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Keith James Holyoak

Personal Information

Address:

University of California, Los Angeles
Department of Psychology
405 Hilgard Ave.
Los Angeles, CA 90095-1563

Phone numbers:

(310) 206-1646 (office)
(310) 825-8712 (lab)
(310) 459-6114 (home)

E-mail: holyoak@lifesci.ucla.edu

Website: <http://reasoninglab.psych.ucla.edu/>

Citizenship: United States & Canada

Education

University of British Columbia, B.A. (1971) in psychology

Stanford University, Ph.D. (1976) in psychology

Academic Appointments

Distinguished Professor of Psychology, University of California, Los Angeles, 2004-present

Visiting Professor of Psychology (honorary), National University of Singapore, 2014

Professor of Psychology, University of California, Los Angeles, 1986-2004

Vice-Chair for Academic Personnel, Dept. of Psychology, UCLA, 2002-2006

Co-Director, Cognitive Science Research Program, 1989-92

Member, Brain Research Institute, 1991-present

Professor of Psychology, University of Michigan, 1986

Associate Professor of Psychology, University of Michigan, 1981-1986

Visiting Scholar, LRDC, University of Pittsburgh, 1985-1986

Visiting Associate Professor of Psychology, Carnegie-Mellon University, 1984-1985

Assistant Professor of Psychology, University of Michigan, 1976-1981

Research Interests

Analogy, induction, and problem solving

Computational models of cognition

Cognitive neuroscience

Educational applications of technology

Awards

UCLA Dept. of Psychology Distinguished Service Award, 2005

James McKeen Cattell Fellow, 1999

John Simon Guggenheim Fellow, 1991

NIMH Research Scientist Development Award, 1981-1986
 Rackham Faculty Fellowship, University of Michigan, 1976
 Stanford University Fellowship, 1972-1975
 British Columbia Psychological Association Gold Medal, 1971

Honorary Fellowships and Offices in Scientific Organizations

Fellow, American Association for the Advancement of Science (from 2003)
 Fellow, Cognitive Science Society (from 2006); Chair of Governing Board (1994-1995);
 Member of Governing Board (1992-1998)
 Fellow, Association for Psychological Science (from 1993)
 Fellow, Society for Experimental Psychology (from 1990)
 Nominating committee member, AAAS Section J (2007-2009, 2012-2014)

Professional Service

Editorships:

Editor, Psychological Review, 2016-
 Editor, Cognitive Psychology, 1995-1999
 Senior Editor, Cognitive Science, 1990-1992
 Associate Editor, Cognitive Psychology, 2000-present
 Associate Editor, Psychological Science, 2012-present
 Guest Co-editor, Special section on analogy and metaphor, J. of Experimental
 Psychology: Learning, Memory, and Cognition, 2012

Member of Editorial Board:

Journal of Experimental Psychology: General, 1988-1995; 2007-2011
 Thinking & Reasoning, 1993-present
 Adaptive Behavior, 1991-present
 Cognitive Psychology, 1990-1995
 American Journal of Psychology, 1988-2008
 Psychological Science, 2001
 Cognitive Science, 1992-2000
 Journal of Experimental Psychology: Learning, Memory, and Cognition, 1984-1987
 Memory & Cognition, 1977-1990

Ad Hoc Reviewer:

Journals

American Psychologist, Applied Cognitive Psychology, Behavioral and Brain
 Sciences, Brain and Cognition, Brain Research, Cerebral Cortex, Child
 Development, Cognition, Cognition and Instruction, Cognitive Development,
 Cognitive Neuroscience, Cognitive Systems Research, Developmental Psychology,
 European Journal of Cognitive Psychology, Journal of Cognitive Neuroscience,
 Journal of Experimental Child Psychology, Journal of Experimental Psychology:
 Human Perception and Performance, Journal of Experimental Social Psychology,
 Journal of General Psychology, Journal of Medical Informatics, Journal of Memory
 and Language, Journal of Neuroscience, Journal of Personality and Social
 Psychology, Nature Neuroscience, Neuropsychologia, Perception & Psychophysics,
 Perspectives on Psychological Science, PLoS Computational Biology, Political

Psychology, Proceedings of the National Academy of Sciences (USA), Psychological Bulletin, Psychological Review, Psychological Science, Psychological Science in the Public Interest, Psychology and Aging, Psychonomic Bulletin and Review, Review of General Psychology, Science, Scientific Study of Literature, Trends in Cognitive Sciences

Government & Private Agencies, Conferences, and Publishing Companies

Guggenheim Foundation, National Science Foundation, National Institute of Education, National Science and Engineering Council (Canada), Social Science & Humanities Research Council (Canada), Biotechnology & Biological Sciences Research Council (UK), Australian Research Council, Conferences of Cognitive Science Society, Program Committee, Advanced Computing in the Social Sciences, (Energy Division of Oakridge National Laboratory), Adjudicator: Ontario Premier's Discovery Awards Program, MIT Press, Harcourt Brace Jovanovich, Lawrence Erlbaum Associates, Prentice-Hall, Harvard University Press, Princeton University Press, Oxford University Press, Wiley & Sons

Advisory Panel Memberships and Workshops:

Member of Advisory Board, Society for the Neuroscience of Creativity (from 2017)
 External advisory board, Grawemeyer Prize in Psychology, 2012
 External review panel, U. of British Columbia Psychology Dept., 2009
 Co-organizer, 2nd International Conference on Analogy, Sofia, Bulgaria, 2009
 NSF workshop on Higher Cognition in Adolescents, 2008
 NIH panel, 2005
 Chair of judging panel, APA Early Career Award in cognition/learning, 2004
 NSF workshop on Knowledge Transfer, 2002
 NSF Learning & Intelligent Systems initiative, 1997
 Co-organizer, 1st International Conference on Analogy, Sofia, Bulgaria, 1998
 NIMH Subcommittee on Thinking and Communication, 1993
 International Advisory Board, Dept. of Cognitive Science, New Bulgarian University
 Editorial Advisory Board, Issues in Thinking and Reasoning, Erlbaum (UK)
 Editorial Advisory Board, Advances in the Psychology of Thinking, Simon & Schuster
 NSF Memory and Cognitive Processes Panel, 1980-1981
 NSF/NIE Program in Science and Mathematics Education, 1978

Teaching Experience

University of California, Los Angeles 1986-present

Undergraduate

Psychology 10, Introduction to Psychology
 Psychology 120A, Cognitive Psychology
 Psychology 121, Laboratory in Cognitive Psychology
 Psychology 124F (Psychology Honors Program), Thinking
 Psychology 185, Cognitive Science

Graduate

Psychology 264, Thinking
 Psychology 269, Analogy in the Mind and Brain
 Psychology 269, Applications of Technology for Mathematics Teaching
 and Learning
 Psychology 269, Causal Knowledge and Cognitive Evolution
 Psychology 269, Induction and Knowledge Acquisition
 Psychology 269, Metaphor and Cognition
 Psychology 269, The Adaptive Character of Memory and Thinking
 Neuroscience 211A, Mental Imagery
 Anthropology 297, Cognitive Science & Anthropology of the Supernatural

University of Michigan, 1976-1986

Undergraduate

Psychology 310, Experimental Psychology Lab
 Psychology 443, Psychology of Thinking
 Psychology 447, Psychology of Language
 Psychology 448, Learning and Memory
 Psychology 518, Learning and Memory Lab

Graduate

Psychology 646, Pro-Seminar in Cognitive Psychology
 Psychology 745, Psychology of Language
 Psychology 746, Human Learning and Memory
 Psychology 908, Seminar on Categorization
 Psychology 948, Seminar on Language Induction

Stanford University, 1972-1976

Teaching Assistant for introductory psychology and psycholinguistics courses

Former PhD and Post-doctoral Students*Associate and Full Professors*

Bruce Burns (Psychology, U. of Sydney, Australia), Richard Catrambone (Psychology, Georgia Tech), Soohyun Cho (Psychology, Chung-Ang University, South Korea), Meredith Gattis (Psychology, Cardiff U., UK), Mary Gick (Psychology, Carleton U., Canada), Dan Krawczyk (Behavioral & Brain Sciences, U. of Texas at Dallas), Jim Kroger (Psychology, New Mexico State U.), Heeseung Lee (Education, Yonsei University, South Korea), Robert Morrison (Psychology & Neuroscience, Loyola U. Chicago), Laura Novick (Psychology & Human Development, Vanderbilt U.), Lindsey Richland (Comparative Human Development, U. of Chicago), Carol Seeger (Psychology, Colorado State U.), Bobby Spellman (Psychology & Law, U. of Virginia), Regina Vollmeyer (Psychology, U. of Potsdam, Germany), Michael Waldmann (Psychology, U. of Goettingen, Germany), James Waltz (Psychiatry, U. of Maryland)

Research Scientists, Lecturers and Post-doctoral Fellows

Michael Vendetti (Oracle), Melissa DeWolf (Microsoft), Guido Schauer (Behavioral & Brain Sciences, U. of Texas at Dallas), Derek Powell (Psychology, Stanford U.), Tage Rai (Management, MIT), Dawn Chen (Psychology, U. of California, Berkeley),

Publications

Books

- Holyoak, K. (2015). *The Gospel According to Judas*. Loveland, OH: Dos Madres Press.
- Holyoak, K. J., & Morrison, R. G. (Eds.) (2012). *The Oxford handbook of thinking and reasoning*. New York: Oxford University Press.
- Holyoak, K. (2012). *Foreigner: New English Poems in Chinese Old Style*. Loveland, OH: Dos Madres Press.
- Holyoak, K. (2010). *My Minotaur: Selected Poems 1998-2006*. Loveland, OH: Dos Madres Press.
- Kokinov, B., Holyoak, K. J., & Gentner, D. (2009). *New frontiers in analogy research: Proceedings of the Second International Conference on Analogy*. Sofia, Bulgaria: New Bulgarian University Press.
- Holyoak, K. (translator) (2007). *Facing the Moon: Poems of Li Bai and Du Fu*. Durham, NH: Oyster River Press.
- Holyoak, K. J., & Morrison, R. G. (Eds.) (2005). *The Cambridge handbook of thinking and reasoning*. Cambridge, UK: Cambridge University Press.
- Gentner, D., Holyoak, K. J., & Kokinov, B. N. (Eds.) (2001). *The analogical mind: Perspectives from cognitive science*. Cambridge, MA: MIT Press.
- Holyoak, K. J., Gentner, D., & Kokinov, B. N. (Eds.) (1998). *Advances in analogy research: Integration of theory and data from the cognitive, computational, and neural sciences*. Sofia, Bulgaria: New Bulgarian University Press.
- Shanks, D. R., Holyoak, K. J., & Medin, D. L. (Eds.) (1996). *The psychology of learning and motivation, Vol. 34: Causal learning*. San Diego: Academic Press.
- Grafman, J., Holyoak, K. J., & Boller, F. (Eds.) (1995). *Structure and functions of the human prefrontal cortex*. New York: New York Academy of Sciences.
- Holyoak, K. J., & Thagard, P. (1995). *Mental leaps: Analogy in creative thought*. Cambridge, MA: MIT Press. Paperback edition, 1996. Japanese translation, 1998.
- Holyoak, K. J., & Barnden, J. A. (Eds.) (1994). *Advances in connectionist and neural computation theory, Vol. 2: Analogical connections*. Norwood, N.J.: Ablex.
- Barnden, J. A., & Holyoak, K. J. (Eds.) (1994). *Advances in connectionist and neural computation theory, Vol. 3: Analogy, reminding, and metaphor*. Norwood, N.J.: Ablex.
- Holland, J. H., Holyoak, K. J., Nisbett, R. E., & Thagard, P. (1986). *Induction: Processes of inference, learning, and discovery*. Cambridge, MA: MIT Press. Paperback edition, 1989. Japanese translation, 1991. Portions of Ch. 4 reprinted in L. Davis (Ed.) (1987), *Genetic algorithms and simulated annealing* (pp. 116-128). London: Pitman. Portions of Ch. 9 reprinted in A. I. Goldman (Ed.) (1993), *Readings in philosophy and cognitive science* (pp. 23-41). Cambridge, MA: MIT Press. Chapter 1 reprinted in N. Lazaric & E. Lorenz (Eds.) (2003), *Critical studies in economic institutions: Knowledge, learning and routines* (pp. 25-56). Camberley, UK: Edward Elgar.

Glass, A. L., & Holyoak, K. J. (1986). *Cognition*, 2nd edition. New York: Random House.
Glass, A. L., Holyoak, K. J., & Santa, J. L. (1979). *Cognition*. Reading, MA: Addison-Wesley.

Individual Papers

- Tyumeneva, Y. A., Larina, G., Alexandrova, E., DeWolf, M., Bassok, M., & Holyoak, K. J. (in press). Semantic alignment across whole-number arithmetic and rational numbers: Evidence from a Russian perspective. *Thinking & Reasoning*.
- Gray, M. E., DeWolf, M., Bassok, M., & Holyoak, K. J. (in press). Dissociation between magnitude comparison and relation identification across different formats for rational numbers. *Thinking & Reasoning*.
- Powell, D., Yu, J., DeWolf, M., & Holyoak, K. J. (2017). The love of large numbers: A popularity bias in consumer choice. *Psychological Science*.
- Kubricht, J. R., Lu, H., & Holyoak, K. J. (2017). Intuitive physics: Current research and controversies. *Trends in Cognitive Sciences*. doi.org/10.1016/j.tics.2017.06.002
- DeWolf, M., Son, J. Y., Bassok, M., & Holyoak, K. J. (in press). Relational priming based on a multiplicative schema for whole numbers and fractions. *Cognitive Science*.
- Plummer, P., DeWolf, M., Bassok, B., Gordon, P. C., & Holyoak, K. J. (2017). Reasoning strategies with rational numbers revealed by eye-tracking. *Attention, Perception, & Psychophysics*, 79, 1426-1437.
- Kubricht, J. R., Lu, H., & Holyoak, K. J. (2017). Individual differences in spontaneous analogical transfer. *Memory & Cognition*, 45, 576-588.
- Chen, D., Lu, H., & Holyoak, K. J. (2017). Generative inferences based on learned relations. *Cognitive Science*, 41, 1062-1092.
- Holyoak, K. J., & Lee, H. S. (2017). Inferring causal relations by analogy. In M. R. Waldmann (Ed.), *Oxford handbook of causal reasoning* (pp. 459-473). New York: Oxford University Press.
- DeWolf, M., Bassok, M., & Holyoak, K. J. (2017). Numbers as mathematical models: Modeling relations and magnitudes with fractions and decimals. In D. C. Geary, D. B. Berch, R. J. Ochsendorf & K. M. Koepke (Eds.), *Mathematical cognition and learning, Vol. 3: Acquisition of complex arithmetic skills and higher-order mathematical concepts* (pp. 141-163). London: Academic Press.
- Holyoak, K. J., & Powell, D. (2016). Deontological coherence: A framework for commonsense moral reasoning. *Psychological Bulletin*, 142, 1179-1203.
- DeWolf, M., Chiang, J. N., Bassok, M., Holyoak, K. J., & Monti, M. M. (2016). Neural representations of magnitude for natural and rational numbers. *NeuroImage*, 141, 304-312.
- DeWolf, M., Bassok, M., & Holyoak, K. J. (2016). A set for relational reasoning: Facilitation of algebraic modeling by a fraction task. *Journal of Experimental Child Psychology*, 152, 351-366.
- Powell, D., Merrick, M. A., Lu, H., & Holyoak, K. J. (2016). Causal competition based on generic priors. *Cognitive Psychology*, 86, 62-86.
- Lee, H. S., DeWolf, M., Bassok, M., & Holyoak, K. J. (2016). Conceptual and procedural distinctions between fractions and decimals: A cross-national comparison. *Cognition*, 147, 57-69.
- Guthormsen, A. M., Fisher, K. J., Bassok, M., Osterhout, L., DeWolf, M., & Holyoak, K. J. (2016). Conceptual integration of arithmetic operations with real-world knowledge:

- Evidence from event-related potentials. *Cognitive Science*, 40, 723-757.
- Holyoak, K. J. (2016). Editorial. *Psychological Review*, 123, 1.
- Horne, Z., Powell, D., Hummel, J. E., & Holyoak, K. J. (2015a). Countering antivaccination attitudes. *Proceedings of the National Academy of Sciences, USA*, 112, 10321-10324.
- Horne, Z., Powell, D., Hummel, J. E., & Holyoak, K. J. (2015b). Reply to Betsch et al.: Highlighting risks of diseases shifts vaccine attitudes. *Proceedings of the National Academy of Sciences, USA*, 112, E6727.
- Chen, D., Lu, H., & Holyoak, K. J. (2015). Learning and generalizing cross-category relations using hierarchical distributed representations. In R. Dale, C. Jennings, P. Maglio, D. Noelle, A. Warfaumont & J. Yoshimi (Eds.), *Proceedings of the 37th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Kubricht, J., Lu, H., & Holyoak, K. J. (2015). Animation facilitates source understanding and spontaneous analogical transfer. In R. Dale, C. Jennings, P. Maglio, D. Noelle, A. Warfaumont & J. Yoshimi (Eds.), *Proceedings of the 37th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- DeWolf, M., Bassok, M., & Holyoak, K. J. (2015). Modeling relational priming and multiplicative reasoning with rational numbers. In R. Dale, C. Jennings, P. Maglio, D. Noelle, A. Warfaumont & J. Yoshimi (Eds.), *Proceedings of the 37th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- DeWolf, M., Son, J. Y., Bassok, M., & Holyoak, K. J. (2015). Implicit understanding of arithmetic with rational numbers: The impact of expertise. In R. Dale, C. Jennings, P. Maglio, D. Noelle, A. Warfaumont & J. Yoshimi (Eds.), *Proceedings of the 37th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Lee, H. S., DeWolf, M., Bassok, M., & Holyoak, K. J. (2015). Semantic alignment of fractions and decimals with discrete versus continuous entities: A cross-national comparison. In R. Dale, C. Jennings, P. Maglio, D. Noelle, A. Warfaumont & J. Yoshimi (Eds.), *Proceedings of the 37th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- DeWolf, M., Bassok, M., & Holyoak, K. J. (2015). From rational numbers to algebra: Separable contributions of decimal magnitude and relational understanding of fractions. *Journal of Experimental Child Psychology*, 133, 72-84.
- Powell, D., Horne, Z., Pinillos, Á., & Holyoak, K. J. (2015). A Bayesian framework for knowledge attribution: Evidence from semantic integration. *Cognition*, 139, 92-104.
- Rapp, M., Bassok, M., DeWolf, M., & Holyoak, K. J. (2015). Modeling discrete and continuous entities with fractions and decimals. *Journal of Experimental Psychology: Applied*, 21, 47-56.
- DeWolf, M., Bassok, M., & Holyoak, K. J. (2015). Conceptual structure and the procedural affordances of rational numbers: Relational reasoning with fractions and decimals. *Journal of Experimental Psychology: General*, 144, 127-150.
- Vendetti, M., Wu, A., Rowshanshad, E., Knowlton, B.J., & Holyoak, K. J. (2014). When reasoning modifies memory: Schematic assimilation triggered by analogical mapping. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 40, 1172-1180.

- Rai, T. S., & Holyoak, K. J. (2014). Rational hypocrisy: A Bayesian analysis based on informal argumentation and slippery slopes. *Cognitive Science*, *38*, 1456-1467.
- DeWolf, M., Rapp, M., Bassok, M., & Holyoak, K. J. (2014). Semantic alignment of fractions and decimals with discrete versus continuous entities: A textbook analysis. In B. Bello, M. Guarini, M. McShane, & B. Scassellati (Eds.), *Proceedings of the 36th Annual Conference of the Cognitive Science Society* (pp. 2133-2138). Austin, TX: Cognitive Science Society.
- DeWolf, M., & Holyoak, K. J. (2014). Reciprocal and multiplicative relational reasoning with rational numbers. In B. Bello, M. Guarini, M. McShane, & B. Scassellati (Eds.), *Proceedings of the 36th Annual Conference of the Cognitive Science Society* (pp. 2139-2144). Austin, TX: Cognitive Science Society.
- Powell, D., Merrick, M. A., Lu, H., & Holyoak, K. J. (2014). Generic priors yield competition between independently-occurring preventive causes. In B. Bello, M. Guarini, M. McShane, & B. Scassellati (Eds.), *Proceedings of the 36th Annual Conference of the Cognitive Science Society* (pp. 2793-2798). Austin, TX: Cognitive Science Society.
- Vendetti, M., Wu, A., & Holyoak, K. J. (2014). Far out thinking: Generating solutions to distant analogies promotes relational thinking. *Psychological Science*, *25*, 928-933.
- Chen, D., Lu, H., & Holyoak, K. J. (2014). The discovery and comparison of symbolic magnitudes. *Cognitive Psychology*, *71*, 27-54.
- DeWolf, M., Grounds, M. A., Bassok, M., & Holyoak, K. J. (2014). Magnitude comparison with different types of rational numbers. *Journal of Experimental Psychology: Human Perception and Performance*, *40*, 71-82.
- Rai, T. S., & Holyoak, K. J. (2013). Exposure to moral relativism compromises moral behavior. *Journal of Experimental Social Psychology*, *49*, 995-1001.
- Holyoak, K. J., & Richland, L. E. (2014). Using analogies as a basis for teaching cognitive readiness. In H. F. O'Neil, R. S. Perez, & E. L. Baker (Eds.), *Teaching and measuring cognitive readiness* (pp. 223-238). New York: Springer.
- Holyoak, K. J. (2013). Thinking, broad and deep (review of *Surfaces and Essences* by D. Hofstadter & E. Sander). *Science*, *340*, 550-551.
- Chen, D., Lu, H., & Holyoak, K. J. (2013). Generative inferences based on a discriminative Bayesian model of relation learning. In M. Knauf, M. Pauven, N. Sebanz, & I. Wachsmuth (Eds.), *Proceedings of the 35th Annual Conference of the Cognitive Science Society* (pp. 2028-2033). Austin, TX: Cognitive Science Society.
- DeWolf, M., Bassok, M., & Holyoak, K. J. (2013). Analogical reasoning with rational numbers: Semantic alignment based on discrete versus continuous quantities. In M. Knauf, M. Pauven, N. Sebanz, & I. Wachsmuth (Eds.), *Proceedings of the 35th Annual Conference of the Cognitive Science Society* (pp. 388-393). Austin, TX: Cognitive Science Society.
- Powell, D., Merrick, M. A., Lu, H., & Holyoak, K. J. (2013). Generic priors yield competition between independently-occurring causes. In M. Knauf, M. Pauven, N. Sebanz, & I. Wachsmuth (Eds.), *Proceedings of the 35th Annual Conference of the Cognitive Science Society* (pp. 1157-1162). Austin, TX: Cognitive Science Society.
- Powell, D., Horne, Z., Pinillos, Á., & Holyoak (2013). Justified true belief triggers false recall of "knowing". In M. Knauf, M. Pauven, N. Sebanz, & I. Wachsmuth (Eds.), *Proceedings of the 35th Annual Conference of the Cognitive Science Society* (pp. 1151-1156). Austin, TX: Cognitive Science Society.

- Vendetti, M., Castel, A. D., & Holyoak, K. J. (2013). The floor effect: Impoverished memory for elevator buttons. *Attention, Perception, & Psychophysics*, *75*, 636-643.
- Vendetti, M., Knowlton, B. J., & Holyoak, K. J. (2012). The impact of semantic distance and induced stress on analogical reasoning. *Cognitive, Affective, and Behavioral Neuroscience*, *12*, 804-812.
- Castel, A. D., Vendetti, M., & Holyoak, K. J. (2012). Fire drill: Inattention blindness and amnesia for the location of fire extinguishers. *Attention, Perception, & Psychophysics*, *74*, 1391-1396.
- Richland, L. E., Stigler, J. W., & Holyoak, K. J. (2012). Teaching the meaningful structure of mathematics. *Educational Psychologist*, *47*, 189-203.
- Lu, H., Chen, D., & Holyoak, K. J. (2012). Bayesian analogy with relational transformations. *Psychological Review*, *119*, 617-648.
- Knowlton, B. J., Morrison, R. G., Hummel, J. E., & Holyoak, K. J. (2012). A neurocomputational system for relational reasoning. *Trends in Cognitive Sciences*, *16*, 373-381.
- Penn, D. C., Holyoak, K. J., & Povinelli, D. J. (2012). So, are we the massively lucky species? *Behavioral and Brain Sciences*, *35*, 236-237.
- Omata, T., & Holyoak, K. J. (2012). The role of comparison processes in the induction of schemas for design styles. In N. Miyake, D. Peebles & R. P. Cooper (Eds.), *Proceedings of the 34th Annual Conference of the Cognitive Science Society* (pp. 2144-2149). Austin, TX: Cognitive Science Society.
- Jurgens, D. A., Mohammad, S. M., Turney, P. D., & Holyoak, K. J. (2012). SemEval-2012 Task 2: Measuring degrees of relational similarity. In *Proceedings of the First Joint Conference on Lexical and Computational Semantics (*SEM)* (pp. 356-364). Montreal, Canada: Association for Computational Linguistics.
- Bassok, M., Dunbar, K. N., & Holyoak, K. J. (2012). Introduction to the special section on the neural substrate of analogical reasoning and metaphor comprehension. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *38*, 261-263.
- Holyoak, K. J., & Morrison, R. G. (2012). Thinking and reasoning: A reader's guide. In K. J. Holyoak & R. G. Morrison (Eds.), *The Oxford handbook of thinking and reasoning* (pp. 1-7). New York: Oxford University Press.
- Holyoak, K. J. (2012). Analogy and relational reasoning. In K. J. Holyoak & R. G. Morrison (Eds.), *The Oxford handbook of thinking and reasoning* (pp. 234-259). New York: Oxford University Press.
- Holyoak, K. J. (2012). Discovering weight in baby steps. In D. J. Povinelli (Ed.), *World without weight* (pp. 321-322). Oxford, UK: Oxford University Press.
- Holyoak, K. J., & Lu, H. (2011). What the Bayesian framework has contributed to understanding cognition: Causal learning as a case study. *Behavioral and Brain Sciences*, *34*, 2-3-204.
- Rai, T. S., & Holyoak, K. J. (2011). The rational hypocrite: Informal argumentation and moral hypocrisy. In L. Carlson, C. Hólscher & T. F. Shipley (Eds.), *Proceedings of the 33rd Annual Conference of the Cognitive Science Society* (pp. 2475-2479). Austin, TX: Cognitive Science Society.
- Holyoak, K. J., & Cheng, P. W. (2011). Causal learning and inference as a rational process: The new synthesis. *Annual Review of Psychology*, *62*, 135-163.
- Holyoak, K. J., Lee, H. S., & Lu, H. (2010). Analogical and category-based inference: A

- theoretical integration with Bayesian causal models. *Journal of Experimental Psychology: General*, *139*, 702-727.
- Chen, D., Holyoak, K. J., & Lu, H. (2010). Learning and generalization of abstract semantic relations: Preliminary investigations of Bayesian approaches. In S. Ohlsson & R. Catrambone (Eds.), *Proceedings of the 32nd Annual Conference of the Cognitive Science Society* (pp. 871-876). Austin, TX: Cognitive Science Society.
- Lee, H. S., & Holyoak, K. J. (2010). Causal models interact with structure mapping to guide analogical inference. In S. Ohlsson & R. Catrambone (Eds.), *Proceedings of the 32nd Annual Conference of the Cognitive Science Society* (pp. 1094-1099). Austin, TX: Cognitive Science Society.
- Chen, D., & Holyoak, K. J. (2010). Enhancing acquisition of intuition versus planning in problem solving. In S. Ohlsson & R. Catrambone (Eds.), *Proceedings of the 32nd Annual Conference of the Cognitive Science Society* (pp. 1875-1880). Austin, TX: Cognitive Science Society.
- Morsanyi, K., & Holyoak, K. J. (2010). Analogical reasoning ability in autistic and typically-developing children. *Developmental Science*, *13*, 578-587.
- Holyoak, K. J. (2010). Analogy. In P. C. Hogan (Ed.), *Cambridge encyclopedia of the language sciences* (pp. 97-98). Cambridge, UK: Cambridge University Press.
- Rai, T. S., & Holyoak, K. J. (2010). Moral principles or consumer preferences? Alternative framings of the trolley problem. *Cognitive Science*, *34*, 311-321.
- Cho, S., Moody, T. D., Fernandino, L., Mumford, J. A., Poldrack, R. A., Cannon, T. D., Knowlton, B. J., & Holyoak, K. J. (2010). Common and dissociable prefrontal loci associated with component mechanisms of analogical reasoning. *Cerebral Cortex*, *20*, 524-533.
- Penn, D. C., Holyoak, K. J., & Povinelli, D. J. (2009). Universal grammar and mental continuity: Two modern myths. *Behavioral and Brain Sciences*, *32*, 462-464.
- Penn, D. C., Cheng, P. W., Holyoak, K. J., Hummel, J. E., & Povinelli, D. J. (2009). There is more to thinking than propositions. *Behavioral and Brain Sciences*, *32*, 221-223.
- Povinelli, D. J., Penn, D. C., & Holyoak, K. J. (2009). An open letter to comparative psychologists. *Psychological Science Agenda*, *23*, 13-14.
- Knowlton, B. J., & Holyoak, K. J. (2009). Prefrontal substrate of human relational reasoning. In M. S. Gazzaniga (Ed.), *The cognitive neurosciences (4th edition)* (pp. 1005-1017). Cambridge, MA: MIT Press.
- Lee, H. S., Holyoak, K. J., & Lu, H. (2009). Integrating analogical inference with Bayesian causal models. In B. Kokinov, K. J. Holyoak & D. Gentner (Eds.), *New frontiers in analogy research: Proceedings of the Second International Conference on Analogy* (pp. 300-309). Sofia, Bulgaria: New Bulgarian University Press.
- Bendig, B. W., & Holyoak, K. J. (2009). Relational priming of analogical reasoning. In B. Kokinov, K. J. Holyoak & D. Gentner (Eds.), *New frontiers in analogy research: Proceedings of the Second International Conference on Analogy* (pp. 30-36). Sofia, Bulgaria: New Bulgarian University Press.
- Lu, H., Yuille, A. L., Liljeholm, M., Cheng, P. W., & Holyoak, K. J. (2008). Bayesian generic priors for causal learning. *Psychological Review*, *115*, 955-982.

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Published Abstracts (Neuroscience Only)

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- Vendetti, M., Knowlton, B. J., & Holyoak, K. J. (2011). Acute mild stress impairs analogical reasoning. *Program No. 931.09. 2011 Abstract Viewer*. San Diego, CA: Society for Neuroscience, November. Online.
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Department and University Service

University of California, Los Angeles:

Vice Chair for Academic Personnel

Chair, Cognitive Science Development Committee

Chair, Cognitive Area

Chair, Cognitive Search Committee (multiple times)
Co-Chair, Assistant Professor Guidance Committee
Psychology Dept. Executive Committee
Merit Review Committee
Departmental Long-Range Planning Committee
Graduate Admissions Committee

University of Michigan:

Graduate Studies Committee
Experimental Area Graduate Admissions Committee
Search Committees in Developmental and Experimental Psychology
Human Subjects Review Committees (for both College and Psychology Department)
Experimental Area Graduate Student Progress Committee
Experimental/ Mathematical Areas Training Grant Committee
Departmental Executive Committee
College Internal Grant Review Board
Undergraduate Academic Counselor
Coordinator of Psychology 170 (Introductory Experimental)

Grants

UCLA Academic Senate
Title: Neuroimaging of Analogical Reasoning
Dates: July 1, 2015 to June 30, 2016
Amount: \$9000

Office of Naval Research
Title: Analogical Reasoning: Integration of Neural, Behavioral and
Computational Analyses
Dates: March 1, 2008 to February 28, 2014
Amount: \$927,215

Institute of Education Sciences (Co-PI; Eva Baker, PI)
Title: Center for Advanced Technology in Schools
Dates: September 14, 2010 to September 14, 2013
Amount: \$592,000

Canon, Inc.
Title: Analogical Reasoning and Creative Product Design
Dates: February 1, 2010 (no end date)
Amount: \$87,500 (gift to Holyoak lab)

Intelligence Advanced Research Project Activities (UCLA PI; with Lockheed Martin)
Title: FRAMES: Framework for Analogy and Memory Embodied as Spiking Neurons
Dates: December 12, 2010 to December 5, 2012
Amount: \$705,140

Air Force Office of Scientific Research (Co-I; Alan Yuille, PI)

Title: Hidden Causal Structure for Reasoning and Learning: Human Cognition,
Machine Intelligence, and Statistics

Dates: October 1, 2008 to September 30, 2011

Amount: \$900,000

Office of Naval Research (in collaboration with Medantic Technology)

Title: Distributed Training for Force Mobilization: CBRNE

Dates: December 1, 2006 to August 31, 2007

Amount: \$24,998

National Institute of Mental Health

Title: Neuroimaging of Analogical Reasoning

Dates: July 1, 2005 to June 30, 2008

Amount: \$129,976 (\$100,000 direct)

National Science Foundation (with D. Simon & S. Read)

Title: Coherence-Based Decision Making: A Theoretical Framework and Practical
Applications

Dates: April 15, 2004 to March 31, 2007

Amount: \$143,250 (\$98,436 direct)

Institute of Education Sciences

Title: A Multidisciplinary Study of Analogical Transfer in Children's Mathematics

Dates: January 1, 2004 to December 31, 2006

Amount: \$300,715 (\$202,195 direct)

Office of Naval Research (in collaboration with Medantic Technology)

Title: An Intelligent System for Case-Based Instruction

Dates: July 1, 2004 to January 31, 2005

Amount: \$29,926 (\$19,496 direct)

National Science Foundation (with D. Simon & S. Read)

Title: Collaborative Research: Applying Constraint Satisfaction Models to Legal Reasoning

Dates: August 1, 2000 to June 30, 2004

Amount: \$178,330

Office of Naval Research (in collaboration with Medantic Technology)

Title: Authoring Shell for Case-based Reasoning

Dates: January 25, 2002 to July 24, 2002

Amount: \$16,191

National Science Foundation (with J. Hummel)

Title: Learning and Inference with Schemas and Analogies

Dates: February 1, 1998 to January 31, 2001

Amount: \$250,000

National Science Foundation (with J. Hummel)
Title: Schema Induction in a Structure-Sensitive Connectionist Model
Dates: August 15, 1995 to July 31, 1998
Amount: \$150,000

National Institute of Neurological Disorders and Stroke (with J. Grafman & F. Boller)
Title: Structure and Functions of the Human Prefrontal Cortex
Dates: September 30, 1994 to September 29, 1995
Amount: \$17,000

National Science Foundation
Title: Mechanisms of Analogical Reminding and Priming
Dates: August 15, 1993 to August 14, 1995
Amount: \$150,000

Army Research Institute (with P. Thagard)
Title: A Cognitive Architecture for Analogy and Problem Solving
Dates: September 1, 1989 to August 31, 1992
Amount: \$599,793

National Science Foundation (Co-PI; 4 others)
Title: Maintenance and Support for Parallel Computation in Cognitive Science
and Cognate Areas
Dates: August 1, 1991 to July 31, 1994
Amount: \$600,000

Biomedical Research Support Grant
Title: Conditioning and Learning Within Rule-based Default Hierarchies
Dates: June 14, 1989 to June 30, 1990
Amount: \$15,420

National Science Foundation (Co-PI; 9 others)
Title: Center for Research in Computational Neuro-Cognition
Dates: July 1, 1987 to June 30, 1988
Amount: \$994,700 (plus \$300,000 supplement, August 1988)

Keck Foundation (Co-PI; 7 others)
Title: Center for Research in Computational Neuro-Cognition
Dates: July 1, 1988 to June 30, 1990
Amount: \$750,000

Army Research Institute (with P. Thagard)
Title: A Cognitive Model for Solving Ill-Defined Problems
Dates: September 1, 1986 to August 31, 1989
Amount: \$400,840

National Science Foundation (with M. Bassok)
Title: Instruction and Transfer Between Isomorphic Topics in Algebra and Physics
Dates: September 1, 1986 to August 31, 1989
Amount: \$106,108

National Science Foundation (with R. Nisbett)
Title: Formal versus Pragmatic Approaches to Deductive Reasoning
Dates: October 1, 1984 to September 30, 1986
Amount: \$45,000

National Science Foundation
Title: Cognitive Processing of Analogy
Dates: April 1, 1983 to September 30, 1986
Amount: \$118,445

Spencer Foundation (with P. Cheng and R. Nisbett)
Title: Influence of Logic Training and Substantive Knowledge on Deductive Reasoning
Dates: January 1, 1983 to June 1, 1984
Amount: \$5,000

Systems Development Foundation (with J. Holland, R. Nisbett, and P. Thagard)
Title: The Process of Induction
Dates: August 1, 1983 to September 30, 1984
Amount: \$15,500

National Science Foundation (with L. S. Fried)
Title: Perceptual Learning with Ill-Defined Categories
Dates: June 1, 1979 to January 31, 1984
Amount: \$115,247

National Institute of Mental Health
Title: Cognitive Processing of Magnitude and Order Information
Dates: June 1, 1979 to December 31, 1982
Amount: \$120,745

National Science Foundation
Title: Decision Processes in Judgments of Order and Relative Magnitude
Dates: June 1, 1977 to December 31, 1979
Amount: \$59,900

Rackham Faculty Grant, University of Michigan
Title: Perceptual Learning with Ill-Defined Categories
Dates: January 1, 1978 to December 31, 1978
Amount: \$5,028

Rackham Faculty Grant, University of Michigan
Title: Decision Processes in Judgments of Order and Relative Magnitude
Dates: January 1, 1977 to December 31, 1977
Amount: \$5,004