

# Using the Transtheoretical Model of Change to Understand High School Students' Screen Time Behavior

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## ABSTRACT

**Objective(s):** The aim of this study is to understand high school students' screen time behavior.

**Methodology:** Part of the study was an experimental randomized controlled trial used to guide this study. The study was conducted at Al-Wihdah High School for females in Al-Nasiriyah City. The study encompassed a simple random sample of 144 high school female students. The study instrument includes subjects' sociodemographic characteristics of age, living arrangement, family's socioeconomic status. It also includes the Transtheoretical Model of Change measures of Stages of Change for Screen Time Scale (Short Form) which includes five questions, each question represents one of the Stages of Change for Screen Time. It also includes Stages of Change for Screen Time Scale (Continuous Measure), the Processes of Change for Screen Time Scale, the Self-Efficacy for Screen Time Scale, and the Decisional Balance Scale for Screen Time. Data were collected using a self-reported method for the period from November 1<sup>st</sup>, 2021 to April 10<sup>th</sup>, 2022. Data were analyzed using the statistical package for social science (SPSS) for windows, version 26.

**Results:** The study results revealed that the administered Transtheoretical Model of Change-Stage-matched intervention moved subjects from lower Stages of Change to higher ones.

**Conclusion:** The administered Transtheoretical Model of Change-Stage-matched intervention stepped subjects to higher Stages of Change. Subjects in higher Stages of Change use more Processes of Change.

## INTRODUCTION

Screen time (ST) refers to time spent in front of electronic monitors such as televisions (TV), video games, computers, gaming devices, electronic games, and mobile phones<sup>1</sup>. Screen time is an important part of most teenagers' everyday life, as it is utilized for communications, entertainment, homework, and other purposes. In the adolescent population, smartphone ownership (95.0 percent), computer ownership (88.0 percent), and game console ownership (84.0 percent) are all very common<sup>2</sup>. Screens, whether in the form of smartphones, televisions, computers, or movie theaters, are now a fundamental part of everyday life<sup>3</sup>. While all of these technologies contribute to screen time, the most typical analysis appears to be of time spent watching TV or using a computer (generally but not entirely in the context of video games) and its likely link to sedentary behavior (SB)<sup>1,2,3,4</sup>.

Too much time spent in front of the screen sedentary behavior has been recognized as a public health risk, especially among children and adolescents. Excessive screen time is a type of sedentary behavior that involves spending too much time in front of a screen while seated<sup>5</sup>. In fact, most teenagers spend far more than the recommended two hours on screens, with average total sedentary screen time ranging from 4 to 7.8 hours per day among Canadian adolescents<sup>6,7</sup>. Because of the present COVID-19 pandemic and the resulting limits on in-person gatherings, many young people around the world are spending more time on screen time sedentary behavior (STSB) for online learning, recreation, and communication<sup>8</sup>.

Electronic media has become an integral element of the lives of today's youth. Children and adolescents are using an ever-increasing number of digital media devices for entertainment<sup>9</sup>. Rapid technology advancements allow for the condensing of an increasing range of faster-paced stimuli into the users' experience, which is accessible practically anywhere and at any time through mobile devices, luring kids to exceed the suggested two-hours daily screen time limit<sup>10</sup>.

An abundance of research demonstrates that parental regulations are linked to a lower body mass index (BMI) and better youth health<sup>11</sup>. Furthermore, parental rules appear to reduce the amount of time children and adolescents spend in SB<sup>12,13,14,15,16</sup>, making parental rules one of the few consistent and modifiable correlates of youth screen time<sup>17,18,19</sup>. However, how parental guidelines may effect total SB or time spent in SB apart from screen time is still uncertain<sup>20</sup>.

## METHODOLOGY

This research was guided by part of the study was an experimental randomized controlled trial. The most conclusive technique to prove causation is to use experimental designs. Researchers use these designs because they ensure a high level of internal validity because random assignment creates very similar experimental and control groups<sup>21</sup>.

The study was conducted at Al-Wihdah High School for females in Al-Nasiriyah City.

The study comprised of a simple random sample of high school female students who agreed to participate in this study. The study subjects were recruited from three grades in this school which Fourth Grade, Fifth Grade, Sixth Grade. Subjects were randomly assigned into both study and control groups; 72 students for the study group and 72 students for the control group. The simple random sampling involved having the lists of students' names in Al-Wihdah High School for females generated on Microsoft Office Word software.

Data were analyzed using the statistical package for social science (SPSS) for windows, version 26. The statistical measures of frequency, percent, mean, standard deviation, Repeated Measures ANCOVA, linear regression, One-way analysis of variance (ANOVA), and independent-sample t-test will be used.

After receiving the approval of the College of Nursing, University of Baghdad for the study, the student researcher discussed study details with officials at the selected high school. The general purpose of the study was explained to the participants, as well as how to complete the questionnaire, to ensure that they understand that participation is optional and that they can withdraw at any time. The student researcher informed participants that their data would be kept private and secure throughout and after their participation in the study. The student researcher further assured study participants that their identities will remain anonymous in the presentation, reporting, and/or any eventual publication of the study.

## RESULTS OF THE STUDY

Table 2: Students' academic achievement

	Study (N = 72)		Control (N = 72)	
	Frequency	Percent	Frequency	Percent
Poor	1	1.4	0	0.0
Fair	6	8.3	3	4.2
Good	25	34.7	27	37.5
Very good	20	27.8	23	31.9
Excellent	20	27.8	19	26.4

Table 3: Participants' distribution according to Stages of Change over time

Group	Stage of Change	Pretest		Posttest I		Posttest II	
		f	%	f	%	f	%
Study	Precontemplation	17	23.6	0	0.0	0	0.0
	Contemplation	36	50.0	24	33.3	16	22.2
	Preparation	19	26.4	43	59.7	37	51.4
	Action	0	0.0	4	6.9	19	24.6
	Maintenance	0	0.0	0.0	0.0	0	0.0
Control	Precontemplation	19	26.4	27	37.5	26	36.1
	Contemplation	27	37.5	20	27.8	24	33.3
	Preparation	17	23.6	12	16.7	16	22.2
	Action	4	5.6	4	5.6	4	5.6
	Maintenance	5	6.9	9	12.5	2	2.8

**DISCUSSION**

Concerning subjects' distribution across the Stages of Change for screen time behavior, the study results demonstrated that in the pretest time, less than a quarter in the study group were in the Precontemplation Stage of Change, a half were in the Contemplation Stage of Change, followed by those who are in the Action Stage of Change, and those who are in the Precontemplation Stage of Change. These findings are less than that reported by Faust<sup>22</sup> who reported that most of subjects were in the Precontemplation (68.7%), followed by those who were in the Contemplation (10.7%), those who were in the Preparation (5%), those who were in the Action, and those who were in the Maintenance Stage of Change. Likewise, these findings are lower than that of Costa<sup>23</sup> who reported that less than a half were in the Precontemplation Stage of Change.

In the posttest I, no subject remained in the Precontemplation Stage of Change. In the posttest I, more than a half become in the Action Stage of Change, followed by those who are in the Contemplation Stage of Change, and those who are in the Action Stage of Change. In the posttest II, more than a half are in the Preparation Stage of Change, followed by those who are in the Action Stage of Change, and those who are in the Contemplation Stage of Change.

The values of the Stages of Change of screen time use for the study group noticeably increase with significant difference in their values. The omnibus effect for this analysis was .661, which indicates that approximately 66% of the total variance in the Stages of Change of screen time use values is accounted for by the variance in the administered intervention. The pairwise comparison analysis demonstrated the existence if differences in their values over time. These findings reflect an invariant, consistent effect of the administered TTM-based Stage-matched intervention over time.

The values of the Processes of Change of screen time use for the study group noticeably increase by time with significant difference in their values. The omnibus effect for this analysis was 992, which indicates that approximately 99% of the total variance in the Processes of Change of screen time use values is accounted for by the variance in the administered intervention. The pairwise comparison analysis demonstrated the existence if differences in their values over time. These findings reflect an invariant, consistent effect of the administered TTM-based Stage-matched intervention over time.

**CONCLUSION**

The administered TTM Stage-matched intervention successfully moved subjects from lower Stages of Change to higher Stages. The administered TTM Stage-matched intervention rendered subjects use more Processes of Change that assist in moving subjects to higher Stages of Change. The administered TTM Stage-matched intervention made an invariant, consistent improvement in subjects' Decisional Balance of refraining from excessive recreational screen time.

**Recommendations:** There is a pressing need to replicate the administered Transtheoretical Model of Change-Stage-matched intervention to as many students across Iraq as possible. There is

a need for researchers to conduct similar studies that consider confounding variables on screen time behavior such as amount of screen time, week days and weekend days of screen time use.

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