What are costs in education and how do we measure them?

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Questions

- Which preschool model best prepares children for kindergarten for the cost?
- What is the cost of Supplemental Reading Program?
- Should we invest in High School Dropout Prevention Program?
- Which program is most efficient at increasing postsecondary enrollment?
- What portion of the cost of College Counseling Intervention is borne by the students?
- What resources are needed to replicate Early Intervention in Math?

Questions

- Which preschool model best prepares children for kindergarten for the cost? **CEA**
- What is the cost of Supplemental Reading Program? **CA**
- Should we invest in High School Dropout Prevention Program? **BCA**
- Which program is most efficient at increasing postsecondary enrollment? **CEA**
- What portion of the cost of College Counseling Intervention is borne by the students? **CA**
- What resources are needed to replicate Early Intervention in Math? **CA**

Need for Economic Evaluation in Education

- Many interventions, reforms, programs, policies
- Intensively investigate “What Works”
- Very little guidance on
- “..At What Cost?”
- “..Is it Worth the Cost?”

What is the total cost of the program?

What is the average cost per student?

Cost to achieve an outcome

Even when costs are offered it may not be an accurate estimate of what is needed to replicate the intervention's impact.

WWC Intervention Report

A summary of findings from a systematic review of the evidence

READ 180®

Report Contents

Cost

As of September 2016, the initial start-up cost of a *READ 180® Universal* package for 60 students was approximately $43,000. Houghton Mifflin Harcourt provides 2.5 days of in-person professional development with the purchase of the program. A *READ 180® Universal* upgrade kit for 30 students costs $8,800 and includes teacher materials, 30 *ReaL Books*, six boxes of Independent Reading Library books, and access to the new online student application. An upgrade kit with 60 student licenses costs $12,000.

Example: Read 180

- WWC includes purchase price information - ***Incomplete***
- Prescriptive program:
    - 90-minutes daily of whole-group, small-group and individualized instruction + videos + feedback
    - Class size 15

Read 180 Cost Study

- Ingredients Method
- Estimate of costs based on intervention model
- Costs measured from three sites
- Costs based on program design: $1,100 per student

Read 180 Cost Study

	Site 1	Site 2	Site 3
Students served	*6,701*	*1,080*	*2,400*
Personnel (teachers)	$320	$950	$70
Personnel (administrators, technicians, coordinators)	$50	$400	$60
Equipment/materials (computers, licenses)	$250	$150	$140
Other (prof. dev., sub teachers, other)	$-	$10	$10
Average Cost	**$610**	**$1,510**	**$280**

Cost to replicate an impact

The Ingredients Method

Ingredients Method

- Identify resources or ingredients required to obtain a given result (for example, impact in RCT).

- Obtain market prices or equivalents for ingredients.

- Calculate the overall cost and average or marginal cost.

- Determine who pays costs and consequences.

- Relate costs to effectiveness for alternatives.

Method in the Field

- Widely accepted.
- Recognized by National Research Council and Institute of Medicine in a recent publication.
- Adopted by JPAL Poverty Lab at MIT for experimental studies.
- Used by World Bank and U.S. Agency for International Development.
- Computer-Based Cost Tool based on method which will be introduced in the training.

Notes on the Ingredients Method

- Opportunity Cost Accounting Framework. Any ingredient used has a cost to someone or to society in the value of its best alternative use.
- Volunteers have cost to themselves.
- Resources in kind from other sources have costs.
- Budget are not good sources of costs.

Costs ≠ Budgets

Problems with Budgets

- Based upon accounting systems developed for what funds were used for—auditing purposes, not costs.

- Cannot do cost-accounting from budget categories.

- Do not consider resources obtained from outside of the budget such as those from other entities or reallocations from other activities.

More on Budgets

- Budgets or data on expenditures is informative but does not capture total cost

- In kind contributions or purchases in other years

- If a resource has value or an alternative use, the opportunity cost should be considered because those resources may be important for replication

- Examples: volunteered time, school staff time, space and computers used to implement the program at schools, etc.

Cost Analysis ≠ Proposal Budget

- A cost analysis is a systematic investigation and analysis of the ingredients utilized in implementing the intervention
- The budget for the proposal or the amount needed to purchase the intervention listed in the proposal is not the cost analysis

Standards to Estimate Costs

- Opportunity Cost - all inputs valued
- Describe inputs with replication in mind
- Separate quantity from price
- Transparency - note all assumptions
- Consistency - comparability

Overview of Ingredients Method

- Identify and describe ingredients
- Match ingredients to standardized prices
- Calculate costs
- Pair costs with effects or benefits

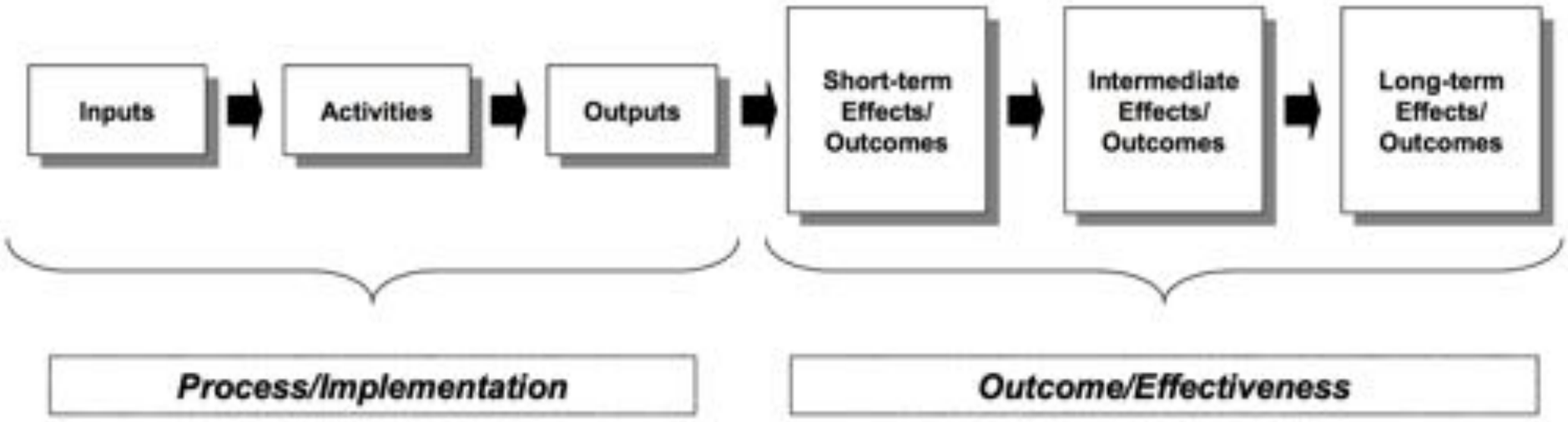

POTAGES

Identifying Ingredients

- Theory of Change
- Logic Model
- Program documentation
- Prior evaluations or implementation studies
- Observation

Source: http://www.cdc.gov/getsmart/program-planner/Step3.pdf

Exhibit 3.1
Evaluation Domains — Boxes



Categories of Ingredients

- Personnel
- Facilities
- Materials & Equipment
- Other

Describing Ingredients

- Quantity
- Descriptive data are often needed, especially on expensive or important ingredients, to understand qualities and use of ingredient
  - to match ingredients to prices
  - for replication
  - for sensitivity testing

http://readbangladesh.org

READ

Reading Enhancement for Advancing Development

USAID
FROM THE AMERICAN PEOPLE

Save the Children


READ


পিঁপড়ে আর
নাহিন


ঘর

1. Measure costs of treatment and control during program implementation following the ingredients method.

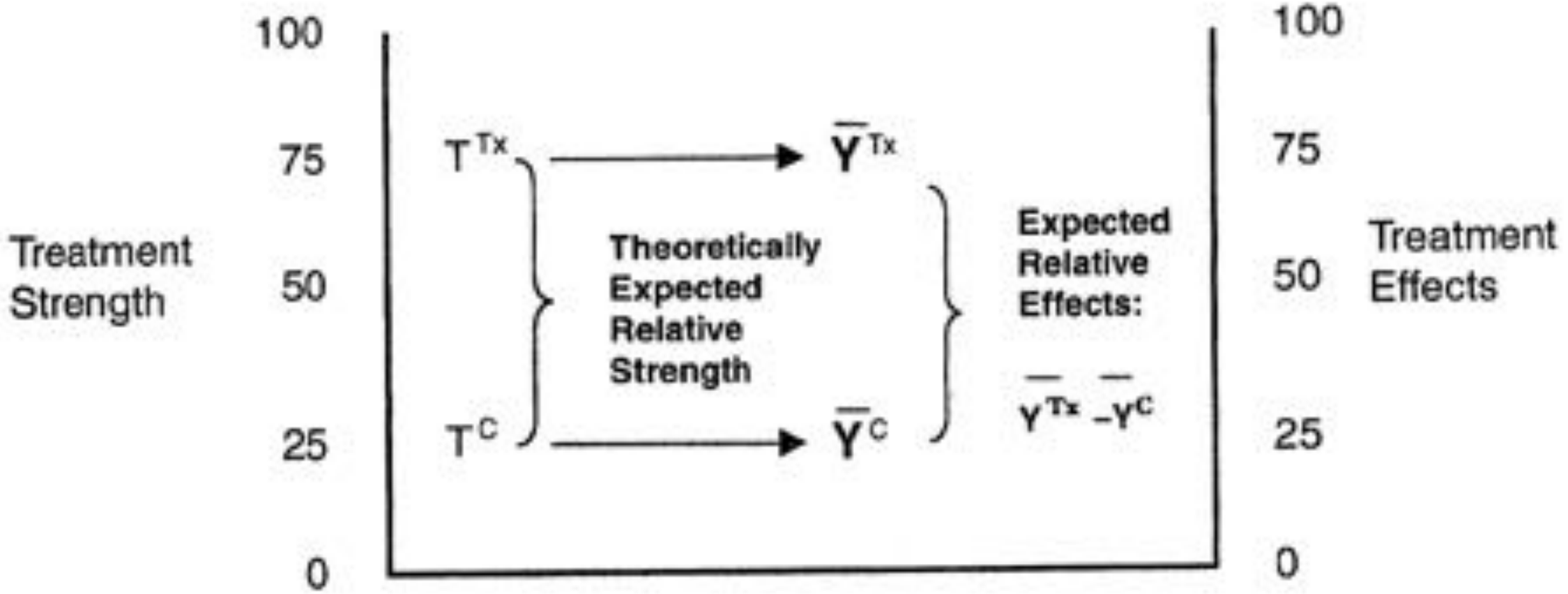


Figure 6.2. Theoretically expected relative treatment strength and effects. Y= outcome; Tx = treatment condition; C = counterfactual condition.

Cordray, D. S., & Pion, G. M. (2006). Treatment Strength and Integrity: Models and Methods. In R. R. Bootzin and P. E. McKnight (Eds.), Strengthening Research Methodology: Psychological Measurement and Evaluation (pp. 103-124). Washington, DC: American Psychological Association.

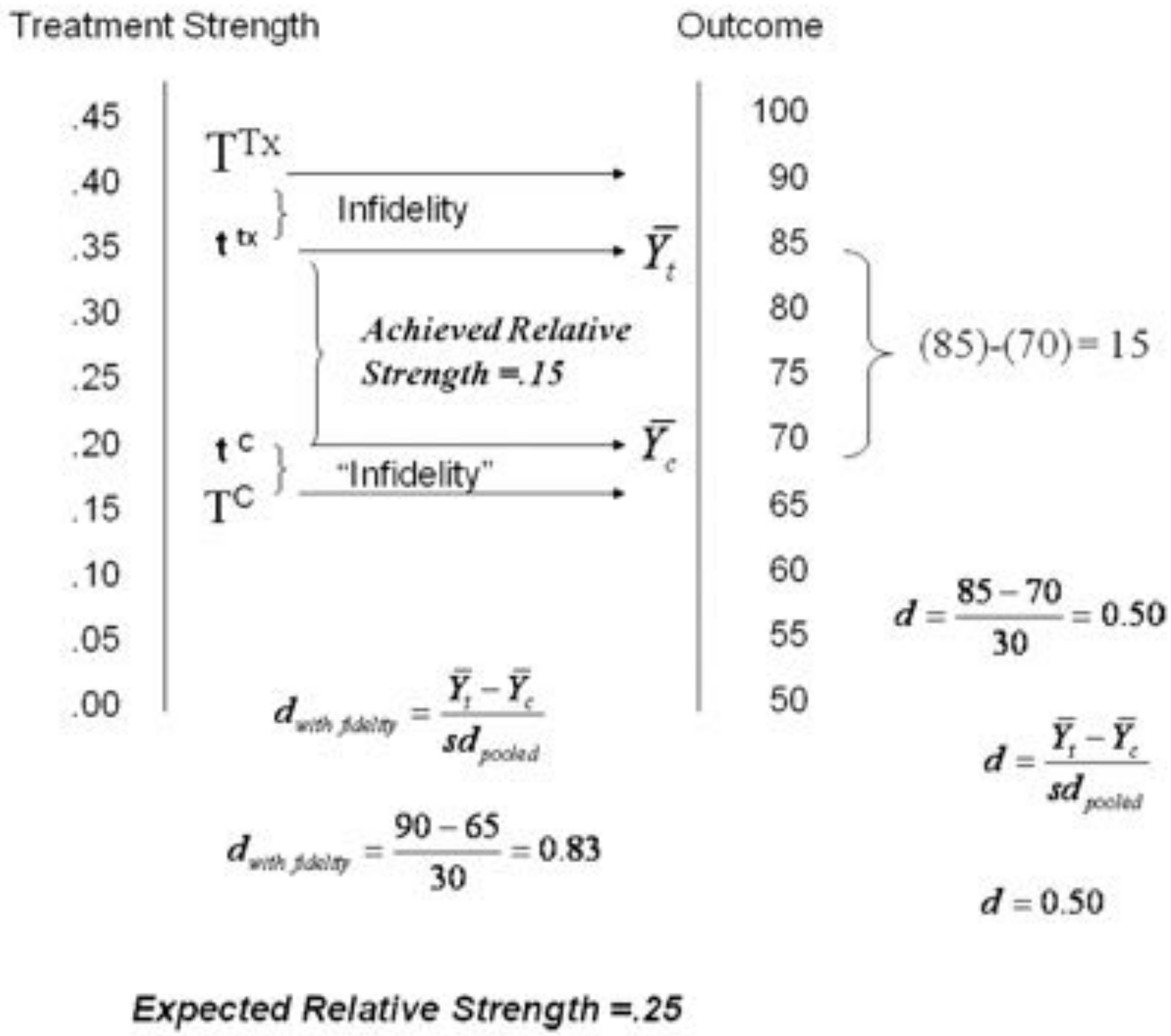
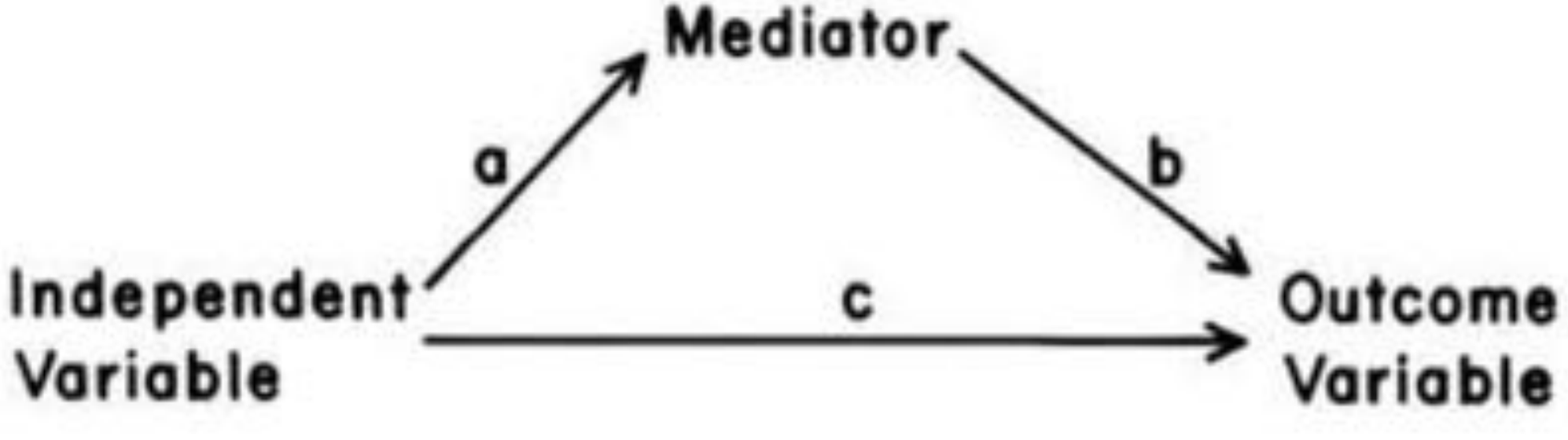


Figure 1. Representing fidelity and relative strength in experiments. Adapted from Cordray and Pion (2006, p. 116).

Chris S. Hulleman & David S. Cordray (2009) Moving From the Lab to the Field: The Role of Fidelity and Achieved Relative Intervention Strength, Journal of Research on Educational Effectiveness, 2:1, 88-110,http://dx.doi.org/10.1080/19345740802539325

2. Carefully consider any induced services that mediate the outcome.



Baron R. & Kenny D.A. (1986). The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173–1182.

3. Be transparent in pricing and analyses.

Thank you!

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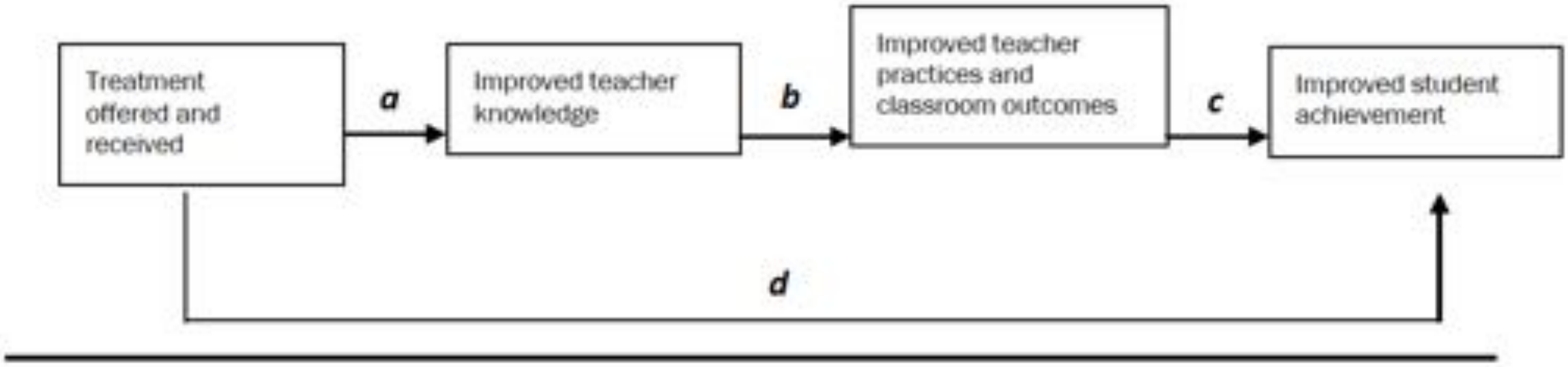
Figure 1. Typical conceptual model for an education randomized control trial



Schochet, P. Z., Puma, M., & Deke, J. (2014). *Understanding variation in treatment effects in education impact evaluations: An overview of quantitative methods* (NCEE 2014–4017). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Analytic Technical Assistance and Development. Retrieved from http://ies.ed.gov/ncee/edlabs.

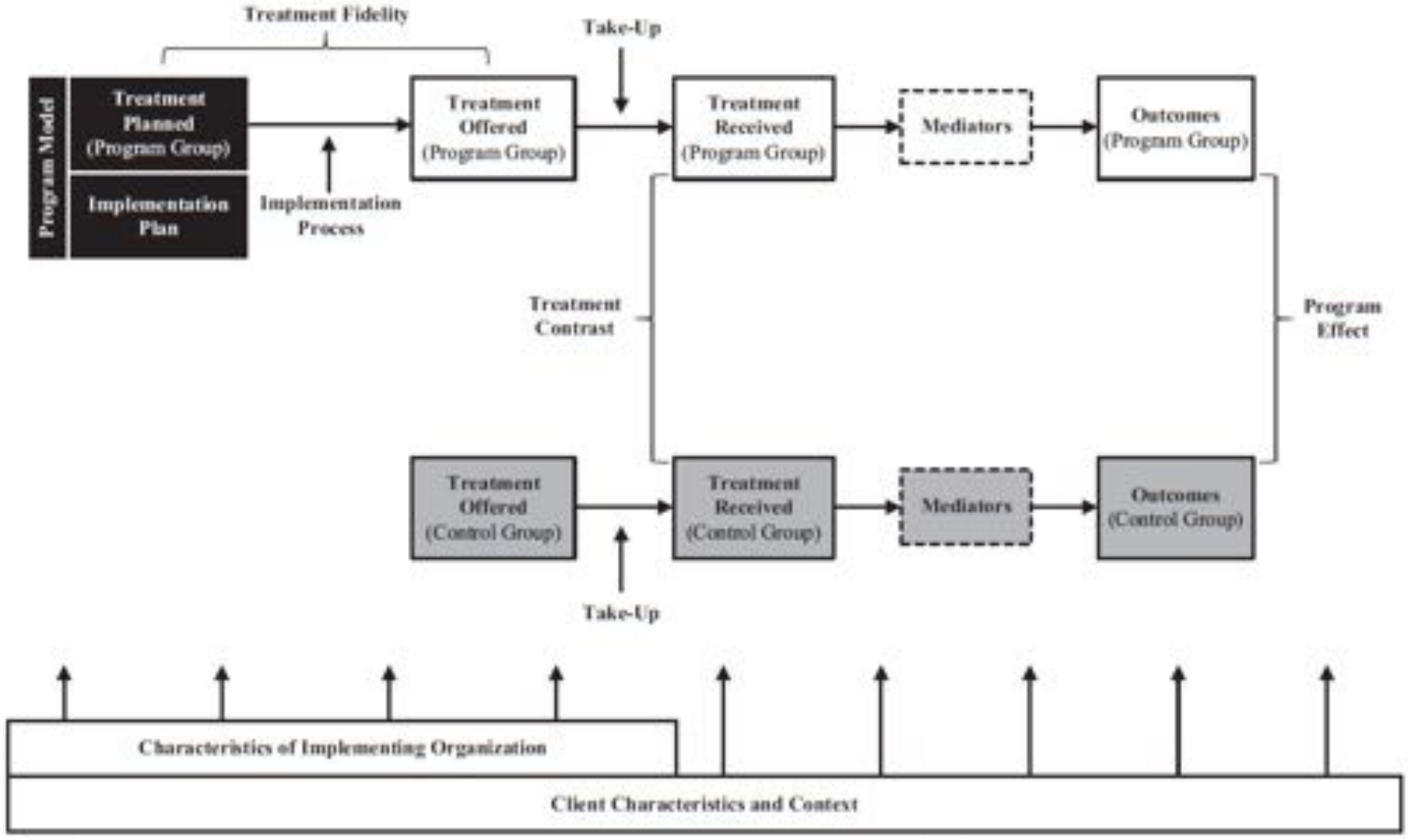


Figure 1. A Conceptual Framework for Studying Variation in Program Effects, Treatment Contrasts, and Implementation.

Weiss, M.J., Bloom, H.S., Brock, T., (2014). A conceptual framework for studying the sources of variation in program effects. *Journal of Policy Analysis and Management*, Vol. 33, No. 3, 778–808 (2014)