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 absolute 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

<table>
<thead>
<tr>
<th>Variables</th>
<th>β</th>
<th>SE</th>
<th>p-value</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advantages outweighing disadvantages</td>
<td>0.042</td>
<td>0.168</td>
<td>0.038</td>
<td>0.007 – 0.077</td>
</tr>
<tr>
<td>Behavioral confidence</td>
<td>0.075</td>
<td>0.019</td>
<td>-0.018</td>
<td>-0.004 – -0.132</td>
</tr>
<tr>
<td>Changes in physical environment</td>
<td>0.262</td>
<td>0.023</td>
<td>0.006</td>
<td>0.000 – 0.080</td>
</tr>
<tr>
<td>Risk Status</td>
<td>0.004</td>
<td>0.075</td>
<td>-0.121</td>
<td>0.000 – 0.051</td>
</tr>
</tbody>
</table>

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<th>Variables</th>
<th>β</th>
<th>SE</th>
<th>p-value</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional transformation</td>
<td>0.079</td>
<td>0.031</td>
<td>0.019</td>
<td>0.000 – 0.145</td>
</tr>
<tr>
<td>Practice for change</td>
<td>0.139</td>
<td>0.017</td>
<td>-0.001</td>
<td>0.004 – 0.236</td>
</tr>
<tr>
<td>Changes in social environment</td>
<td>0.081</td>
<td>0.042</td>
<td>0.022</td>
<td>0.004 – 0.159</td>
</tr>
</tbody>
</table>

Social Change Implications
MTM can be tested and applied for developing physical activity promotion interventions.

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 < .001) predicted 29.7% of the variance.

MTM is a robust theory