Valuing Social and Emotional Skills

Supporting Evidence-Based Prevention Policy & Practice

PennState

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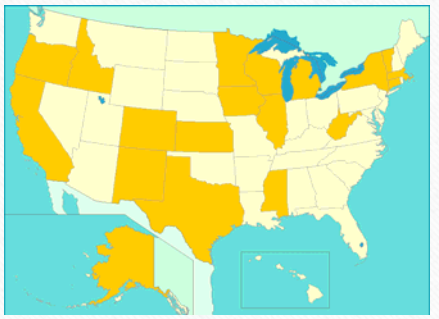
Human Development & Family Studies

Roadmap

- Opportunities for Prevention in Evidence-Based Policy
- Integrative Data Project
- Developing Robust Estimates
- Valuing Healthy Development

Supporting Evidence-based Prevention Policy & Practice

- Washington State Institute for Public Policy model is supported by the literature
- Both for program effects, but also the relationship between program outcomes and fiscal costs
- Many prevention outcomes not represented
  - Thus effects are not 'counted' in model
  - Not enough information to make fiscal projections



Results First States in Orange

Analytic Approach

- Need robust estimates of fiscal value for relevant prevention outcomes
  - Model impact of early risk on future economic outcomes
  - Integrative Data Analysis Project
  - Develop shadow prices for key prevention targets

Sources of Data

Study	Size	Sites	Ages	Oversample for Risk	RCT?
National Longitudinal Study of Youth	7,467	National	14-56	No	No
Panel Study on Income Dynamics-Child Supplement	3,563	National	0-29	No	No
Child Development Project	585	Bloomington, IN; Nashville, TN; Knoxville, TN	5-24	No	No
Fast Track: Normative	308	Durham, NC; Seattle, WA; Nashville, TN; PA	5-23	No	No
Seattle Social Development Project	808	Seattle, WA	12-41	No	Yes
Chicago Longitudinal Study: Control	543	Chicago, IL	3-34	Yes	Yes
Chicago Longitudinal Study: intervention	988	Chicago, IL	3-34	Yes	Yes
Fast Track: Control	446	Durham, NC; Seattle, WA; Nashville, TN; PA	5-23	Yes	Yes
Fast Track: Intervention	445	Durham, NC; Seattle, WA; Nashville, TN; PA	5-23	Yes	Yes

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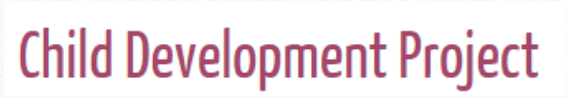
Integrated Data Analysis

- Child Development Project
- Fast Track
- Chicago Longitudinal Study



Child Development Project

- The Child Development Project (CDP) is a multi-site, longitudinal research program aimed at learning more about the processes involved in child and adolescent development.
- The study emphasizes research on social, emotional and scholastic development of children and adolescents as well as how various family, peer, school and neighborhood factors impact development.
- Began summer of 1987, with a second cohort recruited in the summer of 1988.
- Since year one of the project, yearly assessments have been conducted with participants, their families, and their friends.

Child Development Project

Child Development Project

- In 1987 and 1988, five hundred and eighty-five families from a community sample were contacted during kindergarten pre-registration
- Participants were approximately 5 years old at the commencement of the project.
- Information has been gathered from these families through interviews, observations, and questionnaires completed by the participating children, their parent(s), peers, and teachers.

Child Development Project

Fast Track Project

- Fast Track project designed to look at how children develop across their lives
- Intervention provided academic tutoring and lessons in developing social skills and regulating their behaviors.
- Selection began when the participants entered kindergarten and children were placed either in the intervention group or the control group.

FAST TRACK PROJECT

Fast Track Project

- Fast Track identified a sample of children in kindergarten through a multistage screening of nearly 10,000 children.
- With four communities participating (Durham, Nashville, rural Pennsylvania, and Seattle)
- Schools were matched on size, ethnic composition, and poverty,
- Three successive cohorts were recruited in 1991, 1992, and 1993 to yield a sample of 891 children (445 in the intervention group and 446 in the control group).
- 308 youth from a normative sample were also included

FAST TRACK PROJECT

Chicago Longitudinal Study

- The Chicago Longitudinal Study investigates the educational and social development of a same-age cohort of 1,531 low-income, minority children (93% African American)
- This included a control sample of 543 youth and a intervention sample of 988 youth.
- Participants from central-city Chicago
- Intervention participants attended Chicago Child Parent Center's in 1985-1986.

Phases of Analysis

1. Data Harmonization
2. Predictive Models
3. Covariate Models
4. Propensity Models
5. Valuation Models

First things first…

1. Can we harmonize measures across datasets?
2. Can we use harmonized dataset to predict adult outcomes from childhood SEL ?

- Hussong, A. M., Curran, P. J., & Bauer, D. J. (2013). Integrative data analysis in clinical psychology research. *Annual review of clinical psychology*, *9*, 61.
- Curran, P. J., & Hussong, A. M. (2009). Integrative data analysis: the simultaneous analysis of multiple data sets. *Psychological methods*, *14*(2), 81.
- Hussong, A. M., Cai, L., Curran, P. J., Flora, D. B., Chassin, L. A., & Zucker, R. A. (2008). Disaggregating the distal, proximal, and time-varying effects of parent alcoholism on children's internalizing symptoms. *Journal of abnormal child psychology*, *36*(3), 335-346.

Data Harmonization: Social Emotion Learning

- Emotion Regulation
  1. Accepts Things Not Going Way
  2. Copes Well Failure
  3. Accepts Legitimate Limits
  4. Expresses Needs and Feelings
  5. Thinks Before Acting
  6. Can Calm Down
  7. Can Wait in Line Patiently
  8. Aware of Effects of Own Behavior
  9. Plays by Rules of Game
  10. Controls Temper

Hofer, S. M., & Piccinin, A. M. (2009). Integrative data analysis through coordination of measurement and analysis protocol across independent longitudinal studies. *Psychological methods*, *14*(2), 150.

Emotion Regulation

Sample	N	M	SD	Min	Max
Child Development Project	596	4.07	0.91	0.70	5.00
Fast Tack (Normative)	308	2.20	0.72	0.33	5.00
Fast Track (High Risk Control)	446	1.67	0.62	0.00	3.33
Fast Track (Intervention)	445	1.77	0.65	0.17	5.00
Chicago Longitudinal Study (Control)	988	3.53	1.04	0.00	5.00
Chicago Longitudinal Study (Interv.)	543	3.30	1.05	0.03	5.00

Data Harmonization: Baseline Characteristics

- Gender
- Race
- Family Structure
- Parental Education
- Family Income
- Maternal Employment
- Wood Cock Johnson
- IQ
- Home Environment
- Physical Health Problems

Data Harmonization: Adult Outcomes

- Adult Outcomes (age 25)
  - High School Graduation
  - Employment
  - Use of Government Services
  - Substance Abuse
  - Criminal Activity

Variable	% of Sample
Graduate High School	78.8%
Employed	52.6%
Never Use Gov. Services	45.2%
No Drug Treatment	78.3%
Never Arrested	60.6%

Predictive Models

- Evaluating predictive relationship of emotion regulation accounting for sample differences

Parameter	Est.	SE	OR	*p*
INTERCEPT	**0.94**	**0.28**		**<.01**
Emotion Regulation	**0.36**	**0.06**	**1.44**	**<.01**
FT: NORM	**-0.20**	**0.26**	**0.82**	**0.44**
FT: CNTRL	**-0.57**	**0.25**	**0.57**	**0.02**
FT: TREAT	**-0.63**	**0.24**	**0.53**	**0.01**
CSL: CNTRL	**-0.80**	**0.20**	**0.45**	**<.01**
CSL:T REAT	**-1.14**	**0.21**	**0.32**	**<.01**

Predictive Models

- Evaluating predictive relationship of emotion regulation accounting for sample differences

Outcome	EST	SE	OR	p
Graduate High School	.36	.06	1.43	<.01
Employed	.25	.05	1.29	<.01
Never Use Gov. Services	.05	.05	1.05	.33
No Drug Treatment	.19	.06	1.20	<.01
Never Arrested	.30	.05	1.34	<.01

Covariate Model: Demographics

- Includes Gender, Race, Family Structure, Parental Education, Family Income

Outcome	EST	SE	OR	p
Graduate High School	.28	.06	1.32	<.01
Employed	.16	.06	1.17	.01
Never Use Gov. Services	.09	.05	1.09	.08
No Drug Treatment	.04	.07	1.04	.56
Never Arrested	.16	.05	1.18	<.01

Covariate Model: 'Cognitive' Skills

- Includes Gender, Race, Family Structure, Parental Education, Family Income, Woodcock-Johnson, IQ

Modelling: *Graduated High School*

Parameter	Est.	SE	OR	P
Intercept	**0.14**	**0.50**		**<.01**
Emotion Regulation	**0.28**	**0.06**	**1.32**	**<.01**
Woodcock-Johnson	**0.05**	**0.02**	**1.05**	**0.02**
IQ	**0.24**	**0.11**	**1.27**	**0.04**

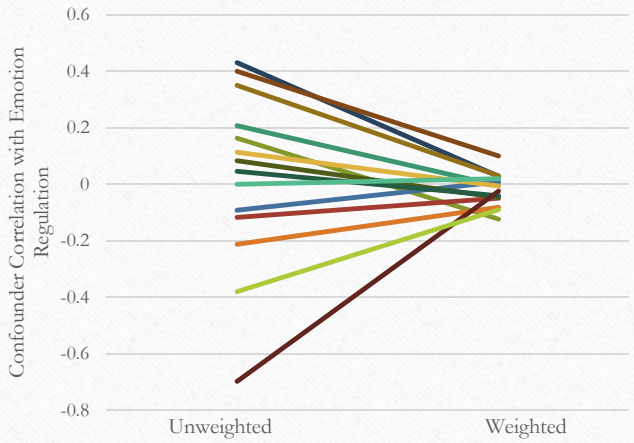
Covariate Model: 'Cognitive' Skills

- Includes Demographic variable as well as
  - Woodcock-Johnson (academic skills)
  - IQ

Outcome	EST	SE	OR	p
Graduate High School	0.28	0.06	1.32	<.01
Employed	.16	.06	1.17	.02
Never Use Gov. Services	.09	.05	1.09	.12
No Drug Treatment	.05	.07	1.05	.49
Never Arrested	.17	.06	1.18	<.01

Propensity Model

- Conditional probability of being in one condition rather than the other condition, given a set of observed variables (Rosenbaum & Rubin, 1983)
- Useful for handling a large array of covariates
  - Demographic
  - 'Cognitive'
  - Employment Measures
  - Home Environment Observations
  - Physical Health Assessments
- Can be used to strengthen causal inference



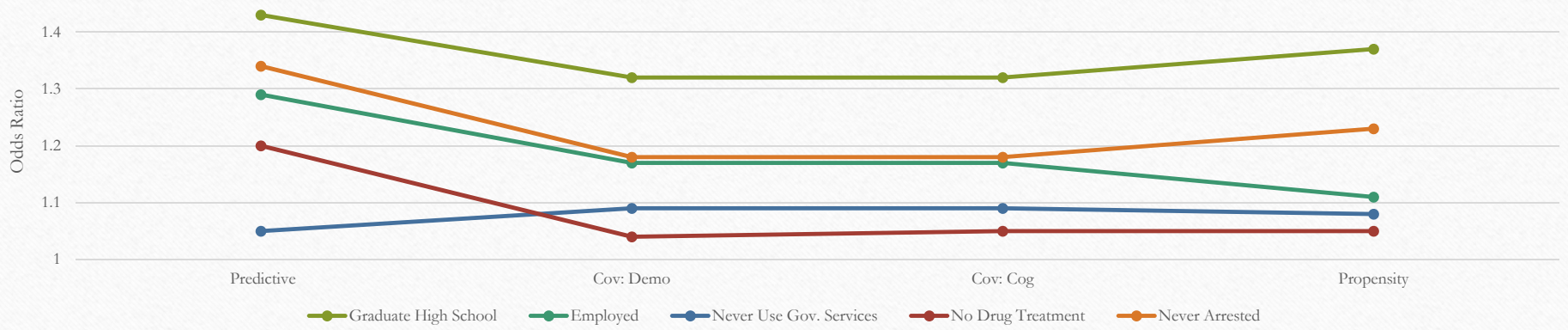
Propensity Model

- Employing inverse probability weights to adjust for selection bias

Outcome	EST	SE	OR	p
Graduate High School	.32	.07	1.37	<.01
Employed	.11	.05	1.11	.02
Never Use Gov. Services	.08	.05	1.08	.10
No Drug Treatment	.05	.07	1.05	.46
Never Arrested	.21	.05	1.23	<.01

Model Summary

Outcome	Predictive	Cov: Demo	Cov: Cog	Propensity
Graduate High School	1.43	1.32	1.32	1.37
Employed	1.29	1.17	1.17	1.11
Never Use Gov. Services	1.05	1.09	1.09	1.08
No Drug Treatment	1.20	1.04	1.05	1.05
Never Arrested	1.34	1.18	1.18	1.23

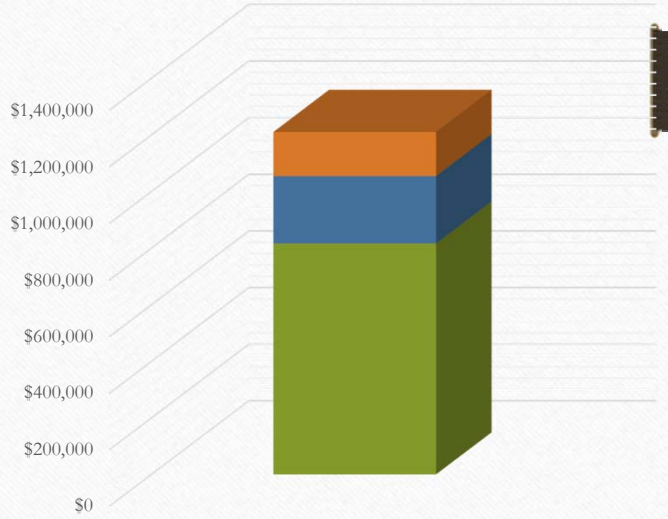


Valuation Model

- Consider: a one point increase in the emotion regulation for 100 kindergarteners translates to:
  - 4.81 additional high school graduates
  - 2.58 individuals with a job
  - 4.85 who were never arrested

Valuation Model

- Value from each of these outcomes
  - Increased pay from completing high school (119-283K)
  - Increased savings from employment
  - Reduced legal costs
- Focusing on public costs for decision makers
- Benefits between $800K and $1.1 million



Next Steps

- Other Datasets for IDA
- Drill Down into Outcomes
- Additional Covariates?
- Leverage Experimental Designs

Thank You!!

FAST TRACK PROJECT

- Conduct Problems Prevention Research Group (CPPRG)
- Jennifer Godwin

Child Development Project

- Ken Dodge
- John Bates
- Gregory Pettit
- Jennifer Lansford

Chicago Longitudinal Study

- Arthur Reynolds
- Suh-Ruu Ou
- Judy Temple

NIDA NATIONAL INSTITUTE ON DRUG ABUSE
The Science Of Drug Abuse & Addiction

Robert Wood Johnson Foundation

Eunice Kennedy Shriver NICHD
National Institute of Child Health & Human Development