ORI IRB# 00000278

Protocol Version 9/1/2021

Official Title: Utilizing Smart Speaker Technology to Deliver Parenting Education Support to Parents of Young Children

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Oregon Research Behavior Interventions Strategies, dba Influents Innovations

Award No. R43HD101190-01A1

Final Version Dated: 9/1/2021

STUDY PROTOCOL

Participant Recruitment, Enrollment, and Overall Design

Families were recruited to participate in the feasibility evaluation study via distribution of study information through parenting support agencies, Head Starts, childcare centers, and Women, Infants, and Children (WIC) offices. Interested parents who contacted project staff were provided additional information about the study and screened for eligibility; those eligible were sent the informed consent form. After signing the consent, primary parents completed the pretest (T1) assessment and then were sent an Echo Dot with the Bedtime Routine enabled. Parents were asked to engage with TP at least 8 times over 4 weeks; project staff provided prompts during the 4-week period to encourage usage and provide technical support as needed. At 4 weeks after T1, parents were administered the posttest (T2) questionnaire. This design allowed evaluation of T1-T2 change and satisfaction/usability of the TP Bedtime Routine prototype. Parents were given $20 for completing the T1 assessment and 3 uses of TP, and $20 for completing the T2 assessment. Those who used the TP program at least 8 times were entered into drawings for a $50 gift card

Talk Parenting (TP) Bedtime Routine

The Alexa-based Talk Parenting app prototype (called a "skill") uses smart speaker technology to provide in-situ experiential support to families of 3-5-year-old children, for a positive bedtime routine that promotes children's healthy sleep habits and a positive parent-child relationship. The TP prototype Bedtime Routine contains 14 bedtime steps supported with cues and reinforcements, 4 songs, 3 stories, 3 relaxation guides, and 3 choices for going-to-sleep music. Through simple voice activation, these media assets prompt parents and children through a series of interactive steps to create a positive, fun, and relationship-building bedtime routine. In addition, 4 podcast episodes provide advice to parents on the most common challenges of bedtime, such as managing bedtime resistance, calling out, and crying.

Measures

T1 and T2 questionnaires measured primary parents' parenting practices (Program-Targeted Parenting Practices (PTPP) Frequency of Engagement and Satisfaction Handling Bedtime subscales (Cronbach's alphas in present sample =.87 & .96); Parenting and Family Adjustment Scale (PAFAS) Coercive Parenting and Positive Encouragement subscales (alphas=.46 & .74)); self-efficacy (Self-Efficacy for Parenting Tasks Index (SEPTI) Discipline and Routine subscales (alphas=.89 & .87); PTPP Self-Efficacy subscale (alpha=.96)), and stress (Parental Stress Scale (PSS; alpha=.86)); children's behavior (Child Adjustment and Parent Efficacy Scale (CAPES) Behavior Problems subscale (alpha=.76)), emotional adjustment (CAPES Emotional Adjustment subscale (alpha=.84)), and sleep problems (Short-Form Children Sleep Habits Questionnaire (SF-CSHQ; alpha=.72)); and the parent-child relationship (Child-Parent Relationship Scale (CPRS) Closeness and Parent-Child Conflict subscales (alpha=.80 & .74)). The T2 questionnaire also contained measures of parent satisfaction, acceptability, and usability of the Talk Parenting skill. Demographics were collected at T1. Usage data measured families' usage of TP.

STATISTICAL ANALYSIS PLAN

The evaluation had three main goals: (a) establish the initial efficacy of the Talk Parenting Bedtime Routine; (b) determine the participants' perceptions of usability, acceptability, and satisfaction regarding the TP Bedtime Routine; (c) and determine the amount of program use.

Paired t-tests were used to examine T1-T2 data to determine whether there were significant improvements in parenting and child outcomes after engaging with the TP Bedtime Routine skill. The point-biserial r provide the measure of effect size, with the convention of .14=small, .36=medium, and .51=large. Examination of descriptive statistics for the user satisfaction and acceptability items informed on participants' reactions to the program. A descriptive summary of the program usage data provides evaluation of families' use of the Bedtime Routine.

Due to the substantial missing data at posttest, change in parenting and child outcomes from pretest to posttest was evaluated only with participants who completed both the T1 and T2 assessments (n= 17). Failure to provide T2 data was minimally associated with T1 scores on outcome measures, indicating a low likelihood of bias when interpreting observed data only. A significant decrease in power was realized: With 17 dyads with both T1 and T2 data, the study is powered to detect significant change in outcomes associated with large effects (r > .65). Thus, in addition to statistical significance, we interpret medium or greater effects (r > .35) as initial evidence that parenting and child outcomes showed meaningful change after engaging with the Talk Parenting program.