

EMBRACED SEPARATION: EXPLORING METHODS OF BREATH ATTUNEMENT IN SPECULATIVE INFANT SWINGS

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OVERVIEW/CHALLENGE

This research explores a speculative design for an infant swing based on breath attunement. There are challenges for working parents to juggle, such as working from home and taking care of an infant, especially when infants want to be physically close to the parent.



Figure.1. A young mother working and attending to the infant simultaneously

BACKGROUND

Two-thirds of the parents kept the baby on its own cot in the same room, while one-third of parents co-slept. This suggests that the parent is still focused on using their own embodied senses to track how the infant is doing, and that proximity is key to accessing that data



Figure.2. An Infant sleeping in a cot.

PROPOSED SOLUTION

This research focuses on the design of a smart baby swing that uses breath attunement and sensori-motor synchronization (SMS), rather than the typical even phrasing of motion in most commercial baby swings. SMS is the coordination of rhythmic movement with an external rhythm and is commonly studied in adults and in children.



Figure.3. Concept image of baby swing design and components.

APPROACH

We have designed an infant swing that is controlled by the parent wearing a breath sensor with a companion app. The breath sensor enables the parent's breath rhythm to control the movement rhythm of the swing. The attuned rhythm of breath between infant and parent, we have also used this goal to inform a variety of aspects of the design: visual design and mechanics, light color, recorded audio options, and a weighted blanket.

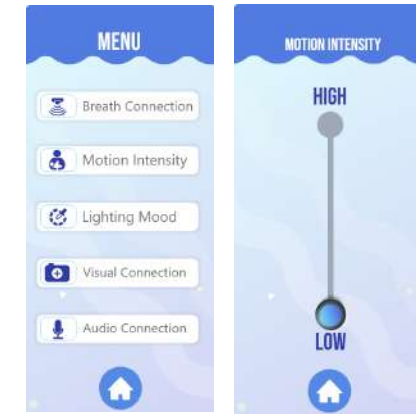


Figure.4 (left). Image of the prototype's user interface home page design.

Figure 5 (right). Image of the prototype's user interface design of rocking gauge.

The breath connection is processed directly from the parent to the automation in the swing, a wearable sensor will be worn by the parent when using this feature. The sensor is an elastic band that is worn around the chest, at the base of the sternum. A conductive fabric on the band measures the amount and timing of movement of the parent's chest, and is directly translated to the actuator's back-and-forth motions.

ADDITIONAL APP FUNCTIONS

Additional features of this speculative design, in order to provide more variables for sensory simulation, include the ability to record and playback audio or play a simulation of environmental sounds, a weighted blanket for a tactile and warm sensation, and an embedded camera for monitoring the baby.

CONCLUSION AND FUTURE WORK

This study presents a speculative design of a smart baby swing that uses sensori-motor synchronization (SMS) to change the swinging rhythm in relation to the parent's breath, by wearing a breath sensor, by using a mobile application. In the future, we plan to develop an in-depth focus group that explores the embodied nature of attunement through the breath interface.