**BACKGROUND:**

Humans display a variety of cognitive biases that inhibit rational thought. For example, people search for confirmatory data rather than disconfirmatory data, are strongly persuaded by vivid testimonials, over-attribute their opinions onto others, and combine probabilities incoherently. Two related deficits occur in the design of research--the causal versus the non-causal assignment of variables. In the former, causality is assumed to be established. In the latter, causality is assumed to be demonstrated. Each assumption is supported by studies demonstrating that a variable is causally related to another variable. The present study tests whether students are capable of understanding the nature of associations between variables (i.e., probabilistic reasoning). Training in psychological science, particularly understanding the appropriate ways of reasoning in probability and statistics, can determine the magnitude and direction of these deficits. To determine the magnitude of these deficits, we designed a study to investigate the inferences that people draw from causal and non-causal research situations.

**SCENARIOS:**

**VIDE GAMES AND AGGRESSION:**

| Participants reading experimental scenario read: |
| All participants read: Parametric tests revealed a significant association between video game playing and aggression among students who read the experimental scenario. The researchers find a negative association between video game playing and aggression. People who spend more time playing video games tend to be more aggressive compared to those who spend less time playing video games. In reality, only 45% showed that playing video games leads to an increase in aggression.

**PORNOGRAPHY CONSUMPTION AND MARITAL SATISFACTION:**

| Participants reading experimental scenario read: |
| All participants read: The effects of pornography consumption on marital satisfaction requires further investigation. People who spend more time consuming pornography tend to be less satisfied with their marriages compared to people who spend less time consuming pornography. In reality, only 26% showed that pornography leads to a decrease in marital satisfaction.

**EXERCISE AND BODY DISSATISFACTION:**

| Participants reading experimental scenario read: |
| All participants read: The researchers found that the number of hours adolescents exercised was negatively associated with body image dissatisfaction. Adolescents who exercise more tend to be less satisfied with their body compared to adolescents who do not exercise. In reality, only 12% showed that exercise leads to body dissatisfaction.

**RESULTS:**

- **Experimental:** Ideal = 100%, Actual = 62%
- **Non-experimental:** Ideal = 0%, Actual = 54%
- **Experimental:** Ideal = 100%, Actual = 45%
- **Non-experimental:** Ideal = 0%, Actual = 44%
- **Experimental:** Ideal = 100%, Actual = 49%
- **Non-experimental:** Ideal = 0%, Actual = 35%
- **Experimental:** Ideal = 100%, Actual = 87%
- **Non-experimental:** Ideal = 0%, Actual = 12%
- **Experimental:** Ideal = 100%, Actual = 82%
- **Non-experimental:** Ideal = 0%, Actual = 8%
- **Experimental:** Ideal = 100%, Actual = 78%
- **Non-experimental:** Ideal = 0%, Actual = 6%
- **Experimental:** Ideal = 100%, Actual = 86%
- **Non-experimental:** Ideal = 0%, Actual = 22%
- **Experimental:** Ideal = 100%, Actual = 80%
- **Non-experimental:** Ideal = 0%, Actual = 22%
- **Experimental:** Ideal = 100%, Actual = 87%
- **Non-experimental:** Ideal = 0%, Actual = 22%
- **Experimental:** Ideal = 100%, Actual = 82%
- **Non-experimental:** Ideal = 0%, Actual = 22%
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