Questions for Sean Duans’ Doctoral Comprehensive Exam:

* Causal Mediation Effects (CMEs) analysis has proven to be an effective methodology to understand potential mechanisms for causal analysis, particularly in the social sciences.   What are the principal limitations of this approach? Is there any advantage of taking a Bayesian approach to learning causal mediation effects?  Finally, can you imagine a scenario where CMEs could be used to address mechanism associated with anthropogenic climate change causes of increased hurricane intensity?
* Pick two of the three below:

1. Gratitude is a very popular positive psychology intervention.  In your opinion, what is special about gratitude, compared to other interventions? What is the evidence base that supports gratitude as more effective, compared to kindness, compassion, best possible selves, and the like?  And, most effective for what?  (please consider your own research goals in answering this part of the question).
2. Is gratitude a positive emotion, a cognitive process, or both?  Opinions differ, so be sure to cite multiple sides in your answer.
3. What more basic affective, physiological, or cognitive processes are affected by a person’s resolve to feel, and express, gratitude?  That is, what are the primary mediators of gratitude effects?  Be sure to discuss studies examining mediators in your answers.

* I would like you to carefully formulate a research question.   Your readings examine moral decision making and justice across multiple domains.  I would like you to choose an existing digital app.  The app could be used on people’s phones, etc.   Please choose an aspect of this app that involves moral decision making.  This could be on the part of the users, developers, company, etc.  Please formulate a precise research question around this moral decision and outline a method of investigation.   Please defend why your research question is important and why it is necessary to investigate it.
* Although numeracy was initially described as a unidimensional construct, more recent research suggests that it is more complex. For example, measures of subjective numeracy predict different behaviors than measures of objective numeracy, and research by Ellen Peters unpacks numeracy into numeric confidence and ability. Further, there are criticisms that measures of numeracy are conflated with literacy and logic given that numeracy is often assessed via word problems. Review the various measures of numeracy and discuss their predictive validity, considering a larger umbrella of related constructs including health literacy (which often involved comprehension of numerical information) and graph literacy. Which measure (or measures) would you recommend including in studies of medical decision making? (these recommendations may differ by context)