Dear Class,

These are the identification assumptions that I asked you to fill out in the blanks on slides 22-24. For a detailed discussion of the existing methods for mediation analysis, please see Chapter 10 of my book.

Guanglei

**Assumptions required by path analysis and SEM**

*αβ* identifies the natural indirect effect while *λ* identifies the natural direct effect under the following assumptions (possibly within levels of covariates):

* Sequential Ignorability
  + The treatment assignment is independent of all the potential mediators and the potential outcomes
  + The mediator value assignment under each treatment is independent of all the potential outcomes
  + There is no treatment-by-mediator interaction
* Both models are linear additive and are correctly specified

**Assumptions required by the IV method**

The ITT effect of *T* on *Y* is equivalent to the natural indirect effect *αβ*; hence *β* identifies the mediator effect on the outcome under the following assumptions (possibly within levels of covariates):

* The treatment assignment is independent of all the potential mediators and the potential outcomes
* The exclusion restriction: a constant zero direct effect,
* No treatment-by-mediator interaction
* *α* ≠ 0; Cov(*αi*, *βi*) = 0 (within levels of covariates)
* Both models are correctly specified

**Assumptions required by the marginal structural models**

*αβ* identifies the natural indirect effect while *λ* identifies the natural direct effect under the following assumptions :

* + Sequential Ignorability (within levels of covariates)
  + The treatment assignment is independent of all the potential mediators and the potential outcomes
  + The mediator value assignment under each treatment is independent of all the potential outcomes
* There is no treatment-by-mediator interaction
* Both models are linear additive and are correctly specified