Using Brain Science to Design New Pathways Out of Poverty
Elizabeth Babcock, Crittenton Women's Union, 2014

- New brain science research shows that the most critical decision-making skills adults draw on to manage the complex challenges of moving ahead are often compromised by situational and chronic experiences of social bias, persistent poverty and trauma.

- To attain economic independence, low-income families require strong skills to establish a career and optimize their lives in five key areas:
    - **Family Stability (housing, child stability)**
    - **Well-Being (health, behavior, social supports)**
    - **Education and Training**
    - **Financial Management**
    - **Career Management**

- The stress of living in poverty negatively impacts the ability of the prefrontal cortex of the brain to solve problems, set goals, execute strategies, and work in tandem with the limbic system to process emotional reactions to environmental stimuli. When the limbic system is sending out too many powerful signals of desire, stress or fear this drowns out the ability of the brain to focus and make clear judgements.

- The constant struggle to make ends meet, deal with the pressures of social bias and protect against trauma, also places extraordinary demands on cognitive bandwidth. Available brain capacity for impulse control, memory and judgement is taxed to the limit.

- Situational stresses can lower average IQ levels, equivalent to being deprived of an entire night's sleep.

- Navigating the pathway to economic stability has become a significant challenge even for successful young adults. Independent household formation by adults under 35 has decreased by 42 percent over the past decade. Only 33% of young adults live in their own households.

- Disadvantages at birth (low birth weight, a mother who is poor, unmarried or a high school dropout) can generate a cascade of negative outcomes, including lack of early school readiness, poor school performance and social and emotional development in middle school, lower grades, higher crime convictions, pregnancy in teen years, lower college completion, earnings and independent household formation all of which impair the ability to attain economic independence in adulthood.

- Recent research shows that brain development is not just a result of genetic inheritance but also strongly affected by exposure to toxins, poor nutrition, prenatal drug use, low social status, stress and violence, all prevalent in low-income households.

- For individuals to routinely reflect upon and decide what they want to do, they must first develop an understanding of themselves as individuals capable of making their own judgements and shaping their environment. The greater the sense of self the more people pause, reflect and decide what to do rather than react impulsively.

- Independent of financial resources, the place a person occupies in the social hierarchy and her level of control over circumstances correlates directly with stress and health outcomes. For example, the higher the rank of British civil servants in a hierarchy the longer they lived. The death rates of those in the lower status rankings were three times higher than for those at the top, despite equal access to health care. The less control an individual has the higher the rates of stress, mental illness and mortality.

- Low income families experience greater instability in obtaining the basic resources for survival. They move and change jobs more frequently, experience more episodes of hunger, food insecurity, homelessness and unemployment. This often makes families feel they have little control over their lives.

- Children feel the stress and volatility their caregivers experience. Overall, low-income caregivers converse far less with their children than high-income caregivers, ask fewer questions that require a thoughtful response and are more directive and negative. The stresses of poverty simply don't give parents the "freedom of mind" to engage with their children. Solving constant crises and securing the basics for survival take most of their energy.

- Low income children are less likely to develop a powerful sense of self or of control over their lives. They are less likely to be able to identify goals and the strategies to reach them and they have less practice in understanding the needs and motivations of those around them.

- Growing up in poverty causes physiological changes in brain development. Stress and fear cause the limbic brain to trigger the release of hormones such as adrenalin and cortisol that result in a "flight or fight" response, increasing heart rate, flow of blood to the limbs and blood sugar, all of which override the reflective, analytic mental processes that slow the body's rapid response to danger.

- Chronic activation of the stress response can lead to a “hair-trigger temper,” “reacting first and thinking later” and “looking for trouble.” They also inhibit the development of “**Executive Function”** skills that include
    - Impulse Control
    - Working memory
    - Mental flexibility, such as multi-tasking.

- The differences in brain architecture of children born into homes at opposite ends of the economic spectrum widen over time because neural networks are based on patterns of use and strengthen over time. The most active pathways become heavy duty superhighways built on an individual’s pattern of highest usage. However, the prefrontal cortex remains responsive to stimulation well into adulthood, allowing adults to grow and strengthen new neural pathways that support **Executive Function** skills.

- In as little as one month of playing brain training games for fifteen minutes a day elders showed statistically significant gains in Executive Functioning and processing speed. Similar results came from brain training young adults age 21. MRI’s taken of one study after 35 hours of logic games, 35 hours of logical reasoning and 30 hours of class-based reading comprehension showed demonstrable physical growth in brain connectivity resulting in better problem-solving and reasoning skills.

- Chronic exposure to social bias, persistent poverty or trauma may result in difficulties in **Managing Thoughts, Organization and Learning; Managing Behavior, Emotions and Feelings; Managing Health and Well-Being.**

- **Mobility Mentoring** developed at Crittenton Women’s Union (CWU) to engage families in brain science based goal-setting and coaching is producing impressive results. Formerly low-income, marginally-educated families have moved out of subsidized housing into their own homes, obtained college degrees and family-sustaining careers, saved thousands of dollars and increased their measurements of well-being.

- To succeed, such programs must deliver information through as many media channels as possible (orally, in writing, using pictures, video and sound) with much repetition and easy-to-understand written documents. Interactions should occur in locations free of distractions, in a manner that is warm and inviting, and relating to participants’ needs. The friendlier the surroundings the more likely the client is to focus and retain information.

- Using organizational tools (checklists, routine reminders) built into the program improves outcomes. Breaking extended tasks into incremental steps and delivering

discrete, measurable modules of program content shortens the timeframe for evaluation and constructive feedback.

- Computer games designed to create fun ways for adults to improve memory, focus and attention, impulse control, organization, problem solving and mult-tasking skills are now widely available and beginning to create positive outcomes.