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Jumping to Conclusions About Causes of Violence from Correlational Evidence

ASC 2023

Kevin L. Nunes, Cassidy E. Hatton, Anna T. Pham, W. Eric Filleter, Carolyn Blank, & Sacha Maimone

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Correlation and Causation

- Correlation does not demonstrate causation because the research design leaves the results open to alternate interpretations (Shadish et al., 2002; Weisburd, 2010)
- Inferring causation from correlation can lead to erroneous explanations and the development and implementation of ineffective or even harmful interventions and policies (e.g., Harris & Rice, 2015; McCord, 2003; Petrosino et al., 2003; Rice & Harris, 2003)

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- Inferring causation from correlation is common among the general public and professionals
  - (e.g., Bleske-Rechek et al., 2015; Harris & Rice, 2015; Motz et al., 2023; Mueller & Coon, 2013; Nunes & Hatton, 2023; Seifert et al., 2022; Sibulkin & Butler, 2019)
- Do researchers do better?
  - Harris & Rice (2015)
  - Nunes et al. (2019)

3

3

Current Study

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

4

4

Recruitment

- Participants were recruited through emails sent to the authors of published studies in violence/aggression journals:
  - 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

5

5

Participants ($N = 43$)

- 79% do research on violent offenders
- 58% employed as researchers, 51% as professors
- Median 11-20 days/month spent on research
- Median 6-10 years doing research
- 86% did (or are doing) a quantitative study for graduate degree
- Median 8 first-author quantitative articles published in peer-review journals
- 60.5% women, 39.5% men
- Median age = 36-40 years old

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Online Survey

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

- Description of a case or sample, but no **relevant** comparison group and no association actually examined between relevant variables ($n = 9$)
- Cross-sectional/retrospective non-experimental ($n = 18$)
- Single-wave longitudinal non-experimental ($n = 11$)
- Multi-wave longitudinal non-experimental ($n = 0$)
- Randomized experiment ($n = 5$)
- Kappa = 1.00

9

9

More Rigorous Designs Permit Stronger Conclusions

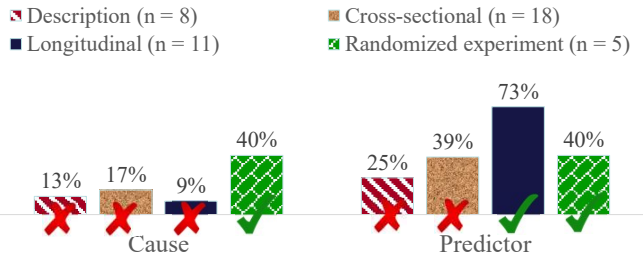
- Description of a case or sample, but no comparisons or associations examined
- Cross-sectional/retrospective non-experimental
- Single wave longitudinal non-experimental
- Multi-wave (the factor was assessed at two or more time points) longitudinal non-experimental
- Randomized experiment

Associated
Predictor
Cause

10

10

Results Demonstrate X is a Cause or Predictor of Violent Offending?



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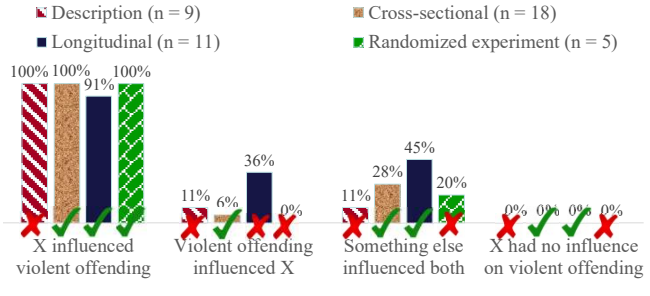
Plausible Interpretations of Results?



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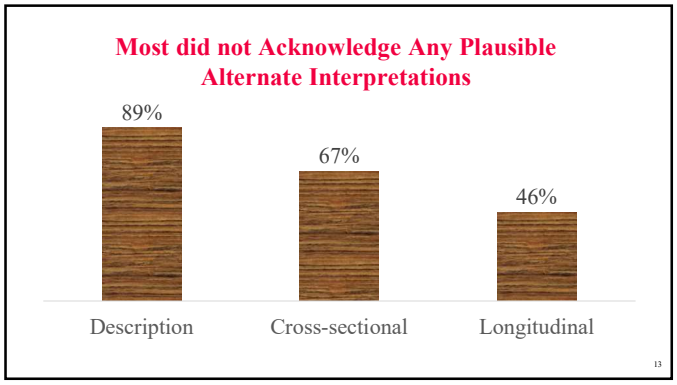

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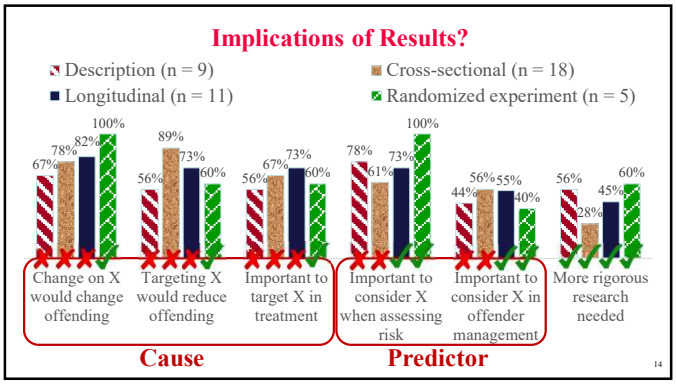

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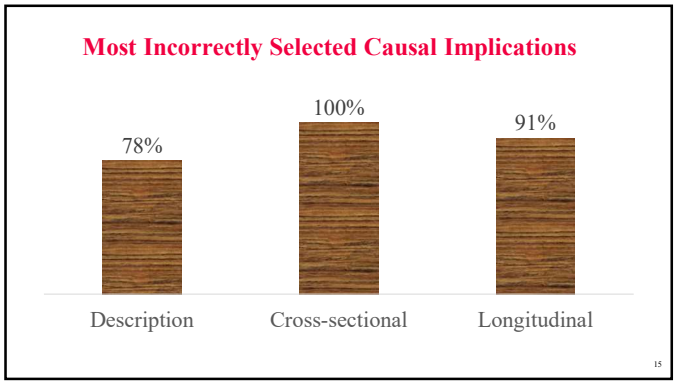

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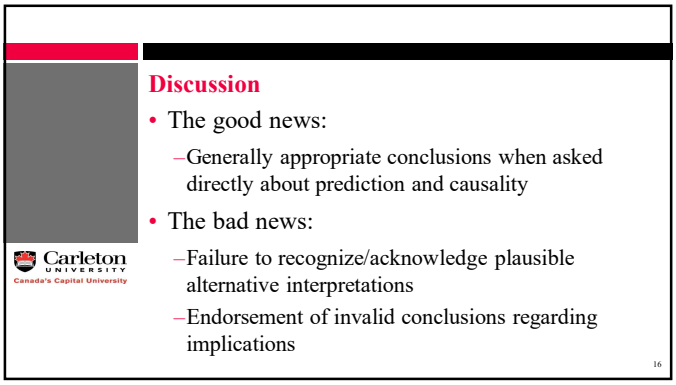

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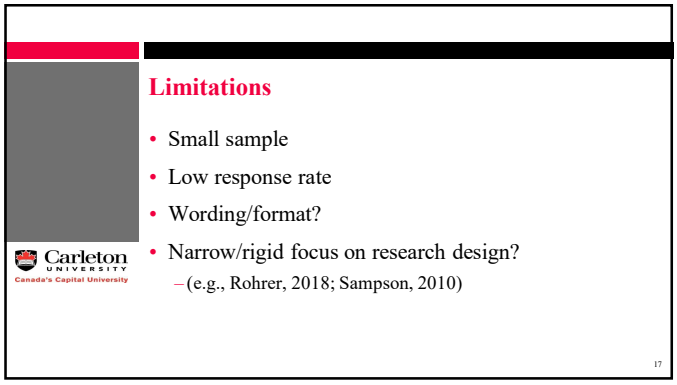

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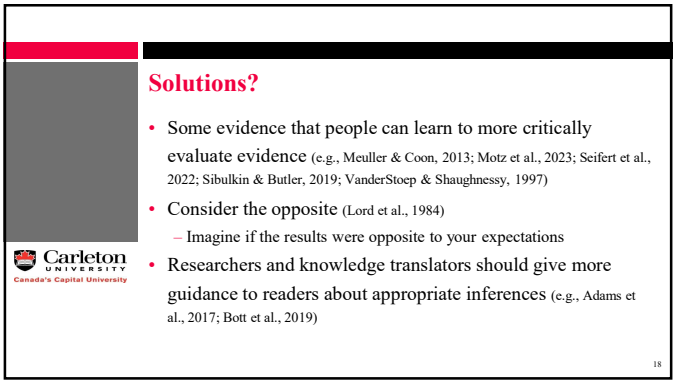

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References

Adams, R. C., Sumner, P., Vivian-Griffiths, S., Barrington, A., Williams, A., Boivin, J., Chambers, C. D., & Bott, L. (2017). How readers understand causal and correlational expressions used in news headlines. *Journal of Experimental Psychology: Applied, 23*(1), 1-14. http://dx.doi.org/10.1037/xap0000100

Bleske-Rechek, A., Morrison, K. M., & Heidtke, L. D. (2015). Causal inference from descriptions of experimental and non-experimental research: Public understanding of correlation-versus-causation. *Journal of General Psychology, 142*(1), 48-70. https://doi-org.proxy.library.carleton.ca/10.1080/00221309.2014.977216

Bott, L., Bratton, L., Diaconu, B., Adams, R. C., Challenger, A., Boivin, J., Williams, A., & Sumner, P. (2019). Caveats in science-based news stories communicate caution without lowering interest. *Journal of Experimental Psychology: Applied, 25*(4), 517-542. http://dx.doi.org/10.1037/xap0000232

20

20

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.

Lord, C. G., Lepper, M. R., & Preston, E. (1984). Considering the opposite: A corrective strategy for social judgment. *Journal of Personality and Social Psychology, 47*(6), 1231-1243.

McCord, J. (2003). Cures that harm: Unanticipated outcomes of crime prevention programs. *Annals of the American Academy of Political and Social Science, 587*, 16-30. doi: 10.1177/0002716202250781

Motz, B. A., Fyfe, E. R., & Guba, T. P. (2023). Learning to call bullsh*t via induction: Categorization training improves critical thinking performance. *Journal of Applied Research in Memory and Cognition, 12*(3), 310-324. http://dx.doi.org/10.1037/mac0000053

Mueller, J. F., & Coon, H. M. (2013). Undergraduates' ability to recognize correlational and causal language before and after explicit instruction. *Teaching of Psychology, 40*(4), 288-293. doi: 10.1177/0098628313501038

21

21

Nunes, K. L., & Hatton, C. E. (2023). *Do professionals show a bias specific to sexual offense treatment in their interpretation of ambiguous evidence?* Manuscript submitted for publication.

Nunes, K. L., Pedneault, C., Filleter, W. E., Maimone, S., Blank, C., & Atlas, M. (2019). "I know correlation doesn't prove causation, but…": Are we jumping to unfounded conclusions about the causes of sexual offending? *Sexual Abuse, 31,* 220-236. doi: 10.1177/1079063217729156

Petrosino, A., Turpin-Petrosino, C., & Buehler, J. (2003). Scared Straight and other juvenile awareness programs for preventing juvenile delinquency: A systematic review of the randomized experimental evidence. *Annals of the American Academy of Political and Social Science, 589*, 41-62. doi: 10.1177/0002716203254693

Rice, M. E., & Harris, G. T. (2003). The size and sign of treatment effects in sex offender therapy. *Annals of the New York Academic of Sciences, 989*, 428-440. https://doi-org/10.1111/j.1749-6632.2003.tb07323.x

22

22

Rohrer, J. M. (2018). Thinking clearly about correlations and causation: Graphical causal models for observational data. *Advances in Methods and Practices in Psychological Science, 1*(1), 27-42. https://doi.org/10.1177/2515245917745629

Sampson, R. J. (2010). Gold standard myths: Observations on the experimental turn in quantitative criminology. *Journal of Quantitative Criminology, 26*(4), 489-500. https://doi-org/10.1007/s10940-010-9117-3

Seifert, C. M., Harrington, M., Michal, A. L., & Shah, P. (2022). Causal theory error in college students' understanding of science studies. *Cognitive Research: Principles and Implications, 7*, Article 4. https://doi.org/10.1186/s41235-021-00347-5

Shadish, W. R., Cook. T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference.* Belmont, CA: Wadsworth.

Sibulkin, A. E., & Butler, J. S. (2019). Learning to give reverse causality explanations for correlations: Still hard after all these tries. *Teaching of Psychology, 46*(3), 223-229. doi: 10.1177/0098628319853936

23

23

VanderStoep S. W., & Shaughnessy, J. J. (1997). Taking a course in research methods improves reasoning about real-life events. *Teaching of Psychology, 24*(2), 122-124. https://doi-org.proxy.library.carleton.ca/10.1207/s15328023top2402_8

Weisburd, D. (2010). Justifying the use of non-experimental methods and disqualitfying the use of randomized controlled trials: Challenging the folklore in evaluation research in crime and justice. *Journal of Experimental Criminology, 6*, 209-227. doi: 10.1007/s11292-010-9096-2

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