

Using Multi-Theory Model for Physical Activity Behavior Change

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Abstract

Physical inactivity is a major **public health problem**. College students are a vulnerable group. This study was aimed at using **multi-theory model (MTM) of health behavior change** to predict physical activity behavior change in college students. Regression revealed that **26%** of the variance in the **initiation** of physical activity was explained by advantages outweighing disadvantages, behavioral confidence, work status, and changes in physical environment. About **30%** of the variance in **sustenance** of physical activity was explained by emotional transformation, practice for change, and changes in social environment.

Problem

There are various **benefits of physical activity** such as reduced risk of overall morbidity, heart disease, hypertension, Type 2 diabetes, metabolic syndrome, & some cancers.

Yet **only 46%** of US college students meet recommendations for physical activity.

One in four college students report zero days of moderate-intensity aerobic exercise for at least 30 minutes.

Although a range of **theoretical models** have been used to identify factors, the existing health behavior theories and models have conceptual problems, lack predictive power, are not parsimonious and/or are too comprehensive and consequently, impractical.

In this context **MTM is a new model** that needs to be tested.

Purpose

The purpose of this study was to examine the utility of the **MTM** of health behavior change in predicting **physical activity behavior** among college students.

Relevant Literature

MTM poses that three primary constructs explain and predict the **initiation** of health behavior change:

- **Participatory dialogue:** Two-way communication that emphasizes the advantages and disadvantages of a health behavior change (Freire, 1970; Prochaska, 1979; Rosenstock, 1974)
- **Behavioral confidence:** How certain someone is to engage in a health behavior change in the future (Ajzen, 1991; Bandura, 1986)
- **Physical environment:** This involves modifying the obtainability, availability accessibility, convenience, and readiness of resources (Bandura, 1986; Prochaska, 1979)

MTM poses that three primary constructs explain and predict the **sustenance** of health behavior change:

- **Emotional transformation:** This involves altering emotions and directing them to assist with health behavior change (Goleman, 1995).
- **Practice for change:** Constantly deliberating behavior change, incorporating ongoing modifications to absolve ineffective strategies, addressing barriers, and staying focused on the health behavior change (Freire, 1970)
- **Social environment:** Establishing social support within the environment (House, 1981; Prochaska, 1979)

Research Questions

To what extent do the constructs of participatory dialogue, behavioral confidence, and physical environment **predict initiation** of physical activity change in college students.

To what extent do the constructs of emotional transformation, practice for change, and social environment **predict sustenance** of physical activity change in college students.

Procedures

Sample

- Cross-sectional design
- Sample size = 143
- Mean age 24.56 years (s.d. 8.19)
- 71% White, 17% Black, 12% Others
- 57% working

Instrumentation

- **37-item** valid and reliable **questionnaire**
- **Face and content validity:** Panel of experts
- **Construct validity:** Structure equation modeling
- **Internal consistency:** Cronbach's alpha

Data Analysis

Descriptive statistical analyses: Means and standard deviations for metric variables, Frequency and percentages for categorical variables.

Inferential data analyses: Stepwise multiple linear regression

Findings

Variables	B	SE _B	β	p-value	95% CI
Advantages outweighing disadvantages	0.042	0.018	0.182	0.018	0.007 - 0.077
Behavioral confidence	0.075	0.019	0.310	<0.001	0.038 - 0.112
Changes in physical environment	2.062	0.023	0.208	0.008	0.016 - 0.107
Work Status	-0.509	0.175	-0.212	0.004	-0.855 - -0.162

$F(4, 135) = 13.220, p < 0.001, R^2 (\text{Adjusted } R^2) = 0.281 (0.260)$
 Dependent variable is initiation of physical activity behavior change; B = unstandardized coefficient; SE_B = standard error of the coefficient; β = standardized coefficient; p = level of significance; CI = confidence interval

Variables	B	SE _B	β	p-value	95% CI
Emotional transformation	0.079	0.033	0.204	0.019	0.013 - 0.145
Practice for change	0.139	0.037	0.331	<0.001	0.066 - 0.211
Changes in social environment	0.098	0.042	0.175	0.022	0.014 - 0.181

$F(3, 136) = 20.596, p < 0.001, R^2 (\text{Adjusted } R^2) = 0.312 (0.297)$
 Dependent variable is sustenance of physical activity behavior change; B = unstandardized coefficient; SE_B = standard error of the coefficient; β = standardized coefficient; p = level of significance; CI = confidence interval

Limitations

Cross-sectional design: Nothing can be said about temporal association of variables.

Actual behavior has **not** been measured by this study but a proxy intention for initiation and sustenance of behavior

Self-report bias.

Test-retest reliability not computed.

Conclusions

For **initiation of physical activity behavior**, the constructs of advantages outweighing disadvantages, behavioral confidence, and changes in physical environment along with work status ($p < .001$) predicted **26% of the variance**.

For **sustenance of physical activity behavior**, the constructs of emotional transformation, practice for change, and changes in social environment ($p < 0.001$) predicted **29.7% of the variance**.

MTM is a robust theory

Social Change Implications

MTM can be tested and applied for developing physical activity promotion **interventions**.

MTM can be tested and applied to **other health behaviors**.

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