



JOHNS HOPKINS
BLOOMBERG
SCHOOL of PUBLIC HEALTH

Protecting Health, Saving Lives – *Millions at a Time*



Using Positive Behavioral Interventions and Supports (PBIS) to Enhance the School Environment and Reduce Children's Disruptive Behavior Problems

Catherine Bradshaw, Ph.D., M.Ed.

Johns Hopkins Center for the Prevention of Youth Violence

Johns Hopkins Bloomberg School of Public Health

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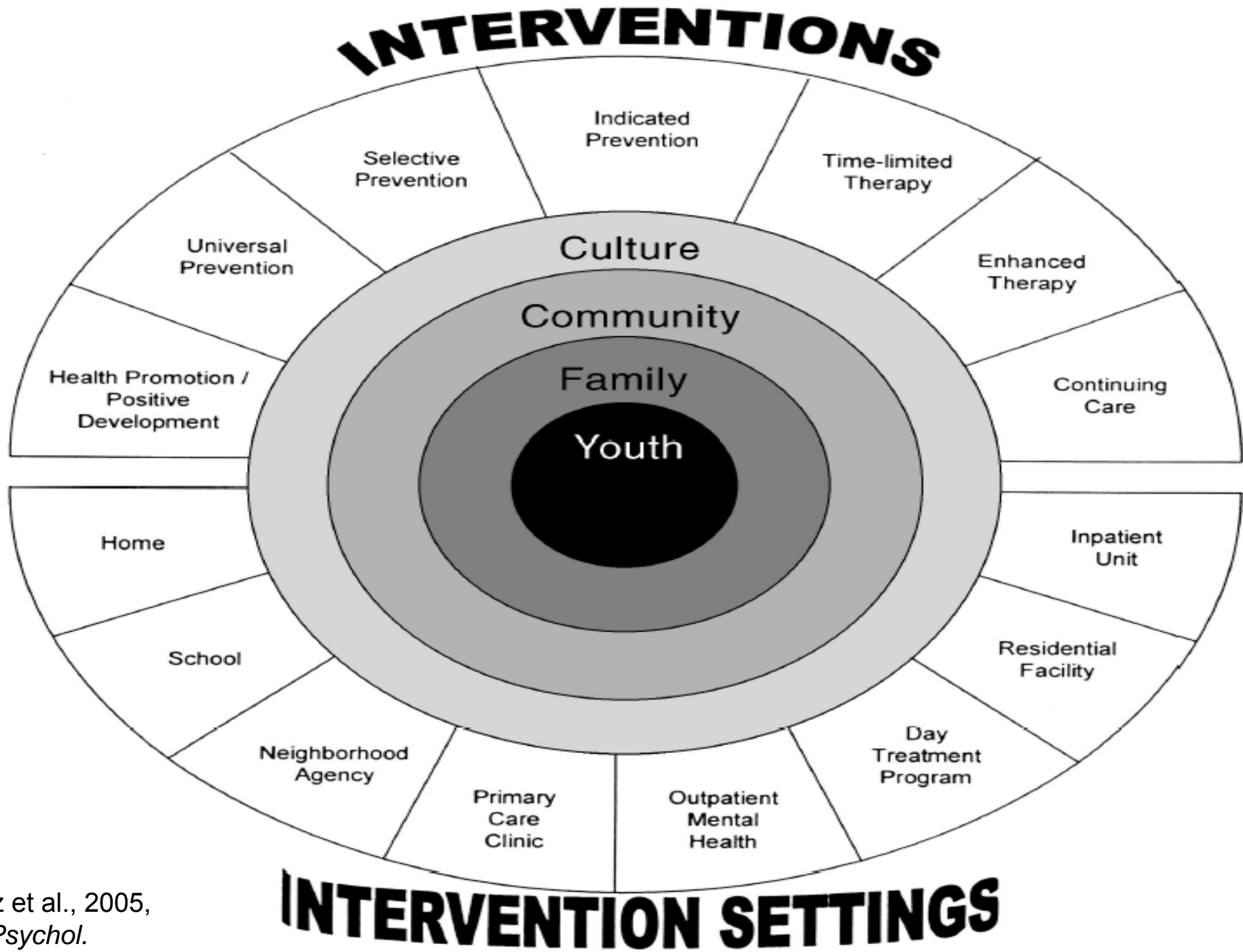
NIMH (1R01MH67948-1A: P. Leaf) & CDC (1U49CE 000728 and K01CE001333-01)

Prevalence & Significance of Children's Aggressive and Disruptive Behavior Problems

- DSM-IV diagnoses (lifetime prevalence)
 - Conduct Disorder: 9.5%
 - Oppositional Defiant Disorder: 10.2%
 - Predict negative outcomes across lifespan
 - School failure and dropout
 - Mental illness
 - Criminal involvement
 - Childhood onset important
 - Among adults with disorders, 75% report that the symptoms began in childhood or adolescence
 - Early onset associated with poorer prognosis
-

(NCS-R; Kessler et al., 2005; Loeber & Farrington, 2000; Nock et al., 2006, 2007; Weisz, 1998)

An Integrative Model for Linking Prevention and Treatment Research



Weisz et al., 2005,
Am. Psychol.

Why prevention through schools?

- Major influence on children's social and cognitive development
- Experiencing behavior problems first-hand
 - Legislative pressure to provide safe schools
- Opportunity for prevention and early intervention
- Schools as a system of care
 - Referral *vs.* prevention, assessment, & treatment
- Challenges to both educators & clinicians
 - Exclusion *vs.* support for behavior problems
 - Additional support & training needed

What works in school-based prevention of aggressive and disruptive behavior problems?

- Teach social-emotional skills directly in real context
- Foster respectful, supportive relations among students, school staff, & parents
- Support & reinforce positive academic & social behavior through comprehensive systems
- Invest in multiyear, multi-component programs
- Combine classroom, school- & community-wide efforts
- Universal prevention efforts

(Gottfredson et al., 2004; Greenberg et al., 2003; Rones & Hoagwood, 2000)

PBIS Model: Whole-school Prevention

- Application of behavioral, social learning, & organizational behavioral principles
 - Clear behavioral expectations
 - Procedures for managing disruptions
 - Positive rewards
- Public health approach (universal / selective / indicated)
 - Requires a shift from punitive to preventive
- Focus on changing adult behavior
 - Team-based & data-based process
 - Emphasizes staff buy-in
- Can be implemented in any school level, type, or setting
 - Non-curricular model – flexible to fit school context
- Coaching to ensure high fidelity implementation

(Horner & Sugai, 2001; Lewis & Sugai, 1999; Sugai & Horner, 2006)

Overview

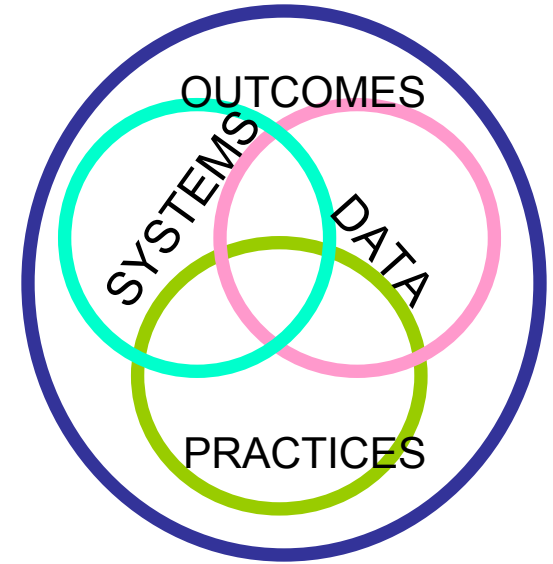


- Positive Behavioral Interventions & Supports (PBIS) model
- PBIS organizational structure in Maryland
- Research on PBIS in Maryland
- Integration of PBIS and mental health services



PBIS aims to prevent behavior problems by:

- Increasing positive behavior in all students
 - Expectations and rewards system





MacArthur Middle School

Eagle Code

Be Responsible

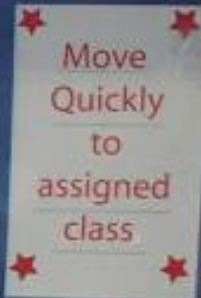
Respect Yourself

Respect Others

FOREMAN STUDENTS AND STAFF STRIVE TO BE:



PRODUCTIVE
APPROPRIATE
RESPECTFUL
RESPONSIBLE



MacArthur Middle School's Eagle Code

Expectations	Classroom	Hallway	Cafeteria	Bus
Be Responsible	<ul style="list-style-type: none"> *Be on time *Be prepared *Complete assignments 	<ul style="list-style-type: none"> *Walk on the right *Inside voices *Keep personal belongings in locker 	<ul style="list-style-type: none"> *Sit at assigned table *Throw away trash 	<ul style="list-style-type: none"> *Follow bus rules *Stay in seat
Respect Yourself	<ul style="list-style-type: none"> *Do your best *Be honest *Use appropriate language 	<ul style="list-style-type: none"> *Report directly to class *Use appropriate language 	<ul style="list-style-type: none"> *Recycle *Use appropriate language 	<ul style="list-style-type: none"> *Be at the stop on time *Use appropriate language
Respect Others	<ul style="list-style-type: none"> *Talk in turn *Keep hands, feet, and objects to yourself *Follow directions 	<ul style="list-style-type: none"> *Keep hands, feet, and objects to yourself *Follow directions 	<ul style="list-style-type: none"> *Eat your own food *Keep hands, feet, and objects to yourself *Follow directions 	<ul style="list-style-type: none"> *Follow the driver's directions *Keep hands, feet, and objects to yourself

Posting of School-Wide Expectations

Senn in the HALLWAY...

Be Respectful

- Walk.
- Use appropriate language (No profanity).
- 2 minute grace period.
- Speak in a conversational tone.

Be Academically Engaged

- Be in class when bell rings.
- Give yourself time to get to class.
- End conversations in time.

Be Responsible

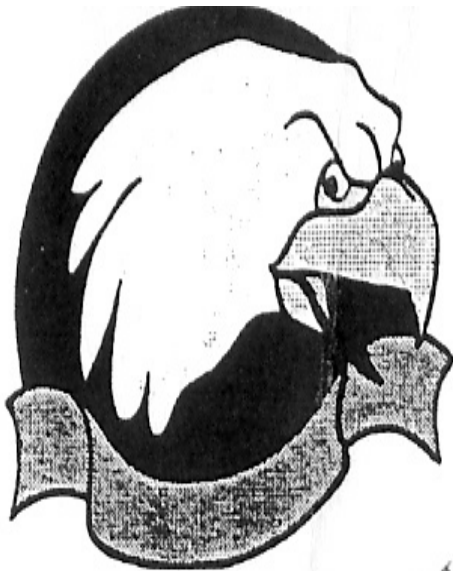
- Be aware of the rules.
- Keep hands, feet and objects to self.

Be Caring

- Offer assistance
- Give a friendly word of encouragement

DO THE RIGHT THING

Eagle Tickets



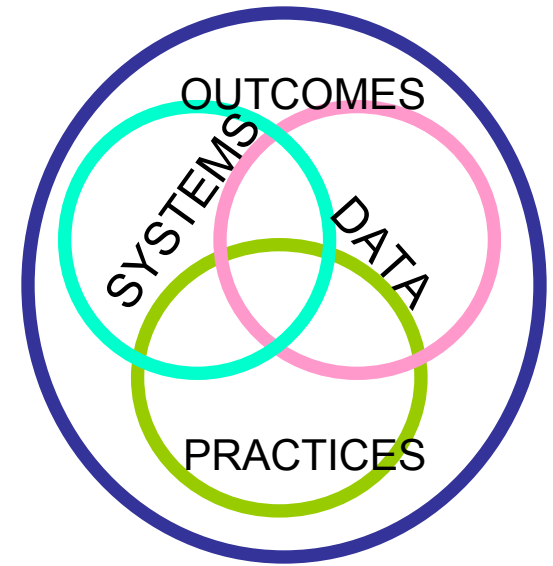
MacARTHUR MIDDLE SCHOOL
EAGLE TICKET
6TH GRADE

Responsibility.....Respect Yourself.....Respect Others

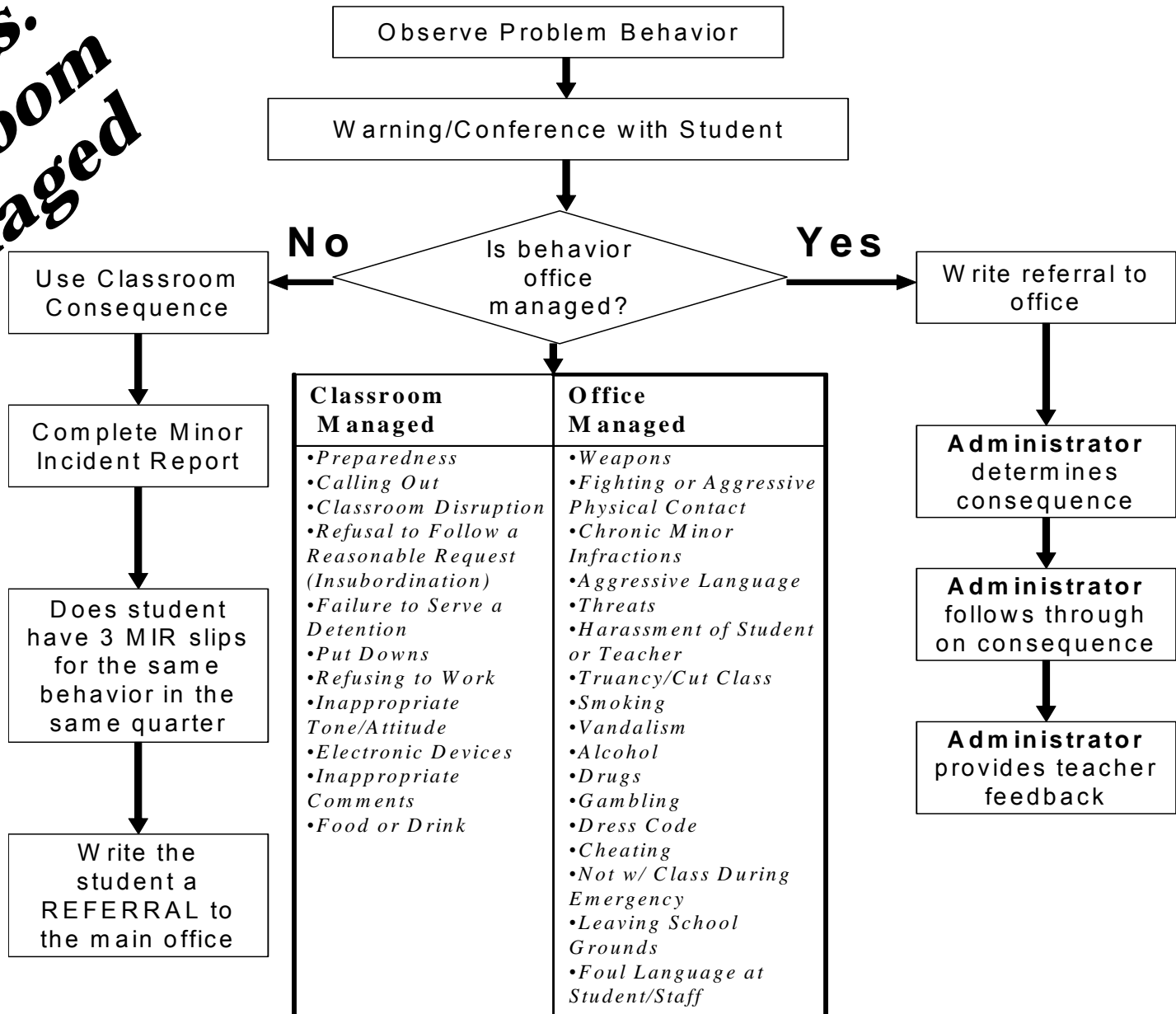
Student Jessica Herpin Teacher Mrs. Friend

PBIS aims to prevent behavior problems by:

- Increasing positive behavior in all students
 - Expectations and rewards system
- Promoting consistency in adults
 - Office vs. classroom managed



Office vs. Classroom Managed

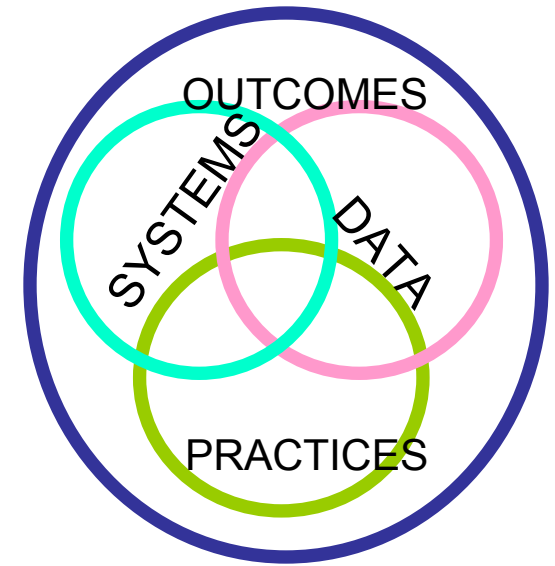


SIDE BAR ON MINOR INCIDENT REPORTS

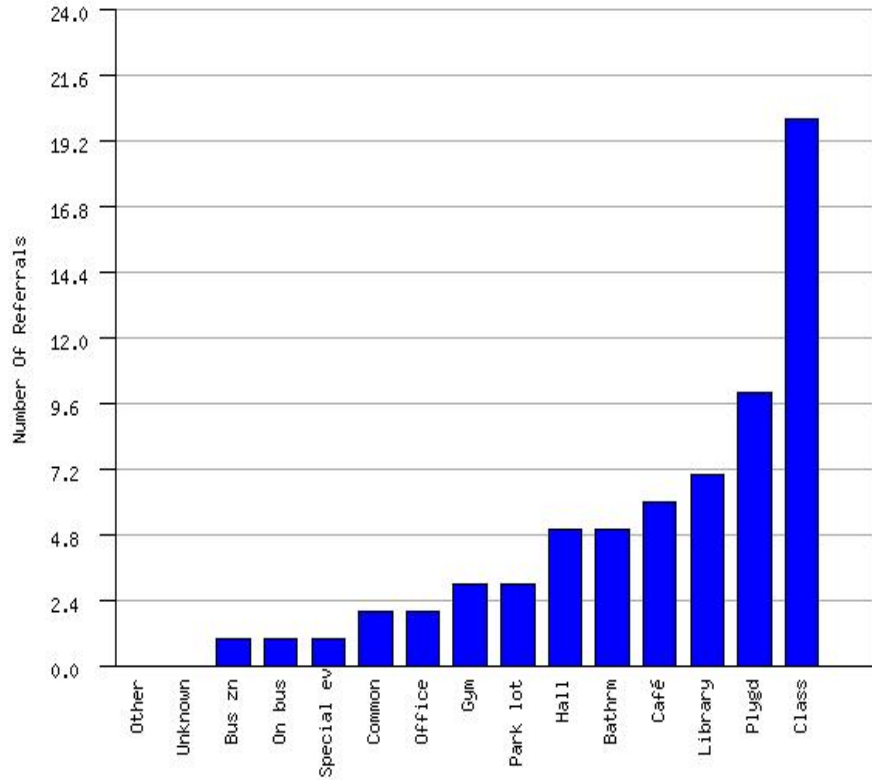
- Issue slip when student does not respond to pre-correction, re-direction, or verbal warning
- Once written, file a copy with administrator
- Take concrete action to correct behavior (i.e. assign detention, complete behavior reflection writing, seat change)

PBIS aims to prevent behavior problems by:

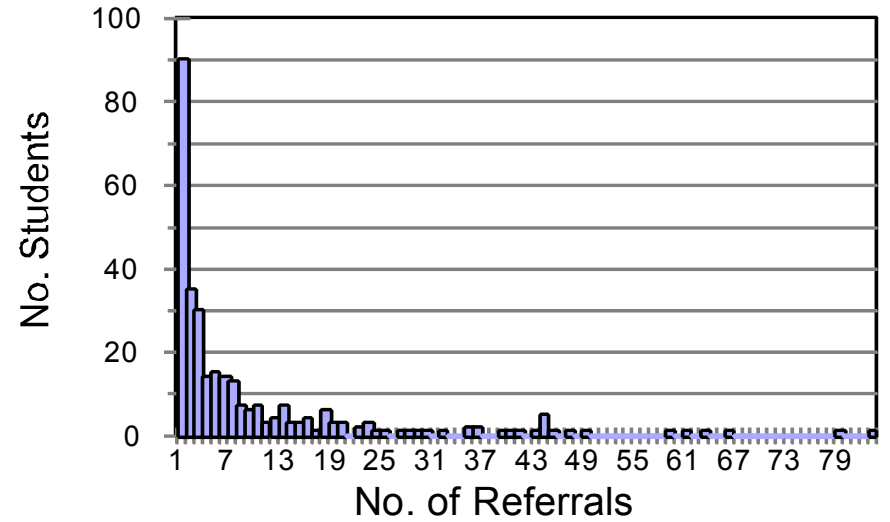
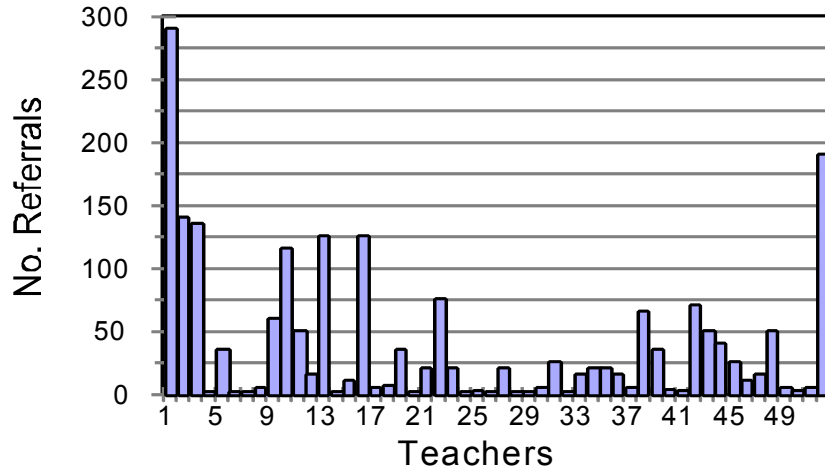
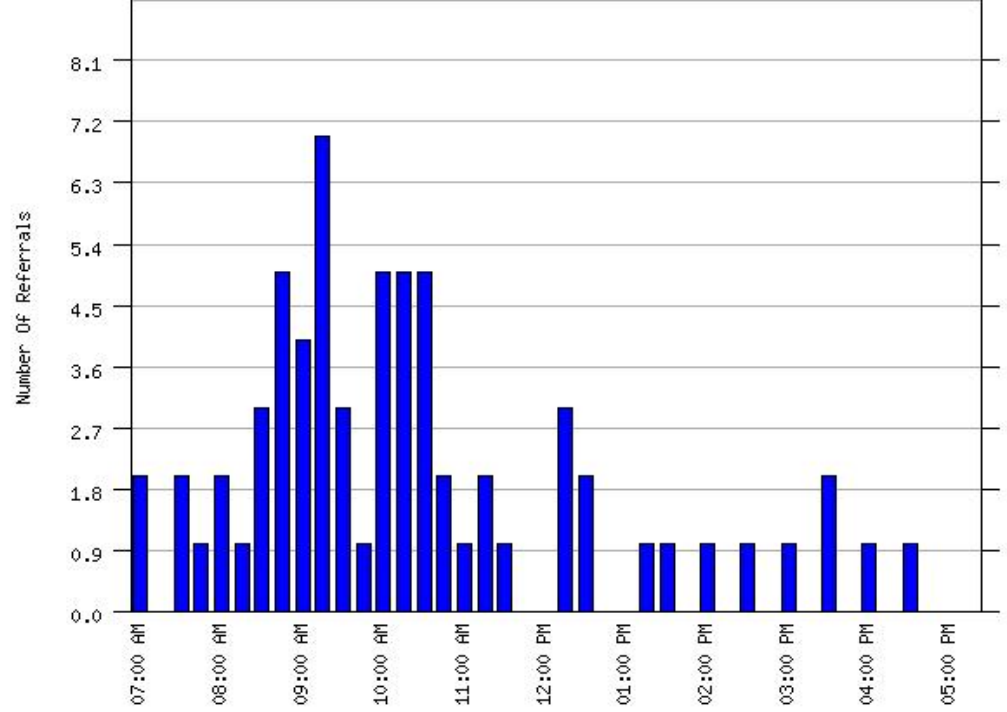
- Increasing positive behavior in all students
 - Expectations and rewards system
- Promoting consistency in adults
 - Office vs. classroom managed
- Making data-based decisions
 - SWIS to collect office referrals



Referrals by Location

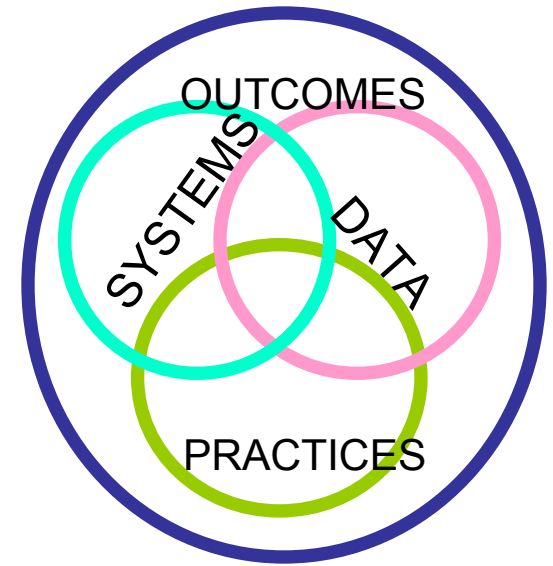


Referrals by Time

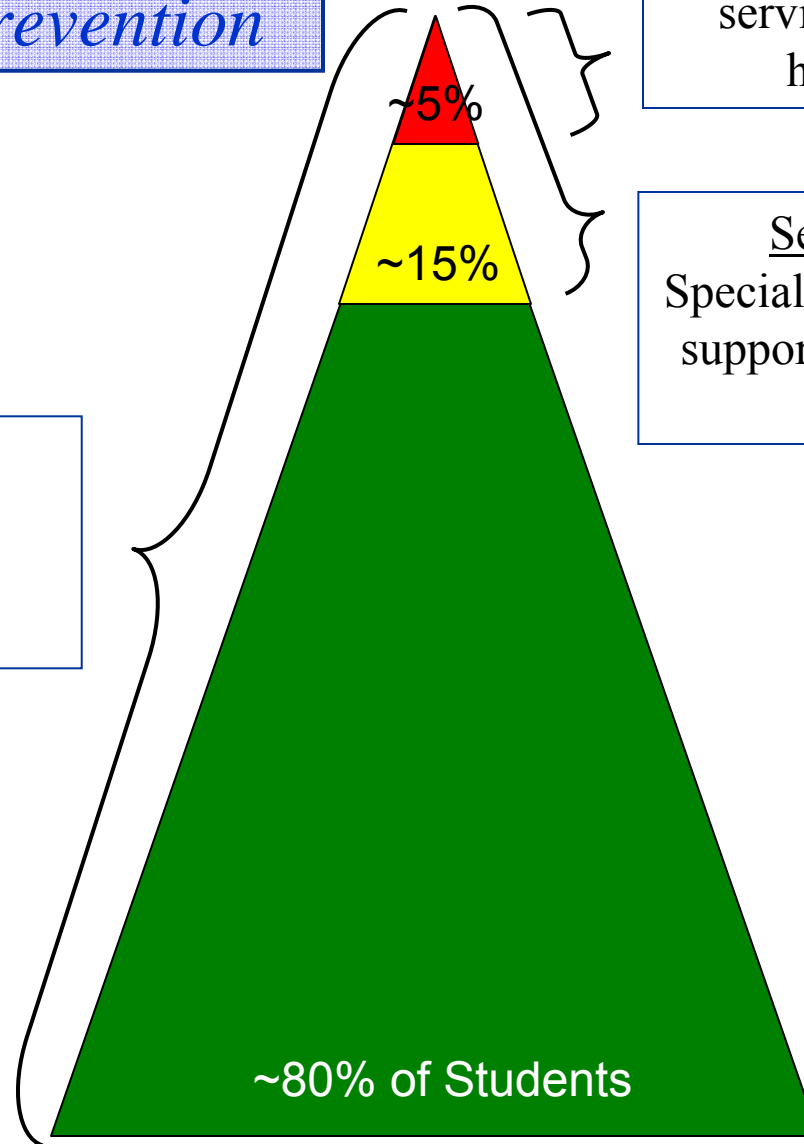


PBIS aims to prevent behavior problems by:

- Increasing positive behavior in all students
 - Expectations and rewards system
- Promoting consistency in adults
 - Office vs. classroom managed
- Making data-based decisions
 - SWIS to collect office referrals
- Enhancing support of “higher-need” students
 - 3-Tiered public health approach



PBIS: *A public health approach to prevention*

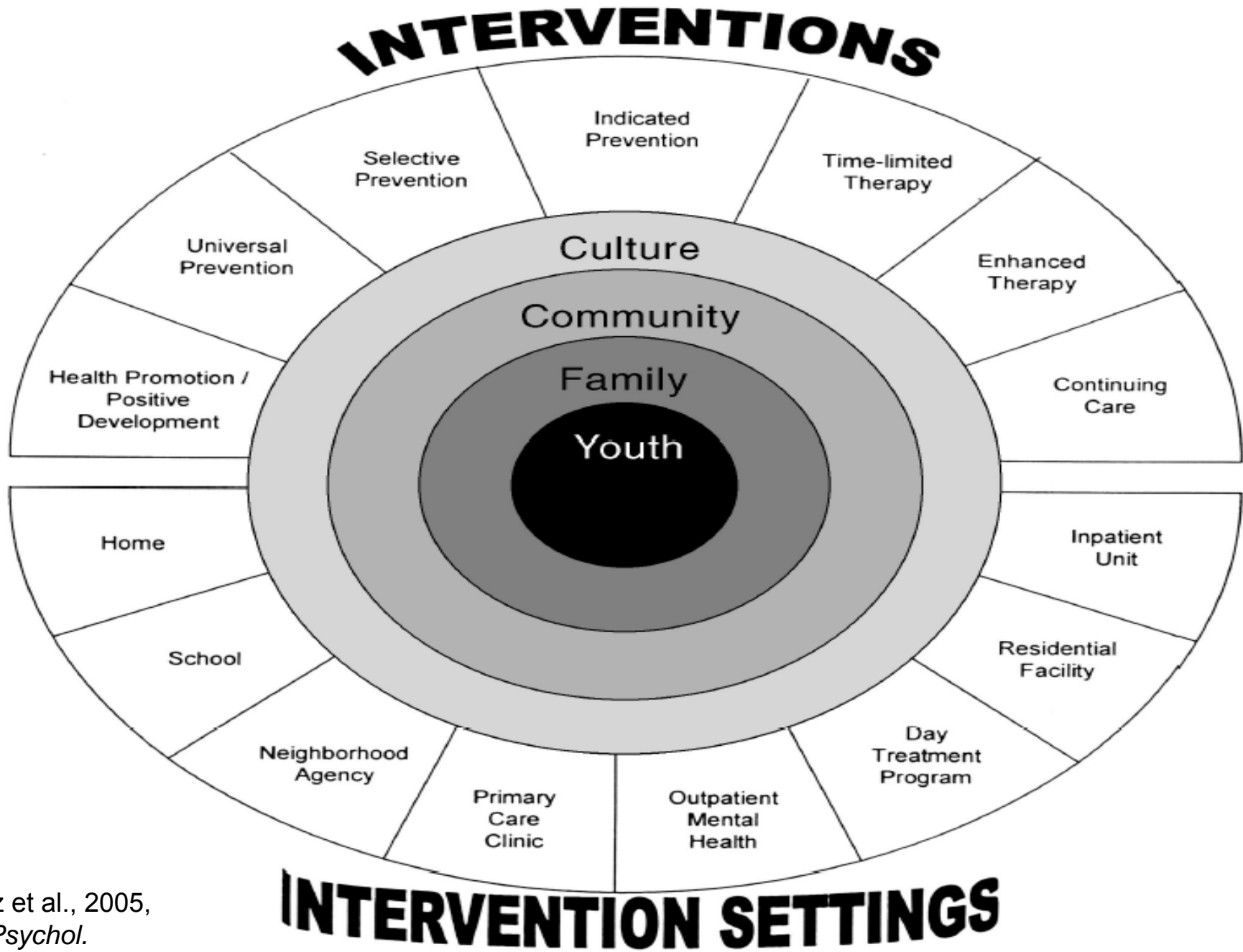


Indicated programs:
Specialized individualized services for students with high-risk behavior

Selective programs:
Specialized, often group-based supports for students with at-risk behavior

Universal programs:
School-/classroom-wide systems for all students and staff

An Integrative Model for Linking Prevention and Treatment Research

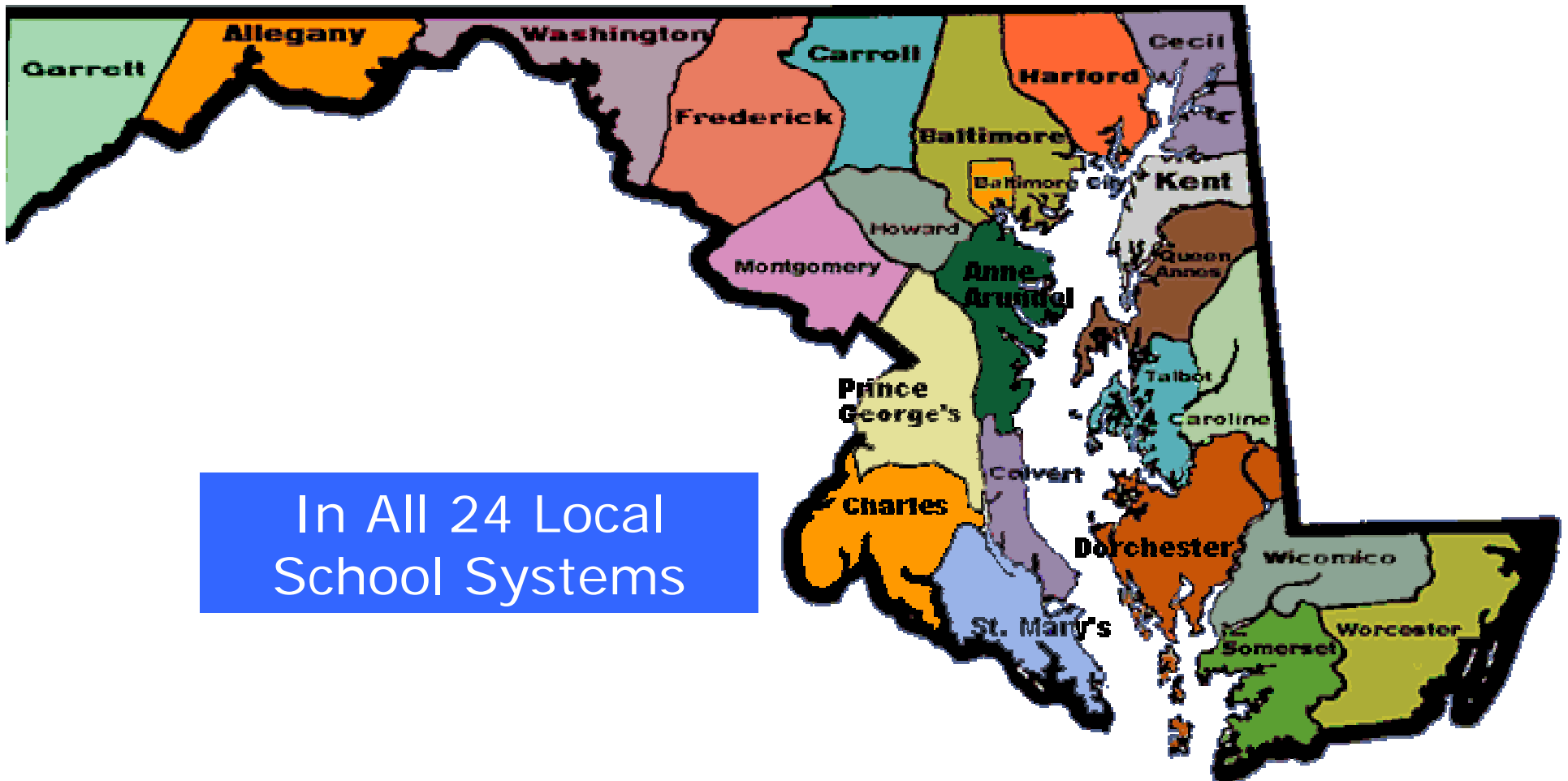


Weisz et al., 2005,
Am. Psychol.

Dissemination of PBIS

State-Wide, Nationally, & Internationally

- 561 schools in Maryland \approx 40%
- 6,500 schools in 40+ states



Maryland Organizational Model

School Level

- ❑ 561 PBIS Teams (one per school) ≈ 40%
 - Team leaders (one per school)
 - Behavior Support Coaches (363)

District Level (24)

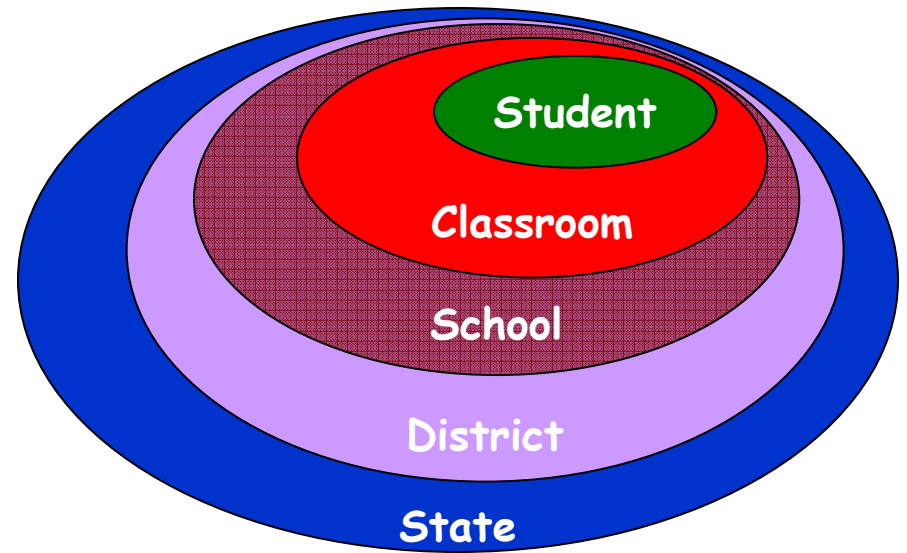
- ❑ District Coordinators

State Level

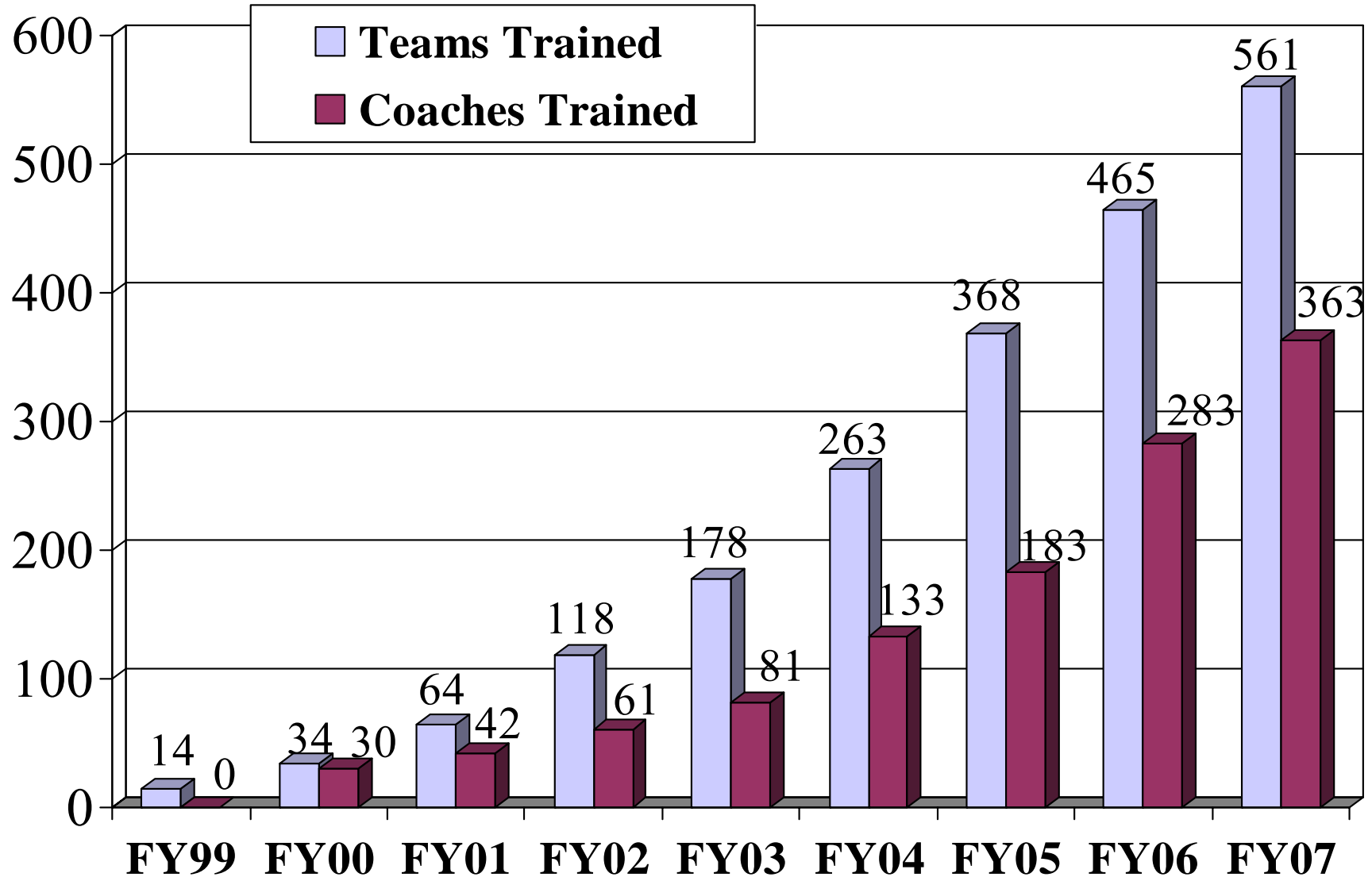
- ❑ State Leadership Team
 - Maryland State Department of Education (MSDE)
 - Sheppard Pratt Health System
 - Johns Hopkins Center for Prevention of Youth Violence
 - 24 Local school districts
 - Department of Juvenile Services, Dept. Health & Mental Hygiene
- ❑ Management Team
- ❑ Advisory Group

National Level

- ❑ National PBIS Technical Assistance Center
 - University of Oregon & University of Connecticut



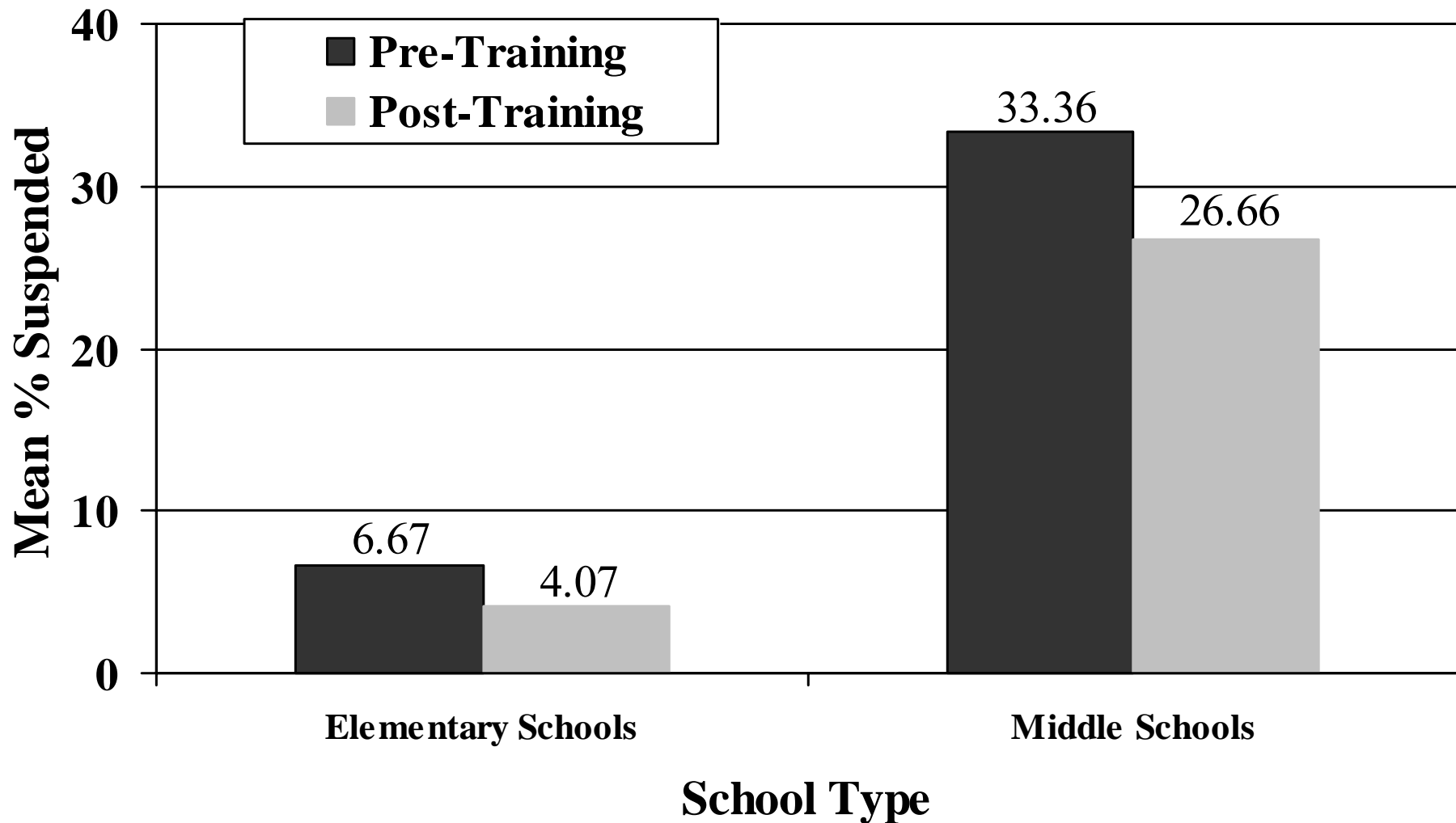
Number of PBIS School Teams and Behavior Support Coaches Trained by Year



Maryland Training and Support Network

- Spring Leadership Forum
 - Attendance: 105 new schools, 600 people
- Summer New Team Training Institute (July)
 - For Coaches & New Teams (1,000 people)
- Summer Returning Team Training Institutes
 - Regional booster training events (3,800 people)
- Coaches Meetings (3 per year) (225 people)
- District Meetings (2 per year) (vary in size)
- Specialized events
 - Special / Alternative Schools (2 per year) (50 people)
 - High Schools (2 per year) (100 people)

Pre- vs. Post-Training Suspension Rates for Elementary ($n=31$) and Middle ($n=31$) Schools



Note. Wilks' $\Lambda = .924$, $F(1,60) = 4.91$, $p = .03$. Schools trained in July 2004 (Barrett, Bradshaw, & Lewis-Palmer, 2008)

Randomized Trial of SWPBIS: *Project Target*

Funding

- Centers for Disease Control & Prevention (P. Leaf, PI)
- National Institute of Mental Health (P. Leaf, PI; C. Bradshaw, Co-PI)

Sample

- 37 voluntary elementary schools across 5 school districts
 - Enrollment 227-983; 60% Caucasian; 48% suburban; 41% urban fringe; 49% Title I

Design

- Group randomized effectiveness trial
 - 21 PBIS & 16 “Focus/Comparison”
- Baseline plus 4 years (spring 2002 - spring 2007)
 - Data from 29,423 students & 3,563 staff



Project Target

School Characteristics

<i>School Characteristics</i>	PBIS (<i>n</i> = 21 schools)		Comparison (<i>n</i> = 16 schools)	
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
School Enrollment	471.76	132.78	505.50	188.57
Student to Teacher Ratio	18.48	4.33	18.61	4.69
Free/Reduced Meals (%)	42.93	19.22	36.25	20.93
Special Education Students (%)	13.24	4.27	15.08	6.66
Caucasian Students (%)	53.81	33.16	67.51	28.99
Student Mobility (%)	25.88	8.24	20.51	7.19
Suspension (%)	7.73	7.43	5.06	4.73
Math Performance (%)†	47.20	22.37	46.96	19.05
Reading Performance (%)†	50.66	19.32	52.94	16.43

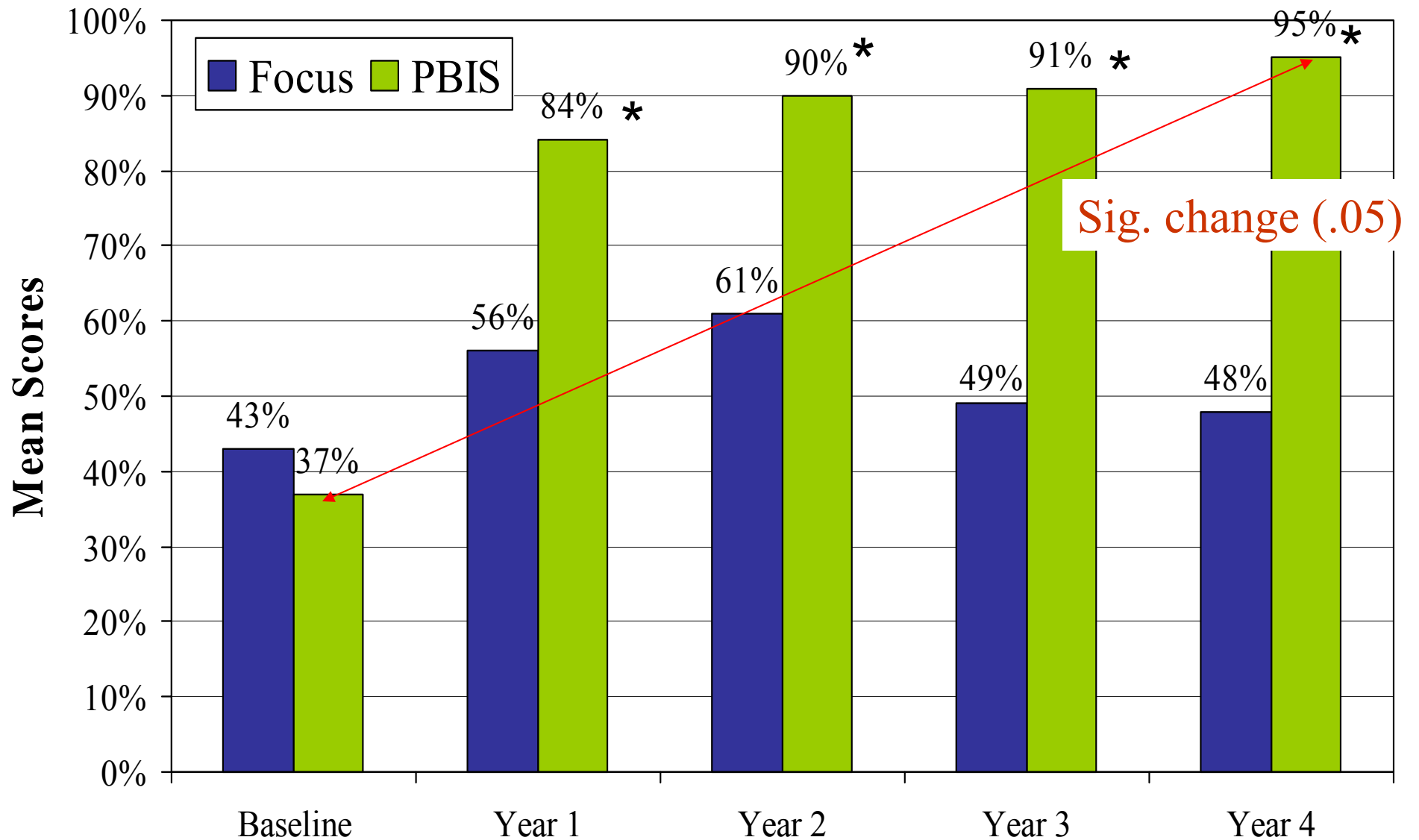
Note. No overall significant difference between PBIS and comparison schools at baseline, Wilks' $\Lambda = .89$, $F(5, 31) = .76$, $p = .58$

Data Collected



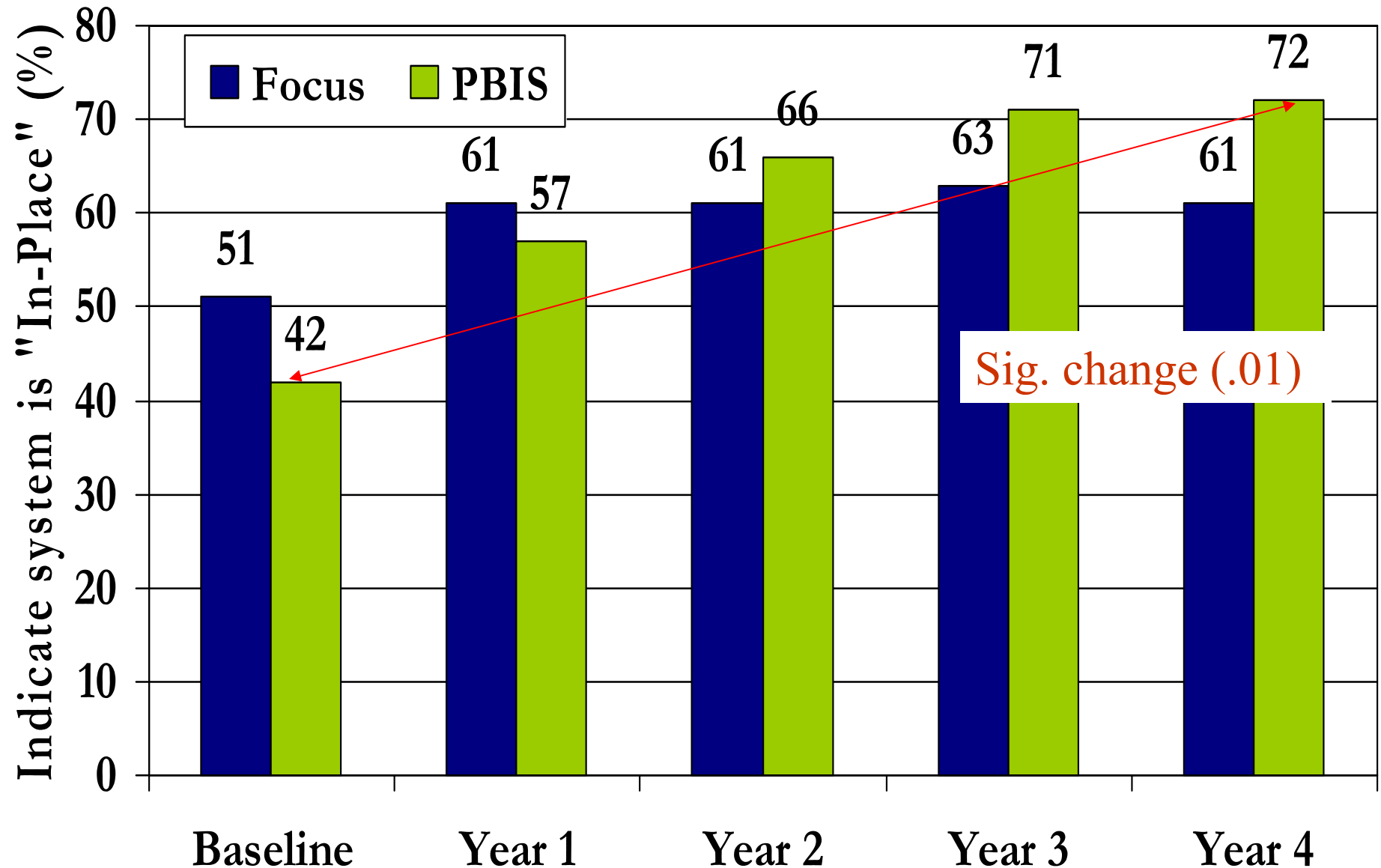
- **Implementation fidelity**
 - School-wide Evaluation Tool (SET; Sugai, Lewis-Palmer, Todd, & Horner, 2001)
 - Effective Behavior Support Survey (Self-assessment; Sugai, Todd, & Horner, 2000)
 - **Organizational health**
 - Organizational Health Inventory (OHI; Hoy et al., 1990)
 - **School climate**
 - School Climate Survey (Haynes, Emmons, & Comer, 1994)
 - **Disruptive behavior**
 - Teacher Observation of Classroom Adaptation (TOCA-R; Werthamer-Larsson et al., 1991)
 - Student Interactions in Specific Settings (SISS; Cushing & Horner, 2002)
 - Office discipline referrals (SWIS; School-Wide Information System)
 - Suspensions (school-level)
 - **Academic information**
 - State standardized test scores (school-level)
-

Fidelity: School-wide Evaluation Tool (SET)



Note. * indicates significant difference, $p < .05$, unadjusted means. (Bradshaw et al., 2008; *ETC*)

Effective Behavior Support Survey (EBS) (*adj*)

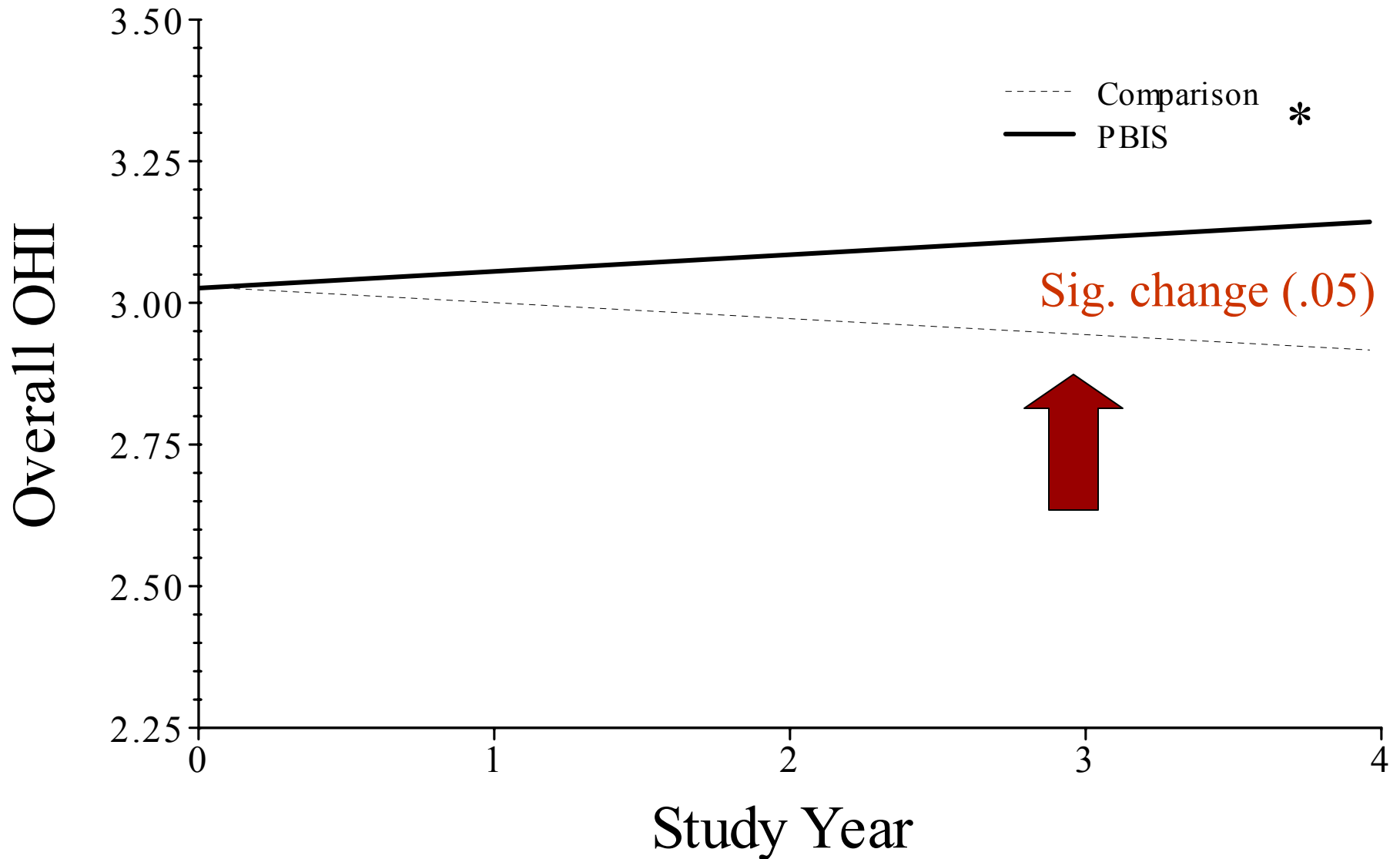


Repeated measures GLM, baseline vs. year 4, sig. intervention effect: $F(1,28) = 14.36, p=.001$; *adj*= controlled for student mobility, school enrollment, % Caucasian, % FARMs, student-teacher ratio, & cohort.

Analysis of Organizational Health Inventory (OHI) Data

- OHI: 37 item staff-report measure of 5 aspects of a healthy functioning school (Hoy et al., 1991)
 - academic emphasis - students are cooperative in the classroom, respectful of other students who get good grades, and are driven to improve their skills
 - staff affiliation - warm and friendly interactions, commitment, trust
 - collegial leadership - principal's behavior is friendly, supportive, open
 - resource influence - principal's ability to lobby for resources for the school
 - institutional integrity - teachers are protected from unreasonable community and parental demands
 - overall OHI score (average of all items)
 - Analyses
 - Longitudinal analyses were conducted using a 3-level approach in Mplus 5.1 (Muthén & Muthén, 2006)
 - Intent to treat approach (Lachin, 2000) & adjusting for fidelity (SET)
 - Adjusted for staff (sex, race, age) and school (FARMs, student mobility, faculty turnover, & school enrollment) covariates on intercept and slope
-

Effect of PBIS on Overall OHI



Note. Adjusted means from 3-level model.

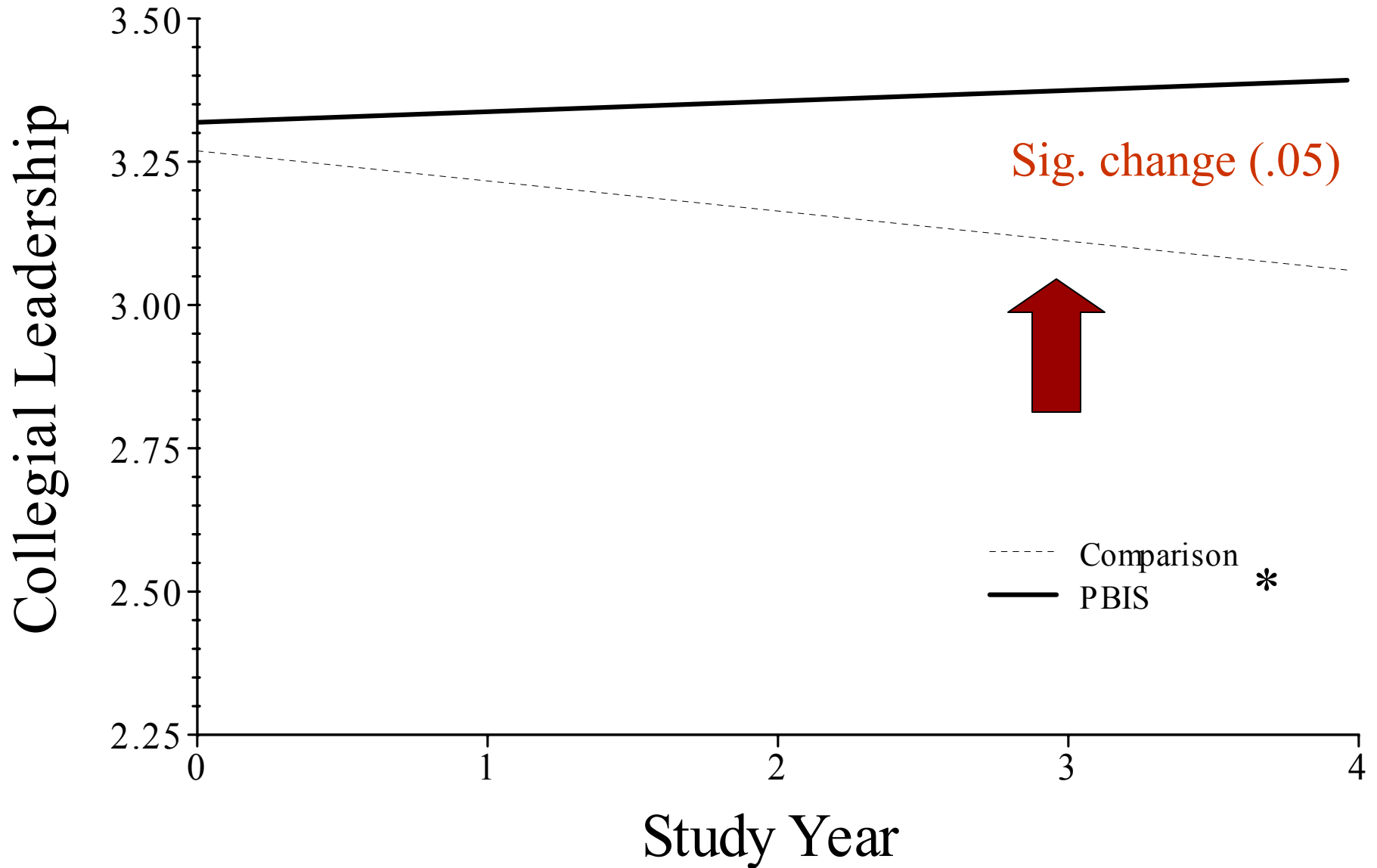
* Intervention effect on slope of overall OHI significant at $p < .05$.

Effect of PBIS on Overall OHI

Overall OHI (<i>n</i> = 2187)	Intercept			Growth (Slope)		
	Coef.	SE	T-ratio	Coef.	SE	T-ratio
<i>Staff Characteristic</i>						
Age	.018†	.011	1.74	.009*	.002	3.08
Minority Status	-.003	.036	-.09	.003	.014	.23
Sex	-.082*	.041	-1.99	.026†	.014	1.86
Role	.013	.019	.70	.006	.009	.69
<i>School Characteristics</i>						
PBIS Intervention Status	.003	.095	.03	.057*	.027	2.10
Faculty Turnover	-.012*	.004	-2.58	-.001	.002	-.13
Student Mobility	-.001	.006	-.07	-.002	.001	-1.64
Free/Reduced Meals	-.003	.002	-1.10	.001	.001	.62
Enrollment	-.180	.138	-1.31	.067*	.030	2.23

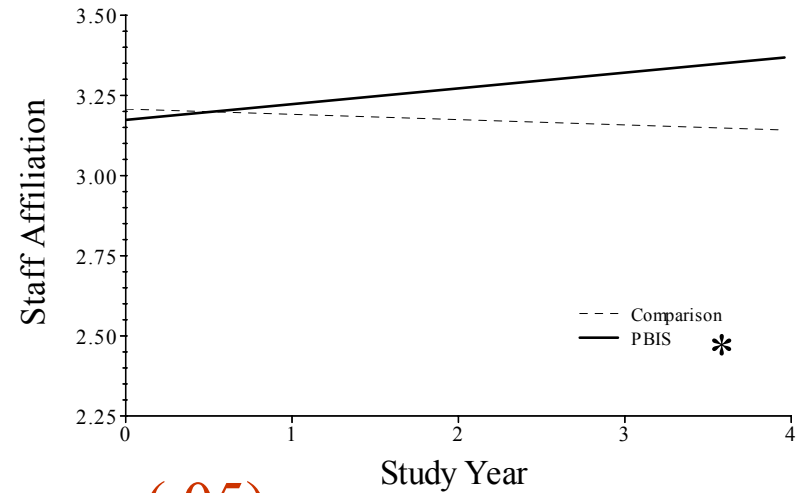
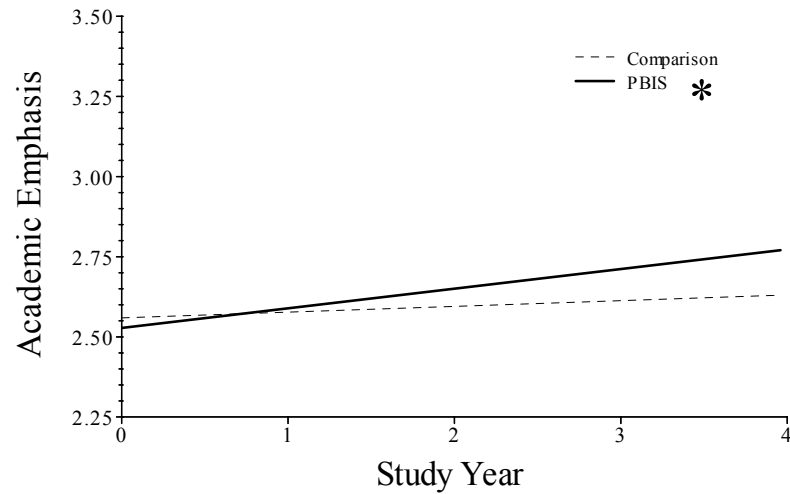
(Bradshaw et al., in press)

Effect of PBIS on Collegial Leadership

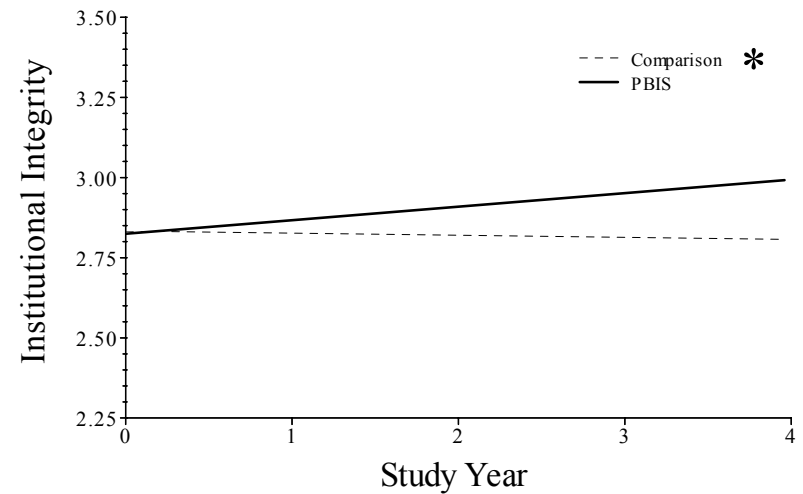
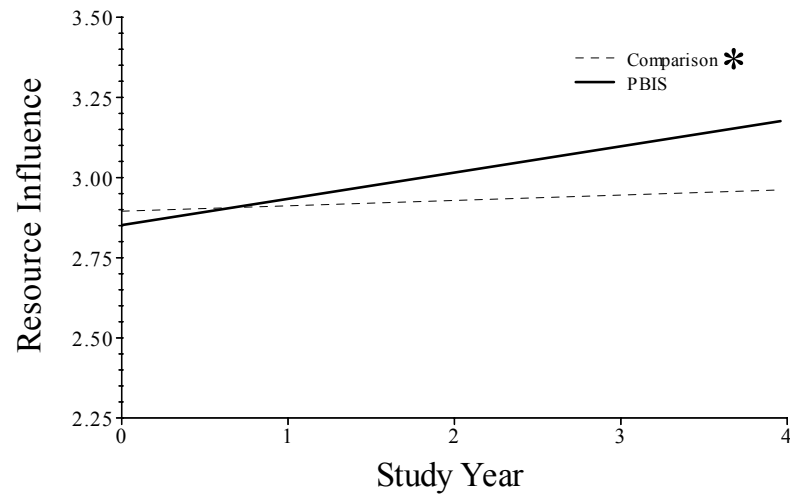


Note. Adjusted means from 3-level model. * Intervention effect on slope significant at $p < .05$, $d = .29$ at Year 3 & 4

Effect of PBIS on Other OHI Subscales



All Sig. change (.05)

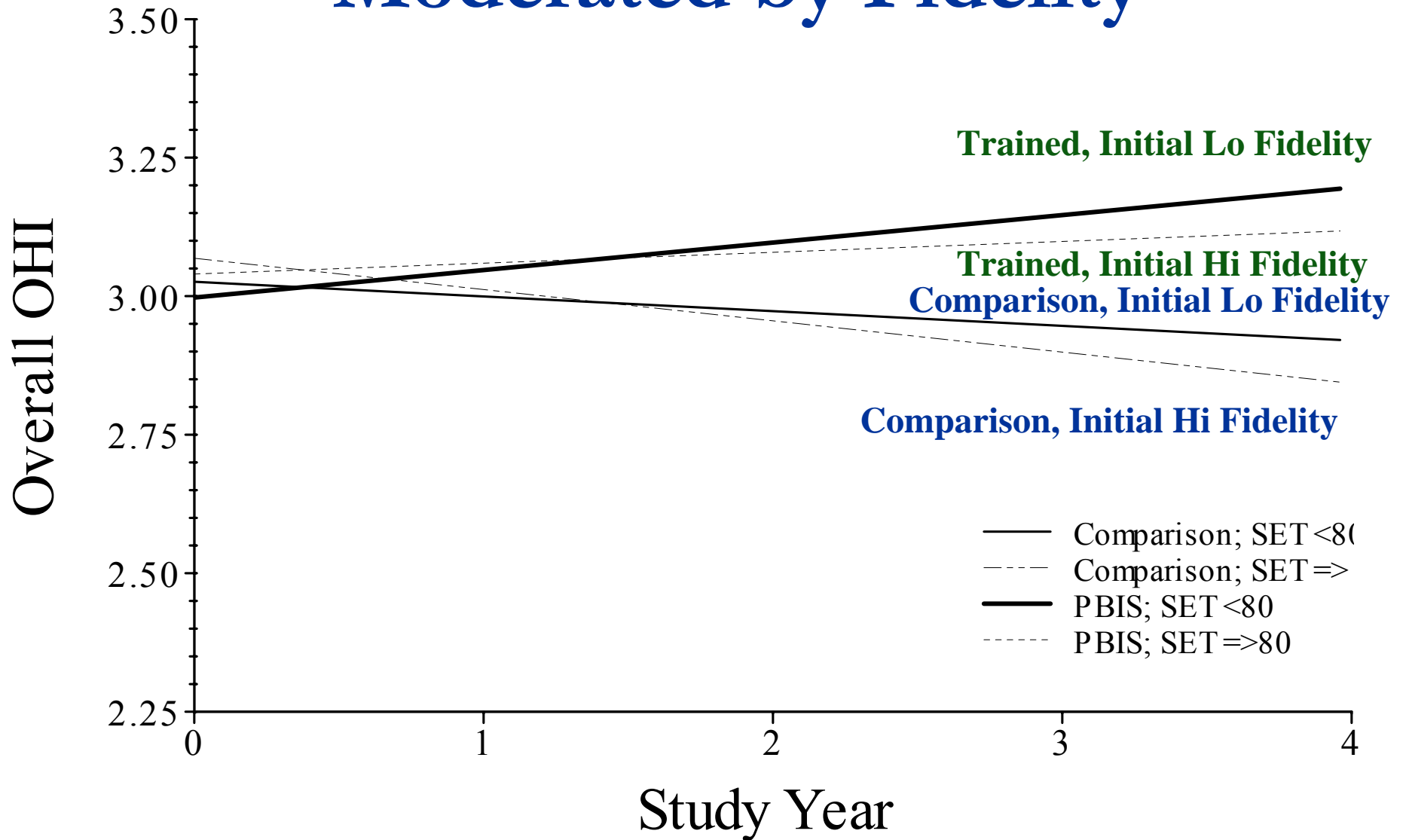


Note. Adjusted means from 3-level model. * Intervention effect on all slopes significant at $p < .05$. d range from .24 - .34 at Year 4.

OHI and Fidelity

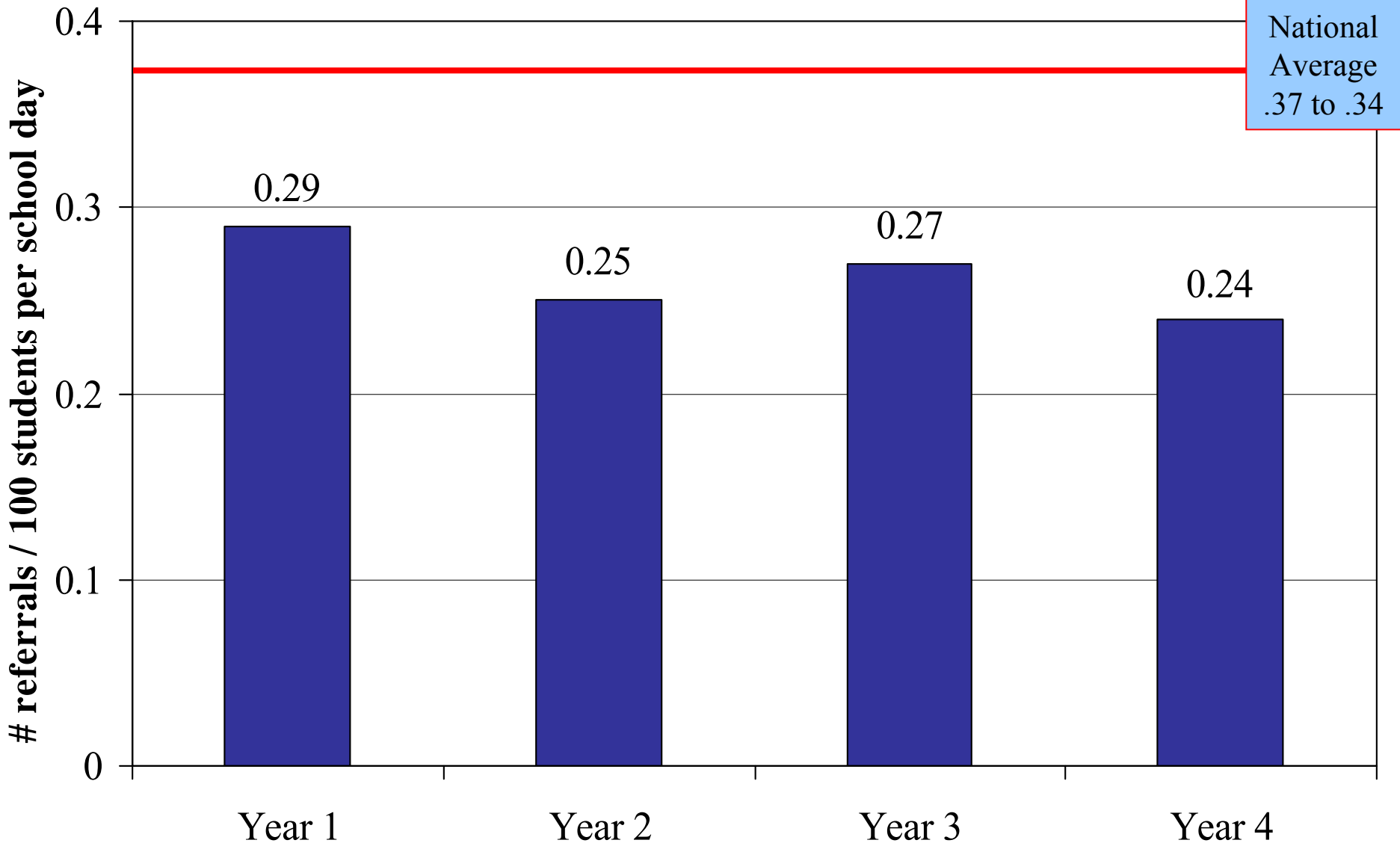
- Baseline fidelity score (“naturally occurring PBIS”) did not predict speed of implementation or baseline OHI
- (Only) end of Year 1 fidelity predicted growth
 - Likely a ceiling effect thereafter because all trained schools reached high fidelity
- OHI intercept and slope negatively correlated
 - Schools starting with lower levels of OHI tended to take longer to reach high fidelity, but improved the most

Effect of PBIS on Overall OHI Moderated by Fidelity



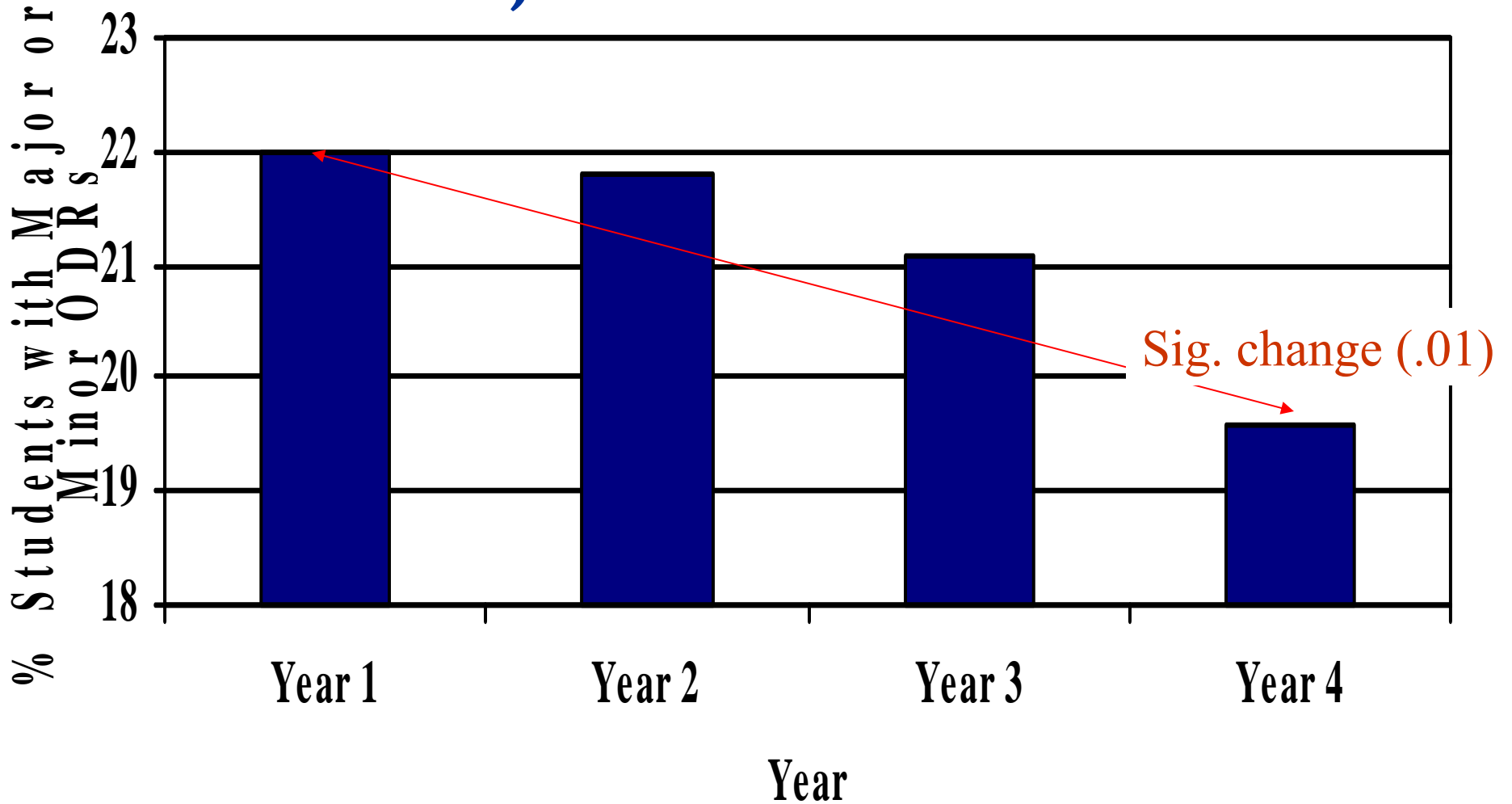
Note. SET is fidelity measure, with >80 indicating high fidelity. Adjusted means from 3-level model.

Major Office Discipline Referrals



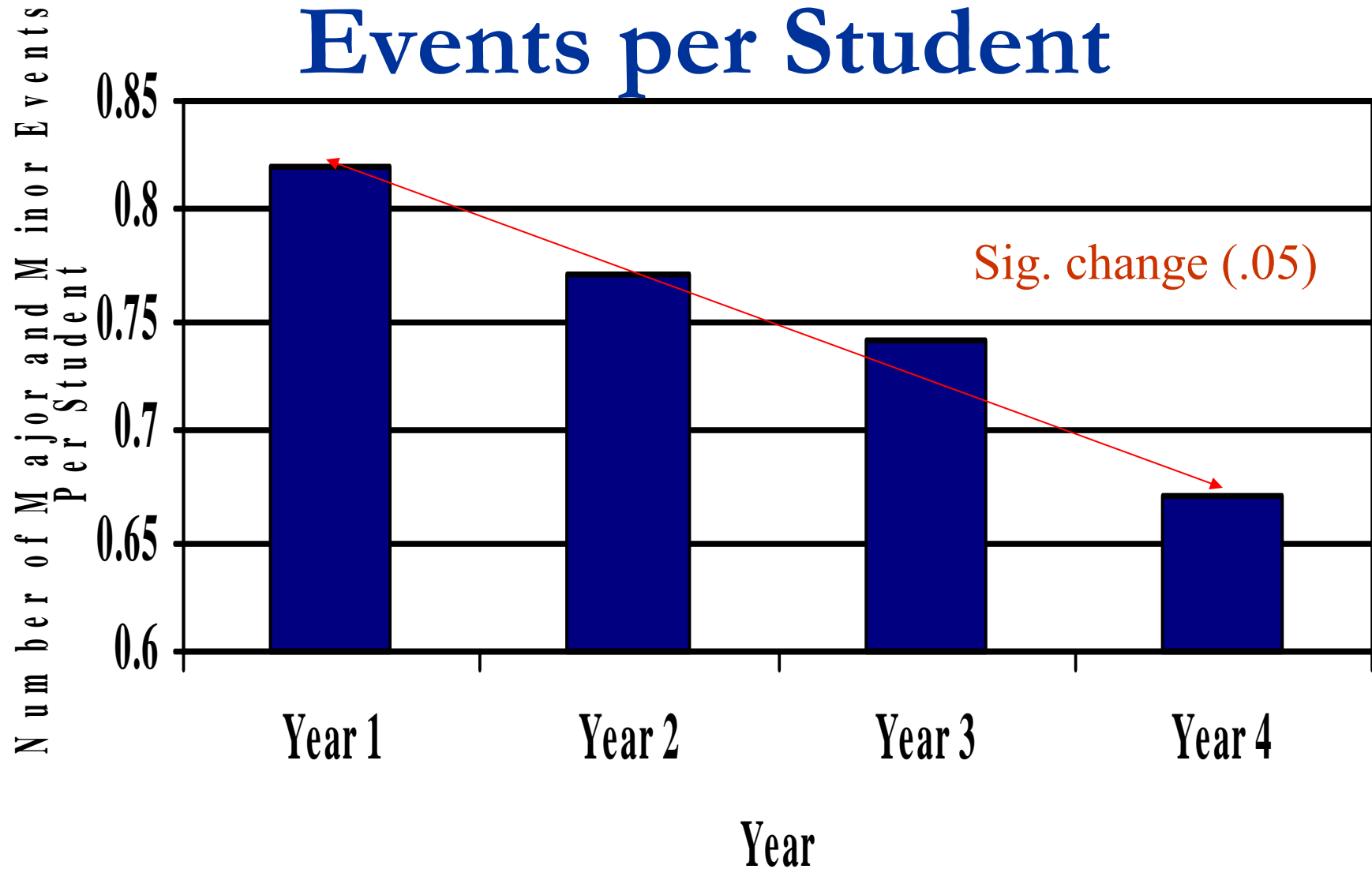
Note. N= 21 PBIS schools. ODR data not available from Comparison schools

Percent of Students with A Major or Minor ODR



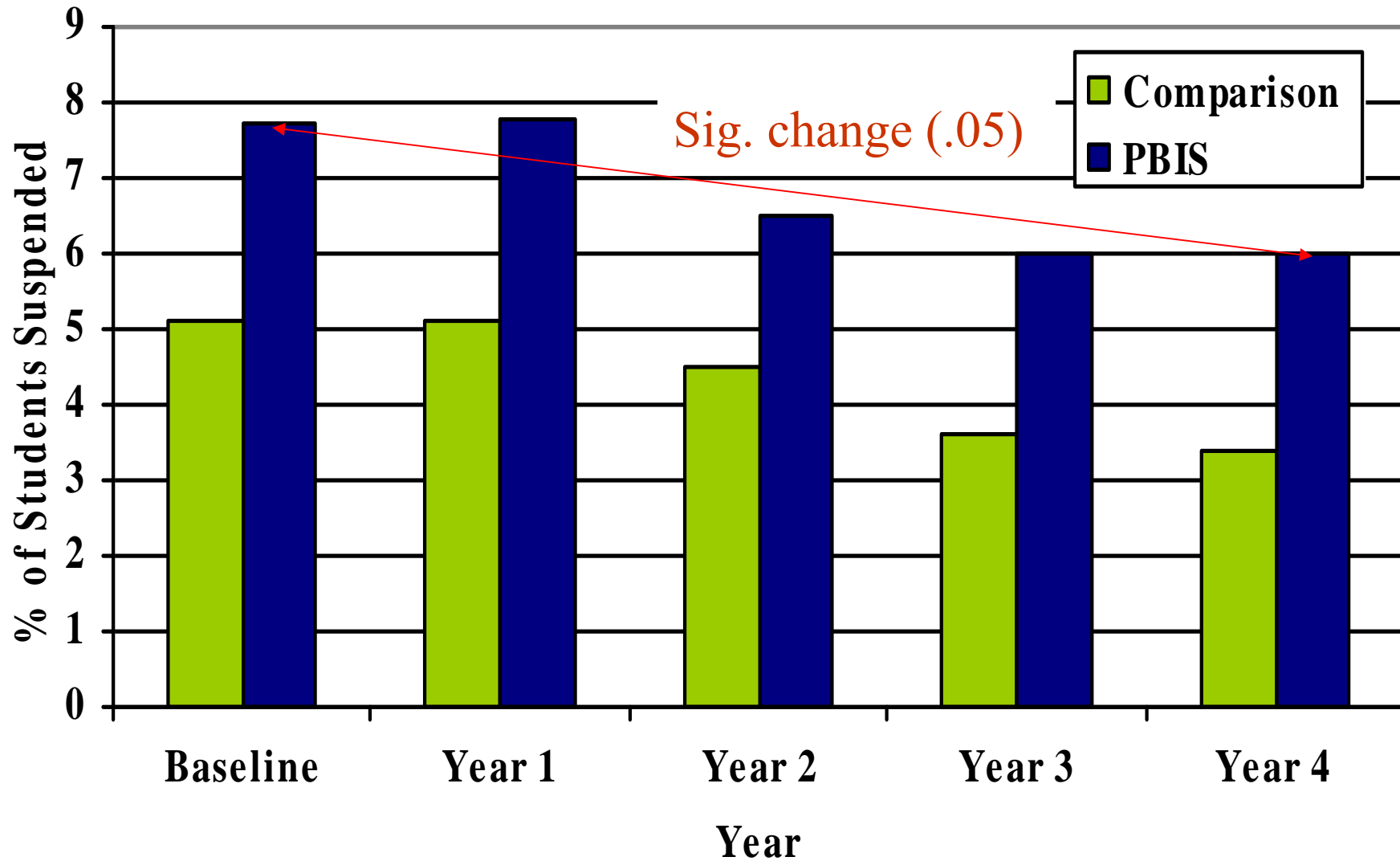
N=21 PBIS schools; Wilks' $\Lambda = .42$, $F[3,13] = 5.92$, $p = .009$, $\eta^2 = .577$, adjusted for covariates

Number of Major & Minor Events per Student



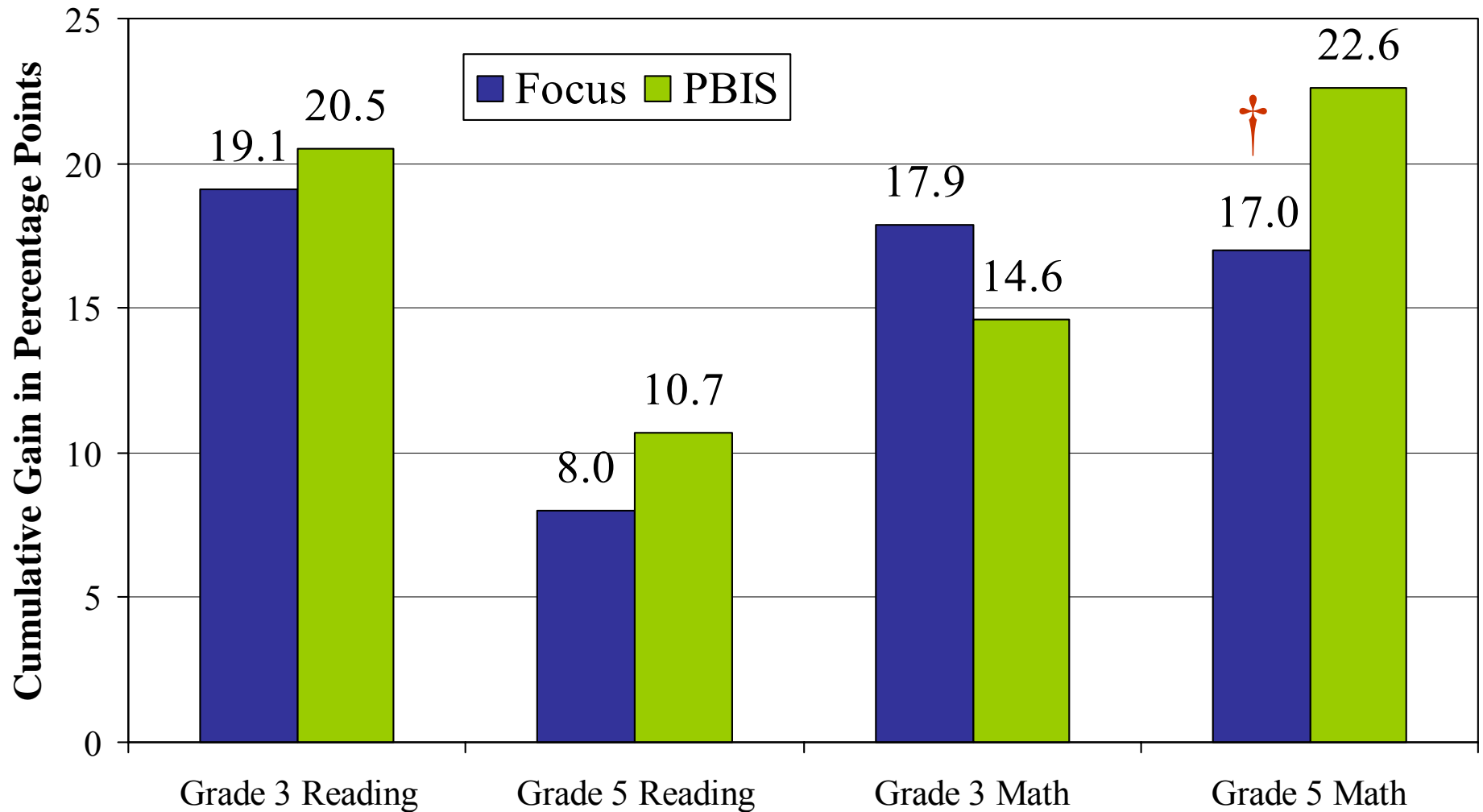
N=21 PBIS schools; Wilks' $\Lambda = .544$, $F[3,13] = 3.633$,
 $p=.042$, $\eta^2 = .456$, $d = .21$, adjusted for covariates

% Students with a Suspension Event (Duplicated Count)



School-level data from MDSE. Wilcoxon test: (PBIS) $Z = -2.17, p = .03$; (Comparison) $Z = -1.54, p = .12$

Achievement Data (MSA): School Level (% Prof. + % Adv.)



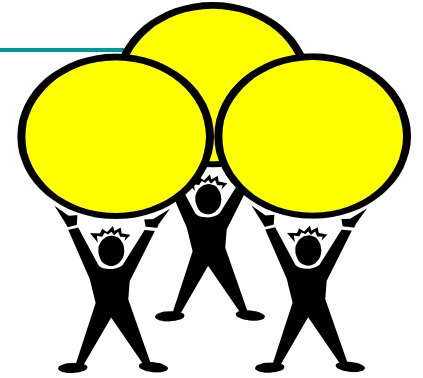
Cumulative gain in improvement in MSA between Year 1 & 4. Baseline data not available. †T-test for Grade 5 math: $t = -1.67$, $df = 35$, $p = .105$.

Summary of Preliminary Findings

Main Effects

- PBIS schools reached & sustained high fidelity
 - PBIS increased all aspects of organizational health
 - Effect sizes .24 for AE to .35 for overall (“practical sig.”)
 - Positive effects/trends for student outcomes
 - Fewer students with 1 or more ODRs (majors + minors)
 - Fewer ODRs (majors + minors) per student
 - Fewer suspensions (-1/4)
 - Increasing trend in % of students scoring in advanced and proficient range of state achievement test
-

PBIS_{plus} Project



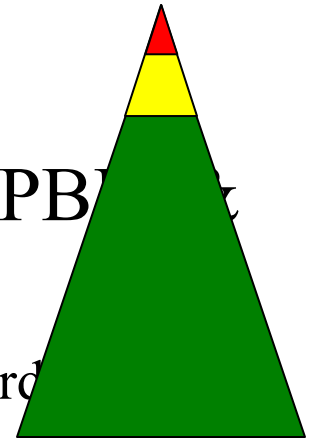
PBISplus

Funding

- Institute of Education Sciences (P. Leaf, PI; C. Bradshaw, Co-PI)

Sample

- 46 elementary schools that have high fidelity PBIS and a significant “yellow-zone”
 - Counties: Anne Arundel, Baltimore County, Charles, Howard, Prince George’s & Carroll)



Design

- ~~3 year group randomized controlled trial~~
- Random assignment to either “SWPBIS” or “Plus”

Meeting the Social-Emotional Needs of Non-Responders

Funding

- Centers for Disease Control and Prevention (K01, C. Bradshaw, PI)

Goals

- Identify social-emotional, behavioral, and family characteristic of children who do not respond to universal PBIS program
 - Identify contextual factors associated with outcomes of PBIS
 - Develop adaptive intervention for non-responders including evidence-based behavioral and social-emotional programs
 - Focus on team-based decision-making and use of data
-

Acknowledgements

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- Phil Leaf
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- Mary Mitchell
- Christine Koth
- Qing Zheng

Contact Information

Catherine Bradshaw, Ph.D.

Assistant Professor and Associate Director

Johns Hopkins Center for the Prevention of Youth Violence

Johns Hopkins Bloomberg School of Public Health

624 N. Broadway, Baltimore, MD 21205

cbradsha@jhsph.edu

410.502.2587

Maryland State Department of Education

- Milt McKenna
- Andrea Alexander

Sheppard Pratt Health System

- Susan Barrett
- Jerry Bloom

PBIS Resources

www.PBIS.org

www.PBISMaryland.org