Resilience in Human Development: Interdependent Adaptive Systems in Theory and Action

(Note that this PDF includes most slides - Photos are excluded.)

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Pathways to Resilience III
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Overview
• Changing concepts, models, & methods
• Translational applications
• Enduring & emerging controversies
• New horizons

Resilience in Human Development:
Interdependent Adaptive Systems in Theory and Action

Capacity of a system
to withstand or recover
from significant disturbances that threaten
its adaptive function, viability, or development

RESILIENCE

In a developing system
• Development arises from interaction of many systems across levels
• Development is dynamic

Systems in a child's life are
• Embedded
• Interacting
• Interdependent

Therefore
• Resilience is dynamic
• Capacity for adaptation to adversity is distributed across systems
• Individual resilience depends on resilience of other systems
• Resilience is not a trait

See Masten 2003

Two key components

- **Disturbances**
  - What challenges are threatening the system?
    - Risk factors, cumulative risk
    - Adversities chronic or acute

- **Adaptation**
  - How well is the system doing?
    - Competence in developmental tasks
    - Symptoms
    - Other criteria for judging adaptive success

**Snapshot of a risk gradient**

**Risk Factors**
- Low education
- Single parent
- Parent died
- Parents divorced
- Foster care
- Maltreatment
- Saw violence

**Risk/asset gradient**

**Variation in function within risk level**

**Reading scores 2005 to 2009**
26,501 students

- Low risk (25%)
- Reduced price (4%)
- Nat test norm
- Free meals (57%)
- HHM (14%)

**HHM student individual reading scores N>3000**

**What makes a difference?**
Pathways of adaptive function

Acute trauma or disaster

Optimal zone
Okay zone
Maladaptive zone

Time

Symptoms

High
Moderate
Low

After Hurricane Andrew 1992

Post-traumatic Symptoms

Clinical level

Luo et al 2012 cortisol in hair related to 2008 earthquake exposure and PTSD

After Hurricane Andrew 1992

Clinical level

La Greca et al. (2013) Child Youth Care Forum, 42, 351-369

La Greca et al. (2013)
**Severe Chronic Adversity**

**Conditions improve**

- **Optimal zone**
- **Okay zone**
- **Maladaptive zone**

**Trajectories of Internalizing Symptoms in War-Affected Sierra Leonean Youth 2002-2008**

Betancourt et al (2013) Child Development

- 5% stable high
- 48% improvers
- 6% deteriorating
- 41% stable low

**After Katrina & Deepwater Horizon oil spill**

Ososky et al 2015

- Stable high 9%
- Steep decreasing 21%
- Low increasing 18%
- Stable low 52%

**Cascades**

- Spreading effects over time across
  - Domains of function
  - Levels of function
  - Systems
  - Generations

**Cascade examples**

- See Masten & Cicchetti 2010 special issues
  - Development and Psychopathology
- Fisher et al 2007 foster care intervention
  - Parenting to child diurnal cortisol patterns
- Boxer et al 2013 Child Development
  - Community violence to increasing youth aggression
    - 3 waves, 3 age cohorts, 3 populations, 3 levels
    - 600 Palestinians, 451 Israeli Jews, 450 Israeli Arabs
    - Cascade
      - Social ecology to microsystems to individual
**Intervention effects can grow and spread**

-0.6
-0.4
-0.2
0
0.2
0.4
0.6
0 1 2 3 4 5 6 7

**Effect Size (d)**

- Parenting
- Youth Internalizing
- Deviant Peer Association
- Teacher Report Delinquency
- Maternal Depression
- Maternal Substance
- Per Capita Yearly Income

Beldavs, Forgatch, Patterson, & DeGarmo (2006)

See Patterson Forgatch and DeGarmo 2010

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**Other key effects considered in resilience science**

- **Promoters of positive adaptation**
  - Promotive factors – regardless of risk level

- **Protectors of positive adaptation to threats**
  - Protective factors & buffers
  - Steeling effects & stress inoculation

- **Other kinds of moderating effects**
  - Vulnerability to undesirable outcomes
  - Context dependent moderators

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**Main effects model**

- Risk/Asset
- Risk
- Promoter
- Intervention
- Adaptive Outcome

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**Vulnerability or Protective Moderators**

- Risk-activated moderator
- Independent moderator

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**Context dependent moderators**

- Adversity
- Differential sensitivity moderator
- Outcome

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**What makes a difference?**

- Decades of research
- Diverse populations and situations
- Disagreement about concepts
- Inconsistent methods
- Yet...

**Striking consistency in findings**
The short list for resilience

- Capable caregiving and parenting
- Other close relationships
- Problem-solving skills
- Self-regulation skills
- Motivation to succeed
- Self-efficacy
- Faith, hope, belief life has meaning
- Effective schools or ECE
- Effective communities
- Effective cultural practices

What does the short list mean?

- Basic adaptive systems are important for resilience under many different circumstances
- Adaptive capacity extends beyond the person into other social and cultural systems

Adaptive systems (examples)

- Family
- Attachment relationships
- Neurocognitive learning systems
- Neurocognitive control systems
- Mastery motivation and reward systems
- Spirituality and religion
- Culture
- Education systems
- Community
- Biological and cultural evolution

Resilience framework for action

<table>
<thead>
<tr>
<th>Mission</th>
<th>Frame positive goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Models</td>
<td>Include positive influences</td>
</tr>
<tr>
<td>Measures</td>
<td>Assess assets &amp; positive goals</td>
</tr>
<tr>
<td>Methods</td>
<td>Prevent - promote - protect</td>
</tr>
<tr>
<td>Multiple</td>
<td>Engage multiple levels, disciplines</td>
</tr>
</tbody>
</table>

Strategies for positive change

Risk-focused
- Prevent / reduce risk or adversity exposure

Asset-focused
- Increase resources or access to resources

Process-focused
- Restore or harness the power of human adaptive systems

Intervention strategies

Figure from Masten 2014

From "Ordinary Magic: Resilience in Development"
Windows of opportunity

- When plasticity is surging
- When conditions converge for change
- When systems are in flux or unstable
- Some are developmental
- Some arise from chance
- Some arise in the context of adversity
- Some arise when people seek help

Strategic targets and timing

- High plasticity and multi-system change
  - Prenatal
  - Early childhood
  - Adolescence
  - Emerging adulthood
  - Later...
- Where, when is the leverage for change?
- Facilitating or interrupting cascades

Minnesota example

- Research program focused on promoting school success in children from homeless/highly mobile families

Important, measureable, malleable

- Parenting
- Child executive function (EF) skills
- Stress

Measurement issues

- Lab-developed tools often do not work well with high-risk families in the field

Biological measures of stress

- Salivary cortisol
- Hair cortisol
- Salivary RNA
- Physiological arousal
Validating parenting measures in highly disadvantaged families

- Five Minute Speech Sample
- Parent self-report
- Interviews
- Observational coding
  - State-Space Grid
  - PMTO FIT coding
  - Global clinical judgments

Parenting Quality Moderates Risk

Herbers et al 2011

Parenting Quality

Academic Functioning

Cumulative Risk

Executive function

- Neurocognitive processes involved in goal-directed control of attention, thought, actions - cognitive control
- Important for school success
  - pay attention, listen to teacher
  - control emotions and impulses
  - wait turn, sit on the circle
  - follow instructions
  - switch activities

Why EF?

- Implicated in resilience studies
- Important for learning
- Affected by “toxic stress”
- Related to competence over time
- Related to good parenting
- Develop rapidly in preschoolers
- Promising malleability

EF skills predict school success

EF Z-scores

0.46
Resilient

-0.33
Maladaptive

Obradović 2010
Masten et al 2012
Executive function related to

- Parenting quality
  - Observed co-regulation skills of parent
  -Expressed emotions

- Child behavior
  - Observed on-task behavior
  - Teacher reported child relationships and conduct
  - School readiness measures, academic achievement
  - Parent reports of child behavior

- Lower salivary cortisol levels

Multiple components

- Curriculum and teacher training

- Parent training and family fun sessions

- Individual child training

Multilevel measures

- Classroom function (CLASS)
- Teacher behavior
- Observed child behavior
- Parent skills
- Child executive function
- Physiological arousal
- Cortisol in saliva and hair
- Salivary RNA

Aiming for translational synergy

- Theory-informed but practical

- Collaborative from inception

- Designed by partners representing science, practice and service expertise

- Consulting families all along the way

- Intervention experiments to promote resilience represent strong tests of resilience theory

Enduring & Emerging Issues

- Test larger scale
- Evaluate
- Pilot
- Refine
- Try
- Refine
- Try
- Design
- Theory of change

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See Masten, 2011
Is resilience a trait?
• The “no” view is prevailing
• Individual differences matter
• Context, timing, and combinations matter
• Interesting new forms
  • Biomarkers and endophenotypes

Is there a price of resilience?
• Terrible experiences can leave scars
  • The cost of adversity
• Positive achievements can exact a cost
  • The cost of adapting well
• Interesting new variation
  • “Is Resilience Only Skin Deep?” (Brody et al 2013)
  • Allostatic load among successful youth at risk

Defining positive adaptation
• Who decides?
• Is happiness important?
• What happens when values collide?

Is there a time limit on resilience?
• Short- and long-term perspectives
• Is recovery that takes a long time still a form of manifested resilience?

See Psychological Inquiry 2015
Lead article by Bonnano
Masten commentary

Does experience with adversity help or hinder capacity to adapt?
• Steeling vs sensitization effects
• Inoculation vs kindling effects
• Depletion effects
• Nonlinear possibilities

New Horizons
The 4th Wave

- Expanding research
  - Neurobiology of resilience
  - Family resilience
  - Community resilience
  - Cultural processes
- Integrative processes linking levels
- Empirical capture of pathways
- Globalization

Sensitivity to context

- Differential susceptibility, biological sensitivity
  - Belsky, Boyce, Ellis, Obradović, Pluess et al
- Transformative effect on how resilience and intervention are conceptualized
- Powerful reminder that context and function matter

Adaptive calibration

- Adaptive biological systems show programming by experience
  - Metabolic, stress, immune systems
- Reprogramming
  - Is re-calibration possible?
  - Can plasticity windows be re-opened?

Ellis & Del Giudice 2014

Cultural influences in resilience

- Rapidly emerging after years of neglect
- Studies of war, disaster, migration
- Key role of the Resilience Research Centre

Globalization emerging in many forms

- Disaster preparedness
  - Focusing on the needs of children
- National Academies
  - Forum on Investing in Young Children Globally
- State and national governments
  - Investing in young children for lifelong benefits
  - Prevention economics
- International humanitarian action
  - Raising the bar beyond survival with multi-sector efforts
  - UNICEF, World Bank, Save the Children, and others

Enduring lessons

- Resilience is common
- There are many paths of resilience
- Ordinary adaptive systems are powerful
- Resilience can be supported and promoted
- Resilience of children and youth depends on resilience of families, communities, societies
Global resilience depends on the resilience of children everywhere

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