# Multiple causes and underlying causes

## Multiple causes

In *How to Write Better Essays* I explained that situations are often more complex that we imagine; that in most situations there are almost certainly many interrelated causes and not just one. A single cause is confirmed only if it *alone* can produce the effect, which is, in fact, much rarer than we like to believe.

### Example

## Smoking and heart disease

Suppose you are a doctor and a patient arrives at the emergency room having had a heart attack. After he has been stabilised you begin to look for the cause. Are you right to assume you have found the cause when he tells you that he has been a smoker for 30 years?

There's no denying that someone who smokes will be more prone to heart disease. This may, indeed, be enough for you to conclude that you have found the cause. But no doubt you will have come across patients who have smoked for years without signs of heart disease; although rare, it is a possibility. At least you will be aware that there are other factors contributing to it, even though you may be convinced that this is the main cause. If you don't identify these other factors, you will not be tackling the problem in such a way as to exclude the possibility of its reoccurrence.

So, you will ask a battery of questions to get a clear picture of all the factors that may be contributing to the condition. These will be carefully devised to search out evidence of the long-term causes (diet, lifestyle and genetic history), medium term causes (controls over diet and cholesterol) and short term causes (recent levels of stress, overwork and poor sleep patterns). Then, once you have a complete picture, you will be in a better position to put together a treatment plan that will tackle the problem successfully.

As you can see from this, to assume that there is only one cause often oversimplifies the explanation, when in fact there may be many causes. What's more, it often leads to the *post hoc* fallacy: we assume that because we have found something that precedes what we are trying to explain it must be the cause.

## Underlying causes

The second possibility is that there may either be an underlying cause explaining them all, or they may not be causally related at all.

## Examples

### Poverty and gambling

Take the first of these: you may come across a situation where you find two conditions side by side, say, poverty and gambling. The obvious causal explanation is to argue that gambling causes poverty, but the person involved may be in a poorly paid, boring job, so he turns to gambling to inject a sense of

excitement into his life. The underlying cause of both his gambling and poverty may be his job, which neither gives him a sense of achievement, nor a sufficient income.

## Stress and breast cancer

Alternatively, they might not be related causally at all. In the study which found that women with high levels of stress were 40 per cent less likely to develop breast cancer than those who described their stress as low, it could be that both stress and breast cancer are linked non-causally. As we suggested in the section on the *Post hoc fallacy*, it might be that the women who are better at reporting stress are also better at monitoring their health and responding promptly to lessen the danger of other unstated factors.

## Exercises

## 1. Factors affecting student achievement

In this exercise read the following report and then critically evaluate the inferences below, which might be drawn from this evidence. How many are relevant and reliable?

A study of first year undergraduates at the University of Newington revealed that 'there was an inverse relationship between grade averages and smoking. Of students with an 'A' average, only 16.7 per cent smoked, while 59.1 per cent of the 'E' average students smoked.' The same investigation showed that 'the greater a student's involvement in extracurricular activities, the less likely he or

she is to smoke' and that 'the incidence of smoking increased with the amount of money they had to spend.'[1]

1.1 Students smoke more when they are anxious as a result of doing poorly in their assignments.

1.2 Students do poorer work because they are heavy smokers.

1.3 Students with low averages and few extracurricular activities are idle. They spend their abundant free time at parties and in bars, where smoking is common. That is why they smoke more than other students.

1.4 Heavy smoking is a sign of students who have difficulty in their assignments and in adjusting to university life.

1.5 Students who smoke are intellectually inferior to those who don't, because a) they disregard the warning that 'smoking will harm your health' and b) they get low grades.

1.6 If students have more to spend than they should, a) they are more likely to smoke, and b) they are more likely not to care about getting good grades.

1.7 Students who budget their money are likely to be better students than those who have enough money to buy cigarettes, since the former are more likely to realise the value of a good education.

What other inferences may be drawn from the evidence? On the basis of this evidence, is it possible to establish any causal connection between smoking, academic performance, extracurricular activities and the possession or lack of money to spend?

## 2. Safest drivers – women or men?

Citing official data from different parts of the country showing that men are responsible for twice as many fatal car accidents as women, a reporter concluded that women drivers are twice as safe as men. What factors has this reporter failed to take into consideration?

## 3. Literacy rate

In the nineteenth century statistics on the literacy rate in England were based on the number of men and women who were able to write their names at the time they were married. In 1861 the percentage of bridegrooms who could do so was 69.3; of brides, 54.8. In 1900 the percentages were 97.2 and 96.8 respectively. Can we conclude from this that by 1900 practically everybody in England could read and write?[2]

## 4. Reliable statements

Assess the reliability of each of the following statements paying particular attention to these questions:

1. Do they take account of the implications of the terms used – are these terms clearly defined?
2. If the statement is based on an accumulation of evidence, how much evidence

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[2] Adapted from an example in Richard D. Altick's book, *Preface to Critical Reading* (New York: Holt, Rinehart and Winston, 1969), p. 321.

and what kind would justify the generalisation?

3. If it is a causal statement, does it take into account that there could be more than one cause?

4.1 If you prohibit the taking of pictures of people and events that are in the public interest, you are interfering with the freedom of the press.

4.2 All of those at the party who were sick had eaten the roast chicken, but some who had eaten it were not sick. So, the chicken cannot be the cause of the outbreak of food poisoning.

4.3 There is obviously some connection between a bird's sense of direction and radio waves. The homing instinct of pigeons is weakened or destroyed when they are in the vicinity of radar installations.

4.4 If it were just a few crackpots reporting sighting UFOs, you would be confident in saying that there weren't such things. But when there are thousands of reports there is strong probability that they exist.

4.5 This airport is obviously unsafe: there have been three crashes here in as many years.