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REVERSE ALARM CLOCK: DESIGNING INTERACTIVE PRODUCTS FOR TRANSITIONS

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Reverse Alarm Clock (RAC) is an interactive system designed with the purpose of helping young children stay in bed during the night. In the long-term, the RAC has the intentions of helping parents feel like they are becoming the parent they desire to be, and to engage children in learning to make good decisions. Field study showed that the RAC kept children in bed and decreased the time parents spent putting their children back to sleep after they woke up during the night.

Dual income families with young children are a growing population in the United States and Europe. While transitioning between work and home, these families encounter stress, life quality decline, and loss of life order. To address this problem, we designed an interactive system, called Reverse Alarm Clock (RAC), with the purpose of helping young children stay in their own beds during the night. RAC (Figure 1) achieves this by providing an abstract display of time that children can understand. The long-term goal of the RAC is two-fold. By placing the interactions within intimate bedtime rituals, it helps parents become the parent they desire to be. Moreover, the RAC supports children in learning to make good decisions (e.g., stay in bed) and creates an opportunity for the parent and child to connect through interactions with the clock.

The RAC has four elements, include Sky display, Treasure chest music box, Parental controller, and Sensorial bed. The *Sky display*, as the central element of the system, uses an abstract and relative display of time, a setting moon and a rising sun, to communicate to children how much longer they need to remain in bed. The *Sky Display* has three stages, bedtime, in-between, and wake-up. When the moon and star lights are on, it is *bedtime* and the child should stay in bed; when only stars are on, it is the *in-between* stage and the child can leave the bed; when the sun light is on, it is the *wake-up* stage and the child needs to get up and start the day. The *treasure-chest music box* lets the child select what music to play in the *wake-up* stage. The *parental controller* lets parents set the alarm times that determine when the system should shift between stages, and the *sensorial bed* detects the

child's motions on the bed to trigger the *wake-up* stage, which rewards the child for her behavior and also increase her agency.

Based on the findings of an initial field study conducted with three families, we found preliminary evidence that the system keeps children in bed, and decreases the time parents spend putting their children back to sleep after they wake up during the night. This shows that RAC not only addresses the biological aspect of sleep (waking up), but also the social aspects, for instance, helping parents to soothe their child. Of the families included in the study, one enjoyed the system the most, where the child used it every night and the RAC was integrated in their bedtime ritual, while another family preferred sleeping with their child rather than using the product. These initial findings help us reframe the problem and reconsider the RAC as a system crossing multiple types of transitions, e.g., daily transitions between night and day, and behavioral transitions from co-sleeping to independent sleeping. This reframing opens up the problem space and leads us to develop a stance to design interactive products that facilitate people's transitions.



Figure 1: Reverse alarm clock elements (1) sky display, (2) treasure chest music box, (3) sensorial bed

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