

Background

- 65% of African American (AA) women do not meet recommendations for physical activity (PA)
- Theory-based interventions to increase PA in AA women, although better than those not based on theory, have only modest effects
- Interventions guided by Social Cognitive Theory (SCT) have targeted three constructs: self-efficacy, outcome expectations, and social support in order to improve PA
- Of 11 PA interventions designed for healthy AA women, only two linked PA outcomes to SCT/health promotion theory constructs
- Understanding how these theoretical constructs relate to PA may provide direction in intervention development

Purpose

To examine the relationships among SCT constructs (self-efficacy, outcome expectations/realizations, group social support) and change in PA from baseline to 48 weeks in AA women participating in a lifestyle PA program.

Methods

Design

- Secondary data analysis of a 48-week randomized control trial with three intervention conditions that used a cluster-randomized, Latin-square design

Sample

- Inclusion: female, AA, sedentary (participated in moderate-vigorous PA < three times/week), 40 to 65 years, no functional limitations preventing PA
- Exclusion: major signs/symptoms of pulmonary or cardiovascular disease, blood pressure $\geq 160/100$ mmHg, $HbA_{1c} \geq 9$, history of myocardial infarction or stroke

Setting

- Six community healthcare sites (3 hospitals and 3 clinics) located in or bordering six predominately AA, low-income, Chicago community areas.

Intervention: Women's Lifestyle Physical Activity Program Based on SCT

- Personalized PA prescription (all treatment conditions)
 - Goal to increase steps/day by 3,000 steps per day over baseline steps
- Group behavior meetings (all treatment conditions)
 - Five two-hour meetings over 24-week adoption phase and one meeting during 24-week maintenance phase
 - Centered on role modelling and problem-solving
 - Addressed barriers and dispelled misinformation
- Telephone contacts between group meeting (randomized)
 - Group + Personal Call (8 motivational interview calls)
 - Group + Automated Call (8 motivational messages)
 - Group only: no telephone calls

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Methods, contd.

Measures

- Demographic characteristics:** age, marital status, children under 18, education, income
- Self-efficacy:** 14-item McAuley's Self-Efficacy for Overcoming Barriers to Exercise
- Outcome expectations/realization:** overall, physical and psychological
 - 14-item expected changes (baseline)
 - 14-item realized changes (24-weeks)
 - Outcome realization categories: surprised pessimists, pessimistic realists, disappointed optimist, optimistic realists
- Group social support:** 24-item Social Provision Scale for Physical Activity (24 weeks)
- PA (baseline and 48 weeks)**
 - Self-report: Community Healthy Activities Model Program for Seniors (CHAMPS)
 - 30 daily activities assigned metabolic equivalent (MET)
 - Moderate PA MET = >3.0 to <6.0
 - Vigorous MET values >6.0
 - Score: Minutes of weekly moderate/vigorous PA
 - Device: Lifecorder EX (NL2200) accelerometer
 - Seven-day blinded pedometer (baseline)
 - Steps accrued during weeks with valid data (≥ 3 days of wear) in the 4 weeks before and after the 48-week assessment (48-week)
 - Score: mean daily steps

Results

Demographics (n=288)		
	n	%
Married or living with partner	110	38.20
1 or more children < age 18	106	36.80
Education college or higher (n=287)	142	49.50
Family income, \$ (n=280)		
$\leq 29,999$	56	20.00
30,000-59,999	102	36.42
$\geq 60,000$	107	38.21

Change in Self-reported MVPA from Baseline to 48 Weeks by Outcome Realization Groups (n=260)

Outcome Realization Groups	Total n (%)	Change in Self-report (minutes/day)		ANOVA
		M	(SD)	
Overall				F (3,256) 4.56 ^a
Pessimistic realist	80 (30.76)	114.37	(346.89)	
Surprised pessimist	53 (20.38)	236.60	(397.74)	
Disappointed optimist	47 (18.07)	77.55	(284.02)	
Optimistic realist	80 (30.76)	277.50	(382.29)	
Physical				F (3,256) 4.97 ^a
Pessimistic realist	79 (30.38)	306.12	(412.56)	
Surprised pessimist	57 (21.92)	203.68	(355.25)	
Disappointed optimist	53 (20.38)	134.15	(347.80)	
Optimistic realist	71 (27.30)	306.12	(412.56)	
Psychological				F (3,256) 2.32 ^b
Pessimistic realist	66 (25.38)	127.50	(346.22)	
Surprised pessimist	65 (25.00)	227.30	(397.94)	
Disappointed optimist	37 (14.23)	127.50	(346.22)	
Optimistic realist	92 (35.38)	231.52	(377.12)	

^a= $p < .01$; ^b= $p = \text{non-significant}$

- Optimistic realists at 24 weeks had the most improvement in self-reported MVPA
- No significant differences for change in device measured steps/day from baseline to 24 weeks by outcome realization category

Results, contd.

Correlations Among SCT Variables and Physical Activity

Social Cognitive Variable	1	2	3	4	5	6	7	8
1 Baseline self-efficacy								
2 24-week self-efficacy change								
3 Baseline physical outcome expectations								
4 24-week physical outcome realizations								
5 Baseline psychological outcome expectations								
6 24-week psychological outcome realizations								
7 24-week group social support								
8 48-week MVPA(minutes/week) change								
9 48-week accelerometer (steps/day) change								

** Correlation is significant at the 0.01 level (2-tailed)

- 48 week self-reported MVPA correlated significantly with: baseline physical outcome expectations, 24-week physical outcome realizations, and 24-week psychological outcomes realizations
- Device-measure (steps/day) correlates significantly with: 24-week self-efficacy change

Regression of Change in MVPA from Baseline to 48 Weeks on SCT Constructs

Variable	Standardized coefficient	t	p
Constant		-1.32	.188
Treatment condition ^a			
WWP+PC		-1.83	.067
WWP+AC		-1.49	.136
Baseline physical outcome expectations ^a	.26	3.15	.002
Baseline psychological outcome expectations ^a	-.19	-2.30	.022
24-week psychological outcome realizations ^a	.26	4.09	.000

$R^2 = .11$, $F(5,250) 6.58$, $p < .001$,

^a These are the independent variables retained in the final regression model using a hierarchical/theoretical regression analysis

- Improvement in moderate vigorous physical from baseline to 48 weeks was associated with higher baseline physical and psychological outcome expectations and higher 24-week psychological outcome realizations.

Regression of Change in Device Measured Steps per Day from Baseline to 48 Weeks on SCT Constructs

Variable	Standardized coefficient	t	p
Constant		1.65	.099
Treatment condition ^a			
WWP+PC		1.17	.242
WWP+AC		-.25	.800
24-week change in self-efficacy ^a	.29	3.68	<.001

$R^2 = .09$, $F(3,148) 5.25$, $p = .002$,

^a These are the independent variables retained in the final regression model using a hierarchical /theoretical regression analysis

- Improvement in device measured steps was associated with improvement in self-efficacy from baseline to 24 weeks

Conclusion

- Findings from this study provided the unique opportunity to examine the associations of SCT constructs obtained from a PA program for midlife AA women with successful PA outcomes.
- SCT constructs including self-efficacy, outcome expectations and outcome realizations were associated with improvement in PA
- These constructs should all be considered targets for further intervention development