Powering Healthcare’s Moonshot

we have the technology
[insert text]
Projected Growth In Population With Chronic Conditions, 2013–25

(This is not a space program)
Cost and Magnitude of Various Solutions to Reduce CO2 emissions by 2050

- Wind Turbines (Offshore)

**Legend:**
- Buildings and Cities
- Electricity
- Food
- Land Use
- Materials
- Transport
- Women and Girls
Cost & Magnitude of Solutions to Address Preventable Injury & Illness

Cost per Unit Change

Magnitude of Effect

CP
Cost & Magnitude of Solutions to Address Preventable Injury & Illness

- Walkable Cities
- Weight Loss Surgery
- Tobacco Quit Lines
- 1-on-1 Consultation
- Brief Alcohol Intervention
- Tobacco 21 Legislation
Cost & Magnitude of Solutions to Address Preventable Injury & Illness

Cost per Unit Change

1-on-1 Consultation

Tobacco Quit Lines

Tobacco 21 Legislation

Brief Alcohol Intervention

Walkable Cities

Weight Loss

Surgery

Magnitude of Effect

Rebooting Psychotherapy Research and Practice to Reduce the Burden of Mental Illness

Alan E. Kazdin and Susan L. Bledsoe, Department of Psychology, Yale University, New Haven, CT

Abstract

Psychological interventions for mental health issues have developed considerably in the past few decades. While progress has been noted generally, evidence suggests that mental illness is underdiagnosed and undertreated. This review focuses on the impact of early intervention in the workplace on the burden of mental illness. Early intervention in the workplace is defined as a program that addresses symptoms and can be delivered in a cost-effective manner. The authors discuss the importance of early intervention and the need for more research on effective treatment approaches. The study found that early intervention in the workplace can lead to significant reductions in the burden of mental illness.

Keywords:

Mental health, early intervention, workplace, burden of mental illness, prevention.
Cost & Magnitude of Solutions to Address Preventable Injury & Illness

**Cost per Unit Change**

- **Walkable Cities**
- **1-on-1 Consultation**
- **Tobacco Quit Lines**
- **Weight Loss**
- **Surgery**
- **Tobacco 21 Legislation**
- **Brief Alcohol Intervention**

**Democratize Here**

**Innovate Here**

**Advocate Here**
Cost & Magnitude of Solutions to Address Preventable Injury & Illness

Democratize Here

Innovate Here

Advocate Here

OUTCOME

OUTPUT

CHP

K =

Magnitude of Effect

Cost per Unit Change

Walkable Cities

1-on-1 Consultation

Tobacco Quit Lines

Weight Loss

Surgery

Tobacco 21 Legislation

Cost & Magnitude of Effect

Cost per Unit Change

500,000,000 a year
8,000 a year
200 a year
12 a year
2 a year
1 every 5 years
Discrete Intervention Technology
Foundational Behavioral Science

Discrete Intervention Technology

[CBTi]  [HRV BFB]  [Rate Reduction]  [CBT-CP]  […]
Discrete Intervention Technology

Foundational Behavioral Science

[Choice Architecture]
[Operant Conditioning]
[B-MAP]

[CBTi] [HRV BFB] [CBT-CP]

[Rate Reduction]
[Hyperbolic Discounting]
[Social Proof]
[...]
Discrete Intervention Technology

Foundational Behavioral Science

Strategic Use of Verbal Behavior

[CBTi] [HRV BFB] [Choice Architecture] [Operant Conditioning] [B-MAP] [CBT-CP] ...

[Rate Reduction] [Hyperbolic Discounting] [Social Proof] [...]

Strategic Use of Verbal Behavior
Foundational Behavioral Science

Strategic Use of Verbal Behavior

- [Reflections]
- [Softening Sustain Talk]
- [Cultivation of Change Talk]
- [Emphasizing Autonomy]

- [CBTi]
- [HRV BFB]
- [Choice Architecture]
- [Operant Conditioning]
- [B-MAP]
- [CBT-CP]
- [Rate Reduction]
- [Hyperbolic Discounting]
- [Social Proof]
Discrete Intervention Technology

Foundational Behavioral Science

Strategic Use of Verbal Behavior

Process-based thinking

Rate Reduction

Hyperbolic Discounting

Social Proof

[…]

Reflections

Softening Sustain Talk

[…]

Choice Architecture

Operant Conditioning

B-MAP

Cultivation of Change Talk

Emphasizing Autonomy

CBTi

HRV BFB

CBT-CP
Discrete Intervention Technology

Foundational Behavioral Science

Strategic Use of Verbal Behavior

Process-based thinking

Problem Definition

Methodology/Design

[Choice Architecture]
[Operant Conditioning]
[B-MAP]
[Cultivation of Change Talk]
[Emphasizing Autonomy]

[CBTi]
[HRV BFB]

[CBT-CP]

[Rate Reduction]
[Hyperbolic Discounting]
[Social Proof]

[Reflections]
[Softening Sustain Talk]

[Process-based thinking]
Discrete Intervention Technology

Foundational Behavioral Science

[Choice Architecture]
[Operant Conditioning]
[B-MAP]
[Cultivation of Change Talk]
[Emphasizing Autonomy]

Strategic Use of Verbal Behavior

Process-based thinking

Interprofessional Collaboration

Problem Definition

Methodology/Design

[CBTi]
[HRV BFB]

Rate Reduction

[Hyperbolic Discounting]

[Social Proof]

[Reflections]

[Softening Sustain Talk]

[CBT-CP]
Discrete Intervention Technology

Foundational Behavioral Science

Strategic Use of Verbal Behavior

Process-based thinking

Interprofessional Collaboration

Problem Definition

Methodology/Design

Influence in Context

[B-MAP]

[CBT-CP]

[Choice Architecture]

[Operant Conditioning]

[B-Map]

[Cultivation of Change Talk]

[Emphasizing Autonomy]

[Writing/Speaking/Presenting]
Discrete Intervention Technology

Foundational Behavioral Science

Strategic Use of Verbal Behavior

Process-based thinking

Interprofessional Collaboration

Deliberate Practice

With Feedback
Requisite for Development

1. Traditional Tertiary Service Delivery
2. Project-Based Work
<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>0700</td>
<td>CHP Meeting</td>
<td></td>
<td>Mindfulness Lab</td>
<td>2nd Year Reading Seminar</td>
<td>Specialty Services Huddle (720)</td>
</tr>
<tr>
<td>0730</td>
<td></td>
<td></td>
<td></td>
<td>2nd Year Reading Seminar</td>
<td>Psych Dept Meeting</td>
</tr>
<tr>
<td>0800</td>
<td>CHP SPEC/Intake</td>
<td>MCCC</td>
<td>Research</td>
<td>Fellow Supervision</td>
<td></td>
</tr>
<tr>
<td>0830</td>
<td></td>
<td></td>
<td>Data Analysis Meeting</td>
<td>MI EBP Lab / Other Projects</td>
<td></td>
</tr>
<tr>
<td>0900</td>
<td></td>
<td></td>
<td>Weight Management</td>
<td>Intern Individual Supervision</td>
<td></td>
</tr>
<tr>
<td>0930</td>
<td></td>
<td></td>
<td></td>
<td>DSMES III (1315; Third Thurs)</td>
<td></td>
</tr>
<tr>
<td>1000</td>
<td>Project Dashboard Meeting</td>
<td></td>
<td>DSMES III (1015; Third Tues)</td>
<td>Intern Individual Supervision</td>
<td></td>
</tr>
<tr>
<td>1030</td>
<td></td>
<td></td>
<td></td>
<td>DSMES III (1015; Third Tues)</td>
<td></td>
</tr>
<tr>
<td>1100</td>
<td>Individual Supervision</td>
<td>Case Conference</td>
<td>Research</td>
<td>Intern Individual Supervision</td>
<td></td>
</tr>
<tr>
<td>1130</td>
<td></td>
<td></td>
<td></td>
<td>DSMES III (1315; Third Thurs)</td>
<td></td>
</tr>
<tr>
<td>1200</td>
<td></td>
<td></td>
<td></td>
<td>DSMES III (1315; Third Thurs)</td>
<td></td>
</tr>
<tr>
<td>1230</td>
<td>CHP - HHL</td>
<td></td>
<td>Sleep Class</td>
<td>Sleep Class</td>
<td></td>
</tr>
<tr>
<td>1300</td>
<td>CHP - HHL</td>
<td></td>
<td></td>
<td>1st Year Reading Seminar</td>
<td></td>
</tr>
<tr>
<td>1330</td>
<td></td>
<td></td>
<td></td>
<td>Pain Class (1st &amp; 3rd Thurs)</td>
<td></td>
</tr>
<tr>
<td>1400</td>
<td></td>
<td></td>
<td></td>
<td>1st Year Reading Seminar</td>
<td></td>
</tr>
<tr>
<td>1430</td>
<td></td>
<td></td>
<td></td>
<td>Pain Class (1st &amp; 3rd Thurs)</td>
<td></td>
</tr>
<tr>
<td>1500</td>
<td>Sleep Seminar</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1530</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1600</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tertiary Service Delivery
Readings, etc…
Project-Based Work
<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>0700</td>
<td>CHP Meeting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0730</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0800</td>
<td>CHP SPEC/Intake</td>
<td></td>
<td>MCCE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0830</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0900</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0930</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1000</td>
<td></td>
<td>Project Dashboard Meeting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1030</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1130</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1200</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1230</td>
<td>CHP - HHL</td>
<td></td>
<td>Wright Management (Sleep CC 2nd Tues)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1300</td>
<td>CHP - HHL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1330</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1400</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1430</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1500</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1530</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1600</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Specialty Clinic**
- Apply behavioral science knowledge base
- Apply problem definition & hypothesis testing frameworks
- Hone strategic use of verbal behavior

**‘Health Habit Lab’**
- Apply behavioral science knowledge base
- Apply problem definition & hypothesis testing frameworks
- Hone strategic use of verbal behavior
- Higher frequency of practice vis-à-vis specialty clinic

**Sleep, Pain, & Weight Pathways**
- Program development, evaluation, and refinement
- Experience meeting demand for high-prevalence phenomena given fixed human resource package
<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>0700</td>
<td>CHP Meeting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0730</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0800</td>
<td>CHP SPEC/Intake</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0830</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0900</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0930</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1000</td>
<td>Project Dashboard</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1030</td>
<td>Meeting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1100</td>
<td>Individual Supervision</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1130</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1200</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1230</td>
<td>CHP - HHL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1300</td>
<td>CHP - HHL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1330</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1400</td>
<td>CHP - HHL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1430</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1500</td>
<td>Sleep Seminar</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1530</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1600</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Tertiary Service Delivery**
- CHP Meeting
- CHP SPEC/Intake
- CHP - HHL
- Sleep Seminar

**Project-Based Work**
- Intern CHP Seminar
- Reading Seminar
- MI EBP Lab
- MI Supervision
- DSMES III
- Intern Individual Supervision
- Intern CHP Seminar
- DSMES III (1315; Third Thurs)
- Pilot Meeting

**Readings, etc…**
- 1st Year Reading Seminar
- 1st & 3rd Thurs
- 1015; Third Tues
- Project Dashboard Meeting

**Data Analysis Meeting**
- Research
- MI EBP Lab / Other Projects
- CHP - FUT
- CHP Lunch

**Population Health Seminar**

**MI EBP Lab**
- Expand verbal-behavioral skillset through provision of deliberate feedback to interns

**MI Supervision**
- Cultivate skill w/ regard to strategic use of verbal behavior

**Intern CHP Seminar**
- Pedagogic application of expanding fund of behavioral scientific knowledge
Dashboard Meeting  
- Review projects; set priorities for the week

Pilot Project Meeting  
- Progress w/ respect to emerging lines of effort

Data Analysis Meeting  
- Confer w/ biostatisticians, epidemiologists, and others

‘Research’ Block  
- ‘Deep work’

Population Health Seminar  
- Deliberate practice/feedback with regard to scientific thinking and interprofessional communication
1. Map:
- Goal
- Conditions Requisite for success
- Supporting actions
- Participating actors
2. Swim-lane Diagram:

- What actions occur?
- By which actors?
- And in what temporal sequence?
3. Specify COM-B elements required for success at each step:

- **Motivation**

- **Ability**

- **Opportunity**
4. Prioritization:

- Which steps are most pivotal?

- And which are most modifiable?
5. Draft as network model

- For what nodes/connections are we attempting to ‘solve’?

- To what established BS principles may we appeal to influence behavior?
6. Design:

- Which BCTs are of potential relevance?

- How shall be design for, and evaluate the consequences of, the behavior change effort?
Insomnia Clinical Care Pathway

‘Freedom Quit Line’ (testing proactive reengagement)

Text Message Booster for Brief Alcohol Intervention

Weight Management Clinical Care Pathway*

Development of Virtual MSK Pain Course

Weight Gain Prevention among Pregnant Women

Vaccine Uptake within 9.6M Beneficiary Health System

Pragmatic Study of BCBT-P in PCBH

Combating Burnout among CRNA Residents

SANDMAN: Promoting Healthy Sleep at Population Level

Skills of Change Program Applied to Community Behavioral Health

Physical-Ecological Variables Impacting Wellness across Air Force

MI ‘Train the Trainer’ across 239 Alcohol and Drug Abuse Treatment Programs

Interdisciplinary Pain Neuroscience Education Class
Insomnia Clinical Care Pathway
‘Freedom Quit Line’ (testing proactive reengagement)
Text Message Booster for Brief Alcohol Intervention
Weight Management Clinical Care Pathway*
Development of Virtual MSK Pain Course
Weight Gain Prevention among Pregnant Women
Vaccine Uptake within 9.6M Beneficiary Health System
Pragmatic Study of BCBT-P in PCBH
Combating Burnout among CRNA Residents
SANDMAN: Promoting Healthy Sleep at Population Level
Skills of Change Program Applied to Community Behavioral Health
Physical-Ecological Variables Impacting Wellness across Air Force
MI ‘Train the Trainer’ across 239 Alcohol and Drug Abuse Treatment Programs
Interdisciplinary Pain Neuroscience Education Class
Enhancing Conventional Clinical Service Delivery
Insomnia Clinical Care Pathway

‘Freedom Quit Line’ (testing proactive reengagement)

Text Message Booster for Brief Alcohol Intervention

Weight Management Clinical Care Pathway*

Development of Virtual MSK Pain Course

Weight Gain Prevention among Pregnant Women

Vaccine Uptake within 9.6M Beneficiary Health System

Pragmatic Study of BCBT-P in PCBH

Combating Burnout among CRNA Residents

SANDMAN: Promoting Healthy Sleep at Population Level

Skills of Change Program Applied to Community Behavioral Health

Physical-Ecological Variables Impacting Wellness across Air Force

MI ‘Train the Trainer’ across 239 Alcohol and Drug Abuse Treatment Programs

Interdisciplinary Pain Neuroscience Education Class

Enhancing Conventional Clinical Service Delivery

Improving the Health System
Insomnia Clinical Care Pathway

‘Freedom Quit Line’ (testing proactive reengagement)

Text Message Booster for Brief Alcohol Intervention

Weight Management Clinical Care Pathway*

Development of Virtual MSK Pain Course

Weight Gain Prevention among Pregnant Women

Vaccine Uptake within 9.6M Beneficiary Health System

Pragmatic Study of BCBT-P in PCBH

Combating Burnout among CRNA Residents

SANDMAN: Promoting Healthy Sleep at Population Level

Skills of Change Program Applied to Community Behavioral Health

Physical-Ecological Variables Impacting Wellness

MI ‘Train the Trainer’ across 239 Alcohol and Drug Abuse Treatment Programs

Interdisciplinary Pain Neuroscience Education Class

Enhancing Conventional Clinical Service Delivery

Improving the Health System

Promoting Population Health