



Nunes, K. L. (2018, March). *"I know correlation doesn't prove causation, but...": Are we jumping to unfounded conclusions about the causes of violence?* Webinar presented for Forensic Grand Rounds, The Alberta Institute for Forensic Mental Health.




## **"I Know Correlation Doesn't Prove Causation, but...": Are We Jumping to Unfounded Conclusions About the Causes of Violence?**


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**Marnie Rice**






### **Introduction**

- Research is the foundation of effective assessment, intervention, and policy aimed at reducing violent behaviour
- However, studies vary in how informative and conclusive they are, and there are differences of opinion about standards for interpreting evidence



### **Goals**

- Raise awareness about important gaps in knowledge regarding the causes of violence
- Identify ways to narrow those gaps



### **Outline**

- Research design review
- Researchers' interpretation of evidence
- Conclusions



## **Research Design**

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### Exercise

- Take the next 5 minutes to read the hypothetical study and answer the questions about it on your own



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### Single-wave longitudinal non-experimental

- Researchers measured attitudes towards violence among a group of people at one time point and then reassessed them 10 years later to see who committed a violent offence after the initial measurement of attitudes towards violence. Those who committed a violent offence during the follow-up period had **more pro-violence attitudes** at the time of the initial assessment than did those who did not commit a violent offence during the follow-up period (the result had a medium effect size and was statistically significant).

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### 1. Which of the following was demonstrated?

- ☒ a. Attitudes towards violence were **associated** with violent offending in the study
- ☒ b. Attitudes towards violence were a **predictor** of violent offending in the study
- ☒ c. Attitudes towards violence were a **cause** of violent offending in the study
- ☒ d. None of the above

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### 2. Which of the following are plausible interpretations?

- ☒ a. Attitudes towards violence influenced violent offending
- ☒ b. Violent offending influenced attitudes towards violence
- ☒ c. Something else influenced both attitudes towards violence and violent offending
- ☒ d. Attitudes towards violence did **not** influence violent offending
- ☒ e. None of the above

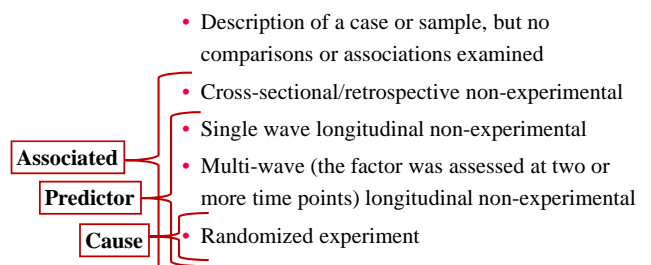
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### 3. Which of the following implications follow logically?

- ☒ a. More rigorous research should be done
- ☒ b. Important to consider ATV when estimating risk for violent offending
- ☒ c. Important to consider ATV for violent offender management
- ☒ d. Change in ATV can be expected to predict change in the likelihood of violent offending
- ☒ e. Change in ATV can be expected to lead to change in the likelihood of violent offending
- ☒ f. Important to target ATV in treatment programs
- ☒ g. Targeting ATV can be expected to reduce likelihood of violent offending
- ☒ h. None of the above

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### More Rigorous Designs Permit Stronger Conclusions



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**More Rigorous Designs Permit Stronger Conclusions**

**Weakest inferences**

↑

↓

**Strongest inferences**

- Description of a case or sample, but no comparisons or associations examined
- Cross-sectional/retrospective non-experimental
- Single wave longitudinal non-experimental
- Multi-wave (the factor was assessed at two or more time points) longitudinal non-experimental
- Randomized experiment

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**Researchers' Interpretation of Evidence**

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**Purpose and Research Question**

- Examine the validity of inferences drawn by people who have conducted research on violent offenders
- Do the strength of inferences correspond to the strength of methodology?

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**Study 1**

**Sexual Violence**

Nunes, K. L., Pedneault, C., Filleter, W. E., Maimone, S., Blank, C., & Atlas, M. (2017). "I know correlation doesn't prove causation, but...": Are we jumping to unfounded conclusions about the causes of sexual offending? *Sexual Abuse: A Journal of Research and Treatment*. Advance online publication. doi: 10.1177/1079063217729156

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**Recruitment**

- Participants were recruited through emails sent to the authors of published studies in
  - Sexual Abuse: A Journal of Research and Treatment
  - Journal of Sexual Aggression
  - Sexual Offender Treatment

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**Participants (N = 35)**

- 91.4% do research on sexual offenders
- 48.6% employed as researchers
- Median 11-20 days/month spent on research
- Median 11-15 years doing research
- 80% did (or are doing) a quantitative study for graduate degree
- Median 4 first-author quantitative articles published in peer-review journals
- 53% female
- Median age = 36-40 years old

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### Online Survey

- What is an important factor that may lead a person to sexually offend?
- Please provide reference information for one research study that presents results supporting a relationship between this factor and sexual offending

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- Which of the following is **demonstrated** by the results of the study you noted above with regard to the factor you noted?
- Which of the following is the most **plausible interpretation** of the results of the study you noted above with regard to the factor you noted?
- What are the **implications** of the results of the study you noted above with regard to the factor you noted?

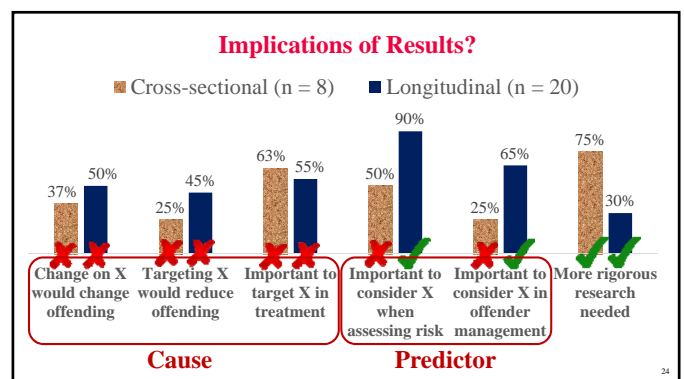
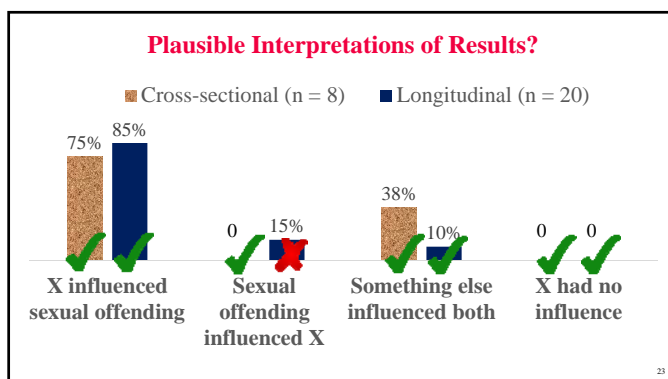
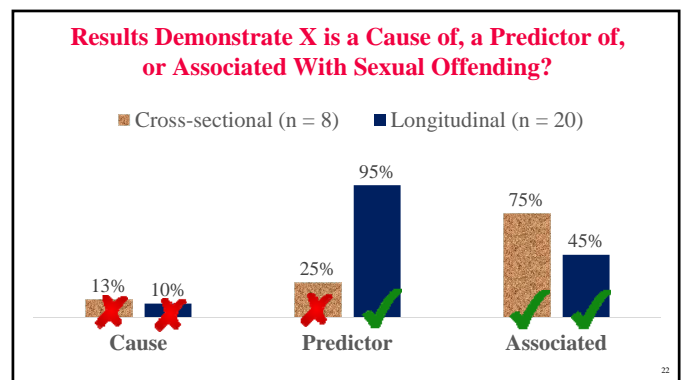
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### Coding of Research Design Used to Test the Relationship Between the Factor and Sexual Offending

- Description of a case or sample, but no **relevant** comparison group and no association actually examined between relevant variables ( $n = 2$ )
- Cross-sectional/retrospective non-experimental ( $n = 8$ )
- Single-wave longitudinal non-experimental ( $n = 20$ )
- Multi-wave longitudinal non-experimental ( $n = 1$ )
- Randomized experiment ( $n = 0$ )
- No relevant original empirical results ( $n = 4$ )
- Kappa = .88 (16 cases)

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## Study 2

### General Violence


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### Recruitment

- Participants were recruited through emails sent to the authors of published studies in
  - Aggression and Violent Behavior
  - Aggressive Behavior
  - Journal of Aggression, Maltreatment, and Trauma
  - Journal of Interpersonal Violence
  - Psychology of Violence
  - Trauma, Violence, & Abuse
  - Violence and Victims
  - Journal of Aggression, Conflict and Peace Research

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### Participants (N = 49)

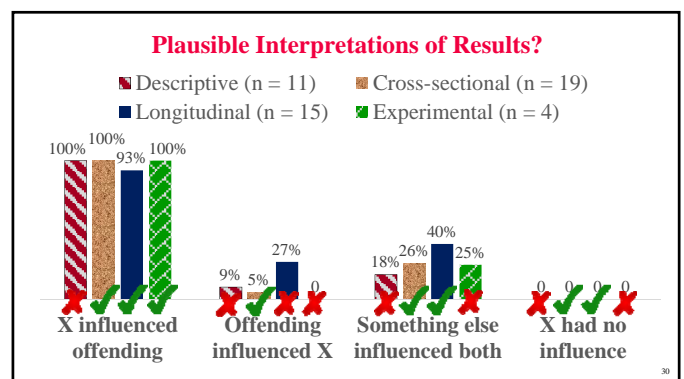
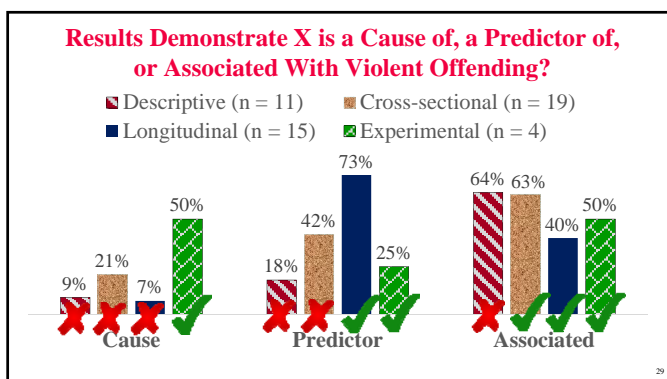
- 82% do research on violent offenders
- 50% employed as researchers
- Median 11-20 days/month spent on research
- Median 11-15 years doing research
- 83% did (or are doing) a quantitative study for graduate degree
- Median 10 first-author quantitative articles published in peer-review journals
- 60% female
- Median age = 41-45 years old

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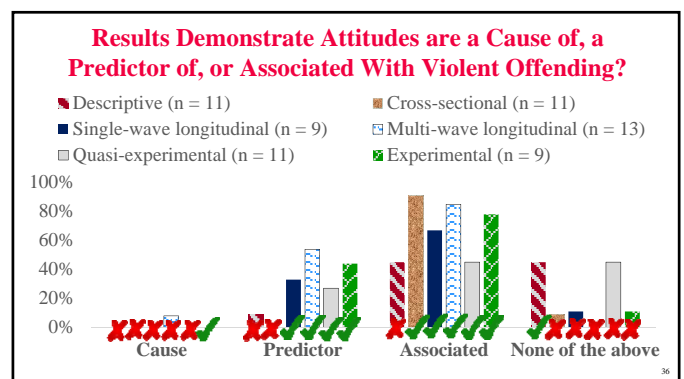
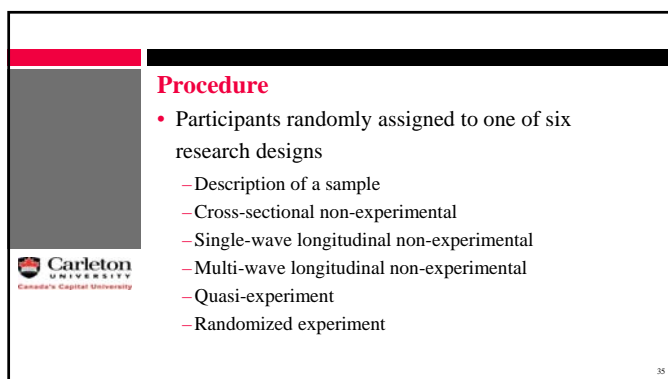
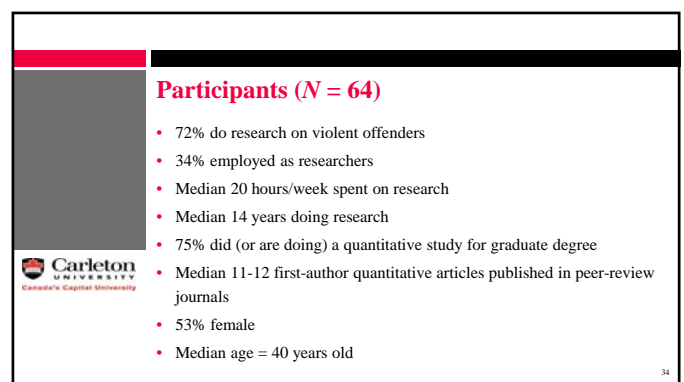
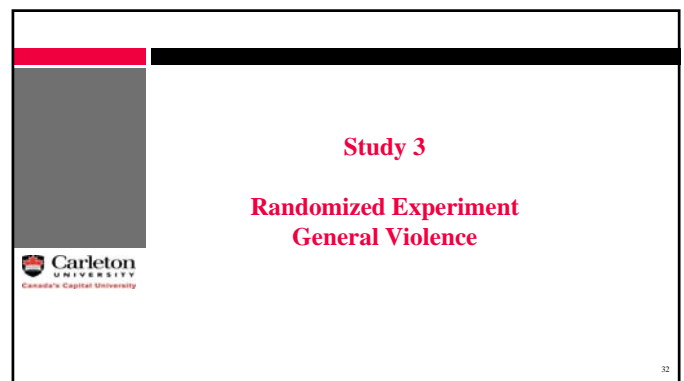
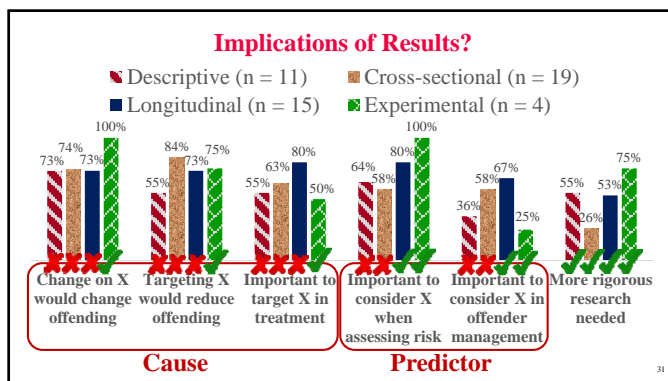
### Coding of Research Design Used to Test the Relationship Between the Factor and Violent Offending

- Description of a case or sample, but no **relevant** comparison group and no association actually examined between relevant variables (n = 11)
- Cross-sectional/retrospective non-experimental (n = 19)
- Single-wave longitudinal non-experimental (n = 15)
- Multi-wave longitudinal non-experimental (n = 0)
- Randomized experiment (n = 4)
- Kappa = .76 (17 cases)

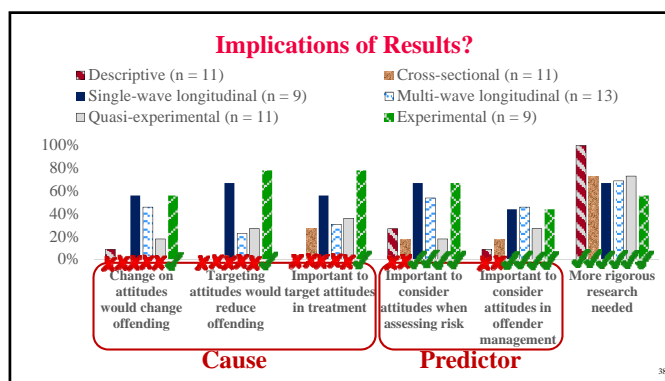
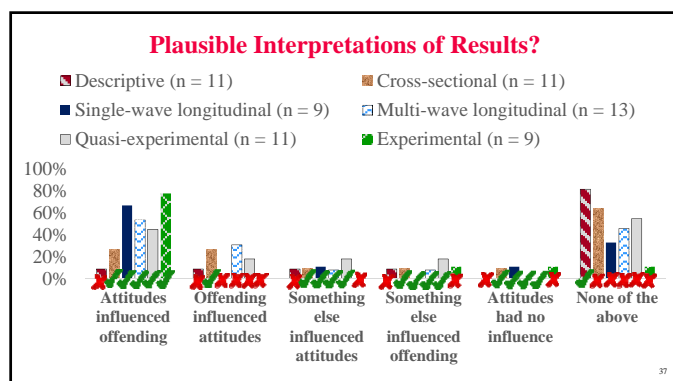
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### Discussion

- The good news:
  - Generally appropriate conclusions when asked directly about association, prediction, and causality
- The bad news:
  - Failure to recognize/acknowledge plausible alternative interpretations?
  - Endorsement of invalid conclusions regarding implications?

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### Limitations

- Small sample
- Low response rate
- Wording/format?

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### Why?

- Confirmation bias?
- Inattention?
- Limited knowledge of research methodology?
- Sense of fatalism about research?
- Denial?

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### Conclusions

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### Speculation

- When evidence is limited, speculation is the best we can do
- Past research and theoretical models are important, valuable, and useful



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### Strength of Inferences Should Match Strength of Evidence

- Sensitivity to the limits methodology places on inferences is important for the sake of accuracy and integrity, and to stimulate more informative research (e.g., Harris & Rice, 2015)
- Stronger research can provide more conclusive evidence to guide practice and policy



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- Increasing awareness and respect for methodology in the research community through better training and standards will advance scientific knowledge about the causes of violent offending, and improve the effectiveness and efficiency of practice and policy



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### Thank You!

- Chloe Pedneault, Eric Filleter, Sacha Maimone, Carolyn Blank, Anna T. Pham., Maya Atlas
- Maia Christopher and Sarah Gorter (ATSA)
- John Hunsley and Guy Lacroix
- Survey respondents



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### Aggressive Cognitions and Behaviour Research Lab



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### Suggested Readings

- Harris, G. T., & Rice, M. E. (2015). Progress in violence risk assessment and communication: Hypothesis versus evidence. *Behavioral Sciences and the Law*, 33, 128-145.
- Kahneman, D. (2011). *Thinking, fast and slow*. New York, USA: Macmillan.
- Nunes, K. L., Pedneault, C., Filleter, W. E., Maimone, S., Blank, C., & Atlas, M. (2017). "I know correlation doesn't prove causation, but...": Are we jumping to unfounded conclusions about the causes of sexual offending? *Sexual Abuse: A Journal of Research and Treatment*. Advance online publication.
- Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Belmont, CA: Wadsworth.

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