



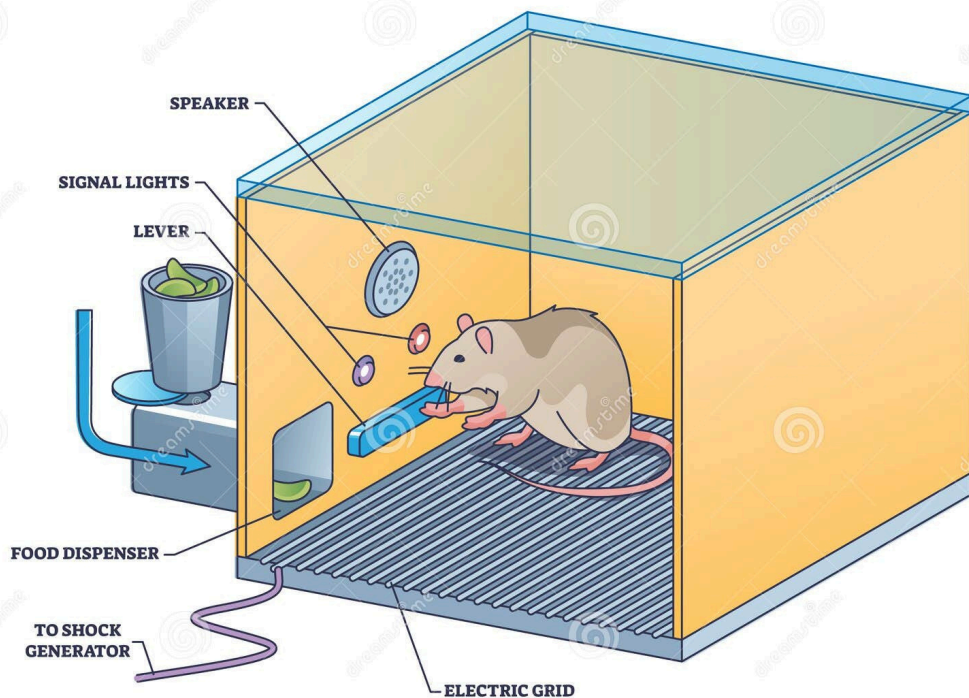
VARIABLE REWARD, SOCIAL MEDIA, & MENTAL HEALTH

The pervasive influence of social media is reflected in the 5 billion users worldwide. But what drives people to engage, sometimes obsessively, with others on social media? In 2019, more than four billion people spent several hours per day, on average, on platforms such as Instagram, Facebook, Twitter, and other more specialized forums. This pattern of social media engagement has been likened to an addiction, in which **people are driven to pursue positive online social feedback to the detriment of direct social interaction and even basic needs like eating and sleeping.**

SOCIAL MEDIA: A SKINNER BOX FOR THE MODERN HUMAN

Regarded as the father of Operant Conditioning (shaping behavior through consequences), psychologist B. F. Skinner put rats in 'Skinner boxes' to **study how he could modify their behavior using rewards and punishments.** Skinner's basic technique was to give the rats a cue that triggered them to engage in an activity that provided them with a reward -- see the button light up, press the lever, and get food.

SKINNER BOX



Notably, Skinner found that the strongest way to reinforce a learned behavior in rats was to reward it on a random schedule. **Humans are no different.** If people perceive a reward to be delivered at random, and if checking for the reward comes at little cost, people end up checking habitually. If social media users pay attention, they might notice that they check phones at the slightest feeling of boredom, purely out of habit. Programmers work very hard behind the screens to keep users doing exactly that.

Dopamine is key
in predicting
rewards.

REWARDS PRODUCE LEARNING

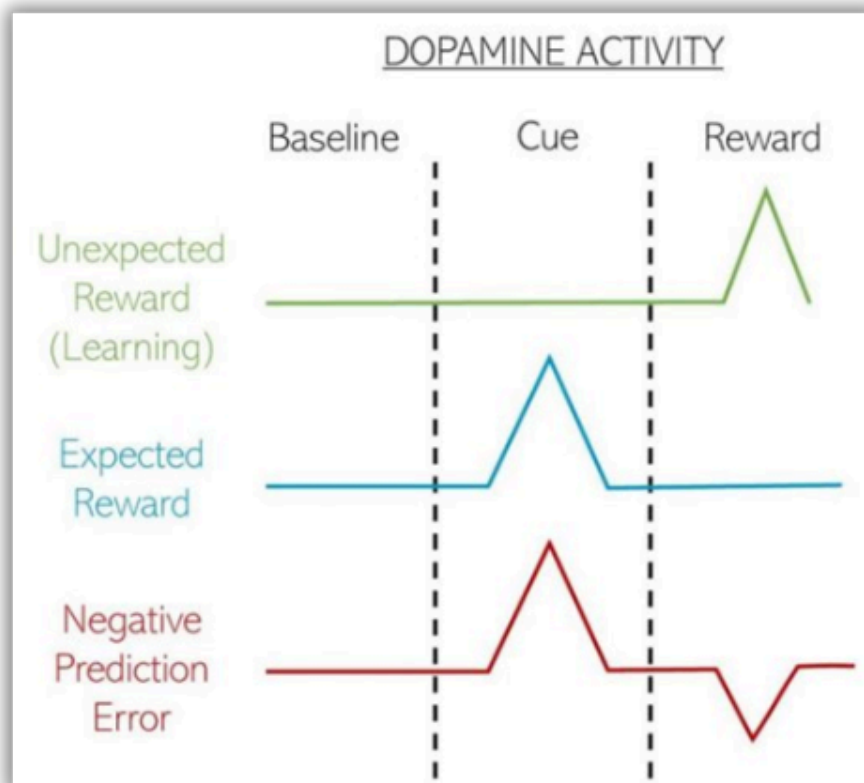
Social media platforms use prediction errors to keep users engaged. A prediction error happens when our expectation does not match what actually happens. The brain uses these errors to help us learn and adjust our behavior based on new information and rewards the learning process with a surge of dopamine. By creating these surprises, social media keeps us coming back for more. **Prediction errors fall into two categories:**

1) Positive Prediction Error: This happens when the outcome is better than expected. For example, if you expect to receive 10 likes on a social media post but end up getting 50, your brain experiences a positive prediction error. This increases dopamine levels, reinforcing the behavior that led to this positive outcome.

2) Negative Prediction Error: This occurs when the outcome is worse than expected. For instance, if you expect to get 50 likes on a post but only receive 10, your brain experiences a negative prediction error. Although this decreases dopamine levels, the variability keeps us engaged because we enjoy the suspense.

In an interview with "60 Minutes," **it was revealed that Instagram's algorithms sometimes withhold likes to deliver them in larger amounts later.**

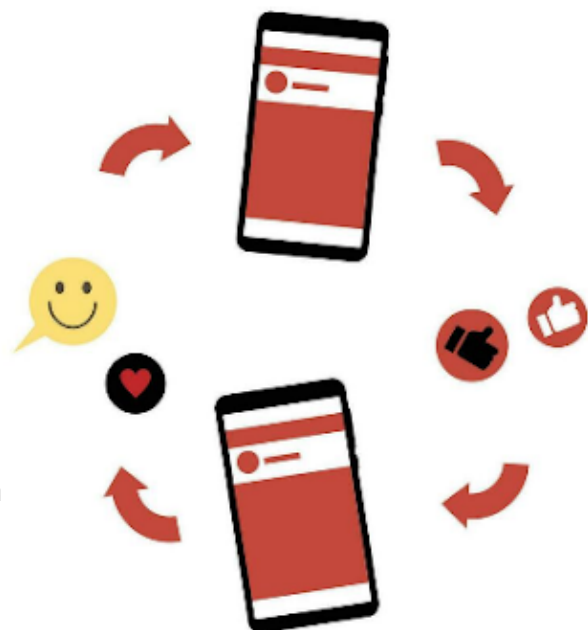
Initially, if a post gets fewer likes than expected, it is a negative prediction error. Later, if it gets more likes unexpectedly, it is a positive prediction error, making us more likely to check back. Instagram uses this understanding to maximize engagement. When users receive unexpected likes, they feel better about their posts, reinforcing the behavior.



LUDIC LOOP

The term "ludic loop" describes a cycle of repetitive actions often linked to gambling but also relevant to social media use. It describes **a pattern where a person enters a calm, near-tranquil state by doing the same thing over and over again, such as checking their smartphone, scrolling through social media feeds, or playing games.**

This cycle is driven by intermittent rewards, much like a slot machine, where an occasional "valuable" social media notification keeps the person hooked and wanting more. Breaking the ludic loop is tough because it not only offers distraction but also **gives the illusion of productivity.**



DOPAMINE DEFICIT: SOCIAL MEDIA AND MENTAL HEALTH

When we're not using the "drug" that spikes our dopamine levels—in this case, social media—we **experience less pleasure and become more unhappy than our usual baseline.** The issue with activities that release a large amount of dopamine at once is that our brains must compensate. Instead of simply returning dopamine levels to normal, our brains push them below baseline, creating a dopamine deficit. This is how the brain restores balance: a significant spike is followed by a drop. This "comedown" leads to a constant urge to stay online, watch one more video, or connect with one more person to regain that dopamine high.

The teenage brain is more susceptible to the dopamine craving. Everyday activities seem less rewarding than the highs offered by social media. This heightened need for stimulation can decrease motivation and increase feelings of boredom when not engaged with technology. The research has shown that high levels of internet and social media use are associated with increased risks of anxiety and depression.

If you have teenagers or know them, you'll agree they always seem to be glued to their smartphones -- or, more precisely, the social media platforms these phones contain. Scientists from UCLA scanned teenagers' brains while they used social media and discovered that the part of the brain associated with rewards, **the nucleus accumbens, lights up when teens see their photos get a lot of "likes."** This reaction is similar to the pleasure experienced from eating chocolate or winning money.

The study also found that teens are **more likely to like photos that have already been liked** by their peers, showing how easily adolescent peer pressure transfers to the most trivial activities online.



"We're really living in this new era that we're not just designing software anymore, we're designing minds."

Ramsay Brown,
Co-Founder Dopamine Labs

SHORT FORM VIDEO (IG REELS, TIKTOK, YOUTUBE SHORTS)

Short-form content on social media isn't just about being quick and catchy—it's a **calculated strategy that targets the very nature of your child's brain development.** Platforms like TikTok, Instagram, and YouTube Shorts have mastered the art of capturing your child's attention by exploiting their natural tendency toward shorter attention spans. These platforms deliver rapid-fire content designed to keep kids scrolling, often at the expense of meaningful engagement or critical thinking. The competition for your child's focus is fierce. Every second, new videos and posts fight for their fleeting attention. Social media companies know how to craft content that is addictive, ensuring your child stays hooked and returns for more.

Short-form content is designed to align with the brain's natural processing limits. The brain can only hold a few pieces of information at a time, and **short videos effectively reduce the cognitive load by presenting bite-sized chunks that are easy to consume and remember.** This constant stream of fresh, concise content keeps the brain engaged without overwhelming it, tapping into our natural preference for novelty. Platforms like TikTok and YouTube Shorts continuously provide new, unpredictable stimuli, which keeps the brain primed and craving the next piece of information, preventing attentional fatigue and sustaining engagement.

This format also hijacks the brain's reward system. With each quick, complete video, dopamine is released, creating a cycle of instant gratification. The fast reward feedback from finishing a short clip keeps users hooked, as they continually seek that next dopamine hit from the next video. By constantly offering quick payoffs, these platforms exploit the brain's desire for immediate rewards, making it difficult for young viewers to disengage.

The challenge isn't just that these messages are short—it's that they are often engineered to bypass deeper thought, making it harder for young minds to process complex ideas. **As parents, it's critical to understand that the constant exposure to this type of content may shape the way your child thinks, learns, and engages with the world.**

HABITS FOR HIGH SCHOOL STUDENTS



Keep it real: Swap Snapchat and other apps for real conversations, talk, and text—make connections that last.



Silence the noise: Turn off notifications—don't let your phone distract you from what matters.



Reflect your best: Think before you share—no text or post is ever truly private, and you never know who may see it.

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