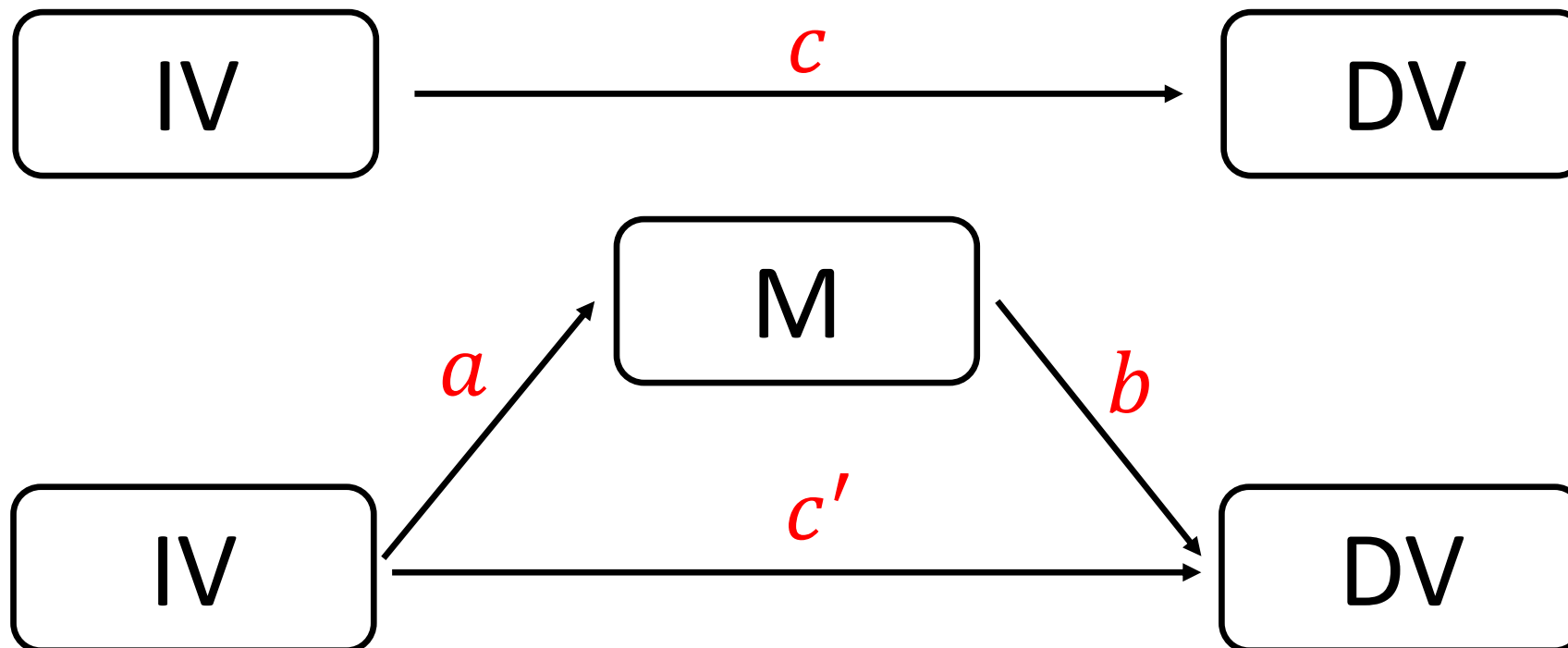


# The Definition of Mediation

- Mediation:
  - Identify the mechanism that underlies an observed relationship between an independent variable (IV, or X) and a dependent variable (DV, or Y).
  - The name of the mechanism is called mediator (M).



**Notes:**

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# Conditions of Mediation

- Based on Baron & Kenny (1986), there are three sets of regression:
- (1)  $X \rightarrow Y$  ( $c$  needs to be significant, generally speaking.)

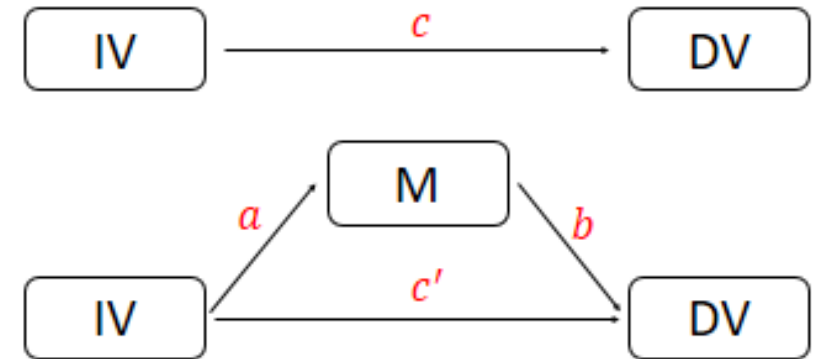
$$Y = cX$$

- (2)  $X \rightarrow M$  ( $a$  needs to be significant.)

$$M = aX$$

- (3)  $X + M \rightarrow Y$  ( $b$  needs to be significant.)

$$Y = c'X + bM$$



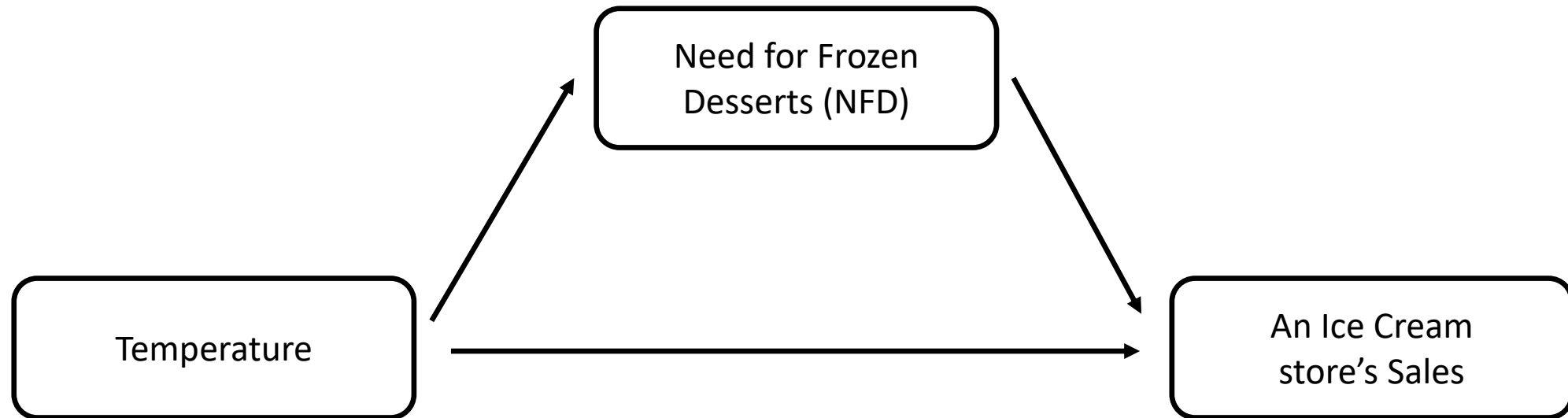
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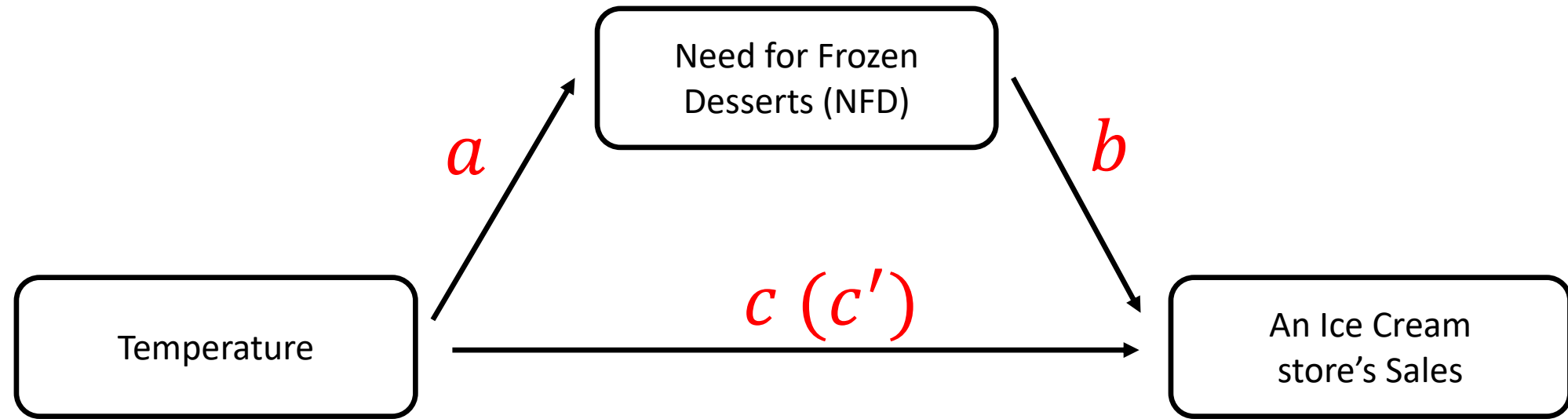
# Example of Mediation

- The following is a hypothetical study.
  - Higher temperatures increase an ice cream store's sales.
- This is because higher temperatures make people want to have frozen desserts, making them more likely to buy ice cream from the store



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- (1)  $X \rightarrow Y$  (*c* needs to be significant, generally speaking.)

$$Y = cX$$

$$\text{Sales} = b_0 + c \text{ Temperature}$$

- (2)  $X \rightarrow M$  (*a* needs to be significant.)

$$M = aX$$

$$\text{NFD} = b_0 + a \text{ Temperature}$$

- (3)  $X + M \rightarrow Y$  (*b* needs to be significant.)

$$Y = c'X + bM$$

$$\text{Sales} = c' \text{ Temperature} + b \text{ NFD}$$

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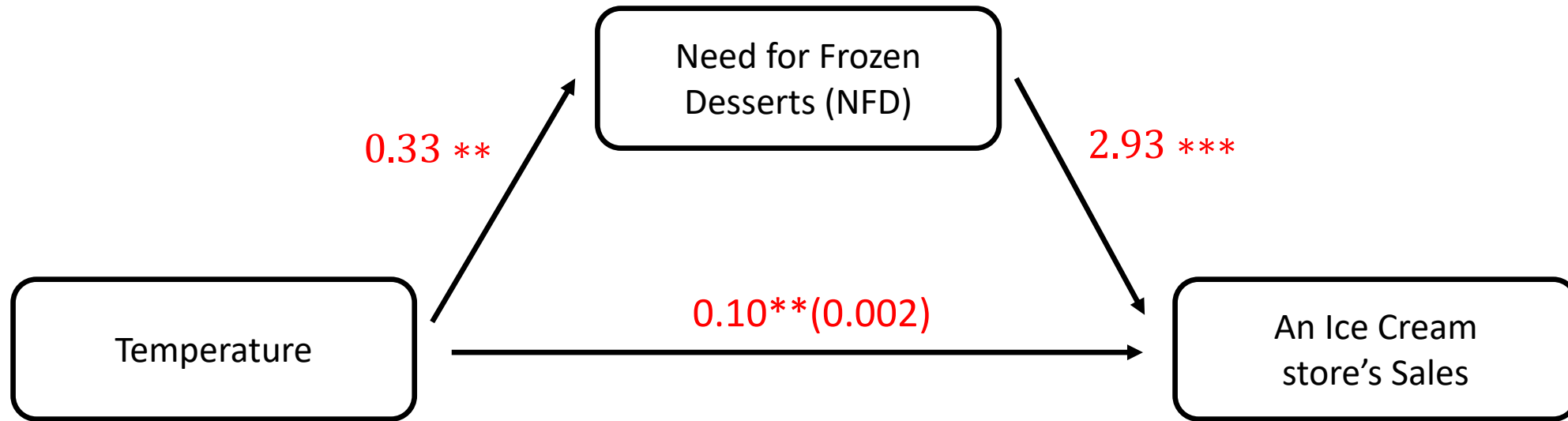
# Hypothetical Data

- **Note:** This data is generated via R programming (i.e., not real data). Please do **not** interpret the findings from a theoretical perspective.
- IV = Temperature
- DV = Sales
- Mediator = Need for Frozen Desserts (NFD)
  - How much do you want to have frozen desserts?
  - 0 = Not at all, 6 = Very much

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\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

We conducted a mediation analysis using PROCESS (5000 bootstrap samples) and found that NFD is the significant mediator for the effect of temperature and ice cream sales (95% CI [.0357, .1569]).

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