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## Gut microbes and human factors: engaging with science through board game play

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The lack of diversity in the gut microbiome is linked to a host of health concerns, including autoimmune illnesses that are increasingly impacting various populations across the globe.<sup>(1)</sup> Our gut microbiome is influenced by factors including our interaction with food, environment, and social factors. The level of understanding of these factors and their influence on gut health is however rudimentary in the general population, and the non-lay friendly presentation of science information also remains a challenge. Our study aimed to enhance awareness of the factors that influence the gut microbiome via the testing and evaluation of a board game, *Goey Gut Trail*. The game was designed to deconstruct scientific information and uncover the microscopic interactions we encounter daily, through real-world scenarios introduced by the game components. Players interact with the card decks detailing various scenarios and food categories that influence the diversity between friendly and unfriendly gut bacteria. Players win by reducing unfriendly bacteria and increasing friendly gut bacteria to achieve a balance between them as they move them across the game board. The game was tested through a qualitative field study involving ( $n = 15$ ) participants (7 males, 8 females) aged 21–58 years with diverse ethnic and educational backgrounds. Semi-structured interviews were conducted with individual participants to gather pre- and post-game awareness levels. We conducted a thematic analysis of interview data to understand how the game helped raise participant awareness levels. This was further supported by conducting observations of gameplay video data. Comparing pre- and post-game interview data, we found that participants ( $n = 10$ ) self-reported that interaction with the game was instrumental in increasing their awareness on the topic from a beginner to intermediate level. In participants with intermediary understanding ( $n = 5$ ), it led to new insight acquisition such as the benefits of eating prebiotic and probiotic foods, interaction with green spaces and pets. Participant interaction with the food deck enabled learning by doing. Food deck scenarios required participants to fill their food plates with diverse ingredients, which led many to understand the importance of meal diversity for a healthy gut microbiome ( $n = 10$ ). Participants ( $n = 8$ ) self-reported feeling the urge to reconsider their meal habits to include diversity in their meal choices. Participants reflected on finding new associations between their everyday activities and the gut microbiome to be instrumental in motivating them to participate in diverse activities. These findings suggest active interdisciplinary collaborations between the fields of nutrition science and interaction design can facilitate playful explorations towards understanding gut health. In doing so, creative fields can also be leveraged by scientific communities to communicate new insights to the general population. Future explorations can involve testing the efficacy of such play-based approaches in long-term decision-making and behavioural change.

### Reference

1. Brody H (2020) *Nature* 577 (7792), S5.