PS1

2.1

a) $Y_i(0)$: The untreated potential outcome for subject *i.*

b) $Y_i(0)$ I $D_i=1$: The untreated potential outcome for subject *i* who would be treated under some hypothetical treatment assignment. Meanwhile $Y_i(0)$ I $d_i=1$ denotes the untreated potential outcome for subject *i* who empirically has been treated

c) $Y_i(0)$ denotes the untreated potential outcome for subject *i.* If you add the notation "I $D_i=0$" it is the untreated potential outcome for subject *i* who under some hypothetical allocation of treatment would not be treated

d) The notation "$Y_i(0)$ I $D_i=1$" is the untreated potential outcome for subject *i* who would be treated under some hypothetical treatment-assignment while "$Y_i(0)$ I $D_i=0$" is the untreated potential outcome for subject *i* who would not be treated under some hypothetical treatment-assignment. If this allokation were to happen the latter would be observable.

e) $E[Y_i(0)]$: The expected value of the untreated potential outcome for subject *i.* If you add the notation "I $D_i=1$" this is only for the subject who under some hypothetical allocation of treatment would be treated.

f) Random assignment will insure that the assignment of treatment is independent of the potential outcome. Selection bias will therefore be 0 if the expected value of the untreated potential outcome for subject *i* who under some hypothetical allocation of treatment would be treated and subject *i* who under some hypothetical allocation of treatment would not be treated.

2.10

a) if the subjects know that they are being treated and with what purpose they might not only receive the newspaper (the treatment). Maybe they will seek other information about politics. And maybe at the end of the trial they will answer potential questions differently than had they not known that their interest in politics was being measured. Thereby it is difficult to *exclude* other explanations of political interest, because the potential outcomes not solely will respond to treatment.

b) There might be interference if the newspapers are in the cafeteria because students from the control group then will be able to read the newspaper as well.

2.12

a) Because of selection problems: The potential outcome is correlated with treatment because the prisoners self-select themselves into treatment and control group. For example, there might be cofounders determining both how much the prisoners read and the number of violent encounters with prison staff.

b) It might not be the reading itself that reduce the number of violent encounters with prison staff but instead the fact that they on a daily basis interfere less with prison staff because they are sitting in these specially designed carrels.

c) If the treatment group starts to read it could also affect the control group; if they might read more.

d)