Philosophy 3334 Fall 2023
Reading questions #11
Due Thu, Nov 2

1) Read Elliott Sober's "Separating Nature and Nurture." Sober points out that measuring the heritability of a trait is not the same as asking whether or not it is inherited. How do these come apart?

Sober doesn't say what he means by inherited – but he means something like 'you got it from your parents'. For example, genes and phenotypes can be inherited. This means something like caused by the traits of your parents. So a phenotype is inherited if it is genetically caused. On the other hand, the heritability of a trait in a population is just a mathematical construct – it is the ratio of the genetic variance to the overall phenotypic variance (or maybe 'the proportion of its variance that is caused by genetic variance'). This leads to some important differences – for example, if a trait is inherited, it is inherited for as long as you have it. But the heritability of a trait can change as the population changes.

If you measure the heritability of the number of hands in the US adult population today, do you think it will be highly heritable? Or have low heritability? Or in between? Why?

To calculate the heritability of hand number look at the people who have two hands and the people who do not have two hands and see what is different about the two groups. If there are genetic differences between the two groups then the trait will be heritable to some degree. If they are genetically very similar and most of the differences are environmental, then the trait will have low heritability. My guess is in US adults today, it is low heritability. Basically everyone has the same genetic predisposition to have two hands but some people have lost one or both hands due to accidents (environmental causes). So there are no genetic differences between groups with different numbers of hands.

2) On page 58 Sober says that prior to the invention of eyeglasses, poor vision was highly heritable. He doesn't say but seems to be implying that it is no longer highly heritable. Why would he say that? What if the population was 18 year olds in the United States today? Is poor eyesight heritable in this population? Is this any different than five hundred years ago? Why?

There are genetic differences between individuals who have naturally good vision vs. naturally poor vision. In the past, it was close to a one-to-one relationship between particular genotypes and eyesight. So that is why the heritability of the trait was very high. But after the invention of eyeglasses, individuals who wore glasses still had the genes for natural bad eyesight, but Sober is treating them as not having the phenotype for poor vision (so the phenotype is visual ability with glasses). Now many of the people with good vision (with glasses) are genetically

similar to people with poor vision. So the genetic differences between those with good eyesight and poor eyesight is less. It is also plausible that there are environmental reasons that explain why some people still have poor vision – for example, if they cannot afford glasses. Either of these two things cause the heritability of the trait to be lower.

3) After reading the chapter, come up with a question that you want answered or a topic that you would like to be discussed. This could be something that the chapters forced you think about or it could be something that you thought was particularly confusing in the chapters.