Annual Meeting of the Cognitive Science Society, ed. N. A. Taatgen and H. v. Rijn, pp. 1522–1527. Austin: Cognitive Science Society. [10]
- Vollmer, A.-L., K. S. Lohan, K. Fischer, et al. 2009. People Modify Their Tutoring Behavior in Robot-Directed Interaction for Action Learning. In: IEEE 8th Intl. Conf. on Development and Learning, pp. 1–6. Shanghai: IEEE. [11]
- Vollmer, A.-L., M. Mühlhig, J. J. Steil, et al. 2014. Robots Show Us How to Teach Them: Feedback from Robots Shapes Tutoring Behavior during Action Learning. *PLoS One* 9:e91349. [11]

- Vygotsky, L. S. 1967. Play and Its Role in the Mental Development of the Child. *Soviet Psychol.* 5:6–18. [14]
- Waldersee, R., and F. Luthans. 1994. The impact of positive and corrective feedback on customer service performance. *J. Org. Behav.* 15:83–95. [12]
- Wallach, D., and C. Lebiere. 2003. Conscious and Unconscious Knowledge: Mapping to the Symbolic and Subsymbolic Levels of a Hybrid Architecture. In: *Attention and Implicit Learning*, ed. L. Jimenez, pp. 112–143. Amsterdam: John Benjamins. [4]
- Walsh, M. W., K. A. Gluck, G. Gunzelmann, T. Jastrzembski, and M. Krusmark. 2018. Evaluating the Theoretical Adequacy and Applied Potential of Computational Models of the Spacing Effect. *Cogn. Sci.* 42:644–691. [11]
- Wang, Y., and M. Kosinski. 2017. Deep Neural Networks Can Detect Sexual Orientation from Faces. *J. Personality Soc. Psychol.* 114:246–257. [18]
- Warneken, F., and M. Tomasello. 2006. Altruistic Helping in Human Infants and Young Chimpanzees. *Science* 311:1301–1303. [16]
- Wasik, B. A. 1998. Volunteer Tutoring Programs in Reading: A Review. *Read. Res. Q.* 33:266–291. [12]
- Wasik, B. A., and R. E. Slavin. 1993. Preventing Early Reading Failure with One-to-One Tutoring: A Review of Five Programs. *Read. Res. Q.* 28:178–200. [12]
- West, R. L., and C. Lebiere. 2001. Simple Games as Dynamic, Coupled Systems: Randomness and Other Emergent Properties. *Cogn. Syst. Res.* 1:221–239. [4]
- Whitehead, A. N. 1979. *Process and Reality*, 2nd edition. New York: The Free Press. [14]
- Whitney, D., M. Eldon, J. Oberlin, and S. Tellex. 2016. Interpreting Multimodal Referring Expressions in Real Time. In: *2016 IEEE Intl. Conf. on Robotics and Automation (ICRA)*, pp. 3331–3338. Stockholm: IEEE. [9]
- Wierzbicka, A. 1985. Different Cultures, Different Languages, Different Speech Acts. *J. Pragmatics* 9:145–178. [18]
- Williams, A. M., P. R. Ford, D. W. Eccles, and P. Ward. 2011. Perceptual-Cognitive Expertise in Sport and Its Acquisition: Implications for Applied Cognitive Psychology. *Appl. Cogn. Psychol.* 25:432–442. [10]
- Williams, T., P. Briggs, and M. Scheutz. 2015. Covert Robot-Robot Communication: Human Perceptions and Implications for HRI. *J. Hum. Robot. Interact.* 4:23–49. [18]
- Wilson, J., E. Krause, M. Scheutz, and M. Rivers. 2016. Analogical Generalization of Actions from Single Exemplars in a Robotic Architecture. In: *Proc. 15th Intl. Conf. on Autonomous Agents and Multiagent Systems*. Singapore: AAMAS. [3]
- Wimmer, H., and J. Perner. 1983. Beliefs About Beliefs: Representation and Constraining Function of Wrong Beliefs in Young Children’s Understanding of Deception. *Cognition* 13:103–128. [15]
- Wittwer, J., M. Nuckles, N. Landmann, and A. Renkl. 2010. Can Tutors Be Supported in Giving Effective Explanations? *J. Educ. Psychol.* 102:74–89. [12]
- Wood, D. J., J. S. Bruner, and G. Ross. 1976. The Role of Tutoring in Problem Solving. *J. Child Psychol. Psychiatry* 17:89–100. [12]
- Woodward, A. 1998. Infants Selectively Encode the Goal Object of an Actor’s Reach. *Cognition* 69:1–34. [16]
- Wray, R. E., S. Lisse, and J. Beard. 2004. Investigating Ontology Infrastructures for Execution-Oriented Autonomous Agents. In: *Knowledge Representation and Ontology for Autonomous Systems* ed. C. Schlenoff and M. Uschold. AAAI Spring Symposium, Technical Report SS-04-04. Palo Alto: AAAI Press. [4]
- Wray, R. E., and A. Woods. 2013. A Cognitive Systems Approach to Tailoring Learner Practice. In: *Proc. 2nd Annual Conf. on Advances in Cognitive Systems*, ed. J. E. Laird and M. Klenk, pp. 21–38. Baltimore: ACS. [3]

- Xu, F., and S. Carey. 1996. Infants' Metaphysics: The Case of Numerical Identity. *Cogn. Psychol.* **30**:111–153. [16]
- Yang, S., Q. Gao, C. Liu, et al. 2016. Grounded Semantic Role Labeling. In: Proc. 15th Annual Conf. of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL-HLT), ed. R. Mihalcea et al., pp. 149–159. Denver: ACL. [9]
- Yechiam, E., I. Erev, and A. Parush. 2004. Easy First Steps and Their Implication to the Use of a Mouse-Based and a Script-Based Strategy. *J. Exp. Psychol. Appl.* **10**:89–96. [10]
- Yechiam, E., I. Erev, V. Yehene, and D. Gopher. 2003. Melioration and the Transition from Touch-Typing Training to Everyday Use. *Human Factors* **45**:671–684. [10]
- Yee-King, M., M. Krivenski, H. Brenton, A. Grimalt, and M. d'Inverno. 2014. Designing Educational Social Machines for Effective Feedback. In: International Conference on E-Learning, pp. 239–248. Intl. Assoc. for Development of the Information Society. [11]
- Yost, G. R. 1992. TAQL: A Problem Space Tool for Expert System Development. PhD thesis, School of Computer Science, Carnegie Mellon Univ., Pittsburgh. [3]
- Young, S., M. Gasic, B. Thomson, and J. Williams. 2013. Pomdp-Based Statistical Spoken Dialogue Systems: A Review. *Proc. IEEE* **101**:1160–1179. [9]
- Yu, H., and J. M. Siskind. 2013. Grounded Language Learning from Video Described with Sentences. In: Proc. 51st Annual Meeting of the Association for Computational Linguistics, pp. 53–63. Sofia: ACL. [9]
- Zacharias, G. L., J. MacMillan, and S. B. Van Hemel, eds. 2008. Behavioral Modeling and Simulation: From Individuals to Societies. Washington, D.C.: National Academies Press. [17]
- Zimmerman, B. 2008. Investigating self-regulation and motivation: Historical background, methodological developments and future prospects. *Am. Educ. Res. J.* **45**:166–183. [12]
- . 2010. Becoming a Self-Regulated Learner: An Overview. *Theory. Pract.* **41**:64–70. [13]

