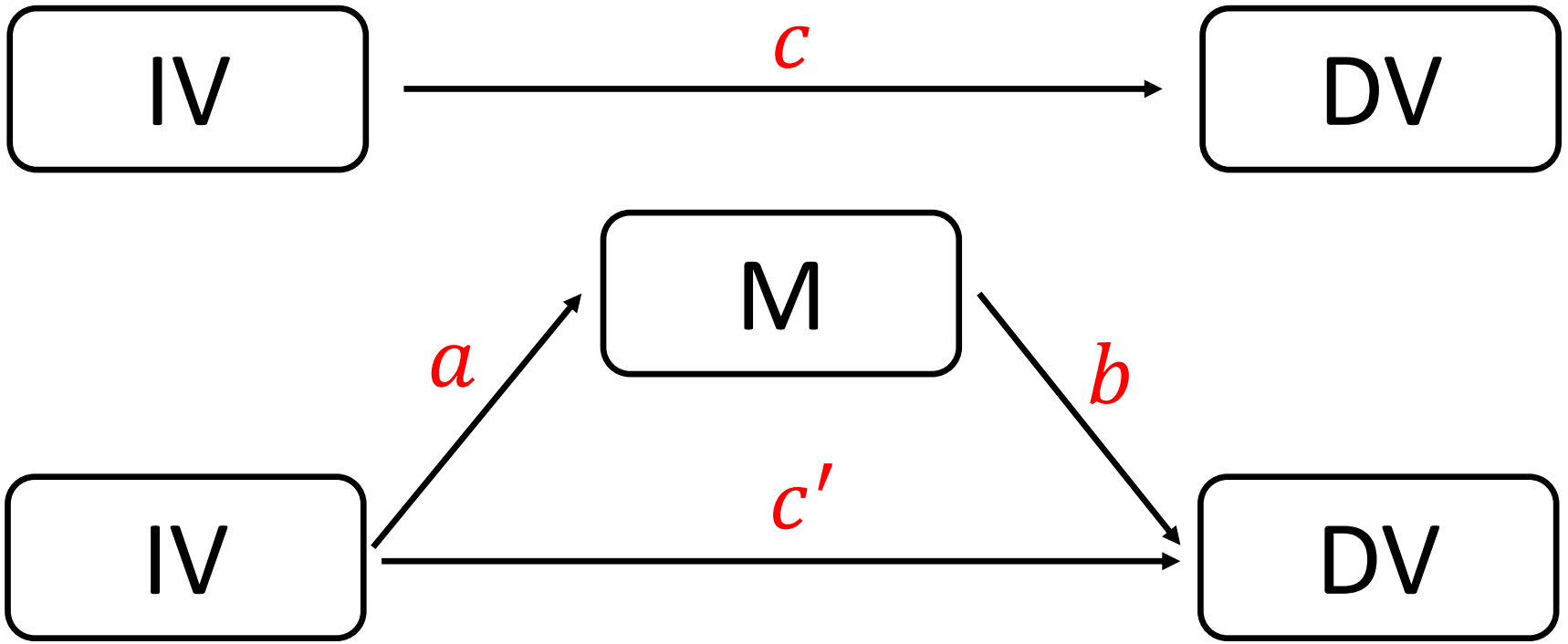
The Definition of Mediation

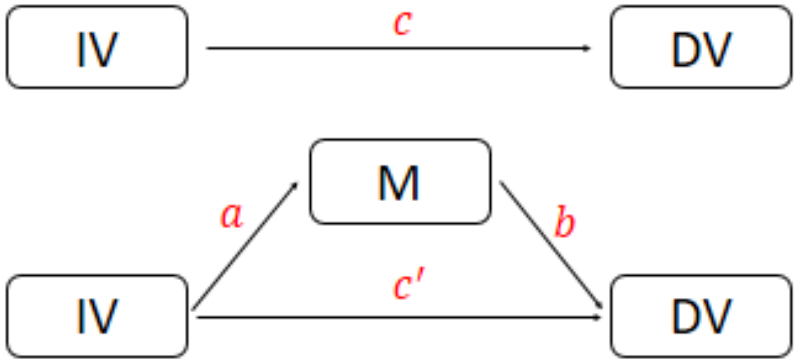
- Mediation:
  - Identify the mechanism that underlies an observed relationship between an independent variable (IV, or X) and a dependent variable (DV, or Y).
  - The name of the mechanism is called mediator (M).



Conditions of Mediation

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

$$Y = cX$$



- (2) X → M (a needs to be significant.)

$$M = aX$$

- (3) X + M → Y (b needs to be significant.)

$$Y = c'X + bM$$

Notes:
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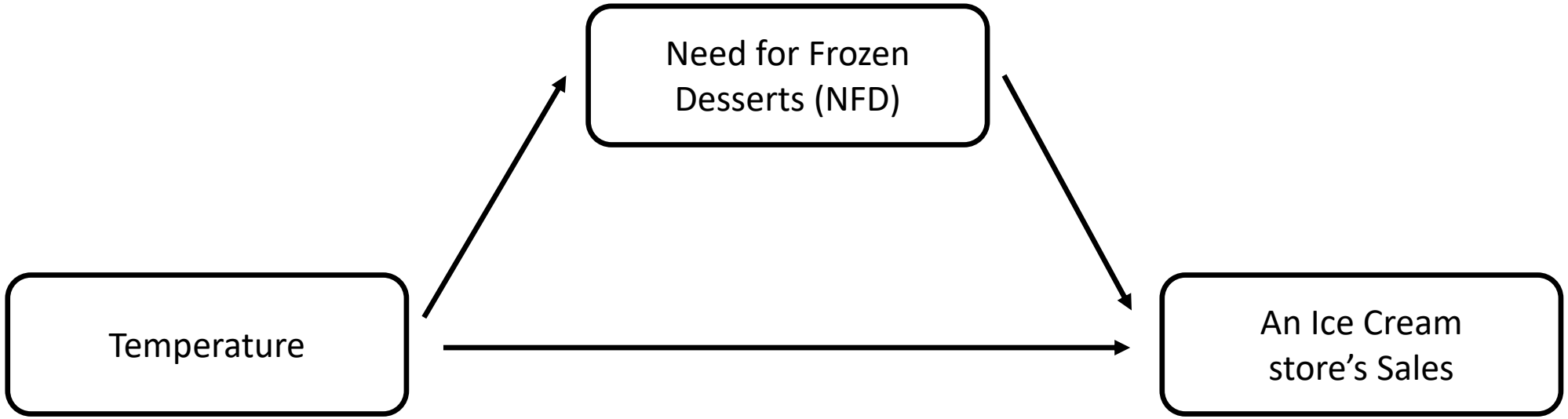
Example of Mediation

- 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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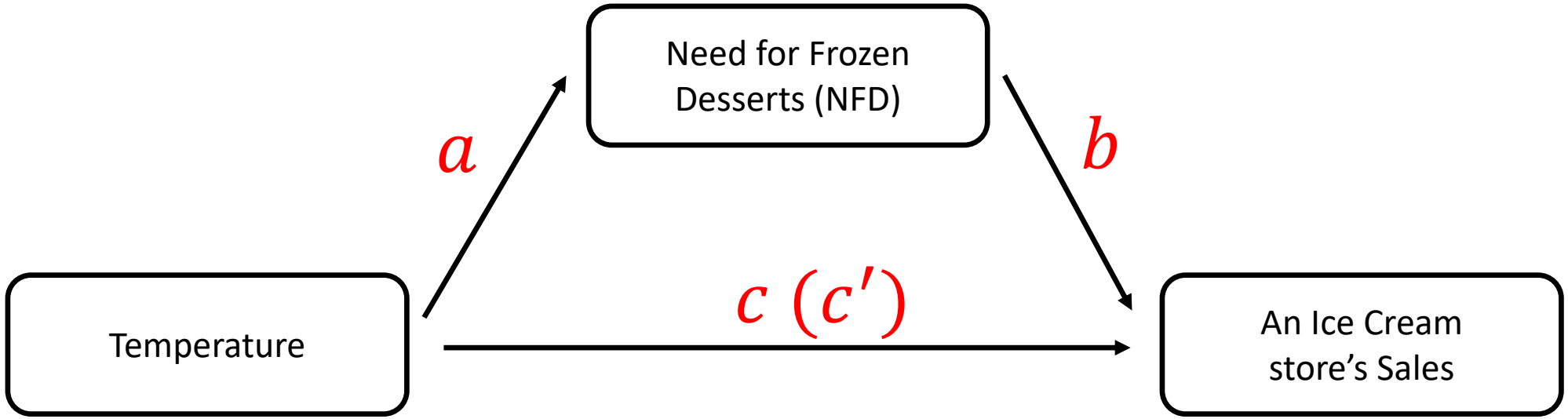


- (1) X → Y (c needs to be significant, generally speaking.)

$$Y = cX$$

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

- (2) X → M (a needs to be significant.)

$$M = a\ X$$

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

- (3) X + M → Y (b needs to be significant.)

$$Y = c'X + b\ M$$

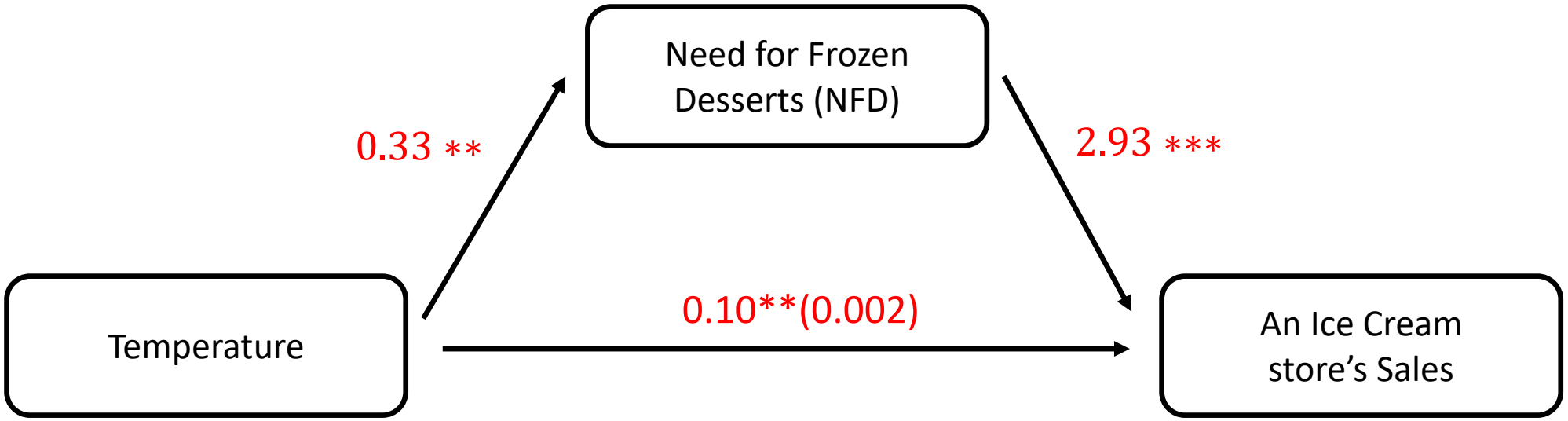
$$\text{Sales} = c'\text{Temperature} + b\ \text{NFD}$$

Notes:

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



* 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]).