



**Science Behind the Story (SBS)**  
**Making Decisions (🌈 A Cognitive Health Story)**  
**(5<sup>th</sup> Grade – 10-11 yrs)**

Making decisions is something that all of us have to do all the time. Making good decisions actually helps you to live a better life and helps your brain stay healthy.

- 🌈 Making good decisions is not easy, especially when the part of your brain that helps you make decisions is still growing.

Humans are born with an immature brain and this immaturity comes at a tremendous cost, both to the newborn, whose brain consumes 60% of its entire energy budget, and to the parents (Meltzoff, 2009). Yet immaturity has value. Delaying the maturation and growth of brain circuits allows initial learning to influence the developing neural architecture in ways that support later, more complex learning (Meltzoff, 2009).

One of the regions of the brain which continues to develop into early adulthood is the prefrontal cortex (Gogyay, 2012). The prefrontal cortex plays a major role in the decision-making process (Euston, 2012). These two facts point to the reason why it is sometimes not easy for adolescents, or young adults, to make good decisions.

- 🌈 While your brain is still growing, you think about the world you live in differently and you may take more risks.

Risk taking behaviors appear to have an evolutionary existence, going back to the days of the caveman (Damodaran, 2007). Back in the caveman days, the life expectancy was in the late 20's and early 30's (Audette, 2000). This means that the prefrontal cortex of these people when they would go out on their own into the world was not fully developed. Going out into the world with an immature brain meant that in order to survive, risks needed to be taken (Damodaran, 2007).

During the cavemen days, people did not know how to read and write – so, people could not pass down all the things that they had learned to future generations like we can do now. So, the cavemen had to take risks to survive – to be able to get food for themselves and their family. They had to do a lot of “trial and error” learning, which meant that sometimes they survived and sometimes they did not (Damodaran, 2007).

Considering changes in brain development and how it relates to cognitive development can help to explain a lot of the risk taking and poor choices that are sometimes made by our youth (Romer, 2017; Arnett, 1992). According to Piaget, children are born with a cognitively egocentric thought process, meaning their thoughts mostly concern their immediate self (Piaget, 1969). It was his logic that children will move through certain developmental stages that allow them to begin thinking more logically rather than egocentrically and eventually allows them to distinguish their perspectives from other's (Flavell, 1999). It is through these stages that development of Theory of Mind can be mapped (Firth, 2005).

- Your brain does a lot of things for you and now is the time when you need to help your brain, so it can help you. Understanding how your brain works and how you are able to make decisions will help you to keep your brain healthy.

When students understand that their brains, which allows them to do all the behaviors that they do, may now need to be taken care of while it is still developing is a concept that adolescents can grasp. Teaching them that making good decisions revolves around staying safe and helping others also is a concept that they can understand. In most cases, making a good decision involves stopping and thinking.

## **National Standards:**

### **Next Generation Science Standards**

- Crosscutting Concepts
  - **Cause & Effect:** Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering.
    - Cause and effect relationships are routinely identified, tested, and use to explain change.
    - Events that occur together with regularity might or might not be a cause & effect relationship.
  - **Structure & Function:** The way an object is shaped or structured determines many of its properties and functions.
    - Different materials have different substructures; which can sometimes be observed.
    - Substructures have shapes and parts that serve functions.
  - **Stability & Change:** For both designed and natural systems, conditions that affect stability and factors that control rates of change are critical elements to consider and understand.
    - Change is measured in terms of differences over time and may occur at different rates.
    - Some systems appear stable, but over long periods of time will eventually change.

## **ASCA (American School Counselors Association):**

### **Academic Development**

- **Standard A:** Students will acquire the attitudes, knowledge and skills that contribute to effective learning in school and across the life span.
  - A:A1 Improve Academic Self-Concept
    - A:A1.5 Identify attitudes and behaviors that lead to successful learning
  - A:A2 Acquire Skills for Improving Learning
    - A:A2.1 Apply time-management and task-management skills
    - A:A2.2 Demonstrate how effort and persistence positively affect learning
- **Standard B:** Students will complete school with the academic preparation essential to choose from a wide range of substantial post-secondary options, including college.
  - A:B1 Improve Learning
    - A:B1.3 Apply the study skills necessary for academic success at each level
- **Standard C:** Students will understand the relationship of academics to the world of work and to life at home and in the community.
  - A:C1 Relate School to Life Experiences
    - A:C1.1 Demonstrate the ability to balance school, studies, extracurricular activities, leisure time and family life

### **Personal/Social Development**

- **Standard A:** Students will acquire the knowledge, attitudes and interpersonal skills to help them understand and respect self and others.
  - PS:A1 Acquire Self-knowledge
    - PS:A1.6 Distinguish between appropriate and inappropriate behavior
    - PS:A1.7 Recognize personal boundaries, rights and privacy needs
    - PS:A1.8 Understand the need for self-control and how to practice it
- **Standard B:** Students will make decisions, set goals and take necessary action to achieve goals.

- PS:B1 Self-knowledge Application
  - PS:B1.2 Understand consequences of decisions and choices
  - PS:B1.3 Identify alternative solutions to a problem
  - PS:B1.4 Develop effective coping skills for dealing with problems
- **Standard C:** Students will understand safety and survival skills.
  - PS:C1 Acquire Personal Safety Skills
    - PS:C1.7 Apply effective problem-solving and decision-making skills to make safe and healthy choices
    - PS:C1.9 Learn how to cope with peer pressure

### **National Health Education Standards (Shape America) & CDC (Centers for Disease Control and Prevention)**

- **Standard 1:** Students will comprehend concepts related to health promotion and disease prevention to enhance health.
  - 1.5.1: Describe the relationship between healthy behaviors and personal health. **(CDC)**
  - 1.5.2: Identify examples of emotional, intellectual, physical, and social health. **(CDC)**
  - 1.5.4: Describe ways to prevent common childhood injuries and health problems. **(CDC)**
- **Standard 2:** Students will analyze the influence of family, peers, culture, media, technology, and other factors on health behaviors.
  - 2.5.3: Identify how peers can influence healthy and unhealthy behaviors. **(CDC)**
- **Standard 4:** Students will demonstrate the ability to use interpersonal communication skills to enhance health and avoid or reduce health risks.
  - 4.5.1: Demonstrate effective verbal and nonverbal communication skills to enhance health. **(CDC)**
  - 4.5.2: Demonstrate refusal skills that avoid or reduce health risks. **(CDC)**
- **Standard 5:** Students will demonstrate the ability to use decision-making skills to enhance health.
  - 5.5.1: Identify health-related situations that might require a thoughtful decision. **(CDC)**
  - 5.5.2: Analyze when assistance is needed in making a health-related decision. **(CDC)**
  - 5.5.3: List healthy options to health-related issues or problems. **(CDC)**
  - 5.5.4: Predict the potential outcomes of each option when making a health-related decision. **(CDC)**
  - 5.5.5: Choose a healthy option when making a decision. **(CDC)**
  - 5.5.6: Describe the outcomes of a health-related decision. **(CDC)**
- **Standard 7:** Students will demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks.
  - 7.5.1: Identify responsible personal health behaviors. **(CDC)**
  - 7.5.2: Demonstrate a variety of healthy practices and behaviors to maintain or improve personal health. **(CDC)**
  - 7.5.3: Demonstrate a variety of behaviors to avoid or reduce health risks. **(CDC)**
- **Standard 8:** Students will demonstrate the ability to advocate for personal, family, and community health.
  - 8.5.2: Encourage others to make positive health choices. **(CDC)**

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