[009] In one embodiment, the present disclosure is directed to a method of enhancing learning in an individual. The method comprises administering to the individual a nutritional composition comprising 2-fucosyl-lactose.

[010] In another embodiment, the present disclosure is directed to a method of enhancing memory acquisition and memory recall in an individual. The method comprises administering to the individual a nutritional composition comprising 2-fucosyl-lactose.

[011] In another embodiment the present disclosure is directed to a method of increasing brain functionality in an individual. The method comprises administering to the individual a nutritional composition comprising 2-fucosyl-lactose.

[012] In another embodiment the present disclosure is directed to a method of inducing a higher long-term potentiation in the hippocampal neuronal synapsis in an individual. The method comprises administering to the individual a nutritional composition comprising 2-fucosyl-lactose.

[013] In another embodiment the present disclosure is directed to a method of inducing a higher long-term potentiation of field excitatory post-synaptic potentials evoked at the hippocampal CA3-CA1 synapse in an individual. The method comprises administering to the individual a nutritional composition comprising 2-fucosyl-lactose.

[014] In another embodiment, the present disclosure is directed to a method of improving neuronal development in the infant. The method comprises administering to the infant a nutritional composition comprising 2 fucosyl-lactose.

[015] In another embodiment, the present disclosure is directed to the use of 2-fucosyl-lactose in the manufacture of a medicament for enhancing the hippocampal long-term potentiation response in an individual, wherein the medicament is a nutritional composition.

[015a] It has been unexpectedly discovered that human milk oligosaccharides, and particularly, 2-fucosyl-lactose, alone or in combination with one or more other HMOs, can enhance the hippocampal LTP response in an individual, including an infant. Particularly, administration of 2-fucosyl-lactose provides a larger, longer-lasting potentiation of field excitatory post-synaptic potential at the hippocampal CA3-CA1 synapse. Additionally, by inducing a higher long-term potentiation in hippocampal neuronal synapsis, an individual can experience enhanced learning and memory, including memory acquisition, retention, and recall.