NORTHERN ILLINOIS UNIVERSITY

Effects of Time Demands on Academic Success and Emotions for Northern Illinois University Students

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With Honors

Department Of

Statistics and Actuarial Science

By

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EFFECTS OF TIME DEMANDS

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Capstone Faculty Approval Page

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Effects of Time Demands on Academic Success and Emotions for Northern Illinois University Students

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Abstract

As college students continue to have more demanding schedules, their grades may be slipping, and their emotional state may be becoming worse. This research aims to determine how more time demands affect the academic success and emotions of happiness, enthusiasm, frustration, and feeling overwhelmed for Northern Illinois University (NIU) undergraduate students. This project started by designing a survey for the students to complete. After the design of the survey was finished, the survey was sent out via email to randomly selected students. The students who completed the survey were split into four different groups depending on the activity that they performed most during the previous fall semester (Fall 2019) and the previous spring semester (Spring 2020). NIU student-athletes were the group of interest. The other three groups were part-time working students, full-time working students, and non-athlete, non-working students. Then two-sample t-tests with unequal variances were used to determine if more time demands indicate a lower grade point average (GPA), a lower rating of happiness and enthusiasm, and a higher rating of frustration and feeling overwhelmed. The results indicate that full-time working students spent more time per week on the extracurricular activity that they performed most than student-athletes, while student-athletes spent more time than non-athlete, non-working students. Then the results suggest that full-time working students had a lower GPA than student-athletes and that full-time working students felt less happiness than student-athletes. Furthermore, the results show that student-athletes felt less enthusiasm than non-athlete, non-working students. Lastly, the results indicate that full-time working students felt more frustration than their student-athlete counterparts. With the results from this research project, hopefully administrators, professors, bosses, coaches, club leaders, parents, and peers become more aware of how time demands affect the academic success and emotional state of NIU undergraduate students.
Effects of Time Demands on Academic Success and Emotions for Northern Illinois University Students

Most college students have demanding schedules, which affects all the activities that they perform. From schoolwork, to jobs, to extracurricular activities, it can be hard for students to balance all their responsibilities. College students often struggle with time management, and when it comes to homework and studying, students often “start too late, get behind, and end up cutting corners,” which increases stress and lowers grades (Siverts, 2020). If students spend too much time on any single task, they may perform better at that activity; however, they may begin to experience a decline in the success of other endeavors. When grades begin to fall, college students may start to panic and lose confidence in themselves. Students who work hard at school but do not see their results prosper right away tend to “suffer from increased levels of stress because they desire good grades” (Twehues, 2013). With college students being so busy each day, these students may not have time to relax and positively reflect. Without the time to relax and enjoy the day, these students may begin to feel fewer positive emotions and more negative emotions, which can also lead to worse academic success. Negative emotions such as “Depression and anxiety have become increasingly prevalent in today’s college students,” and these types of emotions become “barriers to doing well in school” (Staff Writers, 2020). Thus, this project will study the effects of increased time demands on academic success and the emotions of happiness, enthusiasm, frustration, and feeling overwhelmed.

The first hypothesis is that more time demands lead to a lower GPA. Hence, this research seeks to determine whether students who spent more time in hours per week on a particular extracurricular activity had a lower GPA than their counterparts. Another hypothesis is that additional time commitments indicated a feeling of less happiness, so this project aims to
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establish whether students who spent more time in hours per week on a specific extracurricular activity felt less happiness than their peers. The next hypothesis is that increased time demands resulted in a feeling of less enthusiasm. Thus, this study seeks to reveal whether students who spent more time in hours per week on a particular extracurricular activity felt less enthusiasm than the students who did not spend as much time per week on a specific extracurricular activity. Another hypothesis is that more time commitments indicated a feeling of more frustration, so this research aims to determine whether students who spent more time per week on a particular extracurricular activity felt more frustration than their counterparts. The last hypothesis is that additional time demands lead students to feel more overwhelmed. Hence, this project seeks to establish if students who spent more time on a particular extracurricular activity felt more overwhelmed than their peers.

Methods

Survey

This project started by designing a survey for NIU undergraduate students to complete. The survey was split such that the first half of the survey pertained to the previous fall semester (Fall 2019), and the second half of the survey asked questions about the previous spring semester (Spring 2020). For each semester, the survey listed various activities that a typical college student may participate in on a weekly basis. Once a student answered that question, the survey then asked how many hours per week that individual exercised that activity. These two questions divided the participants into four groups of students. The main group, or the group of interest, was student-athletes. The other three groups were part-time working students, full-time working students, and non-athlete, non-working students. Then the survey asked the students about the feelings that they experienced in a typical school week during the last two semesters. The survey
then asked the participants to rate their emotions of happiness, enthusiasm, frustration, and feeling overwhelmed on a scale from zero to ten. A rating of zero means that the student did not feel that emotion at all, while a rating of ten means that the student felt that emotion an extreme amount. The last several questions asked the participating students to give their GPA from the previous fall semester and the previous spring semester. Please see the Appendix for all the survey questions. After the design of the survey was complete, the survey was sent out via email to randomly selected students. Two hundred fifty NIU student-athletes as well as 3,750 NIU undergraduate students were randomly selected to complete the survey.

**Organizing and Analyzing the Data**

The deadline to complete the survey was October 20, 2020. On that date, the survey results data were collected and organized in Excel spreadsheets. The survey results data were organized such that the data for each of the four groups of students were separated. The first analysis was to compare the time that each group of students spent on the extracurricular activity that they performed most during the previous fall and spring semesters. Thus, two-sample t-tests with unequal variances were used to determine which group of students spent the most time per week on a specific extracurricular activity during the previous two semesters. Since student-athletes were the group of interest, the mean time that they spent per week on their extracurricular activity was tested against that which non-athlete, non-working students, part-time working students, and full-time working students spent for both the previous fall and spring semesters.

Then the GPAs of the four groups of students for the previous two semesters needed to be compared and analyzed. Hence, two-sample t-tests with unequal variances were used to determine which group of students had the least and most academic success during the previous
fall and spring semesters. Because student-athletes were the group of interest, their mean GPA for the last two semesters was tested against the mean GPAs of non-athlete, non-working students, part-time working students, and full-time working students for the previous fall and spring semesters.

The final analyses were to compare the ratings of happiness, enthusiasm, frustration, and being overwhelmed of the four groups of NIU undergraduate students. So, two-sample t-tests with unequal variances were used to determine which group of students felt the least happiness and enthusiasm and the most frustration and overwhelmed during the previous fall and spring semesters. Again, since student-athletes were the group of interest, their mean ratings of happiness, enthusiasm, frustration, and feeling overwhelmed were tested against the mean ratings of the four emotions of non-athlete, non-working students, part-time working students, and full-time working students for the previous two semesters. These hypothesis tests produced some significant results that helped to determine whether more time demands affected the academic success and emotions of NIU undergraduate students.
Results

Table 1

Comparison of the academic success and emotions of the four groups of students

<table>
<thead>
<tr>
<th></th>
<th>Student-Athletes</th>
<th>Non-Athlete, Non-Working Students</th>
<th>Part-Time Working Students</th>
<th>Full-Time Working Students</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Previous Fall Semester</strong></td>
<td>Time Spent (hours per week)</td>
<td>21.8 ± 4.2</td>
<td>13.9 ± 12.0</td>
<td>21.7 ± 8.7</td>
</tr>
<tr>
<td>GPA</td>
<td>3.4 ± 0.4</td>
<td>3.2 ± 0.8</td>
<td>3.2 ± 0.7</td>
<td>2.8 ± 0.8</td>
</tr>
<tr>
<td>Happiness</td>
<td>5.7 ± 1.5</td>
<td>6.3 ± 2.6</td>
<td>5.9 ± 2.5</td>
<td>4.8 ± 3.0</td>
</tr>
<tr>
<td>Enthusiasm</td>
<td>4.2 ± 1.8</td>
<td>6.3 ± 2.6</td>
<td>5.7 ± 2.6</td>
<td>4.8 ± 3.0</td>
</tr>
<tr>
<td>Frustration</td>
<td>5.8 ± 1.1</td>
<td>6.1 ± 2.4</td>
<td>5.9 ± 2.6</td>
<td>7.0 ± 2.4</td>
</tr>
<tr>
<td>Overwhelmed</td>
<td>6.7 ± 0.9</td>
<td>6.7 ± 2.6</td>
<td>6.5 ± 2.7</td>
<td>7.3 ± 2.7</td>
</tr>
<tr>
<td><strong>Previous Spring Semester</strong></td>
<td>Time Spent (hours per week)</td>
<td>22.0 ± 4.1</td>
<td>12.3 ± 10.9</td>
<td>21.6 ± 8.7</td>
</tr>
<tr>
<td>GPA</td>
<td>3.6 ± 0.4</td>
<td>3.4 ± 0.7</td>
<td>3.3 ± 0.7</td>
<td>3.0 ± 0.9</td>
</tr>
<tr>
<td>Happiness</td>
<td>5.8 ± 1.5</td>
<td>5.4 ± 2.9</td>
<td>5.3 ± 2.4</td>
<td>4.4 ± 2.5</td>
</tr>
<tr>
<td>Enthusiasm</td>
<td>4.4 ± 1.9</td>
<td>5.4 ± 3.0</td>
<td>5.0 ± 2.5</td>
<td>4.1 ± 2.7</td>
</tr>
<tr>
<td>Frustration</td>
<td>5.7 ± 1.3</td>
<td>6.4 ± 2.7</td>
<td>6.6 ± 2.4</td>
<td>7.2 ± 2.5</td>
</tr>
<tr>
<td>Overwhelmed</td>
<td>6.7 ± 1.3</td>
<td>6.6 ± 2.9</td>
<td>6.8 ± 2.5</td>
<td>7.6 ± 2.7</td>
</tr>
</tbody>
</table>
Table 2

P-values produced by comparing the academic success and emotions

<table>
<thead>
<tr>
<th></th>
<th>Student-Athletes vs. Non-Athlete, Non-Working Students</th>
<th>Student-Athletes vs. Part-Time Working Students</th>
<th>Student-Athletes vs. Full-Time Working Students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>P-Value by two-sample t-test with unequal variances</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previous Fall Semester</td>
<td>Time Spent (hours per week)</td>
<td>0.867</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td></td>
<td>GPA</td>
<td>0.128</td>
<td>0.044*</td>
</tr>
<tr>
<td></td>
<td>Happiness</td>
<td>0.039*</td>
<td>0.419</td>
</tr>
<tr>
<td></td>
<td>Enthusiasm</td>
<td>&lt;0.001*</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td></td>
<td>Frustration</td>
<td>0.213</td>
<td>0.538</td>
</tr>
<tr>
<td></td>
<td>Overwhelmed</td>
<td>0.860</td>
<td>0.384</td>
</tr>
<tr>
<td>Previous Spring Semester</td>
<td>Time Spent (hours per week)</td>
<td>0.624</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td></td>
<td>GPA</td>
<td>0.005*</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td></td>
<td>Happiness</td>
<td>0.307</td>
<td>0.056</td>
</tr>
<tr>
<td></td>
<td>Enthusiasm</td>
<td>0.005*</td>
<td>0.030*</td>
</tr>
<tr>
<td></td>
<td>Frustration</td>
<td>0.011*</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td></td>
<td>Overwhelmed</td>
<td>0.830</td>
<td>0.486</td>
</tr>
</tbody>
</table>

* Statistically significant
Table 3

P-values produced by checking the normality of the acquired samples

<table>
<thead>
<tr>
<th></th>
<th>Student-Athletes</th>
<th>Non-Athlete, Non-Working Students</th>
<th>Part-Time Working Students</th>
<th>Full-Time Working Students</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P-Value by Shapiro-Wilk test</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Previous Fall Semester</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time Spent (hours per week)</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>0.081*</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>GPA</td>
<td>0.014</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Happiness</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>0.004</td>
<td>0.014</td>
</tr>
<tr>
<td>Enthusiasm</td>
<td>0.002</td>
<td>&lt;0.001</td>
<td>0.004</td>
<td>0.020</td>
</tr>
<tr>
<td>Frustration</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Overwhelmed</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Previous Spring Semester</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time Spent (hours per week)</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>0.002</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>GPA</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Happiness</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>0.004</td>
<td>0.014</td>
</tr>
<tr>
<td>Enthusiasm</td>
<td>0.002</td>
<td>&lt;0.001</td>
<td>0.004</td>
<td>0.020</td>
</tr>
<tr>
<td>Frustration</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Overwhelmed</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

* Statistically significant

**Shapiro-Wilk Tests**

Each of the two-sample t-tests with unequal variances used to compare two groups of students produced a p-value. If the p-value from a two-sample t-tests with unequal variances is less than 0.05, then there is a statistically significant effect at the 0.05 significance level. In addition to the two-sample t-tests with unequal variances, Shapiro-Wilk tests were also used to check whether each of the samples were taken from a normal distribution. Like the t-tests, each of the Shapiro-Wilk tests produced a p-value. If the p-value from a Shapiro-Wilk test is greater than 0.05, then the sample came from a normal distribution. On the contrary, if the p-value from a Shapiro-Wilk test is less than 0.05, then the sample was taken from a non-normal distribution. From the survey results data, all but one of the samples had a p-value from a Shapiro-Wilk test.
greater than 0.05. The single exception was the time that part-time working students spent on the extracurricular activity that they performed most during the previous spring semester (Table 3). Thus, besides the single exception, all the samples were taken from non-normal distributions. Even though the all the samples but one came from non-normal distributions, the two-sample t-tests with unequal variances that were used are robust against non-normality if the sample sizes are sufficiently large (greater than thirty). All the samples sizes that were acquired from the survey were greater than thirty, so the results of the t-tests are still valid.

**Time Spent**

To compare the time that student-athletes spent on the extracurricular activity that they performed most during the previous fall and spring semesters to that which non-athlete, non-working students, part-time working students, and full-time working students spent, the results of the two-sample t-tests with unequal variances were analyzed. The mean time that student-athletes spent in hours per week on the extracurricular activity that they performed most during the previous fall semester was 21.8 hours with a standard deviation (S.D.) of 4.2 hours. For non-athlete, non-working students, that mean time during the previous fall semester was 13.9 hours with a standard deviation of 12.0 hours. Meanwhile, part-time working students spent an average time of 21.7 hours with a standard deviation of 8.7 hours during the previous fall semester. Lastly, the mean time that full-time working students spent on the extracurricular activity that they performed most during the previous fall semester was 36.1 hours with a standard deviation of 10.2 hours. During the previous spring semester, however, student-athletes spent an average time of 22.0 hours with a standard deviation of 4.1 hours; non-athlete, non-working students spent a mean time of 12.3 hours with a standard deviation of 10.9 hours; part-time working
students spent a mean time of 21.6 hours with a standard deviation of 8.7 hours, and full-time working students spent an average of 36.2 hours with a standard deviation of 8.4 hours (Table 1).

The p-value from comparing the time that student-athletes spent on the extracurricular activity that they performed most to that which non-athlete, non-working students spent was less than 0.001. Thus, there is sufficient evidence to suggest that student-athletes spent more time in hours per week on the extracurricular activity that they performed most during the previous fall semester than non-athlete, non-working students. The p-value produced by comparing student-athletes to part-time working students during the previous fall semester was 0.876, which means that there is not sufficient evidence to suggest that student-athletes spent more time in hours per week on the extracurricular activity that they performed most during the previous fall semester than part-time working students. The p-value from comparing student-athletes to full-time working students was less than 0.001. Hence, there is sufficient evidence to suggest that full-time working students spent more time in hours per week on the extracurricular activity that they performed most during the previous fall semester than student-athletes. In fact, all the p-values produced by the respective t-tests for the previous spring semester indicated the same conclusions (Table 2).

GPA

To compare the GPA of student-athletes to the GPAs of non-athlete, non-working students, part-time working students, and full-time working students during the previous fall and spring semesters, the results of the two-sample t-tests with unequal variances were analyzed. During the previous fall semester, the mean GPA of student-athletes was 3.4 with a standard deviation of 0.4, while the mean GPA of non-athlete, non-working students was 3.2 with a standard deviation of 0.8. Part-time working students had a mean GPA of 3.2 with a standard
deviation of 0.7 during the previous fall semester, and full-time working students had a mean GPA of 2.8 with a standard deviation of 0.8 during the previous fall semester. However, during the previous spring semester, student-athletes had a mean GPA of 3.6 with a standard deviation of 0.4; non-athlete, non-working students had a mean GPA of 3.4 with a standard deviation of 0.7; part-time working students had a mean GPA of 3.3 with a standard deviation of 0.7, and full-time working students had a mean GPA of 3.0 with a standard deviation of 0.9 (Table 1).

Now the p-value produced by comparing the GPA of student-athletes to the GPA of non-athlete, non-working students during the previous fall semester was 0.128, so there is not enough evidence to suggest that student-athletes had less academic success during the previous fall semester than non-athlete, non-working students. The p-value from comparing the GPA of student-athletes to the GPA of part-time working students during the previous fall semester was 0.044. Thus, there is sufficient evidence to suggest that part-time working students had less academic success during the previous fall semester than student-athletes. Then the p-value from comparing the GPA of student-athletes to the GPA of full-time working students was less than 0.001, which indicates that full-time working students had less academic success during the previous fall semester than student-athletes. All the p-values produced by the respective t-tests for the previous spring semester resulted in the same conclusions except for student-athletes compared to non-athlete, non-working students. For the previous spring semester, the p-value from comparing these two groups of students was 0.005. Hence, there is sufficient evidence to suggest that non-athlete, non-working students had less academic success than student-athletes during the previous spring semester (Table 2).
Happiness

Then the results of the two-sample t-tests with unequal variances comparing the rating of happiness that student-athletes felt to the ratings of happiness that non-athlete, non-working students, part-time working students, and full-time working students athletes felt during the previous fall and spring semesters were analyzed. For student-athletes, the mean rating of happiness during the previous fall semester was 5.7 with a standard deviation of 1.5. The mean rating of happiness for non-athlete, non-working students during the previous fall semester was 6.3 with a standard deviation of 2.6, and part-time working students had an average rating of happiness of 5.9 with a standard deviation of 2.5 during the previous fall semester. Meanwhile, the mean rating of happiness for full-time working students was 4.8 with a standard deviation of 3.0 during the previous fall semester. Although, during the previous spring semester, student-athletes had an average rating of happiness of 5.8 with a standard deviation of 1.5; non-athlete, non-working students had a mean rating of happiness of 5.4 with a standard deviation of 2.9; part-time working students had an average rating of happiness of 5.3 with a standard deviation of 2.4, and full-time working students had a mean rating of happiness of 4.4 with a standard deviation of 2.5 (Table 1).

The resulting p-value produced by comparing the rating of happiness for student-athletes to the rating of happiness for non-athlete, non-working students during the previous fall semester was 0.039. Thus, there is sufficient evidence to suggest that student-athletes felt less happiness during the previous fall semester than non-athlete, non-working students. Comparing the rating of happiness for student-athletes to the rating of happiness for part-time working students during the previous fall semester produced a p-value of 0.419, so there is not enough evidence to suggest that student-athletes felt less happiness during the previous fall semester than part-time
working students. The p-value from comparing the rating of happiness for student-athletes to the
rating of happiness for full-time working students was 0.033. Hence, there is sufficient evidence
to suggest that full-time working students felt less happiness during the previous fall semester
than student-athletes. For the previous spring semester, all the p-values produced by the
respective t-tests resulted in the same conclusions, except for student-athletes compared to non-
athlete, non-working students. The p-value from comparing these two groups of students for the
previous spring semester was 0.307, so there is not enough evidence to suggest that student-
athletes felt less happiness during the previous spring semester than non-athlete, non-working
students (Table 2).

**Enthusiasm**

The rating of enthusiasm for student-athletes felt was compared and analyzed to the
ratings of enthusiasm for non-athlete, non-working students, part-time working students, and
full-time working students for the previous fall and spring semesters using two-sample t-tests
with unequal variances. For student-athletes, the mean rating of enthusiasm during the previous
fall semester was 4.2 with a standard deviation of 1.8. The average rating of enthusiasm for non-
athlete, non-working students during the previous fall semester was 6.3 with a standard deviation
of 2.6, and the mean rating of enthusiasm for part-time working students was 5.7 with a standard
deviation of 2.6 during the previous fall semester. Meanwhile, for full-time working students,
their mean rating of enthusiasm was 4.8 with a standard deviation of 3.0 during the previous fall
semester. However, during the previous spring semester, student-athletes had a mean rating of
enthusiasm of 4.4 with a standard deviation of 1.9; non-athlete, non-working students had a
mean rating of enthusiasm of 5.4 with a standard deviation of 3.0; part-time working students
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had a mean rating of enthusiasm of 5.0 with a standard deviation of 2.5, and full-time working students had a mean rating of enthusiasm of 4.1 with a standard deviation of 2.7 (Table 1).

The p-value produced by comparing the rating of enthusiasm for student-athletes to the rating of enthusiasm for non-athlete, non-working students during the previous fall semester was less than 0.001. Thus, there is sufficient evidence to suggest that student-athletes felt less enthusiasm than non-athlete, non-working students during the previous fall semester. Then the p-value from comparing the rating of enthusiasm for student-athletes to the rating of enthusiasm for part-time working students during the previous fall semester was also less than 0.001, which means that there is sufficient evidence to suggest that student-athletes felt less enthusiasm during the previous fall semester than part-time working students. Lastly, the p-value from comparing the rating of enthusiasm for student-athletes to the rating of enthusiasm of full-time working students was less than 0.117, so there is not enough evidence to suggest that full-time working students felt less enthusiasm than student-athletes during the previous fall semester. In fact, all the p-values produced by the respective t-tests for the previous spring semester indicated the same conclusions (Table 2).

Frustration

To compare the rating of frustration for student-athletes to the ratings of frustration for non-athlete, non-working students, part-time working students, and full-time working students during the previous fall and spring semesters, the results of the two-sample t-tests with unequal variances were analyzed. During the previous fall semester, the mean rating of frustration for student-athletes was 5.8 with a standard deviation of 1.1, while the mean rating of frustration for non-athlete, non-working students was 6.1 with a standard deviation of 2.4. Part-time working students had an average rating of frustration of 5.9 with a standard deviation of 2.6 during the
previous fall semester, and full-time working students had an average rating of frustration of 7.0 with a standard deviation of 2.4 during the previous fall semester. Although, during the previous spring semester, student-athletes had a mean rating of frustration of 5.7 with a standard deviation of 1.3; non-athlete, non-working students had an average rating of frustration of 6.4 with a standard deviation of 2.7; part-time working students had a mean rating of frustration of 6.6 with a standard deviation of 2.4, and full-time working students had an average rating of frustration of 7.2 with a standard deviation of 2.5 (Table 1).

Now the p-value from comparing the rating of frustration for student-athletes to the rating of frustration for non-athlete, non-working students during the previous fall semester was 0.213, so there is not enough evidence to suggest that student-athletes felt more frustration during the previous fall semester than non-athlete, non-working students. The p-value produced by comparing the rating of frustration for student-athletes to the rating of frustration for part-time working students during the previous fall semester was 0.538. Thus, there is not enough evidence to suggest that student-athletes felt more frustration during the previous fall semester than part-time working students. Then the p-value from comparing the rating of frustration for student-athletes to the rating of frustration for full-time working students was less than 0.001, which indicates that full-time working students felt more frustration during the previous fall semester than student-athletes. For the previous spring semester, the p-value produced by the t-test comparing student-athletes to full-time working students resulted in the same conclusion. However, the p-value from comparing the rating of frustration for student-athletes to the rating of frustration for non-athlete, non-working students was 0.011. Hence, there is sufficient evidence to suggest that non-athlete, non-working students felt more frustration than student-athletes during the previous spring semester. Additionally, the p-value produced by the t-test
comparing the feeling of frustration for student-athletes to the feeling of frustration for part-time working students was less than 0.001, so there is sufficient evidence to suggest that part-time working students felt more frustration during the previous spring semester than student-athletes (Table 2).

**Overwhelmed**

Then the results of the two-sample t-tests with unequal variances comparing the rating of feeling overwhelmed for student-athletes felt to the ratings of feeling overwhelmed for non-athlete, non-working students, part-time working students, and full-time working students during the previous fall and spring semesters were analyzed. For student-athletes, the mean rating of feeling overwhelmed during the previous fall semester was 6.7 with a standard deviation of 0.9. The mean rating of feeling overwhelmed for non-athlete, non-working students during the previous fall semester was 6.7 with a standard deviation of 2.6, and part-time working students had an average rating of feeling overwhelmed of 6.5 with a standard deviation of 2.7 for the previous fall semester. Meanwhile, the mean rating of feeling overwhelmed for full-time working students was 7.3 with a standard deviation of 2.7 for the previous fall semester. Although, during the previous spring semester, student-athletes had an average rating of feeling overwhelmed of 6.7 with a standard deviation of 1.3, non-athlete, non-working students had a mean rating of feeling overwhelmed of 6.6 with a standard deviation of 2.9, part-time working students had an average rating of feeling overwhelmed of 6.8 with a standard deviation of 2.5, and full-time working students had a mean rating of feeling overwhelmed of 7.6 with a standard deviation of 2.7 (Table 1).

The resulting p-value produced by comparing the rating of feeling overwhelmed for student-athletes to the rating of feeling overwhelmed for non-athlete, non-working students
during the previous fall semester was 0.860. Thus, there is not enough evidence to suggest that student-athletes felt more overwhelmed during the previous fall semester than non-athlete, non-working students. Comparing the rating of feeling overwhelmed for student-athletes to the rating of feeling overwhelmed for part-time working students during the previous fall semester produced a p-value of 0.384, so there is not enough evidence to suggest that student-athletes felt more overwhelmed during the previous fall semester than part-time working students. The p-value from comparing the rating of feeling overwhelmed for student-athletes to the rating of feeling overwhelmed for full-time working students was 0.078. Hence, there is not enough evidence to suggest that full-time working students felt more overwhelmed during the previous fall semester than student-athletes. For the previous spring semester, all the p-values produced by the respective t-tests indicated the same conclusions, except for student-athletes compared to full-time working students. The p-value from comparing these two groups of students for the previous spring semester was 0.015, so there is sufficient evidence to suggest that full-time working students felt more overwhelmed during the previous spring semester than non-athlete, non-working students (Table 2).

**Discussion**

Based on the results of the hypothesis tests for the previous fall and spring semesters, full-time working students spent more time per week on the extracurricular activity that they performed most than student-athletes. However, student-athletes spent more time per week on the extracurricular activity that they performed most than non-athlete, non-working students during the previous fall and spring semesters. Hence, the results of the hypothesis tests comparing the GPAs of those student groups helped to determine whether more time demands affected academic success. Since full-time working students had a significantly lower GPA than
student-athletes during the previous fall semester, the increased time demands of full-time working students effected their academic success compared to student-athletes. However, student-athletes had a significantly higher GPA during the previous fall semester than non-athlete, non-working students, so their additional time demands did not impact their academic success compared to non-athlete, non-working students. The same results were observed for the previous spring semester. Thus, the hypothesis that more time demands lead to a lower GPA held true for full-time working students compared to student-athletes.

Then the results of the two-sample t-tests with unequal variances comparing the ratings of happiness helped to determine whether more time demands affected the feeling of happiness. Full-time working students felt significantly less happiness than student-athletes during the previous fall semester, so the more time commitments of full-time working students affected their feeling of happiness compared to student-athletes during the previous fall semester. Similarly, student-athletes felt less happiness than non-athlete, non-working students during the previous fall semester, which means that their increased time commitments had an impact on their feeling of happiness compared to non-athletes, non-working students during the previous fall semester. Similar results were observed for the previous spring semester for full-time working students compared to student-athletes. However, even though student-athletes felt less happiness than non-athlete, non-working students during the previous spring semester, the results were not statistically significant, so there is not enough evidence to suggest that the additional time demands of student-athletes affected their feeling of happiness compared to non-athlete, non-working students. This means that the hypothesis that more time demands indicated less happiness held true for full-time working students compared to student-athletes but not for student-athletes compared to non-athlete, non-working students.
To determine the effect of time demands on the feeling of enthusiasm, the results of the hypothesis tests comparing the ratings of enthusiasm were analyzed. Full-time working students did not feel significantly less enthusiasm during the previous fall semester than student-athletes, so their additional time commitments did not affect their feeling of enthusiasm compared to student-athletes. However, student-athletes felt significantly less enthusiasm during the previous fall semester than non-athlete, non-working students, which suggests that the increased time demands of student-athletes affected their feeling of enthusiasm compared to non-athlete, non-working students. The same results were observed for the previous spring semester. Thus, the hypothesis that more time commitments resulted in less enthusiasm held true for student-athletes compared to non-athlete, non-working students.

Next, the results of the two-sample t-tests with unequal variances comparing the ratings of frustration helped to determine whether more time commitments affected the feeling of frustration. Full-time working students felt significantly more frustrated than their student-athlete counterparts during the previous fall semester, so the increased time demands of full-time working students affected their feeling of frustration compared to student-athletes. However, student-athletes did not feel significantly more frustrated than non-athlete, non-working students during the previous fall semester. Hence, their additional time commitments did not impact their feeling of frustration compared to non-athletes, non-working students during the previous fall semester. Similar results were observed for the previous spring semester for full-time working students compared to student-athletes. However, during the previous spring semester, student-athletes felt significantly more frustrated than non-athlete, non-working students, which means that the increased time commitments of student-athletes affected their feeling of frustration compared to non-athlete, non-working students. These results indicate that the hypothesis that
more time commitments resulted in more frustration held true for full-time working students compared to student-athletes but not for student-athletes compared to non-athlete, non-working students.

Lastly, to determine the effect of time commitments on the feeling of overwhelmed, the results of the hypothesis tests comparing the feelings of overwhelmed were analyzed. Full-time working students did not feel significantly more overwhelmed than student-athletes during the previous fall semester, so the additional time commitments of full-time working students did not affect their feeling of being overwhelmed compared to student-athletes. Similarly, student-athletes did not feel significantly more overwhelmed during the previous fall semester than non-athlete, non-working students. Thus, the increased time demands of student-athletes had no effect on their feeling of being overwhelmed compared to non-athlete, non-working students during the previous fall semester. The same results of comparing student-athletes to non-athlete, non-working students were observed during the previous spring semester. However, during the previous spring semester, full-time working students felt significantly more overwhelmed than student-athletes, which suggests that the additional time demands that full-time working students had impacted their feeling of being overwhelmed compared to student-athletes. Thus, the statement can be made that the hypothesis that more time demands lead to students feeling more overwhelmed did not hold true.

Since the proposed hypotheses of this project were not all definitively proven, more research, additional testing, and different statistical strategies should be implemented. In future research and projects, multiple linear regression analysis should be a key component of determining whether more time demands leads to worse academic success and a worse emotional state. As mental health awareness continues to become an ever more important topic, college
students need to understand that they must spare some time to relax and have fun. These students need to balance their time outside of school and in the classroom so that they find the most success in each endeavor. If students want to be successful in school and extracurricular activities simultaneously, they need to be aware of the time and effort that each require.

**Conclusion**

Among Northern Illinois University undergraduate students, especially full-time working students, spending more time on a particular extracurricular activity resulted in a lower grade point average, less happiness and enthusiasm, and more frustration and feeling overwhelmed. The major exception to this conclusion was that student-athletes had a significantly higher GPA during the previous two semesters than non-athlete, non-working students. The data that this survey produced can help administrators, professors, bosses, coaches, club leaders, parents, and peers become more aware of how the busy schedules of college students are affecting them academically and emotionally. More research and other statistical methods should continue to investigate this dilemma as college students are becoming busier and busier, and college courses are becoming more advanced and strenuous.
References

https://howtostudyincollege.com/how-to-get-good-grades/know-your-time/

Staff Writers (2020). *Depression & College Students*. Affordable Colleges Online.
https://www.affordablecollegesonline.org/college-resource-center/college-student-depression/

https://pdfs.semanticscholar.org/b906/f840ec39c5e2c22d1b622d586f19740e72d6.pdf
Appendix

Survey Questions

Q1
What year of college are you currently in?

- 1st year
- 2nd year
- 3rd year
- 4th year
- Other

Q2
How many credit hours did you take during the previous fall semester? (Answer all the following questions for the Fall 2019 semester)

- 12 credit hours
- 13 credit hours
- 14 credit hours
- 15 credit hours
- 16 credit hours
- 17 credit hours
- 18 credit hours
Q3
Which of the following extracurricular activities did you participate in the MOST during the previous fall semester?

- [ ] Work Full-Time
- [ ] Work Part-Time
- [ ] NCAA Division 1 Athletics
- [ ] NIU Intramural Athletics
- [ ] Club Athletics
- [ ] NIU Marching Band
- [ ] Fraternity & Sorority Life
- [ ] NIU ROTC
- [ ] NIU Honors Program
- [ ] NIU Governing Bodies organization(s)
- [ ] Diversity and Cultural organization(s)
- [ ] Honorary Society organization(s)
- [ ] Political organization(s)
- [ ] Professional organization(s)
- [ ] Performance and Performing Arts organization(s)
- [ ] Public Media and Communication organization(s)
- [ ] Religious organization(s)
- [ ] Social Justice, Advocacy, and Support organization(s)
- [ ] Special Interest organization(s)
- [ ] Other
Q4
How many hours per week did you perform this activity during the previous fall semester?

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Q5
How successful did you feel at this activity during the previous fall semester?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
### Q6
How much did you enjoy participating in this activity during the previous fall semester?

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### Q7
How many TOTAL hours per week did you participate in extracurricular/non-coursework activities during the previous fall semester?

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<td>70</td>
<td>80</td>
<td>90</td>
<td>100</td>
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</table>

Slide to the number of hours you perform all the selected activities
Q8
How many hours per week did you spend on coursework during the previous fall semester? (Homework, studying, etc.)

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</table>

Q9
How much did you enjoy being at school during the previous fall semester?

- ○ 0
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ 8
- ○ 9
- ○ 10
Q10
Which of the following describes your overall emotion during the previous fall semester?

- Freedom
- Happiness
- Enthusiasm
- Confidence
- Neutral
- Frustration
- Overwhelmed
- Discouraged
- Angry
- Depression
Q11
How would you rate your feeling of happiness during the previous fall semester?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
Q12
How would you rate your feeling of enthusiasm during the previous fall semester?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
Q13
How would you rate your feeling of frustration during the previous fall semester?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
Q14
How would you rate your feeling of being overwhelmed during the previous fall semester?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

Q15
How many credit hours did you take during the previous spring semester? (Now answer all the following questions for the Spring 2020 semester)

- 12 credit hours
- 13 credit hours
- 14 credit hours
- 15 credit hours
- 16 credit hours
- 17 credit hours
- 18 credit hours
Q16
Which of the following extracurricular activities did you participate in the MOST during the previous spring semester?

- Work Full-Time
- Work Part-Time
- NCAA Division 1 Athletics
- NIU Intramural Athletics
- Club Athletics
- NIU Marching Band
- Fraternity & Sorority Life
- NIU ROTC
- NIU Honors Program
- NIU Governing Bodies organization(s)
- Diversity and Cultural organization(s)
- Honorary Society organization(s)
- Political organization(s)
- Professional organization(s)
- Performance and Performing Arts organization(s)
- Public Media and Communication organization(s)
- Religious organization(s)
- Social Justice, Advocacy, and Support organization(s)
- Special Interest organization(s)
- Other
Q17
How many hours per week did you perform this activity during the previous spring semester?

0 5 10 15 20 25 30 35 40 45 50 55 60

Slide to the number of hours per week you performed this activity

Q18
How successful did you feel at this activity during the previous spring semester?

○ 0
○ 1
○ 2
○ 3
○ 4
○ 5
○ 6
○ 7
○ 8
○ 9
○ 10
Q19
How much did you enjoy participating in this activity during the previous spring semester?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

Q20
How many TOTAL hours per week did you participate in extracurricular/non-coursework activities during the previous spring semester?

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<th>Hours</th>
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<td>Slide to the number of hours you perform all the selected activities</td>
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Q21
How many hours per week did you spend on coursework during the previous spring semester? (Homework, studying, etc.)

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Q22
How much did you enjoy being at school during the previous spring semester?

○ 0
○ 1
○ 2
○ 3
○ 4
○ 5
○ 6
○ 7
○ 8
○ 9
○ 10
Q23
Which of the following describes your overall emotion during the previous spring semester?

- Freedom
- Happiness
- Enthusiasm
- Confidence
- Neutral
- Frustration
- Overwhelmed
- Discouraged
- Angry
- Depression
Q24
How would you rate your feeling of happiness during the previous spring semester?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
Q25
How would you rate your feeling of enthusiasm during the previous spring semester?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
Q26
How would you rate your feeling of frustration during the previous spring semester?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
Q27
How would you rate your feeling of being overwhelmed during the previous spring semester?

○ 0
○ 1
○ 2
○ 3
○ 4
○ 5
○ 6
○ 7
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○ 9
○ 10

Q28
What was your GPA for the previous fall semester?

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Q29
What was your GPA for the previous spring semester?

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Q30
What is your cumulative GPA at NIU?

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