

Leveraging Existing Technology to Enhance Physical Activity in Inactive Predominantly Black and Latina Women

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Digital Physical Activity and Diet Collaborative Webinar

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Overview

Social Environments and Physical Activity

Pilot Study

- Fitness Tracking Together (Project FITT)

Efficacy Trial

- Women on the Move

Incorporation of Technology

Conclusions

Social Environments and Physical Activity

Individuals are embedded within social networks

- Opportunities for behavioral influence
- Positive and negative influences

Physical activity is strongly associated with social and cultural norms

- Gender role expectations
- Cultural appropriateness

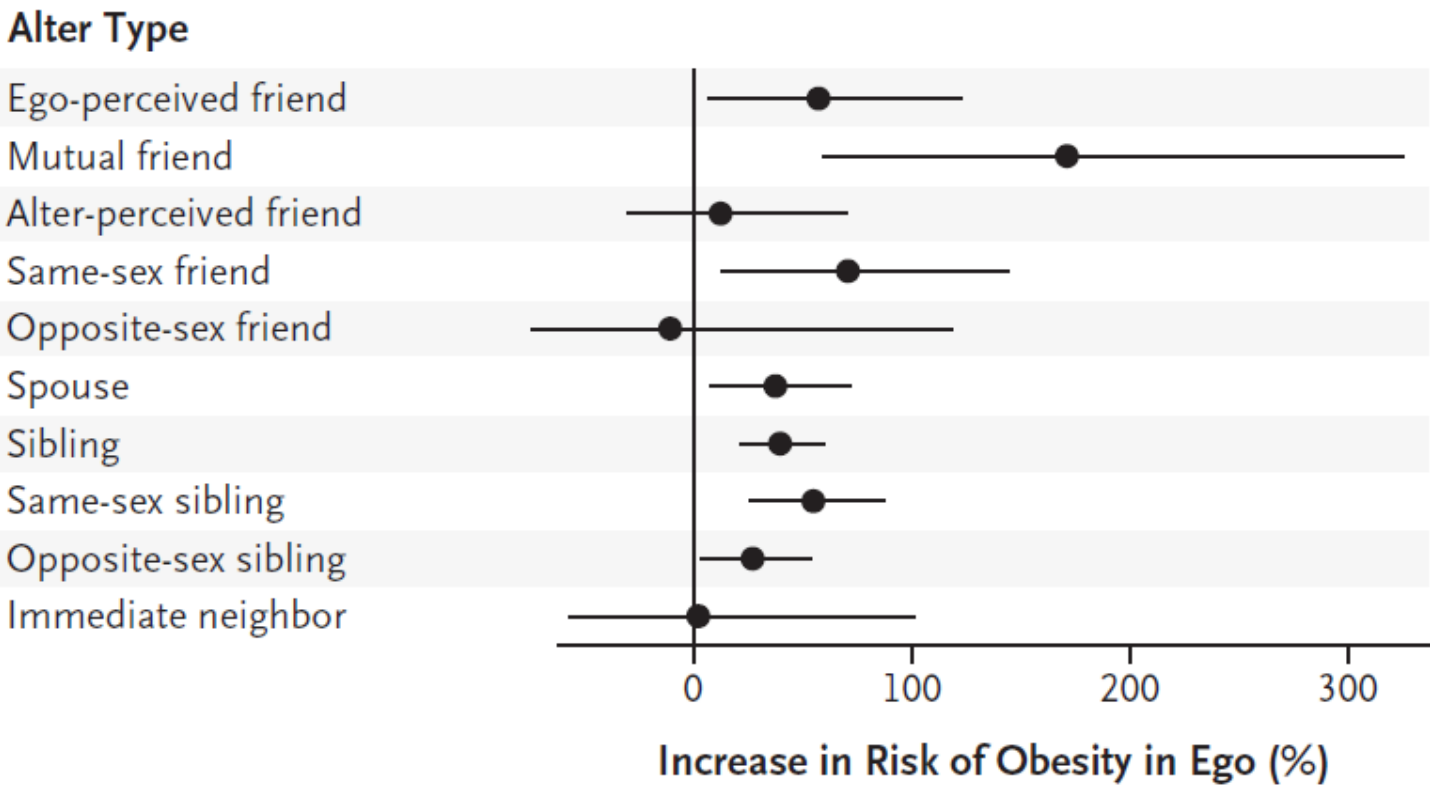


Vrazel et al. An overview and proposed framework of social-environmental influences on the PA behavior of women. *Am J Health Promot* 2008; Heaney & Israel. Social networks and social support. *Health Behavior and Health Education* 1997; Eyler et al., Physical activity and minority women: A qualitative study. *Health Educ Behav* 1998.



Spread of Obesity with Social Networks

Probability That an Ego Will Become Obese According to the Type of Relationship with an Alter Who May Become Obese in Several Subgroups of the Social Network of the Framingham Heart Study.





Social Support

Resources provided by others

- Encouragement to be active
- Actions taken by others that facilitate being active
- Having someone with whom to be active

Intended to be helpful

Positively associated with physical activity across racially/ethnically and socioeconomically diverse groups of women



Women Seek Support for Physical Activity

Studies of racially/ethnically diverse women provide support for the potential appeal of approaches that involve existing members of one's social network.

- Women desire encouragement and support for PA from important people in their lives
- Women seek to exercise with others
- Tangible support in the form of direct help or assistance can facilitate engagement in physical activity
- Seeing others in their communities and their social networks be active is important to feeling comfortable and confident about exercising

Vrazel et al., An overview and proposed framework of social-environmental influences on the PA behavior of women. *Am J Health Promot* 2008; Henderson KA, Ainsworth BE. A synthesis of perceptions about physical activity among older African American and American Indian women. *AJPH*, 2003; Berg et al., Physical activity: perspectives of Mexican American and Anglo American midlife women. *Health Care Women Int* 2002. Eyler et al., Physical activity and minority women: A qualitative study. *Health Educ Behav* 1998



Informing Interventions

We know that social support is important, particularly for women.

BUT...

How do we translate the benefits of social support into effective intervention approaches?

What are effective channels or combinations of channels for delivering social support interventions?



Evidence for dyad-based approach

Overall mixed findings

Family or friend involvement in weight loss program can have benefits

Effects are greatest when

- Partners are highly engaged
- Social support is explicitly addressed

Support from friends was more beneficial than support from unconnected persons within the context of behavior therapy for weight loss

Few studies in minority populations

Wing RR, Jeffery RW. Benefits of recruiting participants with friends and increasing social support for weight loss and maintenance, 1999; Kumanyika SK, et al. Trial of family and friend support for weight loss in African American adults, 2009.

FITT | Fitness Tracking Together

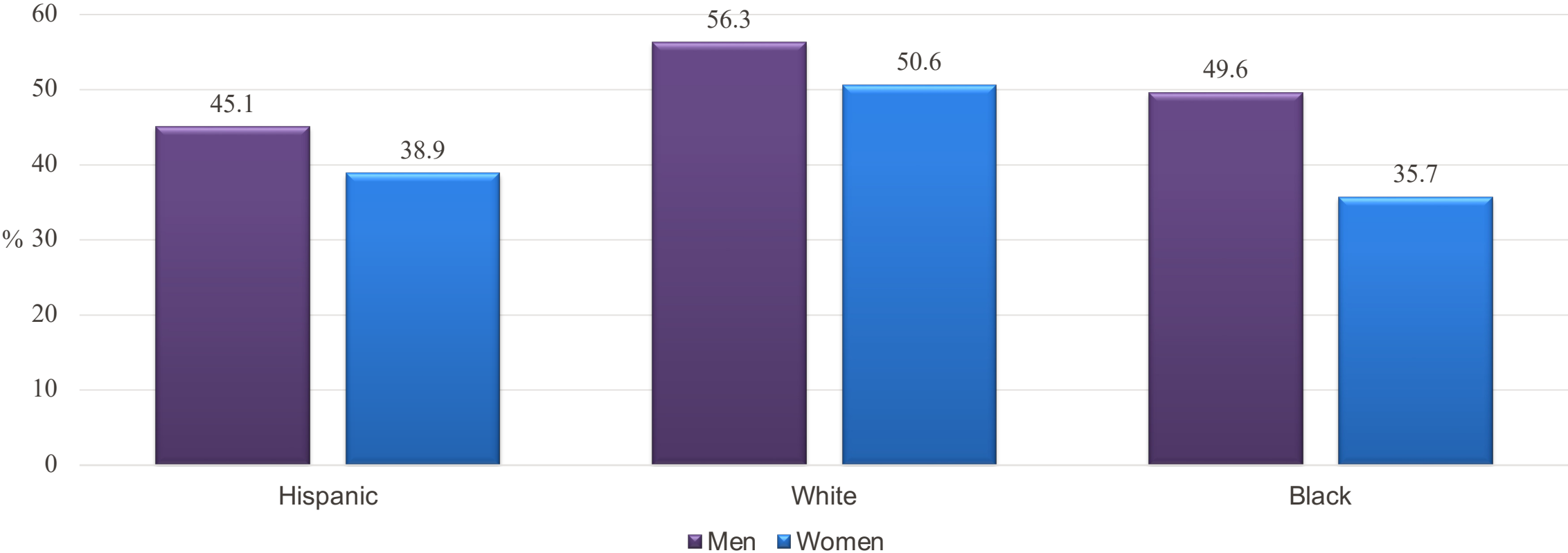
Feasibility Study

Objective: To conduct a pilot intervention trial focused on African American and Hispanic women's physical activity to inform the design of a subsequent, larger RCT





Meeting National Physical Activity (PA) Recommendations





Project FITT Study Aims (2015-2016)

Qualitatively explore women's preferences for a physical activity promotion intervention that uses existing mobile technology and builds off of women's social networks.

Assess the feasibility of recruitment, retention, and implementation of study procedures in a pilot group-randomized trial of a social network-based intervention in inactive predominantly Black and Latina women

Assess the acceptability and appeal of the intervention and study procedures through post-intervention focus groups.



Project FITT Study Design

Group-randomized trial

N=56 women enrolled as 28 social network dyads

Dyad=unit of randomization

Recruited from existing institutional cohorts + community outreach

16-week intervention

Assessments at baseline, 8-weeks (online only), 16-weeks

Intervention Design

- Behavioral skills
- Connect with study partner
- Post comments
- Monitor partner's activity
- Emotional support, appraisal support

Telephone Coaching



Activity Monitor



Health Education Newsletters



- Dyad-based
- Knowledge/skills for behavior change
- Emotional, informational

- Educational/motivational
- 6 “issues” – PA + nutrition
- Timing aligned with counseling calls
- Disseminated via email
- Mobile-friendly



Control Condition

(After 16-week assessment)





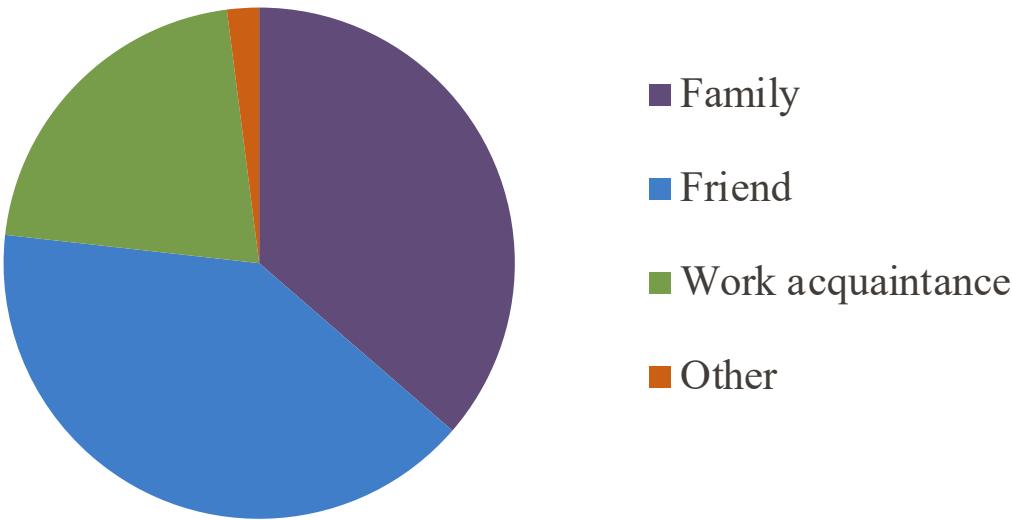
Baseline Characteristics

	Total (n=56)	Intervention (n=26)	Control (n=30)
Age (mean)	42.8	43.2	42.4
Obese (n, %)	43 (78)	21 (81)	22 (76)
Race/ethnicity (n, %)			
Black	30 (54)	14 (54)	16 (53)
Hispanic	23 (41)	11 (42)	12 (40)
Other	3 (5)	1 (4)	2 (7)
Education (n, %)			
≤HS	4 (7)	1 (4)	3 (10)
Some college/Associates degree	23 (41)	14 (54)	9 (30)
≥ College	29 (52)	11 (42)	18 (60)
HH Income (n, %)			
<\$50,000	18 (36)	9 (36)	9 (36)
\$50,000-80,000	17 (34)	9 (36)	8 (32)
> \$80,000	15 (30)	8 (32)	7 (28)

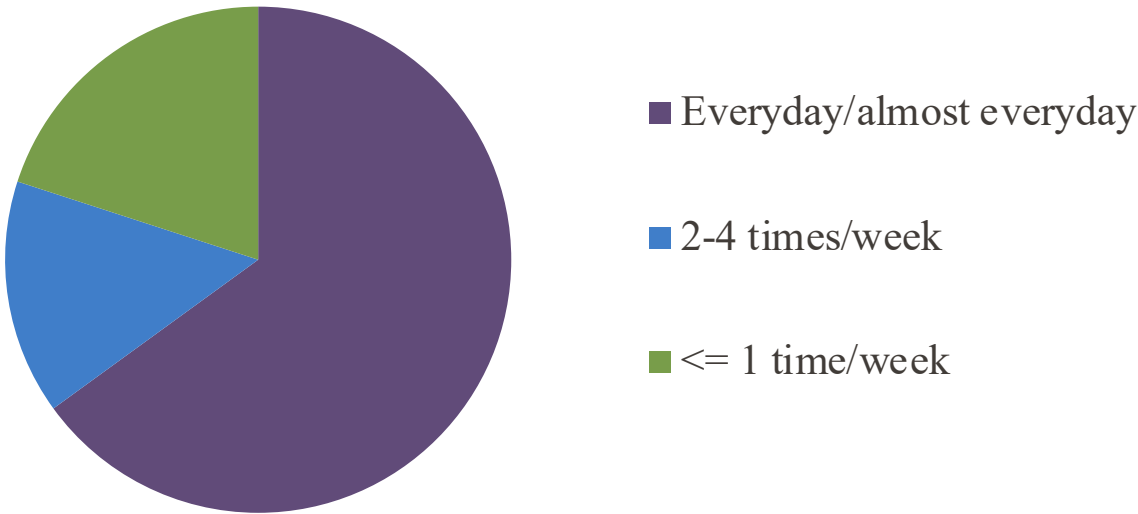


Partner Characteristics

Partner relationship



How often do you usually communicate with your study partner?

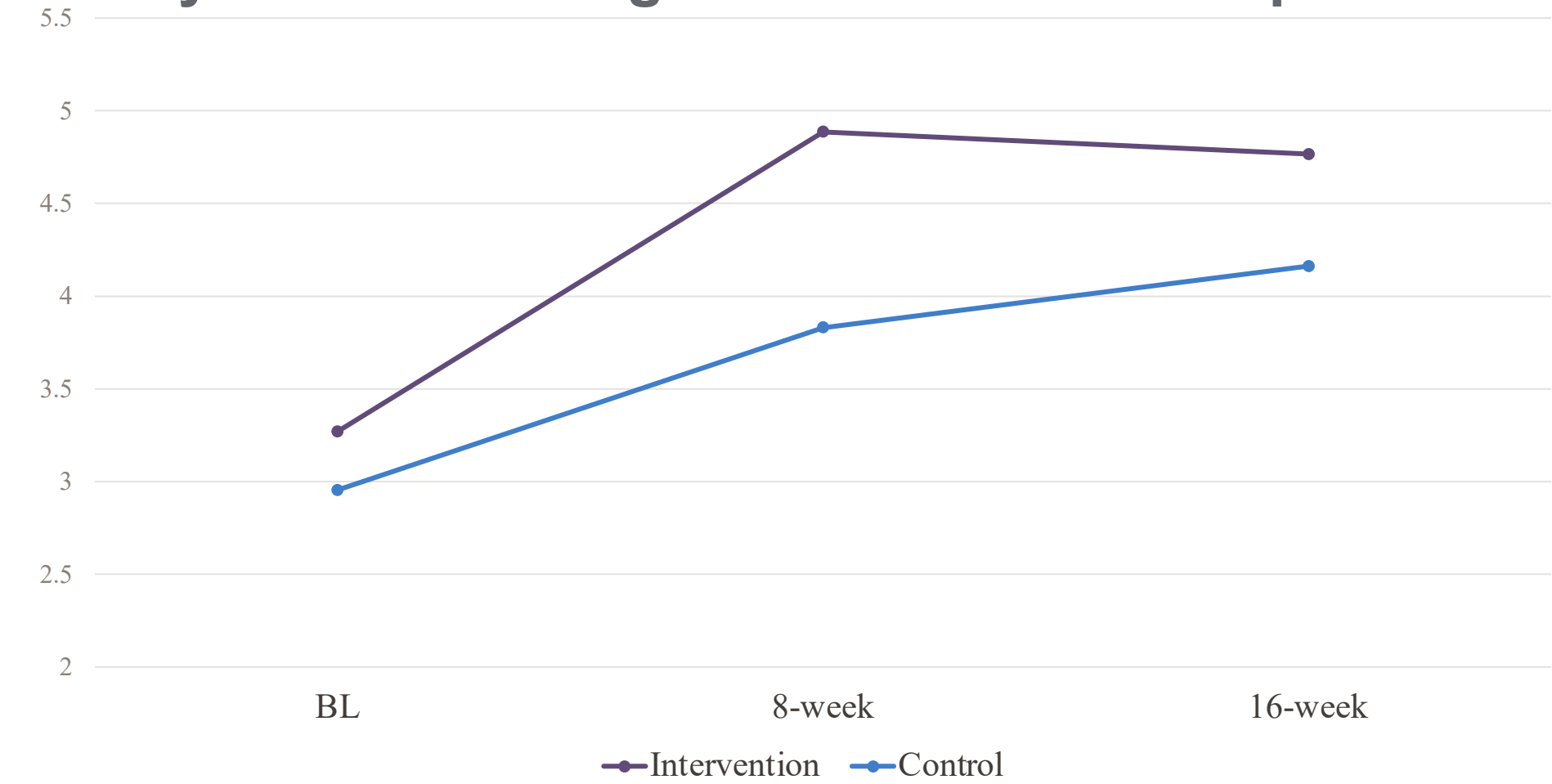


Closeness with partner (range 1-5; 5=very close)

- Mean = 4.2



Weekly Minutes of Log-transformed Self-Reported MVPA^{a,b}

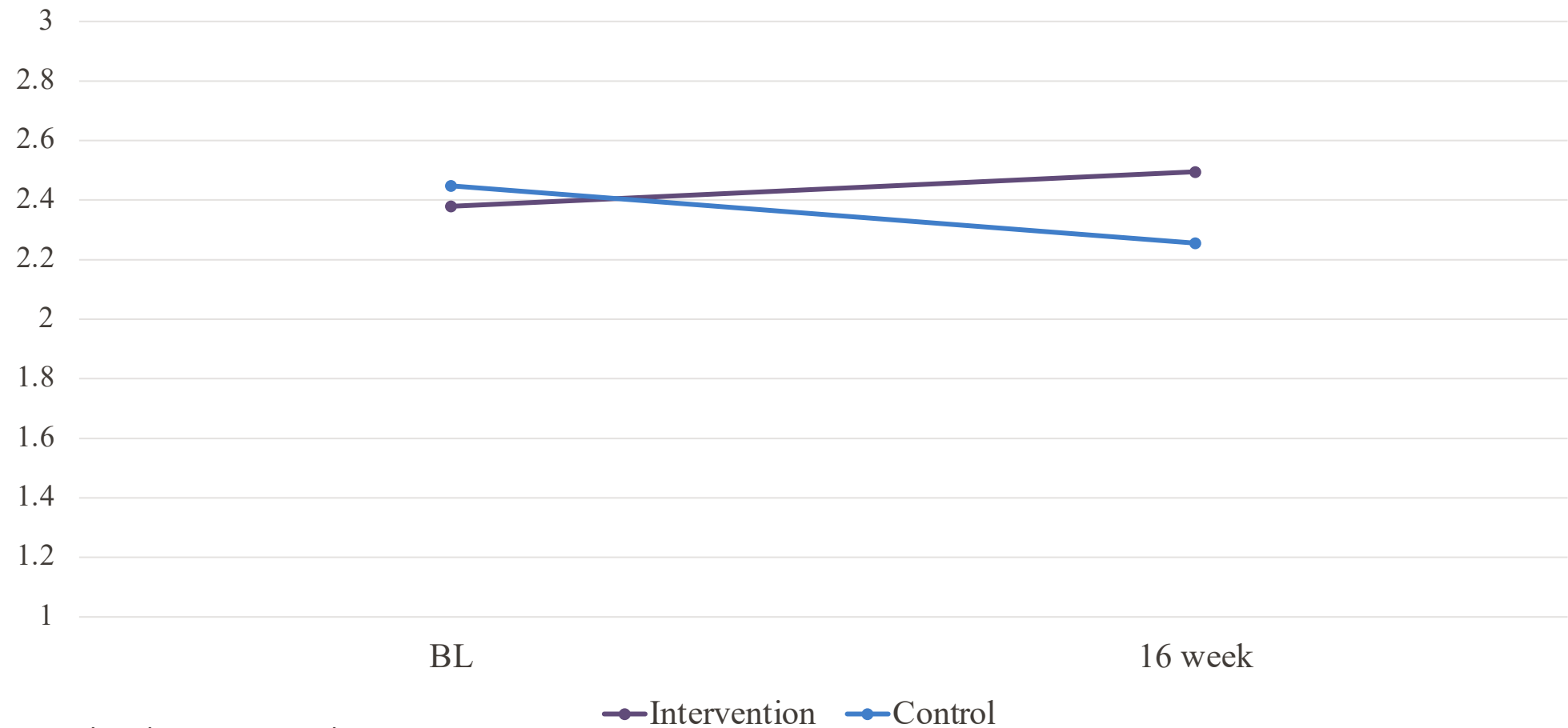


^aModified Godin Leisure-Time Exercise Questionnaire

^bMixed effects models controlled for race/ethnicity, baseline BMI, age, education, income, partner relationship, primary status



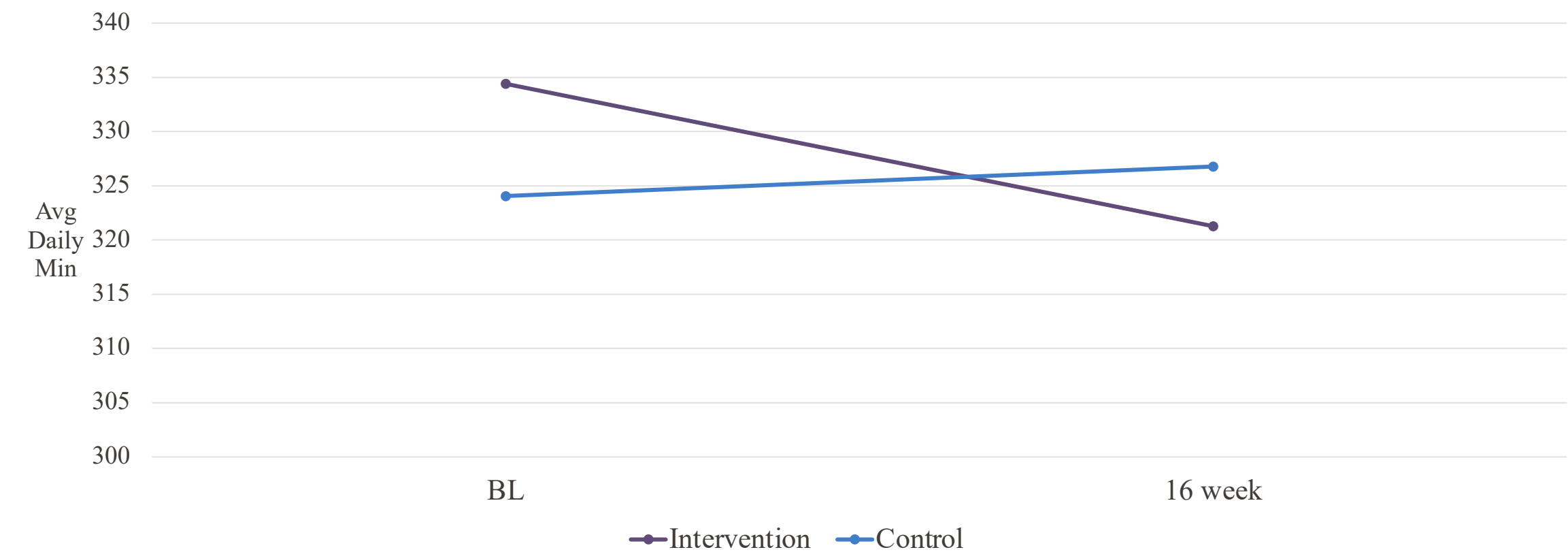
Daily Minutes of Cumulative Log-Transformed Objective MVPA^{a,b}



^aFreedson bouts, Actigraph GT3X+
^bMixed effects models controlled for race/ethnicity, baseline BMI, age, education, income, partner relationship, primary status



Daily Minutes of Objective Sedentary Time in Bouts^{a,b}

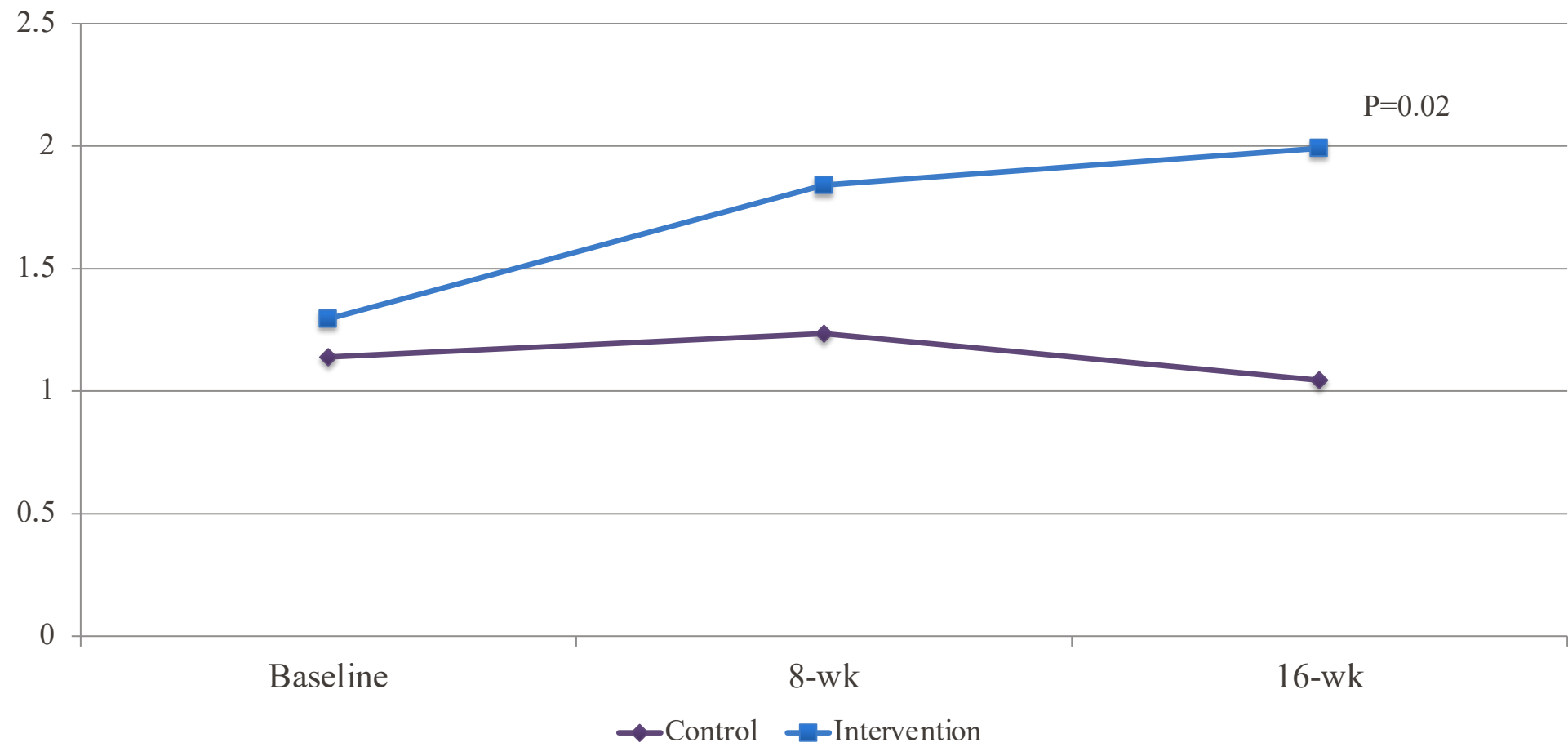


^aActigraph GT3X+

^bMixed effects models controlled for race/ethnicity, baseline BMI, age, education, income, partner relationship, primary status



Social Control – Persuasion^{a,b}

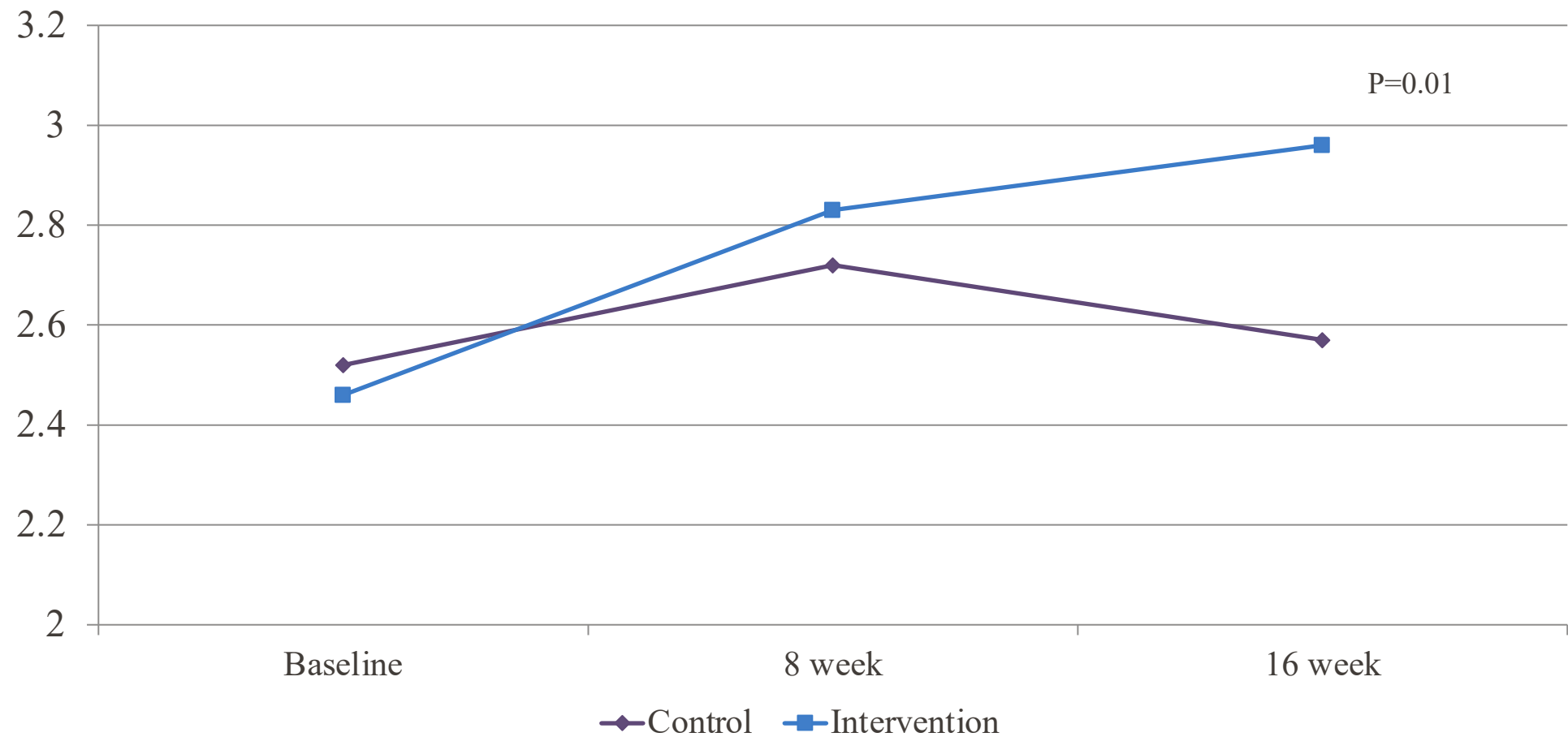


^aSorkin DH, et al. Health Psychol 2014

^bMixed effects models controlled for race/ethnicity, baseline BMI, age, education, income, partner relationship, primary status MD ANDERSON CANCER CENTER



PA-related Social Support^{a,b}



^aSallis JF, et al. Preventive Medicine 1987; Family/friend support combined

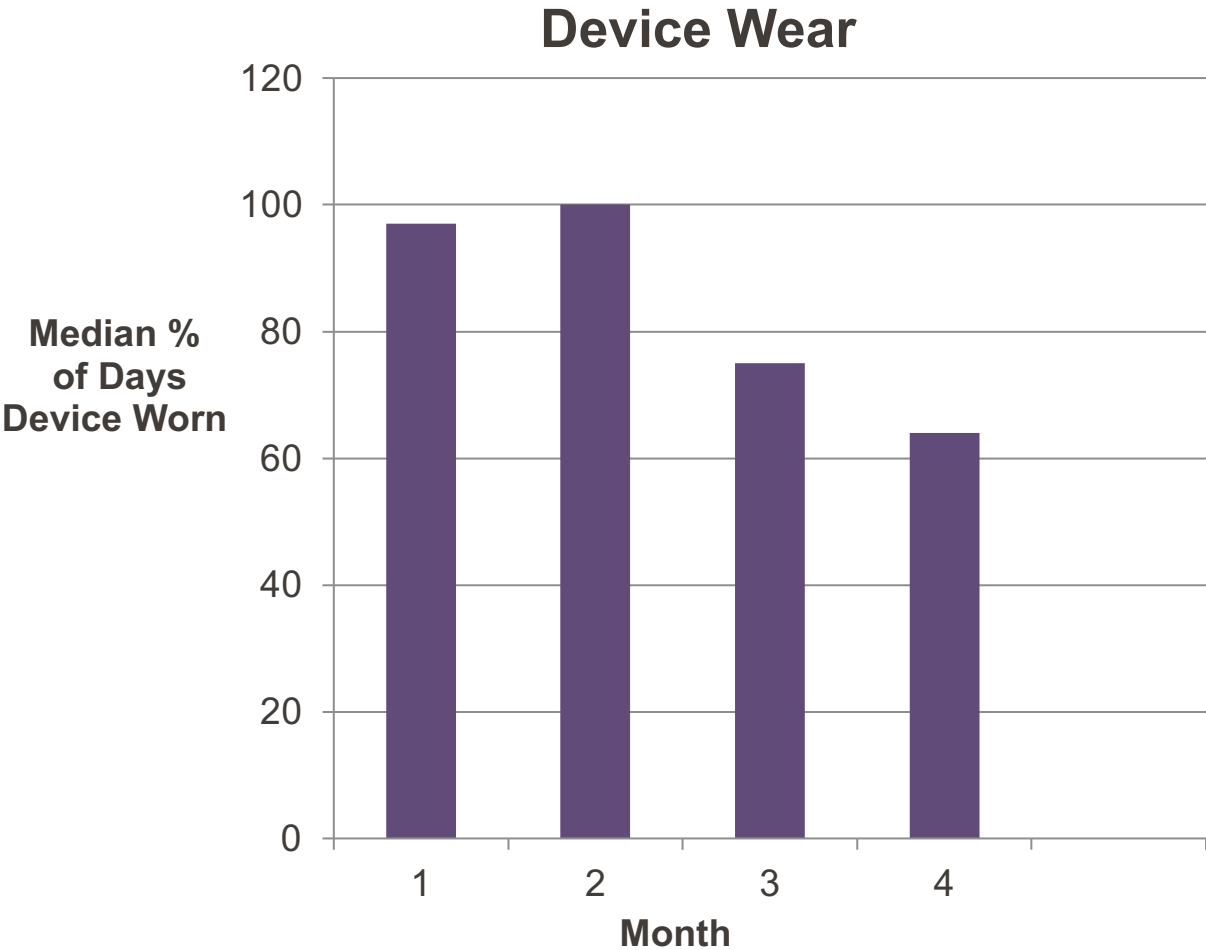
^bMixed effects models controlled for race/ethnicity, baseline BMI, age, education, income, partner relationship, primary status



Intervention Engagement

Counseling calls

- 100% dyads completed 4 of the 6 counseling calls
- 87% completed 5 calls together
- 53% completed all 6 calls together
- 90% of calls had both participants participating





Participant Satisfaction

Perceived satisfaction in intervention participants	
	%
I'd recommend this program to my family or friends	92
The counseling sessions were helpful	92
The program was effective for me	69
Jawbone was easy to use	72

Post-Intervention Focus Group Findings

Satisfaction with health coaching

- “I loved the monthly coaching calls from our coach. It kept us moving forward. I liked that, to see if we were still connected, and if we were still working, how our relationship was going.”
- “I liked the idea of setting the goals, and the accountability in revisiting the goals, for example the health coach would ask, ‘Hey, how did you do on this, because you said you were going to do this? Did you actually accomplish it?’”

Enjoyed friendly competition

- “If [my partner] was out and she did a lot of movement, I said, okay, well, I can’t sit here and watch this movie that I wanna watch. I need to get up and go for a walk. It was the challenge and the competition, being able to see her numbers, which encouraged me to get up and move.”

Post-Intervention Focus Group Findings

Appreciated dyadic approach

- “It’s nice to be supported. I know I had one rough week at work where I went off the grid. I wasn’t walking. Yeah, I went off and [my partner] was like, ‘Are you okay?’”
- “I could see what she had done, and she could see what I had done. Like an accountability thing. If I fell short, she’d text me or call me and say, ‘Mom, what’s going on? What happened today?’ Or if I met the goal, she’d shoot me a little text: ‘Great job Mom!’”

Did not appreciate dyadic approach

- “I didn’t think it was that important to me to have an accountability partner. I let her talk about her progress, but I wasn’t asking her about her progress every day. She was always the initiator. I was like, ‘oh my gosh, not today.’”



What We Learned

Feasibility of the intervention and study procedures was generally positive

- Good compliance with counseling calls
- Some issues with the device (Jawbone UP)
- Good retention at final follow up
- High levels of satisfaction with the intervention overall and the dyadic approach

Preliminary support for the use of a social network-based intervention to promote physical activity in inactive, predominantly Black and Latina women



Women on the *Move*

THE UNIVERSITY OF TEXAS
MDAnderson
~~Cancer Center~~
Making Cancer History®

Objective: To test the efficacy of a 6-month dyadic behavioral intervention, compared to an individual behavioral intervention, to increase moderate-to-vigorous physical activity (MVPA) in 500 inactive, predominantly Latina and Black women





Specific Aims

The primary specific aim of the proposed study is to

Determine whether the dyadic behavioral intervention produces greater engagement in moderate-intensity or greater PA compared with the individual behavioral intervention.

Primary outcomes are change in self-reported and objective minutes per week of MVPA.



Specific Aims

The secondary aims of the proposed study are to

Determine the effects of the dyadic behavioral intervention on **hypothesized intervention mechanisms** (e.g., autonomous motivation, social support, autonomy support, self-efficacy), and the associations of those mechanisms with PA outcomes.

Determine the effects of the dyadic behavioral intervention on **secondary outcomes** (i.e., cardiorespiratory fitness, blood pressure, anthropometric measures, mean daily steps, sedentary time) compared with the individual behavioral intervention.

Determine whether the dyadic behavioral intervention produces greater engagement of MVPA compared with the **individual control**.

New Strategies

Change the comparison to an individual intervention

- Stronger scientific contribution regarding potential benefits of dyadic approach
- Yield insight regarding potential mechanisms for change between the individual and dyadic intervention

Add structured activities to enhance women's ability to be a supportive partner and increase engagement among partners

Provide Fitbit devices to all participants

- Ensures consistency in devices and data monitoring
- Recognizes that many people have access to some form of self-monitoring devices (e.g., phone apps, activity trackers)

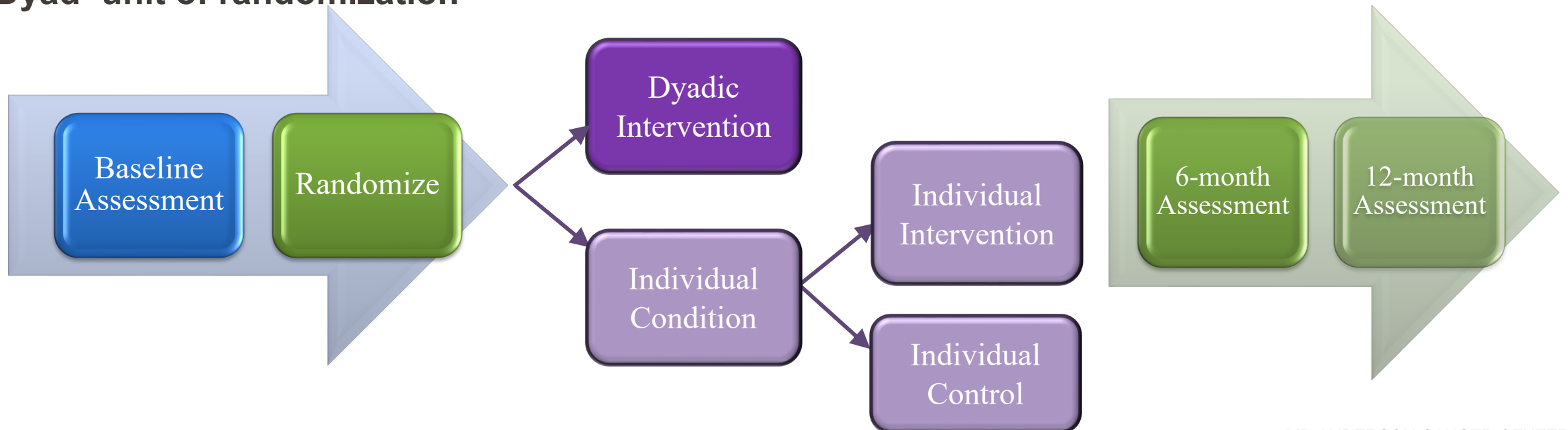


RCT Study Design

Group-randomized trial

N=500 women enrolled as 250 family/friend dyads

Dyad=unit of randomization



Conceptual Framework

Social Cognitive Theory

- Interpersonal-level theory
- Emphasizes dynamic interaction between people, their behavior, and their environments

Self-Determination Theory

- Behavioral motivation spans a continuum from autonomous to controlled
- An individual driven by autonomous motivation feels self-directed, more likely to achieve desired change
- Autonomy, competence, and relatedness nurture and support autonomous motivation

Interdependence Theory

- Emphasizes the reciprocal nature of dyadic relationships



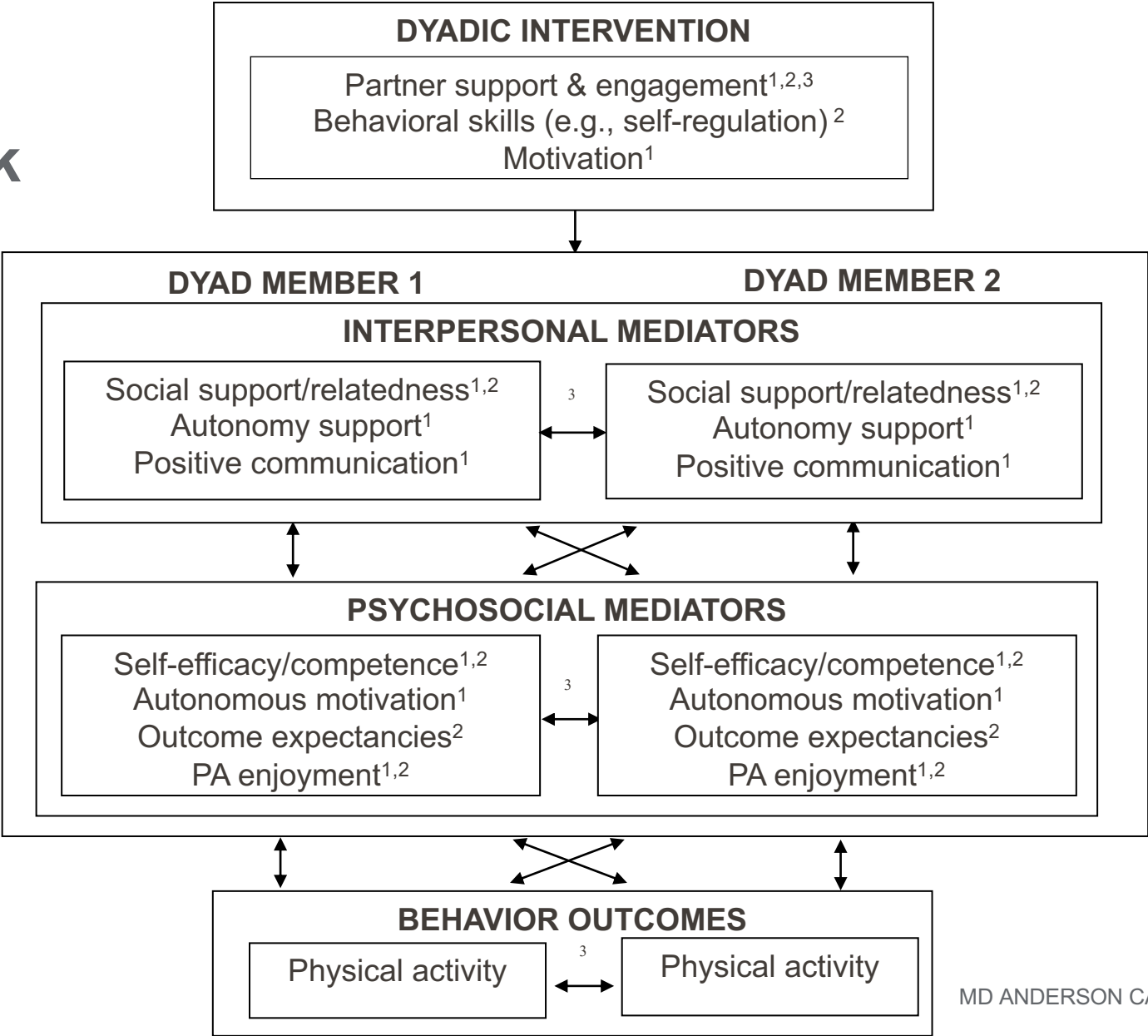
Conceptual Framework

Social Cognitive Theory

Self-Determination Theory

Interdependence Theory

Figure 2. Conceptual Model (Theory:¹SDT, ²SCT,³IT)



Individual Health Education

Fitbit



Health Education Newsletters

- 12 newsletters over 6 months
- Publicly available health education on physical activity
- Links to exercise videos
- Delivered by email or text



Individual Health Coaching Intervention

Fitbit

Electronic Health Education Newsletters

Health Coaching

- Traditional behavioral health coaching using a Motivational Interviewing approach
- 12 video sessions (Zoom)

Month 1

- Sessions 1-4

Month 3

- Sessions 7-8

Month 5

- Session 11

Month 2

- Sessions 5-6

Month 4

- Sessions 9-10

Month 6

- Session 12

Individual Health Coaching

Motivational Interviewing

- Collaborative, goal-oriented, person-centered approach designed to strengthen autonomous motivation for behavior change
- Health coach respects participant's autonomy and choices regarding her behavior
- Includes techniques such as active listening, asking rather than making assumptions, offering empathy, speaking in non-judgmental manner

Key behavioral skills

- Self-monitoring of physical activity (Fitbit)
- Setting incremental and achievable goals
- Problem solving to overcome barriers

Dyadic Coaching Intervention

Fitbit

Electronic Health Education Newsletters

Health Coaching

- Study partners participate in health coaching sessions together
- 12 video sessions (Zoom)

Month 1

- Sessions 1-4

Month 3

- Sessions 7-8

Month 5

- Session 11

Month 2

- Sessions 5-6

Month 4

- Sessions 9-10

Month 6

- Session 12

Dyadic Coaching Components

Identify Women's Support Needs

- Explore past experiences receiving support
- Discuss the type of support women believe they need

Practice Autonomy Supportive Behaviors

- Identify characteristics of a supportive interpersonal environment
- Health coaches will model positive communication strategies
- Participants will practice strategies in role play scenarios

Dyadic Coaching Components

Develop a Mutual Support Plan

- Plan will describe each participant's support needs and ways for partner to be supportive
- May include direct/tangible support and autonomy support

Engage in Weekly Partner Activity

- Challenge/friendly competition
- Exercise together
- Try new class or video
- Do not need to be physically together

Strategies for Enhancing Cultural Sensitivity

“Surface structure” elements

- Intervention materials and research/intervention staff reflect characteristics of the population of interest
- E.g., availability of Spanish language materials, images of diverse women, bilingual and bicultural staff

“Deep structure” elements

- Incorporate issues of salience to the population, e.g., cultural norms and beliefs
 - Importance of family
 - Role of women as caregivers
 - Perceived norms around women exercising
 - Concerns regarding safety and access to physical activity opportunities/resources
 - Concerns regarding hair maintenance
- MI is well-suited for problem solving to address barriers/issues that participants may face

Strategies for Enhancing Cultural Sensitivity

Health Coach training

- In-depth training in factors associated with physical activity engagement and common barriers in our population of interest, recognizing heterogeneity

Community engagement to ensure community input into the research process

- Community Advisory Board
- Community Scientist Program (www.mdanderson.org/communityscientist)

Making study visits accessible, convenient

- Community sites for in-person assessments
- Offer study visits during evening, weekend hours



Eligibility

Inclusion Criteria

Identify as woman
Age 18-65
Able to engage in moderate PA, per the PA
Readiness Questionnaire
Insufficient PA
English/Spanish speaking
Able to enroll with an eligible partner
Have a smartphone
Willing to use Fitbit app and device
Willing and able to send/receive text messages

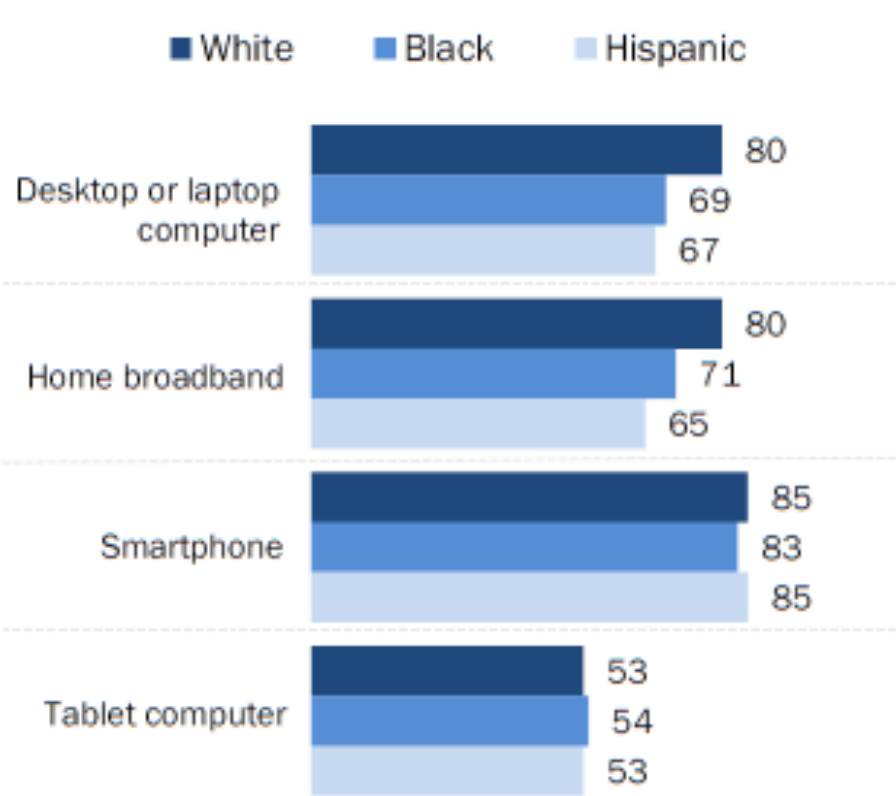
Exclusion Criteria

Dyad members reside in same household
Current or planned pregnancy
Plans to move outside study area
Current participation in PA or weight loss program

Technology Access

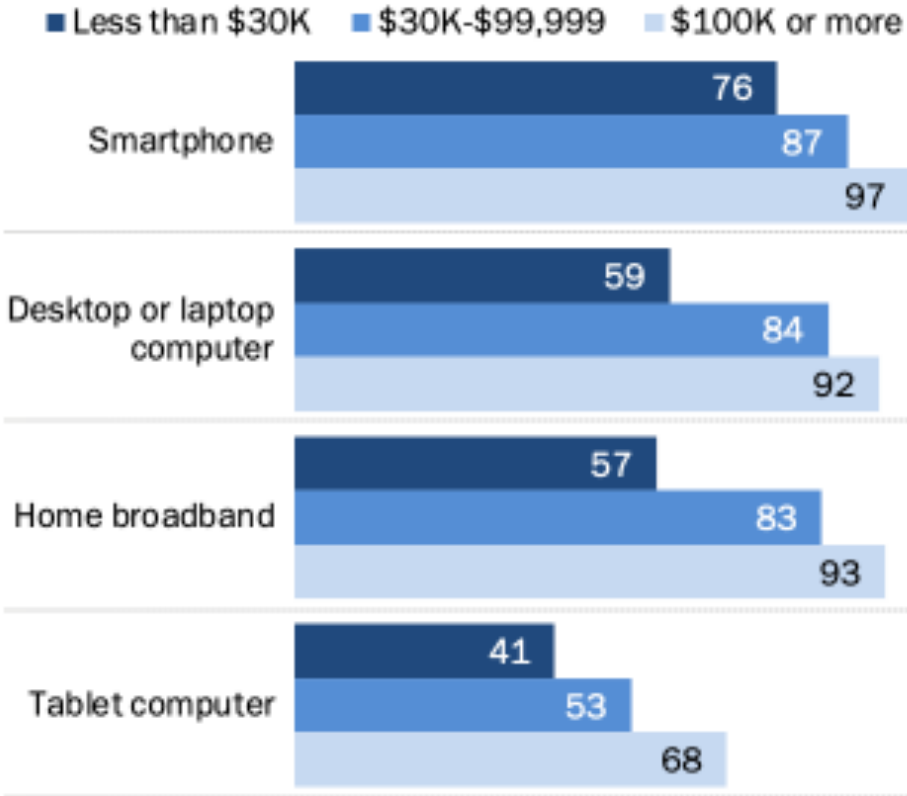
Black and Hispanic adults in U.S. are less likely than White adults to have a traditional computer, home broadband

% of U.S. adults who say they have the following



Americans with lower incomes have lower levels of technology adoption

% of U.S. adults who say they have each of the following, by household income





Technology Access

	Smartphone Ownership (2021)	Regularly wear smartwatch or fitness tracker (2020)
Race/ethnicity		
White	85%	20%
Black	83%	23%
Hispanic	85%	26%
Education		
≤ High school	75%	15%
Some college	89%	25%
College graduate	93%	27%
Income		
< \$30,000	76%	12%
\$30,000-\$49,999	83%	20%
\$50,000-\$74,999	85%	20%
\$75,000+	96%	31%



Recruitment

Focus on recruiting Latina and Black women

Leverage relationships with community- and faith-based organizations

Community outreach

- Events
- Organizations, schools, clinics, churches
- Social media
- Organizational channels



Study Procedures

	Baseline	6 mo	12 mo
ASSESSMENTS			
Survey measures	X	X	X
Objective PA, sedentary time (Accelerometer)	X	X	X
Anthropometrics	X	X	X
Cardiorespiratory fitness (2-minute step test)	X	X	X
Blood pressure	X	X	X
Mean daily steps (Fitbit/Fitabase)	X	X	X

Incorporation of Technology

Virtual Orientation

- Provides more detailed description of study
- Designed to enhance retention, participation

Fitbits/Fitabase

- Self-monitoring
- Connecting with dyadic intervention partners

Text Reminders

- Automated text reminders for study visits, coaching sessions, device wear
- Integrates with REDCap, Fitabase

Brief surveys delivered via text

- Evaluation of health coaching sessions
- Assessment of participation in partner activity

Electronic Newsletters

- Delivered via text or email
- Contain links to brief exercise videos



In Conclusion...

Dyad-based intervention studies = Opportunity to learn!

More research is needed

- Potential benefits and utility of dyad-based interventions
- How to operationalize and nurture support

Barriers still need to be addressed

Technology has an important role to play



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Community Partners

- Avenue
- Can Do Houston
- Community Family Centers
- ProSalud
- Wesley Community Center
- MDA Community Relations

Support

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