Resilience in Developing Systems:
Progress toward Integrated Science & Practice

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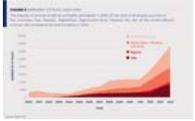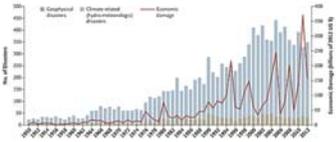
ERFCON 2017
University of Zagreb, Croatia

17 May 2017

We live in turbulent times…

- Natural disasters
- Climate and weather changes
- War and political conflict
- Millions of refugees and displaced families
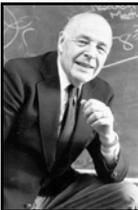- Terror attacks and threats

EM-DAT International Disaster Database

Overview

- **Resilience in developing systems**

- **Progress & promise in resilience science**

- **New horizons**

WWII survivors who pioneered resilience science

Four Waves
1 Who is resilient? What makes a difference?
2 How do protective factors work?
3 Can resilience be promoted?
4 How can systems and sciences be integrated?

Capacity of a system
to adapt successfully to challenges that threaten
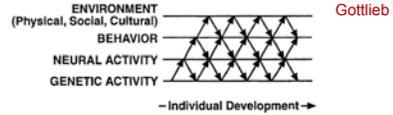system function, viability, or development

RESILIENCE

Slide 1

3 defining questions in research on resilience of individuals

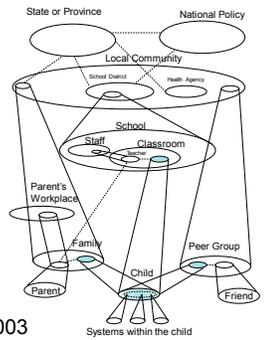| 1. What are the challenges?	3. What fosters adaptive success?	2. How is the person doing?
Threats	Protections	Adaptive success
Trauma	Neurobiological	Developmental tasks
Neglect	Individual	Mental health
Poverty	Family & relational	Physical health
War	Community	Happiness
Natural disaster	Cultural	School or job achievement
ACEs	Societal	Caregiving

Slide 2

Development

…emerges from interactions of many systems across levels

ENVIRONMENT (Physical, Social, Cultural)
BEHAVIOR
NEURAL ACTIVITY
GENETIC ACTIVITY
— Individual Development →

Gottlieb

Gottlieb 2007; Lerner 2006; Overton 2013, 2015; Sameroff 2010; Zelazo 2013

Slide 3

Systems in a child's life
- **Embedded**
- **Interacting**
- **Interdependent**

State or Province • National Policy • Local Community • School District • Health Agency • School • Staff • Classroom • Teacher • Parent's Workplace • Family • Peer Group • Parent • Child • Friend • Systems within the child
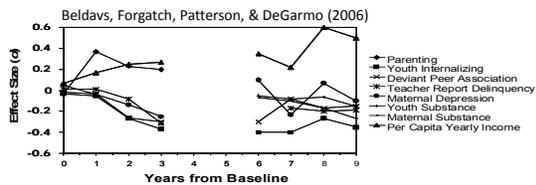
Masten 2003

Slide 4

Developmental Cascades
Adaptation spreads over levels, domains, and contexts

- **Violence/fear effects spread across levels**
- **Biological embedding of toxic stress**
- **Intergenerational effects of trauma**
- **Family resilience supports child resilience**
- **Communities support and depend on families**
- **Good parenting alters gene expression**
- **Competence begets competence**

See Masten & Cicchetti 2010

Slide 5
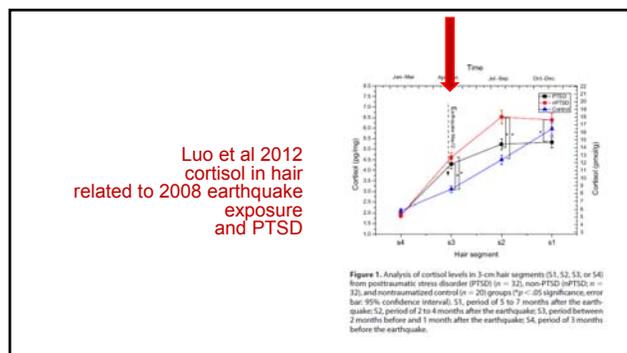
Intervention effects can grow and spread

Beldavs, Forgatch, Patterson, & DeGarmo (2006)

Effect Size (d) / Years from Baseline

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

See summary by Patterson, Forgatch, & DeGarmo 2010

Slide 6

From a developmental systems view…

- **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, 2012, 2014, 2016; Masten & Cicchetti 2016

Diverse pathways of adaptation

Acute trauma or disaster

Optimal zone

Okay zone — A

— B

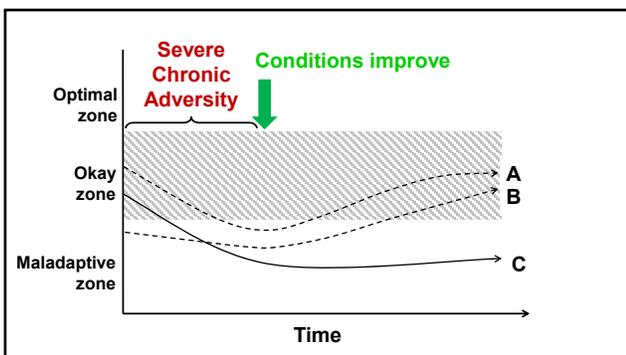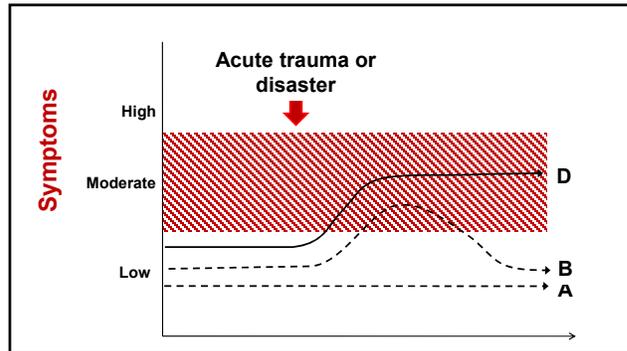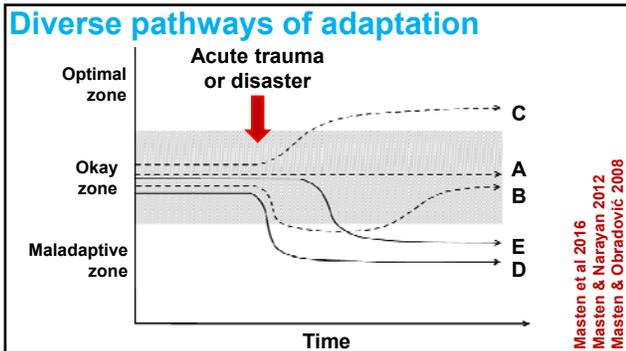Maladaptive zone — E

— D

— C

Time

Masten et al 2016
Masten & Narayan 2012
Masten & Obradović 2008

Symptoms

Acute trauma or disaster

High

Moderate — D

Low — B

— A

Severe Chronic Adversity **Conditions improve**

Optimal zone

Okay zone — A

— B

Maladaptive zone — C

Time

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
Osofsky et al 2015

Stable high 9%

Steep decreasing 21%

Low increasing 18%
Stable low 52%

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

Accounting for resilience

- **What counters or mitigates risk?**
- **What are protective processes?**

## Protective influences for children
Examples

- **In the family system**
  - ❖ **Good caregiving and parenting skills**
  - ❖ **Food security**
  - ❖ **Emotional and physical safety**
  - ❖ **Family routines**

- **In the child**
  - ❖ **Healthy brain development**
  - ❖ **Cognitive skills**
  - ❖ **Self-regulation skills**
 - ❖ **Motivation**

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

EF skills predict school success
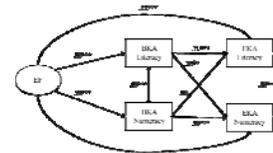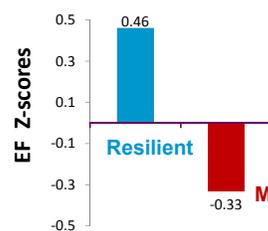
Obradović 2010
Masten et al 2012
Kalstabakken 2016

Intervention
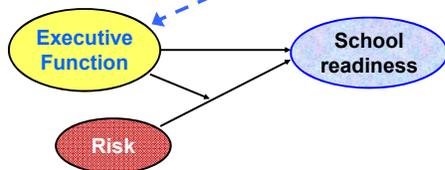
Families matter

- **Moderating stress**
- **Epigenetic programming**
- **Nurturing body, mind and spirit**
- **Emotional security**
- **Economic security**
- **Safety monitoring**
- **Scaffolding learning and self-regulation skills**
- **Facilitating achievement in developmental tasks**
- **Brokering of resources (social capital)**
- **Transmitting cultural capital**

Parenting quality as a risk moderator

Herbers et al 2014

Herbers et al 2011
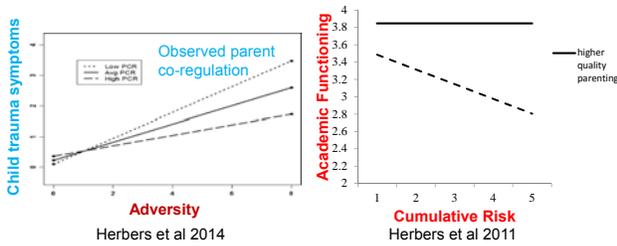
- **In school and classroom systems**
  - ❖ **Strong leadership & effective teaching**
  - ❖ **Positive school climate**
  - ❖ **High expectations, support, structure**

- **In community and cultural systems**
  - ❖ **Health care and emergency services**
  - ❖ **NGO + government services**
  - ❖ **Supports for families and education**
  - ❖ **Traditions and rituals for overcoming stress**

Schools matter

- Nurture human capital
- Can be asset-rich environments
- Can promote prosocial peer activities
- Facilitate relationships with competent adults
- Afford opportunities for building self-efficacy
- Can provide a sense of return to normal life
- **Build capacity for resilience in many ways**

Beyond survival:
The "short list" for individual resilience

- **Capable caregiving**
- **Other close relationships**
- **Problem-solving skills**
- **Self-regulation skills**
- **Self-efficacy**
- **Motivation to succeed**
- **Faith, hope, optimism**
- **Purpose/belief life has meaning**
- **Effective schools**
- **Well-functioning communities**

Protective Systems at Other Levels

- **Within the individual**
  - Immune system
  - Arousal regulation systems
  - Stress systems

- **In religion and other cultural systems**
  - Meaning-making systems of belief, rules and rituals for living
  - Attachments to spiritual figures
  - Arousal regulation through meditation or prayer
  - Cultural practices that provide support

- **In community and society systems**
  - Effective schools
  - Communities that work
  - Good health care systems
  - Policies and laws that protect young people or adults

A cautionary note

Adaptive systems can be hijacked

Resilience science has transformed practice in many fields

- Clinical psychology
- Psychiatry
- School psychology
- Counseling
- Social work
- Family social science
- Pediatrics

Shifting the focus
- Positive outcomes
- Strength-based
- Promotive & protective processes
- Building capacity at multiple levels

Resilience Framework for Action

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

Measures
Track the positives along with the problems

- **Assess the positive as well as the negative**
  - Strengths in children, families, communities
  - Potential resources and protective factors
  - Strengths in systems

- **Evaluate positive as well as negative outcomes**
  - Gains, achievements
  - Health & competence + problems & symptoms

Methods
3 strategies for positive change

- **Risk-focused**
  - Prevent-reduce risk, adversity, trauma exposure

- **Asset-focused**
  - Boost resources or access to resources

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

Risk-focused strategies

- Prenatal care to prevent premature birth
- Reduce stress of pregnant women
- Screen and treat depression in mothers
- Reduce child maltreatment
- Avoid multiple foster care placements
- Reduce family violence
- Reduce neighborhood violence
- Clean up toxins
- Dig up landmines
- Prevent homelessness

Asset-focused strategies

- Food, water, shelter, medical care, dental care
- Educate parents
- Educate teachers and first responders
- Add financial resources
- Provide books or a tutor
- Quality childcare & early education programs
- Build schools, playgrounds, libraries
- Build or restore community services
- Stabilize housing, schooling, case managers
- Scholarships from early childhood to adulthood

Adaptive system focused strategies
Engage powerful engines of change

- Foster secure attachment relationships
- Promote bonds with competent/caring adults
- Support healthy family life and function
- Protect and nurture brain development
- Facilitate school bonding and engagement
- Foster friendships with prosocial peers
- Integrate systems of care
- Provide opportunities to succeed, develop talents…

- Support cultural traditions that provide children with adaptive tools and opportunities to connect with prosocial adults

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Interventions that work typically …

- **Are developmentally informed**

- **Culturally appropriate**

- **Ecologically and developmentally strategic**

- **Focus on the positive and existing strengths**

- **Promote the positive & reduce risk or problems**

- **Mobilize & support powerful adaptive systems**

…and they are

- **Well-timed**
  - **Developmentally**
  - **When systems are amenable to change**
  - **When there is high return on investment**

- **Well-targeted**
  - **Synergistic combinations**
  - **At the right systems or level**

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**

- **Ask when and where is there leverage for change?**

Looking ahead

The 4th wave of resilience science

Emerging neurobiology of resilience
- **Interplay of genes, biological systems, and experience**
- **Programming and reprogramming of adaptive systems**
- **Biological embedding of stress, good parenting, culture**

Aligning systems to foster resilience
- **Linking families, healthcare, schools, peers, community**
- **Aligning state and national policies with child resilience**

Cultural traditions/practices that promote resilience

When and how does experience with adversity help or hinder the capacity to adapt?

- **Steeling vs sensitization effects**

- **Inoculation vs kindling effects**

- **Depletion effects**

- **Nonlinear possibilities**

A price for overcoming adversity?

Terrible experiences can leave scars
  - **The cost of adversity**

Positive achievements can exact a cost
  - **The cost of adapting well (re effort, energy, strain)**

Interesting new variation
  - **"Is Resilience Only Skin Deep?" (Brody et al 2013)**
  - **Allostatic load among successful youth at risk**

Sensitivity to experience

- **Differential susceptibility, biological sensitivity**
  - **Belsky, Boyce, Ellis, Obradović, Pluess et al**

- **Transformative effect on how resilience and intervention are conceptualized**

- **Sensitive individuals may show more problems but they also be more responsive to interventions**

Are there hidden skills?

- **What are the skills of stress-adapted young people?**

- **Can we leverage these skills for success?**

Growing attention to leveraging the power of integrated systems

- **If resilience depends on multiple systems**
  - Individual
  - Family, school, peer systems
  - Cultures and religions
  - Communities
  - National identities
  - Informational and social media

- **Align sectors and disciplines for synergy**

Integrating resilience across systems, disciplines, applications

In theory	In action
• Molecular & global	• Disaster response
• Individual & family	• Humanitarian
• Family & community	• Prevention science
• Psychosocial & ecological	• Public health
• Human & electronic	• Climate change
• Social & economic	• Peacebuilding

Example: **Aligning developmental resilience science (DRS) with ambiguous loss theory**

Table 1. *Shortlist of common factors associated with resilience in developmental resilience science and ambiguous loss theory*

Resilience Factors in DRS	Resilience Factors in Ambiguous Loss
Close attachment relationships	Revised attachment in the psychological family
Mastery motivation, agency	Adjusting mastery
Optimism, hope, faith, coherence	Optimism, hope, faith, coherence
Problem-solving skills, executive functions	Flexibility, collaborative problem solving, tolerance for ambiguity
Meaning making, belief life has meaning	Making meaning, collective meaning, coherence
Positive view of self	Reconstructed identity
Family rituals and routines	Reconstructed family rituals and routines
Cultural or community rituals, routines	Rituals and memorial ceremonies

See Masten 2016 and Boss 2016 articles in Journal of Family Theory & Review

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Globalization emerging in many forms

- **Disaster preparedness**
  - **Focusing on the needs of children**

- **State and national governments**
  - **Investing in young children for lifelong benefits**
  - **Prevention economics**

- **International humanitarian action**
  - **Raising the bar beyond survival**
  - **UNICEF, World Bank, Save the Children, and others**

- **Peace-building efforts**

Enduring take-home messages

❖ **Resilience is common**

❖ **There are many paths of resilience**

❖ **Ordinary adaptive systems are powerful**

❖ **Resilience can be supported and promoted**

❖ **Resilience of children and families depend on resilience of many other systems**
  - individuals, families, communities, cultures, religions, health care systems, government agencies, and NGOs

ORDINARY MAGIC
Resilience in Development

ANN S. MASTEN

Resilience of societies globally depends on the resilience of children everywhere

Invitation to a MOOC on Coursera.org

Resilience in Children Exposed to Trauma, Disaster and War: Global Perspectives

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Thank you!

❖ **For your interest and work in resilience science and its applications**

❖ **To all the family & individual research participants**

❖ **Mentors in developmental resilience science and clinical psychology**

❖ **Faculty and student collaborators**

❖ **Community collaborators**

❖ **Funders over the years**
  University of Minnesota ~ William T. Grant Foundation ~ NIMH
  NICHD ~ National Science Foundation ~ Institute of Education Sciences
  William D. and Catherine T. MacArthur Foundation
  Center for Urban and Regional Affairs, Humphrey Institute
  McKnight, Emma M. Birkmaier, Irving B. Harris, and Regents Professorships

Recent Resources by Ann Masten

Book on resilience
Masten, A. S. (2014, paperback ed. 2015). *Ordinary magic: Resilience in development*. New York: Guilford
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Massive Open Online Course (MOOC)
Resilience in Children Exposed to Trauma, Disaster and War: Global Perspectives. Available free at
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Masten, A. S., & Cicchetti, D. (2016). Resilience in development: Progress and transformation. In D. Cicchetti
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Overview of Project Competence Longitudinal Study (in a nutshell)
Masten, A. S., & Tellegen, A. (2012). Resilience in developmental psychopathology: Contributions of the
    Project Competence Longitudinal Study. *Development and Psychopathology, 24,* 345-361.

Developmental psychopathology
Masten, A. S. (2006). Developmental psychopathology: Pathways to the future. *International Journal of
    Behavioral Development*, *30*, 47-54.
Masten, A. S., & Kalstabakken, A. W. (in press). Developmental perspectives on psychopathology in children
    and adolescents. In the *APA Handbook of Psychopathology* (Editor in Chief, James N. Butcher; Volume
    ed. Philip D. Kendall).Washington DC: American Psychological Association.

Other
Huebner, G., et al. (2016). Beyond survival: The case for investing in young children globally. *NAM
    Perspectives.* National Academy of Medicine. [free to download from the NAM]