7-3 SKILLS

Exercise 7-3a Critiquing Internal Validity

In this exercise, you'll read several examples of studies that utilized various designs to address a particular question. Then you'll critique the studies with regard to control or lack of control of threats to internal validity.

Study 1. Does Smoking Cause Cancer (Part 1)?
This question has been perhaps the major public health issue of the past 50 years in the United States. The question first received serious attention in 1948 when a first year medical student named Ernst Wynder witnessed the autopsy of a man who had died of lung cancer. He wondered what had caused the disease and looked into the man's life history. He discovered no obvious environmental problems (such as air pollution or work in a coal mine) but did learn that the man had smoked two packs of cigarettes each day for 30 years.

Critique
1. What kind of study would you call this?

2. Would you say that there was good evidence that smoking caused cancer from what you read?

3. What internal validity issues do you see in this study?

Study 2. Does Smoking Cause Cancer (Part 2)?
The young medical student (the future Dr. Wynder) knew he was on to something but needed stronger evidence. He and a colleague began interviewing patients with lung cancer as well as patients with other kinds of cancer. Altogether, their research group interviewed 649 patients with lung cancer and 600 comparison patients with other kinds of cancer. They asked all the patients about their smoking histories. They found that the occurrence of cancer was 40 times as great in the lung cancer group and that the risk of lung cancer was related to how much the person smoked (Wynder & Graham, 1950).

Critique

1. What kind of study would you call this?

2. Would you say that there was good evidence that smoking caused cancer from what you read?

3. What internal validity issues do you see in this study?

Study 3. Does Smoking Cause Cancer (Part 3)?
As often happens in science, another researcher was interested in the same question at the same time, and he chose a different method of investigation. Dr. Richard Doll is a very well-known British physician and scientist who took another design approach to the question of smoking and cancer. Over a period of years, Doll and his colleagues interviewed a large number of physicians about their smoking behavior. Then he followed up to see which ones developed lung cancer. Overwhelmingly, the doctors who developed lung cancer were the smokers (Doll & Hill, 1950).

Critique

1. What kind of study would you call this?

2. Would you say that there was good evidence that smoking caused cancer from what you read?

3. What internal validity issues do you see in this study?