Treatment Implementation, Treatment Contrast, and Context

IES SUMMER INSTITUTE ON CLUSTER-RANDOMIZED TRIALS

NORTHWESTERN UNIVERSITY, JUNE 20, 2022
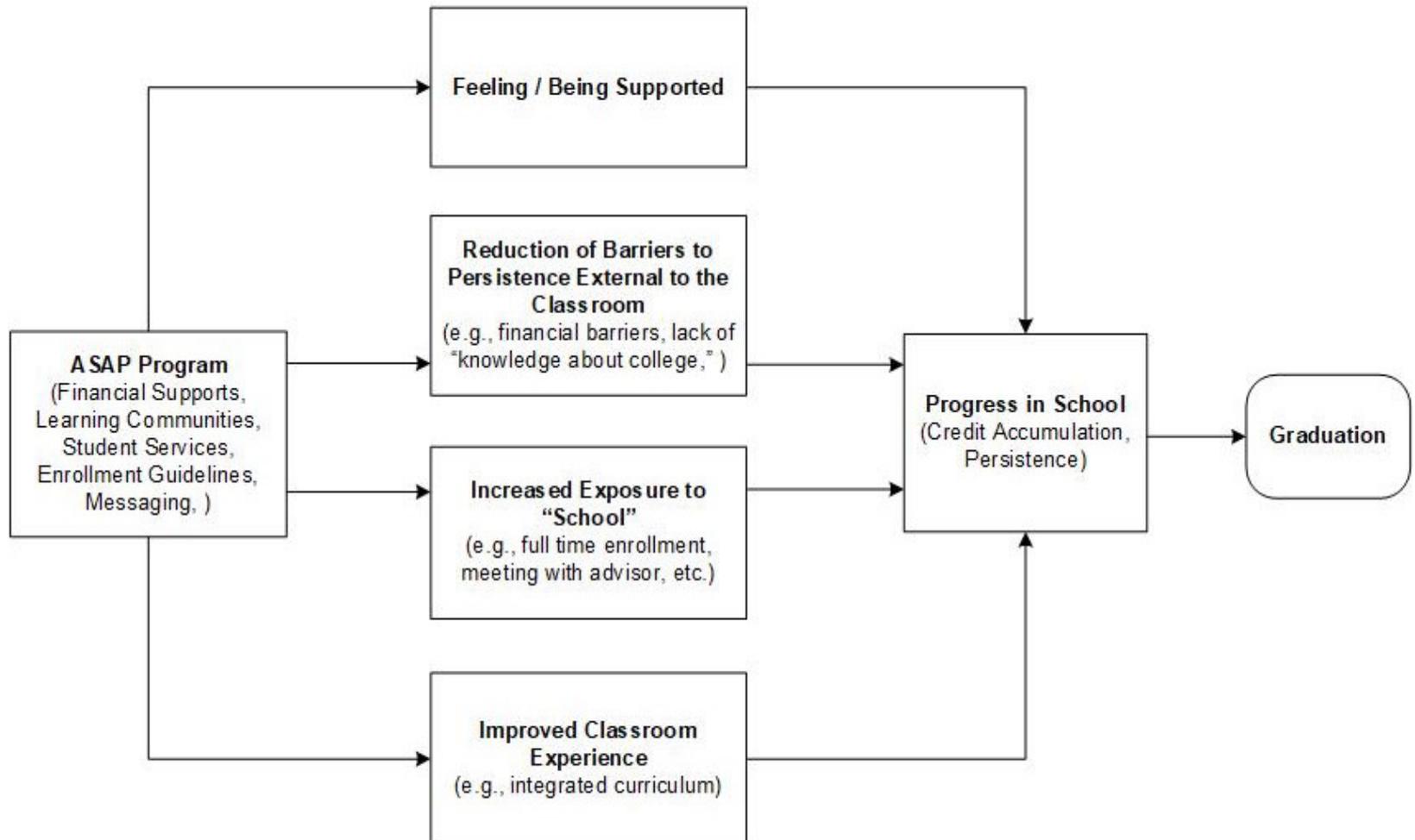
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Implementation research (IR) in RCT studies

- IR helps us interpret impact findings beyond an up-or-down "it worked" or "it didn't work"

- Comprehensive approach to IR in RCTs involves
  - Advance planning and anticipation of different scenarios
  - Analytic thinking and use of frameworks
  - Careful alignment between key constructs and measures
  - Both quantitative and qualitative methods

- IR helps us learn regardless of whether a study finds
  - Implementation of the treatment as planned or with modifications
  - Positive impacts, negative impacts, or null impacts

Broad Logic Model for **CUNY ASAP**
City University of New York, Accelerated Study in Associate Programs

A Conceptual Model for Studying Variation in Treatment Effects, Treatment Contrasts, and Implementation

Outcomes

Treatment / Intervention / Program Group
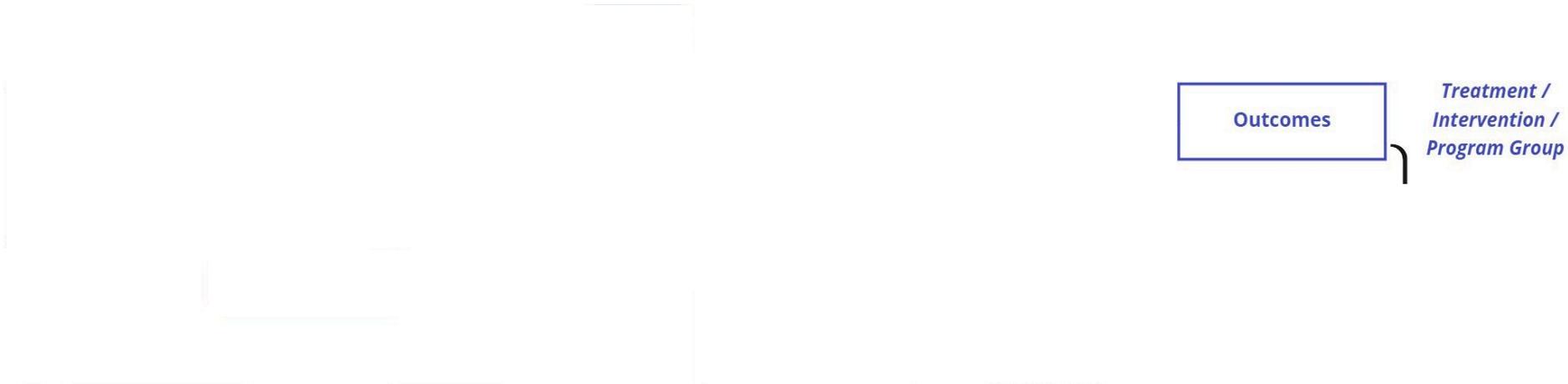
Adapted from Weiss, Bloom, & Brock 2014 *JPAM*

Treatment Planned, Offered, Received

WHAT IS "IT"?

Treatment Planned, Offered, Received
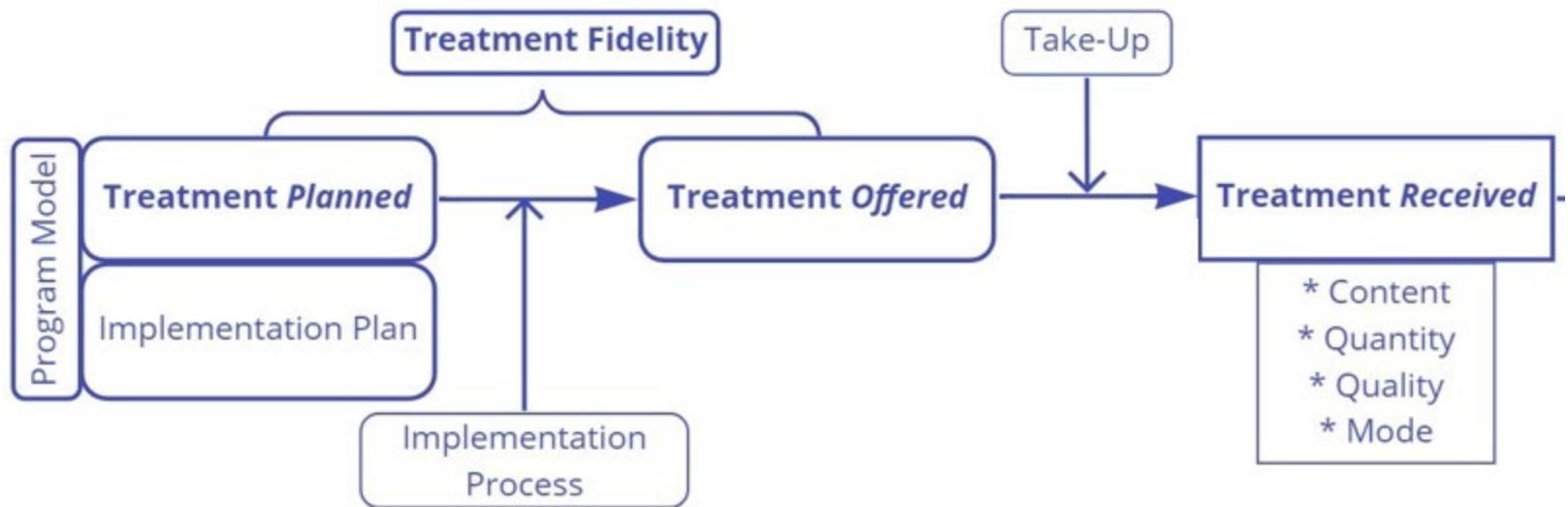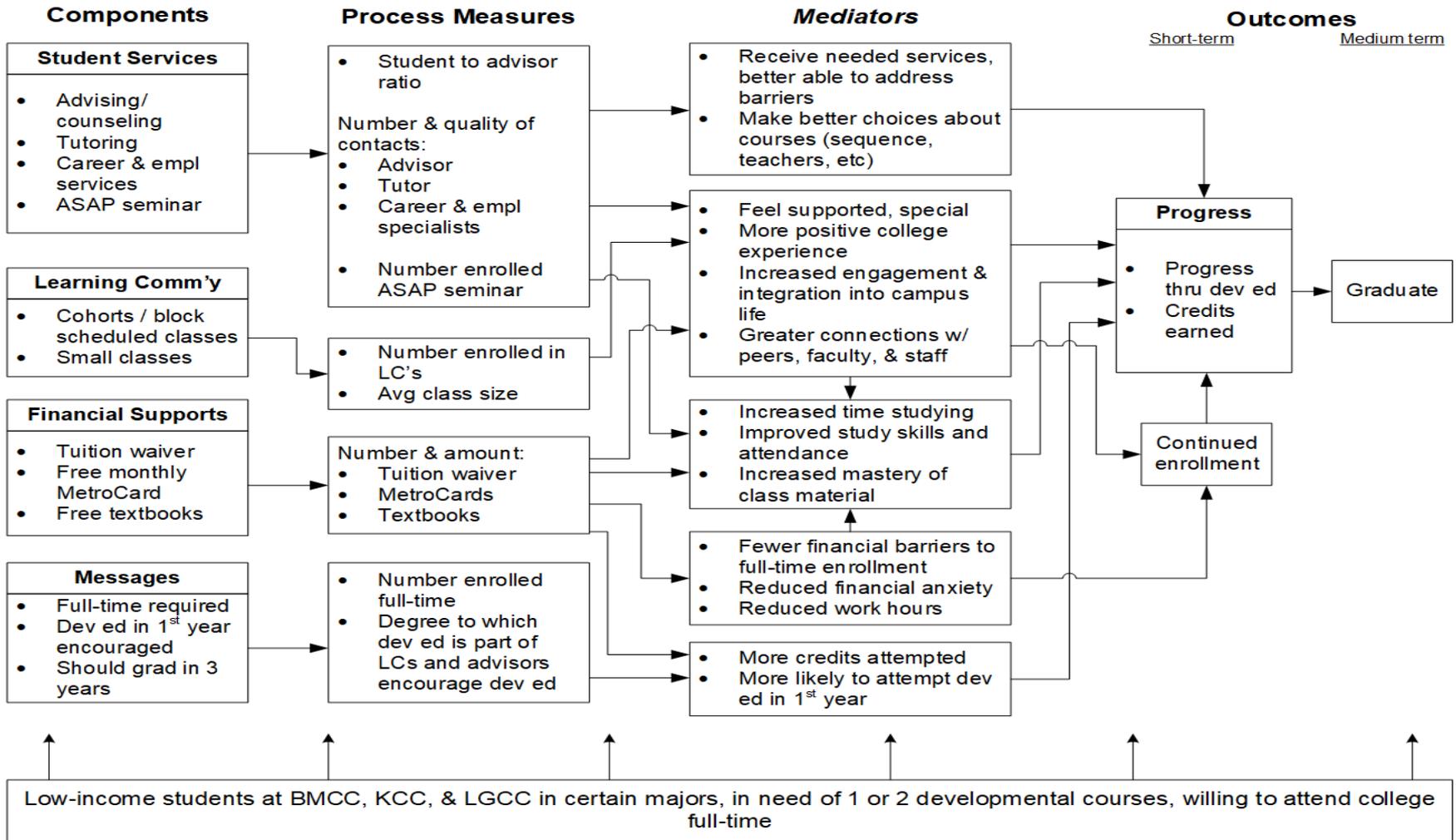

Adapted from Weiss, Bloom, & Brock 2014 *JPAM*

Dimensions of Treatment Components

Dimension	Question of interest	Examples
Content	**What** is the services/intervention provided?	Course topics, messaging, $/other supports, advising

Detailed Logic Model for **CUNY ASAP**
City University of New York, Accelerated Study in Associate Programs

Components

Student Services
- Advising/ counseling
- Tutoring
- Career & empl services
- ASAP seminar

Learning Comm'y
- Cohorts / block scheduled classes
- Small classes

Financial Supports
- Tuition waiver
- Free monthly MetroCard
- Free textbooks

Messages
- Full-time required
- Dev ed in 1st year encouraged
- Should grad in 3 years

Process Measures
- Student to advisor ratio

Number & quality of contacts:
- Advisor
- Tutor
- Career & empl specialists

- Number enrolled ASAP seminar

- Number enrolled in LC's
- Avg class size

Number & amount:
- Tuition waiver
- MetroCards
- Textbooks

- Number enrolled full-time
- Degree to which dev ed is part of LCs and advisors encourage dev ed

Mediators
- Receive needed services, better able to address barriers
- Make better choices about courses (sequence, teachers, etc)

- Feel supported, special
- More positive college experience
- Increased engagement & integration into campus life
- Greater connections w/ peers, faculty, & staff

- Increased time studying
- Improved study skills and attendance
- Increased mastery of class material

- Fewer financial barriers to full-time enrollment
- Reduced financial anxiety
- Reduced work hours

- More credits attempted
- More likely to attempt dev ed in 1st year

Outcomes

Short-term   Medium term

Progress
- Progress thru dev ed
- Credits earned

Graduate

Continued enrollment

Low-income students at BMCC, KCC, & LGCC in certain majors, in need of 1 or 2 developmental courses, willing to attend college full-time

Source: Scrivener et al, MDRC

Fidelity / Integrity definitions

- How the treatment *offered* compares with the treatment *planned* ("adherence")

- Within or across domains, no consensus on precise definition, valid measurement, or adequate thresholds for "fidelity"

- Distinguish "treatment fidelity" and "implementation process fidelity"

Fidelity / Integrity – Some considerations

1. Is the planned program new? a replication/expansion?
2. How specific is the planned program? (manualized? intentionally flexible in some or all dimensions?)
3. For multi-site studies, how is the planned program different across sites?
4. How might intervention fidelity or implementation fidelity vary over the course of the study? Why?
5. What kinds of modifications are possible? probable? (see handout from Wiltsey Stirman, Baumann, and Miller 2019)
   - Planned modifications → "adaptations"
   - Unplanned modifications
6. Consider beforehand: what's the minimum/ essential amount of the intervention that needs to be implemented?
   - What would represent in/sufficient implementation for a "fair test"?

Some resources on measuring fidelity

Goodson, B., Darrow, C., Wolf, A., Price, C., Boulay, B. (2019). *Guidance for Planning and Reporting your Education Innovation and Research (EIR) Fidelity of Implementation Study.* Prepared for the Institute for Education Sciences, U.S. Department of Education, Washington D.C. January 24. Abt Associates, Inc.

Meyers, Coby V. and W. Christopher Brandt (eds.). (2015). *Implementation Fidelity in Education Research: Designer and Evaluator Considerations* (Routledge).

Nelson, M. C., Cordray, D. S., Hulleman, C. S., Darrow, C. L., & Sommer, E. C. (2012). A procedure for assessing intervention fidelity in experiments testing educational and behavioral interventions. *The Journal of Behavioral Health Services & Research*, *39*(4), 374–396

Some questions about fidelity….
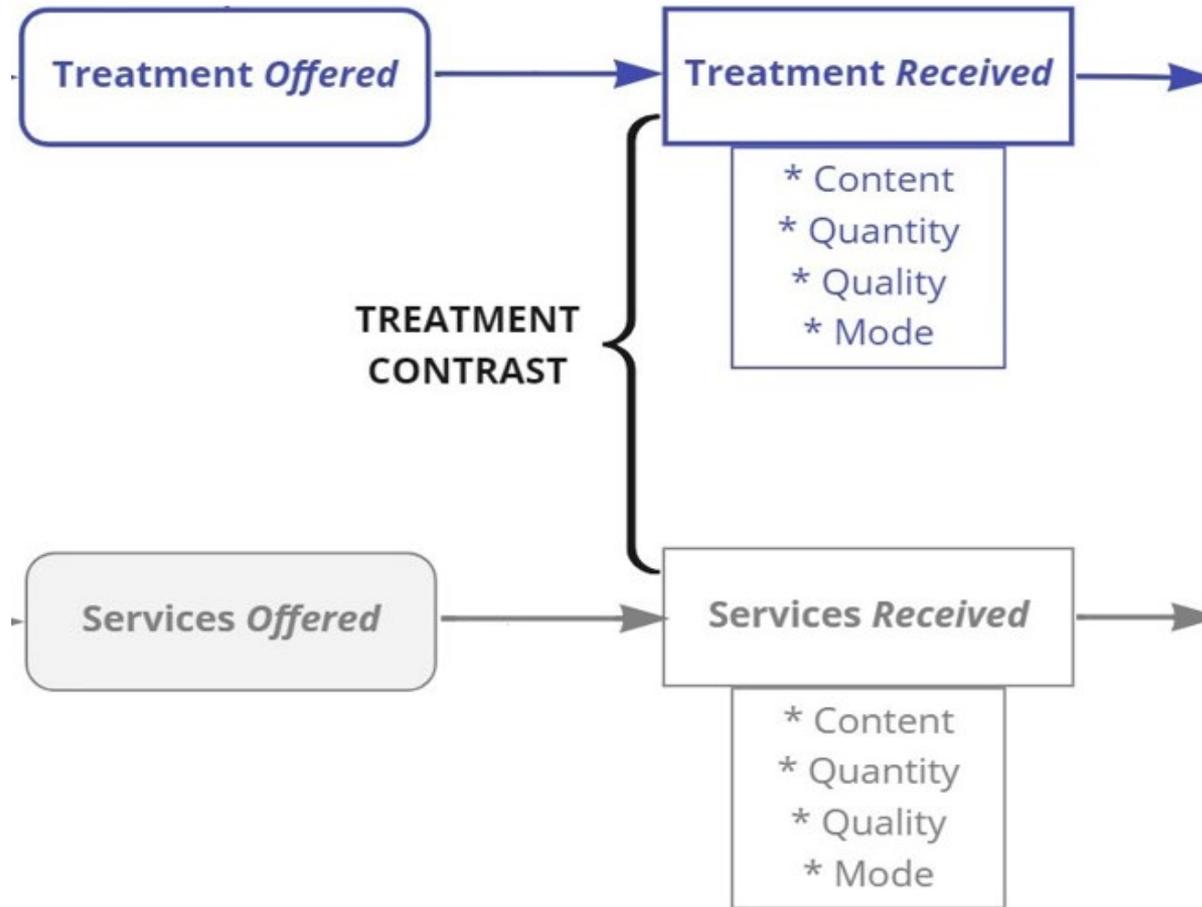
Treatment Contrast

"ACHIEVED RELATIVE STRENGTH"

A Conceptual Model for Studying Variation in Treatment Effects, Treatment Contrasts, and Implementation
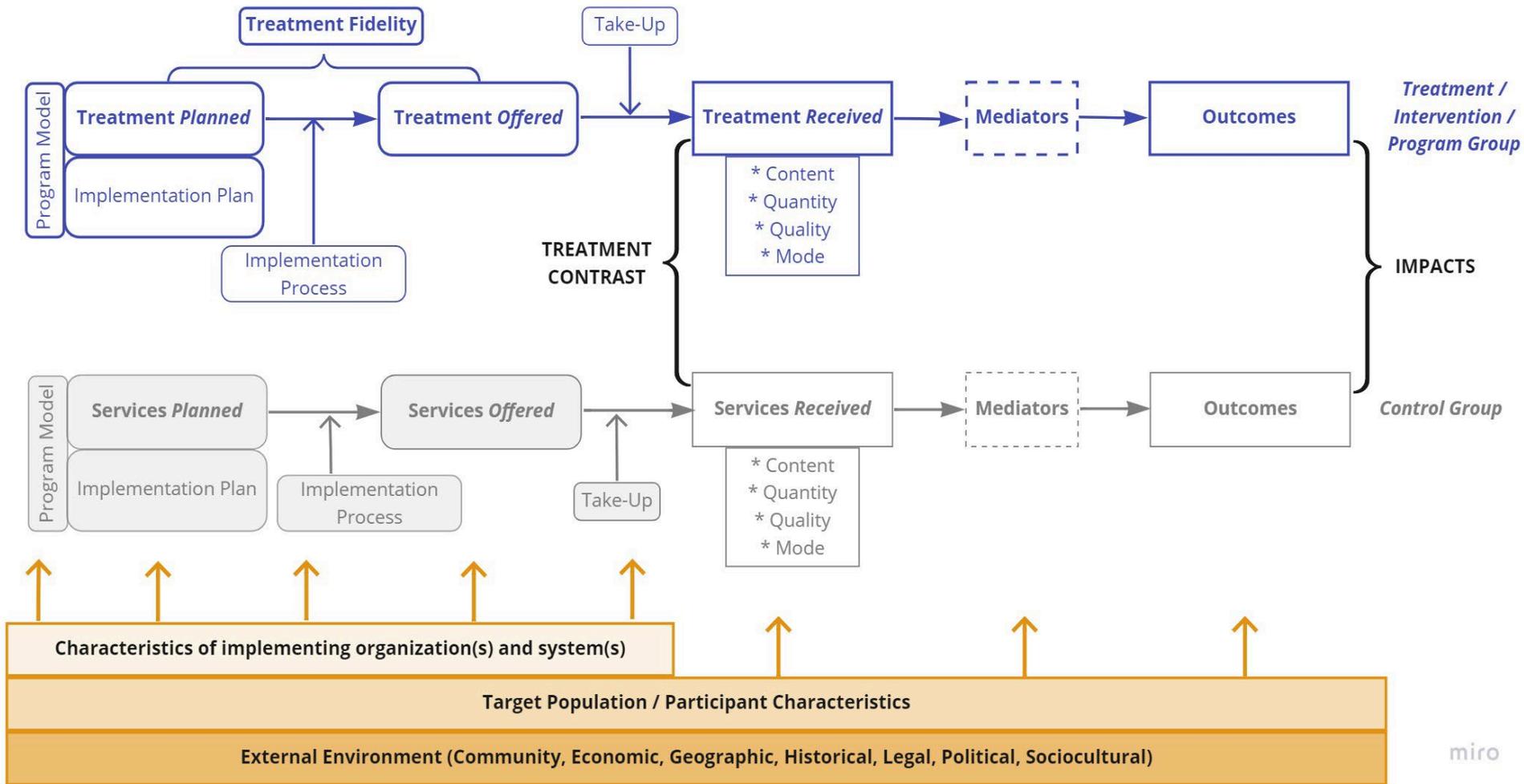
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Treatment Contrast

Adapted from Weiss, Bloom, & Brock 2014 *JPAM*

Treatment contrast example: CUNY ASAP

Students' First-Year Experiences: Career Services

Three-Year Impacts Report

Outcome	Sample Size	Program Group	Control Group	Difference	P-Value
Ever met with career or employment services staff (%)	736	79.5	28.8	50.6 ***	0.0000
Average number of times spoke with career or employment services staff					
First semester	719	4.9	1.0	3.8 ***	0.0000
Second semester	721	4.1	0.6	3.5 ***	0.0000
Survey sample size	742	384	358		

SOURCE: MDRC calculations from the MDRC student survey.

Source: Scrivener et al, MDRC

Treatment contrast example: CUNY ASAP

Student Services

- **Advising:** Student-to-adviser ratio between 60:1 and 80:1; 95 percent of students met with an adviser during first year and students met with an adviser an average of 38 times in that period

- **Career services:** 80 percent of students met with career and employment services staff during first year and students met with such staff an average of 9 times in that period

- **Tutoring:** 74 percent of students received tutoring outside of class during first year and students met with a tutor an average of 24 times in that period

- **Advising:** Student-to-adviser ratio between 600:1 and 1,500:1; 80 percent of students met with an adviser during first year and students met with an adviser an average of 6 times in that period

- **Career services:** 29 percent of students met with career and employment services staff during first year and students met with such staff an average of 2 times in that period

- **Tutoring:** 39 percent of students received tutoring outside of class during first year and students met with a tutor an average of 7 times in that period

Source: Scrivener et al, MDRC
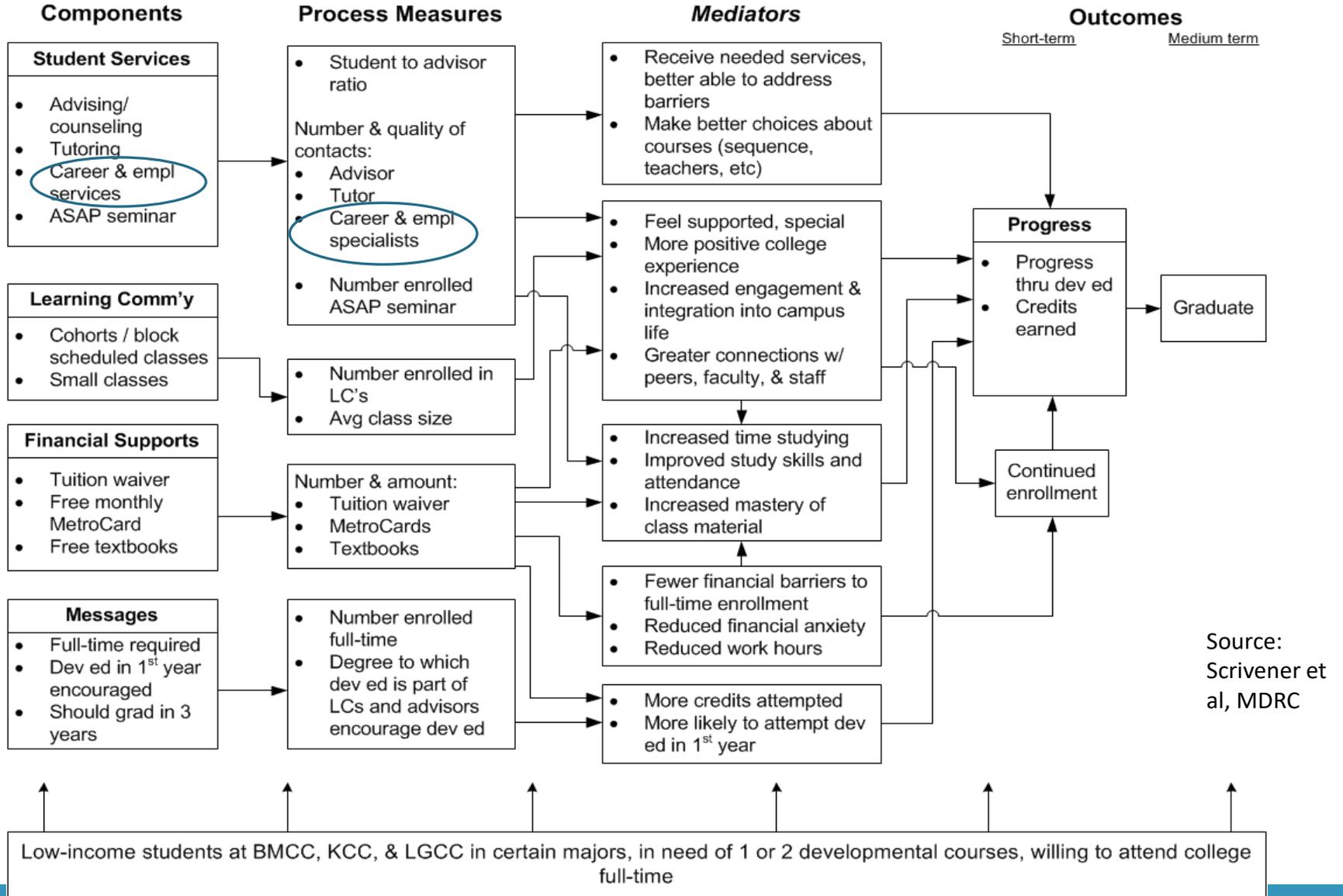
(see larger handout]

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Use the program logic model to conceptualize

- Logic model provides comprehensive listing of core program components

- Logic model shows hypothesized linkages between program components, proximal outcomes, and distal outcomes
  - Are particular outcomes likely to be activated by particular service components?
  - What are implications of strong or weak service contrast (in theory or as measured) for chances of seeing program impacts in those outcomes?
  - What are your study's priority components for measuring contrasts? In what dimensions?

- Consider in two stages: constructs, then measures

ASAP Analysis Plan
Figure 1
Logic Model

Components

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- Tutoring
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- Make better choices about courses (sequence, teachers, etc)

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Source: Scrivener et al, MDRC

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Service Contrast Traction Tool - Partial ASAP Description Only

Program or Service Aspect or Component	PROGRAM GROUP	
	Planned Services **Description**	
Career Services	* Meet with advisor semi-monthly * Meet with CES staff once/semester *specificity/content varies	

ASAP Analysis Plan
Figure 1
Logic Model

Data Source Legend:
Green = Transcript
Blue = Survey
Red = Field Research
Purple = Survey & Field Research
Black = Unmeasured

Components — **Process Measures** — **Mediators** — **Outcomes** (Short-term, Medium term)

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- Student to advisor ratio
- Number & quality of contacts:
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Think about when:
- *You have more than 1 data source for a measure*
- *What you can/ can't measure for C group*
- *What you can't measure at all*

Source: Scrivener et al, MDRC

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Service Contrast Traction Tool - Partial ASAP with possible measures

| Program or Service Aspect or Component | PROGRAM GROUP | | | CONTROL GROUP | | | SERVICE CONTRAST | |
	Planned Services **Description**	*Received Services* **Description**		*Available Services* **Description**	*Received Services* **Description**		*Planned / Available Services* **Description**	*Received Services* **Description**
Career Services	* Meet with advisor semi-monthly * Meet with CES staff once/ semester *specificity /content varies	* Did students meet w/advisors? * How often? * For how long? * What content was discussed? * Where did mtgs take place? * Group or individual sessions? *** How engaged were students?**		* Career svcs office on campus * Career fairs	* Did students meet w/advisors? * How often? * For how long? * What content was discussed? * Where did mtgs take place? * Group or individual sessions? *** How engaged were students?**		*Dedicated staff vs. walk-up * Consistency in advisors across sessions * Prompts for action vs. self-motivation	[difference between Received Svcs Descriptions for T and C groups]

Some reflections on contrast

- How can/should treatment fidelity measures be used for Cs?

- On which components, on which dimensions (content, quantity, mode, quality) in your study is a contrast possible?...likely?

- For which components on which dimensions are you *not able* to measure contrast? How central are those to your theory of change?

- What would represent insufficient contrast between program and counterfactual services for particular components or dimensions? …..

→Both quantitative and qualitative inquiry can be informative.

→Risky to rely on the combination of weak service contrast on multiple components or dimensions to produce impacts

Context

[SOME EXAMPLES]

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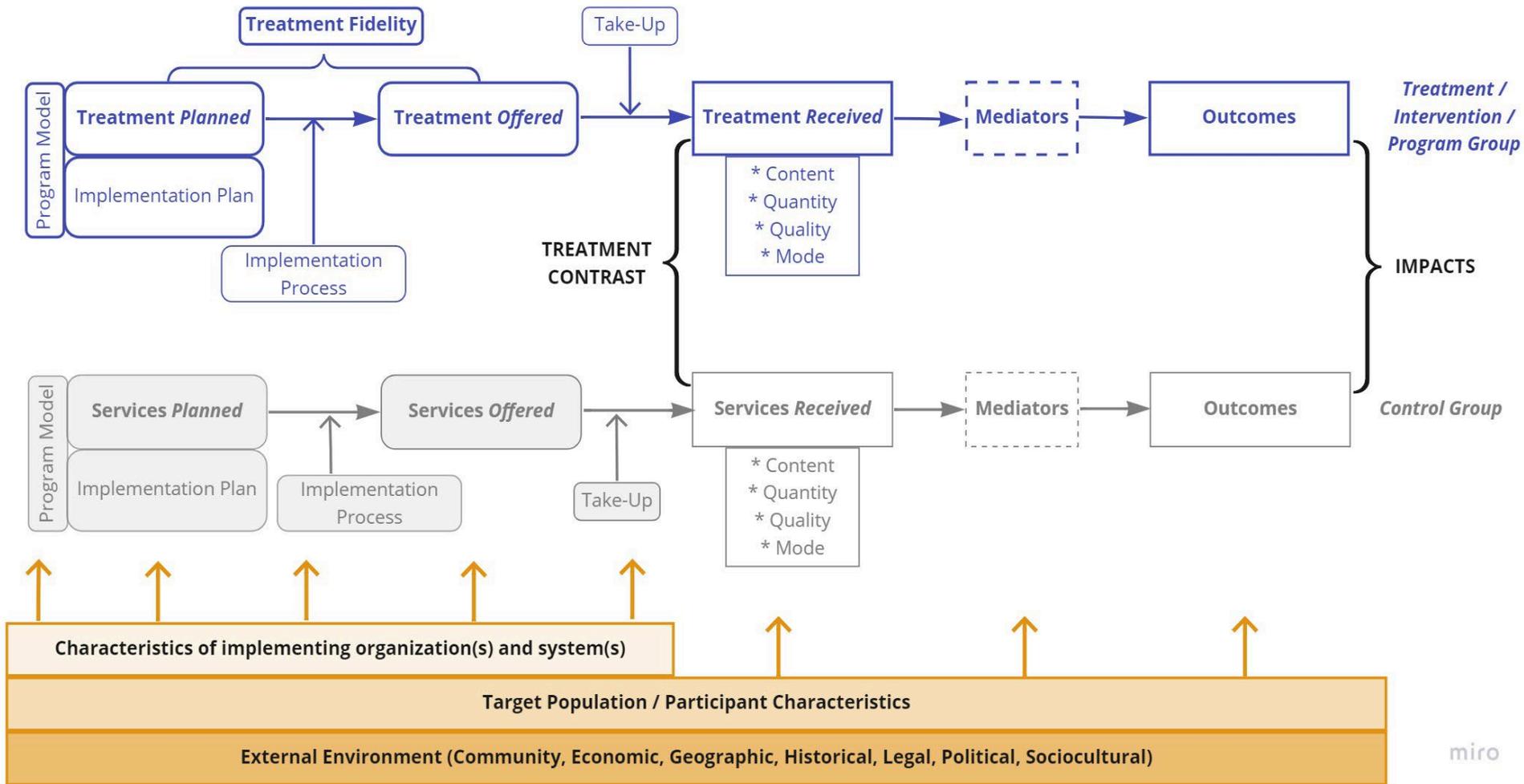
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Table 2. Study sample and context

Key Questions	Description
What is the population of interest?	☐ The population to which the study findings should apply in other contexts. ☐ Steps taken to increase generalizability of findings, either via sampling or analysis.
Who participated in the study?	☐ Student grades, and ages for early childhood and adult learners and learners with disabilities. ☐ Student race, including American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or other Pacific Islander, White, and other. Some students may identify as belonging to multiple racial groups. ☐ Student ethnicity, as Hispanic/Latino or not Hispanic/Latino. ☐ Student sex, gender, or gender identity. ☐ Students with an individualized education program, individualized family service plan, or 504 plan, and disability type—autism spectrum disorder, emotional disturbance, intellectual disability, developmental delay, or other specific disability. ☐ Student English learner status—current, former, ever, never—and other English learner characteristics—language spoken at home, newcomer, long-term, English proficiency level. ☐ Student socio-economic status—free or reduced-price lunch, Pell Grant eligible, other. ☐ Other student characteristics—homeless, migrant, foster. ☐ Student achievement on a standardized measure before the start of the intervention—below grade level, on grade level, above grade level. ☐ Educator characteristics—years of experience and credentials.
Where did the study occur?	☐ Country or state(s), if in the United States. ☐ Urban, rural, suburban, or town setting. ☐ Number of schools, postsecondary institutions, or educational sites. ☐ School type—charter, parochial, public, or private—and format—in-person, online, before or after school. ☐ Postsecondary institution type—two-year, four-year, public, private. ☐ Other educational site—center, home-based. ☐ Classroom type, including general or inclusion, self-contained special education, and designated English language development. ☐ Other school, institution, or site characteristics—enrollment, Title I status, magnet, student characteristics.

Context
Example Characteristics of Teachers/Instructors

- Demographic characteristics
- Educational background
- Professional background and work experiences
- Attitudes and beliefs
- Social-emotional characteristics (for example, burnout, depression, anxiety)
- Readiness for change (psychological)

Context
## Example characteristics of organizations/schools

- Mission/values
- Decision structure
- Resources (physical resources, human capital)
- Leader vision/characteristics/behaviors
- Organizational culture or climate
- Presence/actions of unions
- Readiness for change (structural and psychological)
- Student/client population (e.g., number of students, aggregate student characteristics such as race, ethnicity, socio-economic characteristics, absenteeism, mobility)
- Other initiatives being implemented at the same time as the treatment

Context
Example characteristics of broader environment

- Policies or regulations (federal, state, district, system)
- Financing structures (federal, state, district, system
- Economic conditions, labor market, competition
- Geographic aspects
- Historical events/influences
- Cultural norms/influences
- Political views/influences
- Shocks (e.g., COVID)

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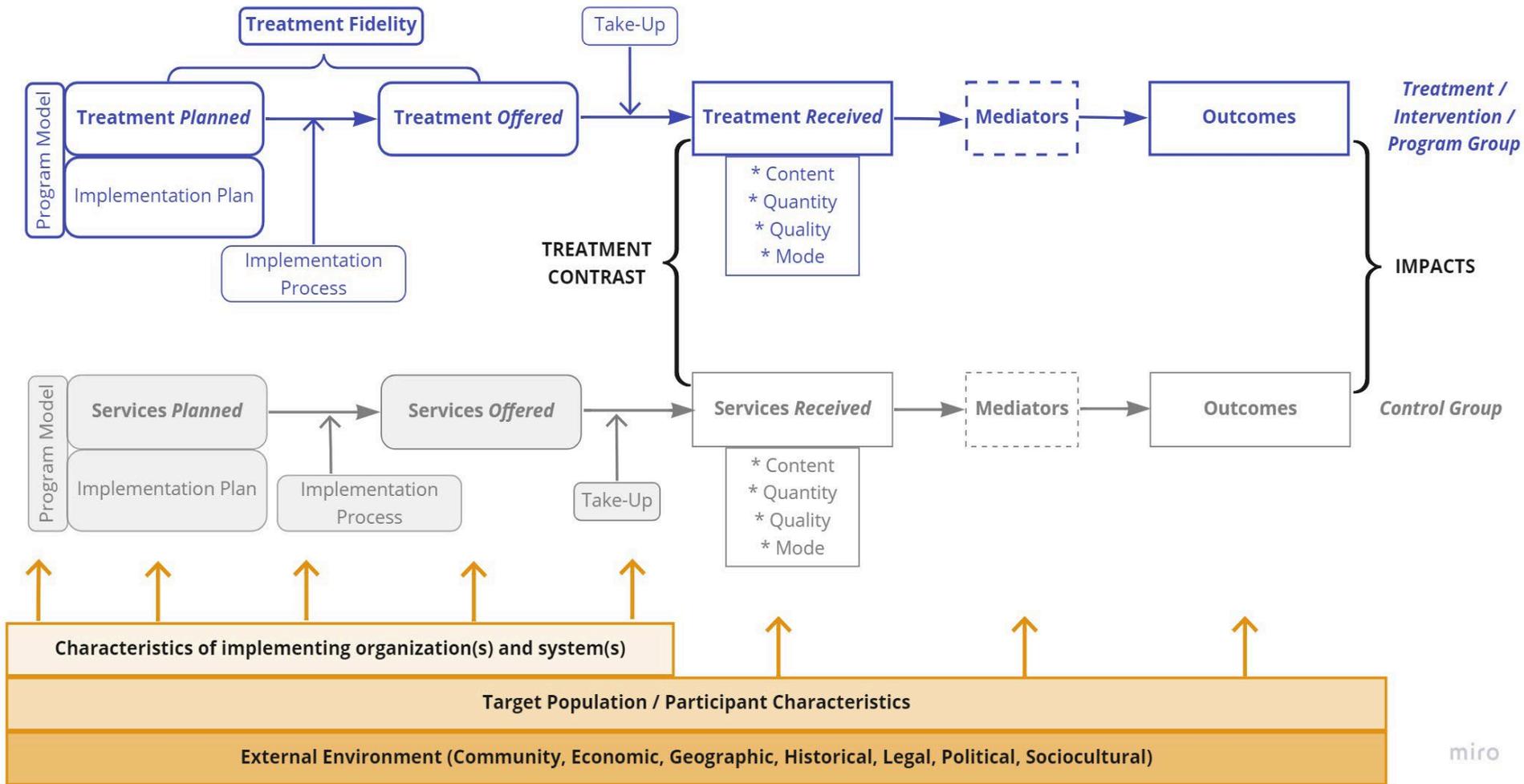
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Have a great Institute experience!

Please contact me with any
questions / suggestions