Alliance

Using a Brain Science-Infused Lens in Policy Development

Achieving healthier outcomes for children and families

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Alberta family wellness initiative

Palix Foundation

Robert Wood Johnson Foundation

Alliance for Strong Families and Communities

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Change in Mind Initiative

A partnership between the Alliance for Strong Families and Communities and the Palix Foundation with strategic investment from the Robert Wood Johnson Foundation

Putting new brain science to work for healthier outcomes.

The healthy development of all children and youth is essential for a thriving and prosperous society. We have learned critical new information in the last decade about the most effective ways to foster the health and well-being of families today and for generations to come. Brain science research has uncovered the basic physiological processes that support healthy development for infants and young children.

What it takes to build healthy brains.

The Center on the Developing Child at Harvard University (2016), through its groundbreaking research has identified core concepts that help us understand what it takes to ensure healthy development and protect children from the effects of toxic stress. These include:

- "Relationships with caring, responsive, adults and early positive experiences build strong brain architecture for children.
- Significant stress from ongoing hardship or threat, such as exposure to violence, extreme poverty, or child maltreatment disrupts the biological foundations of learning, behavior, and health, with life-long consequences.
- Providing the right ingredients for healthy development—including protective factors that can counterbalance the effects of adversity—from the start produces better outcomes than trying to fix problems later.
- In the early years, it's critical to provide both the buffering protection of responsive relationships and safe and stable environments that help to reduce poverty, maltreatment, community violence, racism, and other threats to child well-being."

Awareness of risk factors can help focus prevention efforts.

We also have greater knowledge of the risk factors for lifelong impairments to physical and mental health, as a result of the landmark Adverse Childhood Experiences (ACEs) study, which revealed compelling links between ten types of early adversity that harm children's developing brains so profoundly that the effects show up for decades (Felitti, 1998). This knowledge can focus our prevention and early intervention efforts and underscores the need to build healthy brain architecture for all children from the start.

Early years offer greatest opportunity, but it's never too late.

Although the early years are the most impactful and cost-effective life stage in which to build a solid foundation for the brain, science tells us that it is never too late to lessen the harmful effects of toxic stress and build resilience. The core capabilities that adults need both for parenting and in the workplace are built in early childhood, but the full range of skills continue to develop into the adolescent and young adult years. (Center on the Developing Child, 2016). There is another period of rapid growth, between the ages of 12 and 21, where

proficiency in skills such as planning, maintaining focus, and problem solving are sharpened. Though more difficult to achieve in adulthood, the adult brain, due to neuroplasticity has the capacity to rewire its neural connections. Therefore, positive experiences such as peer support, mentoring, practicing stress reduction techniques, and setting and achieving goals can all strengthen neural connections and help parents build their capacity to raise their children, even under adverse conditions (Center on the Developing Child at Harvard University, 2016).

Drawing on lessons from the prevention and treatment of infectious disease, Dr. Jack Shonkoff argues for a multi-tiered population-level approach that spans the prevention spectrum. This approach includes: (1) general (universal)[1] prevention activities to support the healthy development of children and youth by taking universal precautions that increase internal family protective factors and reduce the external social, economic and environmental conditions (poverty, violence, and racial/ethnic discrimination) that create toxic stress; (2) selective targeted early intervention initiatives that increase resilience among vulnerable children, youth, and families by "building social capital at the neighborhood level, stress-buffering capacities at the caregiver level, and coping skills among young children," and (3) effective treatment programs and practices that provide remediation or recovery services to individuals exposed to significant adversity. In fact, Shonkoff argues this new scientific thinking is on the verge of being leveraged, which will ultimately transform how our society addresses the lifelong impacts and consequences of adversity in the lives of our youngest citizens (Shonkoff, 2016).

U.S. and Alberta agencies seek policy changes using the latest brain science.

Historically, the U.S. and Canada have both created innovative solutions to intractable problems. Families and communities in this century face multiple challenges, some of which are passed from generation to generation, and require all of us to find and implement strategies to strengthen families in efficient and effective ways. With the advances in neurosciences, we have the knowledge to develop more effective approaches, which support stronger foundations in the construction of the human brain. Because brain architecture and critical skills are built continuously over time, policies that promote healthy development through the early years create a foundation for later school achievement, economic productivity, responsible citizenship, and successful parenting. This is how early investments in our youngest citizens benefit all of us, socially and economically.

We know how to create contexts that build a strong foundation for lifelong health and learning; how adversity disrupts healthy development; and how the building blocks of positive experiences and influences that help health and development allow individuals to overcome the effects of adversity (Center on the Developing Child at Harvard University, 2016). Putting this scientific knowledge into practice is of particular importance to the nonprofit human serving sector, leaders in public service, philanthropy, and policy makers. The Change in Mind Initiative, a pioneering coalition of philanthropists and innovative community-based organizations from Alberta,

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1 The older public health literature commonly defines primary prevention as activities intended to prevent a disease or condition from occurring in the first place; secondary prevention as activities intended to help with identification of a condition, allowing for treatment to begin, in its early stages; tertiary prevention as treatment of a condition once it has developed (CDC, 2013). The more current literature defines three types of interventions: (1) universal prevention as interventions that target the general public or an entire population. These interventions generally are low cost and low risk, and effective and acceptable for the general population; (2) selective preventive interventions, which target individuals or subgroups of people who are at a significantly higher risk of developing the disorder than an average individual. These interventions are most appropriate when their cost is moderate and their risk of negative effects is minimal or nonexistent; (3) indicated prevention interventions, which are targeted to high-risk individuals who have minimal but detectable signs or symptoms of a disorder or biological markers indicating predisposition to a disorder but who do not meet diagnostic levels at the current time (National Research Council and Institute of Medicine 2009).

Canada and across the United States is integrating these insights from recent scientific discoveries into policy conversations to promote decisions that will better support and improve the well-being and long-term life prospects of children, youth, families and communities for generations to come.

The policy domains where these compelling new findings can dramatically improve health and wellbeing outcomes for children, youth and families include early childhood education, physical and behavioral health care, child welfare, K-12 education, parenting programs, juvenile justice, community mobilization, income support, housing, and more.

Our public and nonprofit systems and policies are only beginning to leverage 21st century science to innovate, and become intentional and strategic in producing more effective and sustainable outcomes for all children and families. There is a compelling and urgent need to "bridge the gap between what we know in science and what we do in policy and practice." (Integrating Science, Policy & Practice, 2015).

Background

In November 2014, the Alliance for Strong Families and Communities in partnership with the Palix Foundation in Alberta, Canada was awarded a grant from the Robert Wood Johnson Foundation to create a two-country cohort focused on integrating brain science research into the nonprofit human serving sector, with an emphasis on influencing policy and creating systems change. An initial planning grant from the Center on the Developing Child at Harvard University helped launch the proposal that was ultimately supported by RWJF. The objective of the Change in Mind Initiative is to infuse, align and accelerate the brain science research within our 15 cohort sites so the organizations have a deep understanding of the science. We support them in embedding the latest science into the policies and practices of their agencies through the education of staff and leadership, changing their programs and policies to reflect this new knowledge, and incorporating the latest in science-based interventions into their service array. These organizations serve as leaders in their communities and across the nonprofit human serving sector to accelerate knowledge dissemination and influence widespread use of brain science throughout the nonprofit and public sectors. Ultimately their work will advance practice, policy, regulatory and fiscal changes at the local, state, national and international levels.

Using a brain science-infused lens in policy development.

To ensure and restore healthy developmental trajectories for children, adults and families, the Change in Mind Initiative vigorously supports policy and program decisions that draw on decades of behavioral and social science research, as well as recent discoveries in neuroscience, molecular biology, and epigenetics. These can include, but are not limited to, state and national legislation, administrative changes to programs and policies, the strategic use of science-aligned interventions, and the identification and use of fiscal levers that support and advance brain science-infused programs and policies. In addition, we urge support for research and development activities that provide opportunities for innovations, and which involve parents, communities, and researchers in the design and testing of new strategies that can show intended effects. Policymakers at all levels have unprecedented and unlimited avenues available to use public and private resources more effectively to support interventions and policies that will advance our progress towards a more healthy society, based on the best available evidence to date. (The citations in the reference list provide both wide-angle and in-depth information that can generate ideas. The Alliance for Strong Families and Communities, the Palix Foundation, and Change in Mind cohort members are available to provide resources and consultation on policy and system change efforts.)

Values and Principles of Brain Science-Infused Policy

Science is not the only element to be considered in developing public policy, and there are differences in the quality of evidence for various strategies. Therefore, we believe the term "brain science-infused" best describes our policy approach, as it suggests that all policy be derived from and grounded in the science, not just informed by it. Science is the foundation, yet the perspectives of the families and communities served should also influence policy decisions at the local, state, national and international levels. Therefore, we recommend that

the following values and principles guide policy deliberations. The values are intended to serve as the vision for all future policy conversations and decisions; most of which have been promoted and advocated for in the early childhood field for the past several decades. The principles are tied specifically to what we know about how the brain functions and strategies that the research is showing as effective in supporting early brain development and the building of adult core capabilities and resilience.

Values:

1. Always consider the best interests of the child and the family.
2. Recognizes the impact of early childhood interventions on both learning and health outcomes and the critical role of caregivers in supporting children's development.
3. Includes the voice of those with lived experiences.
4. Promotes resilience, health and well-being.
5. Responsive and adaptive to new science as it emerges.
6. Promotes cultural awareness and sensitivity.
7. Advances equity.
8. Facilitates alignment between and among public and private sectors at the local, state, national and international levels.
9. Supports innovation, creativity, and tolerance for learning through failure in pursuit of better outcomes for children, youth, and families.
10. Promotes the use of the social ecological framework and takes into account the inter-relationships among individual, family, community, and society.

Principles:

a. Uses a multi-generational approach to supporting healthy development and mitigating adversity.

b. Emphasizes the importance of actively building skills, including executive functioning and self-regulation, when designing strategies to promote the healthy development of young children, adolescents and adults.

c. Employs approaches that are centered around the early years, including prenatal, while also focusing on building adult core capabilities.

d. Ensures implementation science and evaluation are integrated into approaches to provide accountability and evidence of effectiveness and efficiency.

e. Identifies resources to develop and pilot new ideas based on the best available evidence to date.

We have curated brain science-infused policy examples from the U.S. and Alberta, which we believe embody and demonstrate these values and principles. These are included in the appendix.

Acknowledgements

This document was prepared by the Policy Community of Practice of the Change in Mind Initiative. We would like to acknowledge and thank the following individuals for their contributions.

Nancy Ashley, Children's Home Society of Washington, Seattle, WA

Jeff Bauer, The Family Partnership, Minneapolis, MN

Sheila Castle, Family Service Association of San Antonio, San Antonio, TX

Carlene Donnelly, CUPS, Calgary, Alberta

Jennifer Jones, Alliance for Strong Families and Communities, Milwaukee, WI

Sue Lohrbach, KVC, Olathe, KS

Gabe McGaughey, Children's Hospital of Wisconsin, Milwaukee, WI

Tracy Mercier, Boyle McCauley Health Centre, Edmonton, Alberta

Francesco Mosaico, Boyle McCauley Health Centre, Edmonton, Alberta

Leslie Newman, Children and Families First, Wilmington, DE

Amanda Storteboom, CUPS, Calgary, Alberta

Bill Wolff, LaSalle School, Albany, NY

Additionally, the following individuals provided valuable input and contributed to the final document.

Clare Anderson, Chapin Hall, Chicago, IL

Julie Asher, Center on the Developing Child at Harvard University, Boston, MA

Mary Baker, Monroe Harding, Nashville, TN

Andy Blanch, Campaign for Trauma-Informed Policy and Practice, Sarasota, FL

Martha Davis, Robert Wood Johnson Foundation, Princeton, NJ

Susan Dreyfus, Alliance for Strong Families and Communities, Milwaukee, WI

Wendy Ellis, George Washington University, Washington, DC

Michelle Gagnon, Palix Foundation, Calgary, Alberta

Meg Hargreaves, Community Science, Gaithersburg, MD

Elizabeth Hudson, Wisconsin Office of Children's Mental Health, Madison, WI

Leslie Lieberman, Health Federation of Philadelphia, Philadelphia, PA

Elizabeth Prewitt, ACEs Connection, Washington, DC

Al Race, Center on the Developing Child at Harvard University, Boston, MA

Eric Schindler, Child and Family Resources, Tucson, AZ

Anna Marie Trester, FrameWorks Institute, Washington, DC

Corey Zimmerman, Center on the Developing Child at Harvard University, Boston, MA

Suggested citation: Alliance for Strong Families and Communities & The Palix Foundation (2016). Using a Brain Science-Infused Lens for Policy Development. Achieving healthier outcomes for children and families. http://www.alliance1.org/change-in-mind

Appendix

Examples of brain science-infused policies from the U.S. and Alberta:

U.S. State legislation

1. In 2013, Wisconsin unanimously passed Senate Joint Resolution 59, stating that all "policy decisions enacted by the Wisconsin state legislature will acknowledge and take into account the principles of early childhood brain development and will, whenever possible, consider the concepts of toxic stress, early adversity, and buffering relationships, and note the role of early intervention and investment in early childhood years as important strategies to achieve a lasting foundation for a more prosperous and sustainable state through investing in human capital." Several states, including California used Wisconsin's language to pass similar legislation. [Values 2 & 4; Principle c]
2. With bipartisan support, the Washington State legislature passed the Early Start bill in 2015, with a $158 million investment in the 2015-17 budget to help ensure all children have a great start. The preamble to the bill included the following language: INTENT. (1) The legislature finds that quality early care and education builds the foundation for a child's success in school and in life. . . .The legislature acknowledges that critical developmental windows exist in early childhood, and low quality child care has damaging effects for children. . . The legislature acknowledges that the early care and education system should strive to address the needs of Washington's culturally and linguistically diverse populations. The legislature understands that parental choice and provider diversity are guiding principles for early learning programs. [Values 2, 3 & 6; Principle c]
3. Louisiana, South Carolina, Illinois, Connecticut, Massachusetts, New Hampshire and Mississippi as part of a national "raise the age" movement are increasing the age of criminal responsibility for juveniles to 18, a result in part, of the growing neurological evidence that young people's brains are different from adult brains. [Values 5 & 7; Principle e]

U.S. State-level policy efforts

4. A three-year initiative in Tennessee aims to encourage government and private organizations to revise their policies and create innovative practices focused on ways to strengthen the social and emotional health of families, reduce the impact of toxic stress on young children, and take steps to ensure Tennessee children have safe, stable, nurturing environments. [Values 2, 4, 8, 9 & 10]

U.S. National executive action

5. In January 2016, President Obama adopted the recommendations put forth by the U.S. Department of Justice to reform the federal prison system. The recommendations included banning solitary confinement for juvenile offenders in federal prisons citing the potential devastating psychological implications on the adolescent brain. This policy is informed by scientific understandings of development, which include adolescence as an intense period of construction in the building of the brain. [Values 5 & 7; Principle e]

U.S. Local legislation

6. Best Starts for Kids is an initiative of the King County, Washington County Executive to improve the health and well-being of King County by investing in prevention and early intervention for children, youth, families, and communities. Voters approved a levy that will generate about $65 million per year and cost the average King County property owner an estimated $56 per year, which is about one dollar per week. It will be the most comprehensive approach to early childhood development in the nation, starting with prenatal support, sustaining the gain through teenage years, and investing in healthy, safe communities that reinforce progress. [Values 2, 4, 9 & 10; Principles c & e]

Alberta Provincial legislation and administrative initiatives

7. In 2013, Alberta released a province-wide initiative, Together We Raise Tomorrow: An Alberta Approach to Early Childhood Development to support the well-being, safety, security, education, and health of all children in Alberta by focusing on early childhood development. With this initiative, the government set out to build on the principles of Alberta's Social Policy Framework to create a children's charter, a poverty reduction strategy, and to move forward with the Alberta Approach to Early Childhood Development. With these, the government wishes to "improve maternal, infant and child health to support healthy pregnancies," provide parents with "access to leading edge early years information… to support their child's development," and "assist families experiencing periods of vulnerability to provide healthy, safe, nurturing experiences for their children." [Values 2, 4, & 9; Principles a, b, & c]
8. Alberta's Addiction and Mental Health Strategy is working to transform the addiction and mental health system in the province with the goal of reducing the prevalence of addiction, mental health problems, and mental illness through health promotion and prevention activities. Since the government now knows that "exposure to chronic early stressors creates an exaggerated stress response in the brain and body that may erode the solid foundation on which mental health develops" (Creating Connections: Alberta's Addiction and Mental Health Strategy, 2011), strategic directions include building healthy and resilient communities and fostering the development of healthy children, youth and families. [Values 4, 5 & 10; Principle e]
9. In December 2015, the Alberta Mental Health Review Committee released its Valuing Mental Health report which identifies priorities that include increasing integration of services, measuring progress towards a person-centered system, and a focus on prevention and early intervention. The report specifically identifies actions that include reducing barriers to information sharing and "integrated care planning", "educating the public on brain development, and risk and protective factors related to addiction and mental illness," and, "strengthening skills and abilities of service providers to provide Trauma Informed Care." [Values 2, 5, & 8]

Alberta initiatives and reports

10. The Premier's Council on Alberta's Promise Act is an initiative to encourage organizations, corporations and individuals to enhance community resources in order to further the well-being of children. The Act states that the council shall, in the context of furthering the well-being of children, "provide leadership in promoting the development of community strategies, raise awareness of the shared responsibility of organizations, corporations and individuals, and encourage financial and other support initiatives and research." [Values 8, 9, & 10; Principle e]
11. The Foundations of Caregiver Support was released in Alberta in June 2015. The intent of the document is to, "provide a base from which to develop caregivers' capacity to improve positive outcomes for infants, children and youth" who are within Child and Family Services (CFS) custody in Alberta. The document identifies three pillars of knowledge that are foundational in this pursuit: 1) Child development – brain development and the influence of epigenetics; 2) Trauma – the effect on children; and 3) Loss and grief – experiences of children and youth. The document highlights the critical role of the caregiver in shaping brain architecture. [Values 2 & 5; Principles a & b]

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Glossary

Core Story of Brain Development– Brain science is the branch of neuroscience concerned with the brain. According to the Harvard Center on the Developing Child: http://developingchild.harvard.edu/index.php/resources/briefs/inbrief_series/

- The basic architecture of the brain is constructed through on ongoing process that begins before birth and continues into adulthood (brain architecture).
- Brains are built from the bottom up: basic circuits lay the foundation for more complex circuits and behaviors that follow (skill begets skill).
- Interaction between genes and experience shapes the developing brain, and relationships are the active ingredient in this serve and return process (serve and return).
- Executive function skills help us plan for the future, reason, focus, solve problems, and use information in new and complex ways. These skills can be taught and should be geared up in children as early as possible (air traffic control).
- Cognitive, emotional, and social capacities are inextricably intertwined: learning and behavior are inter-related with physical and mental health over the life course (can't do one without the other).
- Toxic stress damages the developing brain and leads to problems in learning and behavior and to increased susceptibility to poor physical and mental health over time (toxic stress).
- Brain plasticity and the ability to change behavior decreases as we mature: getting it right early is easier and less costly to society and individuals than trying to fix it later.

Evidence-based policy is public policy informed by rigorously established objective evidence. There are different levels of evidence (Center for Evidence-Based Management, 2016). There is a hierarchy of validity associated with different types of evidence.

Evidence-based practice is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual. It means, "integrating individual clinical expertise with the best available external clinical evidence from systematic research" (Sackett, Rosenberg, Muir Gray, Haynes, & Richardson, 1996).

Implementation Science is the study of factors that influence the full and effective use of innovations in practice. (National Implementation Research Network, 2015).

Public policy refers to any official decision, instituted by government or government extension that, "guides the activities of organizations operating in the public interest" (Max Bell Foundation, 2016).

Resilience – In the social, behavioral, and biological sciences, the term resilience is used in a variety of ways and contexts --sometimes as an individual characteristic, sometimes as a process, and sometimes as an outcome. Despite these differences, there is a set of common, defining features of resilience that illustrates how the concept has been used in research and intervention sciences. These features include the following:

1. The capacity of a dynamic system to adapt successfully to disturbances that threaten its function, viability, or development.
2. The ability to avoid deleterious behavioral and physiological changes in response to chronic stress.
3. A process to harness resources to sustain well-being.
4. The capacity to resume positive functioning following adversity.

5. A measure of the degree of vulnerability to shock or disturbance.
6. A person's ability to adapt successfully to acute stress, trauma, or more chronic forms of adversity.
7. The process of adapting well in the face of adversity, trauma, tragedy, threats, or significant sources of stress. Whether it is considered an outcome, a process, or a capacity, the essence of resilience is a positive, adaptive response in the face of significant adversity. It is neither an immutable trait nor a resource that can be used up. On a biological level, resilience results in healthy development because it protects the developing brain and other organs from the disruptions produced by excessive activation of stress response systems. Stated simply, resilience transforms potentially toxic stress into tolerable stress. In the final analysis, resilience is rooted in both the physiology of adaptation and the experiences we provide for children. (National Scientific Council on the Developing Child, 2015).

Science is the combination of theory and data. Data is collected and used to explain theories and theory is tested by collecting further data. Qualitative and quantitative data are relevant in science (Punch, 2013).

The **social ecological model** considers the complex interplay between individual, relationship, community, and societal factors. It allows us to understand the range of factors that put people at risk for certain bad outcomes or protect them from those outcomes. Factors at one level influence factors at other level. The model also suggests that in order to prevent bad outcomes, it is necessary to act across multiple levels of the model at the same time. (Center for Disease Control and Prevention. Retrieved from http://www.cdc.gov/violenceprevention/overview/social-ecologicalmodel.html).

Toxic Stress Response "can occur when a child experiences strong, frequent, and/or prolonged adversity – such as physical or emotional abuse, chronic neglect, caregiver substance abuse or mental illness, exposure to violence, and/or the accumulated burdens of family economic hardship – without adequate adult support. This kind of prolonged activation of the stress response systems can disrupt the development of brain architecture and other organ systems, and increase the risk for stress-related disease and cognitive impairment well into adult years." (Center on the Developing Child at Harvard University).

Well-being – is the integration of physical and mental health and includes the "presence of positive emotions and moods, the absence of negative emotions, satisfaction with life, fulfillment and positive functioning." (Center for Disease Control and Prevention).

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