Boys at Risk: Biological and Experiential influences on Intersubjectivity and the Origins of Self

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Santa Fe, NM
November, 2015
In this workshop on BOYS AT RISK, we will discuss Intersubjectivity within the context of:

The Risk-Resilience Continuum: Why Boys?

Epigenetic Processes and Toxic Stress

Experiential Vulnerabilities contributing to Risk
  Absent and Risky Fathers
  Positive Fathers

Inter-subjectivity & Meaning Making

Organization of Self and Self-Other Relationships
Risk – Resilience Continuum: The Infancy to Innovation Framework
Critical Development Transitions

• **Prenatal through Early Childhood** (0 to 5 years)
  – Rapid physical, cognitive and socio-emotional development
  – Neurobiological, behavioral, mental networks organization
  – Foundation established for transition from home to school

• **Middle Childhood/Early Adolescence** (10 to 15 years)
  – Rapid neurobiological/biological and psychological changes
  – More autonomy and skill development but increased exposure to risk
  – Sets trajectory for success in high school

• **Late Adolescence/Early Adulthood** (18 to 25 years)
  – Transition from home and school to post-secondary education, employment, and self-sufficiency
  – Must acquire skills and attitudes to be successful in rapidly changing workplace
• RISK CUMULATING INFLUENCES

Photo: Gustav Vigeland Sculpture Park, Oslo Norway 2009
Systemic Sources of Risk Development

• Through Family Characteristics
  – Children of alcoholics and other drug-using parents
  – Children of parents with antisocial personality disorder
  – Children of parents with clinical depression
  – Children of parents in conflict
  – Children of parents with low family resources
  – Children with poor prenatal & perinatal histories

• 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)
  – Chronic exposure to toxic risk
Table 3. Prevalence of Specific Reported Adverse Childhood Experiences (ACEs), Total and Age

<table>
<thead>
<tr>
<th>ACE</th>
<th>National Percentage of Children</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>All</td>
</tr>
<tr>
<td>Low Income</td>
<td>26</td>
</tr>
<tr>
<td>Separation/Divorce</td>
<td>20</td>
</tr>
<tr>
<td>Family Alcohol/Drug problems</td>
<td>11</td>
</tr>
<tr>
<td>Family Mental Illness</td>
<td>9</td>
</tr>
<tr>
<td>Witness Neighborhood Violence</td>
<td>9</td>
</tr>
<tr>
<td>Witness Domestic Violence</td>
<td>7</td>
</tr>
<tr>
<td>Parent Incarcerated Sometime</td>
<td>7</td>
</tr>
<tr>
<td>Parent who Died</td>
<td>3</td>
</tr>
</tbody>
</table>

Percent of children nationally with 0 (54%), 1-2 (35%) or 3+ (11%) adverse experiences (aged birth to 17).

Factors Highly Related to Negative Early Organizational Processes

Exposure to multiple, inter-related, and cumulative toxic risk factors imposes heavy developmental burdens during early childhood and induces, facilitates, and/or maintains development of dysfunctional behavior patterns.

Adaptive Processes & Functions

STRESS

Neural & Neuro-endocrine Systems

Behavioral & Psychological Systems

Extra-familial systems

HPA Axis and Allostasis:
(Sterling & Eyer, 1988).
Types of Allostatic Load  (McEwen & Stellar, 1993)

Frequent Stress: Chronic exposure to stressful experience

Failed Shutdown: Failure of homeostatic mechanisms to restore balance

Inadequate Response: Negative feedback systems producing chaotic system overload
• WHY ARE BOYS AT RISK FOR DEVELOPMENTAL PATHWAYS THAT ARE MORE LIKELY TO LEAD THEM TO NEGATIVE LIFE-COURSE OUTCOMES.
THE BIOLOGICAL STORY
Conception

- Death rate higher in male than female fetuses

- @ 120 XY conceived for every 100 XX

- @ 104/107 XY born for every 100 XX

- Considerable variation across cultural samples, intra-cultural environmental stressors, climate changes, nutrition, age of concept (and of the conceiving couple), etc,

Pushback: Large sample from UK studied, finding 50-50 split: but, the sample was not population based, so may be a selection factor
**Lifetime gamete production**

- X or Y (sperm, billions)
- Y @ 50 genes
- XY

- X (ova, about 500)
- X @ 3000 genes
- XX

**Genetic mutation rates**

- 5 times higher on X

more likely to express if paired with a Y, because no gene copy on Y

- 95% of Y does not exchange DNA with X

Boys at Risk: The Short Aspect of the Big Y

Induces gonads to form testes

HPA stress regulatory system
Slow down of biological maturation
Two year lag in onset of puberty

Prenatal changes in neural systems
Higher testosterone levels in males

Telomeres

Nucleoprotein material on ends of chromosomes that protect genetic code.

Telomerase: enzyme that extends length of telomeres

Adult research: Shortening of telomeres related to dementia, osteoporosis, diabetes, stroke, cardiovascular disease, alcoholism, stress
Telomere Shortening in Children

Fragile Family and Child Wellbeing Study:

African American 9 year old boys: **reared in disadvantaged neighborhoods** (low income, low maternal education, unstable family structures, harsh parenting), had **shorter telomeres than boys** reared in advantaged neighborhood.

Boys with specific genetic sensitivity: had **longer telomeres if they lived in advantaged neighborhoods**, than if they lived in disadvantaged neighborhoods.


Prenatal Exposure

**Telomere length in cord blood** was significantly **lower for infants whose mothers experienced anxiety** during pregnancy


Bucharest Early Intervention Study: Institutionalized children placed in Foster Care

Baseline institutional care at time of Foster Care placement predicted telomere length in girls but not boys

**Percentage of institutional care at 54 months of Foster Care predicted telomere length in boys but not girls**

**Consistent with other evidence that there are gender differences in response to stress, with boys more adversely affected.**

Genetics, Epigenetics and Gene-Environment Interplay

Epigenome

\[ \downarrow \]

Turns genes on and off by

\[ \downarrow \]

DNA methylation  Histone Modification

Methylation turns off genes allowing remaining genes remaining in a cell to regulate expression. Especially relevant to organization of the HPA axis stress regulation system. Occurs primarily via gene-environment interactions.

Epigenetics refers to altering gene expression through experience without altering the gene sequence.
# Greater Incidence for Boys

## Mortality
- Diarrhoeal diseases
- Measles
- Dyptheria
- Tuberculosis
- Pneumonia
- Syphilis
- Respiratory disease syndrome
- Haemorrhages
- Birth injuries
- Sudden Infant Death Syndrome
- Infectious disease
- Chronic lung disease
- Malnutrition
- Immunizations
- Accidents

## Morbidity
- Rickets
- Meningitis
- Septicaemia
- Enterovirus
- Acute lower respiratory disease
- Malnutrition
- Autism
- ADHD
- ADD
- Dyslexia
- High activity levels
- Higher irritability
- Self regulatory problems
Three key points to remember: **Epigenetic modifications**

1. Are dynamic and potentially reversible processes

2. Illustrate how environment and life risk factors may be linked to etiology of mental/behavioral problems

3. Are linked to basic aspects of neurobiological function

Four “Laws” of Behavior Genetics

All human behavioral traits are heritable. (all are affected by genetic variation).

The effect of being raised in the same family is smaller than the effect of genes.

A substantial portion of the variation in complex human behavioral traits is not accounted for by the effects of genes or families.

A typical human behavioral trait is association with very many genetic variants, each of which accounts for a very small percentage of the behavior variability.


Development (Independent of Positive or Negative Outcomes)

Increasingly, development is understood as change that is:

Emergent

Epigenetic

Systemic

Organized

Constructive

Complex

(and sometimes chaotic)

Boys at Risk:

Absent and Risky Fathers
Children’s Risky Behaviors

- 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

Evidence Clearly Indicates that Father Absence is Associated with:

**Cognitive Development**
- Poor school achievement
- Lower scores on intelligence tests
- Lower grade point averages
- Trouble with mathematical and puzzle tasks
- Difficulties paying attention
- Higher likelihood of being expelled, drop out
- Lower higher education attainment

**Social, Emotional & Moral Development**
- Poor moral development
- Difficulty delaying gratification
- More impulsivity
- A weaker sense of right and wrong
- Social and emotional maladjustment
- Conduct and anxiety disorders

**Developmental Psychopathology**
- Suicide
- Deviant peer group selections
- High rates of aggression, bullying, and antisocial behavior
- Higher rates of physical and sexual abuse
- Higher rates of involvement with the criminal justice system
- Higher rates of alcohol and other drug problems
- Earlier onset of sexual intercourse, smoking, AUD
- Higher probability of possessing weapons
Boundary Ambiguity:

<table>
<thead>
<tr>
<th>Physical</th>
<th>Psychological</th>
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<tbody>
<tr>
<td>Present</td>
<td>Present</td>
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<tr>
<td></td>
<td>Healthy</td>
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<tr>
<td></td>
<td>Neglect</td>
</tr>
<tr>
<td>Absent</td>
<td>Challenged</td>
</tr>
<tr>
<td></td>
<td>Vulnerable</td>
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</tbody>
</table>

Father Absence and Epigenetics

“epigenetics may help to address a number of questions about offspring phenotypes that result from father absence and unstable environment, including what kind of epigenetic process or switch is involved, whether it is partially reversible, what specific processes are involved at the molecular level…and whether or not the phenotype can be inherited (p. 32).

RESILIENCE CUMULATING INFLUENCES
• MOTHERS TALK, CUDDLE, AND PLAY WITH TOYS; FATHERS DO ROUGH AND TUMBLE, ESPECIALLY WITH BOYS (Fitzgerald, 1977; Power, 1981).

MOTHERS TEACH BABIES ABOUT INNER CONTROL, FATHERS ADD A PLAY DIMENSION, AN AROUSAL DIMENSION AND TEACH BABIES HOW TO GET BACK IN CONTROL (Yogman, 1982).

Father Involvement: Activation Relationship Theory, shifting the focus on what fathers do.

**Stimulation:** fathers encourage the child’s interaction with the outside world

**Discipline:** fathers provide children with limits that will maintain their safety

fathers…..stand for the recognition of independence and desire as reflected in parental attitudes of *stretching* the child’s adaptive capacities, *challenging* children to conquer obstacles, as well as *confronting* the child with the world of differentiation and the demands of reality (Diamond, 1998, pp 262-263).

Good Fathering

“Good fathering is characterized by a high degree of engagement with, accessibility to, and responsibility for children, each of which reflects fathers’ sensitive, mutual delight, developmentally facilitative practice, and other-centered ethics” (p. 135).

Phenomenology

- Edmund Husserl (1859-1938)

Phenomenology: the study of phenomena

Understanding the world as we subjectively experience it
one’s self and thoughts (subjectivity)
one’s experience with others (intersubjectivity)

Who am I?
## Intersubjectivity

<table>
<thead>
<tr>
<th>Self</th>
<th>Related Theories:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self – Other Differentiation</td>
<td>Simulation theory</td>
</tr>
<tr>
<td>Self – Other Relationship</td>
<td>Embodied simulation theory</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Related Concepts:</th>
<th>Related Theories:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empathy</td>
<td>Theory of mind</td>
</tr>
<tr>
<td>Meaning-making</td>
<td>Theory-Theory</td>
</tr>
<tr>
<td>Mind-reading</td>
<td>Interaction theory</td>
</tr>
<tr>
<td>Mental models</td>
<td>Systems theory</td>
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<tr>
<td>Representational models</td>
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</table>

Daniel Stern: Self and Intersubjectivity

Components of Self          Organizational period
• Emergent Self           birth-2 months
• Core Self               2-6 months   (Lewis & Brooks-Gunn categories of self)
• Subjective Self         7-15 months   (emergence of Intersubjective relatedness)
• Verbal Self             15 Months---

Intersubjective Relatedness: Sharing Attention, Affect, and Intentionality

inter-attentionality: sharing attention or joint attention

inter-affectivity: social referencing, affective experience enters intersubjectivity:

   Affect attunement: “performance of behaviors that express the quality of feeling
   of a shared affective state without imitating the exact behavioral expression of the
   inner state.

inter-intentionality: mutual sharing of intentions and motives

Lewis and Brooks-Gunn: Categories of Self

Categorical Self:
Anchored to external context
- Gender
- Height
- Skin Color
- Temperament
- Intelligence
- Religion

Existential Self:
Anchored inwardly (and one’s intersubjective sense of self)
- Who am I?
- Where do I fit into the world?
- What can I become?

Homo Sapiens and Symbolic Meaning

“Human beings are creatures who are evolved to critically rely upon sharing symbolic meanings to live in their world, and such symbolic meanings, ‘depend upon the human capacity to internalize language and use its systems of signs…such a social meaning readiness is a product of our evolutionary past’ (Bruner, 1990).” (p. 271)

An emergent question is therefore: might the genders construct rather different stories, originating from a sexually selected, evolved neuronal template, and consequently, might the earliest expression of such narratives be represented in the first free play activities? (p.271).

Proposes that the ability to understand others’ intentional behavior has its origins in sensory-motor processing (imitation, mirror neurons) which is then scaffolded into more complex social-cognitive mental abilities.
Early Imitative Behaviors

Tongue thrusting,
Mouth gaping,
Finger movements


Perspective taking: Early experience with intersubjectivity facilitates the development of neurobiological underpinnings for perspective taking or mentalization—the ability to imagine another’s viewpoint and understand what might be motivating their behavior, a critical capacity for effective human relations. (p 79).

Attachment theory

“Attachment theory supports the notion that children derive meaning about themselves through parent-child interactions, determining constructed paradigms of self and self-in-relationships.”

Gender Differences in Attachment

Attachment: Story Stem Completion Studies

Girls representations expressed more relationship oriented and coherent themes

Boys representations expressed more non-interpersonal and aggressive themes

Doll play

Girls represented more secure mother-child relationships
Boys represented more relationship difficulties

Family Disturbances (across many studies)

Boys have substantially more disorganized attachment

Activation Relationship Theory: Gender Differences

“The affective bond that enables children to open up to the outside world, focusing primarily on parental stimulation of risk taking and control.”

“Children’s feelings of confidence result from parental encouragement of risk-taking during exploration of their environment, with parents protecting [them] through discipline (limit setting, control).”

Study ART through use of the Risky Situation: a 12-18 month old variation of the Strange Situation

<table>
<thead>
<tr>
<th>ART Classifications</th>
<th>Attachment Classifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underactivated: inhibited</td>
<td>A: Avoidant</td>
</tr>
<tr>
<td>Activated: Confident</td>
<td>B: Secure</td>
</tr>
<tr>
<td>Overactivated: Externalizing</td>
<td>C: Resistant</td>
</tr>
<tr>
<td></td>
<td>D: Disorganized</td>
</tr>
</tbody>
</table>

### Attachment Theory vs. Activation Theory and Child Confidence

<table>
<thead>
<tr>
<th>Relationship Theory</th>
<th>Parental Role</th>
<th>Parental Behavior</th>
<th>Primary Parent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachment</td>
<td>Sensitivity to children in times of distress</td>
<td>stay in close proximity (secure base)</td>
<td>Mother</td>
</tr>
<tr>
<td>Activation</td>
<td>Encourage risk taking, exploration</td>
<td>discipline (limit setting, control)</td>
<td>Father</td>
</tr>
</tbody>
</table>

**Activation scores for boys are significantly higher than for girls**

24.1 percent of boys had disorganized attachments with father

Confident toddlers engage in more rough and tumble play with fathers at age 3.

Also at age 3, boys engage in significantly more physical aggression and become more dominance focused than girls

Mental Representations: Priming Set Points for Developmental Outcomes

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