Pre-and Postnatal Exposure to Alcohol and Other Drugs: The Effects on Children’s Development: Clinical Perspectives

Early Interventions in the Path to Alcoholism

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Michigan Longitudinal Study: Robert A. Zucker, PI; Hiram E. Fitzgerald, Co-PI
Possible Transactional Linkages in a Primary Family System

Establishing Risk

• Through Family Characteristics
  – Children of alcoholics
  – Children of drug abusing or drug addicted parents
  – Children of parents with antisocial personality disorder
  – Children of parents with clinical depression
  – Children of parents in conflict

• Through Individual Characteristics
  – Externalizing behavior, aggression, behavioral undercontrol, oppositional defiant disorder
  – Negative emotionality, depression
  – Attention problems, ADHD
  – Shyness, social withdrawal, social phobias
  – Biological diathesis (genetic, congenital, perinatal)

• Through Social Environments
  – High drug use environments
  – High stress environments (violence, poverty, unemployment)
How early are these factors detectable?
Individual Risk

• We now can identify risk for substance abuse 12 years before it happens.

• These findings inform us about different times when we should intervene and prevent.
What We Know About the Development of High Risk:
Primary Onset of Substance Use Occurs between Ages 12 and 20

Early first drink (EFD ≤ 14 vs. NFD) as a proxy for . . .

- Adult alcoholism: Rate of alcohol dependence 4 times higher among EFD (Grant & Dawson, 1997).

- Lifetime risk of injury: 12 times greater (Hingson et al., 2000).

- Adolescent problem drug use: More problem drinking, injuries, violence, other drug use during adolescence (Gruber et al., 1996).
Cautions Associated with Early Intervention

1. A marker of a damaged social environment: What kind of family would let one so young have access? (Indicates a failure in monitoring, or even more significantly, the early encouragement of addictive behavior).

2. Creates disruption of life tasks (school achievement, peer competence).

3. Provides a head start on problem use, with more troubled peers, where use is more likely to continue.
What predicts early alcohol and other drug use?
Externalizing Behavior as a Predictor

- Aggressiveness
- Delinquent Activity
- Hyperactivity
- Inattention
High Levels of Internalizing Behavior as a Predictor

- Sadness
- Depression
- Anxiety
- Social Withdrawal
- Somatizing Complaints
Association between Behavior Styles at Age 3 and Adult Alcohol Dependence (Percent at Age 21)

Source: Caspi et al. 1996, p. 1038
What other factors in early childhood (ages 3 – 4) predict early drinking & drug use onset in adolescence?
Relation of Preschool Family Environment Indicators to Early First Drink Experience

Moos Family Environment Scale scores

- Cohesion: NFD 7.05, FD 6.19
- Organization: NFD 5.84, FD 5.12
- Conflict: NFD 2.55, FD 3.87

Moos Family Environment Scale scores
During the preschool years (3–5 years), early drinkers (12–14 years old) had...

- Exposure to parental drinking in larger quantities
- More externalizing and internalizing behavior problems
- But no differences in temperament, intelligence, or impulsivity

Relationship between Sleep Problems (Mother’s Ratings when Child was 3 -5 Years Old) & Substance Use in Adolescence

<table>
<thead>
<tr>
<th>Drug Type</th>
<th>Odds Ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alcohol only</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drinking</td>
<td>2.57***</td>
<td>1.45 – 4.57</td>
</tr>
<tr>
<td>Drunkenness</td>
<td>1.36</td>
<td>.64 – 2.90</td>
</tr>
<tr>
<td><strong>Cigarettes only</strong></td>
<td>1.66a</td>
<td>.90 – 3.05</td>
</tr>
<tr>
<td><strong>Marijuana only</strong></td>
<td>2.43*</td>
<td>1.05 – 5.62</td>
</tr>
<tr>
<td>Marijuana &amp; other drugs (excluding alcohol)</td>
<td>2.52**</td>
<td>1.23 – 5.19</td>
</tr>
</tbody>
</table>

Note: a $p = .10$, *$p < .05$, **$p = .01$, ***$p = .001$

Wong, Brower, Fitzgerald & Zucker, 2004
What Happens between Early Childhood and Adolescence?

• Developmental evidence shows that these risky behaviors are stable over time for some characteristics and not for others.
The combination of both early child risk (individual risk) and family environment (social risk) determine differences in course from early childhood to adolescence. . .
# The Different Adaptation Groups During the Preschool Years

<table>
<thead>
<tr>
<th>Family Adversity</th>
<th>Child Psychopathology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Non-challenged</td>
</tr>
<tr>
<td></td>
<td>Troubled</td>
</tr>
<tr>
<td>High</td>
<td>Resilient</td>
</tr>
<tr>
<td></td>
<td>Vulnerable</td>
</tr>
</tbody>
</table>

*Zucker, Wong, Puttlер & Fitzgerald, 2003*
Stability and Change in Externalizing Symptoms During the Transition into High School

Zucker, Wong, Puttler & Fitzgerald, 2003
Internalizing Symptoms

Zucker, Wong, Puttler & Fitzgerald, 2003
• The most damaged children (and those at highest risk) are those who temperamentally have the following vulnerability characteristics 

(behavioral indicators of undercontrol, roughness, irritability, early mood dysregulation, sadness, depression, sleep problems, and antisocial behavior).

• They also are growing up in high adversity, very difficult environments.
Three Development Pathways into Substance Use Disorder

Zucker et al. 2004
<table>
<thead>
<tr>
<th>Time Period</th>
<th>Risk Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preschool</td>
<td>Externalizing behavior problems, social withdrawal, poor school readiness.</td>
</tr>
<tr>
<td>Childhood</td>
<td>Behavior problems, oppositional behavior, impulsivity, social withdrawal, poor school performance.</td>
</tr>
<tr>
<td>Late middle childhood</td>
<td>Family disorganization (divorce/separation, loss of job, health or social problems of other family member); poorer parent monitoring.</td>
</tr>
<tr>
<td>Adolescence</td>
<td>Earlier onset of alcohol and other drug involvement, heavier alcohol and other drug problems, delinquency, depression.</td>
</tr>
<tr>
<td>Adulthood</td>
<td>Antisocial personality disorder, mood disorder, substance abuse disorder.</td>
</tr>
</tbody>
</table>

Adapted from Fitzgerald, Zucher, Puttler, Caplan & Mun (2000)
Social Costs of the High Continuity Trajectory

- Academic difficulty and failure
- Date rape/sexual assault
- Other kinds of physical injury to self and others (e.g. automobile accidents)
- Impaired social relationships
- Loss of social capital; foreclosure of future opportunities, higher poverty risk

Zucker et al. 2004
Risk Over Time: The Discontinuity Pathway I

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Preschool</td>
<td>School readiness, behavior within normal limits, adaptive temperament.</td>
</tr>
<tr>
<td>Childhood</td>
<td>Good school adaptation and performance; good friendship network.</td>
</tr>
<tr>
<td>Late middle childhood</td>
<td>Family disorganization (divorce/separation, loss of job, health or social problems of other family member); poorer parent monitoring; shift in more deviant peer network; increasing emergence of externalizing behavior, developing pattern of internalizing problems.</td>
</tr>
<tr>
<td>Adolescence</td>
<td>Alcohol and other drug involvement, minor delinquency. Poor or adverse outsider response or parent response; undependability of both parents, less available prosocial network. Difficulties self correcting.</td>
</tr>
</tbody>
</table>

Zucker et al. 2004
## Risk Over Time: The Discontinuity Pathway II

<table>
<thead>
<tr>
<th>Stage</th>
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</tr>
<tr>
<td>Adolescence</td>
<td>Alcohol and other drug involvement, minor delinquency. Parent or outsider response and/or personal concern moving back on track; shorter clinical course.</td>
</tr>
</tbody>
</table>

Zucker et al. 2004
Treatment
The Problem of Heterogeneity in Symptom Trajectories

- In clinical practice, trajectory (or symptom) variation tends to get ignored, sometimes is not even detected, because of the relatively short time frame of the clinical contact.
- Yet the data from prospective studies show that this is essential information in evaluating course and prognosis.
- Developmental assessment as a way of evaluating risk.
Must Take into Account

• Multiple pathways to substance abuse (trajectories, life course)
  – Equifinality
  – Multifinality
• Multiple pathways away from substance abuse
• Patterns of protective factors (70% of COA’s do not develop substance abuse problems)
• Awareness that there are nodal points for change in symptom pathways
Public Health Model

AGENT
Alcohol

HOST
Individual

ENVIRONMENT
Physical & Social Drinking Context

Kaskutas, 2003
Types of Prevention Based on Risk

• Universal prevention
  – Directed to entire population (labeling of risk targeting pregnant women; designated drivers)

• Selected interventions
  – Directed to at-risk population (school based programs: ALERT, STAR)

• Indicated interventions
  – Directed to symptomatic population (hospital based programs, bars etc. with warning; brief interventions)

Institute of Medicine (1989)
## Places to Intervene

<table>
<thead>
<tr>
<th>Individual</th>
<th>Environment</th>
<th>Agent</th>
</tr>
</thead>
<tbody>
<tr>
<td>School</td>
<td>Liquor stores</td>
<td>Alcohol content</td>
</tr>
<tr>
<td>Family</td>
<td>Bars and restaurants</td>
<td></td>
</tr>
<tr>
<td>Workplace</td>
<td>Highways</td>
<td></td>
</tr>
<tr>
<td>Health clinic</td>
<td>Community</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Media</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Economy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hospitals/Health Care</td>
<td></td>
</tr>
</tbody>
</table>

Kaskutas, 2003
Health Belief Model

- Perceived susceptibility
- Perceived severity
- Perceived benefits
- Perceived barriers

Kaskutas, 2003
## Predictors of Limiting Drinking for Health Reasons

**Women of Childbearing Age (n = 844)**

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saw 3 messages on birth defects (vs. none)</td>
<td>2.83**</td>
</tr>
<tr>
<td>Believes any alcohol very dangerous (vs. somewhat and not dangerous)</td>
<td>1.57*</td>
</tr>
<tr>
<td>Pregnant within last 12 months (vs. not)</td>
<td>1.76*</td>
</tr>
</tbody>
</table>

* p ≤ .05; ** p ≤ .01

Kaskutas, 2003
Family Adversity Indicators

- High drug involvement in the parent(s)
- Familial assortment of the substance use disorder (family history)
- Currency and persistence of parent(s)’ disorder (the need for family patterns of use)
- Presence of antisocial personality disorder in the parent(s)
- Parental noncompliance in child treatment
- Poor parent monitoring
Children’s Risky Rearing Environments

- Parental history of regulatory system dysfunction
- Parental history of psychopathology
  - Antisocial behavior disorder and aggression
  - Depression
  - Alcoholism and other drug use
- Parental history of relationship disturbances
- Parental poor value structures
- Parental cognitive deficiencies
- Family low socioeconomic status
- Family residence in risk aggregated neighborhoods

Fitzgerald, Puttler, Mun & Zucker, 2000
Children’s Risky Behavior

- Self regulatory dysfunction
- Difficult temperament
- Attachment (relationship) disorders
- Internalizing/externalizing behavior problems
- Parent-child relationship disturbances
- Schemas for alcohol use and alcohol-linked behavior
- Poor value structure
- Cognitive deficiencies
- High risk peer network

Fitzgerald, Puttler, Mun & Zucker, 2000
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