Topic 1: Numeracy and Risk Communication with Dr. Victoria Shaffer

Peters, E. (2020). Innumeracy in the wild: Misunderstanding and misusing numbers. Oxford University Press.

Reyna, V. F., & Brainerd, C. J. (1995). Fuzzy-trace theory: An interim synthesis. *Learning and Individual Differences*, *7*(1), 1–75. https://doi.org/10.1016/1041-6080(95)90031-4

Estrada, C. (1999). Health Literacy and Numeracy. In *JAMA: The Journal of the American Medical Association* (Vol. 282, Issue 6). https://doi.org/10.1001/jama.282.6.527

Lipkus, I. M., Samsa, G., & Rimer, B. K. (2001). General performance on a numeracy scale among highly educated samples. *Medical Decision Making*, *21*(1), 37–44. https://doi.org/10.1177/0272989X0102100105

Ashcraft, M. H. (2002). Math anxiety: Personal, educational, and cognitive consequences. *Current Directions in Psychological Science*, *11*(5), 181–185. https://doi.org/10.1111/1467-8721.00196

Ni, Y., & Zhou, Y. Di. (2005). Teaching and learning fraction and rational numbers: The origins and implications of whole number bias. *Educational Psychologist*, *40*(1), 27–52. https://doi.org/10.1207/s15326985ep4001\_3

Peters, E., Hibbard, J., Slovic, P., & Dieckmann, N. (2007). Numeracy skill and the communication, comprehension, and use of risk-benefit information. *Health Affairs*, *26*(3), 741–748. https://doi.org/10.1377/hlthaff.26.3.741

Fagerlin, A., Zikmund-Fisher, B. J., Ubel, P. A., Jankovic, A., Derry, H. A., & Smith, D. M. (2007). Measuring numeracy without a math test: Development of the subjective numeracy scale. *Medical Decision Making*, *27*(5), 672–680. https://doi.org/10.1177/0272989X07304449

Nutbeam, D. (2008). The evolving concept of health literacy. *Social Science and Medicine*, *67*(12), 2072–2078. https://doi.org/10.1016/j.socscimed.2008.09.050

Garcia-Retamero, R., & Galesic, M. (2009). Communicating treatment risk reduction to people with low numeracy skills: A cross-cultural comparison. *American Journal of Public Health*, *99*(12), 2196–2202. https://doi.org/10.2105/AJPH.2009.160234

Keller, C., & Siegrist, M. (2009). Effect of risk communication formats on risk perception depending on numeracy. *Medical Decision Making*, *29*(4), 483–490. https://doi.org/10.1177/0272989X09333122

Galesic, M., Garcia-Retamero, R., & Gigerenzer, G. (2009). Using Icon Arrays to Communicate Medical Risks: Overcoming Low Numeracy. *Health Psychology*, *28*(2), 210–216. https://doi.org/10.1037/a0014474

Lipkus, I. M., & Peters, E. (2009). Understanding the Role of Numeracy in Health: Proposed Theoretical Framework and Practical Insights. *Health Education & Behavior*, *36*(6), 1065–1081. https://doi.org/10.1177/1090198109341533

Zikmund-Fisher, B. J., Fagerlin, A., & Ubel, P. A. (2010). Risky feelings: Why a 6% risk of cancer does not always feel like 6%. *Patient Education and Counseling*, *81*(1), S87–S93. https://doi.org/10.1016/j.pec.2010.07.041

Ciampa, P. J., Osborn, C. Y., Peterson, N. B., & Rothman, R. L. (2010). Patient numeracy, perceptions of provider communication, and colorectal cancer screening utilization. *Journal of Health Communication*, *15*(SUPPL. 3), 157–168. https://doi.org/10.1080/10810730.2010.522699

Zikmund-Fisher, B. J., Dickson, M., & Witteman, H. O. (2011). Cool but counterproductive: Interactive, web-based risk communications can backfire. *Journal of Medical Internet Research*, *13*(3), 1–11. https://doi.org/10.2196/jmir.1665

Hess, R., Visschers, V. H. M., Siegrist, M., & Keller, C. (2011). How do people perceive graphical risk communication? the role of subjective numeracy. *Journal of Risk Research*, *14*(1), 47–61. https://doi.org/10.1080/13669877.2010.488745

Fagerlin, A., Zikmund-Fisher, B. J., & Ubel, P. A. (2011). Helping patients decide: Ten steps to better risk communication. *Journal of the National Cancer Institute*, *103*(19), 1436–1443. https://doi.org/10.1093/jnci/djr318

Galesic, M., & Garcia-Retamero, R. (2011). Do Low-Numeracy People Avoid Shared Decision Making? *Health Psychology*, *30*(3), 336–341. https://doi.org/10.1037/a0022723

Okan, Y., Garcia-Retamero, R., Cokely, E. T., & Maldonado, A. (2012). Individual Differences in Graph Literacy: Overcoming Denominator Neglect in Risk Comprehension. *Journal of Behavioral Decision Making*, *25*(4), 390–401. https://doi.org/10.1002/bdm.751

Gaissmaier, W., Wegwarth, O., Skopec, D., Müller, A. S., Broschinski, S., & Politi, M. C. (2012). Numbers can be worth a thousand pictures: Individual differences in understanding graphical and numerical representations of health-related information. *Health Psychology*, *31*(3), 286–296. https://doi.org/10.1037/a0024850

Zikmund-Fisher, B. J., Witteman, H. O., Fuhrel-Forbis, A., Exe, N. L., Kahn, V. C., & Dickson, M. (2012). Animated graphics for comparing two risks: A cautionary tale. *Journal of Medical Internet Research*, *14*(4), 1–13. https://doi.org/10.2196/jmir.2030

Siegler, R. S., Duncan, G. J., Davis-Kean, P. E., Duckworth, K., Claessens, A., Engel, M., Susperreguy, M. I., & Chen, M. (2012). Early Predictors of High School Mathematics Achievement. *Psychological Science*, *23*(7), 691–697. https://doi.org/10.1177/0956797612440101

Landy, D., Silbert, N., & Goldin, A. (2013). Estimating large numbers. *Cognitive Science*, *37*(5), 775–799. https://doi.org/10.1111/cogs.12028

Development, O. of E. C. and. (2013). Education at a Glance 2013. In *Education at a Giance*. http://www.oecd-ilibrary.org/docserver/download/4213201e.pdf?expires=1395222439&id=id&accname=guest&checksum=F9C6674E09CE56B8C66B5B09314145B0

Shaffer, V. A., Tomek, S., & Hulsey, L. (2014). The Effect of Narrative Information in a Publicly Available Patient Decision Aid for Early-Stage Breast Cancer. *Health Communication*, *29*(1), 64–73. https://doi.org/10.1080/10410236.2012.717341

Ng, J. Y. Y., Ntoumanis, N., Thøgersen-ntoumani, C., Deci, E. L., Ryan, R. M., Duda, J. L., Williams, G. C., Ng, J. Y. Y., Ntoumanis, N., Thøgersen-ntoumani, C., Deci, E. L., Ryan, R. M., Duda, J. L., & Williams, G. C. (2014). *Perspectives on Psychological Science*. 1–58.

Zikmund-Fisher, B. J., Witteman, H. O., Dickson, M., Fuhrel-Forbis, A., Kahn, V. C., Exe, N. L., Valerio, M., Holtzman, L. G., Scherer, L. D., & Fagerlin, A. (2014). Blocks, ovals, or people? Icon type affects risk perceptions and recall of pictographs. *Medical Decision Making*, *34*(4), 443–453. https://doi.org/10.1177/0272989X13511706

Zikmund-Fisher, B. J., Exe, N. L., & Witteman, H. O. (2014). Numeracy and literacy independently predict patients’ ability to identify out-of-range test results. *Journal of Medical Internet Research*, *16*(8), e187. https://doi.org/10.2196/jmir.3241

Tompkins, M. K. (2015). *The Relations of Objective Numeracy and Subjective Numeracy to Financial Outcomes over Time*. https://medium.com/@arifwicaksanaa/pengertian-use-case-a7e576e1b6bf

Gakumo, C. A., Raper, J. L., Cerice, D. K., Stand-Gravois, M. J., & Mugavero, M. J. (2016). A Qualitative Study on Health Numeracy and Patient–Provider Communication of Laboratory Numbers in Older African Americans with HIV. *Journal of the Association of Nurses in AIDS Care*, *27*(6), 826–834. https://doi.org/10.1016/j.jana.2016.06.003

Davis, D. E., Choe, E., Meyers, J., Wade, N., Varjas, K., Gifford, A., Quinn, A., Hook, J. N., Van Tongeren, D. R., Griffin, B. J., & Worthington, E. L. (2016). Thankful for the little things: A meta-analysis of gratitude interventions. *Journal of Counseling Psychology*, *63*(1), 20–31. https://doi.org/10.1037/cou0000107

Zikmund-fisher, B. J., Scherer, A. M., Witteman, H. O., Solomon, J. B., Exe, N. L., Tarini, B. A., & Fagerlin, A. (2017). Graphics help patients distinguish between urgent and non-urgent deviations in laboratory test results. *Journal of the American Medical Informatics Association*, *24*(3), 520–528. https://doi.org/10.1093/jamia/ocw169

Garcia-Retamero, R., & Cokely, E. T. (2017). Designing Visual AIDS That Promote Risk Literacy: A Systematic Review of Health Research and Evidence-Based Design Heuristics. *Human Factors*, *59*(4), 582–627. https://doi.org/10.1177/0018720817690634

Petrova, D., Kostopoulou, O., Delaney, B. C., Cokely, E. T., & Garcia-Retamero, R. (2018). Strengths and Gaps in Physicians’ Risk Communication: A Scenario Study of the Influence of Numeracy on Cancer Screening Communication. *Medical Decision Making*, *38*(3), 355–365. https://doi.org/10.1177/0272989X17729359

Jonas, N. (2018). Numeracy Practices and Numeracy Skills Among Adults. *OECD Education Working Paper*, *177*, 83. files/2179/Jonas - NUMERACY PRACTICES AND NUMERACY SKILLS AMONG ADULT.pdf

Schapira, M. M., Fletcher, K. E., Ganschow, P. S., Jacobs, E. A., Walker, C. M., Smallwood, A. J., Gil, D., Faghri, A., Kong, A. L., Yen, T. W., McDunn, S., Marcus, E., & Neuner, J. M. (2019). Improving Communication in Breast Cancer Treatment Consultation: Use of a Computer Test of Health Numeracy. *Journal of Women’s Health*, *28*(10), 1407–1417. https://doi.org/10.1089/jwh.2018.7347

Peters, E., Tompkins, M. K., Knoll, M. A. Z., Ardoin, S. P., Shoots-Reinhard, B., & Meara, A. S. (2019). Despite high objective numeracy, lower numeric confidence relates to worse financial and medical outcomes. *Proceedings of the National Academy of Sciences of the United States of America*, *116*(39), 19386–19391. https://doi.org/10.1073/pnas.1903126116

Garcia-Retamero, R., Sobkow, A., Petrova, D., Garrido, D., & Traczyk, J. (2019). Numeracy and Risk Literacy: What Have We Learned so Far? *Spanish Journal of Psychology*, 1–11. https://doi.org/10.1017/sjp.2019.16

Rolison, J. J., Morsanyi, K., & Peters, E. (2020). Understanding Health Risk Comprehension: The Role of Math Anxiety, Subjective Numeracy, and Objective Numeracy. *Medical Decision Making*, *40*(2), 222–234. https://doi.org/10.1177/0272989X20904725

Van Hoof, J., Verschaffel, L., De Neys, W., & Van Dooren, W. (2020). Intuitive errors in learners’ fraction understanding: A dual-process perspective on the natural number bias. *Memory and Cognition*, *48*(7), 1171–1180. https://doi.org/10.3758/s13421-020-01045-1

Persson, E., Andersson, D., Koppel, L., Västfjäll, D., & Tinghög, G. (2021). A preregistered replication of motivated numeracy. *Cognition*, *214*(May). https://doi.org/10.1016/j.cognition.2021.104768

Peters, E. M. (2021). Reflections on innumeracy in the wild. *Numeracy*, *14*(1), 1–10. https://doi.org/10.5038/1936-4660.14.1.1379

Thompson, C. A., Taber, J. M., Fitzsimmons, C. J., & Sidney, P. G. (2021). Math predictors of numeric health and non-health decision-making problems. *Journal of Numerical Cognition*, *7*(2), 221–239. https://doi.org/10.5964/jnc.6545

Peters, E., Boyd, P., Cameron, L. D., Contractor, N., Diefenbach, M. A., Fleszar-Pavlovic, S., Markowitz, E., Salas, R. N., & Stephens, K. K. (2022). Evidence-based recommendations for communicating the impacts of climate change on health. *Translational Behavioral Medicine*, *12*(4), 543–553. https://doi.org/10.1093/tbm/ibac029

Peters, E., & Salas, R. N. (2022). Communicating Statistics on the Health Effects of Climate Change. *New England Journal of Medicine*, *387*(3), 193–196. https://doi.org/10.1056/NEJMp2201801