Toxic Stress in Contemporary Families: Getting from Adversity to Capacity

Anne Farrell, Maria Boccia, Paul Lanier, Julie McRae, & Jay A. Mancini

Annual Meeting of the National Council on Family Relations

Orlando, November 2017
Setting the Stage and Understanding the Contexts

Jay A. Mancini

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Symposium on Toxic Stress in Contemporary Families: Getting from Adversity to Capacity
Ultimately we address three questions

• *Where does the idea of resilience come into thinking about adverse childhood experiences and their consequences?*

• *What sense do we make of community contexts and their significance for “doing well” in the face of adversity? Community serves to set the context for what happens and also serves as an instrument that helps shape the consequences, including positive solutions.*

• *Where does the discussion of adverse childhood experiences, resilience, and community contexts leave us with respect to policies and practices?*
What we should know about adverse childhood experiences (ACEs)

- ACEs are detrimental to child health and also affect health outcomes in adulthood.
- ACEs are common in the general population. Easily three out of four adults have experienced at least one ACE.
- ACEs include: emotional and physical abuse, emotional and physical neglect, substance abuse, family separation/divorce, as well as other situations and events that place one or more family members at risk and increase their vulnerability.
- Exposure to one ACE category increases the likelihood of exposure to additional ACE types.
- Family contexts, while primary places where children are nurtured, are also often where ACEs are experienced.
- Experiencing an ACE often results in disruption, the erosion of trust in relationships, and loss.
- Implications of ACEs are not only with regard to how everyday life is experienced but also involve epigenetic elements, that is, what goes on “under the skin”.
- There are a range of long-term effects of ACE exposure, for example, how family disruption affects how children eventually parent in their own families.
- Children in the child welfare system are even more vulnerable to ACEs.
- Many adults have experienced 2, 3, or 4 ACEs in their lifetime.
- From a research perspective there are three frontiers we discuss today:
  - The significance of epigenetics in understanding both the problem of ACEs, and solutions to the aftermath of ACEs
  - Viewing ACEs in a more nuanced way, understanding them as having variable power
  - Developing a family and community-centered intervention to prevent children's experience of adversity
Parental Divorce Effects on Adult Social Relationships: Neurobiological Linkages

Maria L Boccia, Ph.D.

This research supported by PHS NIH grant MH61995
Oxytocin & Early Attachment Disruptions

- Explanations of effects of divorce focus on social phenomena
- Significant body of research showing how early attachment disruptions affect development of oxytocin systems in animal models
- Oxytocin has been implicated in stress responsivity, depression, attachment, sexual behavior, emotion expression and regulation across species
Oxytocin

• 9 amino acid long protein
• First role discovered in reproduction
• Role in social & emotional behavior:
  • Attachment
  • Stress
  • Aggression
  • Sex
  • Pain perception
Goals of This Study

• We hypothesize that early parental loss, operationalized as divorce, may affect:
  • Oxytocin system development
  • Development of attachment security
  • Adult attachment and caregiving styles
Methods: Sample

• A total of 128 Participants
  • aged 18 to 62, mean = 30.4
  • 37 males/ 91 females
  • 35 whose parents divorced
  • Mean age at parental divorce = 9.2 ± 0.97 yr

Methods: Procedures

• Void bladders
• Drink 16 oz water
• Complete questionnaires
• Provide complete urine sample
Results

- Individuals who experienced parental divorce had lower levels of oxytocin than those who did not (p=.016)
Results:

Perceptions Of Parents

• Measure of Parental Style:
  • Participants whose parents divorced were more likely to report:
    • Mothers as more indifferent (p=.001)
    • Fathers as more indifferent (p=.010)
    • Fathers as more abusive (p=.005)

<table>
<thead>
<tr>
<th>SCALE</th>
<th>DIVORCE</th>
<th>NO DIVORCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOTHER INDIFFERENT</td>
<td>3.60 ± .75</td>
<td>1.11 ± .21</td>
</tr>
<tr>
<td>FATHER INDIFFERENT</td>
<td>3.63 ± .73</td>
<td>1.65 ± .30</td>
</tr>
<tr>
<td>FATHER ABUSIVE</td>
<td>2.49 ± .61</td>
<td>1.12 ± .24</td>
</tr>
</tbody>
</table>
Results:

Attachment Measures

• Attachment Style Questionnaire
  • Participants whose parents divorced were more likely to report:
    • Less confidence (p=.032)
    • More discomfort with closeness (p=.010)
    • Having higher scores on insecure-avoidant attachment style (p=.001)

<table>
<thead>
<tr>
<th>SCALE</th>
<th>DIVORCE</th>
<th>NO DIVORCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONFIDENCE</td>
<td>4.21 ± .15</td>
<td>4.57 ± .07</td>
</tr>
<tr>
<td>DISCOMFORT WITH CLOSENESS</td>
<td>3.75 ± .19</td>
<td>3.23 ± .08</td>
</tr>
<tr>
<td>INSECURE-AVOIDANT</td>
<td>3.26 ± .16</td>
<td>2.86 ± .07</td>
</tr>
</tbody>
</table>
Results:

Caregiving Measures

- Caregiving Style Questionnaire
  - Participants whose parents divorced were more likely to report:
    - Lower scores on proximity maintenance (p=.008)
    - Lower scores on sensitive caregiving (p=.044)

<table>
<thead>
<tr>
<th>SCALE</th>
<th>PARENTAL DIVORCE</th>
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</tr>
</thead>
<tbody>
<tr>
<td>PROXIMITY MAINTENANCE</td>
<td>4.60 ± 0.18</td>
<td>5.17 ± 0.7</td>
</tr>
<tr>
<td>SENSITIVE CAREGIVING</td>
<td>4.11 ± 1.19</td>
<td>4.59 ± 0.8</td>
</tr>
</tbody>
</table>
Oxytocin Correlates with Attachment Scales

• Parental Bonding & Measures of Parental Style

<table>
<thead>
<tr>
<th></th>
<th>Mother over-protective</th>
<th>Mother abusive</th>
<th>Mother over-controlling</th>
<th>Father indifferent</th>
</tr>
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<tbody>
<tr>
<td>-0.334</td>
<td>-0.335</td>
<td>-0.291</td>
<td>-0.262</td>
<td>-0.09</td>
</tr>
<tr>
<td>p=.038</td>
<td>p=.032</td>
<td>p=.065</td>
<td>p=.09</td>
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</table>
Oxytocin Correlates with Attachment Scales

• Attachment Style Questionnaire

<table>
<thead>
<tr>
<th>Confidence</th>
<th>Need for approval</th>
<th>Insecure-preoccupied</th>
<th>Insecure-anxious</th>
</tr>
</thead>
<tbody>
<tr>
<td>+.366</td>
<td>-.299</td>
<td>-.354</td>
<td>-.431</td>
</tr>
<tr>
<td>P=.019</td>
<td>P=.10</td>
<td>P=.023</td>
<td>P=.005</td>
</tr>
</tbody>
</table>

• Relations Style Questionnaire

<table>
<thead>
<tr>
<th>Secure</th>
<th>Insecure-preoccupied</th>
</tr>
</thead>
<tbody>
<tr>
<td>+.382</td>
<td>-.272</td>
</tr>
<tr>
<td>P=.014</td>
<td>P=.09</td>
</tr>
</tbody>
</table>
Conclusions

• Oxytocin levels in adulthood were negatively affected by divorce in childhood

• Experiencing parental divorce was related to both attachment and caregiving styles
  • More parental indifference
  • Less confidence in relationships, more discomfort with closeness
  • Less sensitive in their own caregiving style

• Oxytocin levels correlated with attachment styles in adulthood
  • Less secure, more insecure attachment
  • Less sensitive caregiving
Where do my ideas come from?

- Biomedical research with animal models
- Exploring stress, depression, bereavement
- Systems thinking made transition to family studies relatively easy
A Nationally-Representative Study of Exposure to Multiple ACEs and the Association with Pediatric Health Outcomes

Paul Lanier, Ph.D.
As the number of ACEs increases, so does the risk for negative health outcomes.
Cumulative Risk Index

Strengths of CR for child development (Evans et al., 2013):

1. Prediction of developmental outcomes
2. No assumptions about (unknown) relative weights of risk factors
4. Avoids low powered and incomprehensible interaction effects
5. Easily communicated to policymakers...it makes sense
   (we can come back to this in the discussion)
Research Questions

We know that cumulative ACE score is predictive of adult (and child) health outcomes, but....

1. Are there unobserved groups of children that are similar based on observed ACEs?
   • Do ACEs tend to cluster together in the population?

2. Does membership in these groups (latent classes) predict child health outcomes?
   • If you are in one of these ACE clusters, do you have worse health outcomes?
Methods
2011/2012
National Survey of Children’s Health (NSCH)

- Nationally representative telephone survey (n=95,677)
- Sponsored by US DHHS Maternal and Child Health Bureau
- Sampling and interviews by National Center for Health Statistics (CDC SLAITS)
- ~2,000 surveys collected per state
- One child randomly selected per household
- Previously conducted in 2003-2004 and 2007-2008
NSCH Definition of “Adverse Family Experience”

“Questions about events that may have happened during [child]’s life”

• 9 ACEs:
  1. Extreme economic hardship (poverty)
  2. Parental divorce/separation (divorce)
  3. Parental incarceration (jail)
  4. Witness to violence in the home (DV)
  5. Victim/witness of neighborhood violence (NV)
  6. Lived with anyone with a drug or alcohol problem (drugs)
  7. Lived with anyone with a mental illness or was suicidal (mental health)
  8. Parent/guardian death (death)
  9. Treated unfairly due to race/ethnic group (discrimination)

• What’s missing??
Latent Class Analysis

“Latent class analysis (LCA) identifies unobservable subgroups within a population.

.....so that interventions can be tailored to target the subgroups that will benefit most.”
Results
1. Are there unobserved groups of children that are similar based on observed ACEs?

<table>
<thead>
<tr>
<th>Classes</th>
<th>AIC</th>
<th>BIC</th>
<th>SSABIC</th>
<th>LOG Liklihood</th>
<th># of free parameters</th>
<th>Entropy</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>471592.568</td>
<td>471658.764</td>
<td>471636.517</td>
<td>-235789.284</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Two</td>
<td>421043.124</td>
<td>421184.971</td>
<td>421137.301</td>
<td>-210506.562</td>
<td>15</td>
<td>0.82</td>
</tr>
<tr>
<td>Three</td>
<td>418838.527</td>
<td>419056.027</td>
<td>418982.932</td>
<td>-209396.263</td>
<td>23</td>
<td>0.73</td>
</tr>
<tr>
<td>Four</td>
<td>418125.858</td>
<td>418419.011</td>
<td>418320.492</td>
<td>-209031.929</td>
<td>31</td>
<td>0.76</td>
</tr>
<tr>
<td>Five</td>
<td>417892.253</td>
<td>418261.058</td>
<td>418137.115</td>
<td>-208907.127</td>
<td>39</td>
<td>0.75</td>
</tr>
<tr>
<td>Six</td>
<td>417623.438</td>
<td>418067.895</td>
<td>417918.527</td>
<td>-208764.719</td>
<td>47</td>
<td>0.67</td>
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<tr>
<td>Seven</td>
<td>417502.057</td>
<td>418022.166</td>
<td>417847.374</td>
<td>-208696.028</td>
<td>55</td>
<td>0.71</td>
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<tr>
<td>Eight</td>
<td>417432.966</td>
<td>418028.727</td>
<td>417828.511</td>
<td>-208653.483</td>
<td>63</td>
<td>0.69</td>
</tr>
</tbody>
</table>
2. Does membership in latent classes predict child health outcomes?

<table>
<thead>
<tr>
<th>Class (Compared to “0-1 ACE”)</th>
<th>Child Poor Health</th>
<th>Chronic Condition</th>
<th>Special Health Care Need</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AOR</td>
<td>AOR</td>
<td>AOR</td>
</tr>
<tr>
<td>Class 2: 1-2 ACEs</td>
<td>1.49 [1.12, 1.99]**</td>
<td>1.61 [1.43, 1.80]***</td>
<td>1.58 [1.40, 1.79]***</td>
</tr>
<tr>
<td>Class 3: DV, no MI</td>
<td>1.01 [0.60, 1.69]</td>
<td>1.37 [1.09, 2.24]**</td>
<td>1.24 [0.98, 1.57]</td>
</tr>
<tr>
<td>Class 4: MI, Poverty</td>
<td>1.98 [1.16, 3.36]*</td>
<td>2.95 [2.21, 3.93]***</td>
<td>3.10 [2.33, 4.12]***</td>
</tr>
<tr>
<td>Class 5: Drug, No Jail</td>
<td>0.74 [0.41, 1.33]</td>
<td>2.01 [1.60, 2.54]***</td>
<td>1.46 [1.07, 1.99]*</td>
</tr>
<tr>
<td>Class 6: Drug, Jail</td>
<td>0.66 [0.44, 1.00]</td>
<td>1.43 [1.20, 1.70]***</td>
<td>1.40 [1.63, 1.69]***</td>
</tr>
<tr>
<td>Class 7: High ACEs</td>
<td>2.39 [1.36, 4.20]*</td>
<td>2.25 [1.76, 2.90]***</td>
<td>2.95 [2.33, 3.75]***</td>
</tr>
</tbody>
</table>
Conclusions & Implications
Conclusions

• ACEs as a cumulative risk index is still a strong **predictor** of child health outcomes

• LCA model identified existing sub-groups of children who are at **different** risk levels for health outcomes

• Nuance exists within ACEs: this is important for understanding risk/resilience, social determinants of health, and to develop interventions

• What approach has the most utility for specifying appropriate interventions in clinical settings?

• What approach has the most validity for describing real childhood experiences and for exploring neurobiological mechanisms?
Next Steps

• SPOILER ALERT......Race matters!!!

• Use ACE CRI to **screen** for risk, then identify subgroups to **target** services?

• Are these findings more challenging to communicate to policymakers/public/parents??
References


Children and Adversity: 
Applied Intervention in Primary Care

Julie S. McCrae

This research was supported by the U.S. Department of Health and Human Services, Health Resources and Services Administration (HRSA), Maternal & Child Health Bureau (MCHB) R40MC28307, the Caring for Colorado Foundation, & Catholic Health Initiatives

Co-Investigators include: 
Samantha Brown, Kimberly Bender, Shauna Rienks and Jon Phillips (University of Denver) 
Rebecca Orsi (Colorado State University) 
Dr. Leslie Dempsey, Noel Baros, and Cindy Lau (Southern Colorado Family Medicine)
Study Objectives

Explore implementation and preliminary results from a program aimed to prevent ACEs among children accessing health care.
Health Care and Community Partnership to Address ACEs

- Length and quality of life
- Social & economic factors
- High-risk births, smoking during pregnancy, child deaths
Planning & Implementation

Goal

Increase the number of families who receive targeted preventive services aimed to reduce the number of household ACEs to which young children are exposed, thereby reducing their, and their parent’s, risk for long-term health conditions.

Objectives

- Educate parents and increase awareness
- Increase capacity of organizations to engage with families about the social determinants of health
- Increase parents’ use of evidence-based services that will reduce children’s exposure to ACES
Clinical Setting for Intervention

- Dually-accredited family medicine residency (MD & DO)
- NCQA Level III PCMH
- SCFM clinicians:
  - Faculty: 6 physicians + 1 Dir. Behavioral Science
  - 20 resident physicians (DO, MD)
  - 2 NP, 1 PA
  - 1 Integrated BHC (LPC) and 1.5 Integrated HC Coordinator (RN & LPN)
- Patient load: 10,000* (translating to 17,000 patient visits/year)
- Urban, underserved, mostly Medicaid/Medicare
- 60% Hispanic/Latino
- 3% Spanish language
Family Development Specialist

Increase parents’ receipt of evidence-based parenting services and SDOH resources

- Influence behavioral intention
- Reduce barriers to resources
- Normalize and connect to health
Clinic Workflow

• **IDEAL**
  - PRIOR to provider visit
  - REAFFIRMED by provider during appointment
  - DOCUMENTABLE in chart/EHR
  - FOLLOW-UP available
  - SHARED COMMUNICATION with community partners
  - EMBEDDED assessor

• **WORKABLE**
  - AFTER provider visit
  - Provider administers screen and refers to local resources
Data: Families Served

- 695 adults served since October 2015
- Adult age-range: 14-60
  - Average age=29
- Average 2 children in the home; 29% single parents
- 13% frequently or always depressed
- 81% report good, very good or excellent health
- 57% “resilient”
  - Connor-Davidson Resilience Scale (CD-RISC 25)
Mixed Methods Design

- ACE Scores & Resiliency
- Self-Reported General Health
- Emergency Room Visits
- Compliance with Scheduled Clinic Visits
- Physician perspective
- Patient interviews
Clinician Perspectives

• Family Development Specialist
  • Improved patient/provider relationship
  • Added support for children and families

• OB Case Manager/RN Clinic Supervisor
  • Improved communication
  • Eased into difficult Qs
  • Increased relatability

• Resident physicians
  • Easier/more comfortable to bring up sensitive issues
    • Reminds patient that these are addressable in THIS setting
  • “Improved relationship, as if I [the physician] was the one administering screen by breaking down that ‘don’t talk about it‘ barrier”
  • Well-received by patients as a whole
  • Avoids “negative tone” to encounter if ACEs addressed by FDS
## Family Interviews (n=23)

<table>
<thead>
<tr>
<th>Domain</th>
<th>Descriptive result</th>
</tr>
</thead>
</table>
| Recall    | • 78% recall meeting with the FDS during the health care visit  
  “I remember filling it out but vaguely”  
  “just information to look over that she gave me”  
  “just wanted to make sure my past doesn’t go to the kids”  
  “that questionnaire was pretty uncomfortable as for the adverse childhood experiences” |
| Affect    | • Patients report higher average satisfaction with the FDS visit compared with satisfaction with the visit overall  
  • 18% would not recommend that other patients like them receive the ACE questionnaire as part of their health care  
  “more likely to answer questionnaire truthfully while waiting”  
  • 82% would recommend this  
  “I think its important to understand that part and to know that there are resources out there that can help you” |
| Behavior  | • 45% talked with a spouse, partner, other family member, or friend about the visit  
  • 18% searched online for additional information  
  • 14% indicated a resource need  
  • Very few accessed a new service  
  • 100% provided in-clinic resources (diapers, patient education, children’s books, food pantry) |
## Key Health Care Questions: Emergency Department Visits and Visit Compliance

<table>
<thead>
<tr>
<th>Total Avg. Monthly Rate</th>
<th>Pre-SCAN</th>
<th>Post-SCAN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.14</td>
<td>.10**</td>
</tr>
</tbody>
</table>

**p < .01; paired t-tests

### Patient ED Visit Rate Pre and Post SCAN (n=196)

<table>
<thead>
<tr>
<th>No Show Rate (# of No Shows/# of Scheduled Visits)</th>
<th>Pre SCAN (n=139)</th>
<th>Post SCAN (n=99)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>.22</td>
</tr>
<tr>
<td>2</td>
<td>.02</td>
<td>.15</td>
</tr>
<tr>
<td>3</td>
<td>.11</td>
<td>.08</td>
</tr>
<tr>
<td>4-6</td>
<td>.13</td>
<td>.06</td>
</tr>
<tr>
<td>7-10</td>
<td>.24</td>
<td>.13</td>
</tr>
<tr>
<td>11+</td>
<td>.12</td>
<td>.08</td>
</tr>
<tr>
<td>Total Rate</td>
<td>.10</td>
<td>.14*</td>
</tr>
</tbody>
</table>
Next Steps and Reflections

• Greater integration of SDOH supports within health care service provision
  • SafeCare maltreatment prevention program
  • Prescription Food Pantry
  • Others

• Further study as to whether there is value-add to assessing ACEs
Building Community Capacity to Sustain Efforts to Reduce Toxic Stress and its Effects

Jay A. Mancini, Anne Farrell, Maria Boccia, Julie McCrae, & Paul Lanier

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ACEs, Resilience, Community Capacity, and Implications for Policy and Practice

• Where does the idea of resilience come into thinking about adverse childhood experiences and their consequences?

• What sense do we make of community contexts and their significance for “doing well” in the face of adversity? Community serves to set the context for what happens and also serves as an instrument that helps shape the consequences, including positive solutions.

• Where does the discussion of adverse childhood experiences, resilience, and community contexts leave us with respect to policies and practices?
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