

Implementing Advanced Tiers with Fidelity: Effects for Students With and Without Disabilities

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Agenda

- Introductions
- Discipline & SWPBIS
- Implementation Fidelity
- Advanced Tiers
- Purpose
- Method
- Results
- Discussion



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Discipline & SWPBIS

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Disciplinary Exclusions

- Student removed from instruction due to behavior
 - Continuum of discipline
 - Lost instructional time (Vincent et al., 2012)
- Associated with poor student outcomes (Jabbari & Johnson, 2020; Noltemeyer et al., 2015)
 - Low achievement, dropout
 - Justice system contact (Novak, 2018; Skiba et al., 2014)

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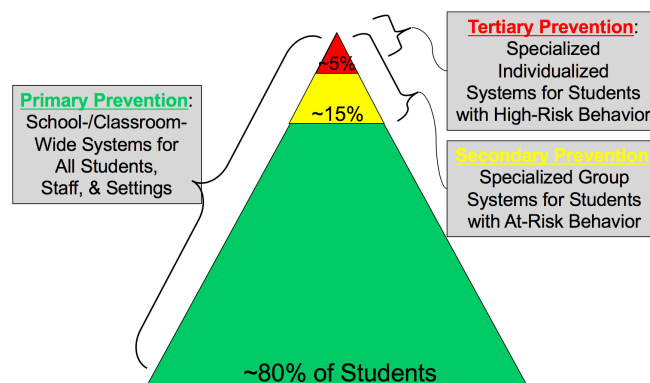
Discipline for SWD

- Disproportionality
 - 2x days of instruction lost for secondary SWD (Losen & Martinez, 2020)
 - More discipline encounters
 - More severe punishments (Blake et al., 2020)
- Lost access to supports (Losen & Martinez, 2020)

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SWPBIS

- Multitiered *framework* for preventing and managing behavior problems (Sugai & Horner, 2020)



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SWPBIS & Discipline

- Recommended framework for addressing discipline
 - American Academy of Pediatrics (2013)
 - Decrease reactive discipline procedures
 - U.S. Department of Education (2022)
 - Decrease discriminatory discipline

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SWPBIS & Discipline

- Does using SWPBIS affect discipline outcomes?



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SWPBIS & Discipline

- QED using one-to-one propensity score matching (Rosenbaum, 1989)
 - Replicated methods from Gage et al. (2018) and Gage et al. (2019)
 - What Works Clearinghouse QED standards (2014)
- 544 schools implementing Tier 1 with fidelity matched to 544 schools not implementing SWPBIS
 - Treatment effect estimations
 - Zero-inflated Poisson (ZIP) regression
 - Odds ratios
 - Standardized mean differences (g)

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SWPBIS & Discipline

School-level characteristic	All possible comparison schools (n = 6,754)		PSM comparison schools (n = 544)		SWPBIS schools (n = 544)		Equivalence (g)
	M	SD	M	SD	M	SD	
Total enrollment	706.4	529.8	666.7	528.7	728.3	445.2	-0.13
Free/reduced lunch (%)	60.6	28.4	70.4	26.5	68.1	27.3	0.09
White (%)	26.1	24.5	17.3	21.1	18.6	20.6	-0.06
Black (%)	5.5	9.4	8.4	14.1	6.3	8.5	0.18
Hispanic (%)	53.5	28.9	57.8	28.0	57.0	30.2	0.03
Students with disabilities (%)	10.5	5.1	10.2	4.8	10.5	4.2	-0.07
Limited English Proficiency (%)	24.1	20.0	30.5	21.2	29.3	20.5	0.06
Meet or exceed ELA standards in 2015-16 (%)	47.5	19.8	41.0	19.3	42.6	19.6	-0.08
Meet or exceed Math standards in 2015-16 (%)	36.4	19.9	32.5	19.2	33.4	20.7	-0.05
FTE Teachers	29.4	21.4	27.2	20.6	29.8	18.1	-0.13
Title I eligible	70.0%		83.8%		81.1%		0.11
School level							
Primary	61.5%		74.8%		74.4%		0.01
Middle	15.2%		18.0%		16.7%		0.13
High	13.5%		6.1%		8.3%		-0.03
Other configuration	2.4%		1.1%		0.6%		0.09
Urbanicity							
City	38.2%		54.2%		46.9%		0.15
Suburb	37.9%		31.3%		37.5%		-0.13
Town	6.7%		10.8%		9.9%		0.03
Rural	9.7%		3.7%		5.7%		-0.09

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SWPBIS & Discipline

- Results

		Estimate	OR	g	SE	p
All students	1 OSS	-0.42	0.66	-0.23	0.20	< .05
	All OSS	-0.45	0.63	-0.25	0.22	< .05
	Days Missed	-0.43	0.65	-0.24	0.22	< .05
Subgroups	Hispanic 1 OSS	-0.40	0.67	-0.22	0.18	< .05
	Black 2+ OSS	-0.33	0.72	-0.18	0.16	< .05
	SWD referred to alt. setting	-1.18	0.31	-0.65	0.58	< .05

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SWPBIS & Discipline

- Large body of evidence of reductions in variety of discipline outcomes in experimental and quasi-experimental studies (Lee & Gage, 2020)
- Majority focused on Tier 1 implementation
 - CA (Gage, Grasley-Boy, Lombardo, & Anderson, 2019; Grasley-Boy et al., 2019)
 - FL (Gage, Grasley-Boy, George, et al., 2019)
 - GA (Gage, Lee, et al., 2018)
 - MD (Pas et al., 2018)

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Implementation Fidelity

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What is Fidelity of Implementation?

- Implementation:
 - A specified set of activities designed to put into practice an activity or program of known dimensions (NIRN)
- Fidelity:
 - A. The quality or state of being faithful,
 - B. Accuracy in details (Merriam-Webster)
- Fidelity of Implementation:
 - “The degree to which...programs [interventions] are implemented by the program developers” (Dusenberry et al., 2003)
 - “Degree to which a set of procedures or strategies are implemented in a manner consistent with the research/evidence that supports their validation and use.” (Childs)
- Synonyms:
 - Treatment integrity

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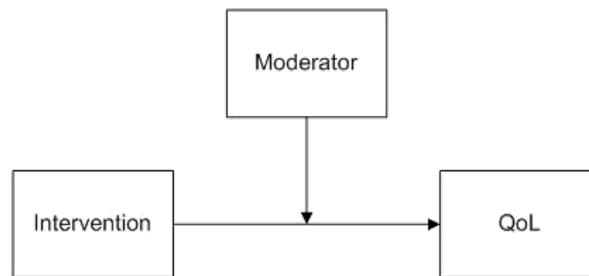
Why is Fidelity of Implementation Important?

- Fidelity data is necessary to make valid conclusions about outcomes.
- Implementation acts as a potential moderator of the relationship between interventions [programs] and their intended outcomes
 - A practical example: an antibiotic

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Why is Fidelity of Implementation Important?

- Research Method/Statistical Reasoning
 - Implementation may impact (moderate) the relationship between two variable
 - Moderator: “a moderator is a qualitative or quantitative variable that affects the direction and/or strength of the relation between an independent and predictor variable.” (Baron & Kenny, 1986)



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Why is Fidelity of Implementation Important?

- Practical Reasons:
 - Collection of Fidelity Data Enables You to
 - Detect and prevent poor instructional/intervention fidelity
 - Establish functional relationships between instruction/intervention and outcomes
 - Target fidelity as a potential reason for unintended outcomes



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Advanced Tiers

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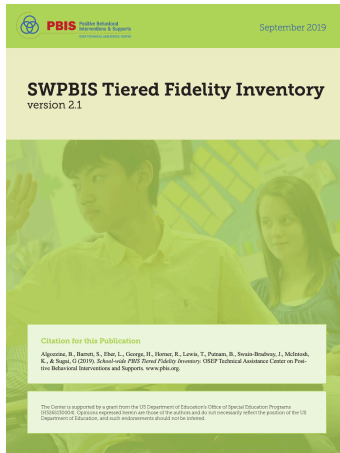
Advanced Tiers

- Much research on interventions within these tiers
- Group studies with advanced tier implementation
 - Algozzine et al. (2012)
 - Academic and behavioral MTSS
 - Significant reductions in ODRs in Year 1
 - Gage et al. (2019)
 - CA schools recognized by state PBIS coalition
 - Gold (Tier 1 + 2 or 3) vs. Platinum (all 3 tiers)
 - Highest implementers had fewer disciplinary exclusions

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Fidelity of Advanced Tiers

- Tiered Fidelity Inventory (TFI; Algozzine et al., 2019)



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Purpose

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Purpose

- Determine effects of implementing additional tiers *with fidelity*
- Research questions
 - Is there a statistically significant difference in the use of disciplinary exclusions in schools implementing only Tier 1 with fidelity compared with schools implementing Tier 1 and Tier 2, Tier 1 and Tier 3, or all three tiers with fidelity?
 - Do these differences replicate for students with disabilities?

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Method

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Sample

- CA PBIS coalition
 - 11 Regional Technical Assistance Centers (TAC)
 - Training, coaching, recognition

- CA schools reporting TFI for 2015-16 ($n = 1,384$)
 - 350 Tier 1 only
 - 113 Tiers 1 & 2
 - 15 Tiers 1 & 3
 - 80 all three tiers

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Table 1. Demographic Characteristics of Schools.

School-level characteristic	All schools ($n = 558$)		Tier 1 only ($n = 350$)		Tiers 1 and 2 ($n = 113$)		Tiers 1 and 3 ($n = 15$)		Tiers 1, 2, and 3 ($n = 80$)	
	M	SD	M	SD	M	SD	M	SD	M	SD
Free or reduced-price lunch (%)	67.6	27.6	68.8	26.2	67.0	27.8	55.7	34.1	65.1	31.3
White (%)	18.9	20.6	18.6	20.2	20.7	21.3	21.9	21.6	17.3	21.6
School level										
Primary	74.4%		75.1%		78.8%		73.3%		65.0%	
Middle	16.7%		16.0%		14.2%		20.0%		22.5%	
High	7.7%		7.7%		6.2%		6.7%		10.0%	
Urbanicity										
City	46.1%		43.7%		55.8%		46.7%		42.5%	
Suburb	37.6%		43.1%		26.5%		26.7%		31.3%	
Town	10.4%		7.7%		11.5%		13.3%		20.0%	
Rural	5.9%		5.4%		6.2%		13.3%		6.3%	
Discipline outcomes										
ISS	1.25	2.79	1.32	3.05	1.26	2.21	1.42	2.29	0.90	2.39
One OSS	2.64	2.80	2.73	2.94	2.39	2.27	3.13	3.71	2.49	2.66
Two or more OSS	1.45	2.01	1.54	2.20	1.33	1.65	1.58	1.99	1.19	1.54
OSS incidents	5.50	8.84	6.12	10.22	4.44	5.52	3.97	4.06	4.57	6.22
All OSS	4.09	4.53	4.27	4.87	3.72	3.70	4.72	4.61	3.68	4.02
Days missed due to OSS	11.53	18.19	12.40	20.19	9.87	14.10	9.80	10.74	10.40	14.84
Expulsion	0.18	0.85	0.23	1.04	0.12	0.37	0.07	0.22	0.06	0.18
Referral to alt. setting	0.03	0.15	0.04	0.14	0.03	0.15	0.10	0.38	0.02	0.09
Law enforcement referral	0.28	0.79	0.37	0.93	0.14	0.48	0.24	0.74	0.10	0.36
School-related arrest	0.05	0.33	0.07	0.40	0.04	0.20	0.07	0.28	0.01	0.09

Note. School-level percentages do not all sum to 100% due to other configurations (e.g., K-12). ISS = in-school suspension; OSS = out-of-school suspension.

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Students with Disabilities

Descriptive Statistics for Schools

School-level Characteristics	All schools (n=558)		Tier 1 only (n=350)		Tiers 1 & 2 (n=113)		Tiers 1 & 3 (n=15)		Tiers 1, 2, & 3 (n=80)	
	M	SD	M	SD	M	SD	M	SD	M	SD
Discipline Outcomes										
ISS	2.4	4.73	2.61	4.90	2.07	4.17	0.54	1.20	2.26	5.06
One OSS	5.76	6.45	5.89	6.52	5.27	6.53	9.06	9.30	5.22	5.17
One or more OSS	39.82	42.61	41.3	46.0	36.1	37.0	44.8	42.1	37.5	33.0
Two or more OSS	4.53	5.8	4.69	6.23	4.42	5.15	4.13	5.72	4.06	4.63
OSS incidents	14.11	19.69	15.5	22.5	11.3	13.0	11.5	11.4	12.0	13.9
Days missed due to OSS	26.21	39.7	28.9	45.1	19.3	24.3	23.8	34.6	24.2	30.0
Expulsion	0.48	2.59	0.63	3.06	0.38	1.89	0.09	0.33	0.07	0.31
Referral to alt. setting	0.08	0.43	0.07	0.43	0.10	0.46	0.18	0.66	0.08	0.32
Law enforcement referral	0.7	2.17	0.94	2.55	0.23	1.00	0.22	0.83	0.34	1.40
School-related arrest	0.08	0.59	0.10	0.65	0.04	0.20	0.09	0.33	0.09	0.74

Note. School-level percentages do not all sum to 100% due to other configurations (e.g., K-12 schools). FRPL = free or reduced lunch; SWD = students with disabilities; ISS = in-school suspension; OSS = out-of-school suspension.

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Measures

- SWPBIS Fidelity
 - TFI
- Demographics
 - National Center for Education Statistics
- Discipline outcomes
 - U.S. Department of Education survey



Tier 1: Universal SWPBIS Features

NOTE: This section may be completed individually or with other tiers as part of the full Tiered Fidelity Inventory

Feature	Possible Data Sources	Scoring Criteria
Subscale: Teams		
11 Team Composition: Tier 1 team includes a Tier 1 systems coordinator, a school administrator, a family member, and individuals able to provide (a) applied behavioral expertise, (b) coaching expertise, (c) knowledge of student academic and behavior patterns, (d) knowledge about the operations of the school across grade levels and programs, and for high schools, (e) student representation.	<ul style="list-style-type: none"> • School organizational chart • Tier 1 team meeting minutes 	0 = Tier 1 team does not exist or does not include coordinator, school administrator, or individuals with applied behavioral expertise 1 = Tier 1 team exists, but does not include all identified roles or attendance of these members is below 80% 2 = Tier 1 team exists with coordinator, administrator, and all identified roles represented, AND attendance of all roles is at or above 80%

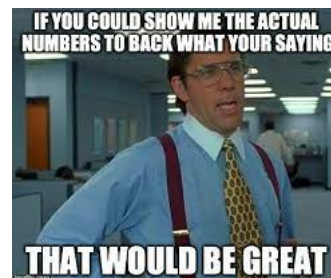
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Data Analysis

- Variable transformation
- Multilevel modeling (MLM)
 - Intraclass correlations (range 26%-41%)
 - MLM model building approach
 - Only estimated outcomes where random intercept or random slope fit better than baseline
 - Rate of students with one OSS
 - Rate of OSS incidents
 - Rate of students referred to law enforcement

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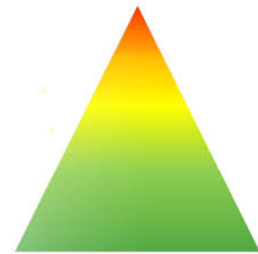
Results



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Results - Study 1

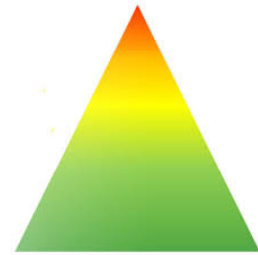
- Schools implementing all three tiers with fidelity had statistically significantly lower rates of:
 - Students receiving one OSS ($g = -0.39$)
 - OSS incidents ($g = -0.38$)
 - Students referred to law enforcement ($g = -0.33$)



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Results - Study 2

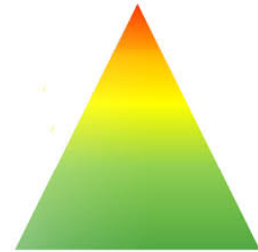
- Schools implementing all three tiers with fidelity had statistically significantly lower rates of students with disabilities receiving:
 - One OSS ($g = -0.29$)
 - 1+ OSS ($g = -0.68$)
 - OSS incidents ($g = -0.27$)
 - Referrals to law enforcement ($g = -0.42$)
 - Days missed due to OSS ($g = -0.24$)



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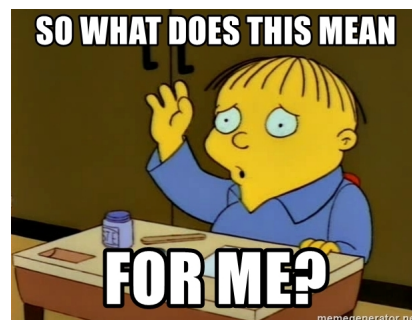
Results - Study 2

- Schools implementing **two tiers with fidelity** had statistically significantly lower rates of **students with disabilities receiving:**
 - ISS ($g = -0.63$) - Tiers 1+3
 - Referrals to law enforcement ($g = -0.24$) - Tiers 1+2



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Discussion



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Discussion

- Similar results to prior Tier 1 studies (e.g., Gage et al., 2019; Grasley-Boy et al., 2019)
- Results replicate for students with disabilities
- Lower rates of law enforcement referral not previously noted

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Discussion

- Initial evidence of additive effects of advanced tiers for all students and students with disabilities
 - Keep going!
 - Impact of students remaining in class

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Limitations

- Could not control for years implementing
- Tier 2 & 3 practices unknown
- Implementing schools missed?
- No measures of reliability/accuracy

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Future Research

- Increase understanding of specific Tier 2 & 3 practices being implemented
- Evaluate additive effects for other student subgroups
- Replications within other states



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Questions?

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