

The Battle of Two Brains: Anxiety and the Brain-Gut-Axis

Written by Dr Simon Knowles

At the age of 23 Alice was successful, intelligent, and outgoing. Anyone who knew Alice would say that she was an ideal daughter, friend or employee; always loyal and forever helpful. However for Alice, these terms were alien to her - if only others knew how she struggled. For Alice, each day brought with it a reminder of her daily struggles with her gut and anxiety. How would it be today? Normal or explosive? Bloating and/or pain? And then there are the usual daily questions by people politely asking how she is? How do you respond? Well I'm anxious and have explosive diarrhea, how are you? Now that's a conversation stopper.

This brief story is an example of the many common challenges individuals with gut, or gastrointestinal problems face. Research indicates that around one-third of GP appointments are related to symptoms associated with the gut. One of the most common gut-related conditions seen by GPs and Gastroenterologists is Irritable Bowel Syndrome (IBS), previously known as colitis, mucous colitis, spastic colon, and spastic bowel disease. Around 10-20% of adolescents and adults have symptoms consistent with IBS (with females twice as likely as males to report IBS symptoms). IBS is associated with 12 months of abdominal pain or discomfort which is (1) relieved with defecation; and/or (2) associated with change in stool frequency and/or form (i.e., constipation and/or diarrhoea). IBS is also associated with other gut-related symptoms including: bloating, nausea, and excessive gas. Non-gut related symptoms include fatigue, headaches, sleep problems, and pain conditions, such as fibromyalgia.

To date, several potential causes have been identified; these include food intolerances (e.g., wheat, fruit, etc), alternations in gut bacteria, gastroenteritis ('gastric flu' or food poisoning), genetic predispositions (many individuals with IBS report other members of their family have gut problems), alteration in immune system activity, and abnormal motility (i.e., how fast or slow food moved through the gut). Despite ongoing research in these areas, not one of these areas explain all symptoms and all examples of IBS. Consequently, many individuals with IBS report frustration with not only their IBS but also the lack of clear treatment options. Further, despite being active in seeking and engaging in various treatments, their symptoms can continue.

So how does this all relate to two brains? Well, IBS is classified as a Functional Gastrointestinal Disorder (FGID), and central to FGID is the premise that underpinning these disorders is an alteration of gut physiology via the brain-gut axis. That is, the cause of IBS, like other FGIDs, is due to the impact of psychological processes (via the Central Nervous System i.e., the brain) and the large nervous system surrounding and controlling the gut, referred to as the Enteric Nervous System (or gut-brain); hence two brains!

What evidence is there for this link between the two brains? Well, quite a bit actually - but let's just focus on the psychological. First of all, think about a significant event in your life, maybe it was your first job interview, or a first date. Thinking back on these times, do you remember some of the anxiety you felt? What was one of the first signals? For many it's the gut and getting butterflies in the tummy, maybe even a sense of urgency to get to the nearest toilet? Clearly our psychological well-being affects us, and for many, this psychological stress is expressed via the gut.

How does psychological distress impact IBS? Research indicated that around 75 percent of individuals with IBS also have a co-morbid psychological condition, most commonly in the form of anxiety (e.g., panic disorder, generalised anxiety disorder, social anxiety disorder) or depression. Individuals with IBS also reported being more hypersensitive (psychologically focused) towards gut changes, whether it be in the form of movement, sounds, or noises.

Commonly, individuals who experience IBS also identify that their gut problems increase during times of stress. It can become a vicious cycle - IBS is exacerbated by stress and stress is in turn increased by symptoms of IBS. With anxiety comes increased muscle tension around the gut (affecting gut motility) and activation of the flight fight response, reducing blood in the gut (this is what causes butterflies in the tummy!). These physical changes cause the gut-brain to send signals to the brain which in turn promote further stress and distress, most commonly in the form of anxiety. For individuals with IBS (or actually most gut conditions), the ongoing worry about their gut and unproductive patterns can be very debilitating. It can also be the starting point for their anxiety and/or depression.

So what can be done to reduce or eliminate IBS symptoms? There is no one 'magic' cure for IBS, for some individuals changing their diet to avoid certain food groups is very helpful, for others it's taking probiotics or other medications (e.g., peppermint oil, laxatives or baulkers, etc); often it is many of these strategies at once.

However, as identified, IBS is due to the battle of the two brains, therefore, working on strategies to address the gut may be helpful, but only when it is combined with gut-focused psychological support will it be the most effective in reducing or eliminating IBS symptoms. Gut-focused psychological interventions can be very effective in reducing the physical and psychological aspect of IBS. Strategies can include stress reduction and slow breathing techniques, hypnosis, mindfulness and acceptance, and identifying and challenging those thoughts that help support and promote the adverse interactions (and complications) of the two minds - Brain-Gut-Axis.

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