

Resilience

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Outline

- **What is resilience**
- **About the brain**
- **Building up resilience**
- **Conclusion**

WHAT IS RESILIENCE

What is resilience

- The ability to overcome hardship
- Resilience is from health, especially a healthy brain (i.e. mental health)

What is mental illness? What is mental health?

illness
疾病

Health
健康

What is mental illness? What is mental health?

- **What is an illness?**
- An illness happens when, our body:
 - Under the harm due to certain causes
 - Organs are impaired in function (器官機能) and structure (結構)
 - Resulting in symptoms (症狀) and disability (能力喪失)

What is mental illness? What is mental health?

- **What is health?**
- Absence of illness (冇病) = having health?
- In 1948, the World Health Organization (世界衛生組織) defined health as:
- A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. (個人處在生理、心理及社交三方面的和諧、安寧狀態。健康不僅是不生病而已。)

What is mental illness? What is mental health?

- **What is mental illness (精神病)?**
 - Brain damage/ abnormal changes (腦部受損/病變)
 - Symptoms and disability, in terms of thought of thought (思想內容), cognitive function (認知能力), perception (感官), mood (情緒), behavior (行為), physiological changes (生理變化)
 - Can be treated (可以治療的)

What is mental illness? What is mental health?

- **Two important concepts**
- 1. Brain (腦部) vs mind (精神)
 - Mind = activities of the brain, including thought, mood, behavior and perception
 - Brain is the organ which generates “mind” (大腦就是產生「精神」的器官)
- 2. Brain vs other parts of the body
 - The functioning of brain is closely related to the functioning of other parts of the brain

- Brain vs mind
- Dancer vs dance

About the brain

- 1. Brain as a network**
- 2. Brain is like a driver**
- 3. Gene vs environment**
- 4. Triune brain**
- 5. Toxic stress**
- 6. Neuroplasticity**
- 7. Attachment theory**
- 8. Higher cognitive function of brain**

ABOUT THE BRAIN: BRAIN AS A NETWORK

- 100 billion cells (called neurons神經元)
- As networks
- Growing and pruning

BRAIN IS A LIKE A DRIVER

- 4 tyres
- 2 front tyres: thought and behavior
- 2 rear tyres: emotion and physiological response
- Also the road, i.e. the environment !

ABOUT THE BRAIN: GENE VS ENVIRONMENT

We = Gene (Nature) x Environment (Nurture)

- Epigenetic effect!

ABOUT THE BRAIN: TRIUNE BRAIN

- The Triune
brain theory

Triune (三位一體) brain

- 3 layers according to the evolutionary emergence in different classes of animals
- Reptilian brain (爬行動物的腦)
- Palaeo-mammalian brain (古哺乳動物腦)
- Neo-mammalian brain (新哺乳動物腦)

Reptilian brain

- Reptile (爬蟲類動物)
- Regulates body temperature, breathing
- Instinctual behavior, e.g. mating, aggression between the same sex
- Very mechanical!

Palaeo-mammalian brain

- A system of **complex emotion**
- Capacity for complex social emotion (**love**) -> parental care (attachment between child and parent; also attachment with others)

Neo-mammalian brain

- Primate 靈長類動物
- Have the capacity for:
 - greater behavioral flexibility(c.f. Reptilian brain: instinct behavior)
 - plan, imagine
 - “rational”; invent
 - self reflection, and think what others are thinking

A general brain rule (1)

1. Reptilian brain (basic instinct and basic body function)
 2. Palaeomammalian brain (emotion)
 3. Neo-mammalian brain (thinking)
- **Middle layer** has the most say!!
 - **Emotional power** >> rational power

A general brain rule (2)

- When having the capacity to use
- Also having the need to fulfill this capacity
- When fulfilled -> **Positive emotion**
- When not fulfilled -> **Negative emotion**
(fear/depressed)

We all have an intellectual/rational
capacity to be fulfilled...

**WE ARE ALL BORN WITH A HUGE CAPACITY
OF LOVE!**

***"The greatest thing you'll ever learn
is just **to love and be loved in return**"***

ABOUT THE BRAIN: TOXIC STRESS

- Upon stress..
- Stress hormone, including cortisol 皮質醇
- Higher blood pressure, increase blood sugar metabolism
- More alert

Flight or fight

- Moderate amount of stress hormone is positive for growth
- Too much stress hormone is toxic to the brain
- Too much “stress hormones” (e.g. cortisol 皮質醇)
- Inhibit the release of a neurotrophins 神經生長因子, called BDNF
- Brain cells damaged

ABOUT THE BRAIN: NEUROPLASTICITY

Neuro-plasticity

ABOUT THE BRAIN: ATTACHMENT THEORY

Attachment needs of children

- Attachment theory
- Infants are born with a **need** to form a **strong bond** to their main caregiver (usually the mother) – to get a **sense of security** 安全感
- The caregiver has to be **dependable, sensitive and to provide loving nurturance**
- Such care is available -> children (**securely attached**) grow up to be psychologically healthy
- Accessibility and responsiveness of attachment figures, esp. to the infant's emotional signals

Quality of attachment shapes:

- 1. 心理上 : Unconscious internal working models, core belief 核心思想模式/對自己同埋世界嘅睇法 (i.e. the lens I see everything)
- 2. 生理上 : Fear system (i.e. the alarm inside my brain)

**Internal working models, core belief 核心思想
模式/對自己同埋世界嘅睇法 (i.e. the lens I see
everything)**

- regulate how a person perceives himself (i.e. **self esteem, self worth 自尊, 自我價值**) and others (people and environment, i.e. **世界觀**), both present and future.

- **With secure attachment, the core belief is positive:**
 - Others: people **trustworthy**; environment **controllable**;
 - Self: I am **worthy of being loved and helped**; I am **lovable and competent**
- **Without secure attachment, the core belief is negative:**
 - Others: people NOT trustworthy; environment **uncontrollable**.
 - Self: I am **unlovable, unworthy, and incompetent**.

Fear system (the alarm inside brain)

- Early attachment shapes an individual's fear reactivity is by calibrating this fear system 調教腦袋裏嘅警鐘
- With secure attachment: a resilient fear system, which:
 - responds less reactively to threats
 - returns quickly to a calm state when the threat has passed.
- Without secure attachment: sensitised fear system, which:
 - leaves the individual forever on the lookout for danger 驚弓之鳥; many false alarm 警鐘經常誤鳴
 - even after a perceived threat has passed, it takes a long time for the fear levels to return to base levels 冇事之後個警鐘好耐都唔識停

Fear and anger: high arousal and negative emotions

Type of attachment	Behavior of the caregivers	The children's behavior as a result
Secure attachment (about 50%)	Sensitive and attuned to their needs (dependable, sensitive and loving nurturance.)	Good social skills and high levels of empathy “It is fine to ask for help”

Type of attachment	Behavior of the caregivers	The children' s behavior as a result
Insecure: avoidant attachments (about 25%)	neglectful, unresponsive	learn to block the need for human connection and grow up determinedly self-sufficient. (too self-reliant)
Insecure: ambivalent attachments (about 15%)	Inconsistent, swing between being intrusive and being dismissive.	hypertuned to their attachment figures and can be extremely sensitive to any hint of withdrawal or intrusion. (too clingy and compulsively care seeking)
Disorganised attachment (about 10%)	Abuse (physical, sexual, emotional)	“fear without solution 恐懼並且無路可逃” - their caregiver, to whom they are primed to turn when they are scared, is also the source of their fear; emotionally dysregulated (particular risk of mental illness later in life)

Circle of security: go to explore; you can come
back at anytime.

ABOUT THE BRAIN: EXECUTIVE FUNCTION AND MENTALIZATION

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The **cerebrum** **大腦** is divided into several lobes:

- **Frontal lobes** **額葉**: **higher cognitive functions (executive function, mentalization)**
- **Parietal lobes** **頂葉**: manage sensation, handwriting and body position
- **Temporal lobes** **顳葉**: memory and hearing
- **Occipital lobes** **枕葉**: contain the brain's visual processing system

Executive function

- One group of higher functions of brain
- Like an air-traffic controller
- Like an conductor in an orchestra
- What a CEO does
- Important for cognitive, emotional and social capability

After knowing these, we know how to build up resilience

- 1. Brain as a network**
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BUILDING OF RESILIENCE

- Resilience is from
health

Our education should teach them how to stay
healthy for the whole life

Environment:

- **Secured and enriched**
- Facilitate growth and development of brain

5 pillars

- Diet
- Sleep
- Physical Exercise
- Stress management
- Early treatment of mental illness

DIET

- We are what we eat

Diet

- More healthy fat
- More protein
- More fiber
- Less sugar
- Less toxin

Start every good day with a good big breakfast !

- Gut-brain axis
- Probiotics, fiber intake

SLEEP

Sleep

- Detox
- Consolidate memory

- Circadian rhythm

- Importance of melatonin

PHYSICAL EXERCISE

Physical exercise

STRESS MANAGEMENT

Stress management

- A secure and enriched **environment**
 - Positive view on self and the world
 - Minimize toxic stress (from school work; from interpersonal relationship, esp. bullying)
- Develop the **capacity** of experiencing pleasure
- Develop social, emotional and cognitive **capabilities** (esp. self-soothing, empathy, cognitive flexibility)

Stress management

- Lifestyle: diet, sleep, physical exercise

- Hobbies
- Play, and have fun with peers
- Positive emotion memory (implicit memory)

- Self-soothing; take refuge from myself
懂得逃自己開心

- Appreciate the beauty of nature with peers

- **Mindfulness practice**

Mindfulness: awareness on the present moment, non-judgemental, not over-reactive. 細心地觀察當下的身心狀況，但不對這種狀況妄下任何結論或過度反應

To manage emotion: name it and then tame it

- 每個人一天內都會有思想及情緒的波動，現在浮起這一片負面思想和情緒，亦只是廣闊的腦海中眾多思想和情緒的一種，人是可以選擇「既然它不請自來，就讓它自行離去」，而不須即時和它「決一死戰」。

Mindfulness 「靜觀」可使人對自己:

- More kind 更為仁慈
- More acceptance to self 更為接納自己
- Less self criticism 不再事事嚴苛地評價自己

- Less stress 精神壓力自然減少
- Less stress hormone, less damage to brain 不會再有過多的壓力賀爾蒙傷害大腦

Mindfulness-based interventions

Mindfulness in Schools Project

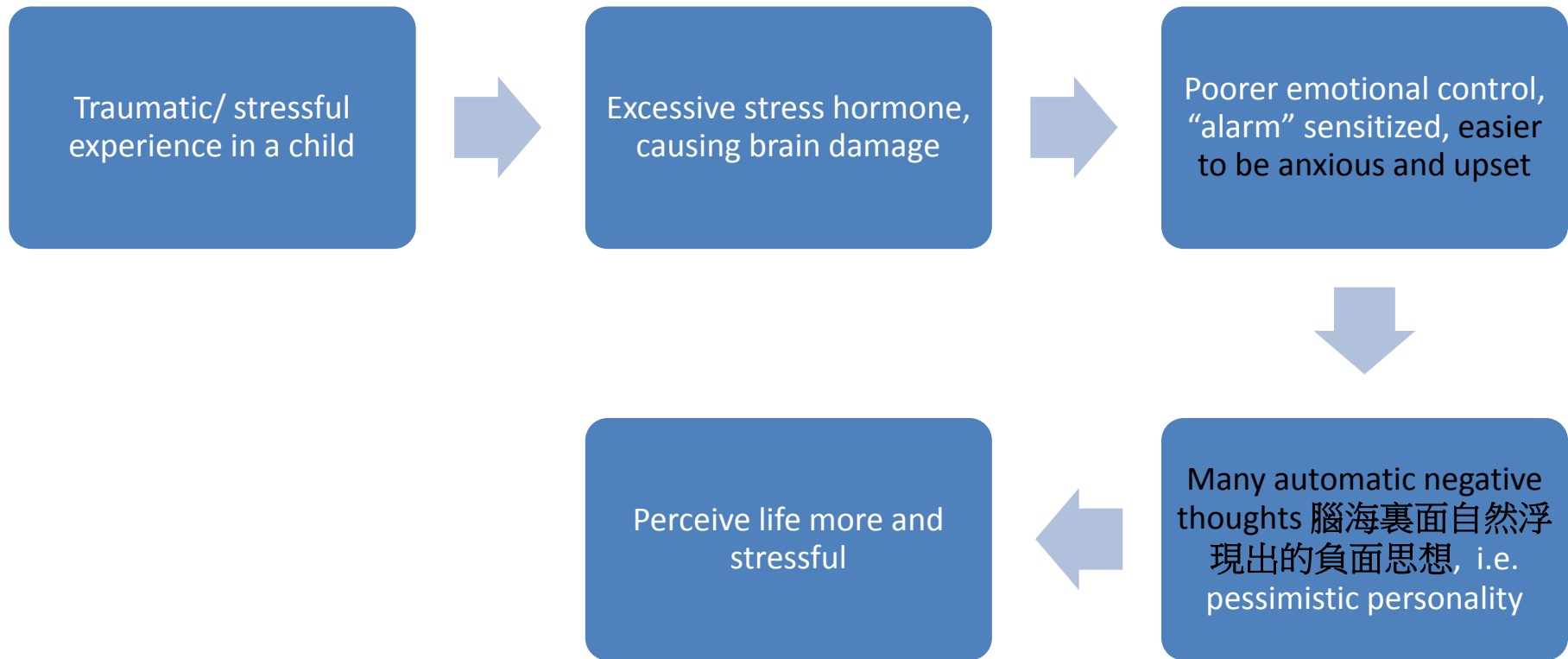
EARLY TREATMENT OF MENTAL ILLNESS

In Hong Kong, working-age population

- 3.2%: suicidal ideation in the past one week
- 7.3% had lifetime suicide attempts.

- > 90% of individuals (all age) who commit suicide meet diagnostic criteria for a psychiatric disorder, especially depression

Children's brain immature, more vulnerable to the damage by stress hormone ...



Depression

- Depression is a brain disease
- Damage on parts of the brain which regulate mood, motivation, memory, sleep and appetite etc.

9. Conclusions

Resilience from a healthy and well-developed brain

- **A Whole Brain – 3 layers integrated**

To enhance the resilience of students =
enhance their health:

- nurture brain-mind-body,
- develop their **sense of security -> self esteem**
- capacity of experiencing pleasure
- social-emotional-cognitive capabilities

Individual level and policy level:

- Enhance health of teachers (Do it on yourself - > on your own children -> on your students as role models of health)
- Diet, exercise, sleep, stress management

- **School – a place of security 安全感; a source of positive experience (from teachers and peers);**
- Nurture positive internal working models (core belief: people trustworthy, environment controllable, self lovable and competent)
- Recalibrate the sensitive “alarm”
- The young people grow into adults who can stay healthy for the whole life.

- Healthy teachers -> healthy students
- Teachers as allo-parents; not possible to take care too many at the same time
- Start sustainable long term action including
小班教學

Reference material

- Siegel, D. J., & Bryson, T. P. (2011). *The whole-brain child: 12 revolutionary strategies to nurture your child's developing mind*.
- 陳美齡 <<50個教育法，我把三個兒子送入了史丹福 >>
- Centre on Developing Child, Harvard University
<http://developingchild.harvard.edu/>
- 9 steps to perfect health- Chris Kresser
<https://chriskresser.com/perfect-health/>

Reference materials

- 不再抑鬱

http://www3.ha.org.hk/cph/imh/doc/information/publications/2_16.pdf

- 青山醫院精神健康學院

http://www3.ha.org.hk/cph/imh/mhi/index_chi.asp

- APPS “減壓情識” Stress Management DIY
- 2011 年 11 月
- 目的
 - 提升大眾對個人情緒及壓力的認知
 - 鼓勵正向思維

Thank you