

# SANGEET KHEMLANI

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## POSITIONS

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- 2023- **US Member**, NATO Research Task Group, “Anticipatory Intelligence for Superior Decision-Making”
  - 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

## EDUCATION

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- 2011 **PhD** in Cognitive Psychology Princeton University, Princeton, NJ
  - 2008 **MA** in Cognitive Psychology Princeton University, Princeton, NJ
  - 2006 **BS** in Psychology and Electronic Arts Rensselaer Polytechnic Institute, Troy, NY

## HONORS & AWARDS

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- 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

## FUNDING

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- 2023-2025 **Computing static and dynamic spatial relations from video**  
Naval Research Laboratory (Co-PI with A. Lovett)
  - 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 (Technical lead; PIs: D. Aha, J.G. Trafton)
  - 2016-2018 **Causal inference in a computational model of human reasoning**  
Naval Research Laboratory (Principal investigator)
  - 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)

- 2024 Harner, H. & **Khemlani, S.** (2024). The development of desire language: A corpus study of ‘want’. *Cognitive Development*, 70, 101438.
- Khemlani, S.**, Johnson, S.B., Oppenheimer, D., & Sussman, A. (2024). The latent scope bias: Robust and replicable. *Cognition*, 252, 105872.
- Johnson-Laird, P.N., Byrne, R.M.J, & **Khemlani, S.** (2024). Models of possibilities instead of logic as the basis of human reasoning. *Minds and Machines*, 34, 19.
- 2023 Albertella, L., ... **Khemlani, S.**, ... & Yucel, M. (2023). Building a transdisciplinary expert consensus on the cognitive drivers of performance under pressure: An international multi-panel Delphi study. *Frontiers in Psychology*, 13, e1017675.
- Johnson-Laird, P.N., Byrne, R.M.J., & **Khemlani, S.** (2023). Human verifications: Computable with truth values outside logic. *Proceedings of National Academy of Sciences*, 120, e2310488120.
- Johnson-Laird, P.N. & **Khemlani, S.** (2023). What happened to the “new paradigm”? A commentary on Knauff and Gazzo Castañeda (2023). *Thinking & Reasoning*, 29, 409-415.
- Kelly, L., & **Khemlani, S.** (2023). Iconicity bias and duration. Manuscript in press at *Journal of Experimental Psychology: Language, Memory, & Cognition*, 49, 1715-1731.
- Kelly, L., & **Khemlani, S.** (2023). Temporal explanations. *Journal of Experimental Psychology: General*, 152, 1639-1646.
- 2022 Blaha, L., ... **Khemlani, S.**, ... & Wong, R. (2022). Understanding is a process. *Frontiers in Systems Neuroscience*, 16, 800280.
- Bucciarelli, M., Mackiewicz, R., **Khemlani, S.**, & Johnson-Laird, P.N. (2022). The causes of difficulty in children’s creation of informal programs. *International Journal of Child-Computer Interaction*, 31, 100443.
- Harner, H., & **Khemlani, S.** (2022). Reasoning about *want*. *Cognitive Science*, 46, e13170.
- Johnson-Laird, P.N., Bucciarelli, M., Mackiewicz, R., & **Khemlani, S.** (2022). Recursion in algorithms, thought, and language. *Psychonomic Bulletin & Review*, 29, 430–454.
- Khemlani, S.**, & Johnson-Laird, P.N. (2022). Reasoning about properties: A computational theory. *Psychological Review*, 129, 289-312.
- 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.
- 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.
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- 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.
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- 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.

- 2024 Kon, M., & **Khemlani, S.** (2024). How spatial simulations distinguish “tracking” verbs. In L. Samuelson, S. Frank, M. Toneva, A. Mackey, and E. Hazeltine (Eds.), *Proceedings of the 46th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Kon, M., **Khemlani, S.**, & Lovett, A. (2024). Measuring and modeling pursuit detection in dynamic visual scenes. In L. Samuelson, S. Frank, M. Toneva, A. Mackey, and E. Hazeltine (Eds.), *Proceedings of the 46th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Mackiewicz, R., Bucciarelli, M., **Khemlani, S.**, & Johnson-Laird, P.N. (2024). Eye movements are like gestures in the creation of informal algorithms. In L. Samuelson, S. Frank, M. Toneva, A. Mackey, and E. Hazeltine (Eds.), *Proceedings of the 46th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- 2023 Bio, B., & **Khemlani, S.** (2023). Omniscience errors in mental state reasoning. In M. Goldwater, F. Anggoro, B. Hayes, and D. Ong (Eds.), *Proceedings of the 45th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Bio, B., & **Khemlani, S.** (2023). Reasoning with online and offline knowledge. In M. Goldwater, F. Anggoro, B. Hayes, and D. Ong (Eds.), *Proceedings of the 45th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Khemlani, S.**, Orenes, I., Moreno-Ríos, S., & Espino, O. (2023). Conditionals conflict with their denials. In M. Goldwater, F. Anggoro, B. Hayes, and D. Ong (Eds.), *Proceedings of the 45th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- 2022 Harner, H., & **Khemlani, S.** (2022). Frequently produced semantic features reflect principled connections. In J. Culbertson, A. Perfors, H. Rabagliati, and V. Ramenzoni (Eds.), *Proceedings of the 44th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- Khemlani, S.** (2022). A computational cognitive model of temporal reasoning. In V. Vandekerckhove, T. Stewart, and D. Kellen (Eds.), *International Conference on Cognitive Modeling 2022*. Society for Mathematical Psychology.
- Harner, H., & **Khemlani, S.** (2022). How children talk about their desires: A corpus study of ‘want’. In J. Culbertson, A. Perfors, H. Rabagliati, and V. Ramenzoni (Eds.), *Proceedings of the 44th Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.
- 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* (pp. 1292-1298). 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., Wasylyshyn, 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.
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- 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., Wasylyshyn, 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.
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- 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.
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- 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.

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- 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

- 
- 2023 Johnson-Laird, P. N., & **Khemlani, S.** (2023). Mental models and the algorithms of deduction. In R. Sun (Ed.), *Cambridge Handbook on Computational Cognitive Sciences*. Cambridge, UK: Cambridge University Press.
- 2021 **Khemlani, S.** (2021). 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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- 2023 **Khemlani, S.** (2023). nodus-ponens: A full-stack framework for running high-level reasoning and cognitive science experiments in Node.js (version 1.3.12). Retrieved from <https://www.npmjs.com/package/nodus-ponens>.
- Khemlani, S.**, & Johnson-Laird, P.N. (2023). mReasoner: A unified computational implementation of mental model theory of thinking and reasoning (version 2.0.9678). Retrieved from <https://github.com/skhemlani/mReasoner>.

## INVITED TALKS

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- 2025 **Swedish Defence Research Agency**, *NATO SAS-189 Meeting*  
**National Institutes of Health**, *Workshop on Reasoning Algorithms Across Species, Diagnoses...*
  - 2024 **Princeton University**, *Workshop on Understanding in Natural and Artificial Minds*  
**Universidad Instituto de Empresa**, *NATO SAS-189 Meeting*  
**University of Maryland**, *Cognitive Science Colloquium Series*
  - 2022 **University of Granada**, *Centro de Mente, Cerebro y Comportamiento Colloquium*
  - 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*

## RECENT CONFERENCE TALKS

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- 2023 **Khemlani, S.** (2023). Interactive spatial reasoning on a mobile robot. Talk presented at the 14th London Reasoning Workshop.
  - 2022 Harner, H., & **Khemlani, S.** (2022). Frequently produced semantic features reflect principled connections. Virtual talk presented at Cognitive Science Society (CogSci 2022).  
Harner, H., & **Khemlani, S.** (2022). How children talk about their desires: A corpus study of *want*. Virtual talk presented at Cognitive Science Society (CogSci 2022).  
**Khemlani, S.** (2022). Tracking spatial relations with mReasoner. Virtual talk presented at London Reasoning Workshop and at Human Behavioral XAI.
  - 2021 **Khemlani, S.** (2021). Logic and possibility. Virtual talk presented at Logic Learning Conference 2021.  
Korman, J., & **Khemlani, S.** (2021). What makes an explanation *incomplete*? Virtual talk presented at Cognitive Science Society (CogSci 2021).
  - 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.



RECENT  
CONFERENCE  
TALKS (CONT'D)

- 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 inherece 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.
- 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.

## MENTORING & ADVISING

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### Postdoctoral researchers

Now at:

2023-2024	Maria Kon, NRC Postdoctoral Research Fellow	US Naval Research Laboratory
2021-2024	Branden Bio, NRC Postdoctoral Research Fellow	University of Wisconsin – Madison
2018-2021	Laura Kelly, NRC Postdoctoral Research Fellow	–
2019-2021	Hillary Harner, NRC Postdoctoral Research Fellow	Altamira Corporation
2017-2018	Zachary Horne, NRC Postdoctoral Research Fellow	University of Edinburgh
2016-2018	Joanna Korman, NRC Postdoctoral Research Fellow	MITRE Corporation

### High school students

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

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## RECENT PROFESSIONAL ACTIVITIES

2024	Organizer, ICT 2024 Symposium: “What are explanations for?” Program committee, 45th Annual Conference of the Cognitive Science Society
2023-2026	US Member, NATO SAS-189 RTG on Anticipatory Intelligence for Superior Decision Making
2023	Program committee, 44th Annual Conference of the Cognitive Science Society Organizer, Meeting in Honor of Phil Johnson-Laird
2022	Program committee, 44th Annual Conference of the Cognitive Science Society
2021	Organizer, ICT 2021 Symposium: “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: “Computational argumentation and cognition”
2019	Organizer, IJCAI-19 Workshop: “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: “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: “Interactive spatiotemporal cognition”
2015	Organizer, EAPCogSci Symposium; “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 and scientific committee membership (journals):

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

### Ad-hoc reviewer (conferences):

*Architectures and Mechanisms for Language Processing*  
*Annual Meeting of the Cognitive Science Society (CogSci)*  
*ACM/IEEE International Conference on Human-Robot Interaction*  
*International Joint Conference on Artificial Intelligence*

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

*Defense Advanced Research Projects Agency · National Science Foundation · 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*  
*Applied Psychology: Health and Well-Being*  
*Argument & Computation*  
*Behavioral Sciences*  
*Brain & Behavior*  
*Child Development*  
*Cognition*  
*Cognitive Research: Principles and Implications*  
*Cognitive Science*  
*Cognitive Psychology*  
*Computational Brain & Behavior*  
*Experimental Psychology*  
*Frontiers in Human Neuroscience*  
*Humanities and Social Sciences Communications*  
*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*  
*Nature Human Behaviour*  
*New Ideas in Psychology*  
*Paladyn: Journal of Behavioral Robotics*  
*Philosophical Psychology*  
*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*  
*Scientific Reports*  
*Synthese*