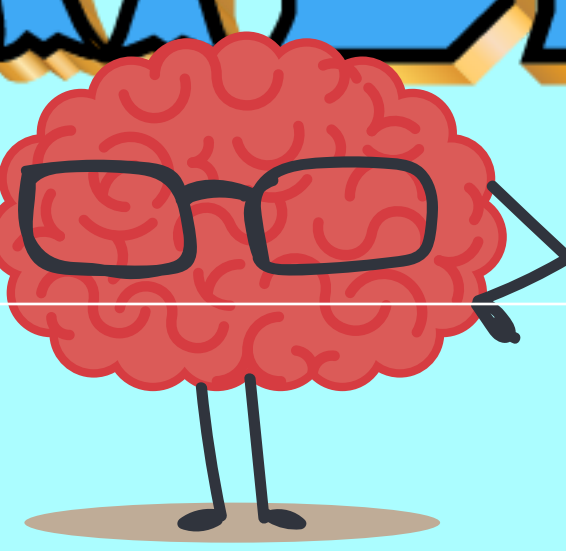


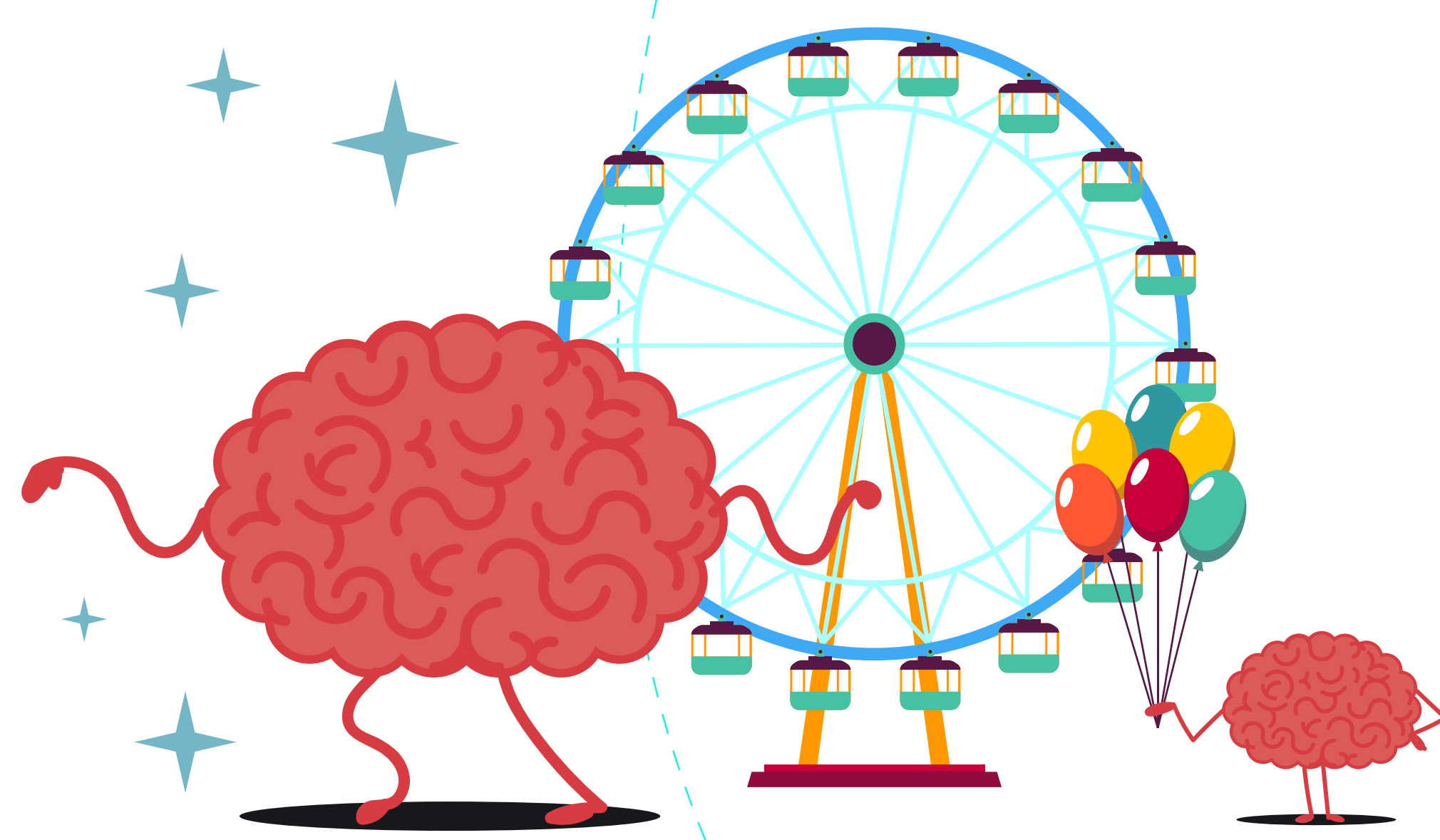
TAKE THE RIDE

MINDRIDE



START HERE

Take a ride through the brain to understand how it reacts to gambling and how it affects the brain much like other behavioral and substance disorders.



THE BRAIN AND ADDICTION

The areas of the brain that control impulse and judgement can put adolescents and young adults on a bumpy ride towards problem gambling, and change the brain in ways that make quitting difficult.

THE BRAIN'S REWARD NETWORK

The Ventral Striatum, the reward-seeking network in the non-addicted brain, is kept in check by pre-frontal cortex, which applies the brakes to stop thrill-seeking. Inconsistencies in applying the brakes in the immature brain can quickly result in less pleasure from natural rewards and increased seeking of unnatural rewards such as gambling or substances.

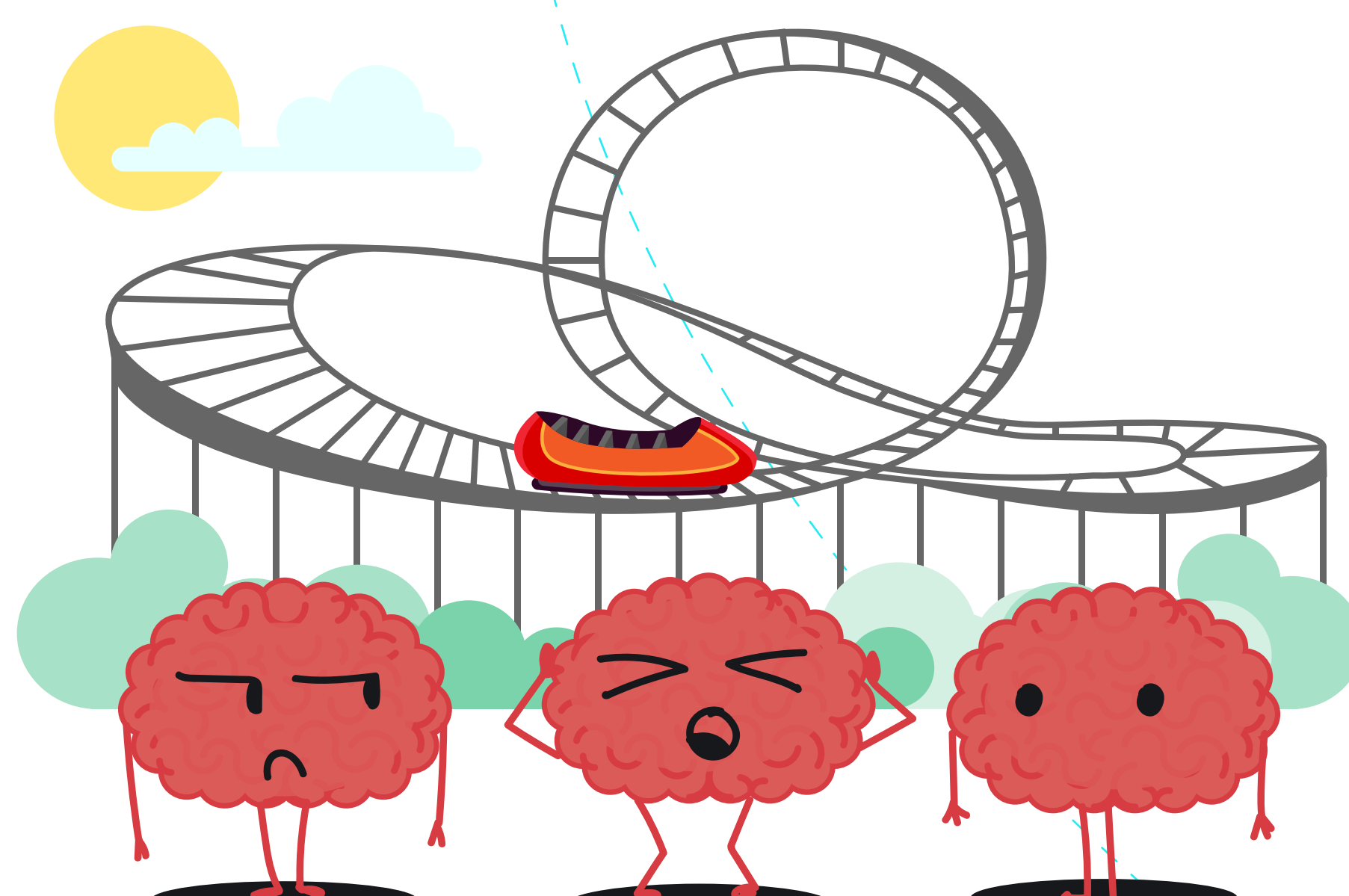


THE BRAIN AND FORMING HABITS

When we over-engage in pleasurable behaviors, brain activity shifts from away from the Ventral Striatum "Reward Hub" to the Dorsal Striatum "Habit Hub" and new problem gambling habits begin to form. These habits change the brain in ways that contribute to problem gambling.

GAMBLING CUES AND THE BRAIN

Habits formed by problem gambling contribute to increased focus on gambling-related cues—sights, sounds and other reminders that cause urges to gamble. The brain's reward network learns to associate pleasure with gambling-related cues, and less pleasure from natural cues, making it difficult to end problem gambling.

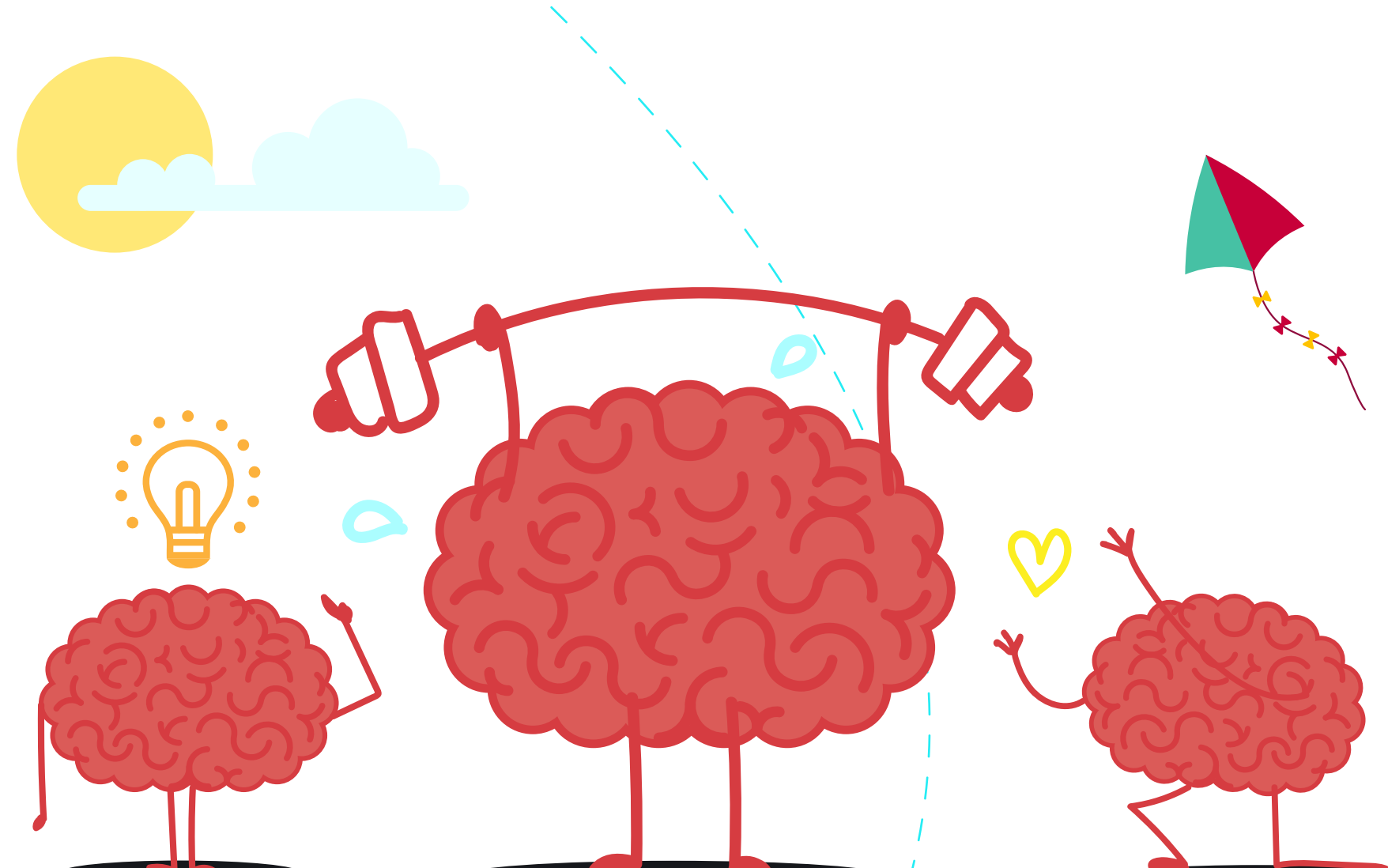


GAMBLING AND MOOD

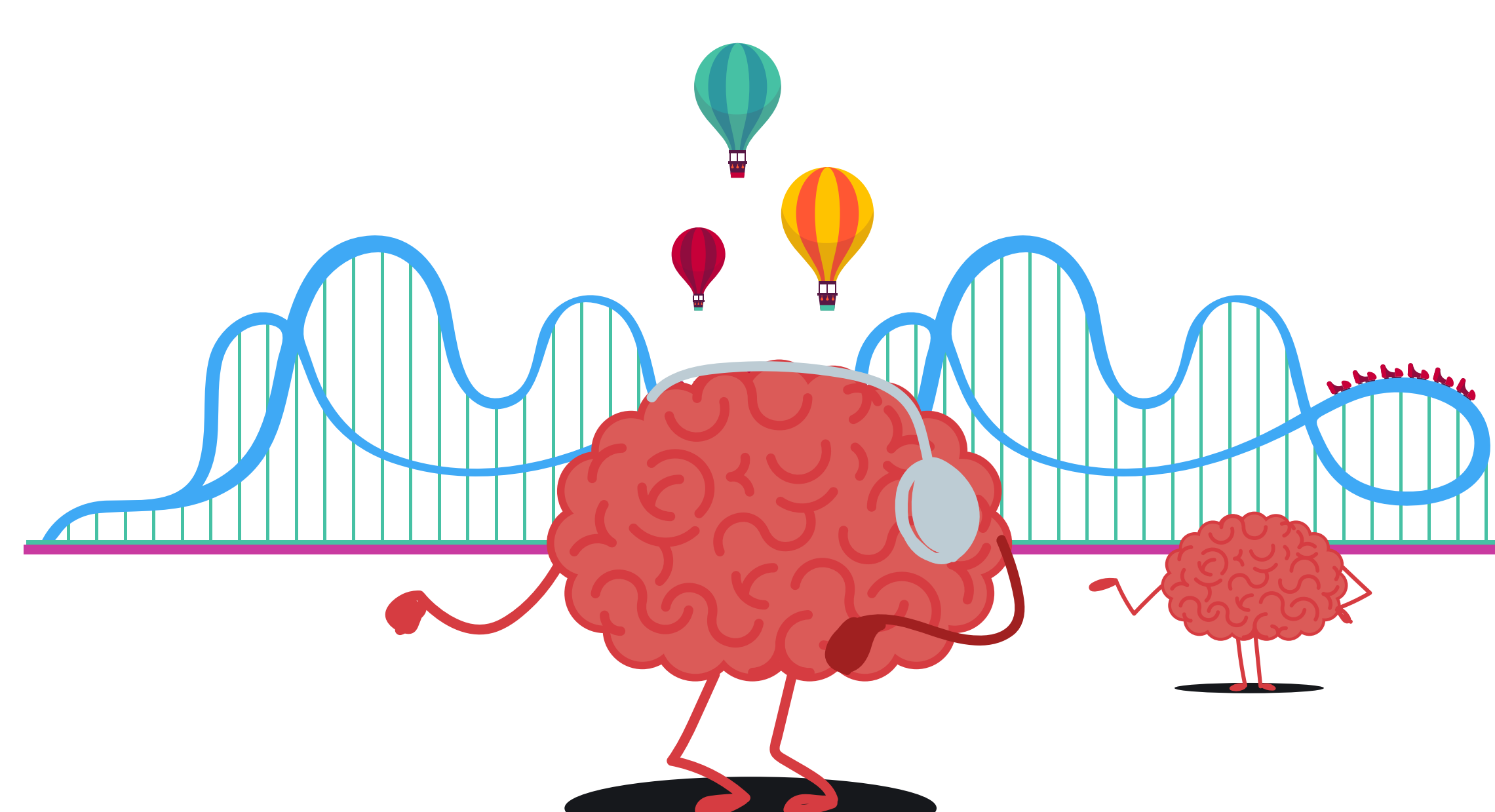
Unable to find pleasure in natural cues, young adults and adolescents can quickly fall into depression and shame due to the stressors that result from problem gambling. This can change the brain's natural mood baseline and contribute to continued problem gambling.

CHANGE YOUR BRAIN

The brain's ability to change gives hope to problem gamblers. With abstinence and behavioral interventions, the brain can again find pleasure in natural cues, and reset the brain's reward & habit hubs to help end problem gambling.

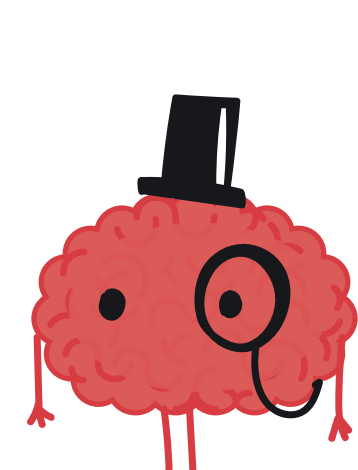


YOUTH AND THE DEVELOPING BRAIN



The Developing Brain and Risk for Problem Gambling

The development of the brain lasts through early adulthood, and the region of the brain that controls judgment and impulse, is the last to develop. This makes adolescents more vulnerable to forming addictions.



Resource Links:

<https://pubmed.ncbi.nlm.nih.gov/28146248/>

<https://www.brainfacts.org/Diseases-and-Disorders/Addiction/2015/Gambling-Addiction-and-the-Brain>

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<https://www.responsiblegambling.org/for-the-public/about-gambling/the-science-behind-gambling/>

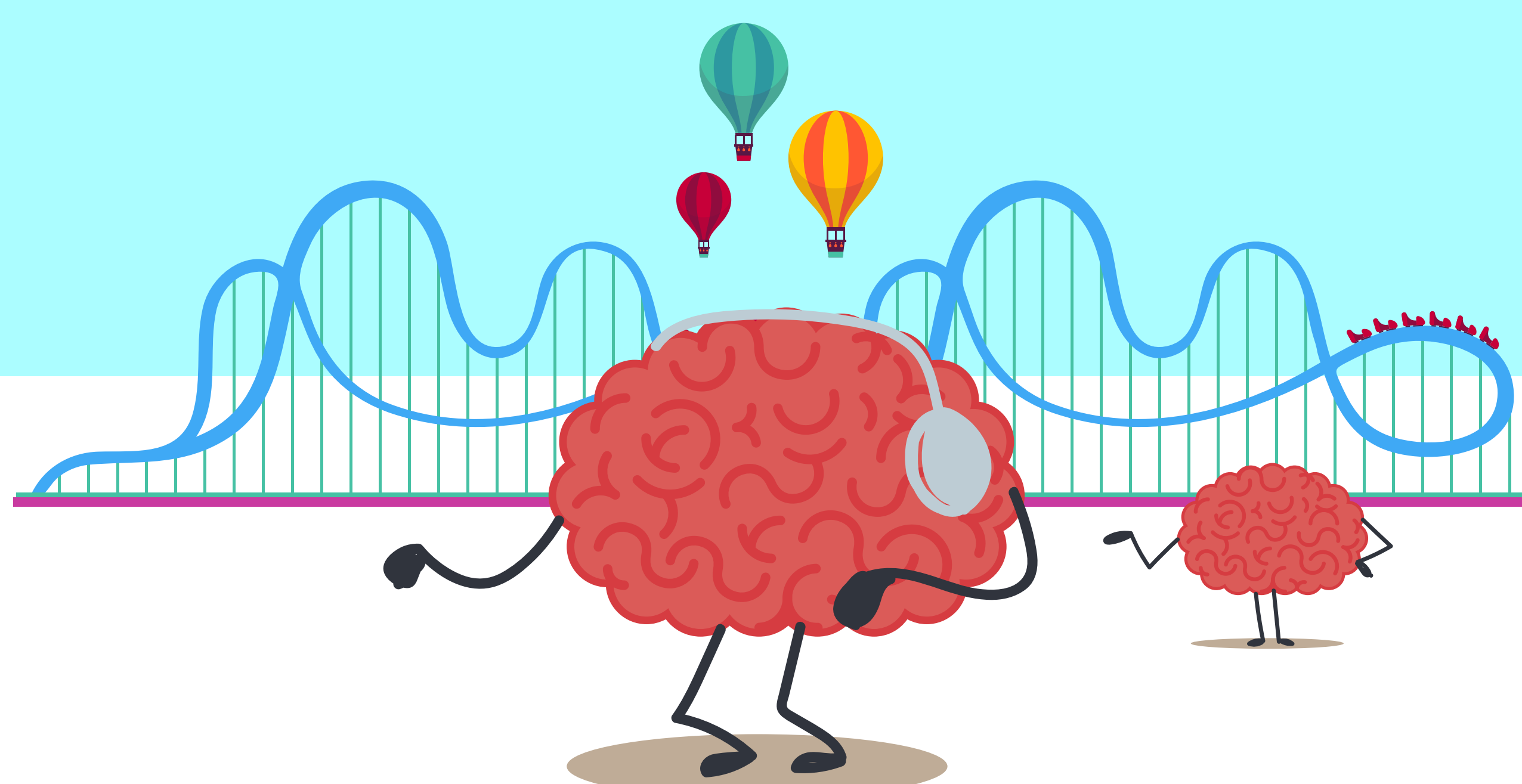
<http://www.youthgambling.com/>

<https://brainconnections.ca/mood-and-gambling/>

YOUTH AND THE DEVELOPING BRAIN

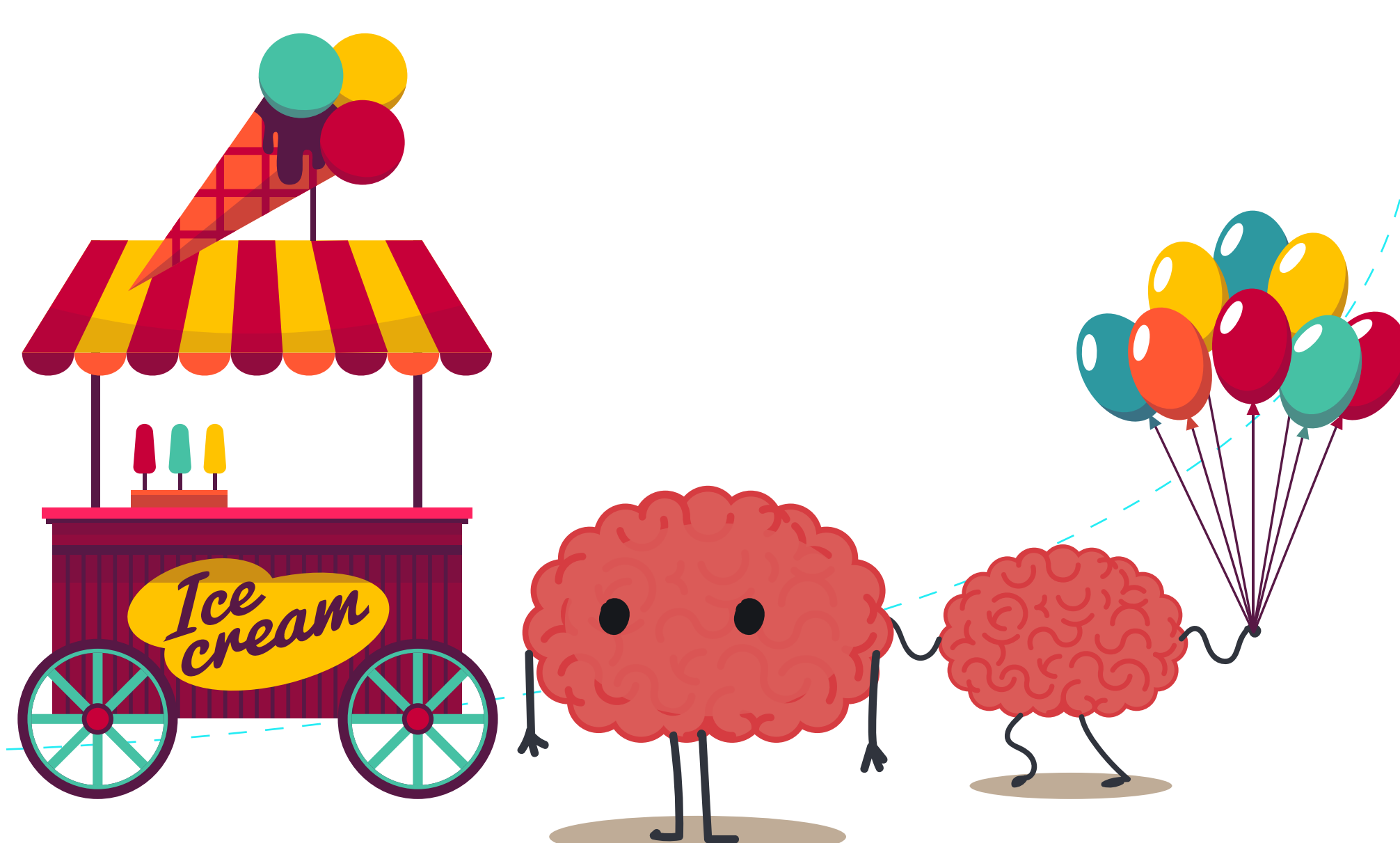
The Developing Brain and Risk for Problem Gambling

The development of the brain lasts through early adulthood, with the prefrontal cortex, the area of the brain that controls judgment and impulse, is the last to develop. This makes youth more vulnerable to forming addictions. The exposure to and access to internet gambling have removed barriers to gambling among youth and increases the risk for problem gambling behavior.

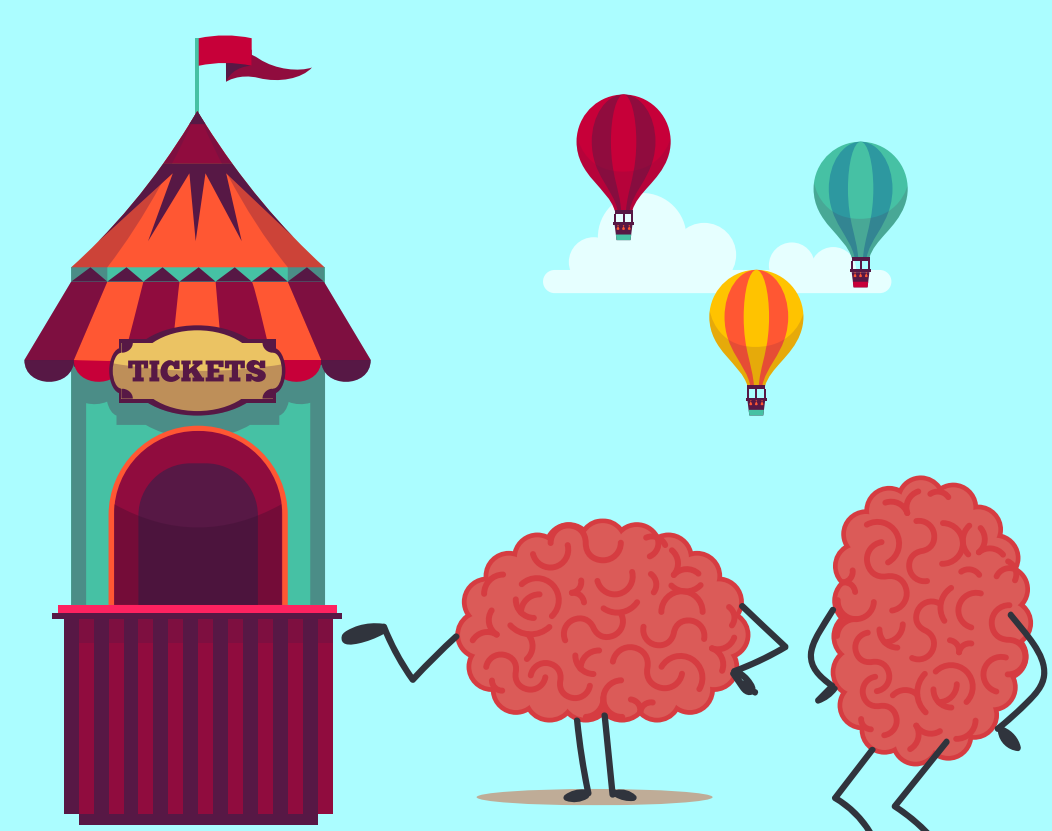


39.5%

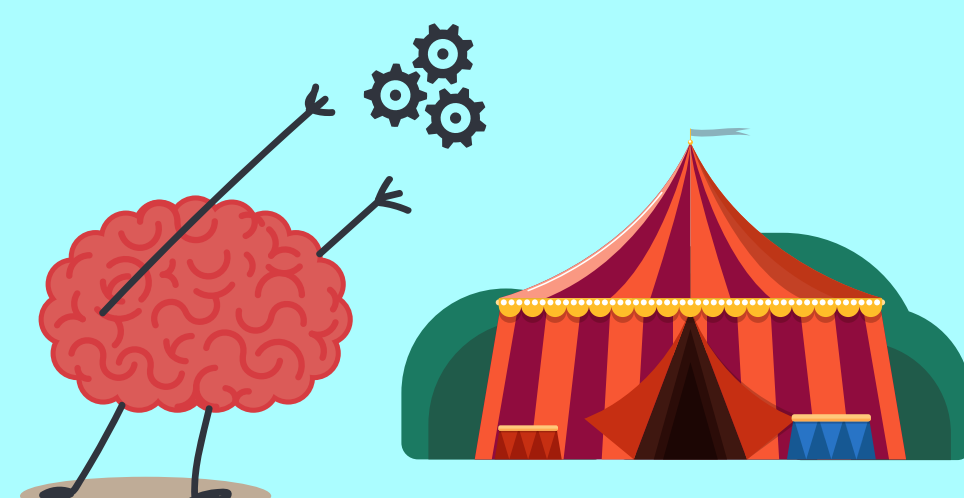
Of **NYS YOUTH** between the ages of **12** and **17** have gambled in the past year.



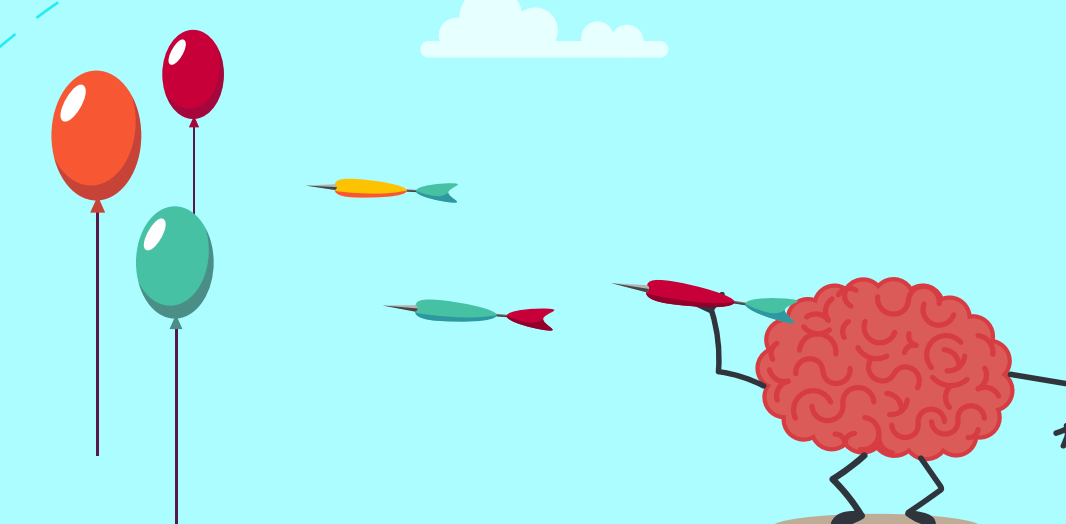
WAYS YOUTH GAMBLE MOST



Playing Lottery, Lotto and Scratch Offs



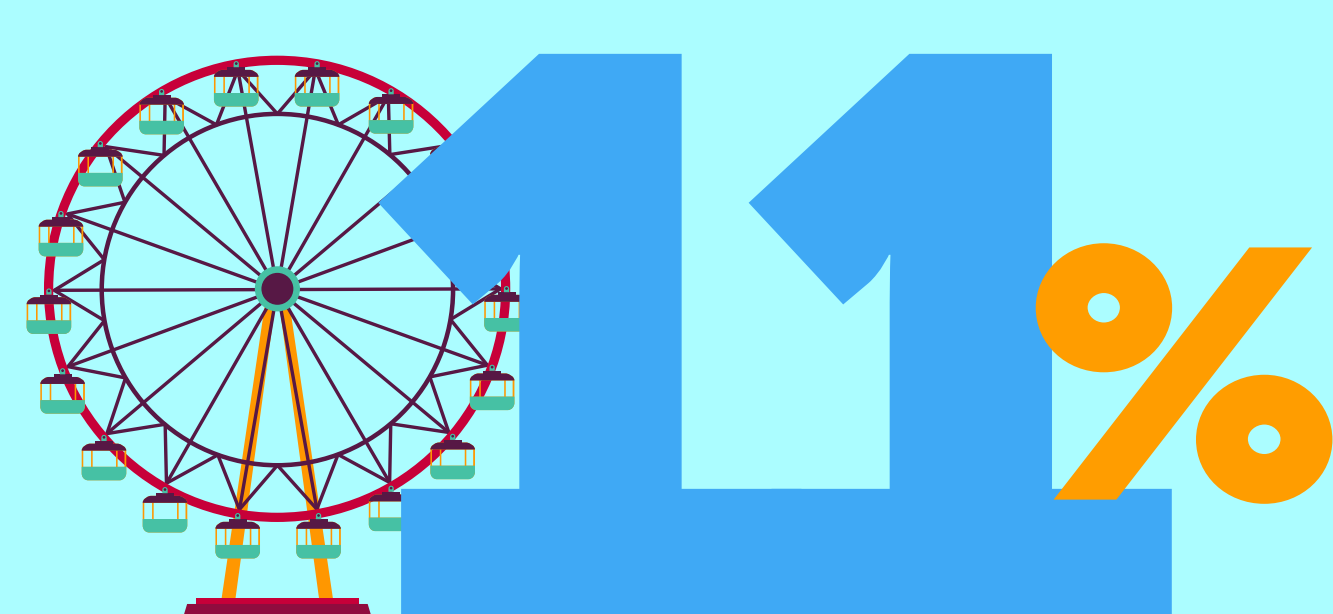
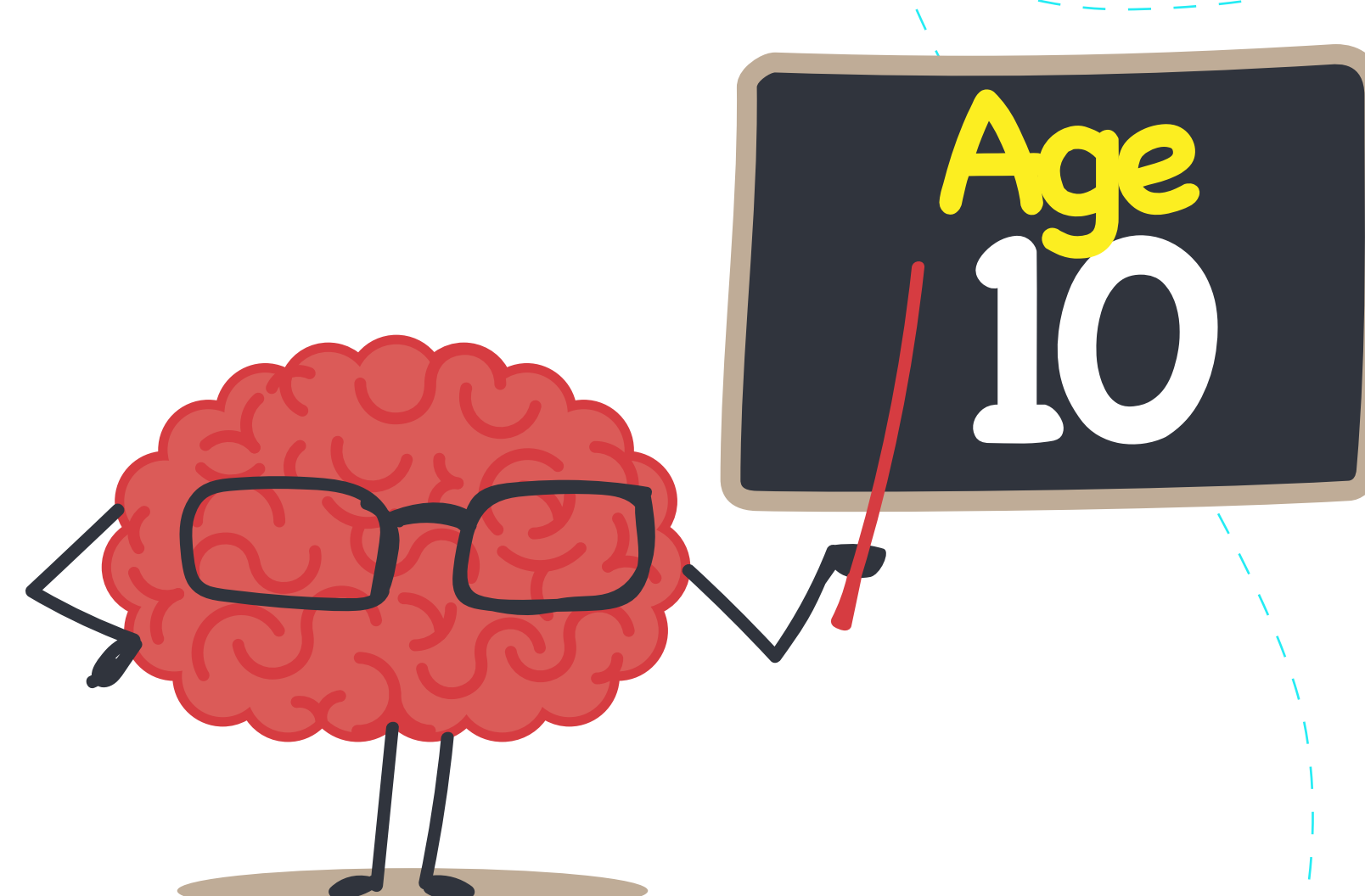
Betting Money on Raffles or Charity Games



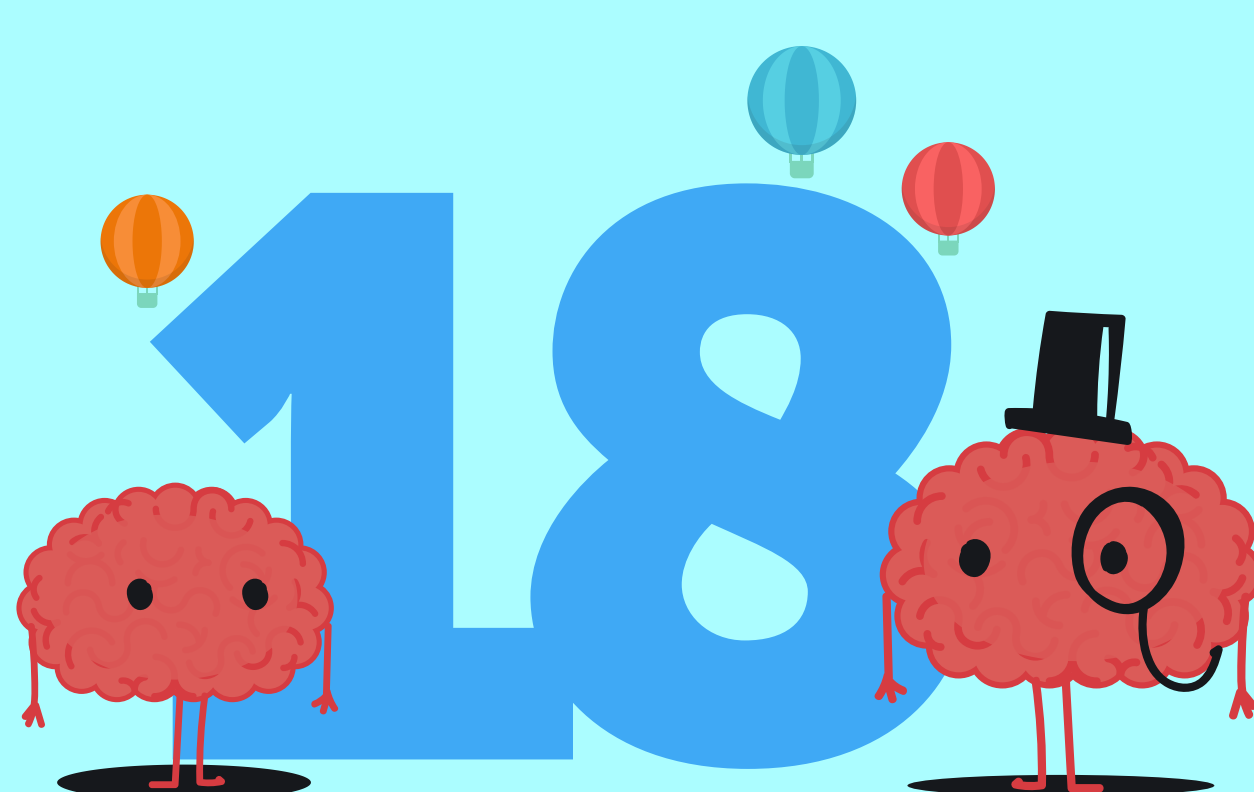
Betting Money on Sports

30%

Of **YOUTH** stated they began gambling at or before what age?



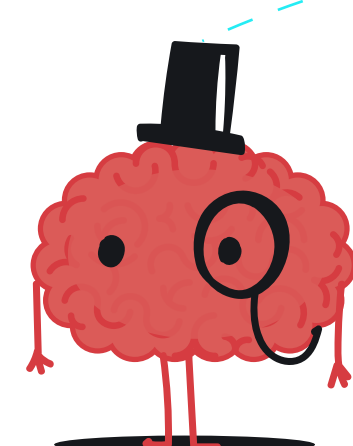
11% admitted to spending their money on gambling in the past week



At age 18, the legal age to enter casinos in New York, the part of the brain that handles judgement and impulse control is not fully developed, leaving young adults at-risk for problem gambling.



Approximately 4-5% of U.S. youth ages 12-17, meet one or more criteria for problem gambling.



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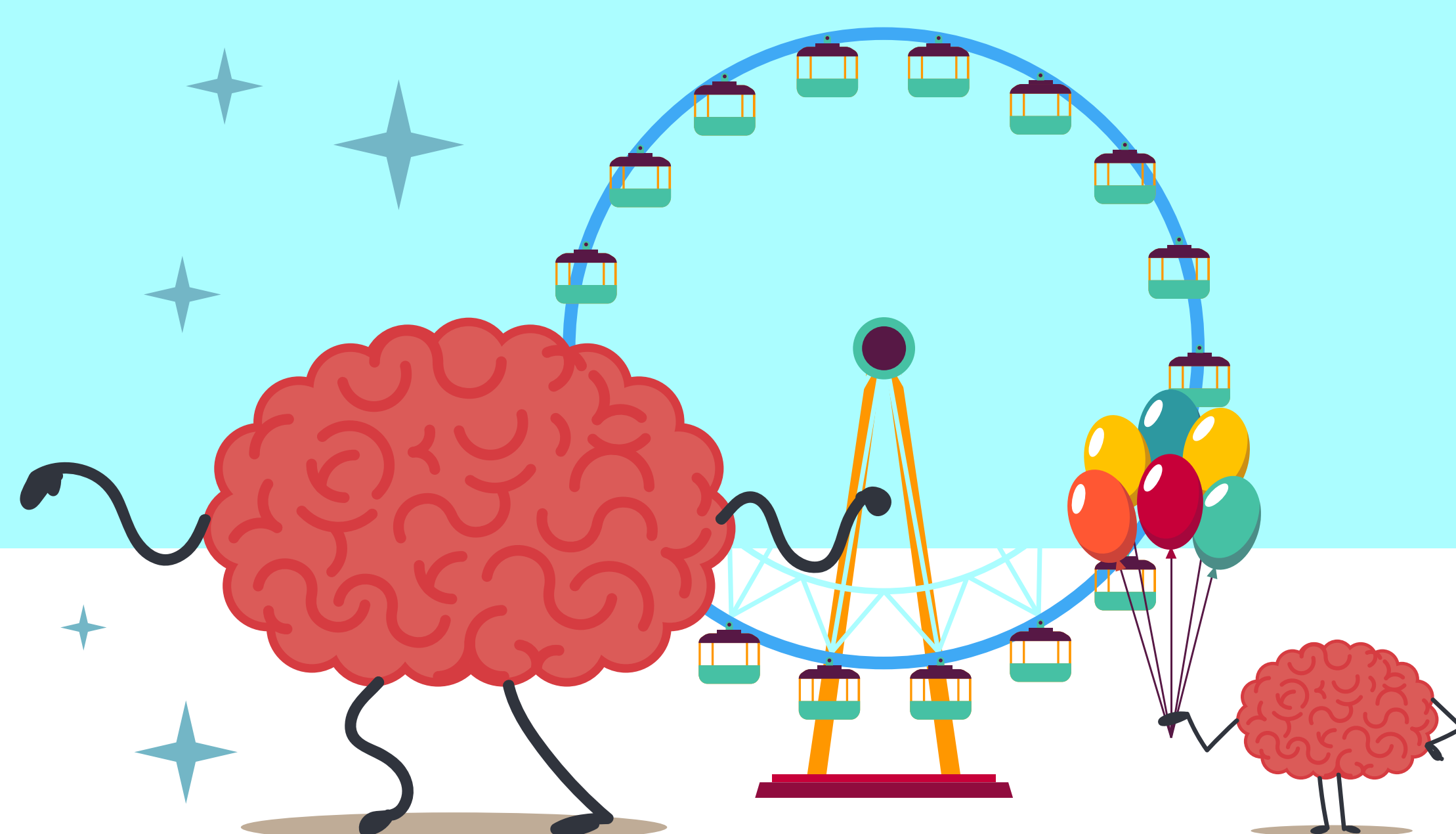
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<http://www.youthgambling.com/>

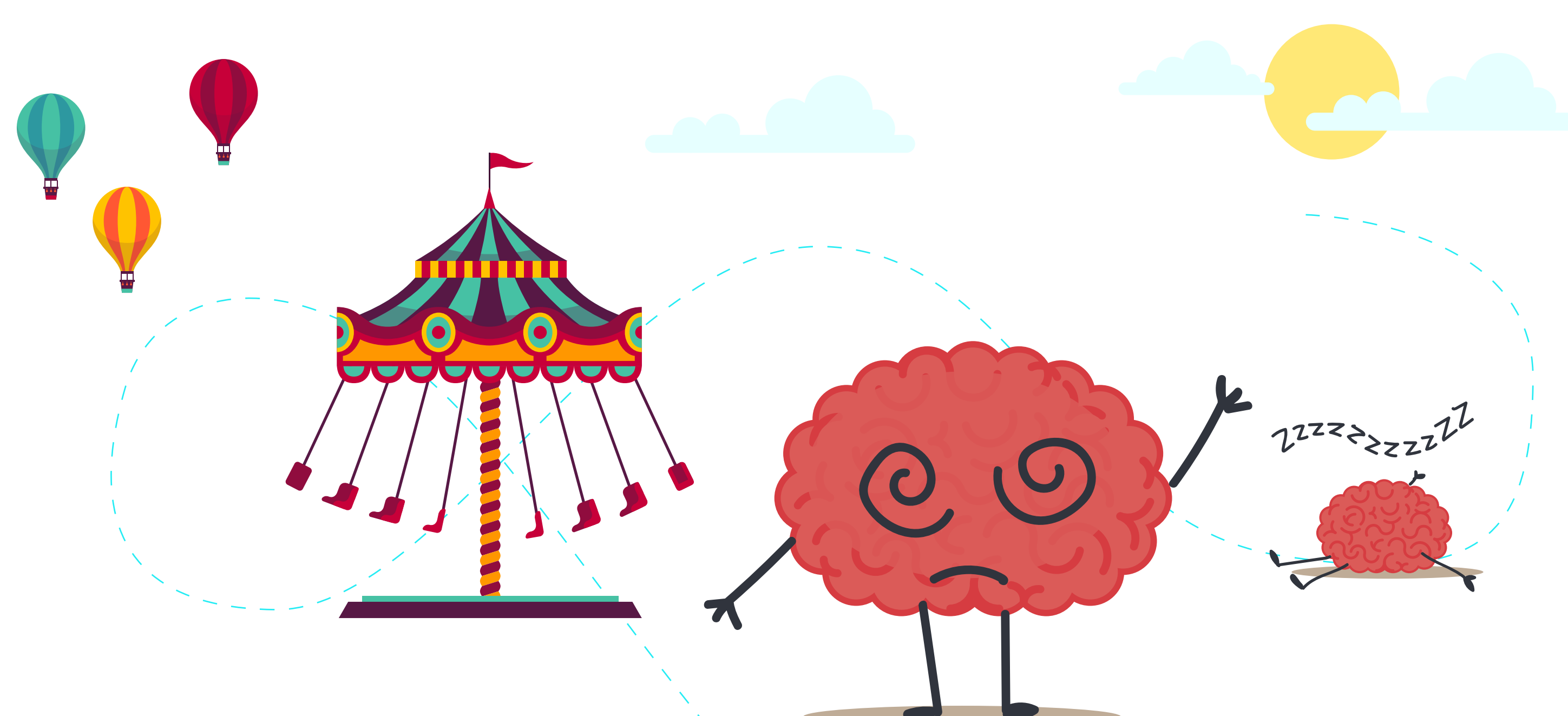
<https://brainconnections.ca/mood-and-gambling/>

THE BRAIN AND ADDICTION

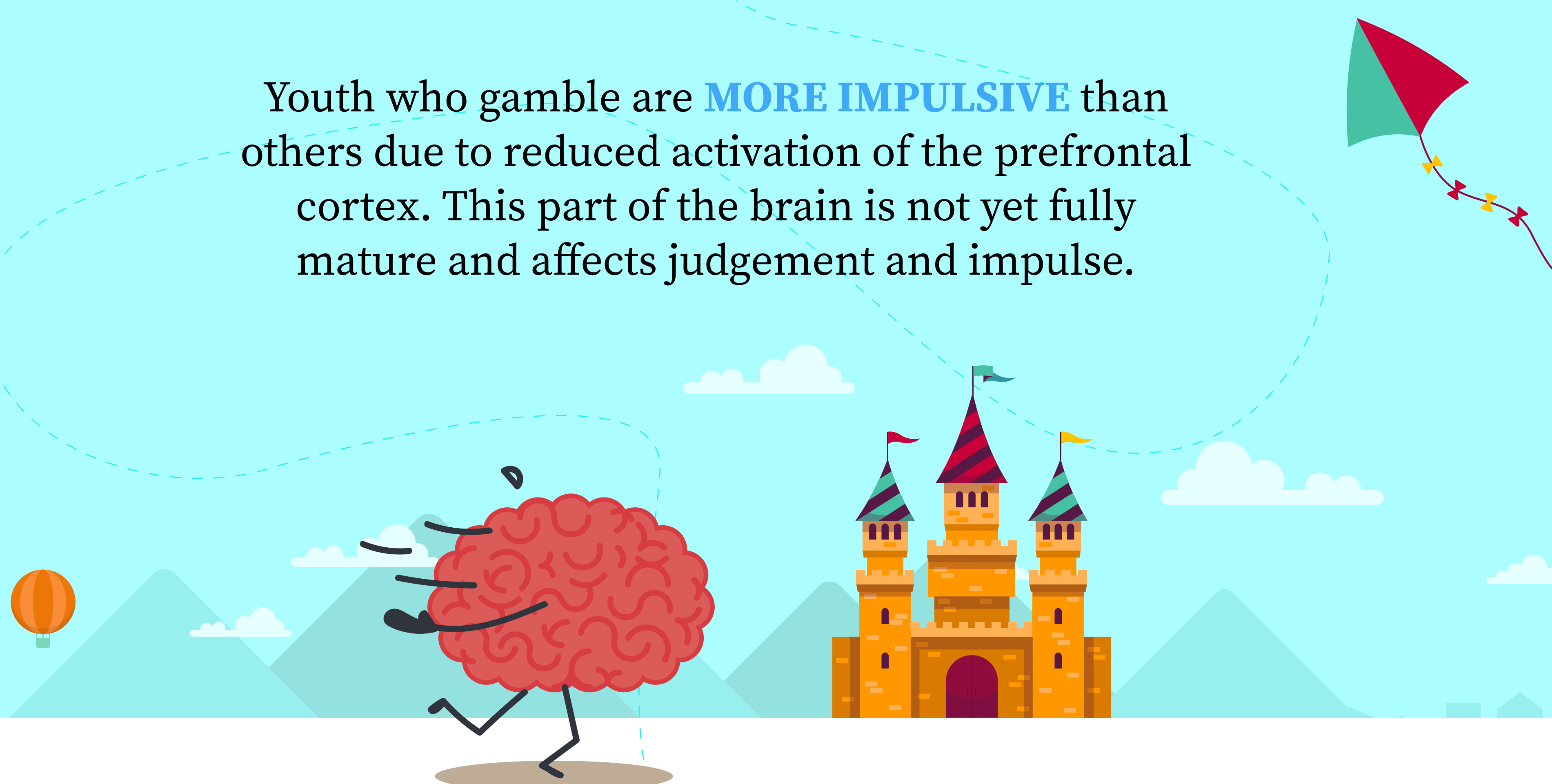
Problem gambling and addiction to drugs or alcohol develop in the brain in similar ways.



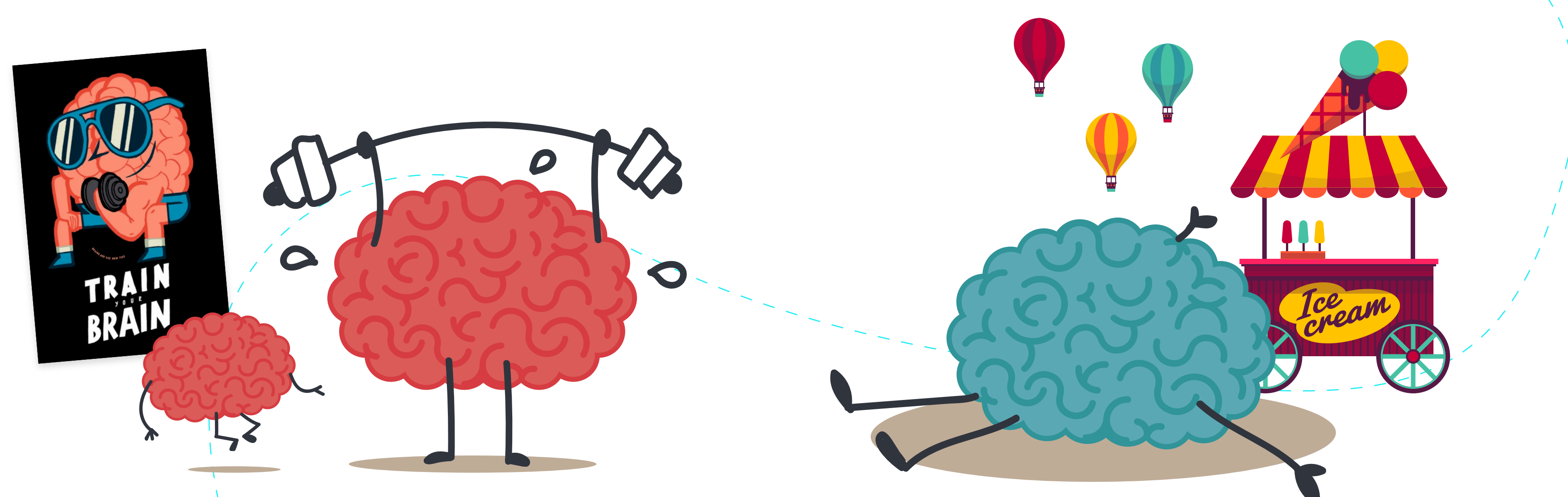
Gambling activates the brain's **REWARD NETWORK** in much the same way as drugs. But as gambling progresses, these rewards can become habit-forming and the gambler finds less pleasure in every day life.



Youth who gamble are **MORE IMPULSIVE** than others due to reduced activation of the prefrontal cortex. This part of the brain is not yet fully mature and affects judgement and impulse.

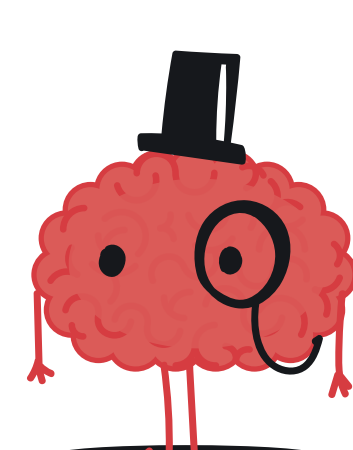


Problem gambling causes **INCONSISTENCIES** in how parts of the brain work together to control or stop behaviors that bring the individual pleasure.



**HEALTHY
BRAIN**

**ADDICTED
BRAIN**



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pdfurl=https%3A%2F%2Fbrainconnections.ca%2Fwp-content%2Fuploads%2F2020%2F05%2Fh1-
whykantistop.pdf&clen=1877698&chunk=true](chrome-extension://efaidnbmninnibpcajpcglclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Fbrainconnections.ca%2Fwp-content%2Fuploads%2F2020%2F05%2Fh1-whykantistop.pdf&clen=1877698&chunk=true)

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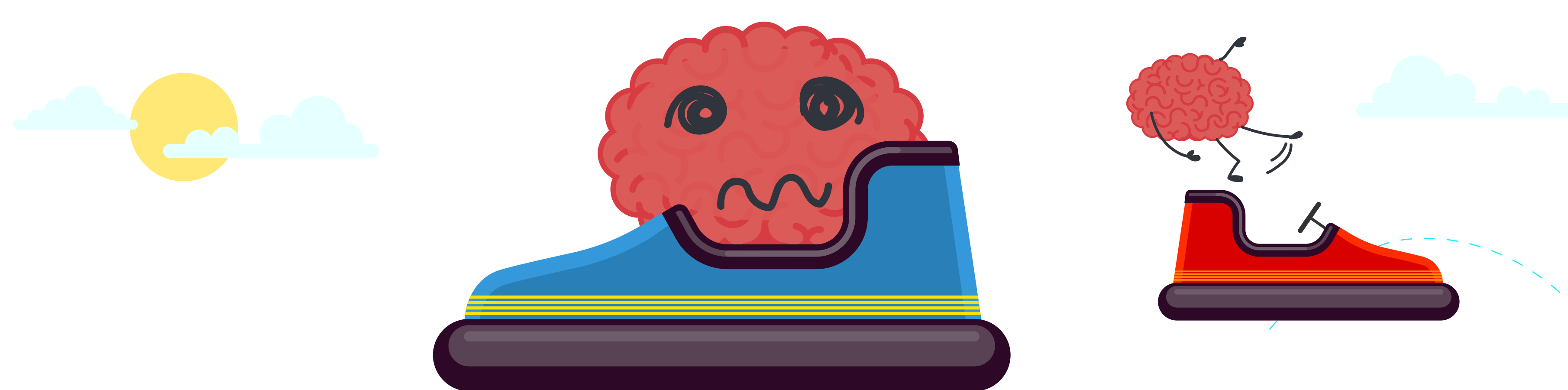
<https://brainconnections.ca/mood-and-gambling/>

THE BRAIN'S REWARD NETWORK

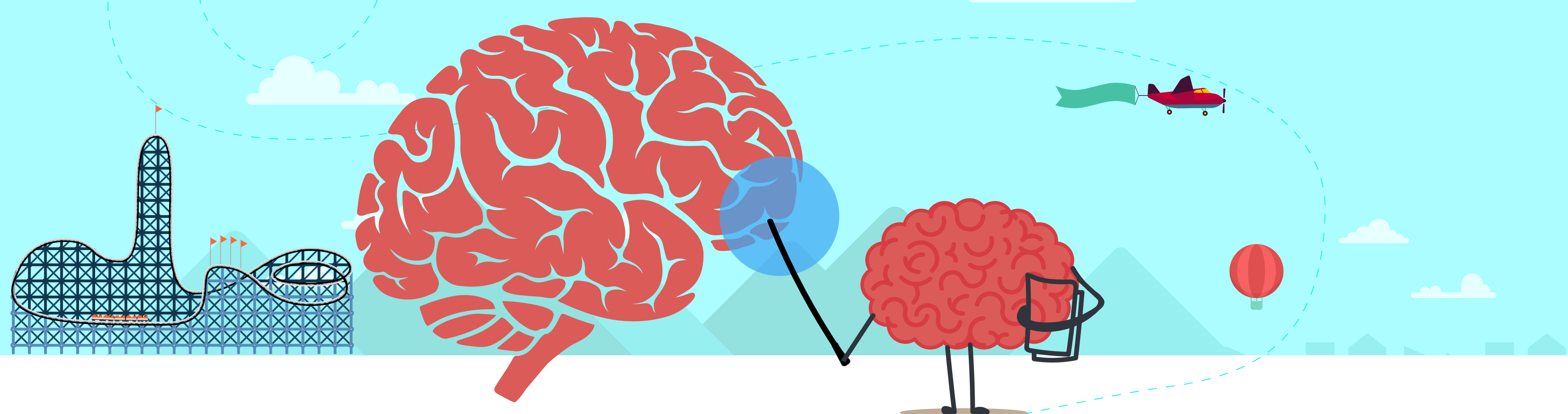
The brain's reward network ensures that we eat, sleep, drink water and other healthy behaviors, but addiction can hijack these functions. A lack of impulse control in the prefrontal cortex makes it more difficult for problem gamblers to stop gambling behaviors and less focus is placed on healthy self-care.



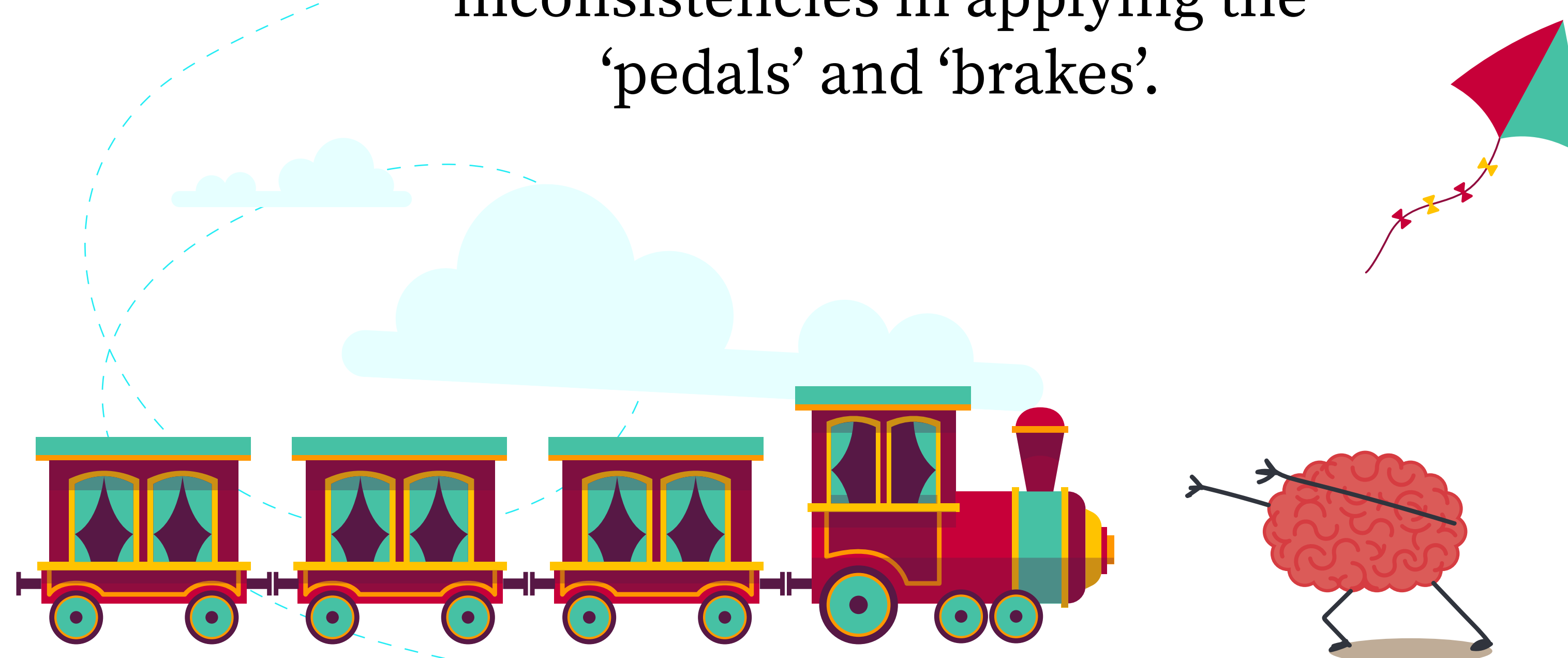
The brain's **REWARD HUB**, fueled by **DOPAMINE**, is like a gas pedal in a car- it's the **GO** that drives you to get what you want or what makes you happy.



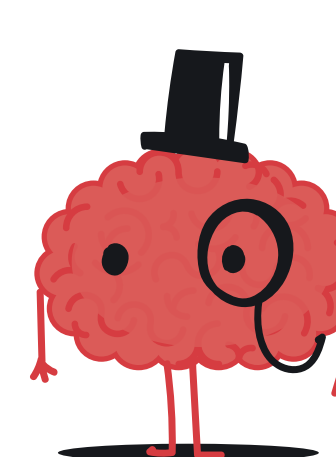
The brain's **TOP-DOWN NETWORK**, located in the pre-frontal cortex, is the 'brakes' to stop what you're doing.



The brain of a person with a **GAMBLING PROBLEM** shows inconsistencies in applying the 'pedals' and 'brakes'.



When given the 'stop' signal, the brain of an individual who gambles shows a **REDUCED ABILITY** to stop.



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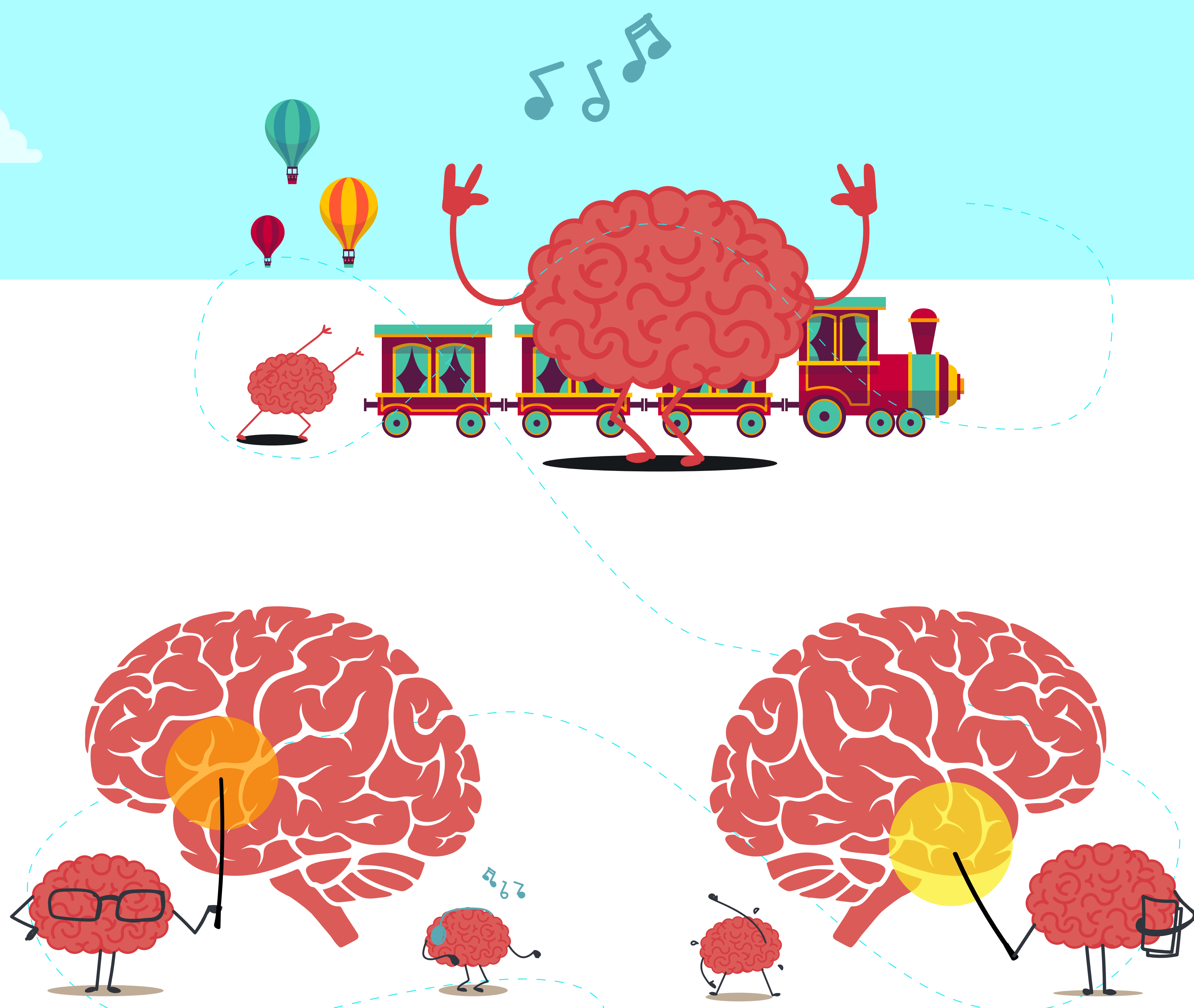
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THE BRAIN AND FORMING HABITS

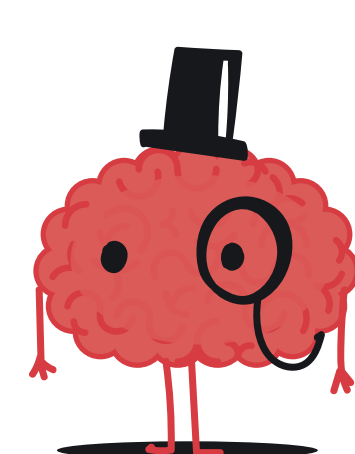
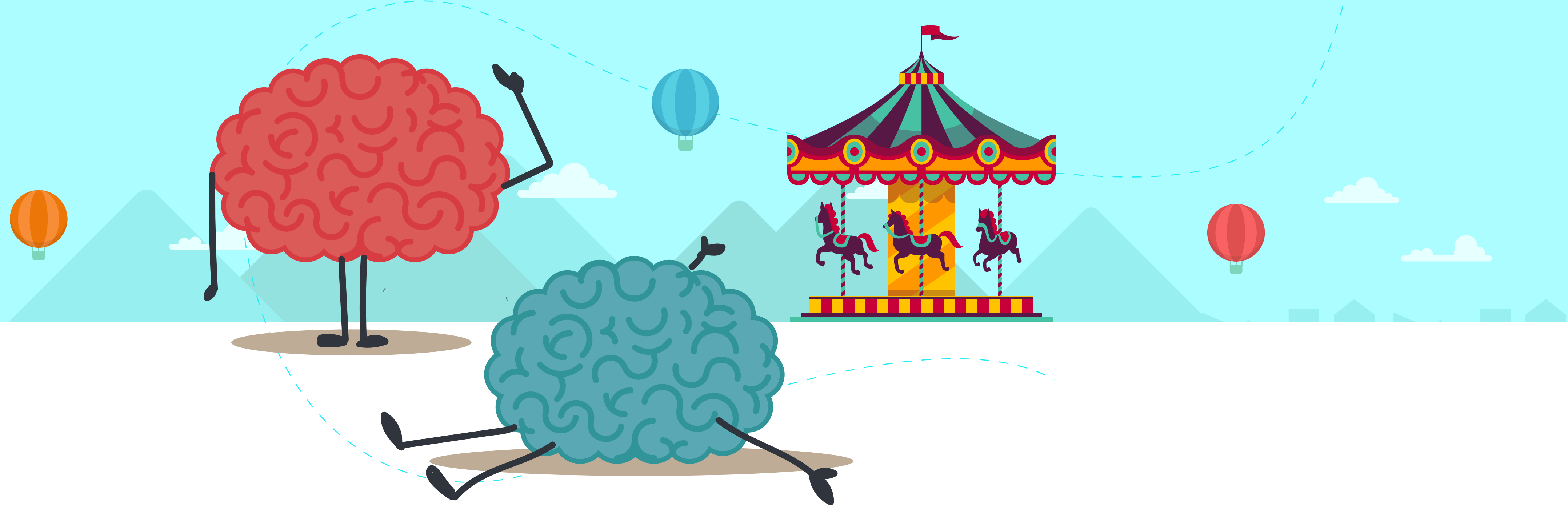
Inconsistencies in how the parts of the brain that work together to mediate pleasure can quickly evolve into habitual gambling.



The **VENTRAL STRIATUM**, also known as the ‘Reward Hub’, allows us to experience pleasure. The Reward Hub lights up when we want something or when we anticipate that something will be rewarding.

The **DORSAL STRIATUM**, also known as the ‘Habit Hub’ helps us to establish habits. When we over-engage in pleasurable behaviors, brain activity shifts from the Reward Hub to the Habit Hub and a habit is formed.

Normally, these two hubs work **TOGETHER**, but the habit hub ends up changing the brain.



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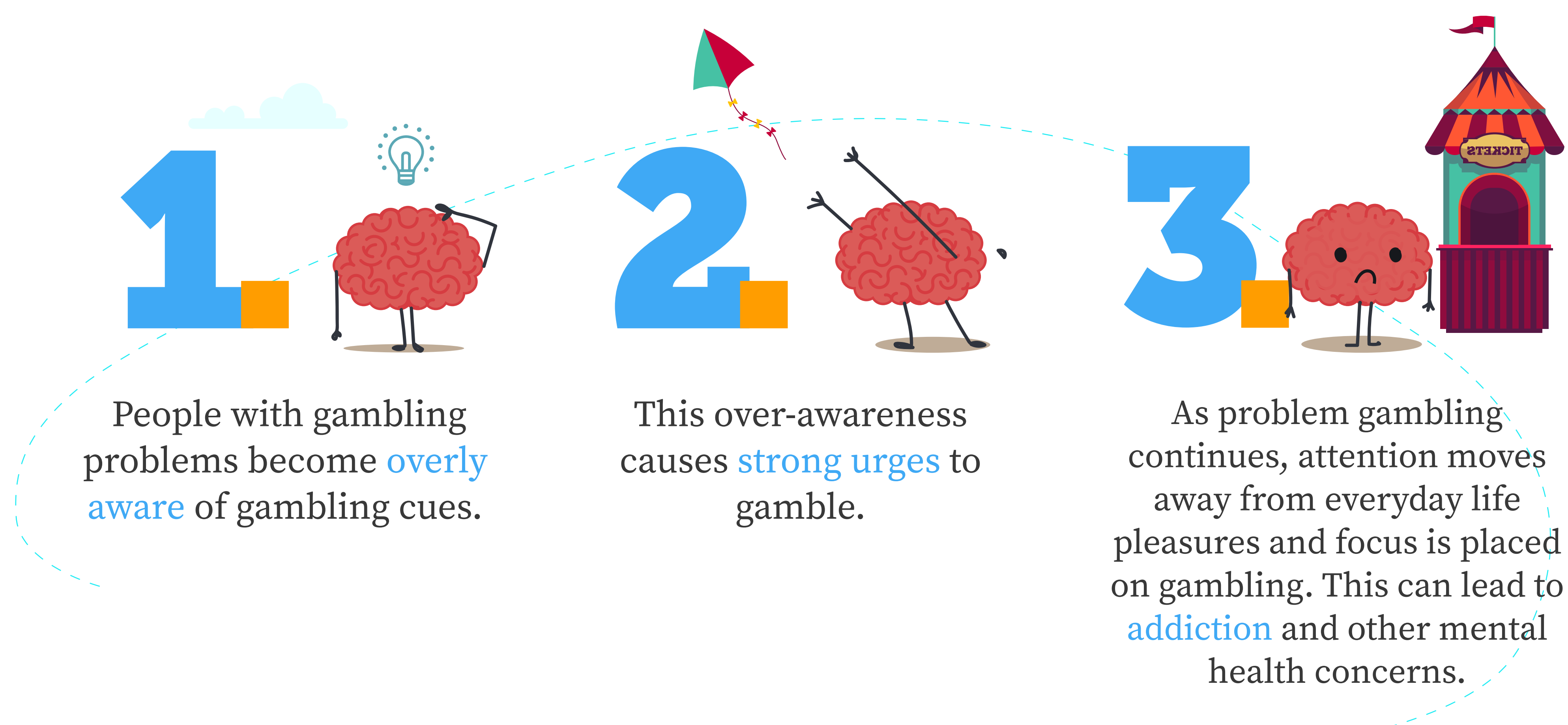
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GAMBLING CUES AND THE BRAIN

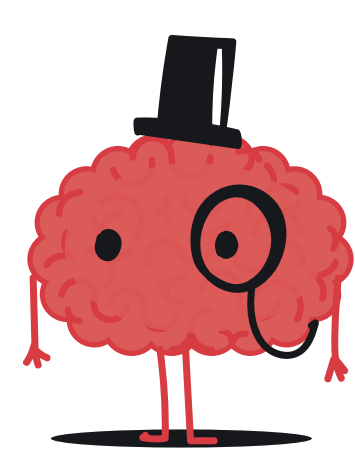
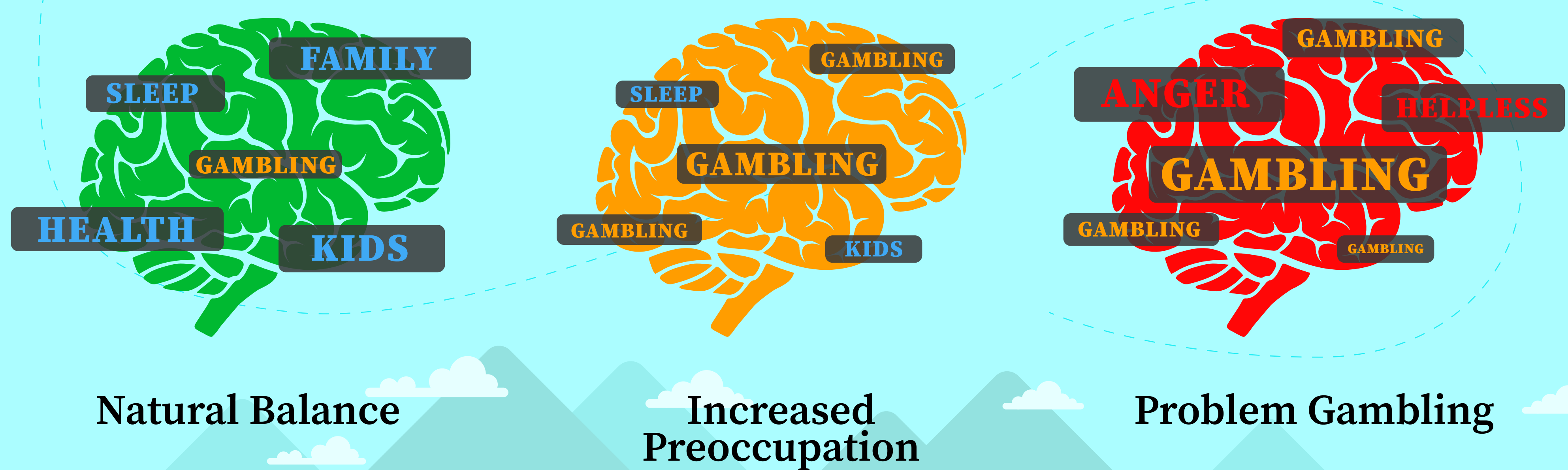
Changes in the brain's attention network causes increased focus on gambling cues and contributes to continued problem gambling.



This change in the brain results in **THREE** things:



Let's take a closer look at these discoveries:



Resource Links:

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<https://www.brainfacts.org/Diseases-and-Disorders/Addiction/2015/Gambling-Addiction-and-the-Brain>

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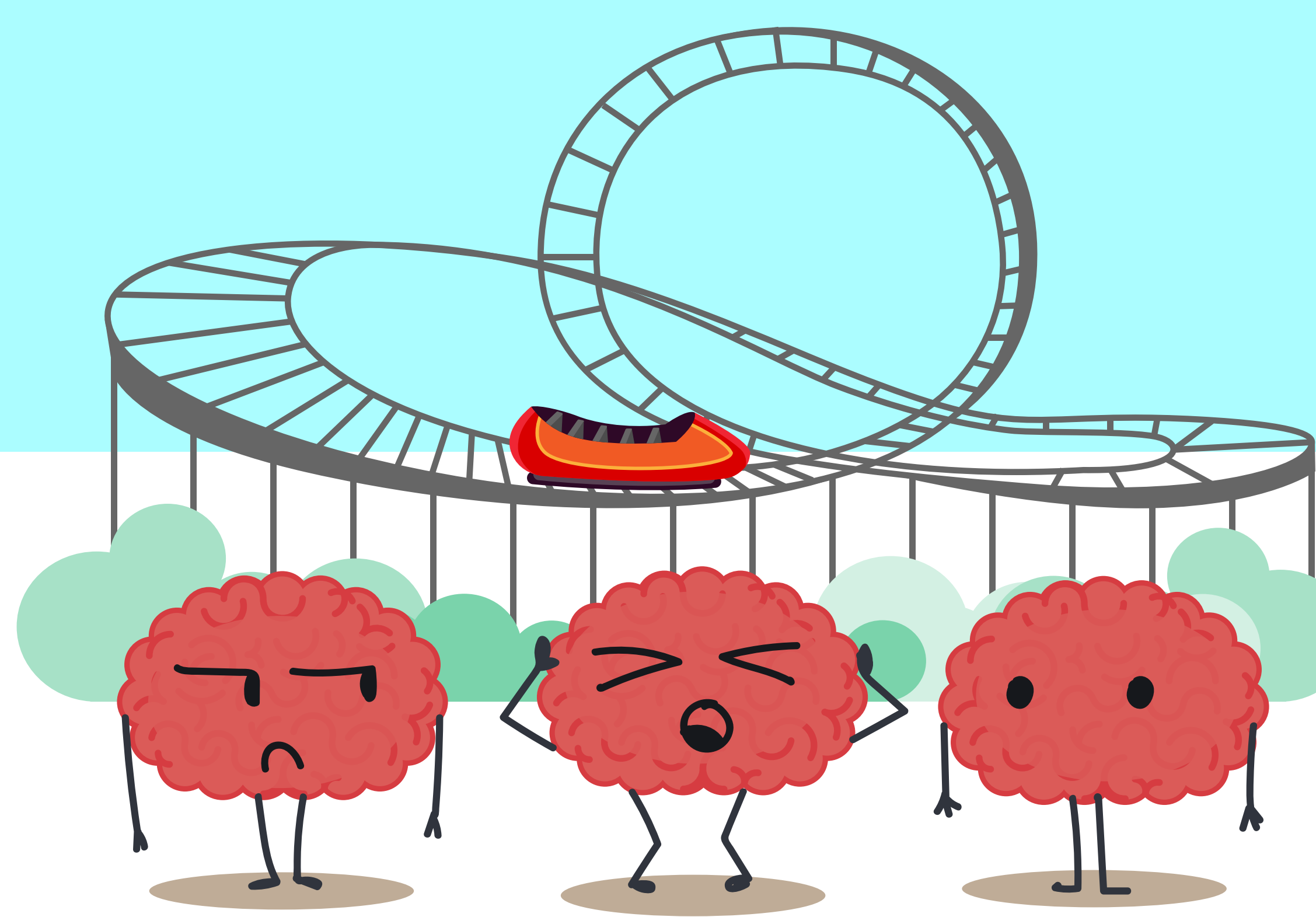
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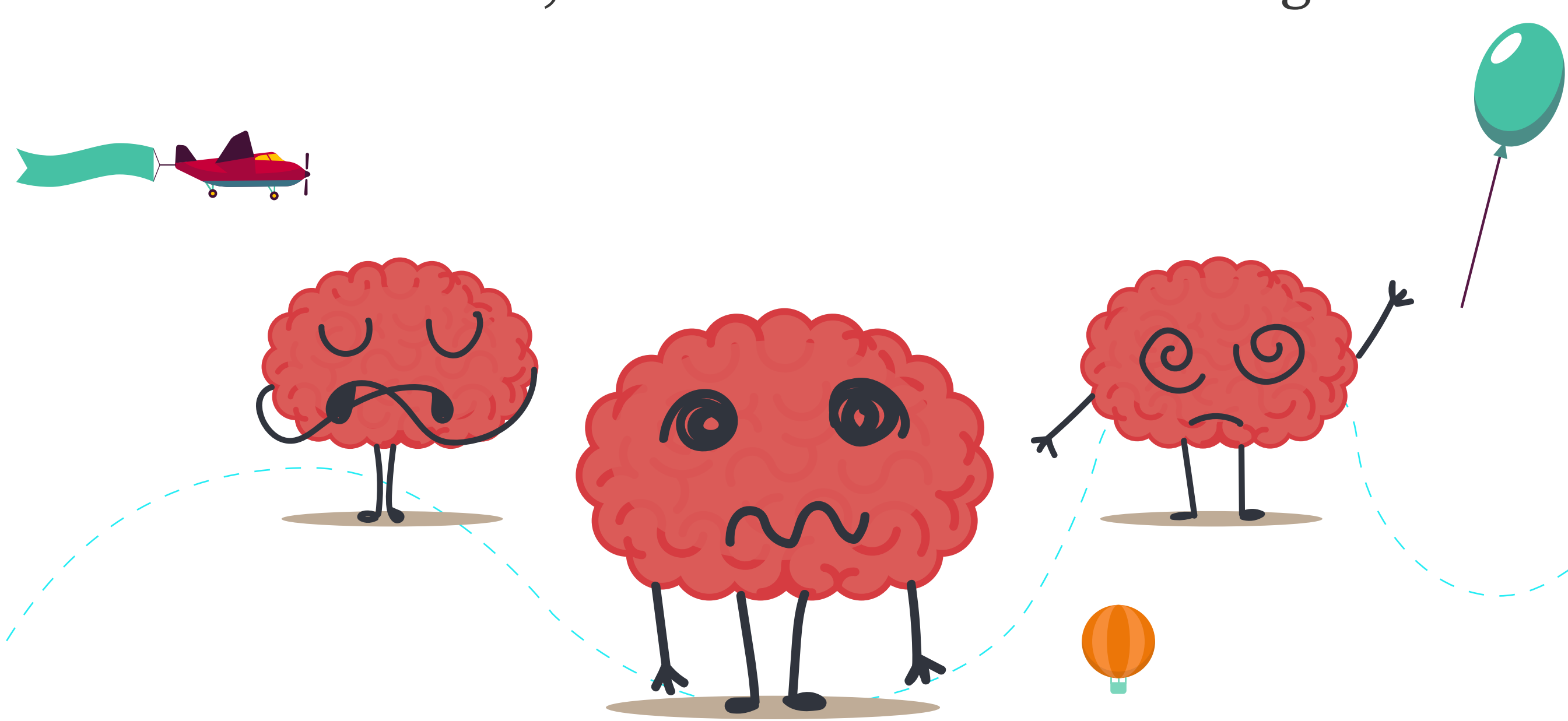
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GAMBLING AND MOOD

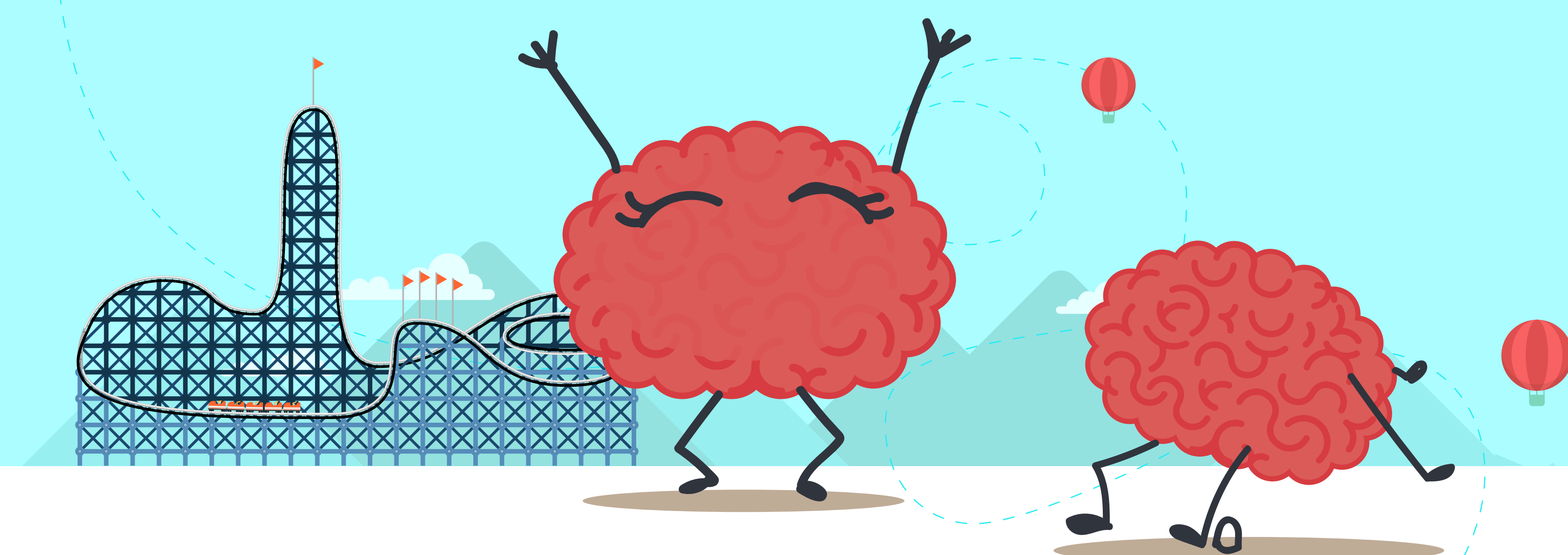
Changes in the brain of a problem gambler can affect their mental health and their ability to derive pleasure from everyday life.



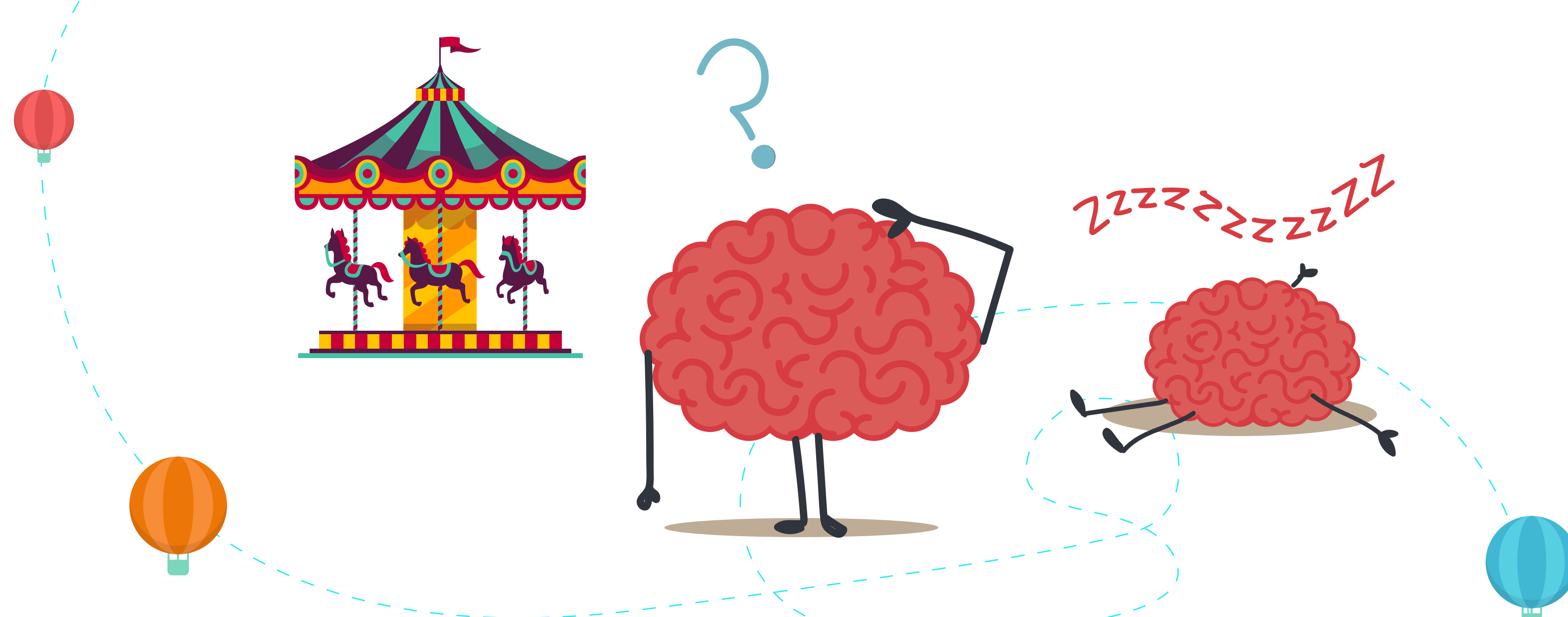
The '**NORMAL BASELINE**' is the natural mood that can shift slightly day to day. With addiction, the natural baseline changes.



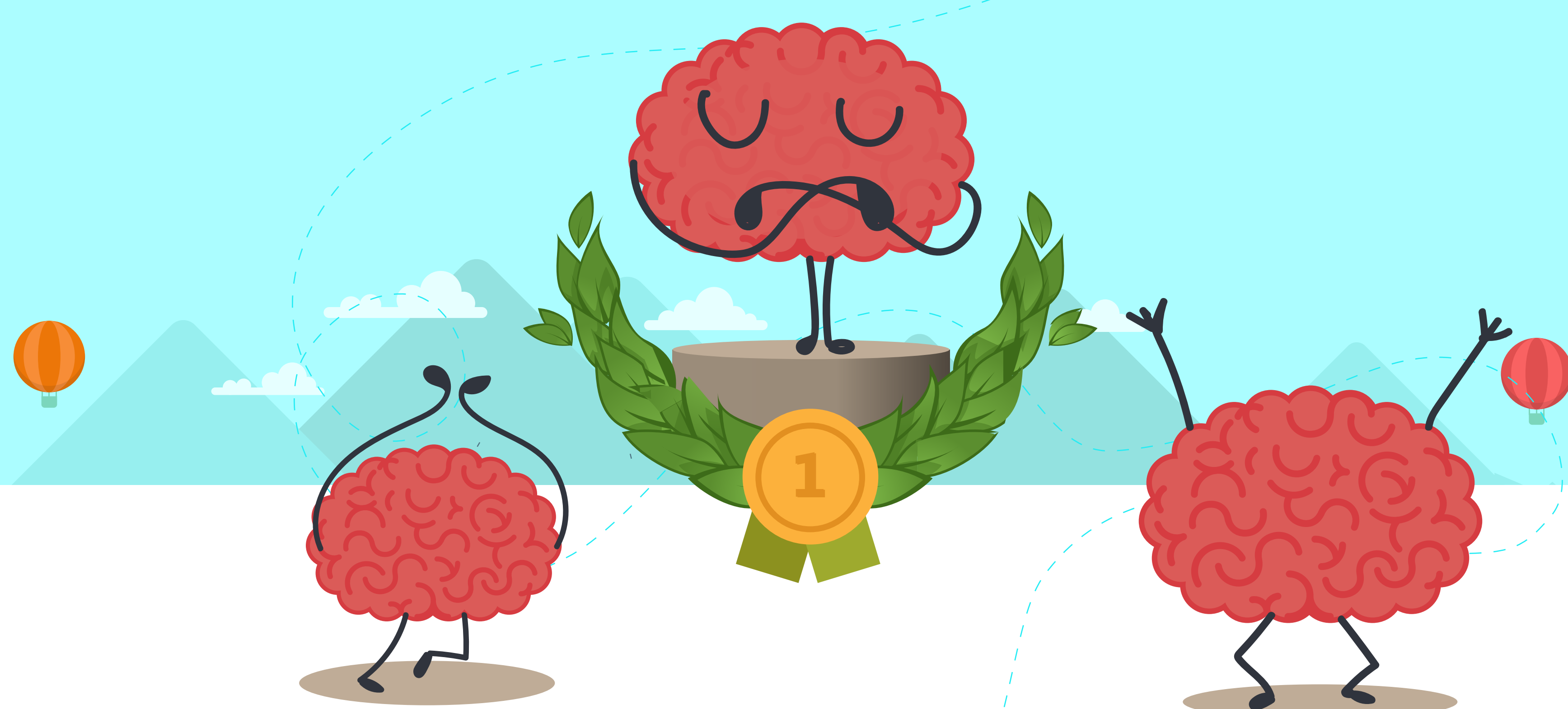
When an individual gambles, their brain gets a flood of **DOPAMINE** from the excitement they feel. The more that the individual gambles, the more they flood their brain with dopamine. This makes the individual feel great!



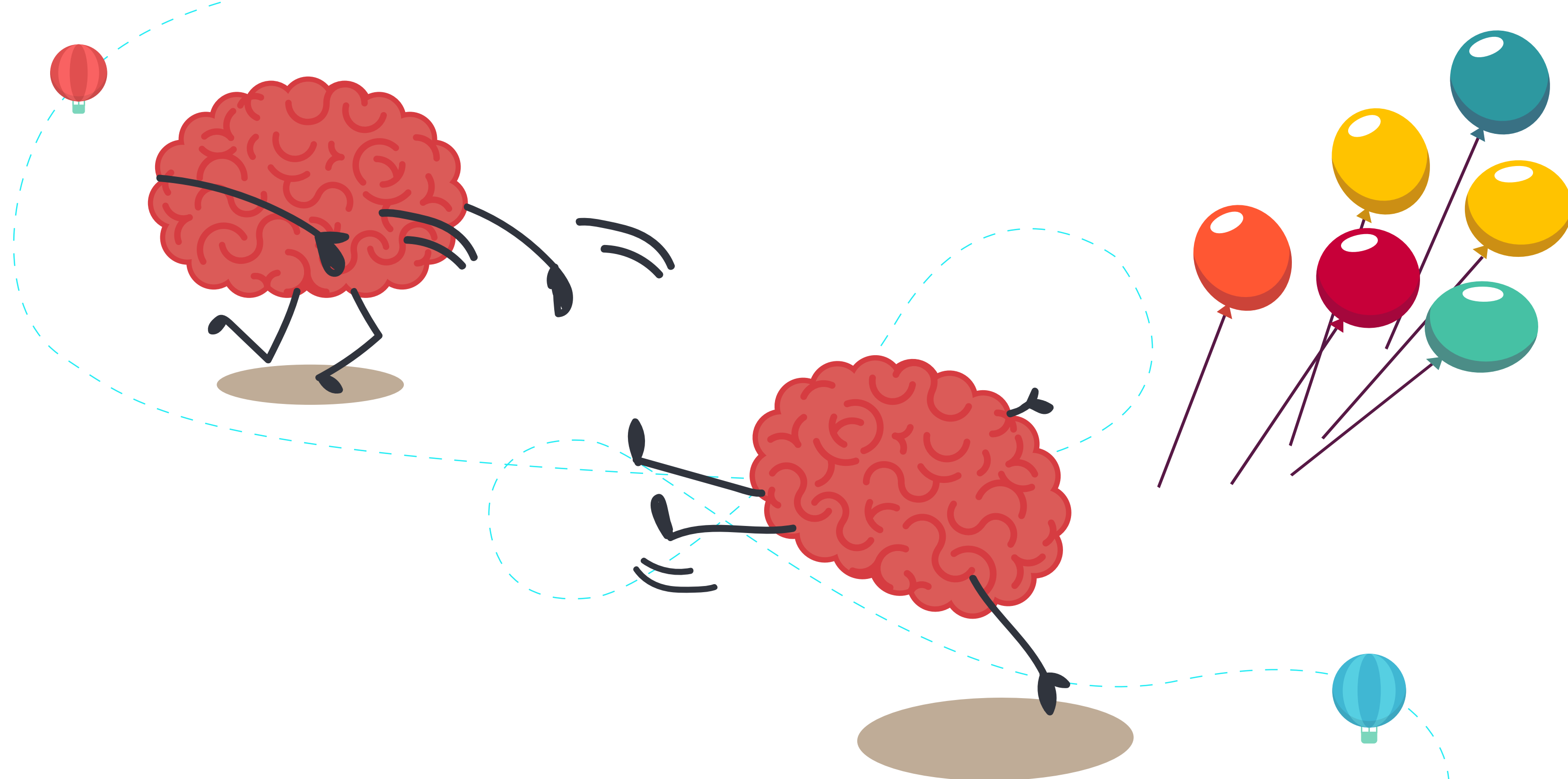
As gambling progresses, the brain will tell itself to stop producing dopamine for regular experiences, including gambling. When less dopamine is produced in the brain, the individual's baseline drops. This can contribute to feelings of **DEPRESSION** and **SHAME** as a result of their gambling.



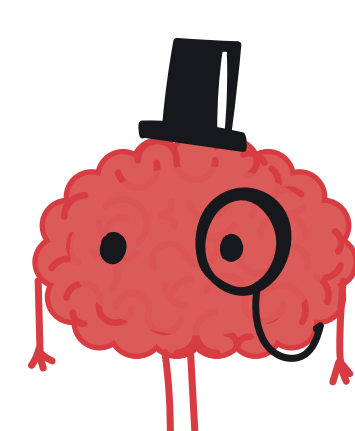
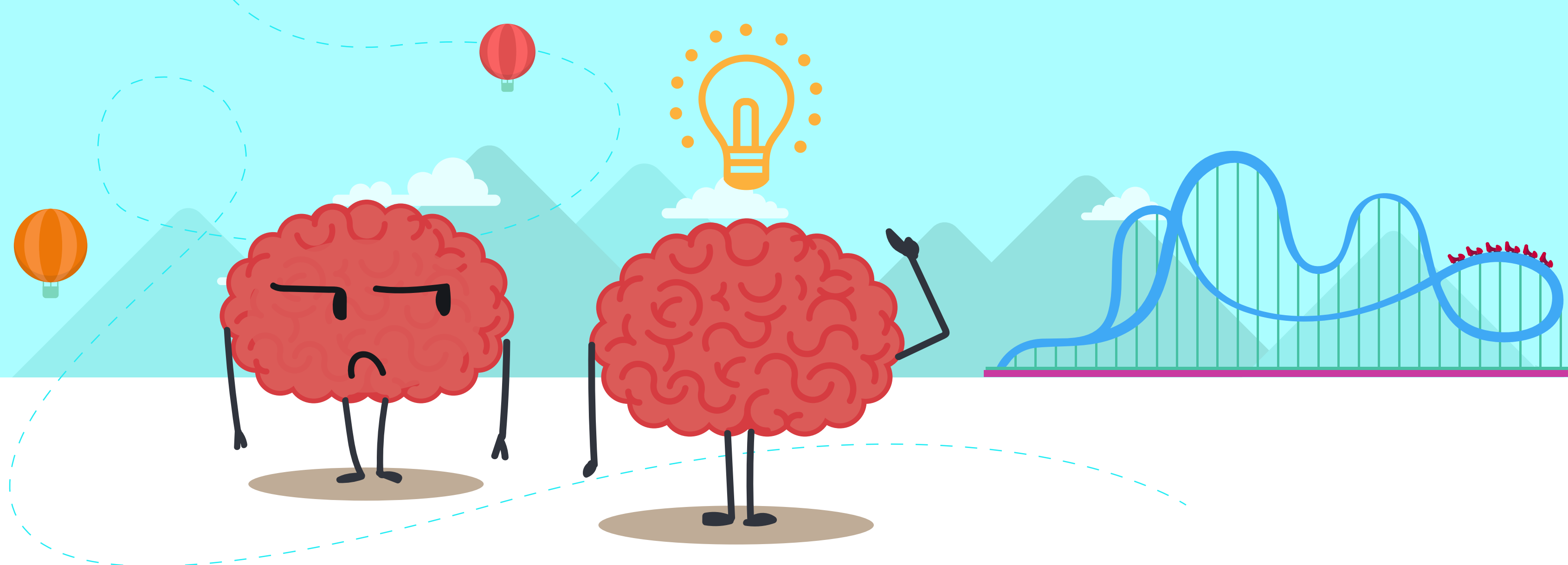
Getting pleasure from **NATURAL REWARDS** (relationships, school, achievements) becomes difficult.



Gambling no longer brings as much **EXCITEMENT**, but also a person's baseline is lower even when they're not gambling.



Experiencing pleasure in everyday life is **DIFFICULT** for those experiencing a gambling problem because the brain is still focused on gambling cues and doesn't respond well to natural rewards from family, friends, relationships, school or work.



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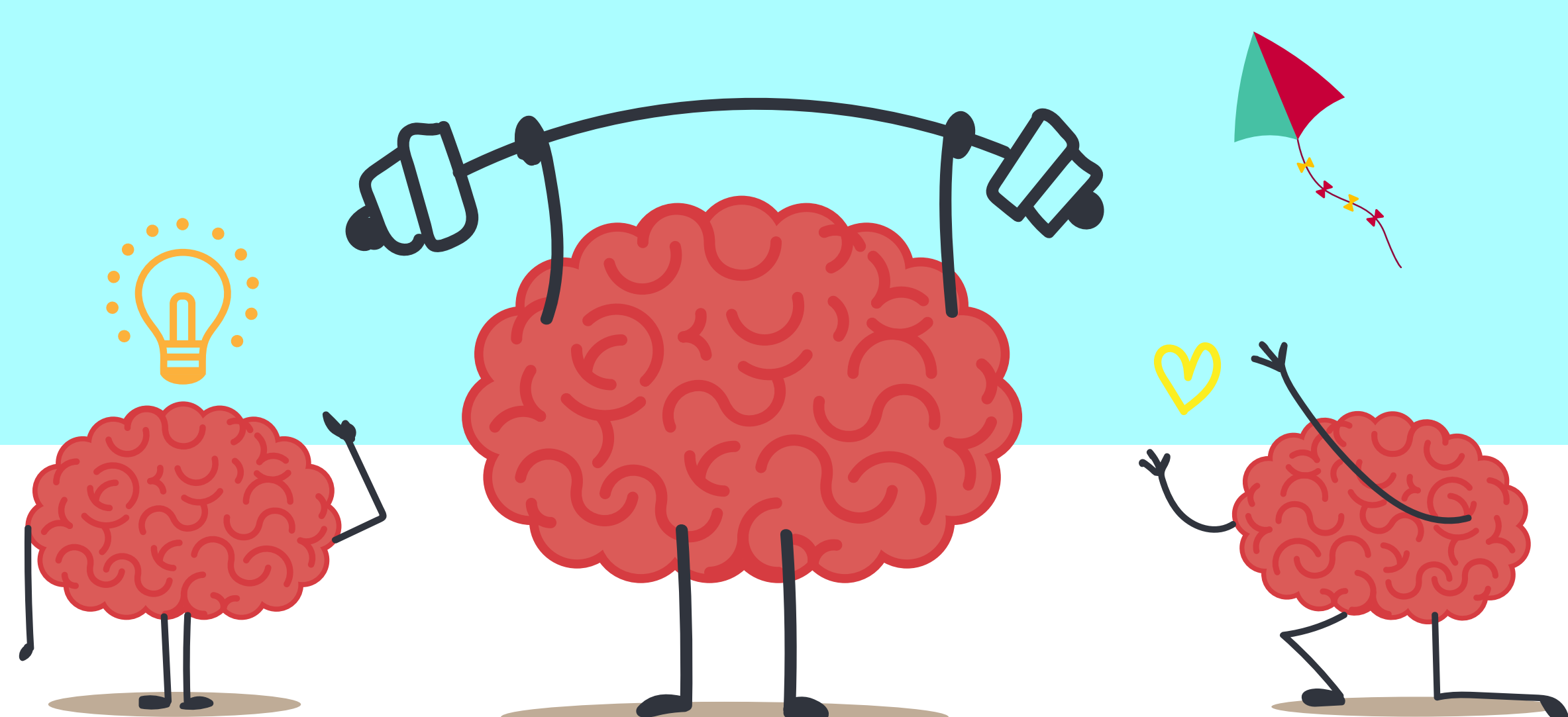
<http://www.youthgambling.com/>

<https://brainconnections.ca/mood-and-gambling/>

CHANGE

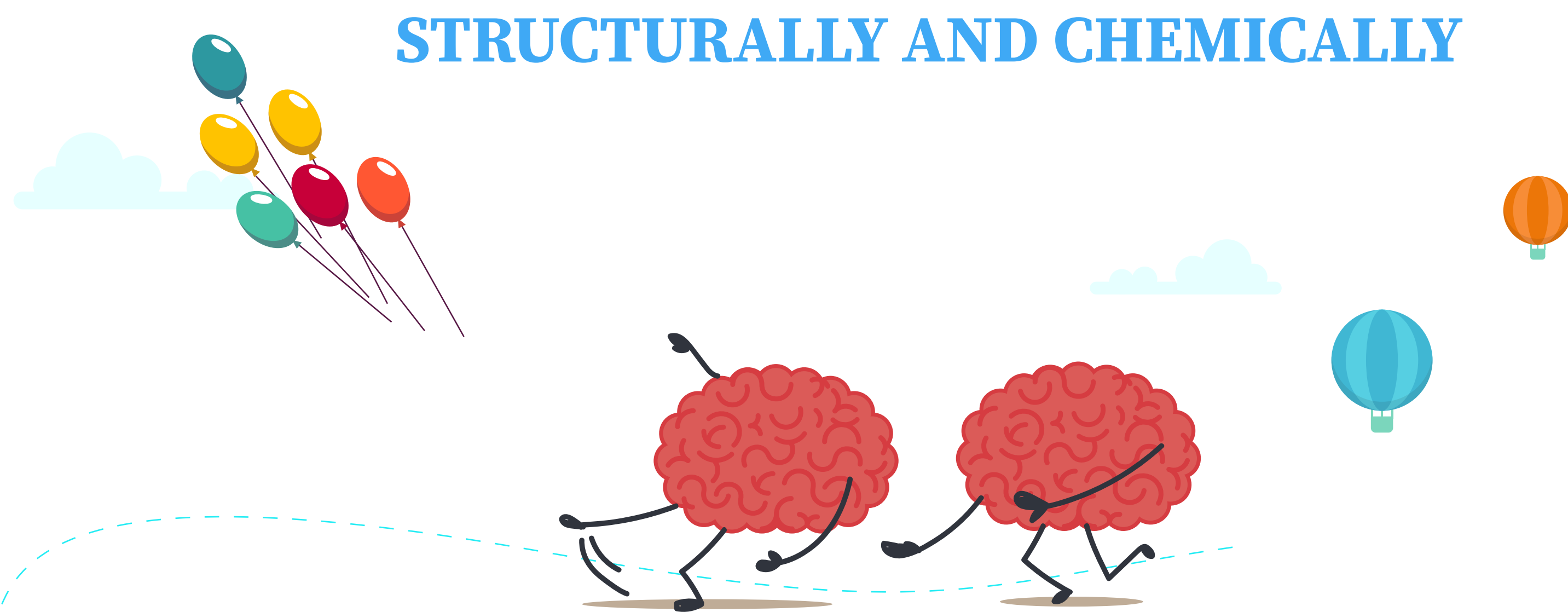
YOUR BRAIN

The brain can change with abstinence and interventions to reduce or end problem gambling

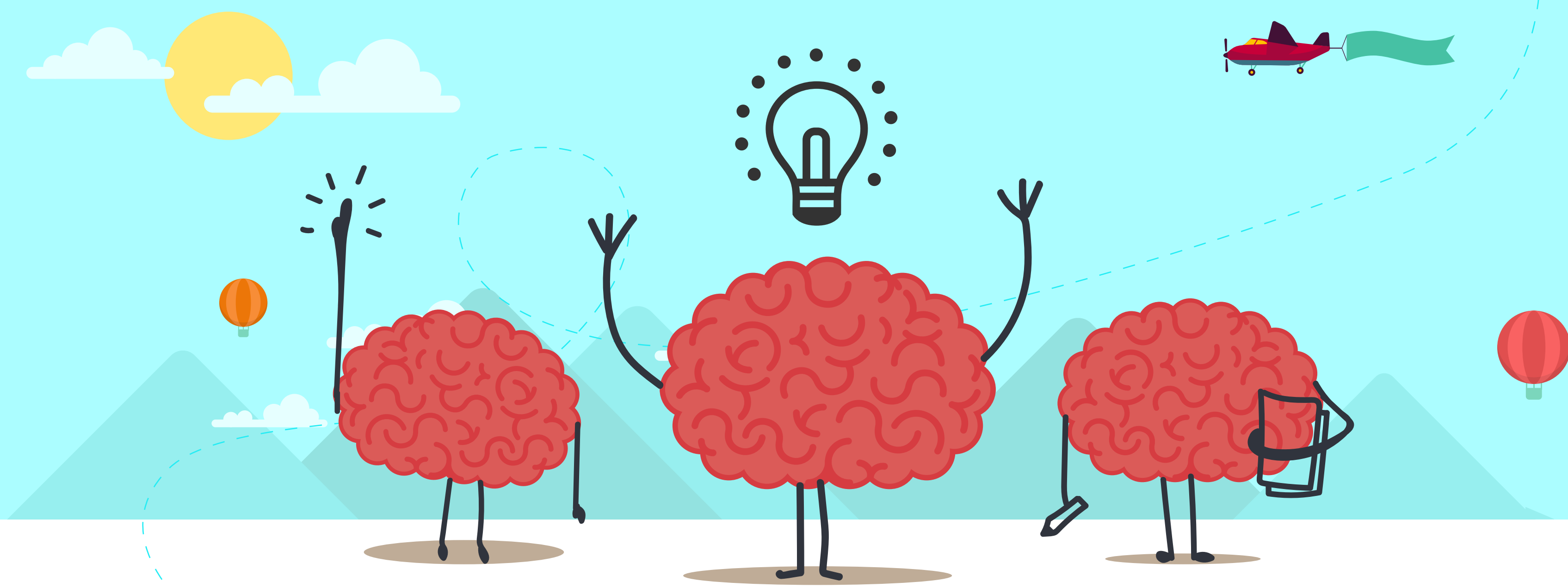


The brain is always changing and the brain can recover

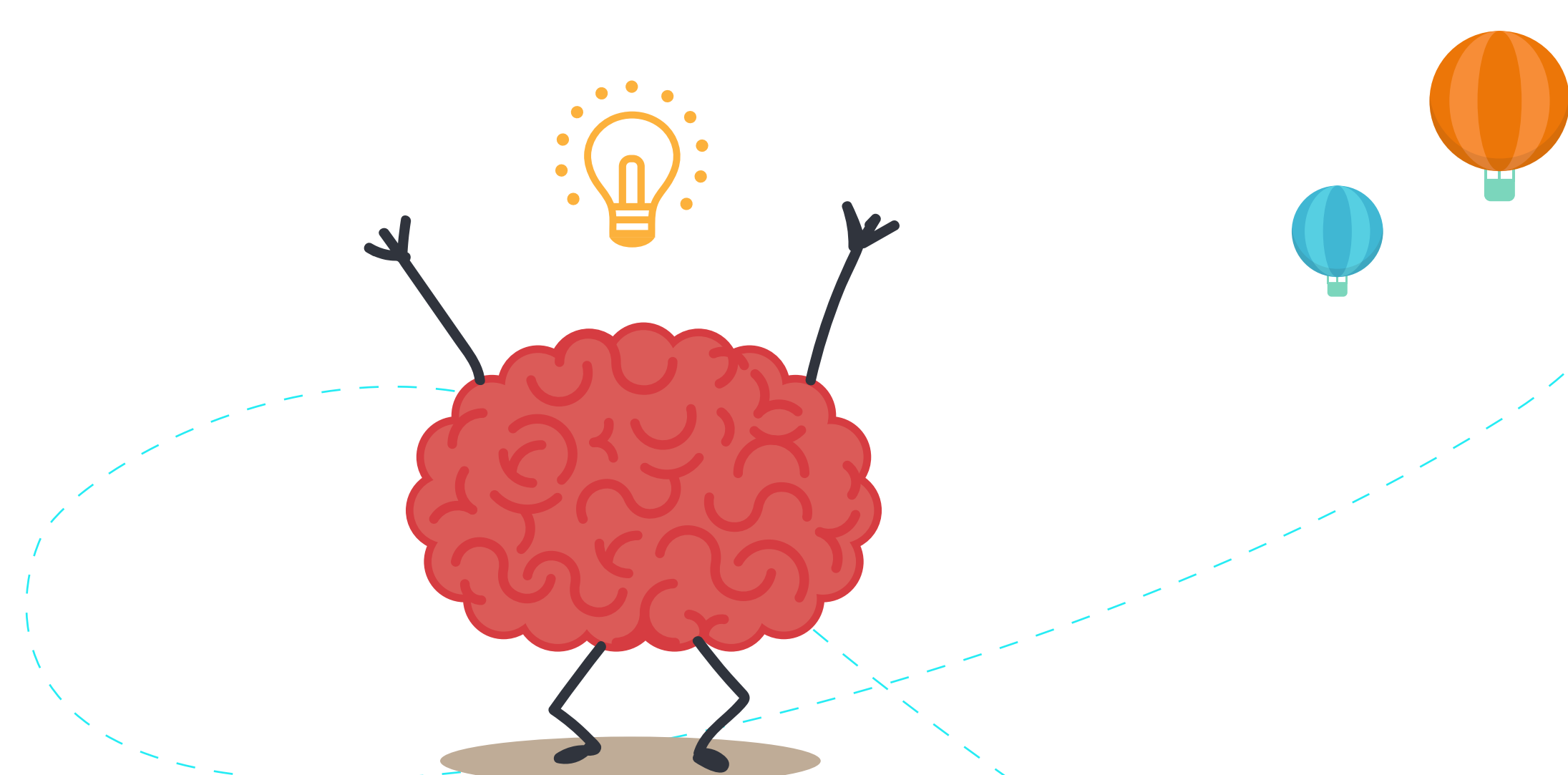
STRUCTURALLY AND CHEMICALLY



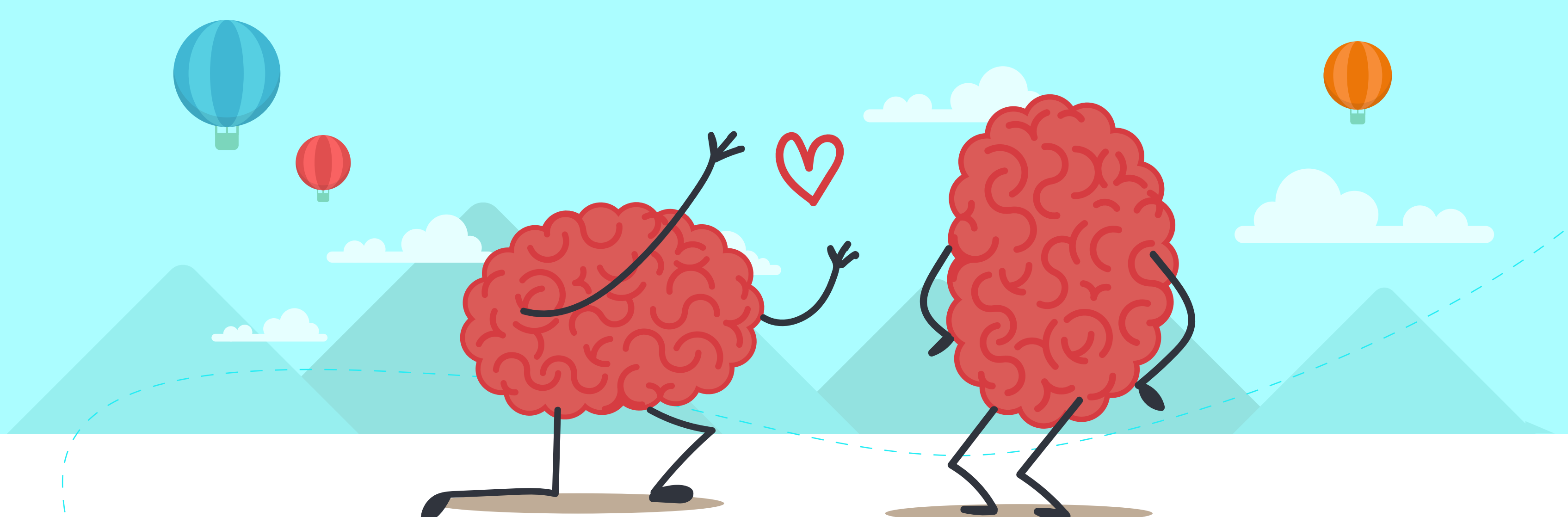
Research on how the brain **RECOVERS** from addiction is just starting, but so far, early findings look **PROMISING**.



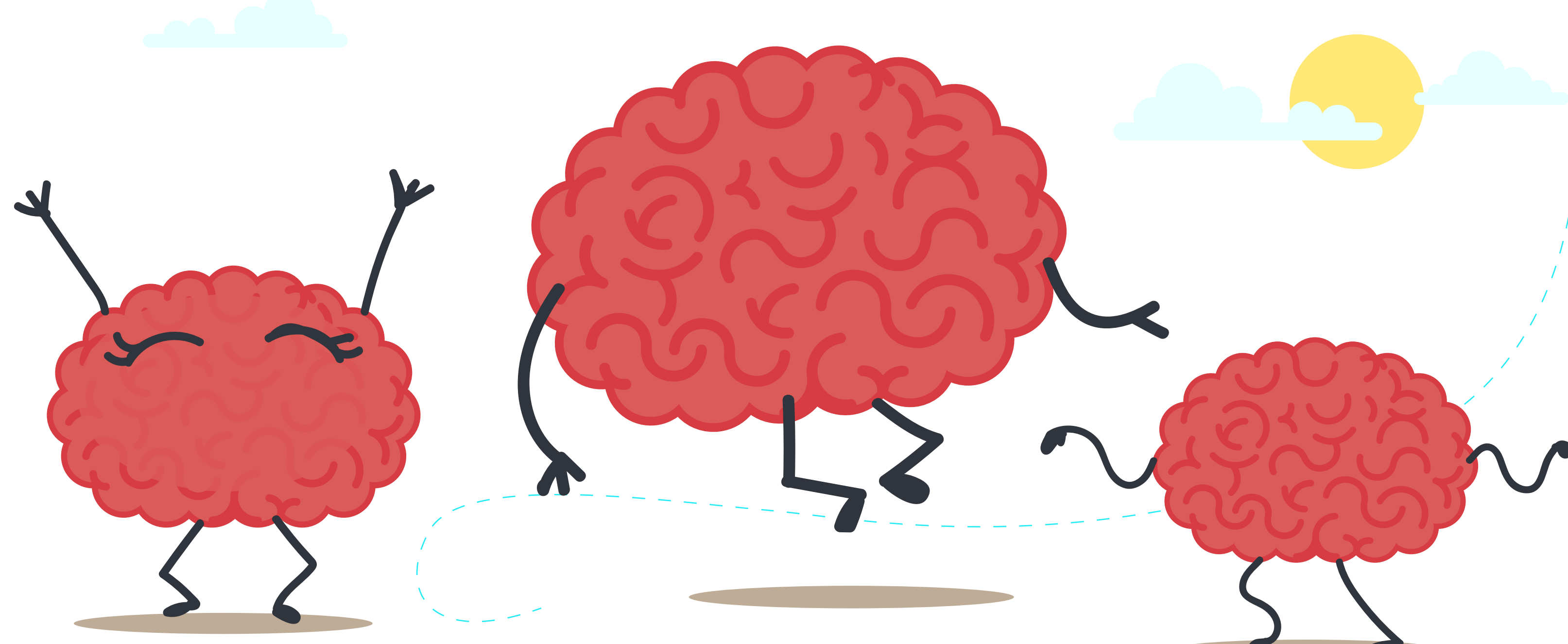
Studies show that after only **FOUR MONTHS OF ABSTINENCE**, individuals with addiction can again respond to non-gambling or ‘neutral’ cues, and show a **REDUCED URGE** to engage in gambling or other problem behaviors.



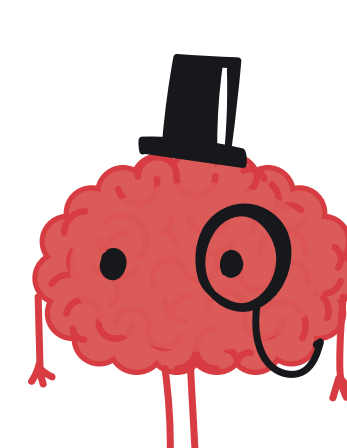
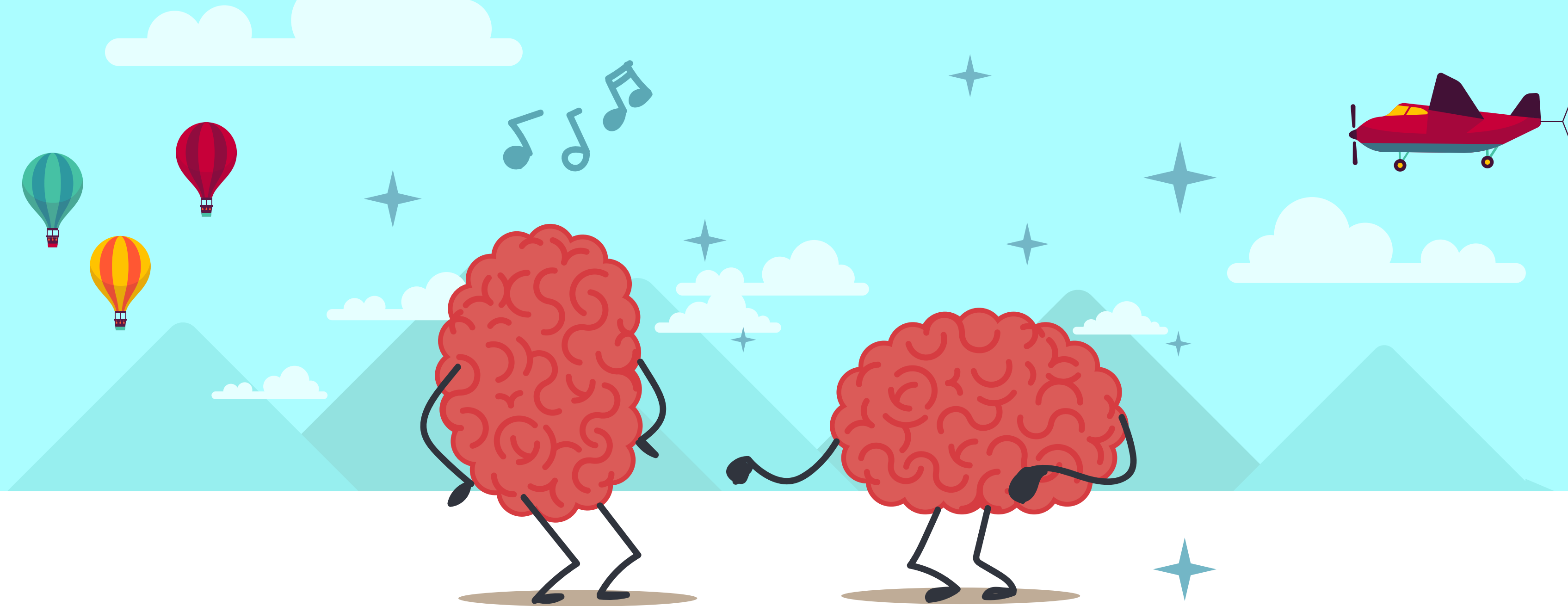
NEUTRAL CUES normally engage the **REWARD HUB** in the brain of a non-addict. Examples include: family, relationships, jobs, health, self-care and other parts of our life that we consider **FULFILLING** and **REWARDING**.



This is a **POSITIVE SIGN** for people with a gambling problem. It shows that the brain **CAN CHANGE**.



The networks in the brain that may have been altered from **ADDICTION** can revert back to **NORMAL BRAIN FUNCTION**, giving hope to individuals who struggle with addiction.



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