



# ORDINARY MAGIC:

## LESSONS FROM RESEARCH ON RESILIENCE IN HUMAN DEVELOPMENT

**TEENAGER MIKE MADDAUS** appeared to be headed for a life of crime. He was frequently in trouble with police in his Minneapolis neighbourhood, skipping school and repeatedly getting into trouble with his delinquent friends. His family story was a familiar tale of alcohol addiction, chaos, and abuse. Yet this young man grew up to become a surgeon and professor at the University of Minnesota. Maddaus is a classic 'late bloomer' whose life took a dramatic turn for the better during the transition to adulthood.

Other young people show resilience much earlier in life, recovering from traumatic experiences or thriving in the midst of hardship. In our research on children at risk due to war, disaster, poverty, family violence, and many other kinds of adversity, we observe many cases of individual children and youth who are doing well in all the ways we would hope to see for people their ages in their communities.

Resilience researchers are intrigued with the challenge of understanding how people overcome risk or adversity to succeed in life. The study of resilience emerged about forty years ago when a group of scientists studying the origins of behaviour problems and mental illness were surprised to find that many children in 'high risk' groups were developing well. Realizing the importance of understanding such children, these pioneers inspired many others to study resilience. These scholars have been instrumental in mov-

ing us away from deficit-based models to positive frameworks for change that take advantage of existing adaptive systems in human development and social systems.

This article will highlight key lessons learned from current research on resilience that may guide practices and policies aimed at promoting positive development among children exposed to high levels of risk or adversity.

### **LESSON 1: RESILIENCE IS COMMON.**

Resilience is all around us. Certainly as risk levels increase, the rates of resilience fall, and there are conditions under which no child can survive or flourish. However, early risk researchers did not expect to observe so much variation or so many good outcomes among children who experienced poverty, violence, disaster, or trauma.

In our current research on academic resilience in children from homeless or highly mobile families, for example, we observe the expected achievement gaps. Poor children on average show much worse reading and math performance over time than more advantaged children. Homeless/highly mobile children show even lower achievement, consistent with the idea of a continuum of risk. Yet we also find striking variability in achievement over time. A substantial proportion of the disadvantaged children who are poor, homeless, or highly mobile nonetheless manifest



**EN BREF** La résilience est omniprésente. Évidemment, lorsque le niveau de risque augmente, les taux de résilience baissent, mais une grande proportion d'enfants défavorisés font preuve de niveaux de réussite et d'apprentissage équivalents ou supérieurs aux moyennes nationales. Les études récentes portant sur la résilience passent présentement de modèles axés sur des lacunes à des cadres positifs de changement mettant à profit des systèmes adaptatifs existant dans le domaine du développement humain et des systèmes sociaux. Certains de ces systèmes adaptatifs sont fondés sur le cerveau et d'autres découlent des relations et des ressources faisant partie des multiples contextes de vie d'un enfant. Lorsque ces systèmes fondamentaux fonctionnent normalement, les jeunes sont très résilients; lorsque les systèmes sont endommagés – ou détruits sans être restaurés – les jeunes sont à risque. Il est donc prioritaire de nourrir, de soutenir et de restaurer ces systèmes adaptatifs fondamentaux de développement humain pour favoriser les compétences ou la résilience et préparer les jeunes à traverser les tempêtes de la vie.

achievement levels and learning rates consistent with national averages or better on standardized tests. Others show the lowest possible scores with little or no improvement across time. Similarly, we find that some of the children living in emergency shelters perform poorly on measures of cognitive development, achievement, or behaviour, while others show impressive competence.

#### **LESSON 2: IT IS IMPORTANT TO MEASURE AND STUDY POSITIVE RESOURCES, PROCESSES, AND OUTCOMES.**

Resilience researchers were instrumental in drawing attention to resilient children and youth. They also promoted the assessment of positive features of development in young people and their environments, including families, peer groups, schools, and communities. These investigators demonstrated that competence in the age-salient developmental tasks of childhood and adolescence, such as doing well in school, social competence with peers, and rule-abiding conduct in society, forecasted later success in life.

When we initially began to study positive development in school-aged children in the late 1970s, we had to develop new measures of competence and resources because most of the available measures focused on assessing risk factors, stressful life events, disabilities, symptoms, or disorders. We followed one cohort of children from Minneapolis for more than 20 years, observing that competence in childhood is a powerful predictor of competence in adolescence and early adulthood. We learned that good cognitive skills and good parenting predicted resilience in children exposed to severe adversity. Some children showed early and steady resilience while others were late bloomers, like Dr. Maddaus.

There is now a growing array of tools for assessing positive resources, behaviour, and gains in development. In the Looking After Children child welfare reform movement, for example, instruments have been developed for assessing positive progress in multiple domains of development. Similarly, in the Strength-Based School Counseling (SBSC) movement, practitioners are assessing positive attributes of children and the school environment.

Resilience researchers also learned, through intervention studies, that promoting competence has the potential to prevent or ameliorate problems. Prevention experiments are a powerful way to test the effectiveness and return on investment of promoting competence and resilience.

#### **LESSON 3: RESILIENCE DEPENDS ON 'ORDINARY MAGIC'.**

Early resilience investigators often noted a common list of factors associated with resilience in their studies of diverse children and situations. Over the decades, this list of widely observed promotive or protective factors in the individual, their relationships, and their cultures or communities, has required very little adjustment. This robust 'short list' of resilience factors provides a crucial set of clues to the protective processes that account for human adaptation and resilience. Some factors are in the family or close relationships, some are in the child, and some are in the community or cultural context.

#### **Short List of Resilience Factors (with Implicated Human Adaptive Systems)**

- Positive attachment bonds with caregivers (attachment; family)
- Positive relationships with other nurturing and competent adults (attachment)
- Intellectual skills (integrated cognitive systems of a human brain in good working order)
- Self-regulation skills (self-control systems and related executive functions of the human brain)
- Positive self-perceptions; self-efficacy (mastery motivation system)
- Faith, hope, and a sense of meaning in life (meaning-making systems of belief)
- Friends or romantic partners who are supportive and prosocial (attachment)
- Bonds to effective schools and other prosocial organizations (sociocultural systems)
- Communities with positive services and supports for families and children (sociocultural)
- Cultures that provide positive standards, rituals, relationships, and supports (sociocultural)

Of course, many details and nuances are omitted from such a list, and much more has been learned about the timing of these factors and the different ways they may work in the lives of children of different ages, situations, and domains of function. The same factor, for example, may work in different ways for different ages of children or different aspects of competence. Good relationships with prosocial friends are clearly more important for older youth as compared to preschoolers.

**RESILIENCE DOES NOT REQUIRE EXTRAORDINARY RESOURCES IN MOST CASES, BUT INSTEAD IS THE RESULT OF WHAT MIGHT BE CALLED 'ORDINARY MAGIC'.**

The pervasiveness of these predictors of resilience suggests that there are fundamental protective systems for human adaptation and development that, when operating normally, afford considerable capacity for resilience in the face of many kinds of adversities. In other words, resilience does not require extraordinary resources in most cases, but instead is the result of what might be called 'ordinary magic'. It arises naturally from the interaction of basic adaptive systems that foster and protect human development. The multiplicity of adaptive systems – which is likely the result of many thousands of years of biological and cultural evolution – accounts for the diversity across individuals and also explains the many different pathways to resilience. 'Ordinary magic' refers to the power of these basic systems to facilitate adaptation and recovery in development. Some have been studied more extensively than others.

The attachment system, for example, has been the focus of many studies in the developmental sciences, ever since it was first observed by John Bowlby and others that humans (like other closely related species) form close social bonds, initially with their caregivers in the first year of life. These bonds provide a sense of security and afford protection from threats of many kinds. Many studies over the years have corroborated the importance of attachment relationships for normal human development and resilience, both for very young children and for adolescents and adults. As young people grow up, they form attachment relationships with people other than their caregivers, including spiritual figures and romantic partners.

Given the pervasive significance of attachment relationships, it is not surprising to find that positive school-based relationships – with teachers, friends, coaches, and mentors – are implicated in many studies of resilience. Schools provide many opportunities for youth to form relationships with competent and caring people who have the potential to promote positive development. These relationships can work in many ways to facilitate resilience in children. Most fundamentally, they provide the sense of security and belonging that frees a child to explore and learn.

In fact, schools, along with families, play a central role in nurturing all the tools of resilience. While caregivers and families carry the greatest responsibility in early life, as children grow older, the importance of schools increases. Both parents and teachers contribute to the development of intellectual and self-control skills as young brains gain the capacity to control attention, emotion, and behaviour. In these ways, children gain human capital along with social capital in the context of family and school.

The human brain is central to the adaptive systems supporting resilience. It is a powerful learning and problem-solving tool that affords individuals with many cognitive, social, and emotional skills for resilience, as well as the motivation to adapt and recover. Good intellectual functioning and good self-control of attention and behaviour are



widely implicated as predictors of resilience in human development. Adaptive behaviour is also supported by a powerful system of 'mastery motivation', whereby we experience pleasure in agency, or being effective in the world. Teachers, as well as parents and coaches, often motivate children for learning by engaging this system. They create opportunities for successful mastery experiences, building a sense of mastery in graduated steps. In this way, they scaffold the development of competence over time, as the child gains confidence and a stronger motivation to learn, solve problems, and engage successfully in the world.

The mastery motivation system is a powerful engine for development, but, like all the systems supporting resilience, it can be shut down or harmed by bad experiences. Children who experience severe neglect or repeated trauma may lose their feelings of agency and the motivation that grows from pleasure in mastery.

Cultural traditions, including religion, also clearly play a role in resilience, although protective factors rooted in cultural beliefs and practices have been neglected in research until recently. Belief systems imbue life (and death) with meaning and may sustain adaptive behaviour in the face of great adversity. Religions also offer attachment relationships (spiritual and human), rituals of comfort and self-regulation (such as services for major life events, prayer, meditation), and many other kinds of emotional and physical assistance.

**LESSON 4: RESILIENCE CAN BE PROMOTED.**

Individual case studies, 'natural' experiments, and prevention and intervention research all indicate that resilience can be promoted. Resilience models suggest three major ways to promote resilience in young people, although in practice these approaches appear in many combinations.

*Reduce risk exposure.* Often it is possible to prevent or reduce exposure to risk or adversity. It does not make sense to build a beautiful new school on the grounds of a war zone until the landmines are removed. Low-birth weight

often can be prevented by good prenatal care and nutrition. Neighbourhood violence can be reduced, and schools can prevent or reduce violence and bullying within their walls, buses, and playgrounds.

**Increase resources and assets.** Even when risks have already occurred, it is often possible to increase assets and resources – or their effectiveness – in an effort to counterbalance risk. Schools, for example, may provide meals, health care, computers, books, tutors, and teachers trained to mitigate the effects of high-risk situations.

**Mobilize and facilitate powerful protective systems.** Interventions can also be directed at the most powerful adaptive systems by promoting their development or restoring their function. Programs to foster or improve the quality of parent-child, mentor, or teacher-child relationships or to provide a loving family for an orphaned child are examples of mobilizing the power of attachment relationships. Protecting the effectiveness of parents during a crisis is another example. Preventive intervention research with families going through divorce and other kinds of adversity has demonstrated that helping and supporting parents has a protective effect on their children, with positive effects that can last for years after the intervention. Recent experiments to boost the development of executive function skills in young high-risk children through training or preschool programs suggest that there is considerable potential for intervening to promote the self-regulation systems that play a central role in school success.

**LESSON 5: A POSITIVE FRAMEWORK FOR INTERVENTION IS EFFECTIVE AND APPEALING TO STAKEHOLDERS.**

Resilience research is transforming practices and policies designed to foster good outcomes in high-risk groups of young people, offering a positive framework for intervention that can be conceptualized in terms of '4 Ms' as follows:

- *Mission: Frame positive goals.*
- *Models: Include positive assets, processes, and outcomes.*
- *Measures: Include positive measures of assets, strengths, and outcomes.*
- *Method: Include strategies to reduce risk, increase resources, and/or mobilize adaptive systems.*

These four components represent a major departure from deficit-focused models of etiology and intervention that dominated earlier practices and policies for young people. It is telling that contemporary evidence-based programs and interventions often feature these positive components, even though many of them were not designed with resilience research in mind.

Emphasizing these '4 Ms' does not mean that risks, symptoms, vulnerabilities, and disorders are ignored but rather that the overarching assumptions and goals of a resilience framework emphasize positive development and positive processes. This positive approach appeals to stakeholders (parents, society, and young people) and also is supported by growing evidence that the promotion of positive development prevents problems.

Evidence is also growing that strategic timing is important. Competence begets competence in newly emerging domains, and failures in one domain can precipitate prob-

lems in other areas of function. As a result, problems can snowball over time, while well-timed interventions have the potential for building competence well into the future, yielding high long-term returns on investment.

There also appear to be windows of opportunity in development where the leverage for change increases. One of those windows occurs during the transition to adulthood years, when gains in cognitive capacity for planning and decision-making related to brain development coincide with opportunities afforded by new contexts (e.g., college, military service, apprenticeship). After a disastrous adolescence, Mike Maddaus began to make choices that took him away from negative peers and behaviour to military service, community college, positive mentors, university and medical school, a successful career, family and fatherhood, and civic engagement.

There are other potential windows of opportunity. In our current research on resilience in young children from homeless or highly mobile families, for example, we are focusing on the window of time when young children typically make the transition into school (around ages 4 to 7). We think that the development of good executive function skills (e.g., self-control, directing attention, flexible thinking) play a crucial role in early school success, with long-term consequences. Interventions to boost executive function skills during this window may prove to be especially strategic for disadvantaged children.

**CHILDREN IN HAZARDOUS CONDITIONS CANNOT WAIT FOR FUTURE RESEARCH TO BE COMPLETED. THERE IS A STURDY BODY OF KNOWLEDGE IN PLACE NOW TO INFORM PRACTICES AND POLICIES TO PROMOTE RESILIENCE.**

## The new standard to measure math proficiency!

# KeyMath<sup>3</sup>

Canadian Edition

Measure math performance and monitor  
progress to make well-informed decisions....

### Diagnostic Assessment (DA)

A comprehensive, norm-referenced instrument, the **KeyMath™-3 Diagnostic Assessment** content covers the full spectrum of math concepts and skills, ranging from early experiences with rote and rational counting through experiences with factoring polynomials and solving linear equations. Two parallel forms (Form A and Form B) allow for test administration in alternating sequence every 3 months. Growth Scale Values (GSVs) enable educators and clinicians to measure progress accurately over time across the full range of math concepts and skills.

### Essential Resources (ER)

The **KeyMath™-3 Essential Resources materials** are directly linked to the KeyMath-3 DA results. They are organized into 10 content strands that reflect the 10 KeyMath-3 DA subtests. This allows the user to measure results and effectively link diagnostic information with instructional guidance.

### ASSIST Software

Enjoy the time-saving convenience of the KeyMath-3 DA **ASSIST computer software!** Available as an optional test component, the tool electronically generates test scores and additional interpretive reports quickly and accurately that are not available with the hand-scoring option. ASSIST software can also provide direct data links to the KeyMath-3 ER instructional program.

PsychCorp.ca

1-866-335-8418

PEARSON

PsychCorp  
a PEARSON brand

## CONCLUSION

New frontiers are emerging in the study of resilience as we learn more about the plasticity of the human brain and the possibility of 'turning on' the genes for learning. Powerful new tools are emerging for research, including new methods for observing the human brain in action or measuring gene expression. There is growing attention to resilience factors in diverse cultures around the world. However, children growing up in hazardous conditions cannot wait for future research on resilience to be completed. There is a sturdy body of knowledge in place now to inform practices and policies to promote resilience.

It is reassuring to know that resilience does not appear to require extraordinary talents or resources, but instead depends on fundamental human adaptive systems. The capacity for resilience develops and changes as the protective systems of a child develop and change. Some are in the child and others arise from relationships and resources in the multiple contexts of a child's life, including school. When these fundamental systems are operating normally, young people have a remarkable capacity for resilience. The greatest threats to young people occur when these key systems and the capacity they represent are damaged or destroyed and never restored. Nurturing, supporting, and restoring these fundamental adaptive systems for human development are top priorities for promoting competence or resilience in young people and preparing them to weather the storms of life. |

ANN MASTEN is a Distinguished McKnight University Professor in the Institute of Child Development at the University of Minnesota and President-Elect of the Society for Research in Child Development. Her research is focused on understanding risk, competence, and resilience in development, and applications for practice and policy.

Preparation of this article was supported in part by a grant from the National Science Foundation (NSF #0745643). The contents of this article reflect solely the views of the author.