

# College's influences on students' physical activity, diet, and alcohol consumption



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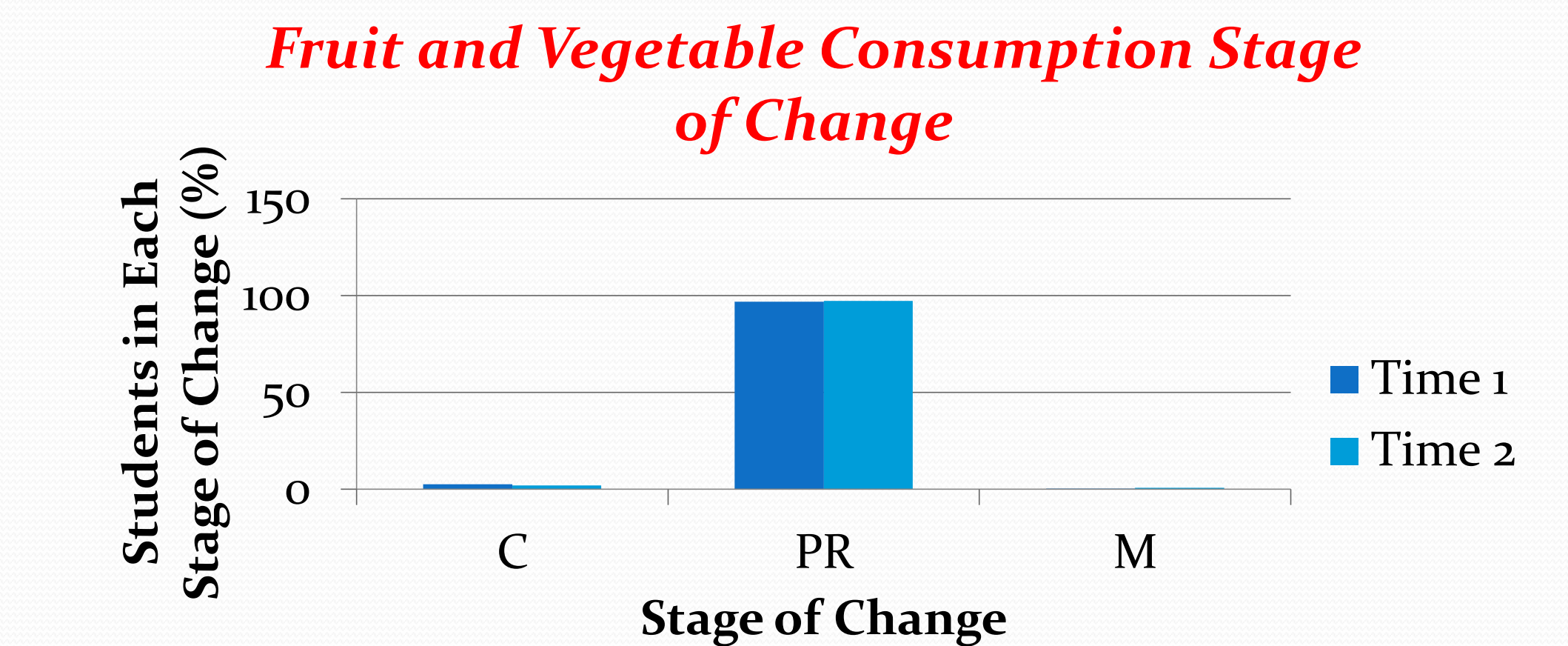
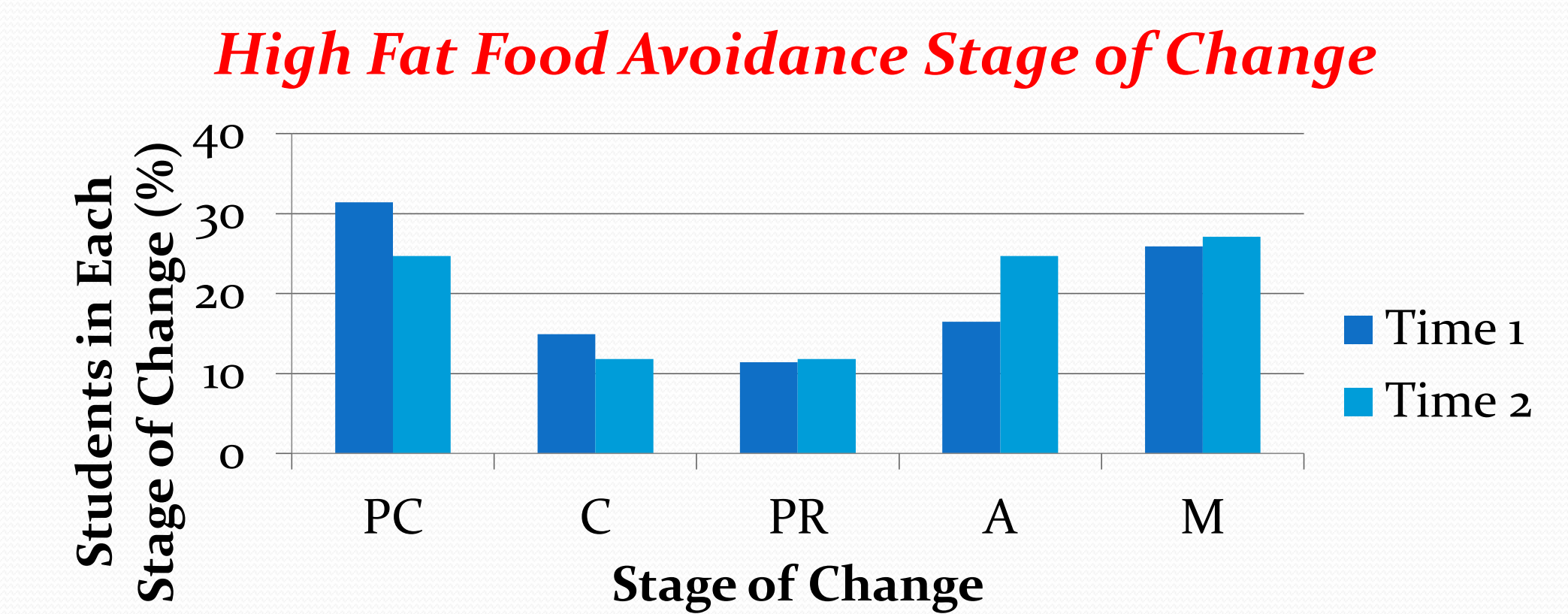
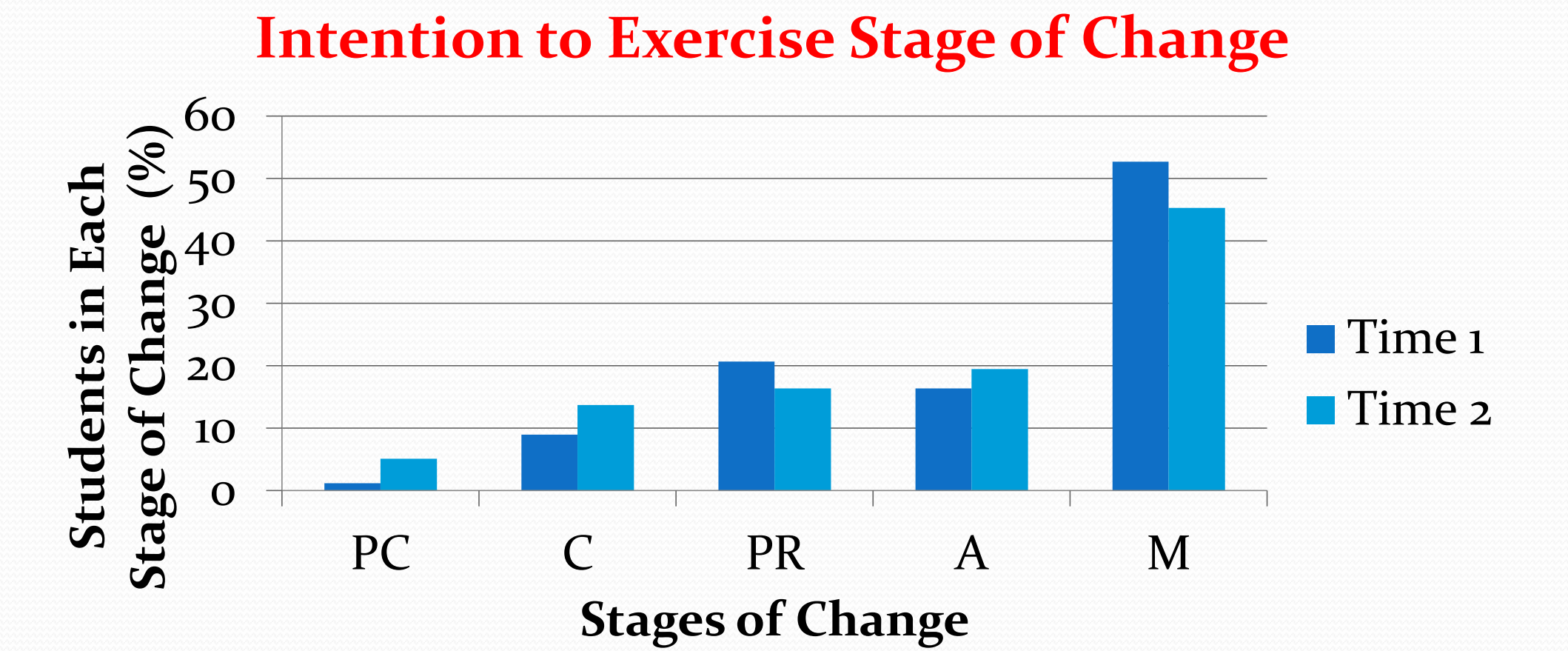
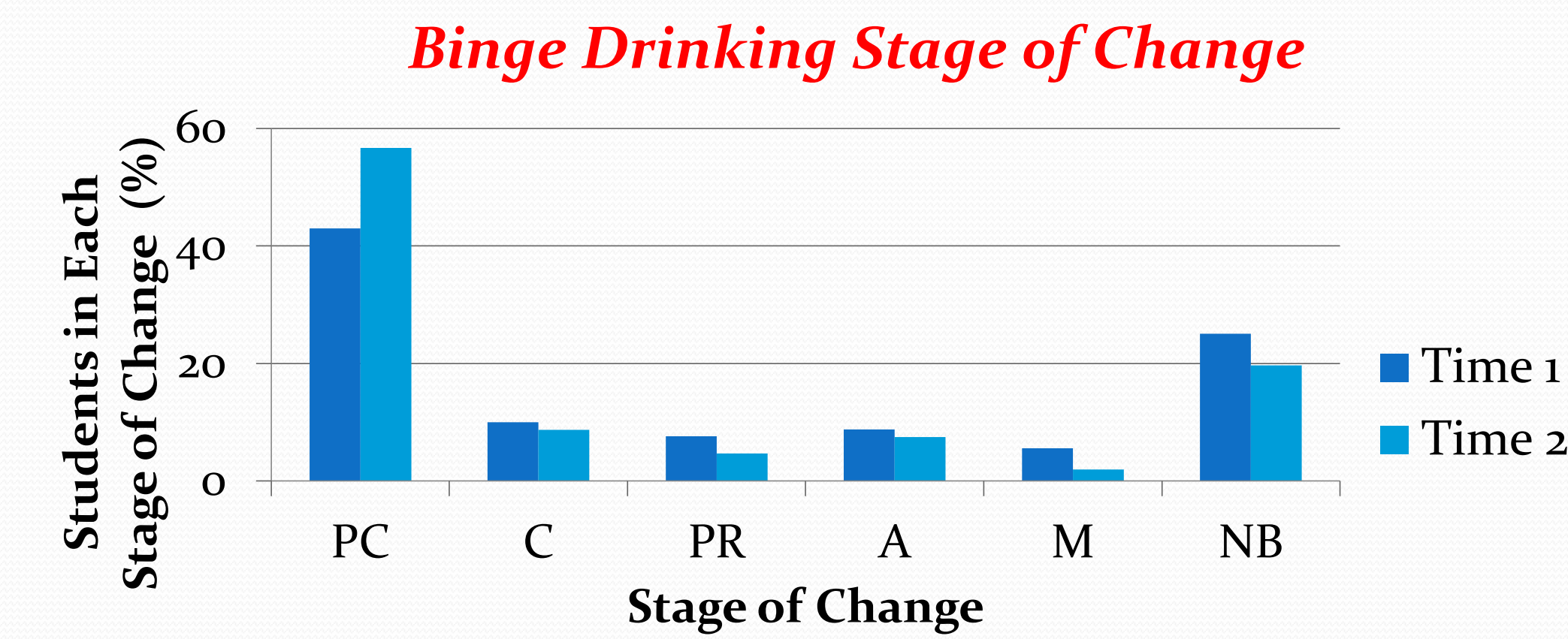
## Abstract

Many behavior choices for one's adult life are established during the college experience (Von Ah et al., 2004), a time in which health behaviors often change (Gruber, 2008; Nelson et al., 2009; Quintiliani et al., 2010; Von Ah et al., 2004). Multiple health behavior change research examines the relationship of two or more health behaviors in people, and may be a method of providing more effective and efficient health interventions (Nigg et al., 2009; Prochaska et al., 2010). Using data from their first semester of college, this study examines the relationship between and changes in freshmen college students physical activity patterns, diet, and alcohol consumption utilizing the Transtheoretical Model framework. Data was collected through questionnaires distributed to 321 first year college students enrolled in an introductory Psychology course at a Midwestern university. Questionnaires were completed at two time points fifteen weeks apart during their first semester of college. Changes in behavior frequencies were observed over the first semester of college. The only significant multiple health behavior relationships were observed between binge drinking and high fat food avoidance stages of change and exercise and fruit and vegetable intake stages of change.

## Methods

Data was collected from 321 first-year undergraduate students enrolled in an introductory psychology course at a mid-sized Midwestern university campus. Students completed a survey inquiring about more than 20 health behaviors at two time points fifteen weeks apart during their first semester of college. Surveys were administered in a large lecture hall on campus both during the first day of fall semester (Time 1) and during the week before finals the same semester (Time 2). Seven versions of the survey were available to help counterbalance any progressive error, and it took participants anywhere from 30-60 minutes to complete the questionnaire.

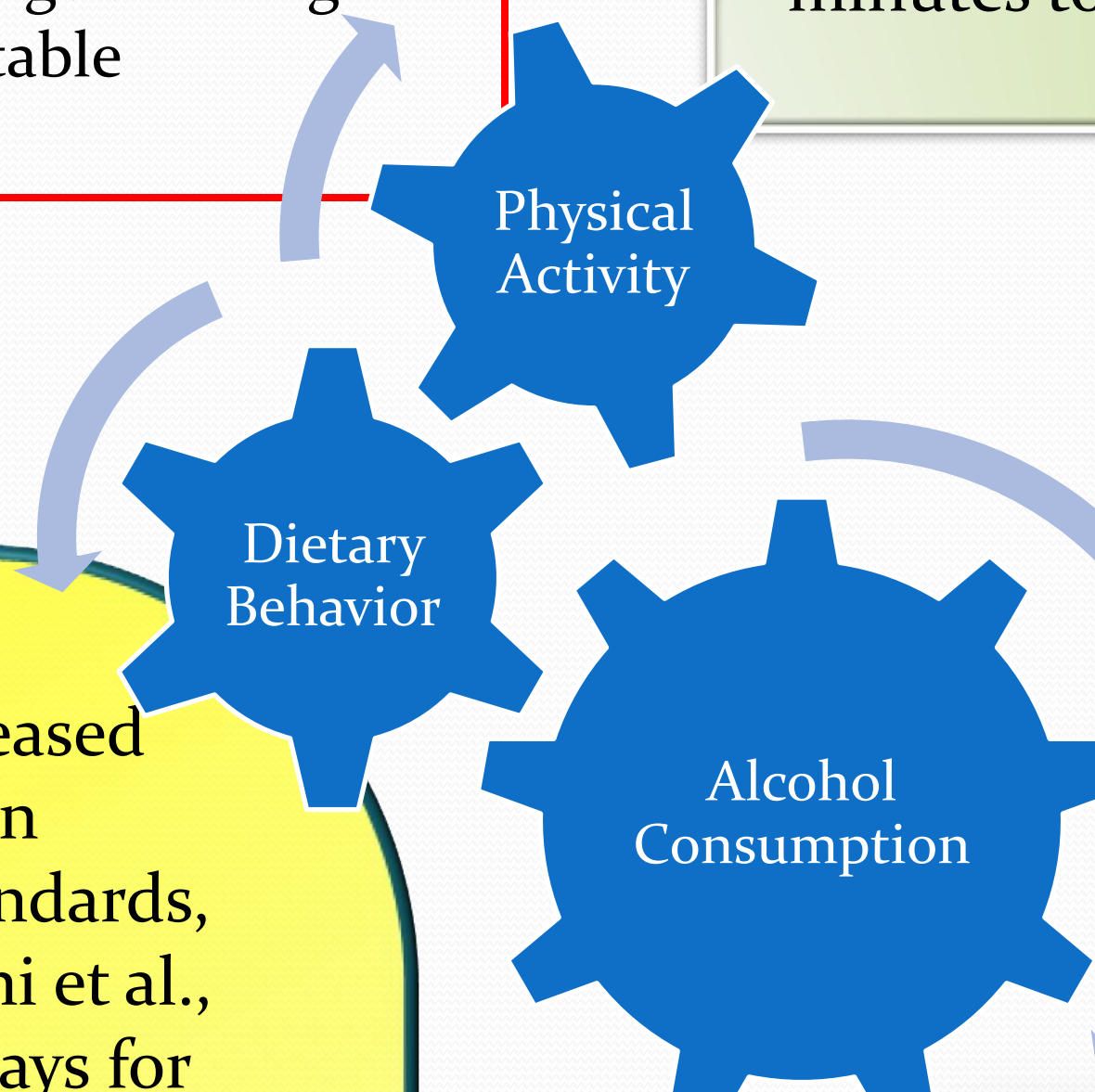
## Results



## Introduction

Health behaviors often change upon entering college due to decreased parental influence (Hogan & Aston, 1986), social influence, changes in physical environment, changes in social norms, varying academic standards, and associated stressors (Gruber, 2008; Nelson et al., 2009; Quintiliani et al., 2010; Von Ah et al., 2004). These health behavior changes are not always for the better including weight gain with over 35% of students being overweight (ACHA, 2010), low fruit/vegetable and high-fat food diets are common (Douglas & Collins, 1997), physical activity levels below recommendations (Racette et al., 2008), and an increase in alcohol consumption (Kasperek et al., 2008). Males show greater rates of health risk behaviors than females including more alcohol consumption (Cullen et al., 1999), more weight gain (Racette et al., 2008), less fruit and vegetable intake (Economos et al., 2008), and more fast food intake (Driskell & Morse, 2009). Multiple health behavior change (MHBC) research is a field focusing on studying health behaviors and interrelationships amongst them; MHBC may lead to more successful health behavior interventions. Past research shows that one risky behavior may be directly linked to another behavior with underlying mental processes, attitudes, or issues potentially producing both behaviors (Nigg et al., 2009; Prochaska et al., 2010).

The Transtheoretical Model (TTM) was developed from components of numerous leading theories in behavior change and is a framework for the health behavior change process (Prochaska & Velicer, 1997). The TTM involves a progression through five stages of change in order to reach the ultimate goal of behavior or lifestyle change and can be used for both the acquisition and cessation of behaviors (Prochaska, DiClemente, & Norcross, 1992). The TTM has been relevant in over forty-eight health related behaviors (Hall & Rossi, 2008) including alcohol consumption, physical activity, and eating behaviors, as well as effective in generalizing across a multitude of target populations (Prochaska et al., 1994). Further understanding changes in and interrelationships amongst college students' readiness to change their physical activity, dietary behaviors, and alcohol consumption over the first semester of college may help produce more successful college student health promotion programs in the future.



## Measures

Both at Time 1 and Time 2 scales were used to assess stage of change (SOC) and behavior patterns for alcohol consumption, physical activity, fruit/vegetable and high fat food intake. Standard definitions for health behaviors were used in the questionnaire to promote accurate responses.

Final Sample Demographics	
n = 256	
Males	29.30%
Females	70.70%
Age (years)	18.6 (SD = .44)
Weight (lbs)	141.76 (SD = 28.59)
Ethnicity	
Caucasian	91.00%
Asian/Asian American	5.30%
Hispanic/Latino	2.80%
Black/African American	1.20%
American Indian/Alaska Native	0.90%
Other	0.90%



## Percent of students moving same number of stages of change from time 1 to time 2

	Binge-Exercise (p > 0.05) n = 251	Binge-Fruit/Veg. (p > 0.05) n = 251	Binge-Fat Avoidance (p = 0.014) n = 250	Exercise-Fruit/Veg. (p = 0.046) n = 256	Exercise-Fat Avoidance (p > 0.05) n = 255	Fruit/Veg.-Fat Avoidance (p > 0.05) n = 255
Change in SOC (T2-T1)						
-4	---	---	0.00	---	---	---
-3	0.00	---	0.00	---	0.00	---
-2	0.00	0.00	0.00	0.00	0.00	0.00
-1	1.20	0.80	1.20	0.00	2.70	0.40
0	35.10	57.00	30.80	54.30	26.70	40.40
1	1.20	0.00	1.60	0.00	3.50	0.40
2	0.00	0.00	0.40	0.00	0.40	0.00
3	0.00	---	0.00	---	0.00	---
4	0.00	---	0.00	---	0.00	---
Total (%)	37.50	57.80	34.00	54.30	33.30	41.20

## Gender specific percent change in stage of change for each behavior.

Change in SOC from Time 1 to Time 2 (T2-T1)	Binge Drinking		Exercise		Fruit/Vegetable		High Fat Avoidance	
	Males	Females	Males	Females	Males	Females	Males	Females
-5	1.40	3.30	---	---	---	---	---	---
-4	1.40	2.80	---	---	---	---	4.10	0
-3	4.30	5.50	0.00	1.10	---	---	6.80	1.1
-2	7.10	9.40	2.70	3.30	1.40	0.00	0.00	4.9
-1	5.70	12.20	9.60	13.10	1.40	2.20	11.00	14.3
0	71.40	56.40	61.60	55.20	91.80	95.10	56.20	39.6
1	5.70	6.60	13.70	13.70	4.10	2.20	12.30	22.5
2	1.40	1.10	6.80	10.40	1.40	0.50	1.40	9.9
3	1.40	1.70	2.70	3.30	---	---	5.50	5.5
4	0.00	0.60	2.70	0.00	---	---	2.70	2.2
5	0.00	0.60	---	---	---	---	---	---

## Discussion

- Similar to past research changes were portrayed in students health behaviors (Douglas et al., 1997; Nelson et al., 2009; Patrick, Covin, Fulop, Calfas, & Lovato, 1997; Racette, Deusinger, Strube, Highstein, & Deusinger, 2005; Spencer, 2002) and readiness to change these patterns (Racette et al., 2005) upon entering college. Even with changes across time, students' health behaviors did not always meet the recommended guidelines at the time.
  - The majority of students had consumed alcohol at some point in their life, and the majority of students were in Precontemplation at Time 2, similar to findings from past research (Harris, Walters, & Leahy, 2008; Vik, Culbertson, & Sellers, 2000).
  - The majority of students at both time points did not meet the recommended intake of five servings of fruit and vegetables per day.
  - Throughout the first semester, more students had progressed to the Action and Maintenance stages of change and less were in the Precontemplation for fat avoidance.
  - At both time points about two-thirds of students sustained the recommended level (were in the Action or Maintenance stage of change) of 20 minutes of physical activity most days of the week. As supported by past research (Racette et al., 2005), more students regressed than progressed in readiness to change physical activity during this time suggesting that the college environment does negatively affect students' physical activity patterns.
- A limited number of significant relationships were found between the studied health behaviors in these freshmen college students.
  - Readiness to increase physical activity and avoid high fat foods were found to be interrelated at both time points, leading to the conclusion that interventions aimed at one behavior may have an inadvertent positive effect on the other behavior.
  - At time 2 only, binge drinking and high fat food avoidance stages of change were significantly interrelated suggesting that one behavior may affect the other.
- Change in stage of change in the multiple behaviors, also produced significant results.
  - A negative correlation was found between change in binge drinking stage of change and change in exercise stage of change.
  - There were significant relationships between change in stage of change of binge drinking and high fat food avoidance, and change in stage of change of intention to exercise and consume fruits and vegetables.
- Contrary to previous findings (Cardinal et al., 2009; Horacek, 2002; Suminski & Petosa, 2002), limited gender differences were found with high fat food avoidance portrayed the only significant difference in change in stage of change between male and females.
- Given these results, TTM based health promotion programs aimed at college student binge drinking, physical activity, and fruit and vegetable consumption may not need to be gender tailored allowing for more efficient health programs. Moreover, current health programs in place at the sample university may not be having the intended positive effect on students' health behaviors. Future research should examine variables producing the found relationships in these behaviors.