Self-Directed Behavioral Interventions For Health Promotion Among Graduate Students

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Self-Directed Behavioral Interventions for Health Promotion Among Graduate Students

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Abstract

Background: Graduate school environments are recognized for contributing to elevated stress levels among student populations, particularly when compared to their non-academic peers. Graduate school settings can subsequently foster maladaptive coping strategies among students, including self-isolation, poor nutrition choices, engaging with less physical exercise, and substance misuse. Self-stigma related to mental health care may additionally discourage students from seeking mental health treatment. The objective of this study was to explore whether self-directed behavioral interventions, delivered in the context of a course on behavior change, are effective in promoting health among this population. Prior studies have shown that self-directed behavioral interventions can improve behaviors related to nutrition and physical activity. The current study adds to this evidence with new findings on behaviors related to mental health.

Methods: Data were collected via a quasi-experimental longitudinal study to observe the effect of self-directed behavioral interventions on categories of health including mental health, physical activity, and nutrition. Participants included students enrolled in a course on the foundations of behavior change theory at the Yale School of Public Health (n=59) and a control group (n=33) of students in the same graduate program. Univariate analyses were conducted between the two participant groups to evaluate changes at post-intervention and at a follow-up assessment in indicators of mental health, physical activity, nutrition, social life, and general health perception.

Results: Among the enrolled participants, statistically significant changes occurred in frequency of anxious and depressed days, measures of depression, anxiety, and stress subscale scores, and perceived level of stress. Notable improvements to levels of engagement with physical activity and consumption of health-promoting food groups were also observed.

Conclusion: Self-directed behavior change interventions are effective in promoting mental and physical health among graduate student populations.
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I. Introduction

Graduate school environments are recognized for contributing to elevated stress levels among student populations as compared to their non-academic peers (Bullock et al., 2017; Oswalt & Riddick, 2007). Chronic stress from a combination of academic pressure and non-academic responsibilities cultivate a landscape for poor health outcomes wherein students may engage with maladaptive coping strategies in order to manage stress. These strategies include self-isolation, poor nutrition choices, engaging with less physical exercise, and substance misuse (Wyatt & Oswalt, 2013).

Students at the graduate level frequently receive less institutional support than their undergraduate peers (Foley, 2020). Examples of undergraduate institutional support include wider availability and use of on-campus housing and its related support systems, including residence hall assistants and live-in faculty members; preferential treatment in student health insurance systems; and access to community-building opportunities through student and social groups. Graduate students also typically enter academic institutions later in life and may have external responsibilities and financial burdens not supported by their academic institution, including caring for families (Foley, 2020). Differences in infrastructure between graduate programs may also contribute to poor allocation of resources for mitigating student stress. Universities typically face challenges administering “one size fits all” solutions due to fragmentation between administrative departments, poor interdepartmental communication, and limited funding for programs supporting wellness initiatives.

These barriers paint a pernicious landscape when considering the ties between elevated stress levels and poor mental health outcomes. Preliminary evidence suggests that self-directed interventions may equip graduate students with tools to individually manage their mental health
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(White et al., 2017, 2019). The goal of the current study is to expand on this existing research evaluating self-care interventions for improving graduate student mental health. In the first iteration of this research, data were collected from public health graduate students enrolled in a survey course teaching principles of behavior change. Students in the course administered self-care interventions by applying behavior change principles to create goals related to health promotion. The study tested two hypotheses: (1) whether student engagement with self-care interventions increased health promotion activities in their daily lives, and (2) whether engagement was associated with improvements in mental health. A follow-up study evaluated the same hypotheses within the context of a distance-learning course employing the same curriculum and intervention. New data from a third cohort of students will be analyzed in this paper to illuminate common trends, improve upon the study design to include a comparable control group, and to equip future researchers with tools to continue this work.

II. Background

Elevated rates of anxiety and depression among graduate students have been well-documented (Arnold, 2014; Oswalt & Riddick, 2007; Puri, 2019). Medical students are typically the most common participants in these studies (Mane et al., 2011), though a growing body of research has focused on students in other graduate and professional programs (Erevik et al., 2017; Myers et al., 2012; Silverstein & Kritz-Silverstein, 2010). Limitations regarding population play a notable role in most of these studies, with population demographics frequently cited as problematic for generalizing findings.

Differences in individual maintenance of mental health present similar challenges when developing “one size fits all” approaches to stress reduction. Self-stigma regarding mental health,
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for example, is shown to influence the ways in which individuals seek psychological treatment, with evidence suggesting that self-stigma may prevent people from engaging with help-seeking behavior (Vogel et al., 2006). Alternate solutions for treatment are needed in these instances. When implemented routinely, self-care interventions can be an effective strategy for students to manage areas of physical health and wellness including nutrition and physical activity (White et al., 2017). Less evidence exists indicating the efficacy of self-care interventions on improving mental health and wellness among students.

Research employing valid methods is likewise critical to measuring the scope of the mental health crisis among graduate students. Inaccurate analysis of data and implementation of poor methodology may lead to inaccurate results and dissemination of misinformation. One article published in 2018, for example, claimed that graduate students are six times more likely to experience depression and/or anxiety than the general population (Evans et al., 2018). This rate was determined from responses to the Patient Health Questionnaire-9 (Kroenke et al., 2001), which assesses degree of depression severity among respondents, and the Generalized Anxiety Disorder 7-item scale (Spitzer et al., 2006), which assesses degree of anxiety severity among respondents. Conclusions drawn from the study were later questioned in a letter to the editor published in the same journal, which found that the sample surveyed did not accurately represent comparable rates of anxiety among the populations it evaluated (Duffy et al., 2019). To this point, inconsistencies and contradictions between publications suggest a need for streamlined methodology when evaluating student mental health.

The goal of the current study is to further existing research regarding self-care interventions among graduate students enrolled in a course at the Yale School of Public Health (SBS 529: Foundations of Behavior Change). The course provides a curriculum-based behavioral
self-care intervention for students. The methodology implemented was designed to support and expand previous conclusions about the efficacy of self-directed behavioral interventions among graduate students for health promotion. Improvements to previous research design included the addition of a control group of students enrolled in the same graduate program at the Yale School of Public Health who did not receive the intervention and the addition of a follow-up assessment twelve weeks after the conclusion of the course.

III. Methods

Procedure

SBS 529 is a seminar course offered by the Yale School of Public Health. Students are taught the fundamentals of behavior change theory with a focus on the integration of social, psychological, and behavioral factors. Evidence-based practices are emphasized for implementation of behavior change strategies that students may eventually produce in broader public health settings.

Aided by course material and guidance from the course instructor, students enrolled in SBS 529 outlined behavior change goals for four modules in varying areas of health over the course of an academic semester occurring in the fall of 2019. Modules included nutrition, physical activity, mental health, and social support. Assignments focused on testing behavior change strategies with respect to individually selected behavioral goals in each domain. For example, a sample assignment was to apply a behavioral strategy to modify a small measurable goal within the nutrition unit for five days. After the five-day period, students had the option to earn extra credit points for maintaining the behavior change for the duration of the semester.
Goal completion was monitored via self-report, collected through Qualtrics surveys distributed weekly. The approach parallels the best practice self-report procedures employed by behavioral health interventions (Bellg et al., 2004).

At the start of the fall semester in September 2019, students provided informed consent and were linked to an anonymous self-report questionnaire operated through Qualtrics Survey Software. Students were delivered this questionnaire three times: (1) Baseline: during the first week of the semester (September 2019), Post-Intervention: during the final week of the semester (November to December 2019), and Follow-up: approximately 10-12 weeks after completion of the course (February 2020). The questionnaire took approximately 10 minutes to complete and included questions mirroring the areas of health wherein students set goals, including unique questions on nutrition, physical activity, and mental health outcomes.

Exemptions

The study was granted an exemption from the institutional review board under federal regulation 45 CFR 46.104(d)(1). This regulation indicates that exemption is permitted when research being conducted in an educational setting uses methods that are not detrimental to students’ learning processes.

Measures

Students completed a self-report questionnaire about health behaviors related to nutrition, exercise, mental health, and social support. Source material for questions stemmed primarily from national longitudinal health surveys and largely focused on frequency of behavioral habits. The full questionnaire battery is included in the Appendix.
Nutrition

Questions regarding nutrition addressed the quantity of servings the student consumed of various food types over the course of the previous week, including red meat, processed meats, dairy, fruit, vegetables, sweets/fast food, and whole grains.

Physical Activity

The Godin Leisure Time Exercise Questionnaire (GLTEQ) is commonly used to measure levels of physical activity (Amireault et al., 2015; Godin, 2011). Physical activity is measured as frequency of mild, moderate, and strenuous exercise, with respondents asked to provide the number of days per week they engaged with each type of exercise category for >15 minutes. The GLTEQ yields a summary score, which is calculated as the combination of values reported for each type of exercise intensity to yield a metabolic equivalents of task score (METs). METs range from 0 to 119, with higher scores indicating higher levels of engagement with physical activity.

Mental Health

The Depression Anxiety Stress Scales (DASS) 21-Item version assesses mental health symptoms along three subscale scores (depression, anxiety, and stress) and yields a total score. Scores range from 0 to 42, with higher scores reflecting higher levels of distress for each category (Lovibond & Lovibond, 1995). The Perceived Stress Scale (PSS) 10-item version was also administered to evaluate perceived stress. Scores range from 0 to 40, with scores above 20 indicating a high level of perceived stress (Cohen et al., 1983).

A few supplementary mental health and wellness questions were sourced from the Behavioral Risk Factor Surveillance System and the Health Related Quality of Life Assessment,
both of which are considered valid and reliable assessment tools for health status. Examples of these questions included “During the past month, how many days have you felt sad or depressed?” and “During the past month, how many days have you felt worried, tense, or anxious?”

The 10-item Self-Stigma of Seeking Help (SSOSH) scale was also administered to measure participants’ self-stigma pertaining to mental health treatment (Vogel et al., 2006). Questions from this assessment include “I would feel inadequate if I went to a therapist for psychological help” and “My view of myself would not change just because I made the choice to see a therapist.” Respondents rank these statements on a Likert scale ranging from “Strongly Agree” to “Strongly Disagree.” Questions associated with low self-stigma are reverse scored. Scores range from 10 to 50, with higher scores indicating greater stigma associated with seeking help for mental health treatment.

Self-Efficacy

Students’ perceptions of their capabilities were evaluated through the 10-item General Self-Efficacy Scale and the Self-Efficacy for Exercise Scale. The General Self-Efficacy Scale evaluates confidence regarding ability to complete tasks and handle adverse events (Schwarzer & Jerusalem, 1995); the Self-Efficacy for Exercise Scale evaluates confidence regarding maintenance of exercise routines in the face of barriers or poor motivation (Resnick & Jenkins, 2000). These measurements were taken in an effort to understand students’ ability to self-direct for completion of their behavior change goals and to explore possible mediators of outcomes.
Social Support

Simple questions original to this study regarding social life, including “How often do you participate in group activities?” and “How satisfied are you with your social life (relationships with friends and/or partner?)”, were also included to measure perceived levels of social support.

Post-Intervention Behavioral Change

Post-intervention questionnaires additionally included questions regarding student adherence to the behavior change goals they established during SBS 529. The questions matched each of the behavior change categories (nutrition, physical activity, mental health, and social support). For each category, students were asked “Considering each of the behavior change goals, on approximately what percentage of days did you achieve your goal?” Percentages for each of these categories were calculated to determine student adherence at the conclusion of the semester (December 2019) and 12 weeks after the conclusion of the semester (February 2020).

Participants

Participants were graduate students recruited via enrollment in a public health course on behavior change (SBS 529) at the Yale School of Public Health (n=59) and a control group of graduate students enrolled in the same academic program who were not enrolled in SBS 529 (n=33). Demographic information for the study sample is provided in Table 1. Loss to follow-up occurred in post-intervention (enrolled retention n=45, control retention n=24) and follow-up assessments (enrolled retention n=33, control retention n=33). The decrease in the number of follow-up respondents may be attributed to the limited time frame under which follow-up assessments were collected. No compensation was provided to participants, although enrolled students were offered the incentive of extra credit for meeting daily behavior change goals.
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throughout the course of the semester. All participants were provided the option to enter a raffle for a $200 gift card.

Data Collection and Statistical Analysis

Data were collected anonymously through an online Qualtrics survey. Students created unique identifiers to allow for matching at baseline and each post-intervention. Demographic information including age, gender, and race/ethnicity were collected. Any questions that could result in respondent identification were avoided in the questionnaire design.

Data were downloaded from Qualtrics and analyzed with SPSS. Univariate analyses were conducted to compare students enrolled in SBS 529 and students not enrolled in SBS 529 at post-intervention and follow-up in order to evaluate changes in indicators of physical and mental health and wellness.

IV. Results

Demographic Characteristics of Population

Participants from the baseline sample (n=91) provided demographic data in a voluntary survey administered separately from the primary health assessment. Participants were divided between those enrolled in SBS 529 (n=47) and those not enrolled in SBS 529 (n=44). The majority of participants in both groups were female (78.7% among enrolled students; 79.5% among non-enrolled students) and non-Hispanic White (51.1% among enrolled students; 52.3% among non-enrolled students). The average age of participants was 25.85 ± 5.9 for enrolled students and 24.95 ± 2.6 for non-enrolled students. Further demographic characteristics are displayed in Table 1. The study groups were comparable with respect to demographic features.
Primary Outcomes

For enrolled students, behavioral goals were self-established over the course of the academic semester, which lasted approximately 12 weeks between September and December 2019. Students set these goals incrementally, beginning with nutrition at the start of the semester and followed by mental health, physical activity, and social support as the semester progressed. In post-intervention and follow-up surveys (conducted at the conclusion of the semester and 12 weeks after the conclusion of the semester, respectively), students enrolled in SBS 529 were asked to self-evaluate their adherence to their behavior change goals.

The primary outcomes were frequency of experiencing depressed or anxious days measured over the course of the previous thirty days, as well as scores on validated measures of mental health via the DASS 21-item version. In addition to the mental health outcomes, analyses comparing baseline, post-intervention, and follow-up on physical activity and nutrition were conducted. Descriptive statistics for these variables are outlined in greater detail in Table 2 for enrolled students and Table 3 for the control group.

Self-Assessment of Adherence to Behavior Change Goals

Students responded to a self-assessment for adherence to behavior change goals by indicating the percentage of days they achieved each of their goals. Physical activity was the most adhered-to behavior change goal, with students estimating daily adherence of 76.7% at post-intervention and 73.6% at follow-up. Adherence to mental health goals suffered the most from retention between post-intervention and follow-up, with students estimating daily
adherence of 73.6% at post-intervention and 50.2% at follow-up. Additional adherence results are outlined in Table 4.

**Mental Health**

*Post-intervention:* There was a statistically significant difference between groups as determined by one-way ANOVA in post-intervention DASS Depression scores \[ F(1,66) = 4.02, p = 0.049 \]. There was no statistically significant difference between groups in post-intervention DASS Anxiety scores.

*Follow-up:* There was no statistically significant difference between groups as determined by one-way ANOVA in follow-up DASS Anxiety and Depression scores.

The changes in mean DASS Depression scores over time are visualized in Figure 1. The changes in mean DASS Anxiety scores over time are visualized in Figure 2.

![Figure 1](image)

**Figure 1.** Mean subscale scores for depression over time measured by the Depression Anxiety Stress Scales 21-item version (Lovibond & Lovibond, 1995).
In addition to the DASS 21-item, participants were explicitly asked “During the past month, how many days have you felt worried, tense, or anxious?” and “During the past month, how many days have you felt sad or depressed?” Statistically significant differences were found between groups at post-intervention as determined by one-way ANOVA for both anxious and depressed days (anxious $F(1,67) = 10.27, p = 0.02$, depressed $F(1,67) = 4.84, p = 0.031$). On average, the control group experienced a higher number of depressed and anxious days at post-intervention and follow-up compared to the enrolled group (see Figures 3 and 4).
There was additionally a statistically significant difference between groups as determined by one-way ANOVA in follow-up Perceived Stress Scores \(F(1,64) = 6.92, p = 0.01\) and post-intervention DASS Stress scores \(F(1,66) = 11.34, p = <0.01\). There was no statistical significance in post-intervention Perceived Stress Scores or follow-up DASS Stress scores.
Figure 5. *Mean scores over time measured by the Perceived Stress Scale 10-item version (Cohen et al., 1983).*

Figure 6. *Mean subscale scores for stress over time measured by the Depression Anxiety Stress Scales 21-item version (Lovibond & Lovibond, 1995).*

**Nutrition**

Students enrolled in SBS 529 displayed improvements related to consumption of healthy food groups at post-intervention and follow-up. As evidenced in Figure 7, the average number of servings of vegetables and fruit per week increased among enrolled students over time. Among
the control group, vegetable, fruit, and whole grain consumption decreased over time. Red meat consumption decreased for both groups over time.

**Figure 7. Consumption of food by type among enrolled and control groups.**
Physical Activity

There was a statistically significant difference between groups as determined by one-way ANOVA in post-intervention Godin scores for physical exercise \( F(1,66) = 4.80, p = 0.03 \).

![Godin (METs) over time](image)

**Figure 8.** Mean scores over time measured by the Godin Leisure Time Exercise Questionnaire (Godin, 2011).

Exercise was also measured by perceived average engagement in physical activity each week, broken into three subcategories: rigorous (indicated on the survey as physical activity where the “heart beats rapidly”), moderate (“not exhausting”), and mild (“minimal effort”). Figures 9 and 10 visualize these rates of engagement with physical activity.
Figure 9. Average number of days per week students enrolled in SBS 529 completed rigorous, moderate, or mild exercise.

Figure 10. Average number of days per week participants in the control group completed rigorous, moderate, or mild exercise.

General Health Assessment

Participants were asked a series of general health related questions to measure their sense of overall health, including improvements or declines in health over time and their health compared to their peers. Of these questions, one was determined to be statistically
significant: “Compared with a year ago, how has your health changed?” Responses were treated as interval, ranging from 1 (“much better than a year ago”) to 5 (“much worse than a year ago”). Means were equivalent at baseline (2.63 for enrolled and control groups). One way ANOVA determined statistically significant differences between groups at post-intervention and follow-up (post-intervention $F[1,67] = 4.62, p = 0.03$; follow-up $F[1,66] = 14.06, p < 0.001$), Students enrolled in SBS 529 felt their health improved at post and follow-up, with responses averaging closer to “much better than a year ago” over time (2.49 at post and 1.97 at follow-up). The control group provided responses averaging closer to “about the same as a year ago” (3.00 at post and 2.74 at follow-up).

**Figure 11.** General health improvement self-assessment measured at post-intervention.
V. Discussion

Summary

The primary goal of this study was to determine if students enrolled in a behavior change course saw improvements to their health as a result of self-directed behavioral interventions. Health promotion was sub-divided into categories including mental health, physical activity, and nutrition to allow for more specific critical analysis. Previous studies evaluating the effectiveness of behavioral self-care interventions found significant improvements in nutrition and physical activity goals (White et al., 2017, 2019). This study supports these findings and adds to the existing body of research by employing validated measures of mental health.

This study is a notable addition to the existing research as it suggests that self-directed behavior change interventions may improve student mental health. Among the improved measurements in mental health among enrolled students were decreases in frequency of anxious and depressed days, decrease in stress as measured by the Perceived Stress Scale 10-item version.
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and DASS 21-item version, and decrease in depression as measured by the DASS 21-item version.

The inclusion of an equivalent control group was an important addition to this study, particularly when compared to previous iterations of this research (White, et al., 2017, 2019). Results from the control group suggest that instruction in behavior change theory may contribute to greater adherence to behavior change goals and, in turn, may result in more significant rates of health promotion. One example supporting this conclusion is the nutrition analysis, which determined that vegetable and fruit consumption increased over time for the enrolled group while vegetable, fruit, and whole grain consumption decreased over time for the control group (Figure 7).

As of the findings from this study, three different groups have been evaluated to determine whether self-directed behavioral interventions contribute to health promotion among graduate student populations. Applying identical methods of data collection to different groups of students over time contributes to the validity of existing research and is likely to encourage researchers to continue this work.

Limitations

The quasi-experimental design of this study does not allow for randomization, which somewhat limits the ability to draw conclusions about causality between the intervention and outcomes measured. That said, a benefit of quasi-experimental design is real-world generalizability. This can be considered a trade-off for the benefits of choosing to conduct a randomized controlled trial (RCT) instead of utilizing a quasi-experimental design. RCTs
typically have more complex requirements in terms of implementation and would have presented challenges to data collection for this study (Harris et al., 2006).

It is possible that the self-report structure of responses to some survey questions resulted in recall bias (for example, asking students to recall the specific number of anxious or depressed days experienced within the last 30 days). However, given that both the control and enrolled students completed identical assessments, this bias is minimized.

Finally, the relatively small and homogenous sample size (graduate students enrolled in a public health program at Yale University) may limit the study’s generalizability. Conclusions drawn in this paper might not translate to other student populations given differences between academic programs, their requirements, and students’ lived experiences.

Conclusions

Findings indicate that self-directed behavioral interventions implemented by students enrolled in SBS 529 were effective in promoting healthy behaviors at various intervals including post-intervention (the conclusion of the course) and follow-up (12 weeks after the conclusion of the course). Significant findings from the enrolled participants included reductions in measurements of stress and depression and frequency of days experiencing depression and anxiety at post-intervention. These findings add to existing evidence from literature regarding the health promotion benefits of self-directed behavioral interventions. Additional findings from the enrolled participants include increased rates of physical activity and increased consumption of health-promoting food groups including vegetables and fruits. These findings are consistent with results from existing literature.
Recommendations

The findings from this study, when combined with results from similar previous studies (White et al., 2017, 2019), present clear evidence that self-directed behavioral interventions are effective in promoting healthy behaviors among graduate students. Given what is known about stress and mental health crises among this population, applying the model used in SBS 529 to students in other academic programs and at other academic institutions is recommended.

It is additionally worth noting that coursework where students are graded on behavioral performance, as opposed to academic performance, is novel in the context of academics. Requiring a course like SBS 529 as part of the curriculum for public health and behavioral science students, for example, could provide students with a stronger foundation to implement behavioral interventions in post-graduate professional settings. A study following students formerly enrolled in SBS 529 in their post-graduate careers could evaluate this hypothesis.

Future research could also evaluate the effectiveness of this curriculum-based intervention when applied to a community sample of learners. Since the behavioral intervention described here is now being delivered through a Massive Open Online Course (MOOC), future research is needed to determine whether it generalizes to that platform and could thus serve as a mental health intervention for a global audience of MOOC learners.
VI. Appendix

Table 1. Demographic characteristics of sample

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Enrolled in SBS 529</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes (N = 47)</td>
</tr>
<tr>
<td>Age (years)</td>
<td>25.8 ± 5.9</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>37 (78.7)</td>
</tr>
<tr>
<td>Male</td>
<td>10 (21.3)</td>
</tr>
<tr>
<td>Non-Binary</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>24 (51.1)</td>
</tr>
<tr>
<td>Non-Hispanic Black</td>
<td>2 (4.3)</td>
</tr>
<tr>
<td>Hispanic/Latinx</td>
<td>5 (10.6)</td>
</tr>
<tr>
<td>Asian/Asian-American</td>
<td>9 (19.1)</td>
</tr>
<tr>
<td>South Asian</td>
<td>4 (8.5)</td>
</tr>
<tr>
<td>Other</td>
<td>2 (4.2)</td>
</tr>
<tr>
<td>Decline to Answer</td>
<td>1 (2.1)</td>
</tr>
</tbody>
</table>
### Table 2. Descriptive statistics for students enrolled in SBS 529 (n=59)

<table>
<thead>
<tr>
<th>Exploratory variables</th>
<th>Baseline (n=59)</th>
<th>Post-Intervention (n=45)</th>
<th>Follow-Up (n=33)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>General health perception (1=excellent, 5=poor)</td>
<td>2.34</td>
<td>(0.73)</td>
<td>2.31</td>
</tr>
<tr>
<td>Compared with a year ago, how has your health changed? (1=much better, 5=much worse)</td>
<td>2.63</td>
<td>(1.00)</td>
<td>2.49</td>
</tr>
<tr>
<td>Compared with others your same age and sex, how would you rate your overall health? (1=much worse than average, 5=much better than average)</td>
<td>3.39</td>
<td>(0.70)</td>
<td>3.56</td>
</tr>
<tr>
<td>Do you believe that you have a diet that leads to weight gain? (1=yes, 2=maintaining current weight, 3=no)</td>
<td>2.29</td>
<td>(0.89)</td>
<td>2.53</td>
</tr>
<tr>
<td><strong>Mental Health</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depressed days past month</td>
<td>3.29</td>
<td>(2.88)</td>
<td>3.69</td>
</tr>
<tr>
<td>Anxious days past month</td>
<td>7.71</td>
<td>(5.64)</td>
<td>7.31</td>
</tr>
<tr>
<td>DASS Stress</td>
<td>12.54</td>
<td>(6.98)</td>
<td>7.95</td>
</tr>
<tr>
<td>DASS Anxiety</td>
<td>6.52</td>
<td>(5.44)</td>
<td>4.86</td>
</tr>
<tr>
<td>DASS Depression</td>
<td>8.66</td>
<td>(8.17)</td>
<td>5.59</td>
</tr>
<tr>
<td>Perceived Stress</td>
<td>16.41</td>
<td>(5.65)</td>
<td>17.02</td>
</tr>
<tr>
<td>Self Efficacy</td>
<td>31.79</td>
<td>(4.32)</td>
<td>31.98</td>
</tr>
<tr>
<td>Mental health stigma</td>
<td>20.07</td>
<td>(7.12)</td>
<td>18.24</td>
</tr>
<tr>
<td><strong>Physical Activity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rigorous physical activity (number times per week)</td>
<td>2.02</td>
<td>(1.73)</td>
<td>2.84</td>
</tr>
<tr>
<td>Moderate physical activity (number times per week)</td>
<td>2.91</td>
<td>(2.12)</td>
<td>3.58</td>
</tr>
<tr>
<td>Mild physical activity (number times per week)</td>
<td>4.30</td>
<td>(2.72)</td>
<td>4.43</td>
</tr>
<tr>
<td>Rigorous physical activity (number times past week)</td>
<td>3.19</td>
<td>(1.98)</td>
<td>4.42</td>
</tr>
<tr>
<td>Godin (METS) / Exercise self efficacy</td>
<td>43.46</td>
<td>(28.52)</td>
<td>53.31</td>
</tr>
<tr>
<td><strong>Nutrition (# servings per week)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red meat</td>
<td>1.03</td>
<td>(1.06)</td>
<td>0.91</td>
</tr>
<tr>
<td>Processed meats</td>
<td>0.75</td>
<td>(0.90)</td>
<td>0.61</td>
</tr>
<tr>
<td>Vegetables</td>
<td>10.02</td>
<td>(6.85)</td>
<td>13.53</td>
</tr>
<tr>
<td>Fruit</td>
<td>8.24</td>
<td>(6.03)</td>
<td>10.29</td>
</tr>
<tr>
<td>Dairy</td>
<td>6.34</td>
<td>(5.00)</td>
<td>6.71</td>
</tr>
<tr>
<td>Sweets/Fast Food</td>
<td>5.31</td>
<td>(3.40)</td>
<td>4.95</td>
</tr>
<tr>
<td>Whole grains</td>
<td>9.73</td>
<td>(6.40)</td>
<td>9.88</td>
</tr>
<tr>
<td><strong>Life Satisfaction and Social Support</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Life (1=very satisfied, 4=not satisfied)</td>
<td>1.64</td>
<td>(0.66)</td>
<td>1.62</td>
</tr>
<tr>
<td>How often do you participate in group activities? (1=never, 2=once per week or less, 3=more than once per week)</td>
<td>2.71</td>
<td>(0.49)</td>
<td>2.67</td>
</tr>
<tr>
<td>How often do you attend religious activities? (1=never, 2=once per week or less, 3=more than once per week)</td>
<td>1.41</td>
<td>(0.56)</td>
<td>1.42</td>
</tr>
</tbody>
</table>
Table 3. Descriptive statistics for control group (n=33)

<table>
<thead>
<tr>
<th>Exploratory Variables</th>
<th>Baseline (n=33)</th>
<th>Post-Intervention (n=24)</th>
<th>Follow-Up (n=33)</th>
</tr>
</thead>
<tbody>
<tr>
<td>General health perception (1=excellent, 5=poor)</td>
<td>2.30 (0.83)</td>
<td>2.38 (0.82)</td>
<td>2.37 (0.81)</td>
</tr>
<tr>
<td>Compared with a year ago, how has your health changed? (1=much better, 5=much worse)</td>
<td>2.63 (0.95)</td>
<td>3.00 (0.78)</td>
<td>2.74 (0.74)</td>
</tr>
<tr>
<td>Compared with others your same age and sex, how would you rate your overall health?</td>
<td>3.39 (0.82)</td>
<td>3.29 (0.75)</td>
<td>3.06 (0.80)</td>
</tr>
<tr>
<td>(1=much worse than average, 5=much better than average)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you believe that you have a diet that leads to weight gain? (1=vs, 2=maintain, current weight, 3=no)</td>
<td>2.61 (0.75)</td>
<td>2.29 (0.96)</td>
<td>2.56 (0.82)</td>
</tr>
</tbody>
</table>

| Mental Health                                                                          |                 |                          |                 |
| Depressed days past month                                                              | 5.03 (5.18)     | 6.23 (6.19)              | 5.09 (4.74)     |
| Anxious days past month                                                                | 10.91 (8.15)    | 12.96 (8.15)             | 11.06 (8.11)    |
| DASS Stress                                                                            | 12.48 (7.21)    | 13.83 (8.86)             | 14.63 (10.38)   |
| DASS Anxiety                                                                          | 7.52 (7.16)     | 6.33 (6.66)              | 8.23 (9.32)     |
| DASS Depression                                                                       | 7.70 (5.50)     | 8.92 (8.13)              | 10.34 (8.49)    |
| Perceived Stress                                                                      | 18.75 (4.44)    | 19.83 (5.98)             | 19.82 (5.11)    |
| Self Efficacy                                                                         | 31.76 (3.40)    | 30.17 (3.88)             | 30.46 (4.50)    |
| Mental Health Sigma                                                                   | 21.36 (8.00)    | 20.29 (8.58)             | 20.17 (7.34)    |

| Physical Activity                                                                      |                 |                          |                 |
| Rigorous physical activity (number times per week)                                     | 1.94 (2.08)     | 2.07 (2.03)              | 2.00 (1.85)     |
| Moderate physical activity (number times per week)                                     | 2.84 (2.51)     | 2.65 (2.16)              | 3.00 (3.08)     |
| Mild physical activity (number times per week)                                         | 4.77 (3.70)     | 4.25 (3.74)              | 4.69 (3.12)     |
| Rigorous physical activity (number times past week)                                    | 3.12 (1.93)     | 3.33 (2.08)              | 3.14 (1.79)     |
| Godan (METs) / Exercise self efficacy                                                  | 42.70 (28.28)   | 37.23 (31.55)            | 43.46 (31.62)   |

| Nutrition (# servings per week)                                                        |                 |                          |                 |
| Red meat                                                                               | 1.32 (1.38)     | 1.04 (1.44)              | 0.86 (0.78)     |
| Processed meats                                                                        | 0.52 (0.86)     | 0.81 (1.22)              | 0.67 (0.99)     |
| Vegetables                                                                             | 13.79 (7.22)    | 12.66 (7.94)             | 11.34 (6.89)    |
| Fruit                                                                                  | 9.30 (7.56)     | 8.96 (6.91)              | 8.94 (5.88)     |
| Dairy                                                                                  | 7.03 (6.76)     | 8.70 (7.23)              | 6.29 (6.50)     |
| Sweets/Fast Food                                                                       | 2.94 (2.26)     | 5.04 (3.95)              | 4.60 (3.72)     |
| Whole grains                                                                           | 12.62 (9.62)    | 10.35 (8.91)             | 10.19 (9.13)    |

| Life Satisfaction and Social Support                                                   |                 |                          |                 |
| Social Life (1=very satisfied, 4=not satisfied)                                        | 2.09 (0.46)     | 2.29 (0.81)              | 3.09 (1.12)     |
| How often do you participate in group activities? (1=never, 2=once per week or less, 3=more than once per week) | 2.48 (0.51)     | 2.46 (0.59)              | 2.38 (0.55)     |
| How often do you attend religious activities? (1=never, 2=once per week or less, 3=more than once per week) | 1.67 (0.92)     | 1.50 (0.83)              | 1.57 (0.85)     |
Table 4. *Self-Assessment of Adherence to Behavior Change Goals Among Students Enrolled in SBS 529*

<table>
<thead>
<tr>
<th></th>
<th>Post-Intervention</th>
<th>Follow-Up**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrition</td>
<td>76.9</td>
<td>63.6</td>
</tr>
<tr>
<td>Physical Activity</td>
<td>76.7</td>
<td>73.6</td>
</tr>
<tr>
<td>Mental Health</td>
<td>73.6</td>
<td>50.2</td>
</tr>
<tr>
<td>Social Support</td>
<td>85.2</td>
<td>62.3</td>
</tr>
</tbody>
</table>

*Considering each of the behavior change goals, on approximately what percentage of days did you achieve your goal?*

**Since the conclusion of last semester, please estimate the percentage of days on which you achieved your behavior change goals.
Appendix B. SBS 529 Health Survey

The following survey was administered online via Qualtrics Survey Software to participants at baseline, post-intervention, and follow-up intervals:

Which diagnosis or health problem is most prevalent in the United States?
- Hypertension
- Mental disorder
- Obesity
- Cancer (all sites)

In the United States, what is the leading cause of disability for people aged 15-44?
- Arthritis
- Physical injury of back or spine; back or spine problems
- Heart disease
- Depression

Would you say that in general your health is —?
- Excellent
- Very good
- Good
- Fair
- Poor

Compared with a year ago, how has your health changed?
- Much better
- Somewhat better
- The same
- Somewhat worse
- Much worse

Compared with others your same age and sex, how would you rate your overall health?
- Much worse than average
- Worse than average
- About average
- Better than average
- Much better than average

During the past month, how many days have you felt sad or depressed?
- 0 days
- 1-5 days
- 6-10 days
- 11-15 days
- 16-20 days
- 21-30 days

During the past month, how many days have you felt worried, tense, or anxious?
Considering a 7-day period (a week), how many times on the average do you do the following kinds of exercise for more than 15 minutes during your free time (write on each line the appropriate number)

<table>
<thead>
<tr>
<th>Times per week</th>
<th>STRENUOUS EXERCISE (HEART BEATS RAPIDLY)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MODERATE EXERCISE (NOT EXHAUSTING)</td>
</tr>
<tr>
<td></td>
<td>MILD EXERCISE (MINIMAL EFFORT)</td>
</tr>
</tbody>
</table>

Considering a 7-day period (a week), during your leisure-time, how often do you engage in any regular activity long enough to work up a sweat (heart beats rapidly)?

- Often
- Sometimes
- Never/Rarely

In the PAST week, during how many days did you exercise or engage in rigorous physical activity for at least 30 minutes?

- 0 days
- 1 day
- 2 days
- 3 days
- 4 days
- 5 days
How many days per week do you usually consume alcohol?
- 6 days
- 7 days

How many days per week do you usually consume alcohol?
- I do not drink alcohol
- 1 or 2 days per week
- 3 to 5 days per week
- 6 or 7 days per week

On average, how many alcoholic drinks do you have in a typical day? One drink is equivalent to a 12-ounce beer, a 5-ounce glass of wine, or a drink with one shot of liquor.
- I abstain
- Fewer than one per day
- 1
- 2
- 3
- 4
- 5 or more

During the past month, how many times did you have five or more drinks on one occasion?
- 0-1
- 2-5
- 6-10
- 11-15
- 15-20
- 20-30

Do you smoke cigarettes?
- Every day
- Some days
- I used to smoke
- Never

How often per week do you have red meat as your main course?
- I do not eat red meat
- I eat red meat less than once per week
- I eat red meat 1-2 days per week
- I eat red meat 3-5 days per week
- I eat red meat 6-7 days per week

How many servings of processed meats (bacon, hot dogs, chicken nuggets, bologna) do you eat per week?
- None
- 1 - 2 servings
- 3 - 4 servings
- Over 5 servings
During the past week, how many servings of fresh vegetables did you eat?
  ○ None
  ○ 1 to 3 servings
  ○ 4 to 6 servings
  ○ 1 serving per day
  ○ 2 servings per day
  ○ 3 servings per day
  ○ 4 or more servings per day
During the past week, how many servings of fruit did you eat?
  ○ None
  ○ 1 to 3 servings
  ○ 4 to 6 servings
  ○ 1 serving per day
  ○ 2 servings per day
  ○ 3 servings per day
  ○ 4 or more servings per day
During the past week, how many servings of dairy products (milk, cheese, yogurt, etc.) did you consume?
  ○ None
  ○ 1 to 3 servings
  ○ 4 to 6 servings
  ○ 1 serving per day
  ○ 2 servings per day
  ○ 3 servings per day
  ○ 4 or more servings per day
During the past week, how many times did you consume sweets or fast food?
  ○ None
  ○ 1 to 3 servings
  ○ 4 to 6 servings
  ○ 1 serving per day
  ○ 2 servings per day
  ○ 3 servings per day
  ○ 4 or more servings per day
During the past week, how many times per day did you eat whole-grain products, brown rice, or high-fiber cereal?
  ○ Less than one serving per day
  ○ 1-2 servings per day
  ○ 3-4 servings per day
  ○ 5-7 servings per day
Do you believe you have a diet that leads to weight gain?
○ I eat too much every day, making it easy for me to stay overweight or to gain more weight
○ I eat such that I am losing weight with a target of reaching a healthy weight
○ I am maintaining a healthy weight with the way I currently eat

How satisfied are you with your social life (relationships with friends and/or partner)?
○ Very satisfied
○ Somewhat satisfied
○ Somewhat unsatisfied
○ Not satisfied

How satisfied are you with your work life?
○ I do not work
○ I am very satisfied
○ I am somewhat satisfied
○ I am somewhat not satisfied
○ I am not satisfied

How often do you participate in group activities?
○ Never
○ Once a week or less
○ More than once a week

How often do you attend religious activities?
○ Never
○ Less than once per week
○ Weekly
○ Several times every week

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Agree</th>
<th>Agree and Disagree equally</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I would feel inadequate if I went to a therapist for psychological help.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. My self-confidence would NOT be threatened if I sought professional help.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Seeking psychological help would make me feel less intelligent.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. My self-esteem would increase if I talked to a therapist.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statement</td>
<td>Did not apply to me at all</td>
<td>Applied to me to some degree, or some of the time</td>
<td>Applied to me to a considerable degree or a good part of time</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>----------------------------</td>
<td>---------------------------------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>5. My view of myself would not change just because I made the choice to see a therapist.</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>6. It would make me feel inferior to ask a therapist for help.</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>7. I would feel okay about myself if I made the choice to seek professional help.</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>8. If I went to a therapist, I would be less satisfied with myself.</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>9. My self-confidence would remain the same if I sought help for a problem I could not solve.</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>10. I would feel worse about myself if I could not solve my own problems.</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

Please read each statement and check the column to indicate how much the statement applied to you **over the past week**. There are no right or wrong answers. Do not spend too much time on any statement.
<table>
<thead>
<tr>
<th>Statement</th>
<th>Not at all true</th>
<th>Hardly true</th>
<th>Moderately true</th>
<th>Exactly true</th>
</tr>
</thead>
<tbody>
<tr>
<td>I felt that I was using a lot of nervous energy</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I was worried about situations in which I might panic and make a fool of myself</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I felt that I had nothing to look forward to</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I found myself getting agitated</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I found it difficult to relax</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I felt downhearted and blue</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I was intolerant of anything that kept me from getting on with what I was doing</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I felt I was close to panic</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I was unable to become enthusiastic about anything</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I felt I wasn’t worth much as a person</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I felt that I was rather touchy</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I felt scared without any good reason</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I felt that life was meaningless</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I can always manage to solve difficult problems if I try hard enough</td>
<td>○ ○ ○ ○ ○</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If someone opposes me, I can find the means and ways to get what I want</td>
<td>○ ○ ○ ○ ○</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is easy for me to stick to my aims and accomplish my goals</td>
<td>○ ○ ○ ○ ○</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am confident that I could deal efficiently with unexpected events</td>
<td>○ ○ ○ ○ ○</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thanks to my resourcefulness, I know how to handle unforeseen situations</td>
<td>○ ○ ○ ○ ○</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can solve most problems if I invest the necessary effort</td>
<td>○ ○ ○ ○ ○</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can remain calm when facing difficulties because I can rely on my coping abilities</td>
<td>○ ○ ○ ○ ○</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I am confronted with a problem, I can usually find several solutions</td>
<td>○ ○ ○ ○ ○</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If I am in trouble, I can usually think of a solution</td>
<td>○ ○ ○ ○ ○</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can usually handle whatever comes my way</td>
<td>○ ○ ○ ○ ○</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How confident are you right now that you could exercise three times per week for 20 minutes if:

| The weather was bothering you |  |
| You were bored by the program or activity |  |
The following questions ask about your feelings and thoughts during THE PAST MONTH. In each question, you will be asked HOW OFTEN you felt or thought a certain way. Although some of the questions are similar, there are small differences between them, and you should treat each one as a separate question. The best approach is to answer fairly quickly. That is, do not try to count the exact number of times you felt a particular way, but indicate the answer that in general seems the best.

<table>
<thead>
<tr>
<th>Feeling/Thought</th>
<th>Never</th>
<th>Almost never</th>
<th>Sometimes</th>
<th>Fairly often</th>
<th>Very often</th>
</tr>
</thead>
<tbody>
<tr>
<td>You felt pain when exercising</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>You had to exercise alone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>You did not enjoy it</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>You were too busy with other activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>You felt tired</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>You felt stressed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>You felt depressed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the past month, how often have you been upset because of something that happened unexpectedly?

In the past month, how often have you felt unable to control the important things in your life?

In the past month, how often have you felt nervous or stressed?

In the past month, how often have you felt confident about your ability to handle personal problems?
In the past month, how often have you felt that things were going your way?
○ ○ ○ ○ ○ ○

In the past month, how often have you found that you could not cope with all the things you had to do?
○ ○ ○ ○ ○ ○

In the past month, how often have you been able to control irritations in your life?
○ ○ ○ ○ ○ ○

In the past month, how often have you felt that you were on top of things?
○ ○ ○ ○ ○ ○

In the past month, how often have you been angry because of things that happened that were outside of your control?
○ ○ ○ ○ ○ ○

In the past month, how often have you felt that difficulties were piling up so high that you could not overcome them?
○ ○ ○ ○ ○ ○

Are you enrolled in SBS 529?
○ Yes
○ No

Are you a student at Yale?
○ Yes
○ No

Display This Question:
If Are you enrolled in SBS 505? = Yes

Considering each of the behavior change goals, on approximately what percentage of days did you achieve your goal? (Consider the entire semester when estimating, not just the 5-day intervention)

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrition (consider all days since Sept 12)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental Health (since Oct 3)</td>
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Self-Directed Behavioral Interventions for Health Promotion Among Graduate Students

Physical Activity (since Oct 24)

Social Support (since Nov 14)

Are you currently a....
- Undergraduate student
- Graduate/professional student
- Non-degree student
- None of these/ not a student

Are you a student at the Yale School of Public Health?
- Yes
- No

Thank you for completing this survey. The point of this research study is to examine changes in health attitudes and behaviors over time. So that we may contact you again at the end of the semester, please click link below. This will route you to a SEPARATE survey that will collect your contact information (email address) and demographic characteristics. This process will assure that the responses you provided here cannot be traced to your identity. Information in the second survey will be used only to contact you again in approximately 12 weeks.

Appendix C. Demographic Characteristics Survey

Are you enrolled in SBS 505?
- Yes
- No

(Q14) Are you a student at Yale?
- Yes
- No

Are you a student at Yale School of Public Health (YSPH)?
- Yes
- No

Are you currently a...
What is your gender?
________________________________________________________________

What is your race/ethnicity?
________________________________________________________________

What is your age?
________________________________________________________________


Evans, T., Bira, L., Gastelum, J. et al. Evidence for a mental health crisis in graduate education. 

*Nat Biotechnol* 36, 282–284 (2018). [https://doi.org/10.1038/nbt.4089](https://doi.org/10.1038/nbt.4089)


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