



# Research Summary: Bandwidth #1

As featured in Dr. Kenny Mittelstadt's video:  
"Gut Health Impacts Your Clarity and Success (More Than You Think)"  
Date of Publication: 01/01/2026

## Research Context:

A key theme that emerges across this body of research is that gut-brain communication often shapes mental clarity before conscious effort ever enters the picture. We tend to assume that focus, motivation, and decision-making are driven primarily by mindset or discipline, but the evidence suggests the brain is constantly responding to internal biological signals first. Information from the gut travels rapidly to the brain through neural, immune, and metabolic pathways, helping determine how much cognitive "bandwidth" is available in any given moment.

This means that when the gut environment is under strain, whether from inflammation, microbial imbalance, nutrient disruption, or chronic stress chemistry, the brain may quietly shift into a more protective, resource-conserving mode. In that state, higher-level functions like planning, emotional regulation, and complex decision-making can feel harder, slower, or more effortful, even when someone is highly motivated and capable. From the outside, it may look like procrastination or mental fatigue. Internally, it is often a rational response to signals suggesting the system needs to prioritize stability over performance.

## Key Findings from the Research:

### Study 1 (PMID 25772005):

Researchers found that gut microbes actively produce chemical messengers that influence brain chemistry, stress response, and behavior. The human gut microbiome contains more genetic material than the rest of the body combined, emphasizing its role as a regulatory system rather than a passive one. Studies in germ-free animals showed significant differences in neurotransmitter levels, stress hormone signaling, and social behavior, suggesting that gut microbes help shape brain function from early development onward. The authors propose that these microbes operate as part of an unconscious system that influences how the brain responds to internal and external conditions.

### Study 2 (PMID 38745566):

This human study examined whether changing gut bacteria could influence decision-making. After seven weeks of synbiotic supplementation, participants demonstrated measurable changes in social decision behavior during a fairness-based economic task. Those receiving the intervention were more willing to reject unfair offers, even when it resulted in personal loss. These behavioral changes were associated with shifts in dopamine-related amino acids and were most pronounced in individuals with specific baseline gut microbiome patterns, highlighting that gut composition can shape how people respond to interventions.

### Study 3 (PMID 33493503):

This comprehensive review analyzed over 180 studies and showed that gut-brain communication occurs through multiple integrated pathways, including neural signaling via the vagus nerve, immune messengers, and microbial metabolic byproducts. Specialized gut cells can transmit information to the brain in milliseconds, allowing the gut to rapidly influence mood, cognition, and stress responses. When this communication network is disrupted by factors such as chronic stress, poor diet, or infection, both digestive symptoms and cognitive or emotional changes often appear together as expressions of the same underlying imbalance.



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## Functional Medicine Connections:

These findings highlight a key principle: the gut and brain are in constant communication through a complex signaling network. Food, stress, and microbial balance influence the chemical messages the gut sends to the brain via nerve pathways, immune messengers, and gut-derived hormones.

What makes this connection especially relevant is its speed. Some gut signals reach the brain in milliseconds, shaping nervous system responses before conscious thought occurs. As a result, the brain often reacts to internal conditions first rather than operating independently.

When gut signaling is balanced, mental clarity and emotional regulation tend to feel more accessible. When it is disrupted by chronic stress, inflammation, or dietary strain, the nervous system shifts into a more protective mode. This can show up as foggier thinking, stronger emotional reactions, or increased effort around decision-making. From a functional medicine perspective, restoring gut health helps clean up this communication, allowing cognitive capacity to return more naturally without forcing performance.

## Practical Reflections & Takeaways:

When mental clarity feels harder to access, it can help to look beyond motivation or discipline alone. Notice when focus dips or decisions feel heavier and consider what else is happening at the same time. Subtle changes in digestion, sleep, stress, or eating patterns often show up before cognitive shifts, even if they don't seem directly connected.

Instead of pushing through, try observing patterns. Pay attention to how your thinking feels following poor sleep, high stress, irregular meals, or digestive discomfort. These patterns offer useful information about how your gut-brain communication is functioning. This approach replaces self-judgment with curiosity. Difficulty concentrating or following through is not necessarily a personal failure. It may reflect the nervous system responding to internal signals of strain. When gut health and daily rhythms are better supported, mental clarity often returns more naturally, without forcing effort.

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