如何提升ADHD學童的學習動機

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Content 內容

- Why is motivation important?
  為什麼學習動機很重要？
- Brain architecture and neurotransmitters behind the "liking" and "wanting" systems
  在「喜歡」和「想要」系統背後的腦神經學
- Motivation in ADHD population
  ADHD學童的學習動機較弱的原因
- What we could do as helping adults?
  成人可以怎樣幫助？

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Myths and Facts about Motivation
關於學習動機的迷思與事實

Myths 迷思	Facts 事實
Some people just naturally have or lack motivation 有些人天生有或缺乏學習動機	The nature of caregiving relationships and opportunities for safe exploration that we provide young children affect the development of these systems 照顧關係的性質以及成人給予小朋友安全探索的機會都能影響這些系統的發展

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Myths and Facts about Motivation (Con't)
關於學習動機的迷思與事實 (續)

Myths 迷思	Facts 事實
Carrots (rewards) and sticks (punishments) 軟硬兼施 (獎勵與懲罰)	Support internal drivers with the right kind of external feedback 支持孩子的內在驅動力，並在適當時候提供外部獎勵

Myths and Facts about Motivation (Con't)
關於學習動機的迷思與事實 (續)

Myths 迷思	Facts 事實
Addiction = a simple lack of conscious effort or a "failure of character" 癖癮=純粹缺乏嘗試或性格缺陷	Addictions chemically hijack the basic biological, managing addictions requires blocking these chemical diversions below the conscious level 癖癮化學上劫持基礎生物，管理癖癮需要阻止這些化學物轉移至意識水平以下

Myths and Facts about Motivation (Con't)
關於學習動機的迷思與事實 (續)

Myths 迷思	Facts 事實
If anyone wants something badly enough, he or she will find a way to do it 一個人如果想要某些東西，他或她總會找到方法去追求	Behavior is affected by the experiences and conditions that shape a mindset that goal achievement is possible 個人經驗及達成目標的條件會影響行為

Myths and Facts about Motivation (Con't)
關於學習動機的迷思與事實 (續)

Myths 迷思	Facts 事實
Predictable reward system is good behavioral modification program for children 可預測的獎勵系統是好的兒童行為修正法	Experiences that are exactly as expected every time lose their novelty, and eventually elicit less neural activity in the dopamine system 每次都完全符合預期的體驗會失去新穎性，最終在多巴胺系統中引起較少神經活動

Importance of Motivation in Life
學習動機在生活中的重要性

- Healthy balanced motivation >>>Development of attention, learning, and self-esteem/ confidence >>> to persevere in the face of setbacks>>>pride and satisfaction, better relationships
  健康均衡的學習動機>>>可幫助發展注意力、學習和自尊/自信心>>> 堅持面對挫折>>>自信與有滿足感，更好的人際關係
- People to participate actively and productively in schools, jobs, and communities
  主動和有成效地投入校園、工作及社區

Importance of Motivation in Life (Con't)
學習動機在生活中的重要性 (續)

- Disrupted and hijacked motivation >>>Dropping out of school and not participating in family support, job training, or addiction programs cycles
  學習動機受到干擾和被劫持>>>輟學，不參與家庭活動、工作培訓或循環的成癮活動

The Science of Motivation 學習動機的科學性

- Approach motivation vs avoidance motivation
  「積極」成功的學習動機 vs 「逃避」失敗的學習動機
- Fight or flight reactions
  戰鬥或逃跑反應
- Intrinsic drivers vs external rewards
  內在驅動 vs 外部獎勵
- Dopamine surge vs amygdala activation
  多巴胺激增 vs 杏仁核激活

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The Brain Circuits Underlying Motivation
學習動機下的腦內迴圈

Experiences Create Pathways Between Brain Regions

How Motivation Systems Develop

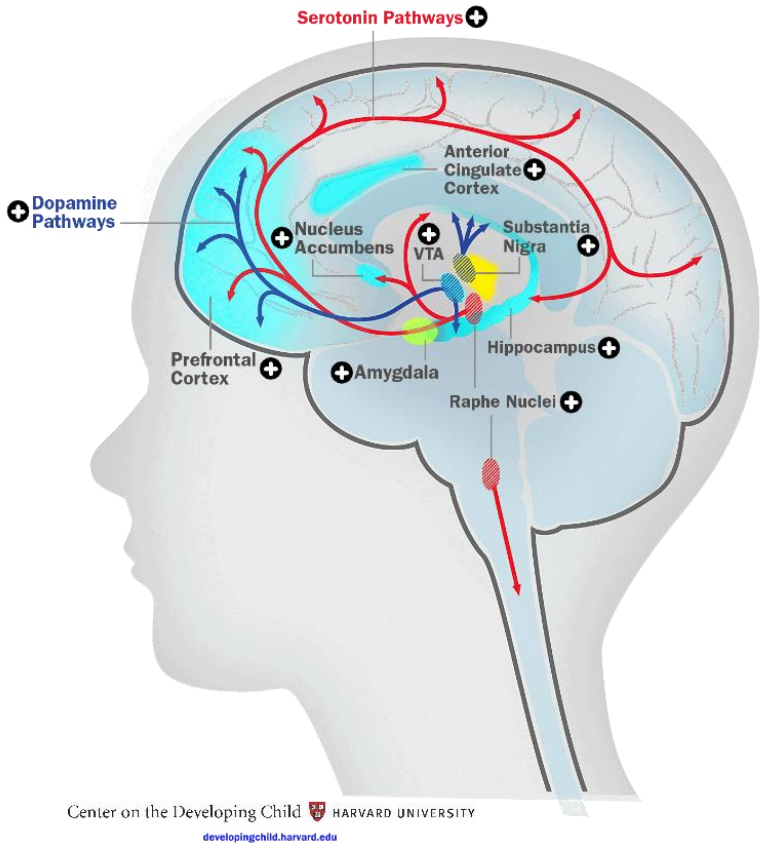
Hover over the labels on the brain regions or the highlighted text below to learn more about the role each plays in reward and motivation.

1. Experiences trigger neurons (brain cells) in certain regions of the brain to send chemicals to other neurons in different regions.

2. Repeated experiences create different pathways in the brain that link those experiences to thoughts, memories, and behaviors.

3. These linked pathways create powerful associations between what we do and the memories of how that made us feel physically and emotionally, and that drives our behavior.

4. We are motivated to repeat those experiences that made us feel good, and to avoid those that made us feel bad.



https://developingchild.harvard.edu/reward-motivation-brain/

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本能
Instincts
Intrinsic Drivers
內在驅動力
Preferences
偏好
Interests
興趣
Stressful Conditions
壓力狀態
Substance Dependence
物質依賴
Life Circumstances
生活環境
Social Supports
社交網絡
Responsive Adults
成年人的敏感回應
Extrinsic Feedback
外部獎勵
Reward
獎賞
Approach
「積極」成功
Motivation
學習動機
Avoidance
「逃避」失敗
Threat
威脅

Wanting System 想要系統	Liking System 喜歡系統
Widespread, robust network across multiple regions of the brain 遍及大腦多個區域的廣泛而強大的網絡	Highly localized within a small region of the brain 高度定位於大腦的一個小區域
Activated through connections involving the reward, the action that led to it, and the emotions felt at the time 通過涉及獎勵，導致獎勵的行動以及當時的情感的聯繫而被激活	Activated when dopamine, serotonin, and naturally occurring opioids are received in this specific brain region 當在此特定的大腦區域接受多巴胺，血清素和天然存在的鴉片類藥物時被激活
Even when a reward is diminished or absent, the brain will still prompt “wanting” 即使獎勵減少或缺失，大腦仍會提示「想要」	The dopamine system triggers less neural activity over time, leading to reduced pleasure from the same experiences 多巴胺系統隨著時間的推移會觸發較少的神經活動，從而導致相同經歷的愉悅感降低

Development of Motivation
學習動機的發展歷程

- Basic needs and emotional security met, young children are motivated intrinsically by exploration, active involvement in play, and achieving mastery or success in a task
  基本的需求和情感上的安全得到滿足後，年幼的孩子會通過探索，積極參與遊戲以及在任務中達到精通或成功而獲得內在動力
- Circle of Security 安全圈
- Positive reinforcement by dopamine surge
  多巴胺激增引起的正向強化

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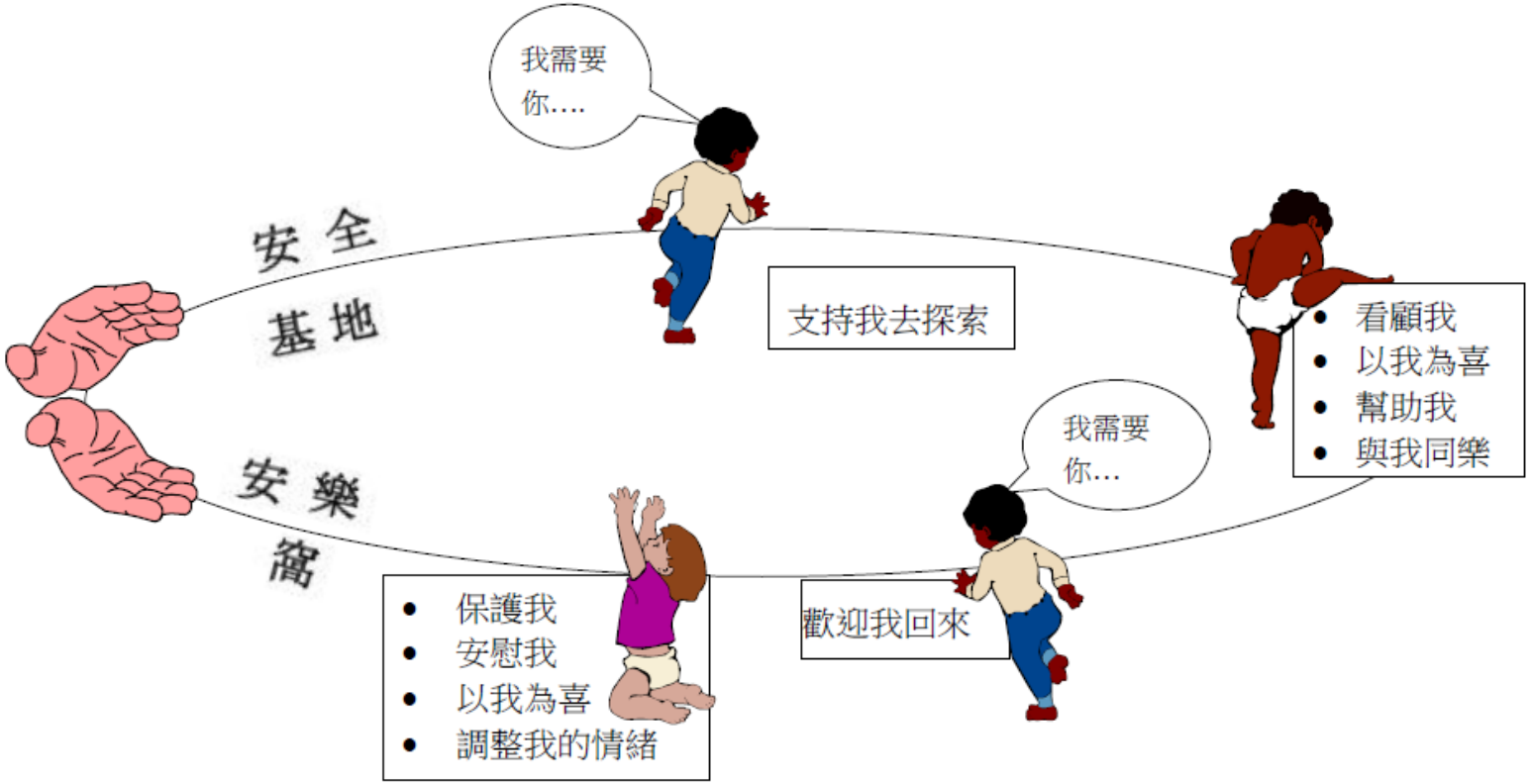
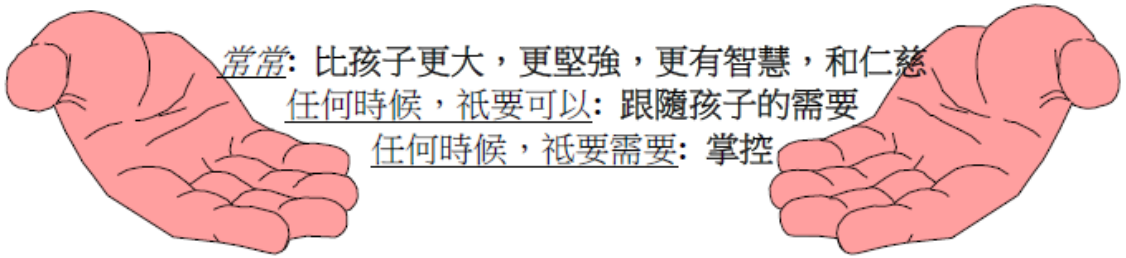
安　全　圈®

(父母致力於照料孩子的需要)





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- Negative feedback: when the brain correctly or incorrectly predicts how serious a particular threat may be, it learns whether (and how much) to avoid it in the future
  負面反饋：當大腦正確或錯誤地預測特定威脅的嚴重程度時，它將了解將來是否要避免該威脅以及要避免其的程度
- While important for survival, the avoidance response can actually inhibit higher-level learning by focusing the brain's activity on immediate response rather than planning to attain a long-range goal or resisting an impulsive behavior
  逃避反應雖然對生存很重要，但實際上可以通過將大腦的活動集中在即時反應上，而不是計劃實現長期目標或抵制衝動行為，從而抑制了更高層次的學習

- Because the timing of the development of motivation systems is so important, different kinds of experiences may have different impacts at different stages
  由於學習動機系統發展的時機非常重要，因此不同類型的經歷可能在不同階段產生不同的影響
- Attachment in baby stage
  嬰兒期的依附

- The cognitive and emotional development + increased cognitive flexibility that occurs during adolescence creates both opportunities and challenges. The increased sensitivity to social rewards can lead to an inclination toward risk-taking and self-oriented acts, but also powers exploratory learning and the ability to adapt to different social contexts and cultures

  青春期發生的認知和情感發展+認知靈活性的增加既創造了機遇，也帶來了挑戰。 對社交獎勵敏感度的提高可能導致傾向於冒險和自我導向的行為，但也增強了探索性學習的能力以及適應不同社會背景和文化的能力

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Internal drivers vs external rewards
內在驅動力與外部獎勵

- Intrinsic drivers are considered to be the strongest and most lasting motivators, especially in early childhood
  內在驅動力被認為是最強大、最持久的動力，尤其是在兒童早期
- In some cases, external rewards have been shown to undermine intrinsic drivers
  在某些情況下，外部獎勵已被證明會破壞內在驅動力

Internal drivers vs external rewards (Con't)
內在驅動力與外部獎勵 (續)

- Children are less likely to engage spontaneously in activities after they have received a tangible reward for having performed them
  給予獎勵後，孩子不太可能自發地參加活動
- The combination of intrinsic drivers supported by positive extrinsic feedback is best for building a healthy motivation system, but extrinsic feedback by itself is not an effective driver of behavior over the long term
  最有效能夠提升學習動機的方法是以正面的外在反饋來支持內在驅動力，但長遠而言，單單外在反饋並不會有效提升動機

Intrinsic motivation 內在動機

- Can either be encouraged or suppressed by the experiences adults provide for children
  成人為孩子提供的經驗可以激勵或抑制的動機
- Successful experience
  成功經驗
- Mindset intervention: fixed mindset vs growth mindset
  心態干預：固定心態與成長心態

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Summary 小結

- Children who experience a safe, supportive, and predictable environment develop healthy motivation systems that are driven by a balance of approach and avoidance, and of wanting and liking

提供安全、具支持性和
可讓他/她有心理準備的環境

開發正面的學習動機

平衡「積極」成功及「逃避」失敗的學習動機

平衡「想要」及「喜歡」系統

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Summary 小結

- But excessive or misdirected fear by a primary caregiver can lead a child to lose interest in healthy exploration when the motivation to avoid threat overpowers the motivation to approach new experiences
  但是，當主要照顧者引起過度或誤導的恐懼，會導致孩子對探索失去興趣，沒有尋求新經驗的動機
- Children can over-learn fear from the adults around them, which affects the amygdala and may have long-term consequences for a child's health, learning, and social relationships
  孩子可能會過度學習成年人給他的恐懼，這會影響杏仁核，並可能對兒童的健康、學習和社會關係產生長期影響

Case study 1 個案1

- M/ 20 男/ 20歲
- ADHD
- Divorced parents 父母離異
- Academic backwardness 學校成績倒退
- Dismissed by multiple colleges 被多所大學開除
- Anxiety 焦慮
- Alcoholism 酗酒
- Low self-esteem and avoidance motivation
  自尊心低和迴避動機

Case study 2 個案2

- M/ 10 男/10歲
- Multiple exceptional development 多重特殊資優生
- Gifted and dyslexia 資優及讀寫障礙
- Wins money by achieving 80/100 in dictation
  如果默書考80分或以上，父母會有金錢獎勵
- Eventually lost interest in study and developed oppositional behavior and internet gaming addiction
  最終對學習失去興趣，並發展出對抗行為和網絡遊戲成癮

ADHD and motivation
ADHD與學習動機

- Weak impulse control= Cannot delay gratification
  衝動控制能力弱=無法延遲得到滿足
- Poor working memory= distorted experience
  工作記憶力差=經驗失真
- Un-sustained efforts + Short attention span = lack of rewards
  不持續的努力+注意力時間短=缺乏獎勵

ADHD and motivation (Con't)
ADHD與學習動機 (續)

- Emotional dysregulation = sensitization by negative comments and emotional escalation
  情緒失調=負面評論和情緒升級引起的劇烈反應
- High distractibility = overthinking
  容易分心=過度思考
- Addiction = hijacked motivational system
  癖癮 = 劫持控制系統

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Bullying changes the brain architecture
欺凌會改變大腦的結構

- Experiencing chronic peer victimization is associated with lower academic achievement, higher unemployment rates, depression, anxiety, post-traumatic stress disorder, substance abuse, and self-harm and suicidal thoughts

  經歷長期的同伴欺凌，學童會有較大機會出現
  - 學業成績下滑
  - 較高的失業率
  - 抑鬱症
  - 焦慮症
  - 創傷後壓力症候群
  - 藥物濫用
  - 自殘和自殺念頭

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Bullying changes the brain architecture (Con't)
欺凌會改變大腦的結構 (續)

- Research found that participants who experienced chronic bullying had significantly steeper decreases in the volume of two regions at the brain involved in movement and learning — the left putamen and left caudate — with the former showing the stronger effect
  研究發現，經歷了長期被欺凌的參與者在大腦中負責活動和學習的兩個區域（左殼核和左尾狀）的體積顯著減小，左殼核的反應更顯著
- "Toxic" stress and the stress hormone cortisol appear to alter brain development
  "有毒"的壓力和壓力激素「皮質醇」會改變大腦發育

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Bullying changes the brain architecture (Con't)
欺凌會改變大腦的結構 (續)

- The hypothalamus is activated by the amygdala — an important region for processing emotions — when danger is detected
  當發現危險時，下丘腦被杏仁核激活，杏仁核是處理情緒的重要區域
- Following their initial release of adrenaline, if danger continues to be perceived, the adrenal glands release cortisol into the bloodstream. Higher levels of cortisol allow the body to operate at higher performance when it is exposed to an acute stressor
  當感覺到危險，腦部會最初釋放腎上腺素；如果繼續感覺到危險，腎上腺會將皮質醇釋放到血流中。 高水平的皮質醇可使身體性能提高

Bullying changes the brain architecture (Con't)
欺凌會改變大腦的結構 (續)

- But chronic stress — such as experiencing persistent bullying — could have just the opposite effect because memory, cognition, sleep, appetite and other functions are continually on "alert" and not allowed to repair

  但是，長期的壓力（例如遭受持續的欺凌）可能會產生相反的效果，記憶、認知、睡眠、食慾和其他功能持續處於「警報」狀態，並不能修復

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Self-medication of untreated ADHD
未經治療的ADHD患者使用「自我藥療」

- Addictive drugs can often release more dopamine than natural rewards. This over- stimulation of cells that receive dopamine can, over time, change the neural pathways and chemistry in the motivation systems
  容易上癮的藥物或行為通常比自然獎勵釋放更多的多巴胺。 隨著時間的流逝，過度的多巴胺刺激會改變動力系統中的神經通路和化學反應
- By flooding the nucleus accumbens with dopamine, these activities provide a short- cut to pleasure, bypassing the time and effort required to trigger similar positive feelings of reward that are generated by achieving a goal or mastering a skill
  輕易得來的多巴胺提供了快感的捷徑，而無需花費時間和精力來觸發通過達成目標或掌握技能而產生的積極獎勵感

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Self-medication of untreated ADHD (Con't)
未經治療的ADHD患者使用「自我藥療」(續)

- Other parts of the brain create memories of this rapid experience of pleasure and connect them to the wanting and liking systems
  大腦的其他部分為這種快速的愉悅體驗創造了回憶，並將它們連接到「想要」和「喜歡」的系統上
- The wanting systems can become permanently *hyper*-reactive to drug cues, even after ending drug use
  即使在結束「吸毒」之後，「想要」的系統也可能對這種愉悅感產生永久性的過度反應
- As a result, the brain becomes less and less affected by dopamine, at least as long as the drug continues to be taken
  最後，就算是「吸毒」的情況下，大腦受到多巴胺的影響只會越來越少

Addiction = Hijacked control system
癖癮 = 控制系統被劫持

- Repeated use of a short-cut to pleasure creates circuitry that is so strongly associated with *memories* of pleasure that the wanting system produces powerful urges to follow it, even when the pleasure itself fades
  重複使用快捷方式來創建愉悅感，與愉悅的*回憶*緊密相關，以至於「想要」系統產生強烈的追隨慾望，即使愉悅感本身消失了
- Ultimately, the mere memory of the behavior—and even the associations of people or places with the behavior—can lead to the impulsive actions that characterize addiction
  最終，僅是對行為的記憶，甚至是人或地方與行為的關聯，都可能導致成癮的衝動行為。

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Addiction = Hijacked control system (Con't)
癖癮 =控制系統被劫持(續)

- These experiences can quickly ramp up good feelings *and* tamp down bad feelings—but only temporarily
  這些經歷可以迅速提升良好的感覺，*同時*減少不良的感覺，但只是暫時性的
- This can create a spiral of dysregulation, in which the addictive experience triggers initial pleasure, followed by negative emotions and physical craving, which can only be suppressed by the addictive behavior
  這可能會導致螺旋式上升的失調，其中成癮的經歷會觸發最初的愉悅感，隨後產生負面情緒和身體對其的渴望，這些負面影響只能透過成癮的行為來抑制

Practical tips to promote motivation in children
促進兒童動機的實用技巧

- Role modeling 好榜樣
- Respect the relationship=Balance between in charge and being too weak
  尊重關係=「話事」及「軟弱」之間的平衡

- Balance between loving and disciplining
  愛護與紀律之間的平衡

Practical tips to promote motivation in children
促進兒童動機的實用技巧

- Develop intrinsic motivation and not overly relying on extrinsic motivation
  培養內在動機，而不是過度依賴外在動機
- Successful stories for parents and ADHD individuals
  認識關於ADHD的成功故事
- More intrinsic motivating activates through creativity and less structured tasks
  通過創造力和較低結構化的任務來激發更多內在動力
- Less external rewards
  較少的外部獎勵

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Practical tips to promote motivation in children
促進兒童動機的實用技巧

- Modified Behavioural modification program
  參與行為修正課程
- Emotional security and social connections
  情緒上給予安全感及社交聯繫
- Team sports and group activates
  團隊運動和小組活動
- Inspiring adult
  成為能夠鼓舞人心的成年人

What adults should do 大人應該做什麼？

1. Follow babies' needs
   遵循嬰兒的需求
2. Elicit curiosity
   引發孩子的好奇心
3. Encourage children's playful exploration
   鼓勵孩子從遊玩中探索
4. Prioritize social interaction during learning
   在學習過程中優先考慮社交互動
5. Challenge children just enough
   給孩子適當的挑戰

What adults should do 大人應該做什麼？

6. Give children agency
   給孩子自主性
7. Provide incentives only when necessary
   在必要時提供獎勵
8. Praise the process rather than the outcome
   稱讚過程而不是結果
9. Maintain a close connection with adolescents
   在青少年期時，要保持緊密聯繫

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問答環節

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