

# SANGEET KHEMLANI

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Principal investigator of the Reasoning Lab  
Human and Machine Intelligence Section  
Navy Center for Applied Research in Artificial Intelligence  
US Naval Research Laboratory

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## POSITIONS

- 2018- **Senior Cognitive Scientist**, Navy Center for Applied Research in Artificial Intelligence, NRL
- 2016- **Principal Investigator**, Reasoning Lab @ NRL
- 2014-2018 **Cognitive Scientist**, Navy Center for Applied Research in Artificial Intelligence, NRL
- 2011-2014 **Postdoctoral Fellow**, Navy Center for Applied Research in Artificial Intelligence, NRL

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## EDUCATION

- 2011 **PhD in Cognitive Psychology**  
Department of Psychology  
Princeton University, Princeton, NJ
- 2008 **MA in Cognitive Psychology**  
Department of Psychology  
Princeton University, Princeton, NJ
- 2006 **BS in Psychology and Electronic Arts**  
School of Humanities, Arts, and Social Sciences  
Rensselaer Polytechnic Institute, Troy, NY

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## HONORS & AWARDS

- 2015 “IngeniUS” early-career role model, Department of Defense
- 2014 Jerome and Isabella Karle Distinguished Scholar Fellowship, Naval Research Laboratory
- 2013 “Rising Star”, Association for Psychological Science
- 2011 National Research Council Research Fellowship, National Academy of Sciences
- 2007 Graduate Research Fellowship, National Science Foundation
- 2006 Walker McKinney Life Sciences Fellowship, Princeton University

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## FUNDING

- 2019-2022 **Automating human meta-epistemic inference**  
Naval Research Laboratory (Principal investigator)
- 2019-2021 **Establishing the critical tests for machine understanding for human-machine teaming**  
Office of the Secretary of Defense (Technical lead; PIs: L. Blaha, J.G. Trafton, R. St. Amant)
- 2016-2018 **Contextual modeling and spatiotemporal reasoning for autonomous systems**  
Office of Naval Research (Co-PI with D. Aha and J.G. Trafton)
- 2016-2018 **Causal inference in a computational model of human reasoning**  
Naval Research Laboratory (Co-PI with P. Bello)
- 2013-2015 **Coherent and accurate status updates**  
Office of Naval Research (Technical lead; PI: J.G. Trafton)
- 2011-2014 **Explanatory reasoning in cognitive robotics and human-robot interaction**  
National Research Council (Principal investigator)
- 2009-2012 **Deductive and probabilistic reasoning**  
National Science Foundation (Technical lead; PI: P.N. Johnson-Laird)

- 2021 Henne, P., O'Neill, K., Bello, P., **Khemlani, S.**, & De Brigard, F. (2021). Norms affect prospective causal judgments. *Cognitive Science*, 45, 2103–2116.
- Khemlani, S.**, Bello, P., Briggs, G., Harner, H., & Wasylyshyn, C. (2021). Much ado about nothing: The mental representation of omissive causation. *Frontiers in Psychology*, 11, 3854.
- Khemlani, S.**, & Johnson-Laird, P.N. (in press). Reasoning about properties: A computational theory. Manuscript in press at *Psychological Review*.
- Trafton, J.G., Raymond, P., & **Khemlani, S.** (2021). The power of theory. *ACM Transactions on Human-Robot Interaction*, 10, 11.
- 2020 Kelly, L., **Khemlani, S.**, & Johnson-Laird, P.N. (2020). Reasoning about durations. *Journal of Cognitive Neuroscience*, 32, 2103–2116.
- Khemlani, S.** & Johnson-Laird, P.N. (2020). Causal conflicts produce domino effects. *Quarterly Journal of Experimental Psychology*, 73, 2317–2327.
- Korman, J., & **Khemlani, S.** (2020). Explanatory completeness. *Acta Psychologica*, 209, 103139.
- Korman, J., & **Khemlani, S.** (2020). Teleological generics. *Cognition*, 200, 104157.
- 2019 Kelly, L., Prabhakar, J., & **Khemlani, S.** (2019). Updating and reasoning: Different processes, different models, different functions. *Behavioral and Brain Sciences*, 42, e258.
- Khemlani, S.**, & Johnson-Laird, P. N. (2019). Why machines don't (yet) reason like people. *KI – Künstliche Intelligenz*, 33, 219–228.
- 2018 Bucciarelli, M., Mackiewicz, R., **Khemlani, S.**, & Johnson-Laird, P. N. (2018). Simulation in children's conscious recursive reasoning. *Memory & Cognition*, 46, 1302–1314.
- Khemlani, S.**, Byrne, R.M.J., & Johnson-Laird, P.N. (2018). Facts and possibilities: A model-based theory of sentential reasoning. *Cognitive Science*, 42, 1887–1924.
- Khemlani, S.**, Wasylyshyn, C., Briggs, G., & Bello, P. (2018). Mental models and omissive causation. *Memory & Cognition*, 46, 1344–1359.
- 2017 Hiatt, L., Narber, C., Bekele, E., **Khemlani, S.**, & Trafton, J. G. (2017). Human modeling for human-robot collaboration. *International Journal of Robotics Research*, 36, 580–596.
- Khemlani, S.**, & Johnson-Laird, P.N. (2017). Illusions in reasoning. *Minds & Machines*, 27, 11–35.
- 2016 Bucciarelli, M., Mackiewicz, R., **Khemlani, S.**, & Johnson-Laird, P. N. (2016). Children's creation of algorithms: simulations and gestures. *Journal of Cognitive Psychology*, 28, 297–318.
- 2015 Johnson-Laird, P. N., **Khemlani, S.**, & Goodwin, G.P. (2015). Logic, probability, and human reasoning. *Trends in Cognitive Sciences*, 19, 201–214.
- Johnson-Laird, P. N., **Khemlani, S.**, & Goodwin, G.P. (2015). Response to Baratgin et al.: Mental models integrate probability and deduction. *Trends in Cognitive Sciences*, 19, 548–549.
- Khemlani, S.**, Harrison, A. M., & Trafton, J. G. (2015). Episodes, events, and models. *Frontiers in Human Neuroscience*, 9, 590, 1–13.
- Khemlani, S.**, Lotstein, M., & Johnson-Laird, P. N. (2015). Naive probability: Model-based estimates of unique events. *Cognitive Science*, 39, 1216–1258.
- Khemlani, S.**, Lotstein, M., Trafton, J.G., & Johnson-Laird, P. N. (2015). Immediate inferences from quantified assertions. *Quarterly Journal of Experimental Psychology*, 68, 2073–2096.
- 2014 **Khemlani, S.**, Barbey, A., & Johnson-Laird, P. N. (2014). Causal reasoning with mental models. *Frontiers in Human Neuroscience*, 8, 849, 1–15.
- Khemlani, S.**, Orenes, I., & Johnson-Laird, P. N. (2014). The negation of conjunctions, conditionals, and disjunctions. *Acta Psychologica*, 151, 1–7.
- Ragni, M., **Khemlani, S.**, & Johnson-Laird, P. N. (2014). The evaluation of the consistency of quantified assertions. *Memory & Cognition*, 42, 53–66.
- Sussman, A., **Khemlani, S.**, & Oppenheimer, D. (2014). Latent scope bias in categorization. *Journal of Experimental Social Psychology*, 52, 1–8.
- 2013 **Khemlani, S.**, & Johnson-Laird, P. N. (2013). Cognitive changes from explanations. *Journal of Cognitive Psychology*, 25, 139–146.
- Khemlani, S.**, & Johnson-Laird, P. N. (2013). The processes of inference. *Argument & Computation*, 4, 1–20.
- Khemlani, S.**, Mackiewicz, R., Bucciarelli, M., & Johnson-Laird, P. N. (2013). Kinematic mental simulations in abduction and deduction. *Proceedings of the National Academy of Sciences*, 110, 16766–16771.

- Prasada, S., **Khemlani, S.**, Leslie, S.-J., & Glucksberg, S. (2013). Conceptual distinctions amongst generics. *Cognition*, 126, 405-422.
- Trafton, J. G., Hiatt, L.M., Harrison, A. M., Tamborello, F.P., II, **Khemlani, S.**, & Schultz, A.C. (2013). ACT-R/E: An embodied cognitive architecture for human-robot interaction. *Journal of Human Robot Interaction*, 2, 30-55.
- 2012 Hiatt, L.M., **Khemlani, S.**, & Trafton, J. G. (2012). An explanatory reasoning framework for embodied agents. *Biologically Inspired Cognitive Architectures*, 1, 23-31.
- Khemlani, S.** & Johnson-Laird, P. N. (2012). Hidden conflicts: Explanations make inconsistencies harder to detect. *Acta Psychologica*, 139, 486-491.
- Khemlani, S.**, & Johnson-Laird, P. N. (2012). Theories of the syllogism: A meta-analysis. *Psychological Bulletin*, 138, 427-457.
- Khemlani, S.**, Leslie, S.-J., & Glucksberg, S. (2012). Inferences about members of kinds: The generics hypothesis. *Language and Cognitive Processes*, 27, 887-900.
- Khemlani, S.**, Lotstein, M., & Johnson-Laird, P. N. (2012). The probabilities of unique events. *PLOS ONE*, 7, e45975.
- Khemlani, S.**, Orenes, I., & Johnson-Laird, P. N. (2012). Negation: A theory of its meaning, representation, and use. *Journal of Cognitive Psychology*, 24, 541-559.
- 2011 **Khemlani, S.**, & Johnson-Laird, P. N. (2011). The need to explain. *Quarterly Journal of Experimental Psychology*, 64, 2276-88.
- Khemlani, S.**, & Oppenheimer, D. (2011). When one model casts doubt on another: A levels-of-analysis approach to causal discounting. *Psychological Bulletin*, 137, 195-210.
- Khemlani, S.**, Sussman, A., & Oppenheimer, D. (2011). *Harry Potter* and the sorcerer's scope: Latent scope biases in explanatory reasoning. *Memory & Cognition*, 39, 527-535.
- Leslie, S.-J., **Khemlani, S.**, & Glucksberg, S. (2011). Do all ducks lay eggs? The generic overgeneralization effect. *Journal of Memory and Language*, 65, 15-31.
- 2010 **Khemlani, S.**, & Goodwin, G. (2010). The function and representation of concepts. *Behavioral and Brain Sciences*, 33, 216-217.
- Khemlani, S.**, Lee, N.Y.L., & Bucciarelli, M. (2010). Determinants of cognitive variability. *Behavioral and Brain Sciences*, 33, 37-38.
- 2009 **Khemlani, S.**, & Johnson-Laird, P. N. (2009). Disjunctive illusory inferences and how to eliminate them. *Memory & Cognition*, 37, 615-623.
- 2008 Bucciarelli, M., **Khemlani, S.**, & Johnson-Laird, P. N. (2008). The psychology of moral reasoning. *Judgment and Decision Making*, 3, 121-139.
- Neth, H., **Khemlani, S.**, & Gray, W. (2008). Feedback design for the control of a dynamic multitasking system: Dissociating outcome feedback from control feedback. *Human Factors*, 50, 643-651.

REFEREED  
CONFERENCE  
PAPERS

- 2021 Briggs, G., Harner, H., & **Khemlani, S.** (2021). Preferences in the quantified description of visual groups. In T. Fitch, C. Lamm, H. Leder, and K. Tessmar (Eds.), *Proceedings of the 43rd Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Harner, H., & **Khemlani, S.** (2021). Desires can conflict with intentions; plans cannot. In T. Fitch, C. Lamm, H. Leder, and K. Tessmar (Eds.), *Proceedings of the 43rd Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Kelly, L., & **Khemlani, S.** (2021). Temporal explanations help resolve temporal conflicts. In T. Fitch, C. Lamm, H. Leder, and K. Tessmar (Eds.), *Proceedings of the 43rd Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Khemlani, S.** (2021). Epistemic verbs produce spatial models. In T. Fitch, C. Lamm, H. Leder, and K. Tessmar (Eds.), *Proceedings of the 43rd Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- 2020 Briggs, G., Harner, H., & **Khemlani, S.** (2020). Visual grouping and pragmatic constraints in the generation of quantified descriptions. In B. Armstrong, S. Denison, M. Mack, and Y. Xu (Eds.), *Proceedings of the 42nd Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Harner, H. & **Khemlani, S.** (2020). A theory of bouletic reasoning. In B. Armstrong, S. Denison, M. Mack, and Y. Xu (Eds.), *Proceedings of the 42nd Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.

- Kelly, L. & **Khemlani, S.** (2020). Directional biases in durative inference. In B. Armstrong, S. Denison, M. Mack, and Y. Xu (Eds.), *Proceedings of the 42nd Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- 2019 Briggs, G., Harner, H., Wasylshyn, C., Bello, P., & **Khemlani, S.** (2019). Neither the time nor the place: Omissive causes yield temporal inferences. In A. Lieto (Ed.), *Proceedings of the 7th International Workshop on Artificial Intelligence and Cognition*.
- Briggs, G. & **Khemlani, S.** (2019). A cognitively plausible algorithm for causal inference. In T. Stewart (Ed.), *Proceedings of the 17th International Conference on Cognitive Modeling*.
- Henne, P., Bello, P., **Khemlani, S.**, & De Brigard, F. (2019). Norms and the meaning of omissive enabling conditions. In A. Goel, C. Seifert, & C. Freksa (Eds.), *Proceedings of the 41st Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Kelly, L., & **Khemlani, S.** (2019). The consistency of durative relations. In A. Goel, C. Seifert, & C. Freksa (Eds.), *Proceedings of the 41st Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- 2018 Bekele, E., Lawson, W., Horne, Z., & **Khemlani, S.** (2018). Implementing a robust explanatory bias in a person re-identification network. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2018)*. Salt Lake City, UT: IEEE.
- Bekele, E., Lawson, W., Horne, Z., & **Khemlani, S.** (2018). Human-level explanatory biases for person re-identification. In M. de Graaf, B. Malle, A. Dragan, & T. Ziemke (Eds.), *Proceedings of the Workshop of Explainable Robotic Systems*. Chicago, IL: ACM.
- Horne, Z., & **Khemlani, S.** (2018). Conceptual constraints on generating explanations. In C. Kalish, M. Rau, T. Rogers, & J. Zhu (Eds.), *Proceedings of the 40th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Korman, J., & **Khemlani, S.** (2018). How people detect incomplete explanations. In C. Kalish, M. Rau, T. Rogers, & J. Zhu (Eds.), *Proceedings of the 40th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Korman, J., & **Khemlani, S.** (2018). These boots are made for walking: Teleological generalizations from principled connections. In C. Kalish, M. Rau, T. Rogers, & J. Zhu (Eds.), *Proceedings of the 40th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Ragni, M., Riesterer, N., **Khemlani, S.**, & Johnson-Laird, P.N. (2018). Individuals become more logical without feedback. In C. Kalish, M. Rau, T. Rogers, & J. Zhu (Eds.), *Proceedings of the 40th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- 2017 Bello, P., Wasylshyn, C., Briggs, G., & **Khemlani, S.** (2017). Contrasts in reasoning about omissions. In G. Gunzelmann, A. Howes, T. Tenbrink, & E. Davelaar (Eds.), *Proceedings of the 39th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Khemlani, S.**, Hinterecker, T., & Johnson-Laird, P.N. (2017). The provenance of modal inference. In G. Gunzelmann, A. Howes, T. Tenbrink, & E. Davelaar (Eds.), *Proceedings of the 39th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Trafton, J.G., Zish, K., McCurry, M., Hiatt, L., & **Khemlani, S.** (2017). A cognitive model of social influence. In G. Gunzelmann, A. Howes, T. Tenbrink, & E. Davelaar (Eds.), *Proceedings of the 39th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- 2016 **Khemlani, S.** (2016). Automating human inference. In U. Furbach and C. Shon (Eds.), *Proceedings of the 2nd IJCAI Workshop on Bridging the Gap between Human and Automated Reasoning* (pp. 1–4). CEUR Workshop Proceedings.
- Khemlani, S.**, & Johnson-Laird, P. N. (2016). How people differ in syllogistic reasoning. In A. Papafragou, D. Grodner, D. Mirman, and J. Trueswell (Eds.), *Proceedings of the 38th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- 2015 Bello, P., & **Khemlani, S.** (2015). A model-based theory of omissive causation. In R. Dale, C. Jennings, P. Maglio, T. Matlock, D. Noelle, A. Warlaumont, & J. Yoshimi (Eds.), *Proceedings of the 37th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.

- Khemlani, S.**, Goodwin, G.P., & Johnson-Laird, P.N. (2015). Causal relations from kinematic simulations. In R. Dale, C. Jennings, P. Maglio, T. Matlock, D. Noelle, A. Warlaumont, & J. Yoshimi (Eds.), *Proceedings of the 37th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Khemlani, S.**, & Johnson-Laird, P.N. (2015). Domino effects in causal contradictions. In R. Dale, C. Jennings, P. Maglio, T. Matlock, D. Noelle, A. Warlaumont, & J. Yoshimi (Eds.), *Proceedings of the 37th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- 2014 **Khemlani, S.**, Lotstein, M., & Johnson-Laird, P. N. (2014). A mental model theory of set membership. In P. Bello, M. Guarini, M. McShane, & B. Scassellati (Eds.), *Proceedings of the 36th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Khemlani, S.**, & Trafton, J. G. (2014). Percentile analysis for goodness-of-fit comparisons of models to data. In P. Bello, M. Guarini, M. McShane, & B. Scassellati (Eds.), *Proceedings of the 36th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- 2013 **Khemlani, S.**, Gartenberg, D., Park, K.H., & Trafton, J.G. (2013). Uncertainty can increase explanatory credibility. In M. Knauff, M. Pauen, N. Sebanz, & I. Wachsmuth (Eds.), *Proceedings of the 35th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Khemlani, S.** & Johnson-Laird, P. N. (2013). Mental simulation and the construction of informal algorithms. In M. Knauff, M. Pauen, N. Sebanz, & I. Wachsmuth (Eds.), *Proceedings of the 35th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Khemlani, S.**, Trafton, J. G., & Johnson-Laird, P. N. (2013). Deduction as stochastic simulation. In R. West & T. Stewart (Eds.), *Proceedings of the 12th International Conference on Cognitive Modeling*.
- 2012 **Khemlani, S.** & Moore, A. (2012). Evaluative feedback improves deductive reasoning. In N. Miyake, D. Peebles, & R. Cooper (Eds.), *Proceedings of the 34th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Khemlani, S.**, Orenes, I., & Johnson-Laird, P.N. (2012). Negating compound sentences. In N. Miyake, D. Peebles, & R. Cooper (Eds.), *Proceedings of the 34th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Khemlani, S.**, & Trafton, J. G. (2012). mReactr: A computational theory of deductive reasoning. In N. Miyake, D. Peebles, & R. Cooper (Eds.), *Proceedings of the 34th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Khemlani, S.**, Trafton, J. G., Lotstein, M., & Johnson-Laird, P. N. (2012). A process model of immediate inferences. In N. Rußwinkel, U. Drewitz, & H. van Rijn (Eds.), *Proceedings of the 11th International Conference on Cognitive Modeling*. Berlin, Germany: University of Groningen.
- 2011 **Khemlani, S.**, Lotstein, M., & Johnson-Laird, P. N. (2011). What makes intensional estimates of probabilities inconsistent? In L. Carlson, C. Hölscher, & T. Shipley (Eds.), *Proceedings of the 33rd Annual Conference of the Cognitive Science Society* (pp. 1906-1911). Austin, TX: Cognitive Science Society.
- 2010 **Khemlani, S.** & Johnson-Laird, P.N. (2010). Explanations make inconsistencies harder to detect. In S. Ohlsson & R. Catrambone (Eds.), *Proceedings of the 32nd Annual Conference of the Cognitive Science Society* (pp. 2900-2905). Austin, TX: Cognitive Science Society.
- Kunze, N., **Khemlani, S.**, Lotstein, M., & Johnson-Laird, P.N. (2010). Illusions of consistency in quantified assertions. In S. Ohlsson & R. Catrambone (Eds.), *Proceedings of the 32nd Annual Conference of the Cognitive Science Society* (pp. 2028-2032). Austin, TX: Cognitive Science Society.
- 2009 Arkoudas, K., Bringsjord, S., & **Khemlani, S.** (2009). Qualitative spatial reasoning via 3-valued heterogeneous logic. In J.L.G. Dietz (Ed.), *Proceedings of the International Conference on Knowledge Engineering and Ontology Development 2009* (pp. 80-87). Porto, Portugal: INSTICC Press.
- Khemlani, S.**, Leslie, S.-J., & Glucksberg, S. (2009). Generics, prevalence, and default inferences. In N. Taatgen & H. van Rijn (Eds.), *Proceedings of the 31st Annual Conference of the Cognitive Science Society* (pp. 443-448). Austin, TX: Cognitive Science Society.

- Leslie, S.-J., **Khemlani, S.**, Prasada, S., & Glucksberg, S. (2009). Conceptual and linguistic distinctions between singular and plural generics. In N. Taatgen & H. van Rijn (Eds.), *Proceedings of the 31st Annual Conference of the Cognitive Science Society* (pp. 479-484). Austin, TX: Cognitive Science Society.
- 2008 **Khemlani, S.** & Johnson-Laird, P.N. (2008). Illusory inferences with embedded disjunctions. In B. C. Love, K. McRae, & V. M. Sloutsky (Eds.), *Proceedings of the 30th Annual Conference of the Cognitive Science Society* (pp. 2128-2133). Austin, TX: Cognitive Science Society.
- Khemlani, S.**, Leslie, S.-J., & Glucksberg, S. (2008). Syllogistic reasoning with generic premises: The generic overgeneralization effect. In B.C. Love, K. McRae, & V.M. Sloutsky (Eds.), *Proceedings of the 30th Annual Conference of the Cognitive Science Society* (pp. 619-624). Austin, TX: Cognitive Science Society.
- 2007 **Khemlani, S.**, Leslie, S.-J., Glucksberg, S., & Fernandez, P. R. (2007). Do ducks lay eggs? How people interpret generic assertions. In D. McNamara & J.G. Trafton (Eds.), *Proceedings of the 29th Annual Conference of the Cognitive Science Society* (pp. 395-400). Mahwah, NJ: Erlbaum.
- 2006 Neth, H., **Khemlani, S.**, Oppermann, B., & Gray, W. (2006). Juggling multiple tasks: A rational analysis of multitasking in a synthetic task environment. In *Proceedings of the 50th Annual Meeting of the Human Factors and Ergonomics Society*. Santa Monica, CA: Human Factors and Ergonomics Society.
- 2005 Bringsjord, S., **Khemlani, S.**, Arkoudas, K., McEvoy, C., Destefano, M., & Daigle, M. (2005). Advanced synthetic characters, evil, and E. In A.E.R. Marwan Al-Akaidi (Ed.), *Game-On 2005, 6th International Conference on Intelligent Games and Simulation*. Ghent-Zwijnaarde, Belgium: European Simulation Society.

BOOK  
CHAPTERS

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- in press Johnson-Laird, P. N., & **Khemlani, S.** (in press). Mental models and the algorithms of deduction. In R. Sun (Ed.), *Cambridge Handbook on Computational Cognitive Sciences*. Cambridge, UK: Cambridge University Press.
- Khemlani, S.** (in press). Psychological theories of syllogistic reasoning. In M. Knauff and W. Spohn (Eds.), *Handbook of Rationality*. Cambridge, MA: MIT Press.
- 2018 **Khemlani, S.** (2018). Reasoning. In S. Thompson-Schill (Ed.), *Stevens' Handbook of Experimental Psychology and Cognitive Neuroscience*. Wiley & Sons.
- 2017 Johnson-Laird, P. N., Goodwin, G.P., & **Khemlani, S.** (2017). Mental models and reasoning. In V. Thompson and L. Ball (Eds.), *International Handbook of Thinking & Reasoning*. Routledge.
- Johnson-Laird, P. N. & **Khemlani, S.** (2017). Mental models and causation. In M. Waldmann (Ed.), *Oxford Handbook of Causal Reasoning*. London, UK: Oxford University Press.
- 2013 Johnson-Laird, P. N., & **Khemlani, S.** (2013). Toward a unified theory of reasoning. In B. Ross (Ed.), *The Psychology of Learning and Motivation* (pp. 1-42). Cambridge, MA: Academic Press.

SOFTWARE

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- 2019 **Khemlani, S.** (2019). nodus-ponens: A full-stack framework for running high-level reasoning and cognitive science experiments in Node.js (version 1.3.5). Retrieved from <https://www.npmjs.com/package/nodus-ponens>.
- Khemlani, S.**, & Johnson-Laird, P.N. (2018). mReasoner: A unified computational implementation of mental model theory of thinking and reasoning (version 0.9.6525). Retrieved from <http://mentalmodels.princeton.edu/models/mreasoner/>.
- Kreke, J.G., **Khemlani, S.**, & Trafton, J.G. (2016). gofMC: Benchmarking and rescaling  $R^2$  using noise percentile analysis (version 1.1.2). Retrieved from <https://cran.r-project.org/package=gofMC>.

## INVITED TALKS

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- 2021 **Claremont Graduate University**, *Applied Cognitive Science Talk Series*
  - 2019 **Villanova University**, *Cognitive Science Program Colloquium Series*
  - 2018 **Duke University**, *Center for Cognitive Neuroscience*  
**George Mason University**, *Department of Psychology*
  - 2017 **Harvard University**, *Department of Psychology*
  - 2016 **Duke University**, *Center for Cognitive Neuroscience*  
**New York University**, *NYU ConCats, Department of Psychology*  
**University of Quebec at Montreal**, *Summer School in Cognitive Sciences*
  - 2015 **New York University**, *NYU ConCats, Department of Psychology*
  - 2014 **University of Edinburgh**, *Department of Psychology*  
**Oxford University**, *St. Catherine's College*  
**Institute for Human and Machine Cognition**, *Ocala Afternoon Lecture Series*
  - 2013 **University of Freiburg**, *Center for Cognitive Science*  
**Washington University in St. Louis**, *Philosophy-Neuroscience-Psychology Seminar*
  - 2012 **Brown University**, *Department of Cognitive, Linguistic, and Psychological Sciences*
  - 2011 **Naval Research Laboratory**, *Navy Center for Applied Research in Artificial Intelligence*
  - 2010 **New York University**, *NYU ConCats, Department of Psychology*
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## RECENT CONFERENCE TALKS

- 2020 Briggs, G., Harner, H., & **Khemlani, S.** (2020). Visual grouping and pragmatic constraints in the generation of quantified descriptions. Virtual talk presented (by Briggs and Harner) at Cognitive Science Society (CogSci 2020).  
**Khemlani, S.** (2020). Leveraging conceptual constraints for interactive AI. Virtual talk presented at European Conference on Artificial Intelligence (ECAI 2020) and at Robots: Science and Systems (RSS 2020).
- 2019 Briggs, G., & **Khemlani, S.** (2019). A cognitively plausible algorithm for causal inference. Talk presented (by Briggs) at *International Conference on Cognitive Modeling*, Montreal, Canada.  
Briggs, G., Harner, H., Wasylshyn, C., Bello, P., & **Khemlani, S.** (2019). Neither the time nor the place: Omissive causes yield temporal inferences. Talk presented (by Harner) at *International Workshop on Artificial Intelligence and Cognition*, Manchester, UK.  
Kelly, L., & **Khemlani, S.** (2019). The consistency of durative relations. Talk presented (by Kelly) at *London Reasoning Workshop*, London, UK.  
Bhat, N., & **Khemlani, S.** (2019). The dynamic processing of perceptual models. Talk presented (by Khemlani) at *London Reasoning Workshop*, London, UK.
- 2018 Bekele, E., Lawson, W., Horne, Z., & **Khemlani, S.** (2018). Implementing a robust explanatory bias in a person re-identification network. Talk presented (by Bekele) at *Computer Vision and Pattern Recognition (CVPR 2018)*, Salt Lake City, UT.  
Bekele, E., Lawson, W., Horne, Z., & **Khemlani, S.** (2018). Human-level explanatory biases for person re-identification. Talk presented (by Bekele) at *Human-Robotic Interaction (HRI 2018)*, Chicago, IL.  
Byrne, R., Goodwin, G., Johnson-Laird, P.N., **Khemlani, S.**, Ragni, M., & Quelhas, C. (2018). What conditionals mean. Talk presented (by Johnson-Laird) at *London Reasoning Workshop*, London, UK.  
Korman, J., & **Khemlani, S.** (2018). These boots are made for walking: Teleological generalizations from principled connections. Talk presented (by Korman) at *Cognitive Science Society (CogSci 2018)*, Madison, WI.
- 2017 Horne, Z., & **Khemlani, S.** (2017). Principled connections underlie the inference bias in explanatory reasoning. Talk presented (by Horne) at *London Reasoning Workshop*, London, UK.  
**Khemlani, S.**, Hinterecker, T., & Johnson-Laird, P.N. (2017). The provenance of modal inference. Talk presented at *Advances in Cognitive Systems (ACS 2017)*, Troy, NY, and at *Cognitive Science Society (CogSci 2017)*, London, UK.  
Korman, J., & **Khemlani, S.** (2017). How people detect when an explanation is incomplete. Talk presented (by Korman) at *London Reasoning Workshop*, London, UK.

RECENT  
CONFERENCE  
TALKS (CONT'D)

- 2016 **Khemlani, S.**, Harrison, A., & Trafton, J.G. (2016). An embodied architecture for thinking and reasoning about time. Talk presented at Cognitive Science Society (CogSci 2016), Philadelphia, PA.
- Khemlani, S.**, & Johnson-Laird, P.N. (2016). How people differ in syllogistic reasoning. Talk presented at Cognitive Science Society (CogSci 2016), Philadelphia, PA; and at the Meeting in Memory of Vittorio Girotto, London, UK.
- 2015 **Khemlani, S.**, Goodwin, G., & Johnson-Laird, P.N. (2015). Causal relations form kinematic simulations. Talk presented at London Reasoning Workshop, London, UK and Cognitive Science Society (CogSci 2015), Pasadena, California.
- 2014 **Khemlani, S.**, Lotstein, M., & Johnson-Laird, P.N. (2014). The conditional probabilities of unique events. Talk presented at London Reasoning Workshop, London, UK.
- Khemlani, S.**, & Trafton, J.G (2014). Percentile analysis for goodness-of-fit comparisons of models to data. Talk presented at Cognitive Science Society (CogSci 2014), Quebec City, Canada.
- 2013 **Khemlani, S.**, Trafton, J.G., & Johnson-Laird, P.N. (2013). Deduction as stochastic simulation. Talk presented at London Reasoning Workshop, London, UK and International Conference on Cognitive Modeling (ICCM 2013), Ottawa, Canada.
- 2012 **Khemlani, S.**, Orenes, I., & Johnson-Laird, P.N. (2012). Negating compound sentences. Talk presented at Cognitive Science Society (CogSci 2012), Sapporo, Japan.
- Khemlani, S.**, & Trafton, J.G. (2012). mReactr: A computational theory of deductive reasoning. Talk presented at Cognitive Science Society (CogSci 2012), Sapporo, Japan.
- Khemlani, S.**, & Johnson-Laird, P. N. (2012). mReasoner: A unified computational model of reasoning. Talk presented at International Conference on Thinking (ICT 2012), London, UK.
- 2011 **Khemlani, S.** (2011). Explanatory reasoning. Talk presented to Princeton Area Alumni Association, Princeton, NJ.
- 2010 **Khemlani, S.** & Johnson-Laird, P. N., (2010). Explanations make inconsistencies harder to detect. Talk presented at *Cognitive Science Society* (CogSci 2010), Portland, OR.



## MENTORING & ADVISING

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### Postdoctoral researchers

Now at:

2019-	Hillary Harner, NRC Postdoctoral Research Fellow	–
2018-	Laura Kelly, NRC Postdoctoral Research Fellow	–
2017-2018	Zachary Horne, NRC Postdoctoral Research Fellow	University of Edinburgh
2016-2018	Joanna Korman, NRC Postdoctoral Research Fellow	Bentley University

### High school students

2019	Neha Bhat, Science and Engineering Apprenticeship Program	
2017, 2018	Nikhil Khosla, Science and Engineering Apprenticeship Program	University of Michigan

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## RECENT PROFESSIONAL ACTIVITIES

2021	Organizer, ICT 2021 Symposia on Mental Models in Thinking and Reasoning Consultant, NRC Mentoring Guides for Research Advisers	
2020	Panelist, NRC/ASEE Postdoctoral Research Publication Award Directorate Panel Program committee, ECAI-20 Workshop on Computational Argumentation and Cognition	
2019	Organizer, IJCAI-19 Workshop on Bridging the Gap between Human and Automated Reasoning Organizer, CogSci 2019 Workshop on Predicting Individual Human Reasoning	
2018	Chair, NRC/ASEE Postdoctoral Research Publication Award Directorate Panel Organizer, FAIM Workshop on Bridging the Gap between Human and Automated Reasoning	
2016-2018	Organizer, NCARAI Seminar Series	
2016	Organizer, Meeting in Honor of Vittorio Girotto Organizer, CogSci 2016 Workshop on Interactive Spatiotemporal Cognition	
2015	Organizer, EAPCogSci Symposium on High-Level Inference through Mental Simulation Program committee, 37th Annual Conference of the Cognitive Science Society	
2014	Member abstracts co-chair, 36th Annual Conference of the Cognitive Science Society	

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## EDITORIAL & REVIEW SERVICES

### Editorial board membership (journals):

*Cognitive Science*  
*Journal of Cognitive Psychology*  
*Thinking & Reasoning*

### Ad-hoc reviewer (conferences):

*Architectures and Mechanisms for Language Processing*  
*Cognitive Science Society*  
*International Joint Conference on Artificial Intelligence*

### Ad-hoc reviewer (grants):

*European Research Council*  
*French National Research Agency*  
*Research Council KU Leuven*

**Ad-hoc reviewer (journals):**

*ACM Transactions on Interactive Intelligent Systems*  
*Acta Psychologica*  
*Advances in Cognitive Psychology*  
*Argument & Computation*  
*Child Development*  
*Cognition*  
*Cognitive Research: Principles and Implications*  
*Cognitive Science*  
*Cognitive Psychology*  
*Computational Brain & Behavior*  
*Experimental Psychology*  
*Frontiers in Human Neuroscience*  
*Japanese Psychological Research*  
*Journal of Cognitive Psychology*  
*Journal of Cognitive Science*  
*Journal of Experimental Psychology: General*  
*Journal of Experimental Psychology: Language, Memory, and Cognition*  
*Journal of Semantics*  
*Journal of Memory & Language*  
*Inquiry*  
*Memory & Cognition*  
*Paladyn: Journal of Behavioral Robotics*  
*PLOS ONE*  
*Proceedings of the National Academy of Sciences*  
*Psychological Bulletin*  
*Psychological Review*  
*Psychonomic Bulletin & Review*  
*Quarterly Journal of Experimental Psychology*  
*Trends in Cognitive Sciences*  
*Thinking & Reasoning*  
*Sage OPEN*  
*Synthese*