# A NOVEL FAMILY-BASED E- HEALTH INTERVENTION PROCESS TO REDUCE OBESITY

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Family-Based E-Health

The CRITICAL GAP = how to disrupt the link to destructive factors by connecting families of at-risk children to protective community, family, and individual based factors.

Hypothesis: socioeconomically disadvantaged families of overweight/obese children who receive interactive e-health interventions will have improved knowledge and perceptions of lifestyle behavior choices.
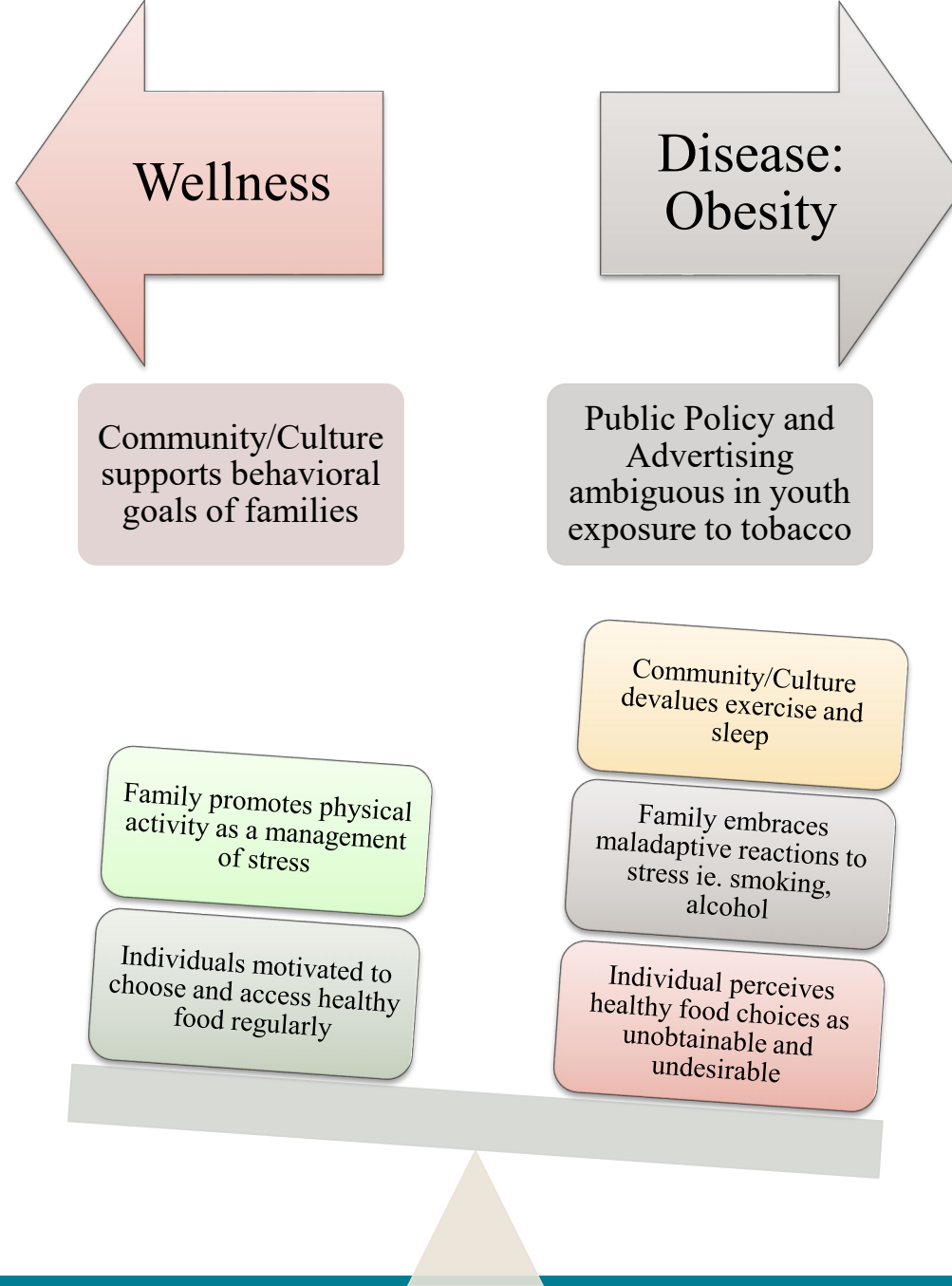
NIMHD Research Framework

✦ =

Framework areas addressed by E-health intervention

National Institute on Minority Health and Health Disparities Research Framework

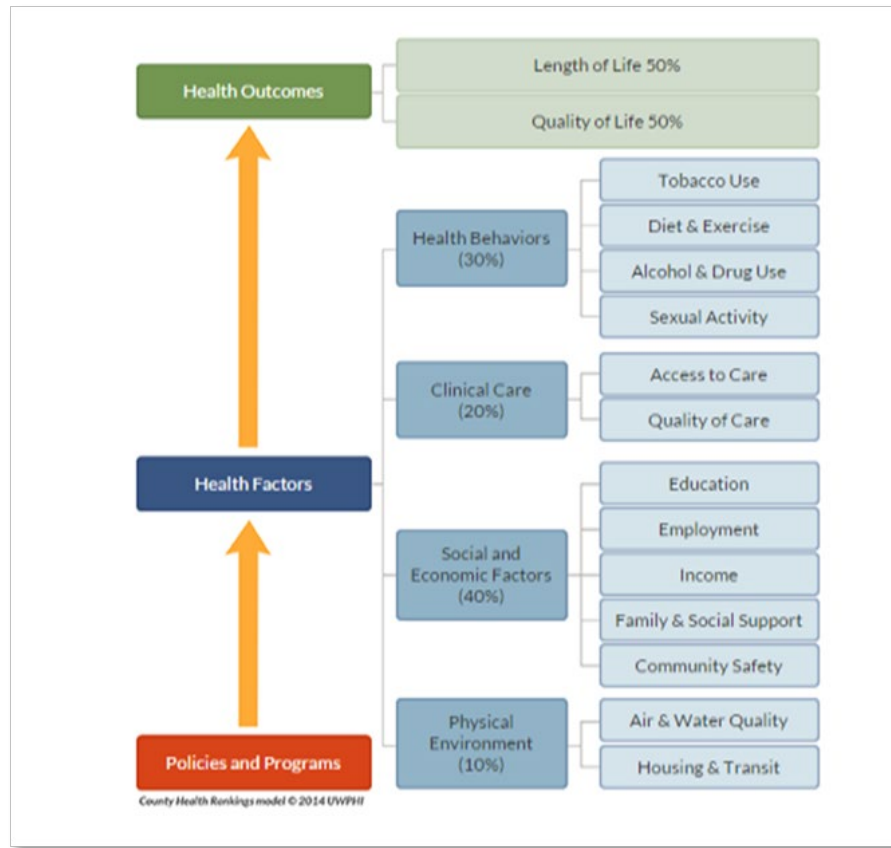|		Levels of Influence*			
		Individual	**Interpersonal**	**Community**	**Societal**
Domains of Influence *(Over the Lifecourse)*	**Biological**	Biological Vulnerability and Mechanisms	Caregiver–Child Interaction Family Microbiome	Community Illness Exposure Herd Immunity	Sanitation Immunization Pathogen Exposure
	Behavioral	Health Behaviors Coping Strategies ✦	Family Functioning School/Work Functioning ✦	Community Functioning ✦	Policies and Laws
	Physical/Built Environment	Personal Environment	Household Environment School/Work Environment	Community Environment Community Resources ✦	Societal Structure
	Sociocultural Environment	Sociodemographics Limited English Cultural Identity Response to Discrimination ✦	Social Networks Family/Peer Norms Interpersonal Discrimination ✦	Community Norms Local Structural Discrimination	Social Norms Societal Structural Discrimination
	Health Care System	Insurance Coverage Health Literacy Treatment Preferences	Patient–Clinician Relationship Medical Decision-Making	Availability of Services Safety Net Services	Quality of Care Health Care Policies
Health Outcomes		👤 **Individual Health**	👥 **Family/ Organizational Health**	🏠 **Community Health**	👥 **Population Health**

National Institute on Minority Health and Health Disparities, 2018
*Health Disparity Populations: Race/Ethnicity, Low SES, Rural, Sexual/Gender Minority
Other Fundamental Characteristics: Sex/Gender, Disability, Geographic Region

Social determinants of health

- Notice approximately 50% of health factors are physical environment, economic, or social factors that individuals often cannot influence

Health Outcomes = Morbidity + Mortality

Community/Societal
- Physical environment
  - Housing safety
  - Housing stability
- Cultural norms
- Social bias/discrimination
- Air/Water quality
- Public transportation
- Governmental policy

Socioeconomic status
- Education
- Food access/quality
- Income
- Family/relational support
- Job status

Individual health behaviors
- Diet and physical activity
- Tobacco use
- Drug/alcohol use
- Sexual activity

Healthcare
- Healthcare acces
- Healthcare quality

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Lifestyles Impacting Obesity

LIFESTYLE MEDICINE FOCUSES ON 6 AREAS TO IMPROVE HEALTH

Increase PHYSICAL ACTIVITY

Develop strategies to MANAGE STRESS

HEALTHFUL EATING of whole, plant-based food

Cessation of TOBACCO

Improve your SLEEP

Form & maintain RELATIONSHIPS

Inertia to change

Hoeppner et al., 2017 has demonstrated with tobacco cessation text message studies that Social Cognitive Theory is most impactful in maintaining tobacco abstinence.
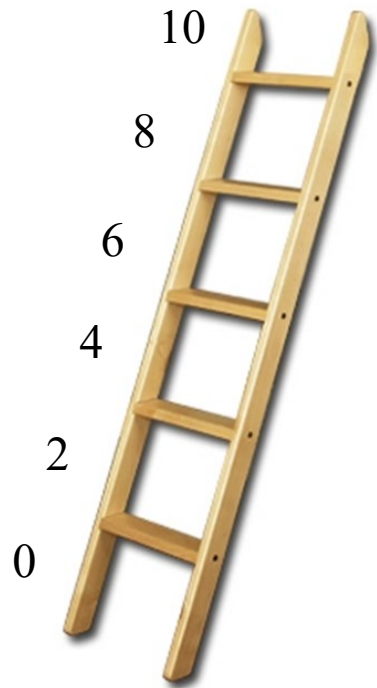
Griffin et al., 2018 has demonstrated with text message weight loss studies that self-efficacy, self-monitoring, and goal setting are beneficial to initiate physical activity and nutritional changes

Transtheoretical model of behavior change constructs
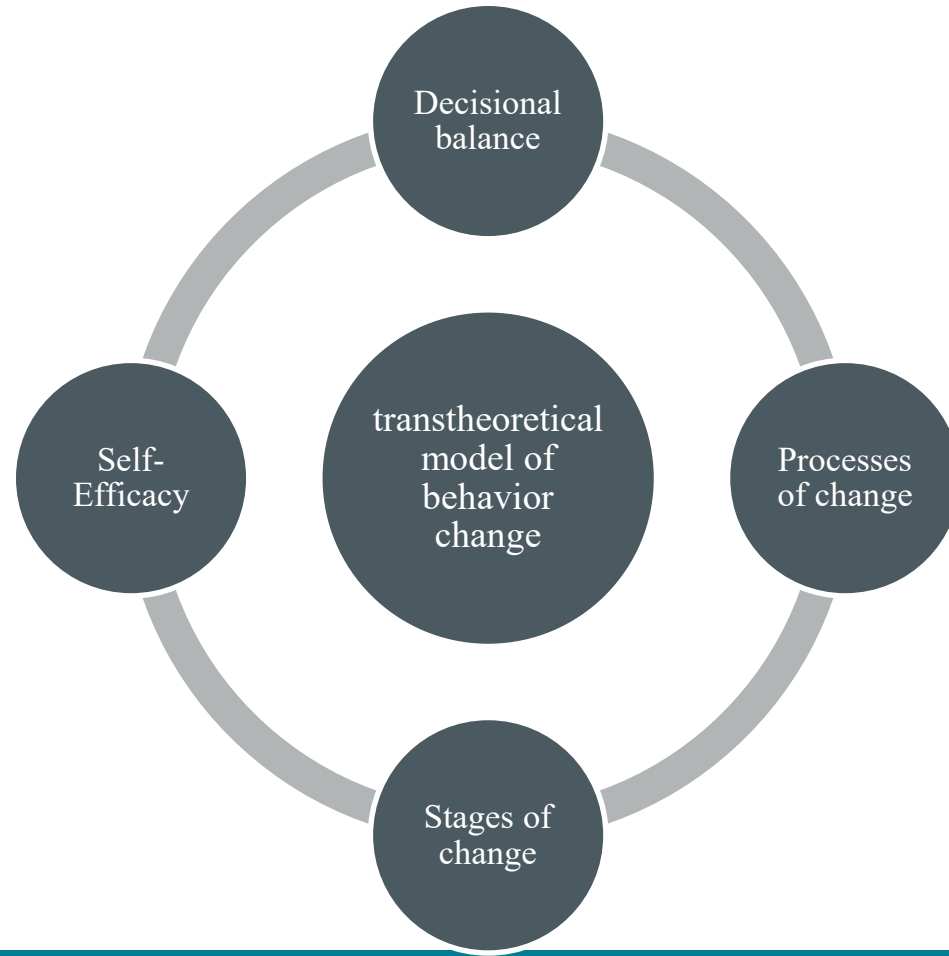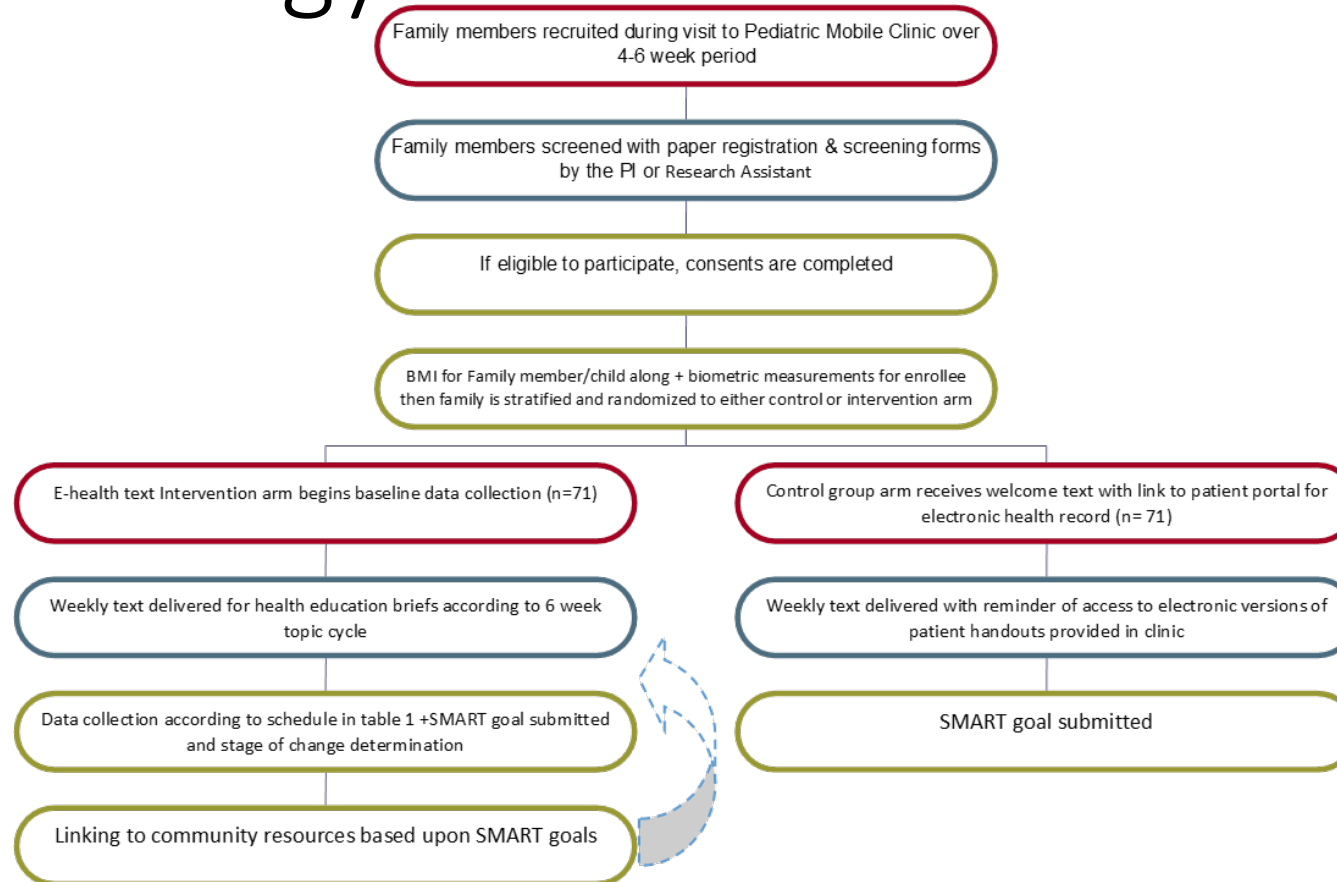
Transtheoretical model

- Maintenance: reinforce positive changes, social support
- Action: facilitate/support steps towards desired behavior
- Preparation: increase knowledge of benefits
- Contemplation: increase in self-efficacy = persuade + motivate
- Pre-contemplation: increase awareness

Specific Aims

(SA1): tailoring an e-health text message intervention to improve the delivery of information to African American and Hispanic families of overweight/obese children ages 6 months to 11 years

(SA2): can an e-health text message intervention impact family members' attitudes, knowledge, and confidence to achieve SMART goals as related to 6 lifestyle behaviors?

Research Strategy

Family members recruited during visit to Pediatric Mobile Clinic over 4-6 week period

Family members screened with paper registration & screening forms by the PI or Research Assistant

If eligible to participate, consents are completed

BMI for Family member/child along + biometric measurements for enrollee then family is stratified and randomized to either control or intervention arm

E-health text Intervention arm begins baseline data collection (n=71)

Control group arm receives welcome text with link to patient portal for electronic health record (n= 71)

Weekly text delivered for health education briefs according to 6 week topic cycle

Weekly text delivered with reminder of access to electronic versions of patient handouts provided in clinic

Data collection according to schedule in table 1 +SMART goal submitted and stage of change determination

SMART goal submitted

Linking to community resources based upon SMART goals

Enrollment

Objective measures are biometrics such as BMI, abdominal circumference, (+/- total cholesterol, BP, blood glucose)
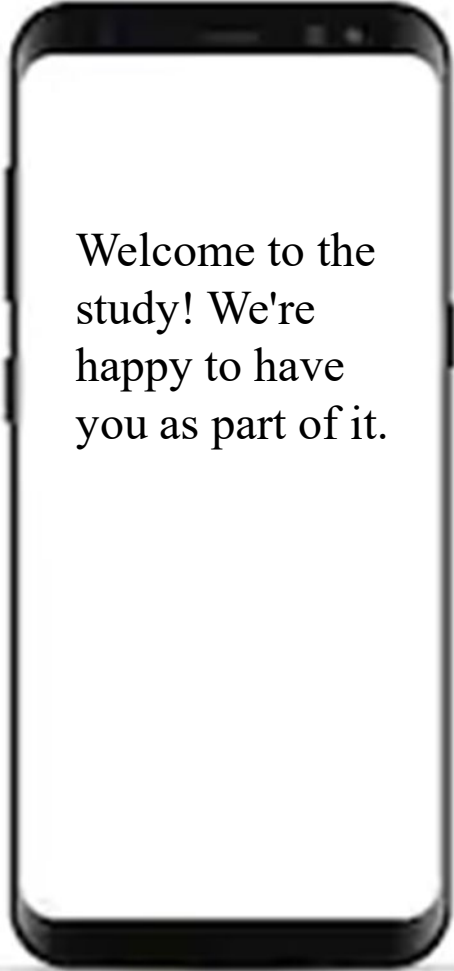
Participants will be delivered weight scales, tape measures, (+/- automated BP cuffs)

Intervention Overview

- E-health platform software is Mosio which supports features of:
  - Text chat - bidirectional text message conversations between the study team and participants
  - Survey - questionnaires to be delivered at set times
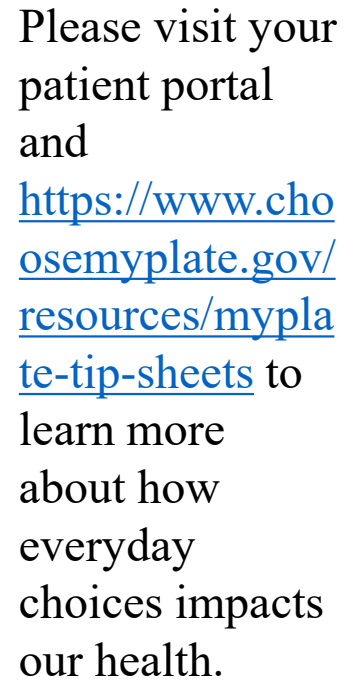 - Storylines - tailoring for the frequency of text messages per week and motivational messaging

Study Welcome

Welcome to the study! We're happy to have you as part of it.

Control arm

Please visit your patient portal and https://www.choosemyplate.gov/resources/myplate-tip-sheets to learn more about how everyday choices impacts our health.

Experimental arm

Did you know how you relate to others can impact your health? People who have satisfying relationships are happier, have less health problems, and live longer.

Day 1

On a ladder of 0 to 10, how confident are you in your ability to make changes related to our topic this week?

Day 6

On a ladder of 0 to 10, how motivated are you to make changes related to our topic this week?
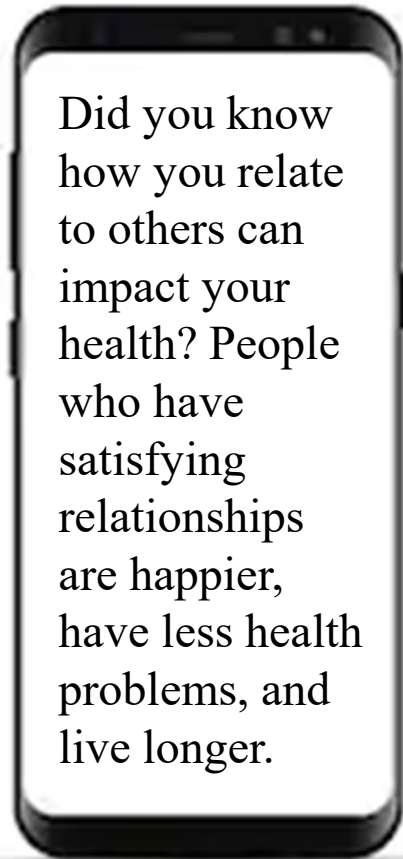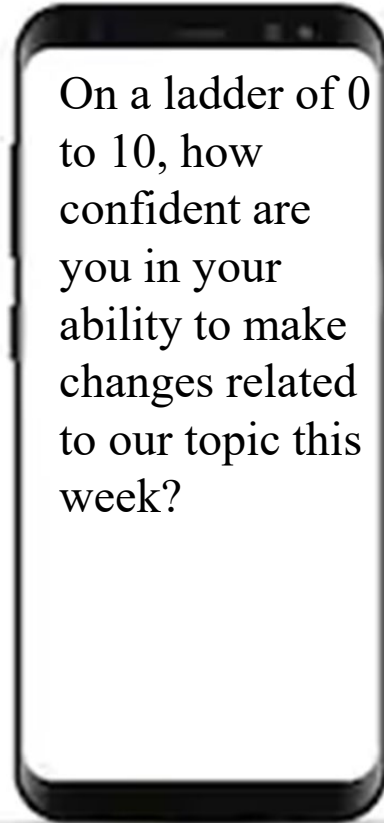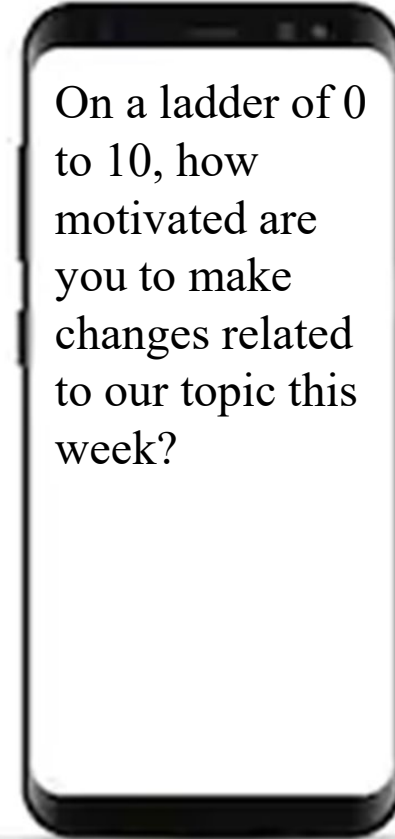
Day 6

Community Resource feature

- Trigger words
  - **HELP** = signal to initiate text chat when participants need more support (ex: community resource connection)
  - **STOP** = signal to initiate text chat when participants want to leave the study or modify their tailoring frequency

Where we are

Timeline

AIMS/TASKS	Months 0-1	Months 2-8	Months 8-11	Months 12-20
Specific Aim #1				
Text message content written	√			
Community resource list complete	√			
Specific Aim #2				
Recruit caregiver participants	√			
Collect baseline biometric data	√			
Biometric measurements		√	√	
E-health content delivery		√		
Weekly cognition surveying		√		
Behavior monitoring		√	√	√
Post intervention follow up				

Goals	Months 0-3	Months 4-8	Percent complete
Goal 1			
Text message content written	√		90%
Community Resource list complete	√		100%
Goal 2			
Recruitment of caregivers participants		√	0%
Collect baseline biometric data		√	0%
Biometric measurements		√	0%
E-health content delivery		√	0%
Weekly cognition survey		√	0%
Behavior monitoring		√	0%

Next steps

- Recruit participants for the research study using the eligibility screening tool with each family during clinic encounters and through flyers provided to our community partners.

- We have a rolling enrollment until our target goal of 142 total participants are reached.

Future Directions

- Determine the duration of parental behavior change necessary to impact children's behavior and subsequent biometric changes

- Evaluate impact of lifestyle behaviors on resilience to mitigate stress of COVID-19 and societal stress

Acknowledgements

Thank you!

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