

Marshmo, Digital Healthcare at Your Fingertips

About the Company

Meta Analytics Inc. is using its state-of-the-art technology to offer and develop products such as Marshmo, a digital treatment application for children which helps manage mental health disorders like ADHD based on pediatric psychological tests and brain imaging data, and Marshmo Care, an electronic medication device for treating depression. Marshmo's main features include a habit correction rule card, an emotion monitoring system which utilizes generative AI technology, and an English learning AI agent. Marshmo Care provides a non-invasive vagus nerve stimulation service.

Background

Background and Inspiration

The number of children suffering from various developmental diseases is increasing due to causes like the excessive use of smartphones, resulting in a spike in cases of ADHD and depression in children. In such cases, establishing treatment goals after accurately identifying the cause which is dependent on emotional, cognitive, and physical symptoms, and making a correct diagnosis is critical. ADHD and depression, in particular, are on the rise among young children due to negative dopamine stimulation and the ambiguous rules given to children. The prefrontal cortex (PFC) and striatum, which are involved in advanced cognitive functions, are one of the main areas of the brain which enables decision-making and self-control. Forming good habits in the brain circuits

the storing of procedural memory in the striatum, which is very important for children to build good studying habits. Meta Analytics' Marshmo digital therapy app can help the striatum receive input from the prefrontal cortex by providing clear rules and rewards and help stimulate good dopamine production—a method used to improve ADHD in children. The Marshmo mobile app is now in service and boasts a high retention rate. Meta Analytics is also in the process of developing Marshmo Care, a non-invasive vagus nerve stimulation service for children, to help alleviate depression symptoms in children diagnosed with depression using the data-based Marshmo app.



Purpose

As more people work and learn remotely after the Covid-19 pandemic, they are using more digital media devices such as smartphones at home, which can negatively affect self-control and resilience due to the easy and frequent exposure to media content that indiscriminately produces dopamine. The overuse of digital media devices also makes it difficult for parents to set clear and consistent rules when disciplining their children. As a result, many children are experiencing difficulties in learning as they suffer from ADHD or depression. Although some antidepressant effects of vagus nerve stimulation have been reported in the past, conventional vagus nerve stimulation involves surgically attaching electrodes to the vagus nerve. This invasive vagus nerve stimulation not only requires surgery, but also has many disadvantages such as infection and inflammation, pain, and high cost. In contrast, non-invasive vagus nerve stimulation does not require surgery, and offers easier access through various products such as earphones and accessories. Furthermore, the antidepressant effect of the conventional vagus nerve stimulation requires days or weeks of stimulation to be effective, while Marshmo Care's method has been proven to provide an antidepressant effect with just a single instance of stimulation.

About the Product

Marshmo Service for Treating ADHD

- **Rule Cards:** A feature that allows users to modify daily habits with rule notes (waking up early, meditating, setting screen time limits, etc.)
- **Smart Shop:** Users can purchase various mobile coupons with Gold Marshmallows that are given when they follow the rules on their rule cards.
- **AI Agent:** Users can earn Blue Marshmallows by following rules on their rule cards, then use the Marshmallows to use features like the AI English Learning and AI Chatbot.
- **Rule Notes for Parents:** Parents can create rule cards for their children, purchase Gold Marshmallows, and comment on the rule cards.

Marshmo Care Service for Treating Depression

- **Vagus nerve stimulation:** Non-invasive vagus nerve stimulation (VNS) service is a clinically used hardware device that stimulates the nerves connected to the vagus nerve in the ear. Unlike conventional VNS, the mechanism does not require surgery. Currently, Meta Analytics is developing a miniaturized taVNS device, and plans to apply this technology in animals while activating neural circuits with optogenetics or fiber photometry.



[Figure 1] Marshmo Digital Therapy App

Competitive Edge and Business Strategy

Competitive Edge

Marshmo and Marshmo Care are non-drug treatment devices dedicated to treating developmental disorders like ADHD and depression in children. They can also assist in the mental development of children, and make them better learners. Marshmo is a one-of-a-kind software which helps parents discipline their children suffering from ADHD and other developmental disorders. It helps control excessive game playing and smartphone addiction in children. Meta Analytics was selected by the Ministry of Science and ICT as a participant in the AI Learning Data Building Project targeting children, and has participated in various research projects.

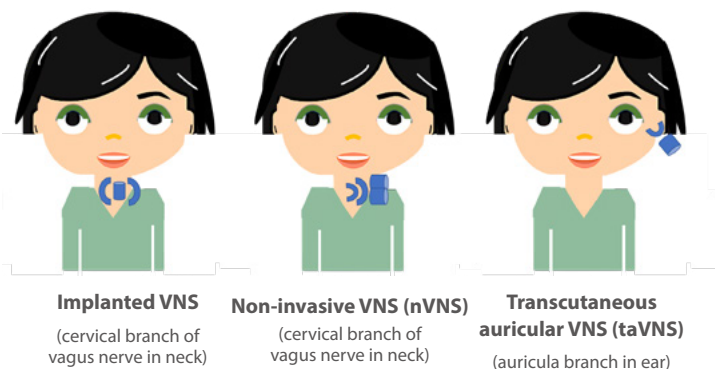
Business Strategy

Marshmo is a digital software treatment device that helps children with ADHD build good habits and provides rewards. Marshmo Care is an electronic treatment hardware device that is attracting attention as a third-generation pharmaceutical non-drug treatment method that can resolve the limitations of existing depression treatment methods and drugs. Meta Analytics is pursuing a two-pronged strategy of offering a digital software app for treating children with developmental disorders, and an electronic treatment hardware device.

Future Plans

Meta Analytics plans to attract more users to its Marshmo digital treatment app and establish a corporate research center to conduct joint research on planning and designing rule card templates. In addition, Meta Analytics is working to develop Marshmo Care, a depression treatment service that is provided based on Marshmo's mental health data on children. The plan is to develop and conduct clinical trials of non-invasive electronic VNS stimulation to help treat depression.

Vagus Nerve Stimulation



[Figure 2] Marshmo Care: Transcutaneous Auricular VNS

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* The opinions expressed in this article are the author's own and do not reflect the views of KOTRA.