Navigating Adversity with PACEs

Jennifer Hays-Grudo, PhD PI & Director, CIRCA Oklahoma State University Center for Health Sciences



Childhood Adversity

Verbal Abuse

Physical Abuse

Sexual Abuse

Emotional Abuse

Neglect

Witness Intimate Partner Violence

Separated/Divorced Parents

Substance Abuse in Home

Family Member Mentally III or Suicidal

Family Member Incarcerated









ACEs lead to chronic illness

>4 ACEs increase the risk

- 4 to 12 times for alcohol abuse, drug abuse, depression & suicide attempt, teen pregnancy, violence
- 2 to 4 times for smoking, poor self-rated health, STDs, cancer, cardiovascular disease, chronic headache
- 50% to 99% increase in diabetes, autoimmune disease, obesity

Bellis et al., 2019

	16		1 ACE		3.465-	
	to dies (n)*	Individuals (n)	1 ACE		≥2 ACEs	
			Pooled relative risk	Heterogeneity, I ²	Pooled relative risk	Heterogeneity, I ²
use						
	4	20 427	1.51 (1.22-1.87)	75-4% (0-89-1)	2.11 (1.13-3.95)	98.0% (97.1-98.5)
≟rica	5	85745	1-44 (1-20-1-74)	80.1% (37.6-89.8)	1.81 (1.22-2.68)	96.7% (95.2-97.6)
/se						
	4	21365	1.69 (1.48–1.93)	45.7% (0-80.7)	2.89 (2.68-3.12)	0% (0-67.9)
America	1	17337	1.53 (1.36–1.72)	NA	2.64 (2.40-2.91)	NA
ıg						
pe	4	21402	1.29 (1.21-1.38)	1% (0-68-2)	1.82 (1.71–1.95)	25.9% (0-75.5)
rth America	7	113 339	1.23 (1.04–1.46)	93-1% (88-9-95-2)	1.74 (1.47-2.05)	95.1% (92.8-96.4)
sity						
urope	2	6437	1.06 (0.99–1.15)	0%†	1.24 (0.85-1.79)	41.2%†
North America	5	78 004	1.08 (1.00–1.17)	69-9% (0-86-2)	1.23 (1.06–1.43)	93.8% (89.1–95.9)
auses of ill health						
inxiety						
Europe	1	2493	1-44 (1-17-1-77)	NA	2.56 (2.19-2.98)	NA
North America	3	30859	1.08 (0.66-1.77)	94% (85.6-96.6)	2.25 (1.43-3.56)	96.1% (92.5-97.6)
Depression						
Europe	3	1459284	1.54 (1.51-1.57)	0% (0-72-9)	2.34 (2.19-2.50)	82.5% (0-92.5)
North America	7	91112	1-34 (1-15-1-56)	88-6% (78-5-92-8)	2.69 (2.17-3.33)	96.8% (95.6-97.5)
Cancer						
Europe	4	21593	1.08 (0.89-1.30)	39-6% (0-79-1)	1.58 (1.32-1.91)	25.6% (0-75.4)
North America	2	14372	1.10 (0.95–1.28)	0%†	1.25 (1.10-1.43)	0%†
Cardiovascular disease						
Europe	3	15742	1.11 (0.99-1.24)	0% (0-72-9)	1.57 (1.20-2.06)	59.9% (0-86.7)
North America	6	83 932	1.16 (1.04–1.29)	55-2% (0-80)	1.60 (1.41-1.81)	75.7% (26.9–87.4)
abetes						
urope	3	15733	1.02 (0.88-1.19)	0% (0-72-9)	1.43 (1.11-1.83)	58.7% (0-86.4)
orth America	6	74662	1.11 (1.02–1.22)	39-3% (0-74-7)	1.15 (0.97–1.37)	85.3% (66.5–91.5)
ra tory disease						
iti	5	38 075	1.19 (1.04-1.35)	14.7% (0-69.1)	1.98 (1.42-2.76)	83.3% (53.1-91.1)
1, merica	5	67 417	1-29 (1-17-1-41)	0% (0-64-1)	1.90 (1.58–2.29)	77% (19-4-88-6)

heses are 95% Cls. ACE=Adverse childhood experience. NA=not applicable. *Included studies are shown in the appendix (p 9). †Cls not calculable.

relative risks for risk factors and causes of ill health

ACEs are costly

- ACEs cost North America \$748 billion per year—just from preventable health care costs.
- A 10% reduction in ACEs prevalence could save **\$105 billion** per year.

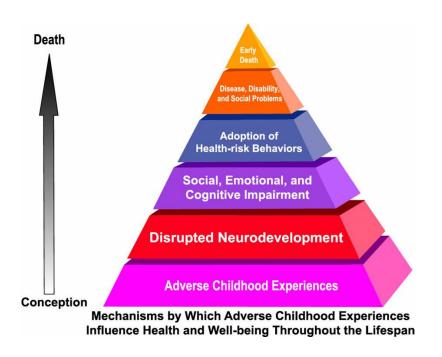
Bellis et al., 2019

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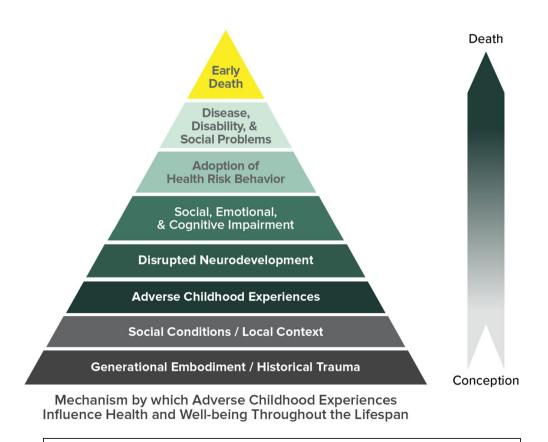
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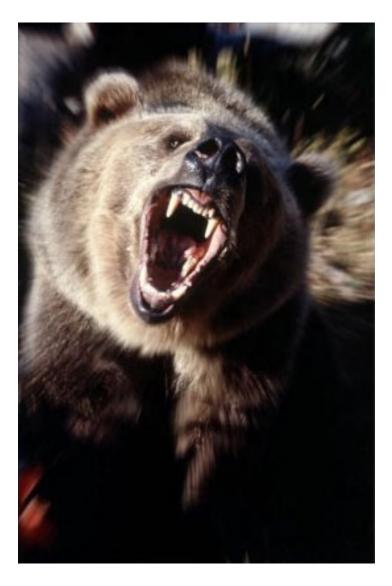
ACEs Models



Felitti, Anda, et al., 1998 Am J Prev Med, 14(4), 245-258.



https://www.cdc.gov/violenceprevention/aces/about.html

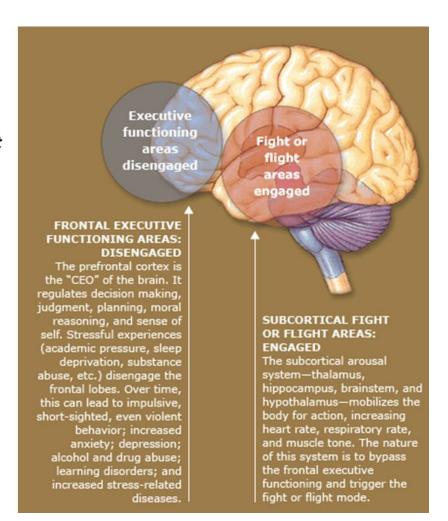


Stress & the Brain

Frontal executive functioning areas are disengaged
Subcortical fight or flight areas are engaged

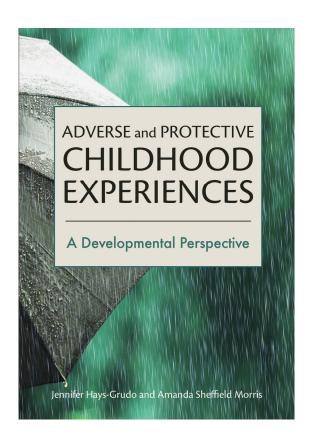
Trauma: Allostatic load

The wear and tear that the body experiences due to repeated cycles of stressful events as well as the inefficient turning-on or shutting off of these responses



McEwen, 1998; Teicher & Samson, 2016

Linking adversity with outcomes: Identifying biobehavioral adaptations to adversity and stress during development





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Integrating and Synthesizing Adversity and Resilience Knowledge and Action: The ICARE Model

Jennifer Hays-Grudo¹, Amanda Sheffield Morris², Lana Beasley³, Lucia Ciciolla⁴, Karina Shreffler², and Julie Croff⁵

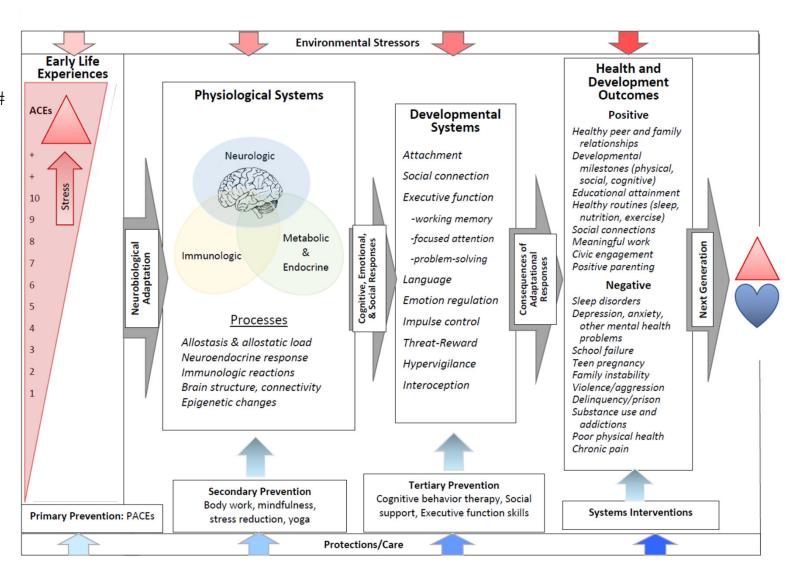
Department of Psychiatry and Behavioral Science, OSU Center for Health Sciences
 Department of Human Development and Family Science, Oklahoma State University, Tulsa
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 Department of Psychology, Oklahoma State University
 Department of Rural Health, OSU Center for Health Sciences

This article proposes a model for understanding the effects of adverse childhood experiences (ACEs) as dynamic and interrelated biobehavioral adaptations to early life stress that have predictable consequences on development and health. Drawing upon research from multiple theoretical and methodological approaches, the intergenerational and cumulative adverse and resilient experiences (ICARE) model posits that the negative consequences of ACEs result from biological and behavioral adaptations to adversity that alter cognitive, social, and emotional development. These adaptations often have negative consequences in adulthood and may be transmitted to subsequent generations through epigenetic changes as well as behavioral and environmental pathways. The ICARE model also incorporates decades of resilience research documenting the power of protective relationships and contextual resources in mitigating the effects of ACEs. Examples of interventions are provided that illustrate the importance of targeting the dysregulated biobehavioral adaptations to ACEs and developmental impairments as well as resulting problem behaviors and health conditions.

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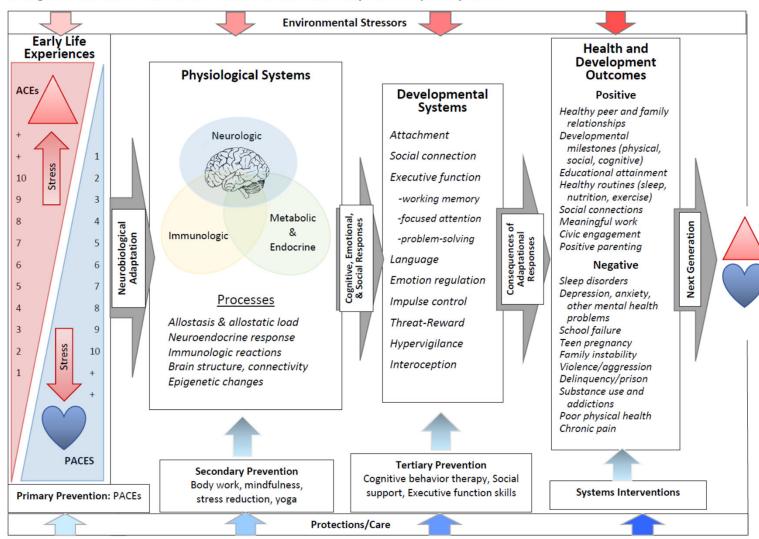
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The Multiple Effects of ACEs Over a Lifetime and Across Generations



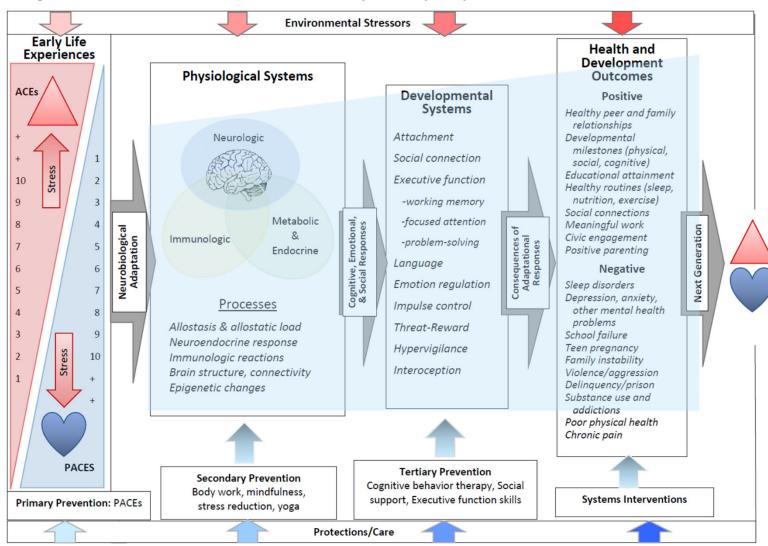
Intergenerational and Cumulative Adverse and Resilient Experiences (ICARE) Model

ACEs are only part of the story



Intergenerational and Cumulative Adverse and Resilient Experiences (ICARE) Model

And PACEs can be lifelong



ORIGINAL ARTICLE



Adverse and Protective Childhood Experiences and Parenting Attitudes: the Role of Cumulative Protection in Understanding Resilience

Amanda Sheffield Morris 1 • Jennifer Hays-Grudo 1 • Martha Isabel Zapata 1 • Amy Treat 1 • Kara L. Kerr 1

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Abstract

Theory and research indicate that adverse childhood experiences (ACEs) are linked to negative parenting attitudes and behaviors. We posit that protective and compensatory experiences (PACEs) in childhood buffer the negative effects of ACEs on later parenting. To test this premise, the present study examined associations between ACEs, PACEs, and attitudes towards nurturing and harsh parenting in an ethnically diverse sample of parents with children of various ages (N = 109; 65% mothers, 35% fathers; M age = 38). Parents completed a widely used parenting attitudes questionnaire and the ACEs and PACEs surveys. PACEs were negatively correlated with ACEs and positively correlated with nurturing parenting attitudes and parent income and education



Importance of Cumulative Protective Experiences for Children and Teens

Animal models have found that exposure to **enriched environments**, (novelty, stimulation, and social opportunities), limit or reverse effects of early adversity on the HPA axis (Kentner et al., 2018).

Bethell et al. (2019) **Positive childhood experiences** reduced risk of mental and relational health problems, even with ACEs (7 items measuring belongingness/relationships)

Narayan, Atzl, Merrick, Harris, & Lieberman (2020) **Benevolent Childhood Experiences**. 10 items reflecting positive emotional/relational family climate predict less psychopathology and stress in pregnant women

Yamaoka & Bard (2019) **Positive Parenting Practices** (6 items from NSCH) reduced negative effects of ACEs on both soc-emo deficits and developmental delays in early childhood.

Morris, Hays-Grudo, Zapata, Treat, & Kerr (2021) Protective and Compensatory Experiences (PACEs) mitigate effects of ACEs on harsh parenting attitudes.



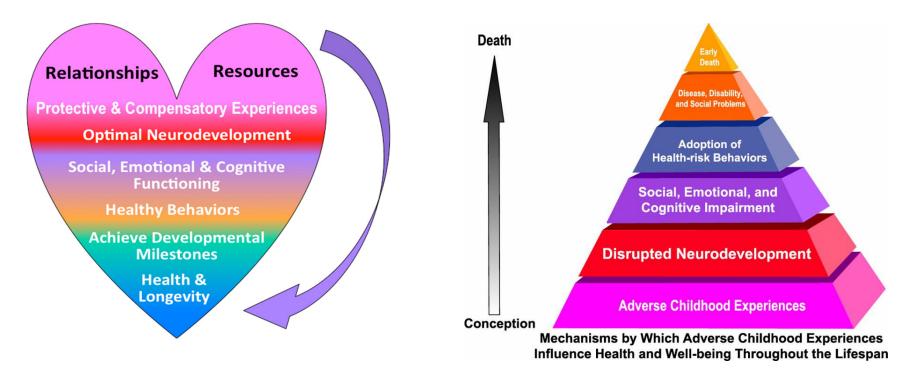
Special Issue Article

The heart of the matter: Developing the whole child through community resources and caregiver relationships

Amanda Sheffield Morris (D), Jennifer Hays-Grudo, Kara L. Kerr and Lana O. Beasley Oklahoma State University, Tulsa, OK, USA

Abstract

Numerous developmental scholars have been influenced by the research, policies, and thinking of the late Edward Zigler, who was instrumental in founding Head Start and Early Head Start. In line with the research and advocacy work of Zigler, we discuss two models that support the development of the whole child. We begin by reviewing how adverse and protective experiences "get under the skin" and affect developmental trajectories and risk and resilience processes. We then present research and examples of how experiences affect the whole child, the *heart* and the *head* (social, emotional, cognitive, and physical development), and consider development within context and across domains. We discuss examples of interventions that strengthen nurturing relationships as the mechanism of change. We offer a public health perspective on promoting optimal development through nurturing relationships and access to resources during early childhood. We end with a discussion of the myth that our current society is child-focused and argue for radical, essential change to make promoting optimal development for all children the cornerstone of our society.



PACEs: The Antidote to ACEs



Relationship PACEs

Unconditional Love

- Children need to feel loved and know that they are cared about.
- Attachment research and research on authoritative parenting supports the importance of unconditional love, warmth, and nurturance.

Having a Best Friend

- Having a best friend protects children from peer rejection, bullying, and victimization.
- With friends, children can try out new skills and learned behaviors among equals.
- Friends also reduce stress, provide social support and acceptance.

Having a Mentor

- A trustworthy adult provides support, advice, and comfort when parents are not available or in other areas of life.
- A coach, teacher, or relative can protect children and make up for much of the negative outcomes associated with poorly functioning households.



Relationship PACEs

Being Part of a Group

- Membership in a group fosters a sense of belonging and community.
- Being part of civic or faith-based group means that children are spending time in positive activities.
- Group membership can also help with identity development, and aid children in developing their own values and morals.

Volunteering

- Helping others provides us with a sense of connection to the broader world.
- It helps children learn about the needs of others and fosters empathy, altruism, and perspective taking.
- Research shows the positive effects of volunteering, particularly when children volunteer with their parents.





Environment & Resource PACEs

Having the opportunity to be physically active

- Being physically active is important for health and helps children handle the physiological effects of stress on the body.
- Organized sports can provide both security and connection.
- Sports can help develop goal-setting, self-regulation, and selfesteem.

Having a hobby

- Having a hobby teaches discipline and self-regulation in the context of fun. It can lead to a sense of mastery, competence, and selfesteem.
- Creative hobbies provide an outlet for expression and identity exploration and allow children to have a voice and be recognized for the abilities.

Environment & Resource PACEs

Clean, safe home with enough food

- Children who live in homes that are cluttered and unclean, have worse outcomes even when things like parenting and resources are equal.
- Good nutrition is important for brain health and development.
- Mealtimes can be part of the home routine, and a time for family communication and sharing.

Clear & fair rules and predictable routines

- Fair rules and predictable routines create a sense of safety.
- Children who have no rules or limits often grow up to be irresponsible adults, engage in risky behavior as teens, and do not do well in school.
- Adolescents whose parents monitor their activities are less likely to engage in risky behavior and do better in school. As children grow older it is important for them to have a say in the rules.



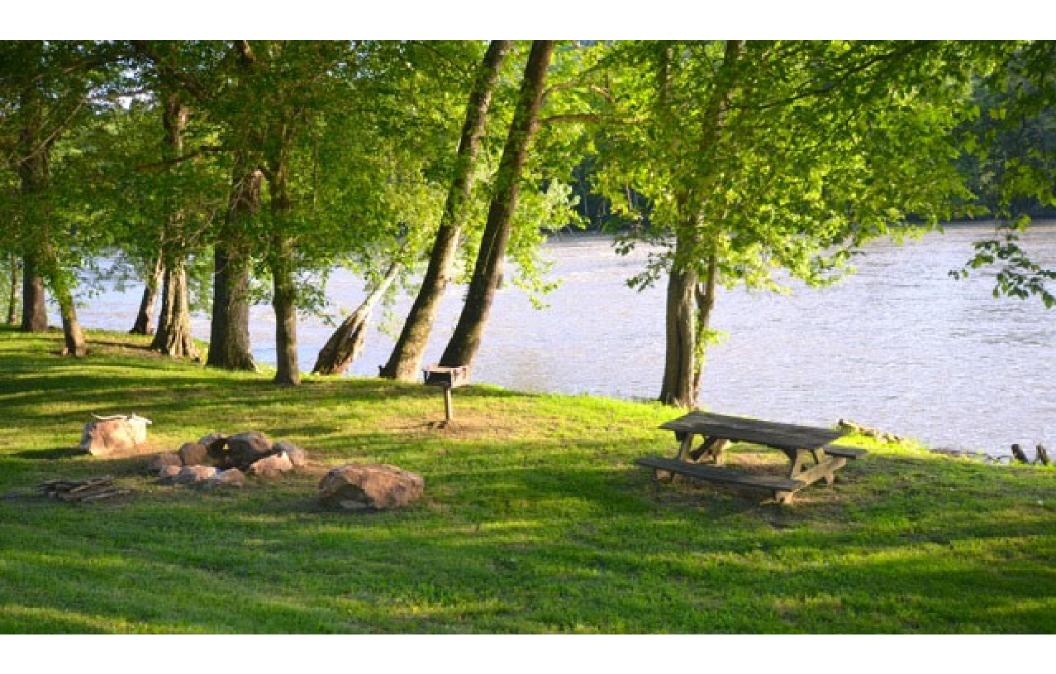


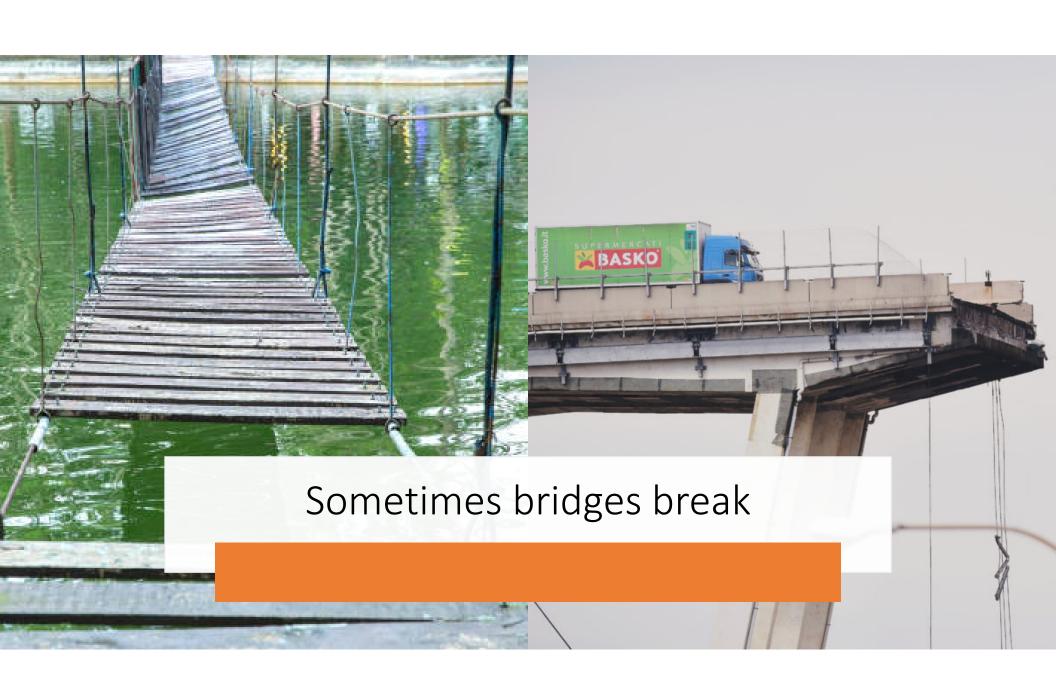


Environment & Resource PACEs

Good Schools/Opportunities to Learn

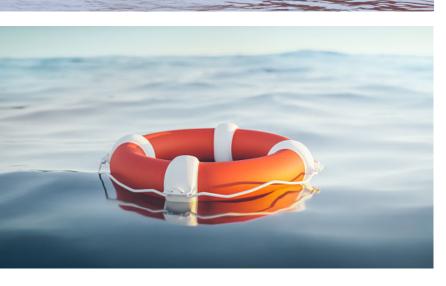
- Early Childhood Education 7 to 1 return on investment.
- Attending a school that provides the resources and opportunities to have positive academic experiences helps children facilitate mastery of knowledge.
- When children attend a good school, they are typically among peers who do well in schools and families who value education. Being among such peers amplifies students' performance, as students tend to fall or rise in performance, based on those around them.
- Evidence across many disciplines (psychology, economics, sociology) finds that quality education is one of the best predictors of later life success and happiness.













Adult PACEs























Protective and Compensatory Experiences in Adulthood

(Current Adulthood PACEs)

When answering these questions, think about the last 12 months. On a scale of 1 to 5, fill the circle of the number that best describes how often each of the items occurred.

Never	Rarely	Sometimes	Often	Very Often
1	2	3	4	5

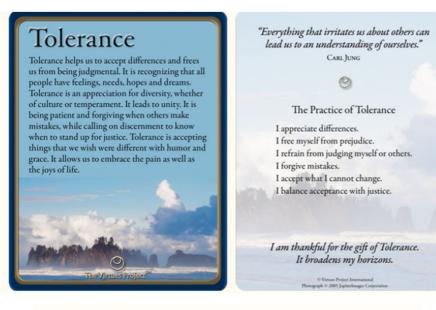
		1	2	3	4	5
1.	T C 1 (1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	Never	Rarely	Sometimes	Often	Very Often
	I felt loved and did not doubt that I was cared for.	0	0	0	0	0
2.	I had someone I trust that I could turn to for advice, mentorship, or	Never	Rarely	Sometimes	Often	Very Often
	support.	0	0	0	О	0
3.	I had at least one best friend, someone I could count on and had fun	Never	Rarely	Sometimes	Often	Very Often
	with.	0	0	0	0	О
4.	I was engaged in at least one social or faith-based group.	Never	Rarely	Sometimes	Often	Very Often
	I was engaged in at least one social of faith-based group.	0	0	0	0	0
5.	I did things to benefit others or participated in community helping	Never	Rarely	Sometimes	Often	Very Often
	projects.	0	0	0	О	0
6.	I had regular routines for things like sleeping, eating, and exercising.	Never	Rarely	Sometimes	Often	Very Often
	That regular routilies for timings like steeping, earing, and exercising.	0	0	0	0	0
7.	I lived in a space that was clean, safe, and uncluttered.	Never	Rarely	Sometimes	Often	Very Often
	I rived in a space that was clean, sale, and diciditered.	0	0	0	0	0
8.	I had opportunities to learn and grow as a person or in my work.	Never	Rarely	Sometimes	Often	Very Often
	I had opportunities to learn and grow as a person of in my work.	0	0	0	0	0
9.	I was physically active, either alone or with others.	Never	Rarely	Sometimes	Often	Very Often
	1 was physically active, cities alone of with others.	0	0	0	0	0
10.	I enjoyed at least one hobby or leisure activity.	Never	Rarely	Sometimes	Often	Very Often
	1 enjoyed at least one noody of leistile activity.	0	0	0	0	0

Universal Needs	PACEs - Birth to 18	Virtues
Love	Felt unconditional love; Knew you were cared for	Trust
Guidance	Had a trusted adult as a mentor for advice and support	Wisdom
Friendship	Had at least one best friend – someone you trusted, had fun with	Compassion
Affiliation	Belonged to at least one social group	Cooperation
Benevolence	Regularly volunteered or did projects to help others	Gratitude
Stability	Had regular routines and rules were fairly enforced	Self-control
Comfort	Lived in a clean, uncluttered home with enough food to eat	Contentment
Knowledge	Had appropriate opportunities and resources to learn	Curiosity
Movement	Regularly participated in organized sports or physical activity	Vitality
Recreation	Had an engaging hobby, artistic, or intellectual pastime	Creativity

PACEs create virtues

- Virtues are character strengths that build the capacity for resilience
- PACEs begin as external (relationships and environmental) but become internalized (ICARE)
- PACEs create new habits and cultivate positive approaches to everyday problems
- These habits and responses cultivate strengths of character, or virtues

See: https://www.virtuesproject.com/



THE VIRTUES WHAT WE DO WHO WE SERVE ABOUT US STORE



"THE MISSION OF THE VIRTUES PROJECT IS TO INSPIRE PEOPLE OF ALL CULTURES TO REMEMBER WHO WE REALLY ARE AND TO LIVE BY OUR HIGHEST VALUES."



PACEs Plan

PACEs Plan	Month				
Relationship PACES					
Love. I know that am love ar cared for.	nd love someone unconditionally. I do not doubt that I am				
Current status:	Actions taken:				
Goal:					
Friendship. I have at least or	ne best friend, someone I can count on and have fun with.				
Current status:	Actions taken:				
Goal:					
_	egularly to benefit others or participate in community helping				
projects. Current status:	Actions taken:				
Current status.	Actions taken.				
Goal:					
Mentor. I have someone I can look to for advice, information, or support.					
Current status:	Actions taken:				
Goal:					
Community connection. I am an active member of at least one civic, social, or faith-based					
group.					
Current status:	Actions taken:				
Goal:					

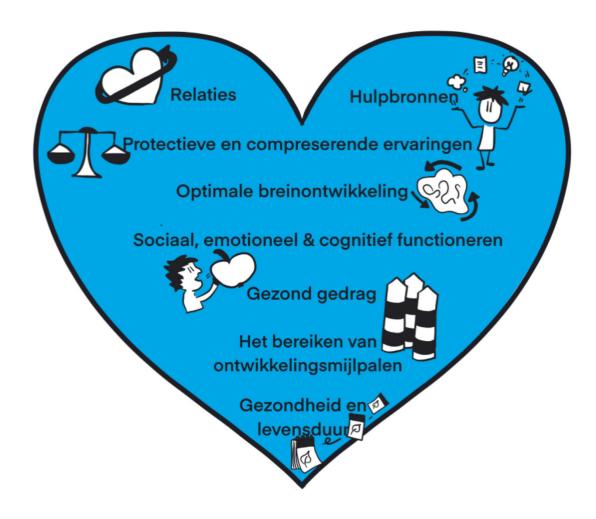
Notes:

Notes:

	Month			
Environment and Resources PACES				
Home. I live in a home that	is clean, uncluttered, safe, with healthy food to eat.			
Current status:	Actions taken:			
Goal:				
	ies for lifelong learning, and have the resources I need to learn			
and grow in my work and as				
Current status:	Actions taken:			
Goal:				
Physical activity. I get some	type of physical exercise every day, either alone or with others.			
Current status:	Actions taken:			
Goal:				
Gour.				
Hobby. I have a hobby that	gives me pleasure and allows me to be creative and productive			
and feel proud of my accomplishments.				
Current status:	Actions taken:			
Goal:				
000.11				
Routines and rituals. I make a point to get enough sleep, eat regular meals with family and				
	ortunities to spend time with others.			
Current status:	Actions taken:			
Goal:				
554				

PACEs are global

- Dutch translation (Jessica Vervoot, U of Amsterdam)
- Japanese translation
 - PACEs (Ryu Takizawa, Clin Psy, U of Tokyo)
 - Book (Satoko Matsumoto, Masumi Sugawara, Ochanomizu University, Tokyo)
- Portuguese translation (Telma Almeida, Instituto Universitário Egas Moniz
- · Canadian podcast (Agnes Chen, Rise Resilient)
- Child & Family blog (Duncan Fisher, UK, international distribution)
- Spanish translation (Catholic Charities)

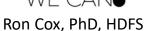




Phase 1 (2016-2022): Five major projects









Karina Shreffler, PhD, HDFS







Misty Hawkins, Psychology

And 10 pilot projects!

Phase 2 (2023-2028): Three initial projects plus CIRCA common database



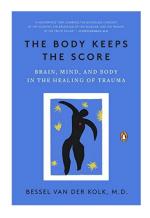


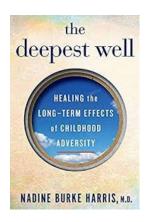
Behavioral Immunology Lab of Tulsa

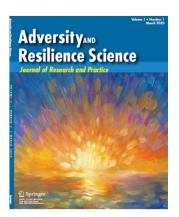
Bart Ford, PhD OSU-CHS Pharmacology & Physiology

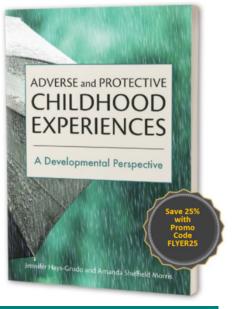


Kara Kerr, PhD **Psychology**

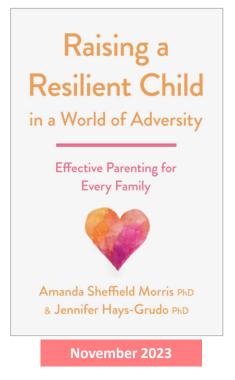








Order at.apa.org/adverse-childhood. Enter promo code FLYER25 to save 25% plus free shipping.



Readings and Resources

www.acesandpaces.com

https://www.springer.com/journal/42844

https://childandfamilyblog.com/how-to-protect-your-child-against-adversity-pace-methods/

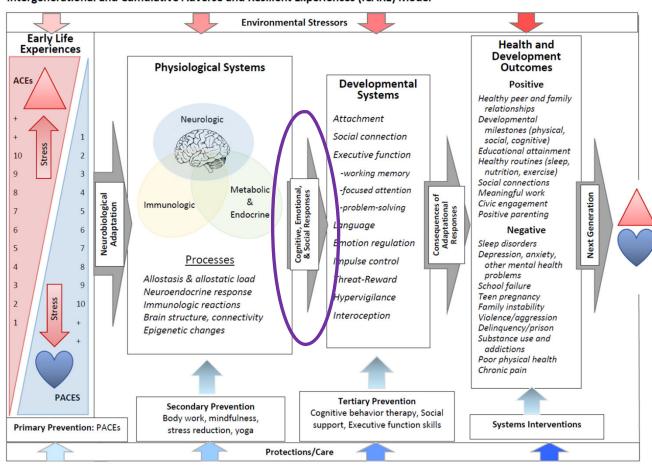
jennifer.hays.grudo@okstate.edu

Thank You PACEs Lab Team!





Intergenerational and Cumulative Adverse and Resilient Experiences (ICARE) Model



As a child (6-18) when bad things happened to me or others in my home, I often (circle all that apply)

- 1. Pretended that nothing bad had really happened.
- 2. Denied having negative thoughts or feelings.
- 3. Refused to believe it had happened.
- 4. Avoided being around other people.
- 5. Made sure no one knew about the situation.
- 6. Took my negative feelings (anger, fear, frustration) out on others.
- 7. Fought back verbally or physically.
- 8. Distracted myself with video games, TV, food, sleep.
- 9. Was preoccupied with physical aches and pains.
- 10. Came up with possible solutions to the problem.
- 11. Talked with someone who could help, such as a relative, teacher, police.
- 12. Asked someone I respected for advice and followed it.
- 13. Blamed myself for the situation.
- 14. Avoided my home and those within it who caused the problem(s).
- 15. Worried about what to do.
- 16. Told myself it wasn't really happening to me.
- 17. Did things to reduce the stress I felt (was physically active, practiced breathing exercises).
- 18. Believed that something good that would come out of the situation.
- 19. Changed something about myself so that I could deal with the situation better.
- 20. Tried to make things better by having a plan and following it.
- 21. Accepted sympathy and understanding from someone.
- 22. Criticized or lectured myself.
- 23. Hoped or prayed that a miracle would happen.
- 24. Daydreamed or imagined a better time or place than the one I was in.
- 25. Had specific fantasies (perfect revenge, finding lots of money) that made me feel better.
- 26. Focused on schoolwork, sports, creative interests, or other activities.
- 27. Tried to make everything okay by acting more like a parent (caring for younger siblings, doing housework).
- 28. Blamed myself for not knowing what to do.
- 29. Asked for advice from a school or other counselor and did what they recommended.
- 30. Talked with others who had gone through similar situations.

Childhood Adaptations to ACEs (CHAACEs)







As an adult, when bad things happen to me, I sometimes (circle all that apply)

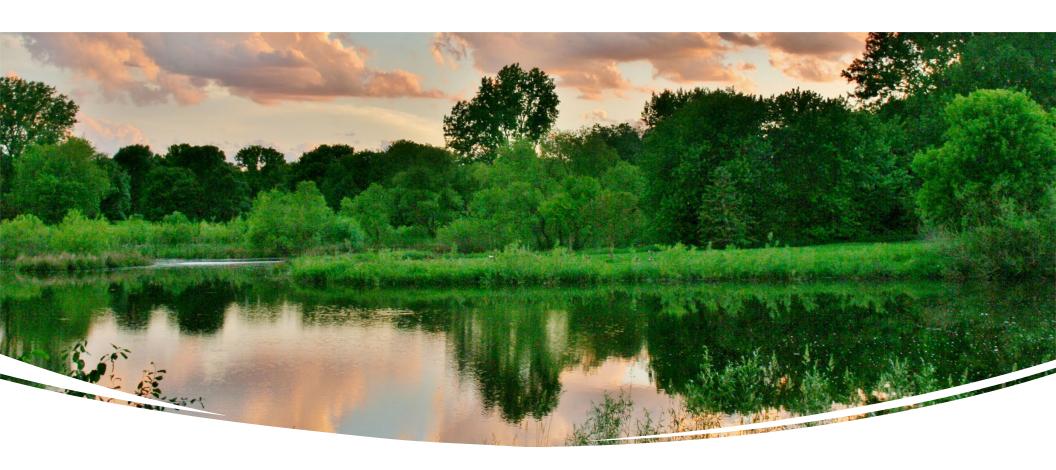
- Pretend that it's not really so bad.
- 2. Deny having negative thoughts or feelings.
- 3. Refuse to believe it happened.
- 4. Avoid being around other people.
- 5. Make sure no one knows about the situation.
- 6. Take my negative feelings (anger, fear, frustration) out on others.
- 7. Fight back verbally or physically.
- 8. Distract myself with video games, TV, food, drink, drugs, sleep.
- 9. Become preoccupied with physical aches and pains.
- 10. Come up with possible solutions to the problem.
- 11. Talk with someone who can help, such as a relative, clergy, police.
- 12. Ask someone I respect for advice and followed it.
- 13. Blame myself for the situation.
- 14. Avoid being with those who caused the problem(s).
- 15. Worry about what to do.
- 16. Tell myself it isn't really happening.
- 17. Do something healthy to reduce stress (be physically active, practice breathing exercises).
- 18. Concentrate on finding something good that could come out of the situation.
- 19. Change something about myself so that I can deal with the situation better.
- 20. Try to make things better by having a plan and following it.
- 21. Accept sympathy and understanding from someone.
- 22. Criticize or lecture myself.
- 23. Hope or pray that a miracle will happen.
- 24. Daydream or imagine a better time or place than the one I am in.
- 25. Have specific fantasies (getting the perfect revenge) that make me feel better.
- 26. Focus on work, sports, creative interests, or other activities.
- 27. Try to make things better by being extra responsible and caring for others around me.
- 28. Blame myself for not knowing what to do.
- 29. Get professional help and follow their recommendations.
- 30. Talk with others who have gone through similar situations.











- Reflection how aware of my coping strategies am I?
- What strategies would I like to change?

Intergenerational Transmission of Adversity

ACEs impact on the developing child

- Allostatic load (stress dysregulation)
- Neural development (brain structure & function)
- Epigenetic changes
- Behavioral dysregulation
- Developmental impairments

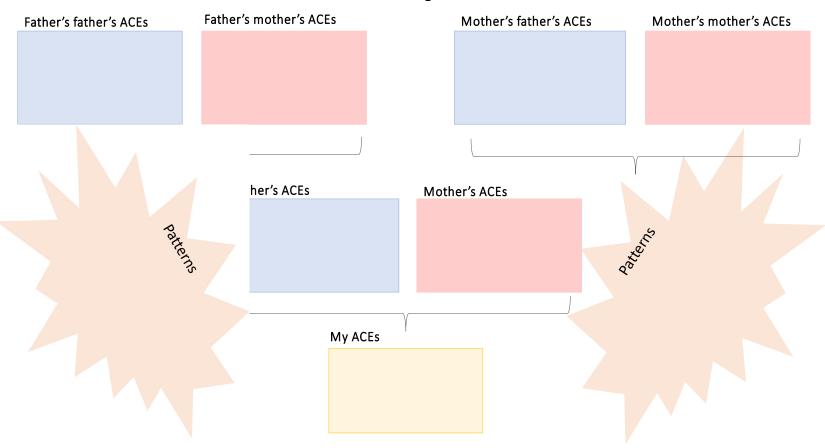
Adult Neurobiological & Behavioral Effects

- Immune system impairments (health problems)
- Neuroendocrine (oxytocin, cortisol)
- Biophysical (obesity, susceptibility to addiction)
- Mental skills (cognitive, emotion regulation)
- Health-harming behaviors (smoking, drugs)
- Psychological (depression, anxiety)

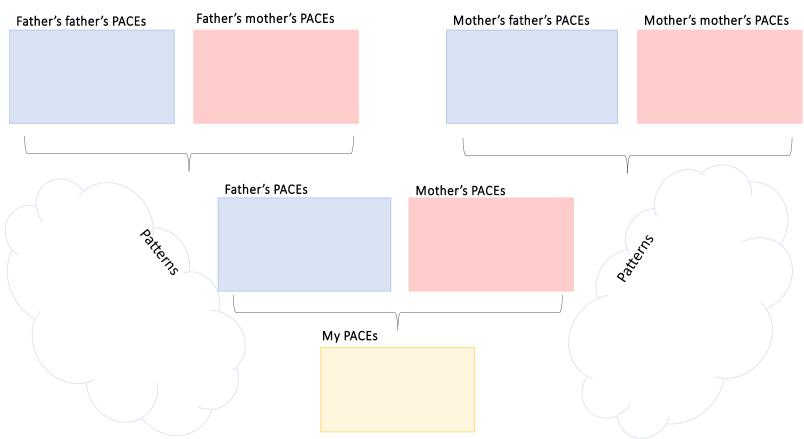
Environmental Effects on next generation

- Family instability
- Family violence
- Social isolation
- Economic instability
- Neighborhood violence
- Maltreatment

ACEs Genogram



PACEs Genogram





Questions for Reflection

- Did you find any patterns of adversity in your family history?
- Are there patterns of PACEs in your family?
- How might you use ACEs/PACEs genograms in your work? In your personal life?