

## Philosophy 12: Introduction to Causal Reasoning

### Answers to study questions for Lecture 9: “Causation vs. Association”

1. Answer(s):

No. The policy of hand washing breaks the causal influence that existed in the “natural system” from Smoking to Finger Stains. Since everyone has unstained hands in the experimental world, smoking has no effect on finger stains.

2. Answer(s):

No. Since Harry never hurries in the experimental system, leaving late no longer has an effect on hurrying. Harry’s policy has broken the causal influence that existed in the “natural system.”

3. Answer(s): (a)

Remember that if what is told to me changes my uncertainty about the switch position, then it gives me information.

4. Answer(s): (b)

The fact that the lights are on doesn’t mean that the switch is up. For example, we might have intervened to turn the light on without touching the switch, in which case the lights being on would have no effect on the state of the switch.

5. Answer(s): (b)

Since Harry observed that half of the people were late and half were on time, the chances of drawing a chip out of the barrel which represents a person who arrived late is 50%.

6. Answer(s): (c)

We have given you information about the person—we have told you that he or she did, in fact, hurry. If you look at the figure, you will see that most of the people who hurried arrived late.

7. Answer(s): (a)

We haven’t made any intervention yet, nor have we told you anything about this particular person, so the chance that this person smokes is simply the overall percentage of smokers in the population.

8. Answer(s): (c)

We have given you information about the person—we have told you that he or she does, in fact, have nicotine stained fingers, and we know that in the real world, for the most part, only people who smoke have nicotine stained fingers.

9. Answer(s): (a)

Presumably, having nicotine stained fingers is not associated with owning a red shirt. Thus, telling you that the person picked has a cousin who owns a red shirt gives you no information about whether he or she smokes. So, telling you that the person has a cousin who owns a red shirt should not change your uncertainty about whether he or she smokes.

10. Answer(s): (a)

Since you know nothing about the individual picked, and you haven’t intervened to do anything, the chance that he or she is a smoker is given in the population facts.

11. Answer(s): (c)

You have learned that the individual *does not* have nicotine stained fingers. Since smoking and nicotine stains are positively associated, this decreases the chances that he or she is a smoker.

12. Answer(s): (a)

You have intervened to apply nicotine paint. Nicotine stains don't cause smoking, so your intervention has no effect on whether the person smokes. Since your intervention eradicates any information we might have obtained from whether their fingers were naturally stained, we know nothing more about whether the person smokes than the proportion of smokers given by the population facts in this problem.

13. Answer(s): (a)

You have intervened to wash away any nicotine stains that the individual might have had. Clean fingers do nothing to prevent smoking, so your intervention has no effect on whether he or she smokes or not. Since your intervention eradicates any information we might have obtained from whether his or her fingers were naturally stained, we know nothing more about whether the person smokes than the proportion of smokers given by the population facts in this problem.

14. Answer(s): (a)

Since you know nothing about the individual picked, and you haven't intervened to change anything, the chance that he or she scored high is given in the population facts.

15. Answer(s): (b)

You have learned that the individual picked has studied hard. Since studying hard and scoring high on the final exam are positively associated, this knowledge increases the chance that he or she scored high.

16. Answer(s): (b)

You have intervened to make the individual you picked study hard. Since studying hard is a cause of scoring high, your intervention has increased the chance that he or she scored high.

17. Answer(s): (c)

You have intervened to prevent the individual you picked from studying hard. Since studying hard is a cause of scoring high, your intervention had decreased the chances that he or she scored high.

18. Answer(s): (a)

Since you know nothing about the individual you picked, and you haven't intervened to do anything, the chances that he or she scores high is given in the population facts.

19. Answer(s): (c)

The individual you picked *has not* scored high. Since studying hard and scoring high in the final are positively associated, this decreases the chance that he or she studied hard.

20. Answer(s): (a)

You have intervened to make the individual you picked have a high grade on the final. This means you changed the grade in the instructor's records, or graded it unfairly, etc. High scores on a final don't cause someone to study hard, so your intervention has no effect on whether they studied hard. Since your intervention eradicates any information we might have obtained from whether their score was low or high naturally, we know nothing more about whether they were more likely to study hard than the proportion quoted in the population facts.

21. Answer(s): (a)

You have intervened to make the individual you picked have a low grade on the final. This means you changed the grade in the instructor's records, or graded it unfairly, etc. Low scores on a final don't cause someone to study less, so your intervention has no effect on whether they studied hard. Since your intervention eradicates any information we might have obtained from whether their score was low or high naturally, we know nothing more about whether they were more likely to study hard than the proportion quoted in the population facts.

22. Answer(s): (a)

Choice B is not correct because, in essence, association involves information. If two properties are associated, learning something about one changes our uncertainty about the other. The reason neither C nor D is correct is that association does not necessarily involve causation. Two properties can be associated even if one doesn't cause the other.

23. Answer(s): (c)

Association does not necessarily involve causation. Two properties can be associated even if one doesn't cause the other.

24. Answer(s): (a)

25. Answer(s): (b)

No, because this is a claim about what will happen when we intervene in a particular way. Associational claims are informational only: they can't be used to predict what will happen on an intervention, and the evidence cited is purely associational.

26. Answer(s): (b)

A is incorrect because association does give us information about uncertainties, but by itself it cannot tell us about the natural system. C is incorrect because, if both have a common cause, then preventing teenagers from seeing violent movies won't remove the cause of teenage violence. D is incorrect because in this case the policy would then be removing the effect rather than the cause.

27. Answer(s): (b)

The association between media violence and teenage aggression can be explained by a number of theories, some of which do not posit media violence being a cause of teenage aggression. In fact, as indicated in the lecture notes, one plausible argument claims that the association between viewing media violence and teenage aggression deriving from a common cause of both.