

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

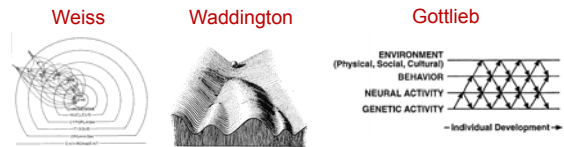
- Changing concepts, models, & methods
- Translational applications
- Enduring & emerging controversies
- New horizons

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

RESILIENCE

In a developing system

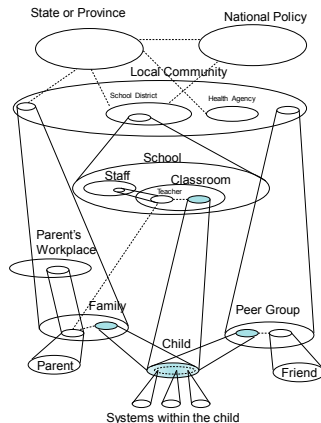
- Development arises from interaction of many systems across levels
- Development is dynamic



Gottlieb 2007, Lerner 2006, Overton 2013, Sameroff 2010, Zelazo 2013

Systems in a child's life are

- Embedded
- Interacting
- Interdependent



See Masten 2003

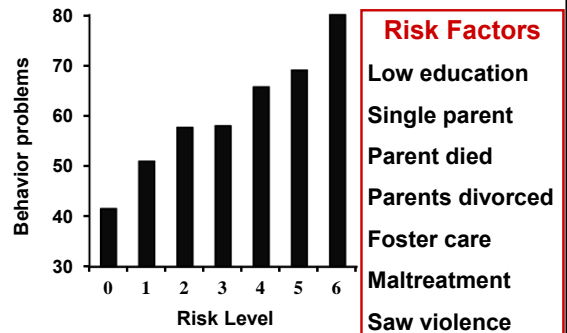
Therefore

- 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

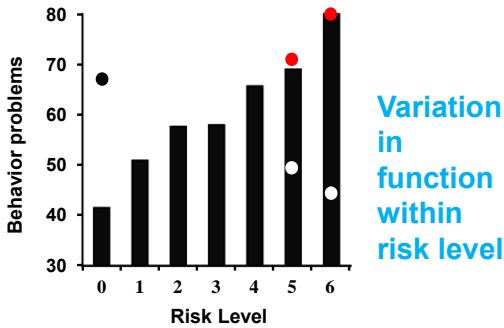
Two key components

- **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

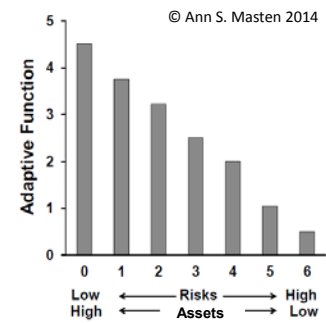
Snapshot of a risk gradient



Masten & Sesma 1999

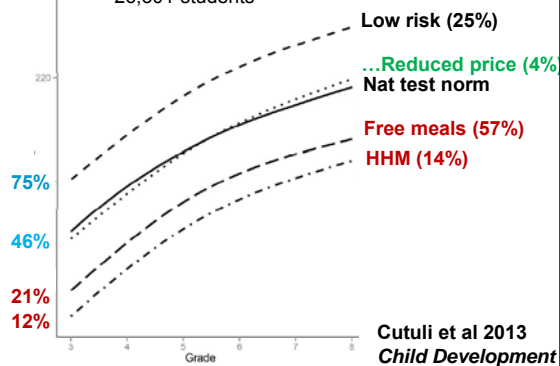


Risk/asset gradient

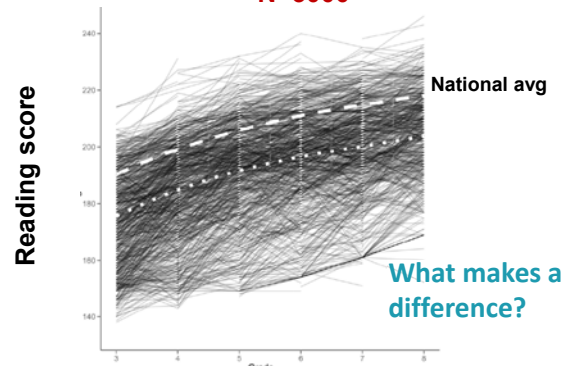


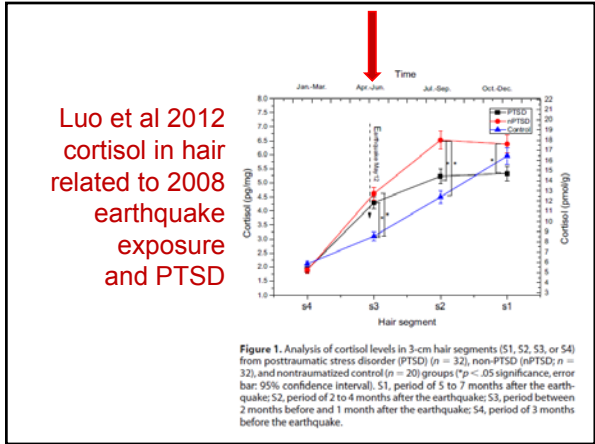
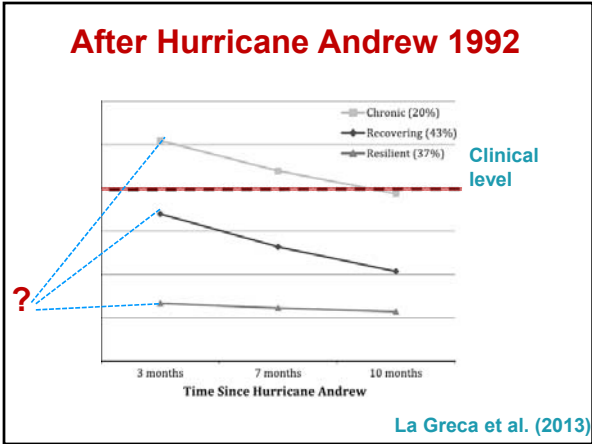
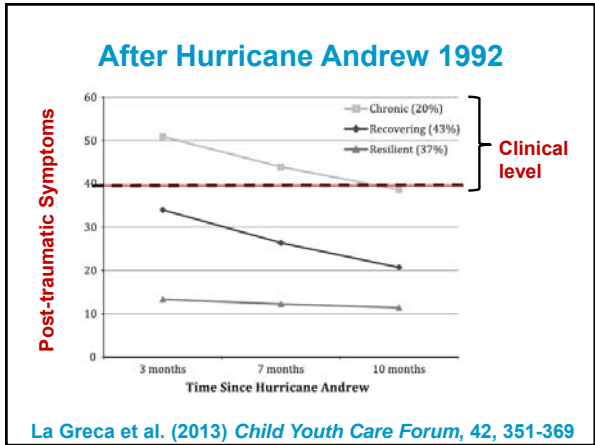
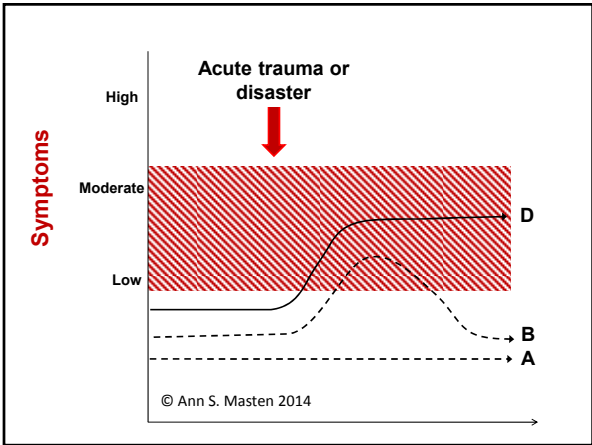
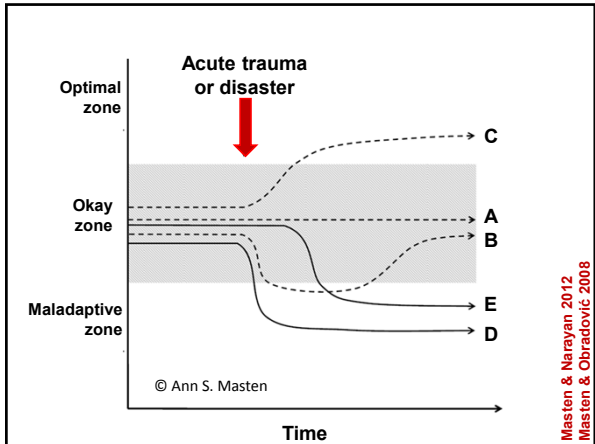
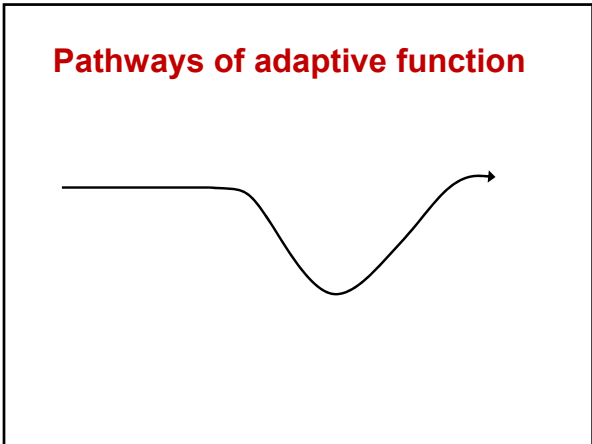
Reading scores 2005 to 2009

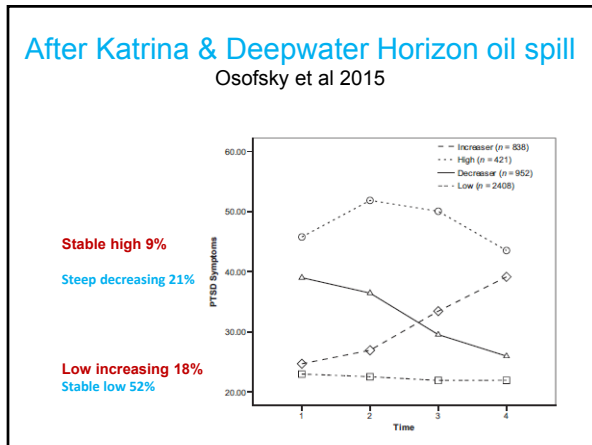
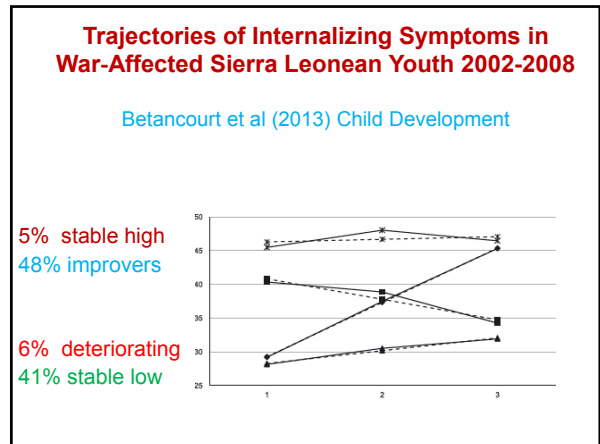
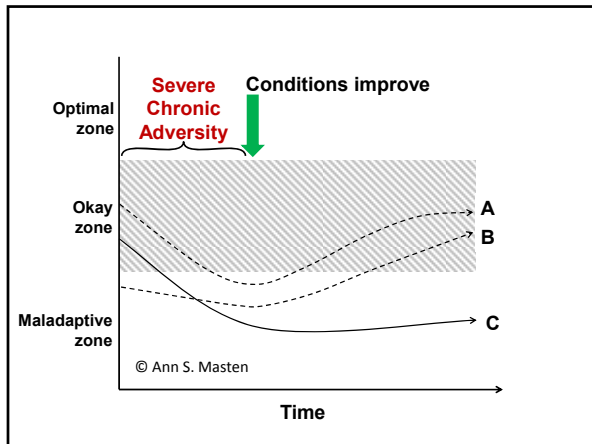
26,501 students



HHM student individual reading scores N>3000

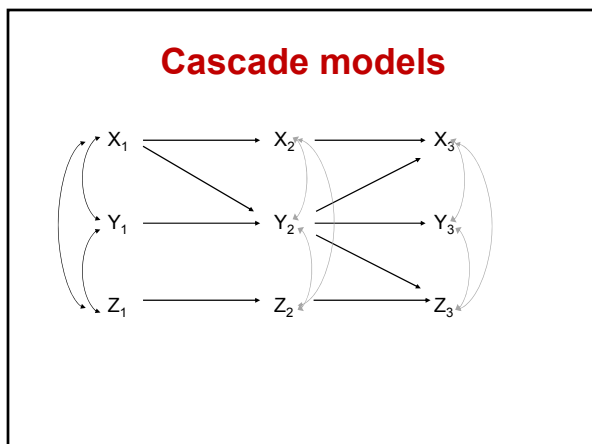






Cascades

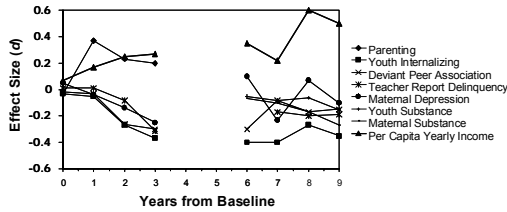
- Spreading effects over time across
 - Domains of function
 - Levels of function
 - Systems
 - Generations



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



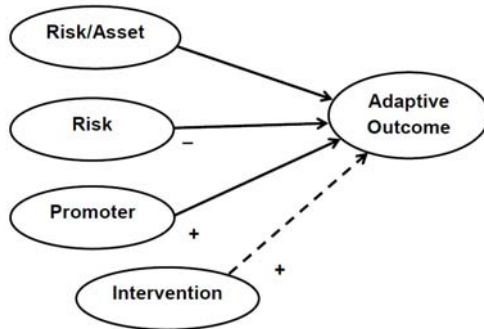
Beldavs, Forgatch, Patterson, & DeGarmo (2006)

See Patterson Forgatch and DeGarmo 2010

Other key effects considered in resilience science

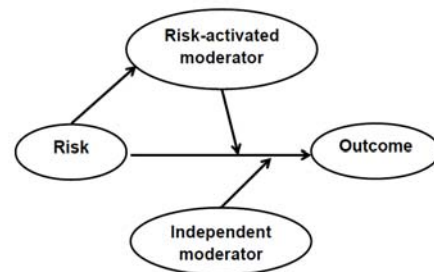
- Promoters of positive adaptation
 - Promotive factors – regardless of risk level
- Protectors of positive adaptation to threats
 - Protective factors & buffers
 - Stealing effects & stress inoculation
- Other kinds of moderating effects
 - Vulnerability to undesirable outcomes
 - Context dependent moderators

Main effects model



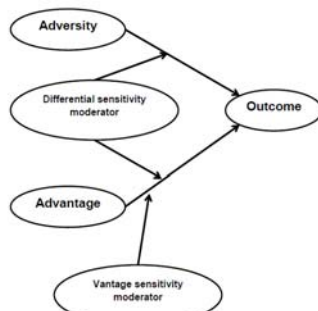
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Vulnerability or Protective Moderators



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Context dependent moderators



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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

Mission	Frame positive goals
Models	Include positive influences
Measures	Assess assets & positive goals
Methods	Prevent - promote - protect
Multiple	Engage multiple levels, disciplines

See Masten 2011, 2014

Strategies for positive change

Risk-focused

- Prevent / reduce risk or adversity exposure

Asset-focused

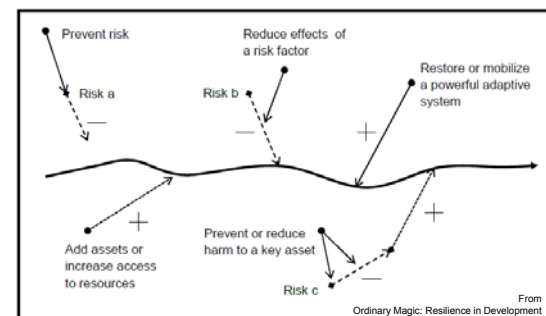
- Increase resources or access to resources

Process-focused

- Restore or harness the power of human adaptive systems

Intervention strategies

Figure from Masten 2014



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**

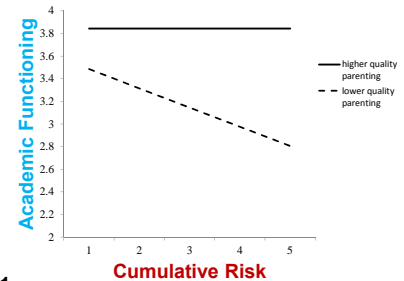
Biological measures of stress

- **Salivary cortisol**
- **Hair cortisol**
- **Salivary RNA**
- **Physiological arousal**

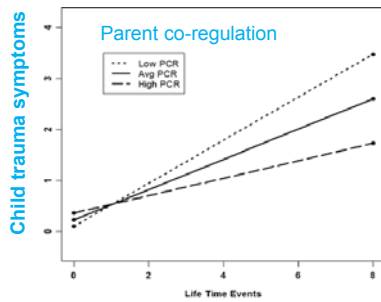
Validating parenting measures in highly disadvantaged families

- 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



Herbers et al 2014
J of Abnormal Child Psychology

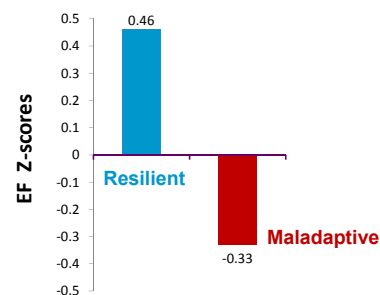
Executive function

- 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



Obradović 2010
Masten et al 2012

Executive function related to

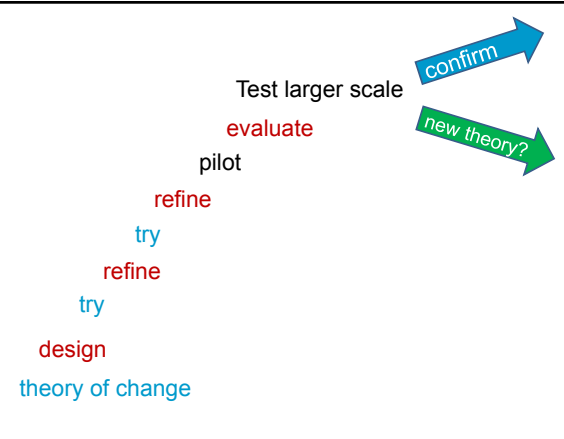
- **Parenting quality**
 - Observed co-regulation skills of parent
 - Expressed emotions
- **Child behavior**
 - Observed on-task behavior
 - Teacher reported child relationships and conduct
 - School readiness measures, academic achievement
 - Parent reports of child behavior
- **Lower salivary cortisol 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**

See Masten, 2011

Enduring & Emerging Issues

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?

- Stealing 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**

Acknowledgments

- **Families & individual research participants**
- **Mentors in developmental and resilience science**
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