Assessing Causality Examples & Answers
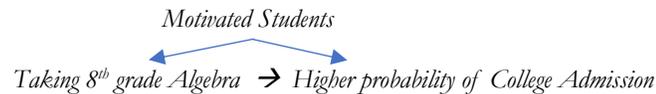*Poli 30; TA: Liesel Spangler*

A. **Early Exposure to Math:** AP. 1997. "Math Adds Up to College, Report Says"

Taking 8th grade Algebra → College Admission

1. **Temporal Ordering?** The temporal ordering here makes sense. Most students apply to colleges at the end of high school not in 8th grade.

2. **Evidence of Correlation?** No specific evidence is provided but the article suggests a positive correlation between 8th grade algebra and college admission.

3. **Causal Mechanism?** The article suggests that taking 8th grade algebra teaches you hard work and discipline early on. This means students do better throughout high school leading to higher probability of college admission.

   Taking 8th grade Algebra → Teaches Hard Work/Discipline → Higher probability of College Admission

4. **Potential Confounds?** There could be a *selection bias*—those that select into (choose) 8th grade algebra are more motivated students anyway and thus are more likely to go into college algebra

   Motivated Students
   Taking 8th grade Algebra → Higher probability of College Admission

B. **Alcohol Consumption:** Reuters. "Young Drinkers More Likely to Turn Out Alcoholic". 1/15/1998

Age of First Drink → Alcoholism

1. **Temporal Ordering?** Timing of cause and effect makes sense, one does not experience alcoholism before they've begun to drink alcohol.

2. **Evidence of Correlation?** The study suggests a negative correlation…the younger the person when they consume their first drink, the more likely the person is to develop alcoholism. The evidence that is provided states that those who have their first drink younger than 15 years of age are four times more likely to develop alcoholism than those who have their first drink at age 21.

3. **Causal Mechanism?** The study suggests three possible causal mechanisms:

1. The amount of time between starting to drink and the time protective life events happen (e.g., first job, marriage). If there is a shorter period of time between these, destructive habits are less likely, reducing the risk of alcoholism.

    Age of First Drink → Time Before Marriage/Job → Alcoholism

2. People who Second, a person who starts drinking at a younger age may be more vulnerable to peer pressure, advertising and other influences.

    Age of First Drink → Resistance to Outside Influences → Alcoholism

3. And third, the young brain at age 11 or 12 may be biologically more susceptible to alcohol addiction due to hormonal and other physical changes, Dr. Gordis said.

    Age of First Drink → Biological Susceptibility → Alcoholism

4. **Potential Confounds?** Perhaps having an addictive personality leads people to drink earlier and develop alcoholism. Those individuals with addictive personalities are more likely to seek out alcohol earlier and more frequently, and are also more prone to substance abuse.

    Addictive Personality.

    Age of First Drink → Alcoholism

C. **Student Age and Behavior:** AP. "How Grade Delay Affects Children". October 7, 1997.

    Age in the cohort of 1ˢᵗ graders → Behavior Problems

1. <u>Temporal Ordering?</u> A little vague as to the timing, but presumably they are measuring behavior problems that have occurred after the student has entered elementary school.

2. <u>Evidence of Correlation?</u> The article states that students who were a year or more older than their classmates were 70% of more likely to have extreme behavior problems. This indicates a positive relationship between age in cohort and behavior problems.

3. <u>Causal Mechanism?</u> The study provides no potential causal mechanism. Other experts suggest that the causal mechanism could be related to older students being "out of sync" with or dissimilar to their peers, looking older, etc.

    Age in the cohort of 1ˢᵗ graders → Similarity/Dissimilarity → Behavior Problems

4. Potential Confounds? The most obvious confound is the presence of a trait, such as immaturity or previous problematic behavior. Immature students are more likely to be delayed entrance into kindergarten or first-grade, making them older in the cohort. Immature students are also more likely to exhibit problematic behavior.

Immaturity

Age in the cohort of 1st graders → *Behavior Problems*