

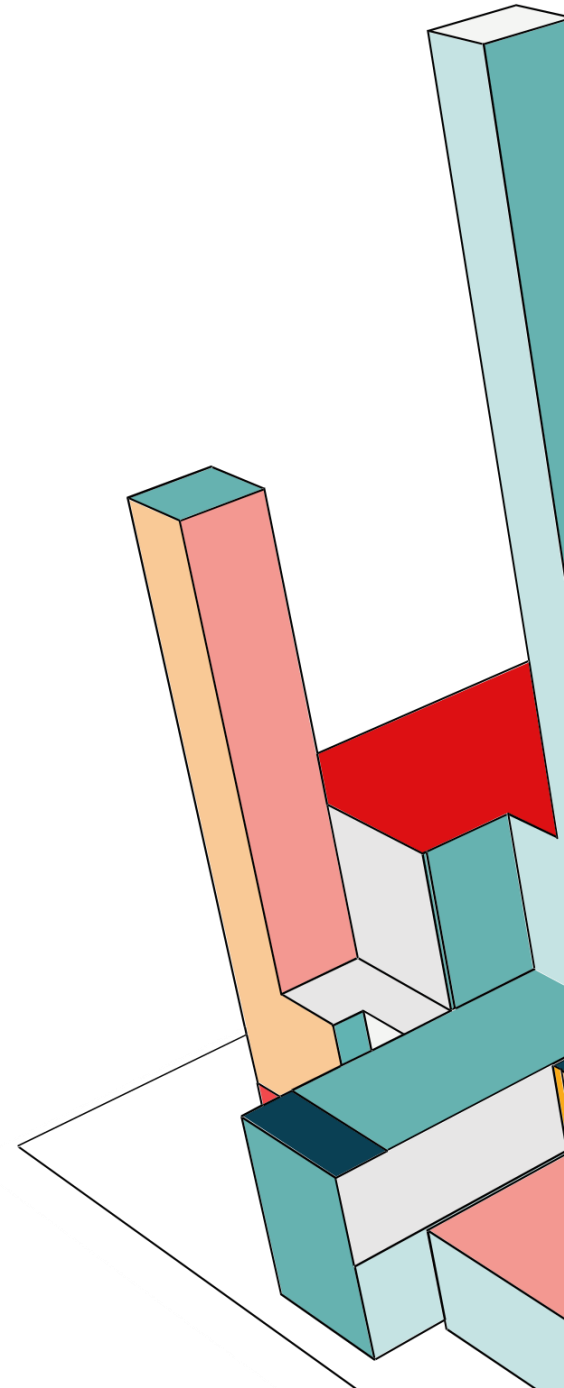
UNPACKING CORE COMPONENTS OF INTERVENTIONS: A COMPARISON OF SYNTHESIS APPROACHES

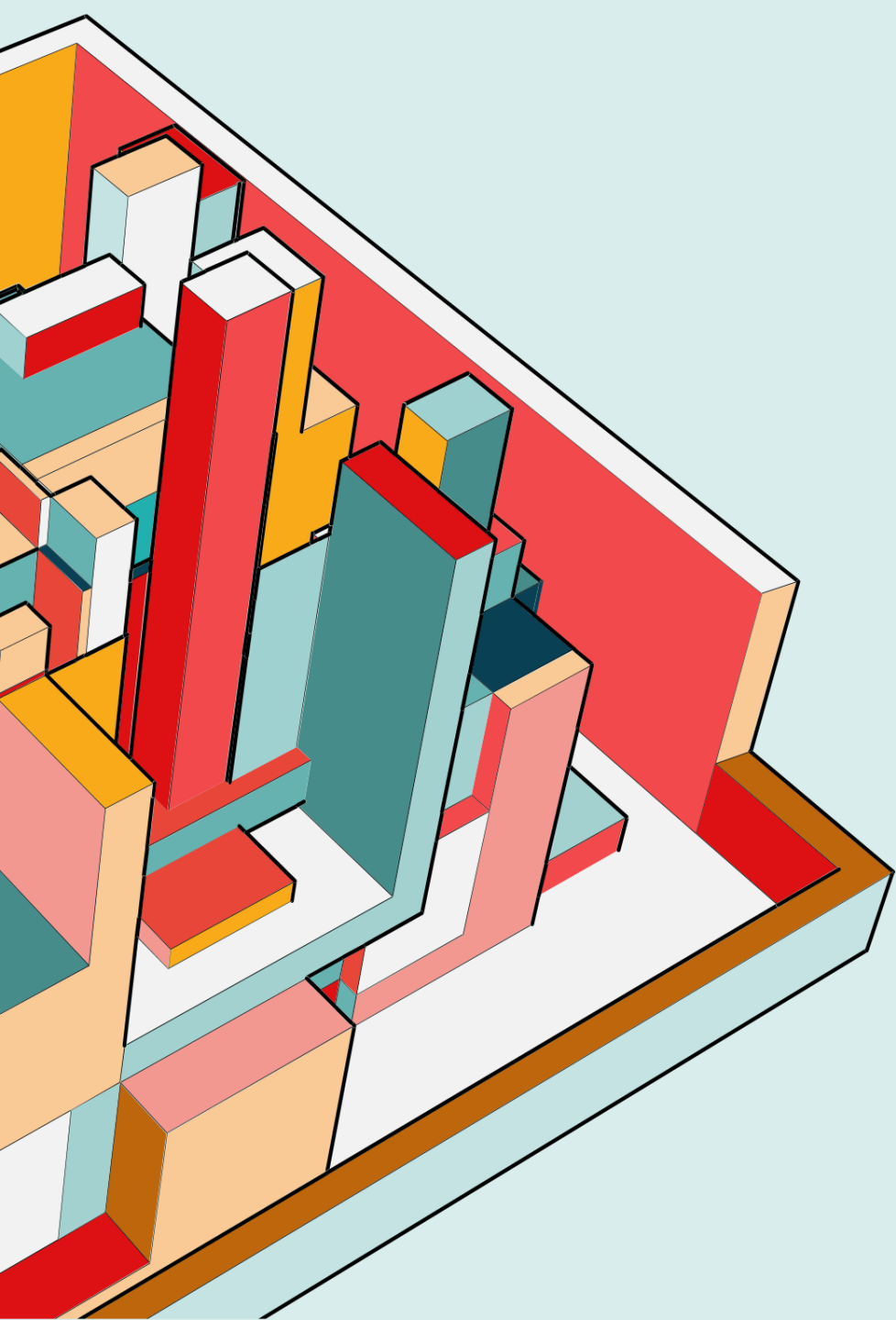
AGENDA

- Systematic Evidence Reviews and Core Components
- Framework Approach
- Qualitative Comparative Analysis
- Meta-regression
- Future Directions



Lemire, S., Peck, L. R., Porowski, A., & Dymnicki, A. (2024). Unpacking core components for policy design: A comparison of synthesis approaches. *Policy Studies Journal*, 53(1), 171-184. DOI: 10.1111/psj.12567





SYSTEMATIC EVIDENCE REVIEWS AND CORE COMPONENTS

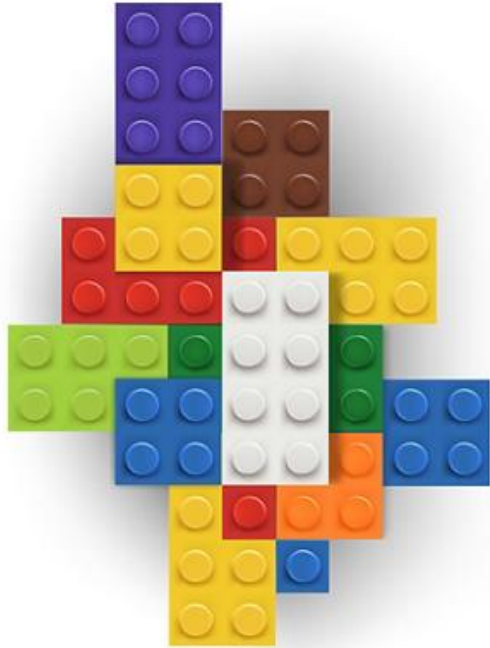
SYSTEMATIC EVIDENCE REVIEWS



- Systematic and transparent search, coding, and review procedures
- Meta-analysis and combined effect sizes
- Focus on “what works” and whole interventions

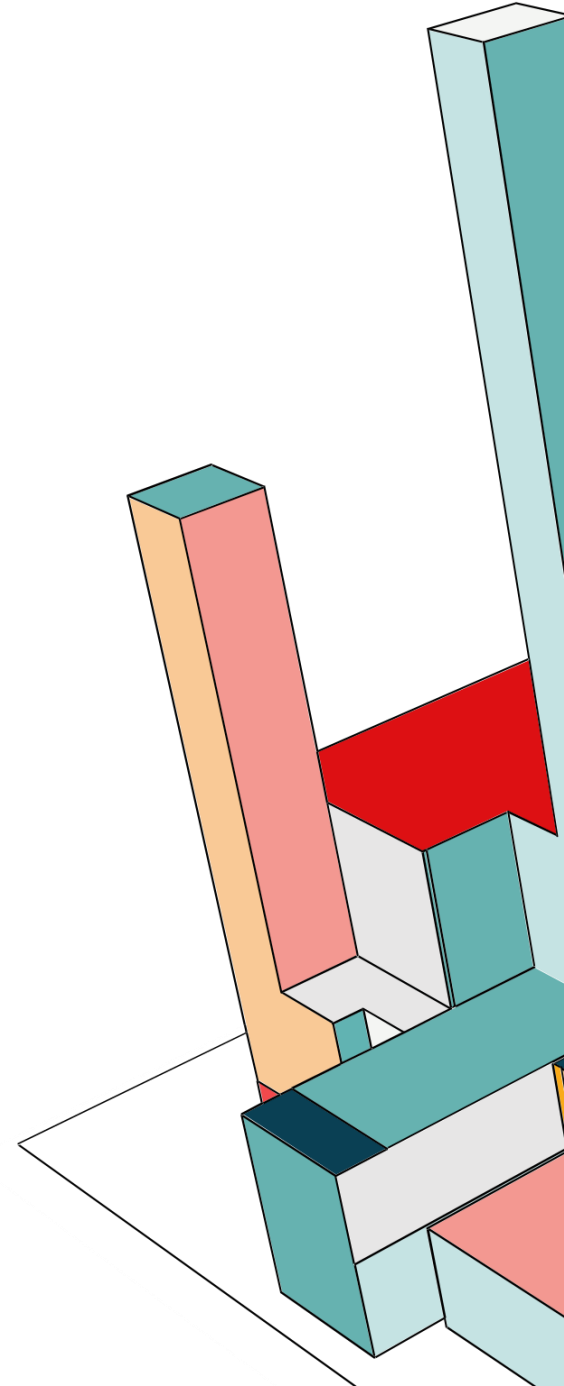


WHAT IS A CORE COMPONENT?

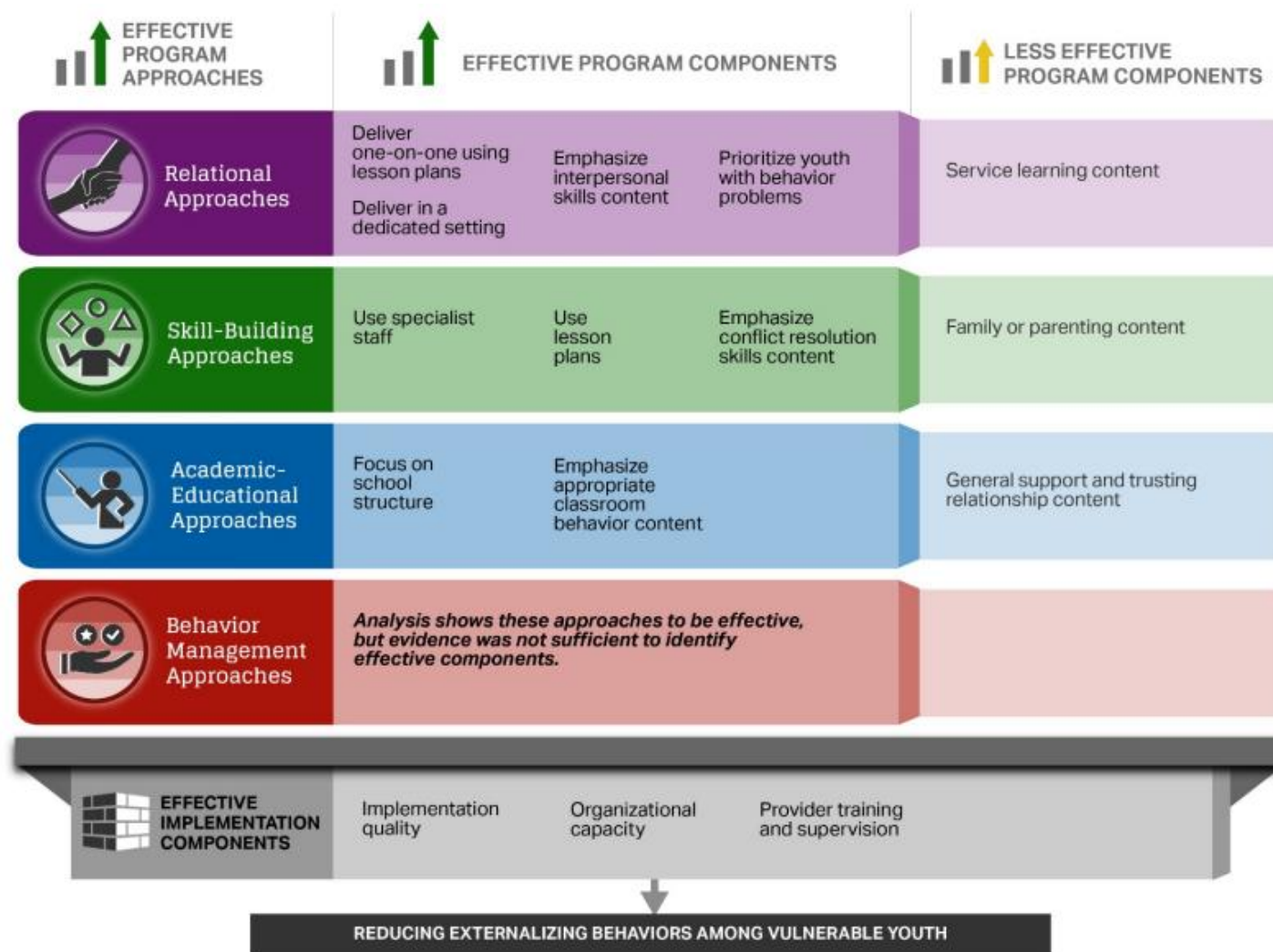


"Core components are the parts, features, attributes, or characteristics of a program that a range of research techniques show influence its success when implemented effectively"

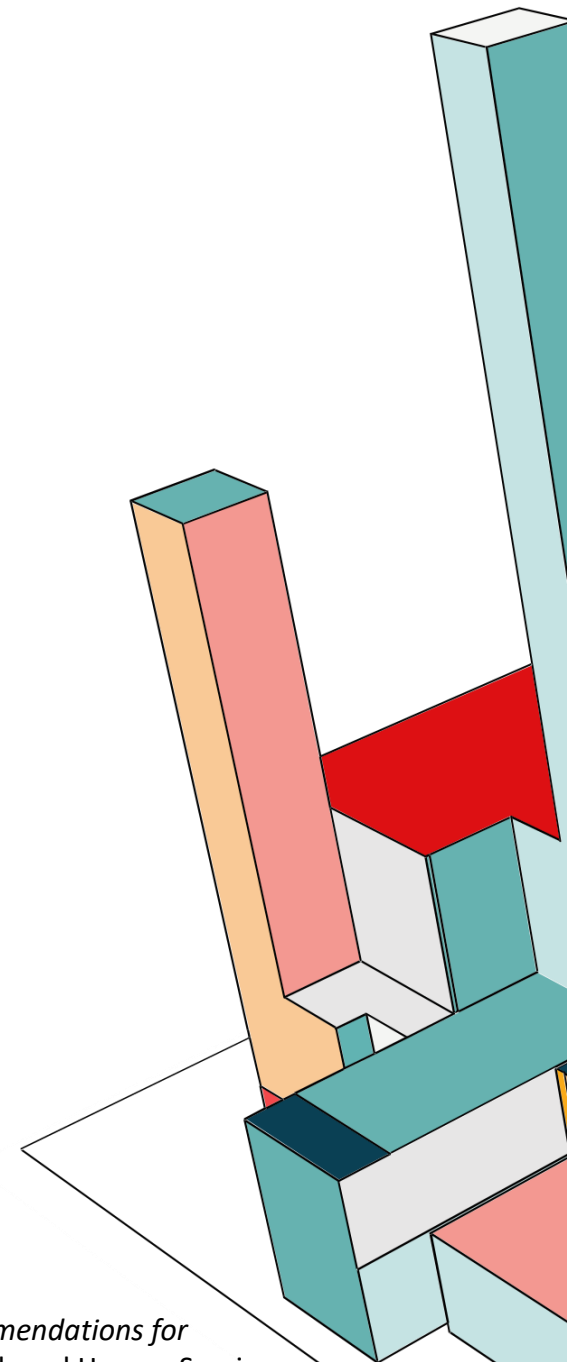
Ferber et al. (2019)



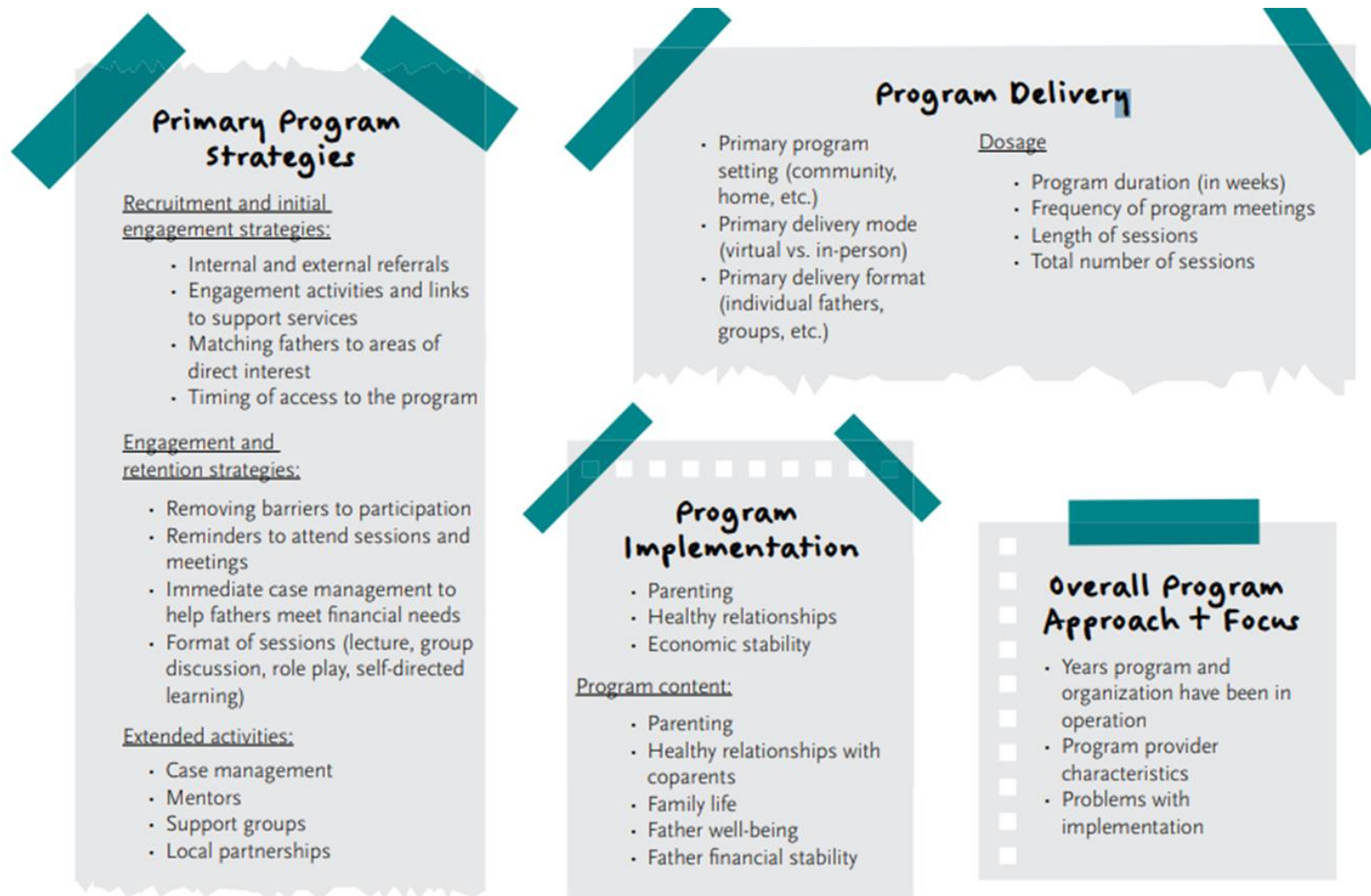
CORE COMPONENTS EXAMPLE: SOCIAL COMPETENCE PROGRAMS FOR YOUTH



Source: Weiss, C., Wilson, S. J., Francis, K., Hyra, A. & Norvell, J. (2021). *Improving social competence programs for children and youth: Recommendations for aligning programs with evidence on core components*. Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services.

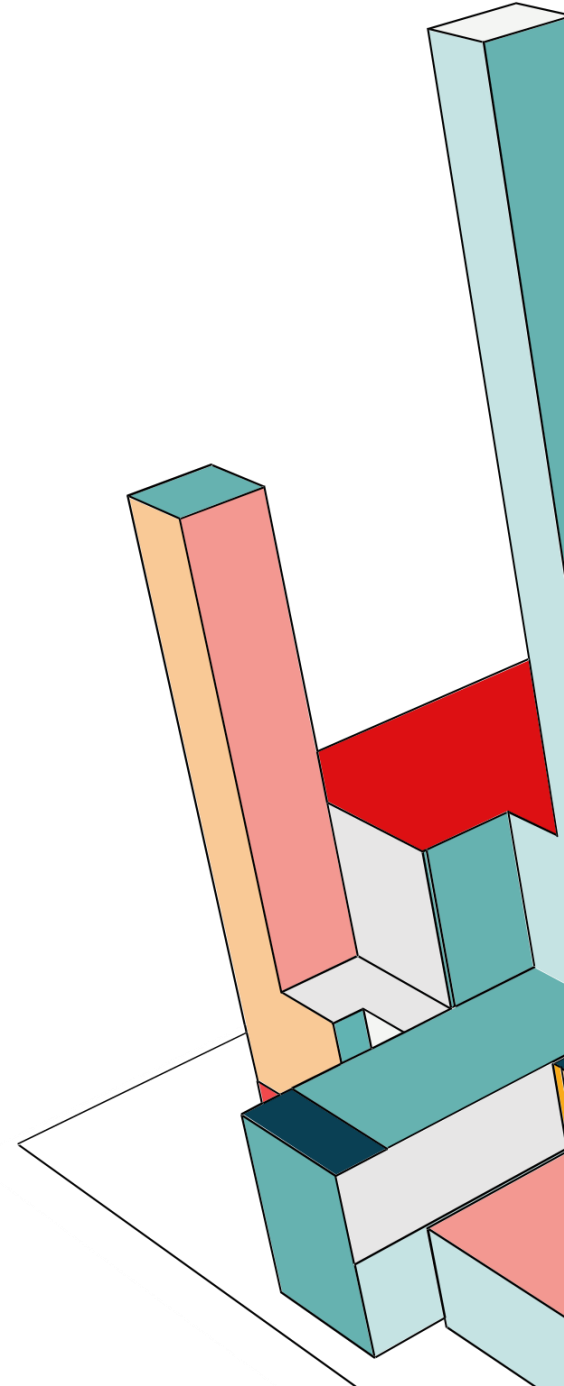


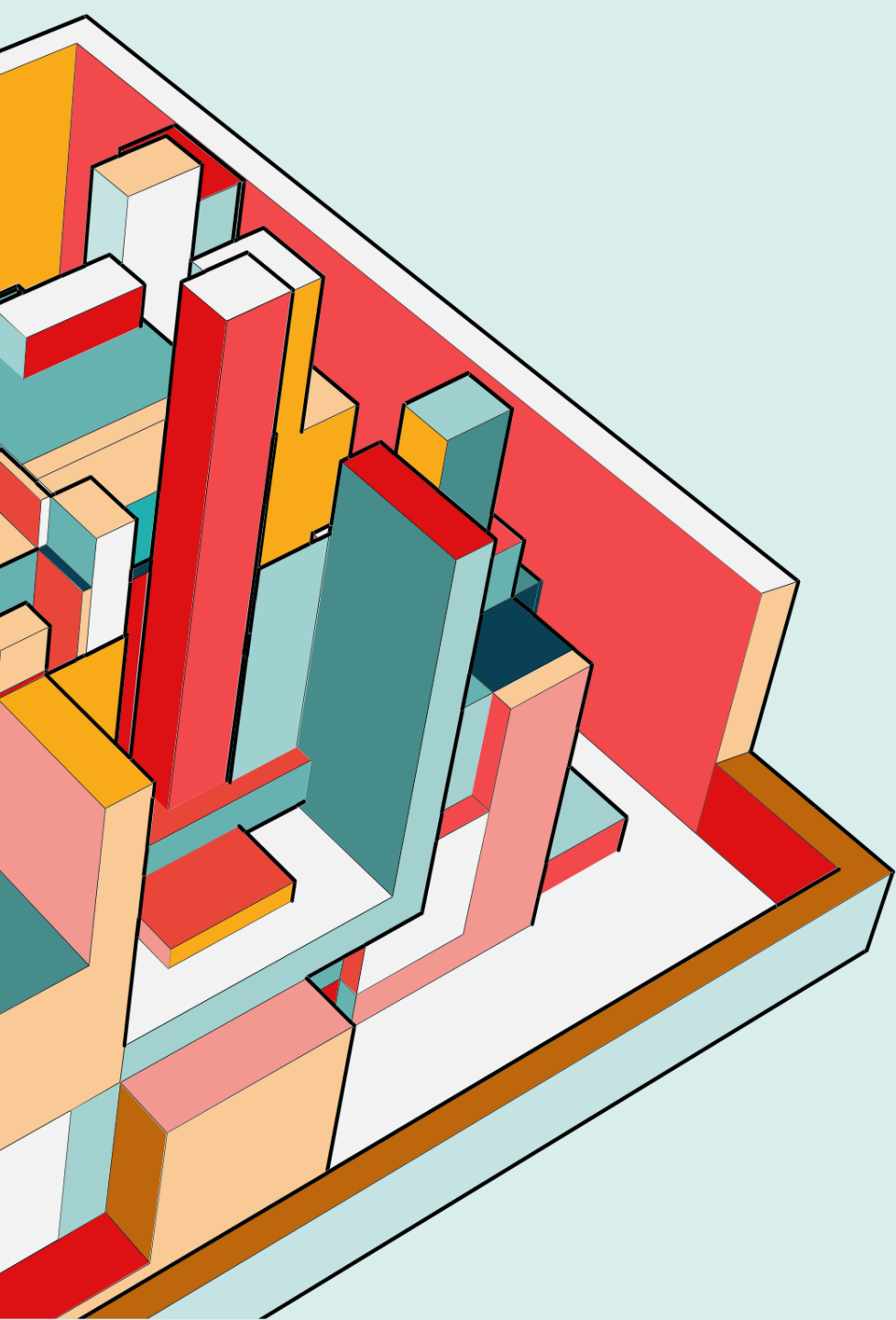
CORE COMPONENTS EXAMPLE: FATHERHOOD PROGRAMS



BENEFITS OF CORE COMPONENTS ANALYSIS

- Unpacks “bundled” interventions
- Sheds light on how , for whom, and under what circumstances interventions work.
- Supports transferability
- Informs refinement and design of future interventions



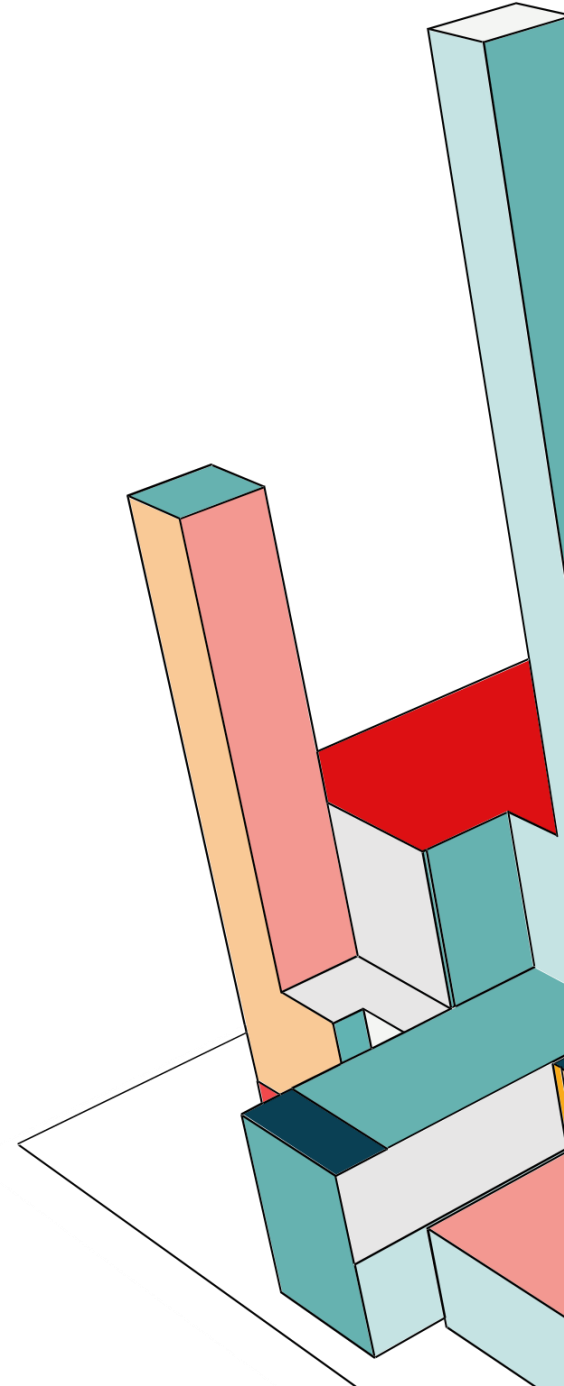


FRAMEWORK SYNTHESIS APPROACH

Matrix Tabulation

FRAMEWORK SYNTHESIS APPROACH

- Matrix-based approach that involves preestablished coding framework of candidate components and component coding of impact studies.
- Evidence matrix summarizes intervention components and impact.
- Core components are identified based on visual inspection.
- Provide insights into how and why specific core components make a difference.



EXAMPLE: SUPPORT AND EDUCATION STRATEGIES FOR TREATMENT ADHERENCE

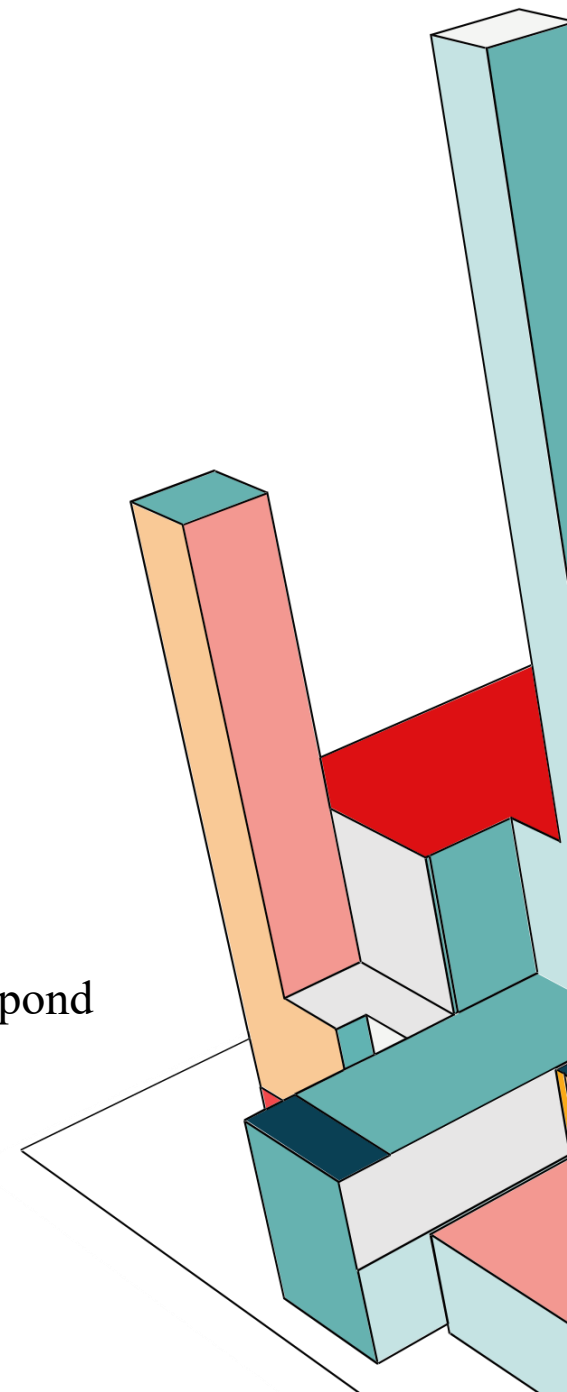
	General over arching			Therapy			HIV-1 status		Patient						Healthcare				Social circumstances			Impact
Trial	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
Berrien (2004)			X	X							X	X	X		X	X	X					Y
Pradier (2003)		x		X		x	X	x			X	X	x	x	X							Y
Rathburn (2005)				X	x						X							x				N
Rawlings (2003)				x	X											X	X					N

Notes:

X indicates that the patient recommendation and intervention content correspond

x indicates that the patient recommendation and intervention content only partially correspond

Source: Candy, B., King, M., Jones, L., & Oliver, S. (2011). Using qualitative synthesis to explore heterogeneity of complex interventions. *BMC Medical Research Methodology*, 11:124.



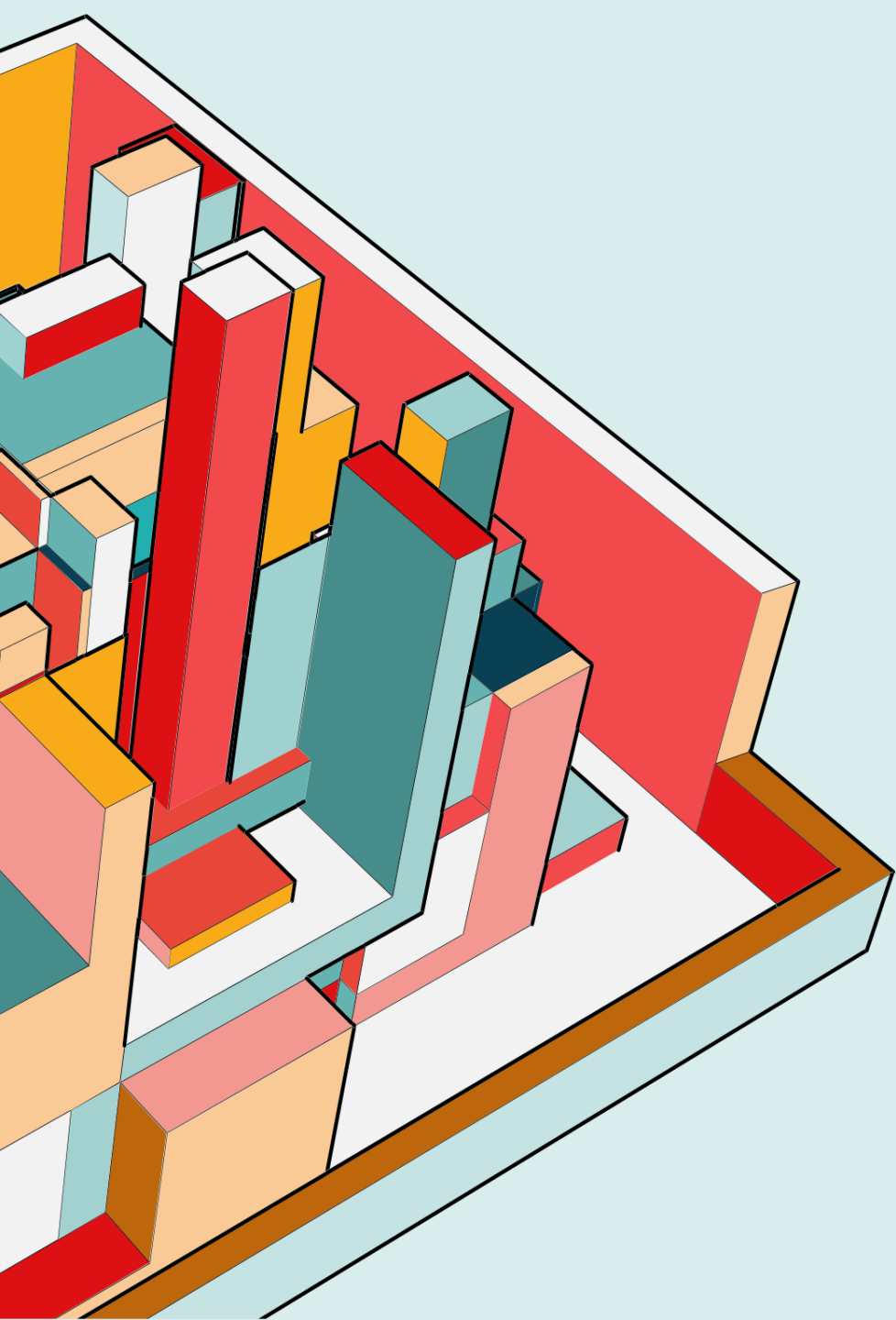
BENEFITS AND LIMITATIONS

Benefits:

- Accessible overview
- Simple, low-tech approach
- Motivates reflection on core components and why interventions work (participant perspective)

Limitations:

- Not a formalized analytical approach
- Works best with low number of studies/components
- Hard to detect more complex patterns (configurations of components)

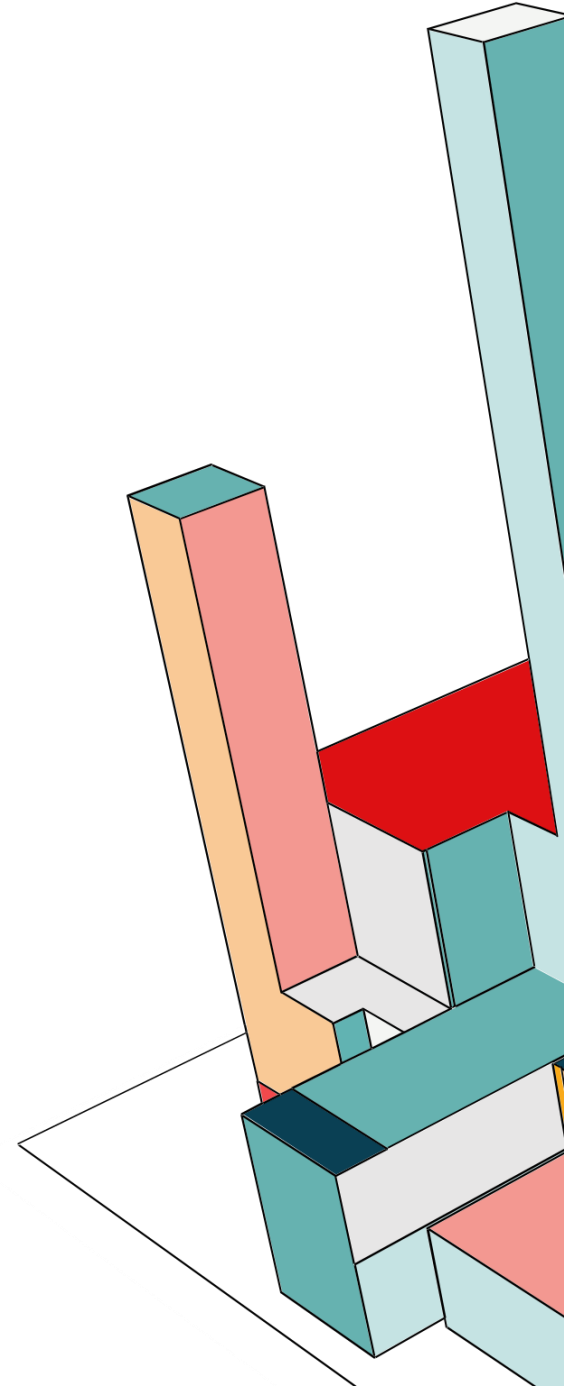


QUALITATIVE COMPARATIVE ANALYSIS

Logical Configurations

QUALITATIVE COMPARATIVE ANALYSIS

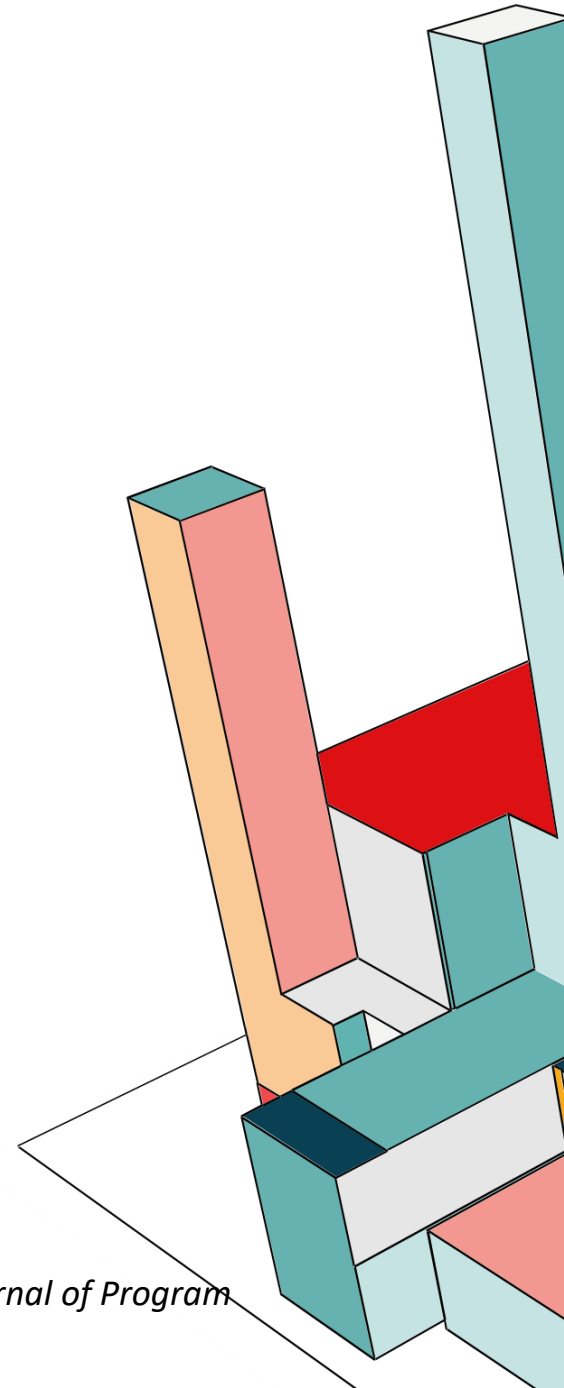
- Case-based approach that involves component coding and “configurational” analysis of components.
- Evidence matrix summarizes intervention components and impact.
- Configurations of core components are identified based on Boolean algebra (software-enhanced analysis).
- Provide insights into configurations of components that make a difference.



EXAMPLE: HOUSING FIRST

Study	Housing	Harm reduction	Supportive services	Client choice	Outcome
TSE(2000)	1	.67	1	1	1
GUL(2003)	1	1	1	1	.67
TSE(2003)	1	1	1	1	1
TSE(2004)	1	1	1	1	.67
GRE(2005)	1	1	1	.67	1
SIE(2006)	.67	.67	.67	.67	.67
STE(2007)	1	1	1	1	.67
TSA(2010)	1	.33	.33	.33	0
HAN(2011)	1	.33	.33	.33	1
APP(2012)	1	.33	1	.33	1
MON(2013)	1	.67	1	1	.67
PAL(2013)	1	.67	1	1	1
SOM(2015)	1	.67	1	1	1
STE(2015)	1	.67	1	1	.67
AUB(2016)	1	.67	1	1	.67
BRO(2016)	.67	.67	.67	.67	1.

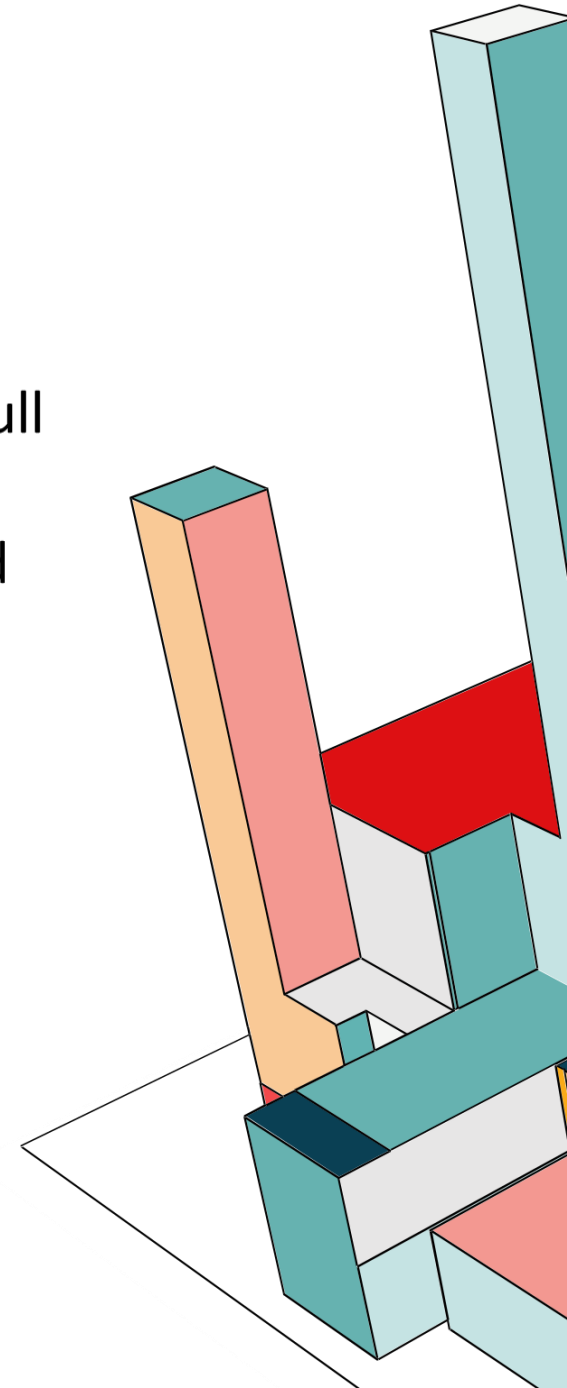
Source: Lemire, S., Christie, C. (2019). Meta-modeling Housing First: A theory-based synthesis approach. *Canadian Journal of Program Evaluation*, 33(3), 395-413.



EXAMPLE: HOUSING FIRST

1. Housing First programs with high fidelity to provision of **immediate housing, supported serviced, harm reduction, and client choice** (the full Housing First model).
2. Housing First programs with a strong fidelity to **immediate housing** and **supportive services** components combined with low fidelity to client choice and harm reduction promote housing tenure.

	Coverage	Unique coverage	Consistency
~CHOICE*SERVICES*~HARM*HOUSING	0.13	0.03	0.83
CHOICE*SERVICES*HARM*HOUSING	0.76	0.66	0.88
Solution Coverage: 0.79			
Solution consistency: 0.88			



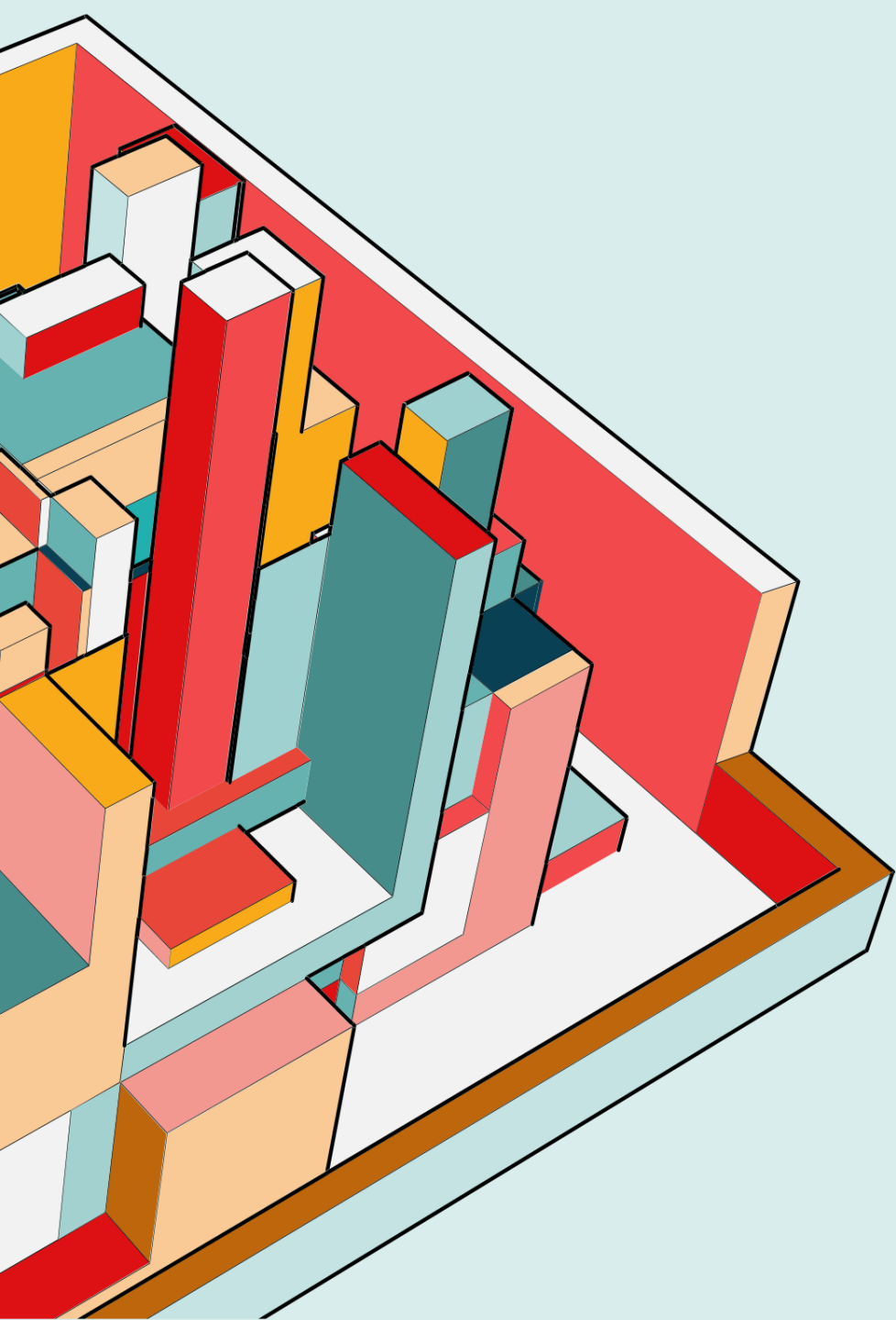
BENEFITS AND LIMITATIONS

Benefits:

- Trail of evidence
- Systematic & formalized analysis (Boolean algebra)
- Can accommodate more studies than framework analysis and works with fewer studies than meta-regression

Limitations:

- Few published examples
- Coding can be difficult based on information provided in primary studies
- Requires QCA software and technical skills

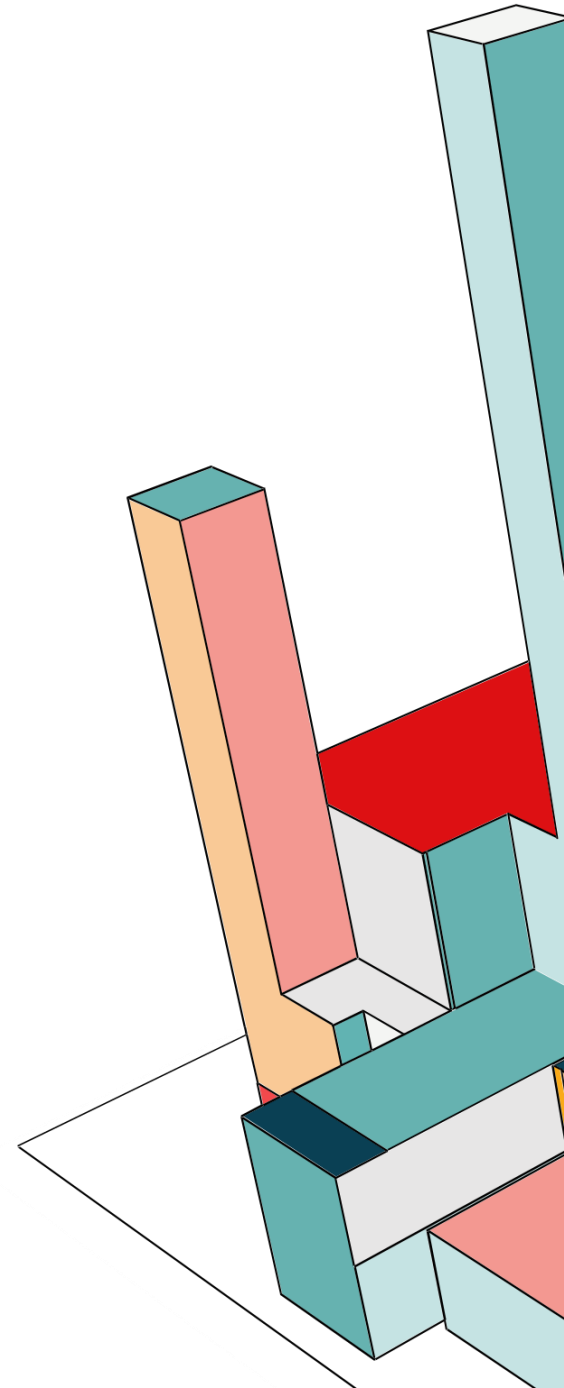


META-REGRESSION

Statistical Relationships

META-REGRESSION

- Statistical approach that involves component coding, followed by regression-based analysis.
- Core components are identified by examining regression coefficients for individual core components.
- Quantifies the relative influence of individual components on the outcome of interest, holding the influence of other components (and context factors) constant.

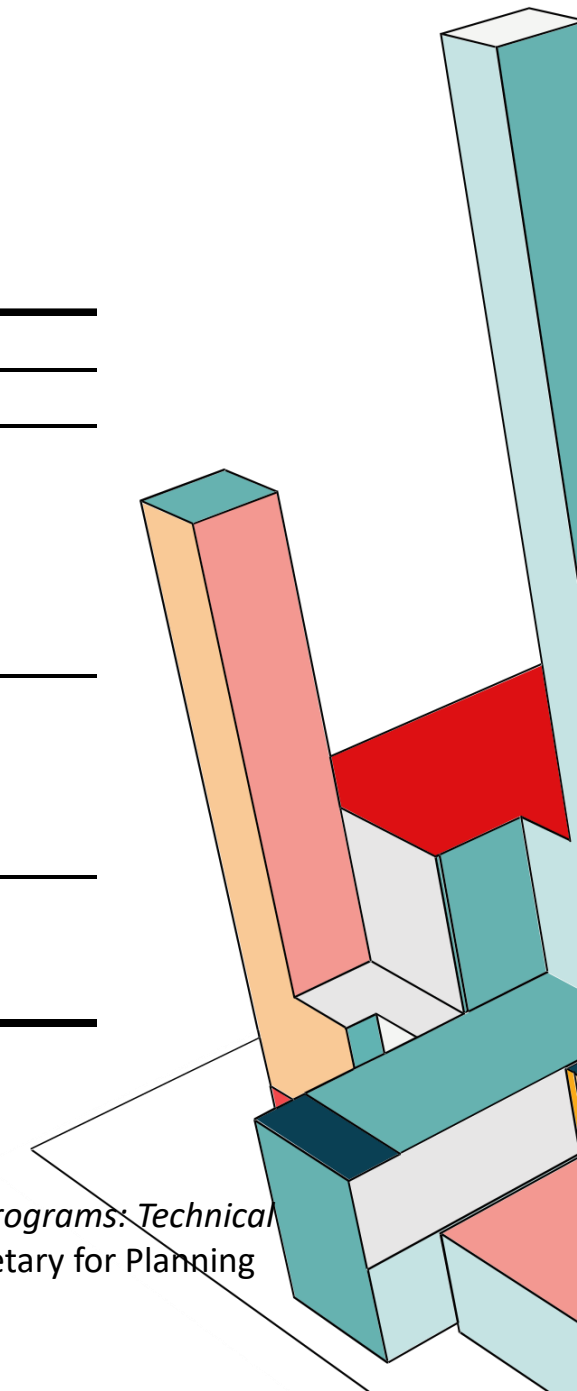


EXAMPLE: INTERVENTIONS TARGETING EXTERNALIZING BEHAVIORS AMONG YOUTH

	Coefficient	Standard Error
Intercept	0.12	(0.10)
Specific Core Components		
Delivery by specialist staff (vs. all others)	0.46	(0.12) ***
Lesson-plan program	0.13	(0.10)
Content element: conflict resolution skills	0.29	(0.12) **
Content element: any family/parenting element	-0.11	(0.19)
General Core Components		
Implementation: explicit or suggested problems	-0.25	(0.10) **
Program complexity score	-0.09	(0.06)
Provider training or supervision	0.07	(0.09)
Model Statistics		
I-squared	52.6%	
R-squared	37.0%	

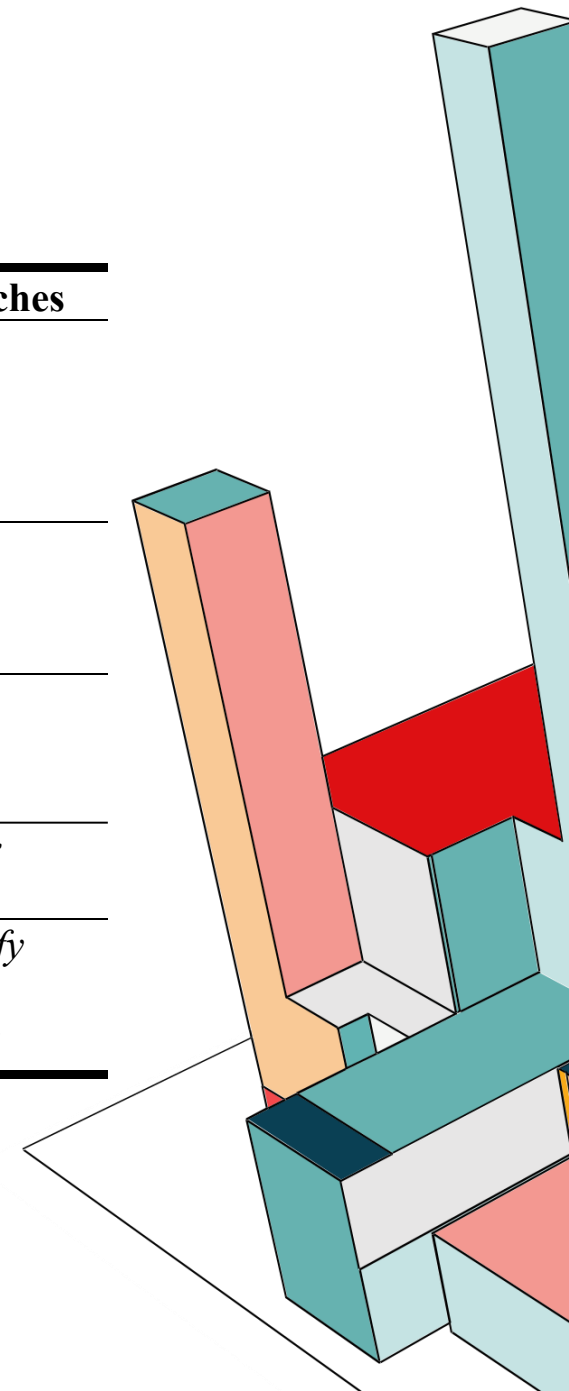
Notes: Statistical significance is indicated as follows: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Source: Wilson, S. J., Lipsey, M. W., Aloe, A., & Sahni, S. (2020). *Developing evidence-based practice guidelines for youth programs: Technical report on the core components of interventions that address externalizing behavior problems*. Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services



EXAMPLE: INTERVENTIONS TARGETING EXTERNALIZING BEHAVIORS AMONG YOUTH

Program Approaches	More Effective Program Approaches	Less Effective Program Approaches
Relational	<ul style="list-style-type: none"> • Deliver one-on-one using lesson plans • Deliver in a dedicated setting • Emphasize interpersonal skills content • Prioritize youth with behavior problems 	<ul style="list-style-type: none"> • Service learning content
Skill-Building	<ul style="list-style-type: none"> • Use specialist staff • Use lesson plans • Emphasize conflict resolution skills content 	<ul style="list-style-type: none"> • Family or parenting content
Academic	<ul style="list-style-type: none"> • Focus on school structure • Emphasize appropriate classroom behavior content 	<ul style="list-style-type: none"> • General support and trusting relationship content
Behavior Management	<i>Insufficient evidence to identify components that contribute to greater or lesser program effectiveness</i>	
Implementation Approaches	<ul style="list-style-type: none"> • Implementation quality • Organizational capacity • Provider training and supervision 	<i>Insufficient evidence to identify components that contribute lesser program effectiveness</i>



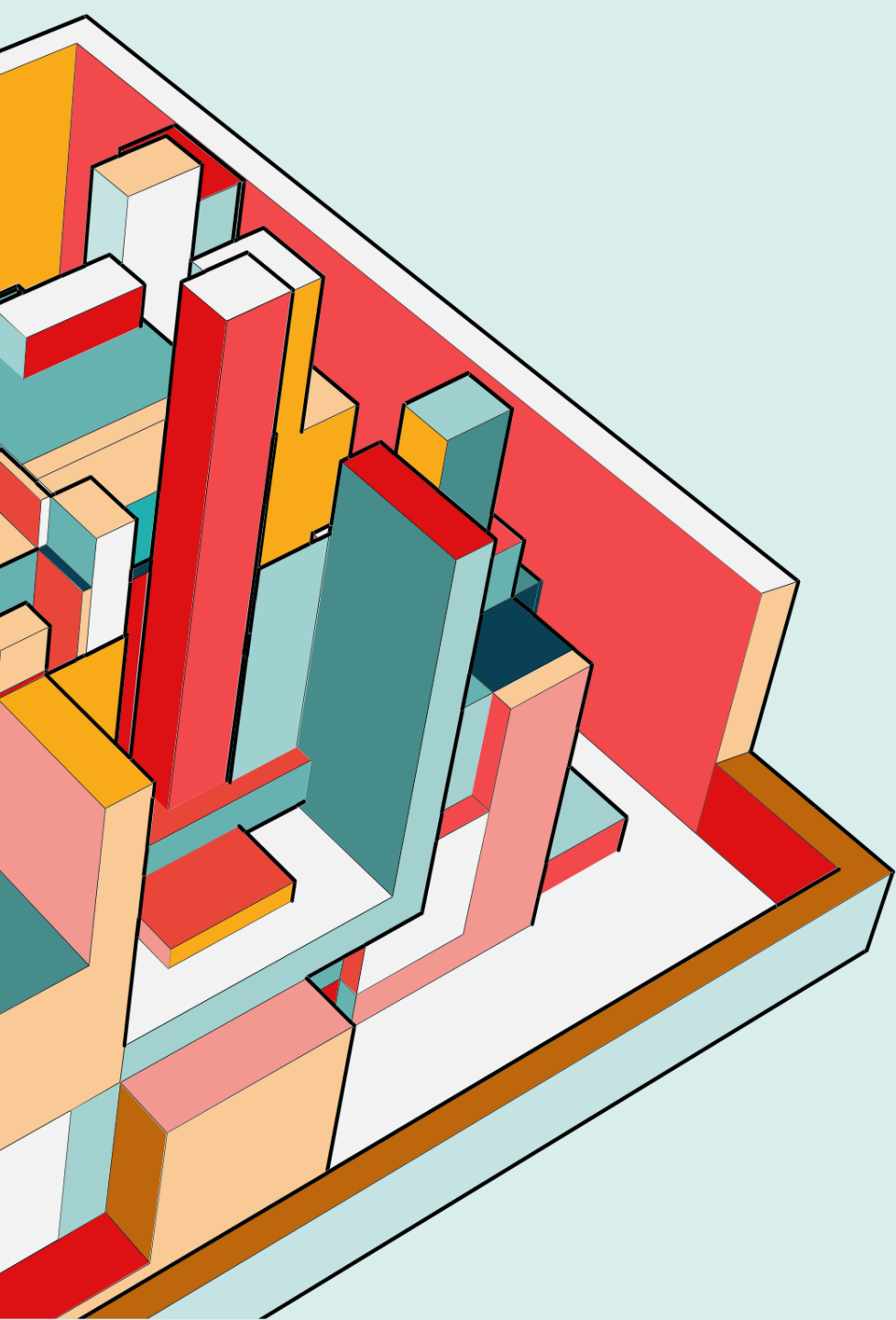
BENEFITS AND LIMITATIONS

Benefits:

- Quantifies the relative influence of individual intervention components
- Well-established and widely applied statistical approach
- Can accommodate a high number of components and studies

Limitations:

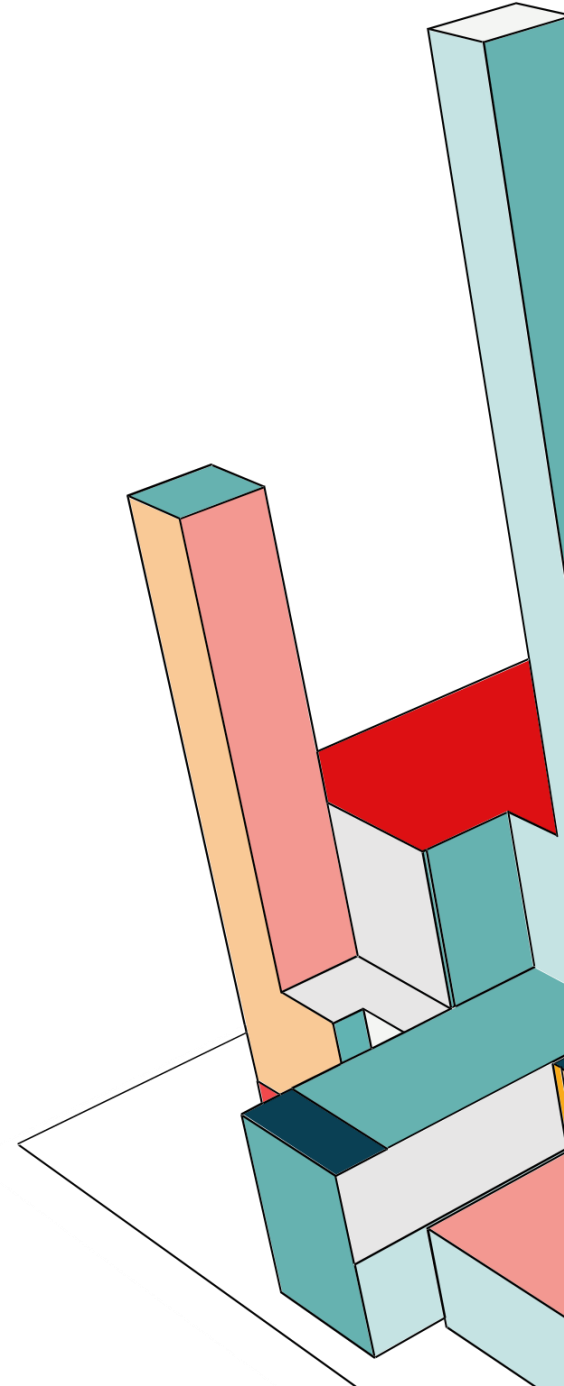
- Requires a relatively high number of group design studies with adequate information
- Does not provide information on configuration of components
- Requires statistical skills and software



FUTURE DIRECTIONS

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- Improve Reporting on Interventions in Primary Studies
- Use Multi-Phased Designs to Generate Stronger Evidence
- Broaden Applications of Core Components Analysis to Support Transferability of Findings



THANK YOU

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