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STUDY BUDGETS IN HUMAN ANATOMY AND PHYSIOLOGY STUDENTS:  
ASSESSMENT OF TIME ON TASKS AS AFFECTED BY STUDENT MOTIVATION  
AND ASSESSMENT WEIGHTING

By

Mattie Derivaux

A thesis submitted to the faculty of the University of Mississippi in partial fulfillment of  
the requirements of the Sally McDonnell Barksdale Honors College.

Oxford

April 2023

Approved by:

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Advisor: Dr. Carol Britson

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Reader: Dr. Carla Carr

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Reader: Dr. Colin Jackson

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Mattie Derivaux

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## ABSTRACT

Mattie Derivaux: Study Budgets in Human Anatomy and Physiology Students:  
Assessment of Time on Tasks as Affected by Student Motivation and Assessment  
Weighting

(Under the direction of Dr. Carol Britson)

The extent to which a student is motivated, along with the root of that motivation, can significantly influence the nature of a student's experience in a course, especially in a rigorous science course such as Human Anatomy and Physiology (HAP). Students' perceptions of specific course elements, coupled with how they perceive their purposes, can alter their motivation to succeed, which in turn can affect their performance. This study sought to analyze student motivation in an undergraduate HAP course at the University of Mississippi by focusing on students' attitudes towards the weight distribution of course assessments, effort exertions, and time allotted toward course tasks. To perform the analysis, two, in-person surveys were administered to students in addition to short polls that were completed remotely. Collected student responses provided demographic information and data regarding students' perceptions of each of the aforementioned concepts. Relevant questions from in-person surveys were subsequently categorized according to the emphasis its response would reflect: weight, effort, or motivation. While effort and motivation scores were each found to have a positive relationship with academic performance, weight scores were found to have a negative relationship with academic performance. Although students were seemingly optimistic at the beginning of the course, the decline in mean responses to questions regarding motivation and effort exertions implies that both motivation levels and the

extents of effort put forth dwindled throughout the semester. Both an increased emphasis on the weight of homework assignments and a decreased emphasis on the weight of course exams were found. This may show that students believe that their homework assignments should contribute more toward their overall course grade and that exam scores should contribute less. The short polls were remotely distributed five days, three days, and one day prior to each exam, with the exception of exam three, in which only polls three days and one day prior were distributed. It was found that motivation typically, not but always, reached its peak one day prior to an exam. Further, more than half of the responding students reported a lack of confidence on each poll. Compared to five days and three days prior, the highest number students that had begun studying occurred one day prior to each exam. The lack of confidence may be due, in part, to the difficulty of course material and potentially could serve to hinder student motivation levels. Ultimately, these findings show that motivation and effort exertions peak just before an exam, which implies that students may prioritize activities unrelated to HAP until the exam date is imminent.

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## INTRODUCTION

A student's motivation is inherently complex; it's a characteristic that is not only heavily influenced by the students' intrinsic traits, but also by their extrinsic circumstances (Meguid et al. 2020). Previous studies have shown that students' motivation largely affects how they delegate their time and effort towards a particular course and ultimately their final grade in that course (Maurer et. al 2013). An understanding of the influences and processes by which students are motivated to succeed academically and their resulting impacts on students' overall course performances have increasingly become integral parts of educational research (Orsini et al. 2016). Although insight into students' motivational mechanisms could serve to benefit educators of all academic disciplines, this study sought information specifically relevant to instructors of under-graduate Human Anatomy & Physiology (HAP) courses.

Undergraduate HAP courses are universally perceived as extremely difficult and challenging by educators and students (Sturges et al. 2017). HAP at the University of MS (UofM) is known to be incredibly rigorous and challenging for students of all academic backgrounds. Although there are not any mandatory prerequisites for HAP at the UofM, studies have shown that students with prior experience in college-level science courses are more likely to perform better in HAP courses (Harris et al. 2004). Many students take HAP early in their college careers, before they have had the opportunity to accumulate such course experience, (Lunsford and Diviney 2020). This lack of experience not only leaves students naïve to the challenging reality of the course, but also hinders them from forming study methods sufficient for success in HAP (Britson 2022).

To ensure maximum chances of success in HAP, it is essential for students to be equipped with adequate study habits, which has shown to be influenced by a student's motivation. Research has found that student motivation is positively associated with students' efforts, study habits, and course grades in HAP (Maurer et al 2013). A student's motivation level can influence the likelihood of course assignment completion. While course assignments may be structured to maximize student learning and deepen understanding, it has been suggested that a student may not fully benefit from the assignment if he or she does not perceive it to be important enough to dedicate time and effort towards it (McDonald et al. 2016). Data have shown that while many college students are motivated to complete course assignments in order to learn course material, a considerable number of students are largely motivated by the credit to be earned by assignment completion (Planchard et al. 2015). Thus, it can be inferred that by completing an assignment on the basis of credit, a student is simultaneously avoiding the negative impact that assignment incompleteness would have on the student's course grade.

The weighting of course assessments can influence student motivation in not only rigorous courses like HAP, but also in courses of unrelated academic disciplines. How much something is worth of a student's overall course grade may contribute to the student's willingness to put time and effort into that particular assignment or assessment (McDonald et al. 2016). Previous research has suggested that students may have dedicated increased amounts of time and effort in preparation for in-class quizzes because of their increased weight towards students' overall course grades (Dunn-Lewis et al. 2016). However, other research has suggested that increased exam weighting may

possess the potential to negatively impact the mental and emotional health of students (Franke 2018).

Consistent lecture attendance, a behavioral choice by the student unless mandated by course policy, is influenced by many factors. Lecture attendance rates have been found to have a positive association with academic performance (Credé et al. 2010). However, other research has implied that some students fail to find value in going to class, and those that do not attend lectures report lower levels of motivation (Moore et al. 2008). Because newly presented information in difficult courses, such as HAP, tend to build off of knowledge acquired from previous lectures, consistent lecture attendance can be pivotal to a students' success in the course (Favero and Cesar, 2022).

Two theories are relevant to the discussion and analysis of the connection between motivation and academic performance: the self-efficacy theory and the expectancy-value theory (Sander and Sanders 2006). The self-efficacy theory functions to investigate individuals' perceptions of their abilities, determination of task value, and ability to establish goals (Bandura 1991). Similarly, the expectancy-value theory functions to explore the mechanism by which individuals determine the expected outcome belonging to a particular task and the value associated with that task (Wigfield and Eccles 2000). Both of these theories are heavily concerned with the reasons that individuals partake in tasks.

A students' motivation cannot be placed into a single category; instead, it falls somewhere between the three dimensions of internal, external, and amotivation. The interplay between these extremes is central to the self-determination theory (SDT) (Sturge et al 2016). A students' motivation can come from within, or said to be intrinsic,

or it can be derived from an outside source, or said to be extrinsic. In some cases, motivation may be completely absent, otherwise known as amotivation (Maurer et al. 2013). Information regarding the types of motivation that students possess could be vital information to educators, as research indicates that this information could maximize potential student success.

Where a student's motivation lies between these dimensions is dependent upon a variety of factors, and these factors will impact each student's motivation differently (Sturges et al. 2016). Students are said to be extrinsically motivated when they are motivated by some sort of reward, avoidance of a negative outcome, or the value of the task itself (Maurer et al. 2013). For example, some students may be motivated to succeed in courses to maintain a high GPA or to obtain the degree which they are pursuing. Additionally, a previous study indicated that some professional students were driven by the competitive desire to do better academically than their classmates (Meguid et al. 2020). Unlike extrinsic motivation, intrinsic motivation is associated with pleasure coinciding with the completion of a task itself rather than the obtainment of reward or evasion of poor consequences (Maurer et al. 2013). Intrinsic motivation is also associated with performing tasks out of curiosity or to be stimulated by that task (Orsini et al. 2016).

Maurer et al. (2013) found that HAP students were mostly extrinsically motivated by the value perceived by success in the course, regardless if they enjoyed the tasks. Similarly, Keller and Hughes (2021) also found that many HAP students were motivated to succeed by external factors, including award attainment and punishment avoidance. However, Whitehead and Britson (2022) found students' levels intrinsic motivation to be positively associated with course performances. This is consistent with other previous

findings which indicate higher intrinsic motivation levels to be associated with better academic performance (Sturges et al. 2016).

Existing research has found that student motivation could be predicted by both students' intrapersonal characteristics and the nature of the educational environment (Orsini et al. 2016). Prior studies implicate a student's level of self-confidence as a determinant of academic motivation, such that low levels of self-confidence may deter students from completing required coursework assignments and studying for upcoming exams (Moneva and Tribunaleo 2020). This seems to be counterintuitive, as the completion of such assignments and exam preparation tend to increase student confidence (Van Etten et al. 1997). Students' discouragement to put forth such efforts could mean that low confidence levels in students impedes motivation and ultimately academic success.

A student's performance in HAP can have a number of implications on his or her future, which is why many students perceive the stakes in HAP to be much higher than courses of other academic disciplines. In a sense, whether or not a student succeeds in HAP can be argued to "make or break" the remainder of their academic or professional career. Although a student's final grade in HAP does not contribute to her cumulative grade point average (GPA) more than any other course, a student's success in HAP is often paramount to her acceptance to her desired health-related professional school (Keller and Hughes 2021).

There is a plethora of research available pertaining to the aforementioned motivational theories. However, information regarding the evolution of student motivation leading up to course exams throughout a course's duration is limited. Studies

that do exist are typically limited in their scope and may not be applicable to educators of all academic disciplines. Furthermore, previous motivational studies do not specifically address the extent to which motivation influences the amount of effort that students choose to exert to succeed in HAP, nor do they explore the impact that the weighting of course assessments may have.

To fill in gaps of research, this study seeks to examine these elements throughout HAP I with hopes sought to uncover information that will allow educators to structure their courses in a manner that will maximize student motivation and improve academic outcomes. Results of this study will be used to increase effective communication with students about course goals, identify peak interactions regarding weight of assessments, and motivation to study for such assessments. We hypothesized that as exam dates approach, student motivation levels and effort exertions will increase, and that the highest levels of motivation and effort will be observed day prior to each exam. Further, we hypothesized that students' perceptions of the weight distribution of course assignments and assessments will influence motivation and course performance.

## MATERIALS AND METHODS

To conduct this study, the students of Human Anatomy and Physiology (HAP) I, Bisc 206, during the Fall 2022 semester served as potential subjects. Typically, students enrolled in this course are in either their 2<sup>nd</sup> or 3<sup>rd</sup> year of college and are between 18 and 24 years of age. HAP I is the first of a two-semester course sequence that aims to teach students in depth about the human body systems on both a macroscopic and microscopic level. Students enrolled in this course are required to simultaneously be enrolled in the corresponding laboratory course that utilizes dissected specimens and various other anatomical models. Students were recruited to participate in this study via an announcement made during their respective laboratory sections. This protocol was approved as exempt under 45 CFR 46.101(b) (#2) by the University of MS Institutional Review Board (Protocol #22x-283).

Two, in-person surveys were conducted, both of which asked questions that focused on potential motivational influences for HAP I students. Responses to these questions provided data regarding students' motivation levels, effort exertions, and perceptions on the distributing course assessment weighting. Survey 1 consisted of 13 total questions and conveyed the perspective of students prior to completing the course. Survey 1 also contained questions to obtain demographic data of the subjects, including the participants' age, sex, undergraduate year in school, major, and reason for taking HAP.

Survey 1 was administered to students during their individual laboratory sections during the first week of laboratory meetings at the beginning of the Fall 2022 semester (Table 1). Lab sections met for the first time during the second week of class, a few



weeks prior to exam one. Survey 2 consisted of 10 questions and conveyed the students' perspective after completing a majority of the coursework and exams. Survey 2 was administered during students' individual laboratory sections during the week of the fourth course exam, which took place toward the end of the semester (Table 1).

In addition to the administration of in-person surveys, ecological momentary survey data were obtained. Short Google polls were remotely distributed to students through Blackboard at 5 days, 3 days, and one day prior to each exam throughout the semester (Table 1). Blackboard was chosen as the method to administer these short surveys to ensure that the surveys were easily accessible to all students. Each poll remained open for a limited period of time to ensure the accuracy of the data. Each poll was distributed to students between roughly 4pm and 6pm and closed at midnight. The questions on each of the polls distributed to HAP students were identical. This consistency made it much easier to interpret student response data collected throughout the semester.

On each poll, students were able to indicate whether or not they had begun studying for the upcoming exam, whether or not they felt confident that they would do well on the upcoming exam, and rank how motivated they were to do well on the exam. By asking only 3 simple questions per survey, students could quickly answer each question. Further, the simplicity of the questions lowered the likelihood that students would overthink their responses. Had these polls contained more questions or had the questions been more complex, students could have possibly become discouraged from responding to them, potentially decreasing the number of responses per survey.

At the end of the semester, survey responses were compiled with student performance scores (e.g., Exam 1, exam 2, exam 3, exam 4, percentage grade date to each respective exam, midterm grade, and final grade) and de-identified prior to analysis. Three categories of questions were designed based on whether the student response would reflect an emphasis on motivation, assessment weighting, or perceived effort (Table 2). Where relevant, selected survey questions were assigned to the appropriate category (Tables 3 and 4). Summed category scores for each student were then analyzed via Pearson correlation tests for each pair wise comparison of category scores, exam scores, lab practical scores, and course averages. The level of significance was set at  $\alpha = 0.05$ . Frequency data and descriptive statistics were calculated for all survey questions. All statistical tests were conducted using SPSSV27 software licensed to the University of Mississippi.

## RESULTS

On the initial in-class survey, students taking part in the study were given the opportunity to provide demographic information, including their age, year in school, gender, major, GPA, and professional goal. Of the students that chose to provide demographic information, 20.9% were male and 79.1% were female. The mean age of students was 20 years old. More than half of the participating students identified themselves as second year students (Figure 1). Although a wide variety of majors were represented in this study, a large portion of students are part of two particular majors, Allied Health and Exercise Science. 162 of 315 students indicated that they were Allied Health majors and 94 students indicated they were Exercise Science majors (Figure 2).

Information regarding students' potential reasons for enrollment in HAP was also collected on the initial survey. Of all the students that participated in Survey 1, 87.9% indicated that HAP was a prerequisite for professional school. Additionally, 89.9% of students in this sample indicated that HAP was a required course to complete their degree. Only 11.6% of students indicated that they were taking HAP for a reason other than to satisfy a prerequisite or fulfill a graduation requirement. Survey 1 also gave students the opportunity to provide information regarding their previous course experiences. In this sample, 86.6% of students had completed a college-level science course prior to their enrollment in HAP. Only 5.22% of students indicated that they were not taking HAP for the first time in Fall 2022. (Table 5).

Students' total effort scores and total motivation scores were shown to have significant positive correlations with students' midterm grade percentages (Figures 3a and 3b). However, students' total weight scores were shown to have a significant

negative correlation with students' midterm grade percentages (Figure 3c). In a similar fashion, students' total effort scores and total motivation scores were shown to have significant positive correlations with students' final grade percentages (Figures 4A and 4B), and students' total weight scores were shown to have significant negative correlations with students' final grade percentages (Figure 4c).

Each of the polls distributed throughout the semester gave students the opportunity to indicate whether or not they had begun studying for each course exam. Five days prior to exam one, the first course exam, 80.49% of responding students indicated that they had begun studying. Three days prior to this exam, the percentage of students indicating that they had begun studying increased to 98.59%. There was an additional increase one day prior to exam one, although slight, in which 98.94% of responding students indicated that they had begun studying (Figure 5a). Compared to data from exam one polls, a lower percentage of students, approximately 67.92%, indicated that they had begun studying five days prior to exam two. However, this number did increase three days prior to this exam, in which 86.96% of students indicated that they had begun studying. It is notable that 100% of students indicated that they had begun studying one day prior to exam two (Figure 6a).

A poll was not distributed to students five days prior to exam three. However, data were collected from polls distributed three days and one day prior to exam three. Three days prior, 83.82% of students marked that they had begun studying, which increased to 98.59% one day prior to the exam (Figure 7a). Five days prior to exam four, 88.24% of students indicated that they had begun studying, which increased to 93.44% three days prior, and increased again one day prior to 98.61% (Figure 8a). Data from

polls pertaining to exam five, the final course exam, followed an upward trend similar to data from previously administered polls. Five days prior to exam five, 76.06% of responding students indicated they had begun studying. This number increased to 91.22% three days prior, and increased yet again one day prior to exam five, in which 98.91% of students indicated that they had begun studying (Figure 9a).

On each poll, students were also given the opportunity to state whether or not they felt confident about their performance on each course. Five days prior to exam one, 46.34% of responding students expressed that felt confident that they would do well on the upcoming exam. The percentage decreased to 29.58% three days prior to the exam. Interestingly, this number actually increased one day prior to the exam, in which 48.42% of students indicated that they felt confident (5a). Five days prior to the second course exam, 39.62% of students voiced that they felt confident about their future exam performance. This percentage increased to 43.48% three days prior to the exam. However, the number of students that felt confident about their pending performance on exam two actually decreased to 37.21% one day prior to exam two (6a).

As previously mentioned, data were not collected five days prior to exam three. The percentage of students that felt confident three days prior to exam three was notably low, in which only 22.06% of students declared that they felt confident. This percentage nearly doubled one day prior to the exam, in which 45.07% of students indicated they felt confident (7a). Five days prior to exam four, only 23.53% of students indicated that they felt confident. There was only a slight increase three days prior, in which 26.23% of students marked that they felt confident. The percentage of students conveying that they felt confident slightly decreased to 25.00% one day prior to the exam (8a). The

percentage of students that asserted that they felt confident five days prior to exam five was higher than data from the previous exam, in which 38.03% of students marked that they did feel confident. There was a slight decrease three days prior, in which 36.84% of students indicated that they felt confident. The percentage of students that indicated that they felt confident actually increased to 42.39% one day prior to the final course exam (9a).

The final question on each Google poll asked students to rank their motivation to do well on the upcoming exam on a scale from 1-3. Five days prior to exam one, 65.85% of responding students ranked their motivation as a 3, the highest rank. This percentage increased to 71.83% three days prior to the first exam., and increased again to 75.80% one day prior (5b). Five days prior to the second course exam, 71.70% of students deemed their motivation to be 3 out of 3. This percentage actually slightly decreased to 68.12% three days prior to exam two, but increased to 73.26% one day prior (6b).

Three days prior to exam three, only 58.82% of students expressed that their motivation was considered to be a 3 out of 3. The percentage increased by more than 20% one day prior to exam three, as 77.14% of students marked their motivation to be a 3 (7b). Five days prior to exam four, 70.50% of students indicated their motivation to be ranked as a 3 out of 3. There was a slight decrease in this percentage three days prior, in which 67.21% of students ranked their motivation as a 3. There was an additional, although very small, decrease in this percentage one day prior, in which 66.67% of students rated their motivated as a 3 out of 3 (8b). The poll distributed five days prior to exam five, final exam, showed that 71.83% of responding students rated their motivation

as a 3 out of 3. This percentage increased to 78.95% three days prior, but decreased to 73.91% one day prior to the final exam.

The responses to the question regarding students' motivation from each google poll were divided into three groups: 5 days prior to an exam, 3 days prior to an exam, and 1 day prior to an exam. The mean value of each category was computed. The mean for responses five days prior to a course exam was 2.527. The mean for responses three days prior was slightly lower, 2.522. The mean for responses one day prior was the highest, 2.578 (Table 6).

## DISCUSSION

This study sought to undertake the challenge to explore student perception and motivation in order to ascertain, in a sense, what *really* mattered to students as they advanced throughout the first semester of HAP. To develop such findings, this study examined HAP students' perceived levels of motivation, their beliefs regarding the weight distribution course assessments and other assignments, and the degree to which they put forth effort in the course. Furthermore, this study worked to uncover the influence each factor had on the amount of time students allocated for assignments, exam preparation, and the course as a whole, otherwise known as a student's "study budget."

The positive relationship found between students' academic performances and total motivation scores (Figures 3b and 4b) supports previous research that points to levels of motivation as a prognostic influence of academic performance (Sturges et al. 2016). While the total motivation scores reflect student self-reported motivation in a broad sense, analyzing questions individually gives greater insight into sources of motivation. Comparison of students' responses to questions from Survey 1 and Survey 2 led to observations regarding students' motivation in HAP. While many of students indicated on Survey 1 that they were motivated to learn course material (mean=4.6179) (Table 3), responses on Survey 2 suggest that some students did not maintain this motivation (Mean=3.8762) (Table 4). These data support previous research that also suggests that students tend to lose motivation throughout the semester (Whitehead and Britson 2022).

In this study, homework completion, lecture attendance, and course exam preparation represent means in which students could exert effort into HAP. The positive



correlation between students' academic performance in HAP and total effort scores (Figures 3a and 4a) suggests that higher levels of perceived effort may improve academic outcomes. These data are similar to findings of a preceding study conducted on students enrolled in a college-level genetics course which found that students that did complete homework assignments performed better on course exams (Planchard et al. 2015).

Interestingly, responses from Survey 1 convey that a majority of HAP students saw purpose in completing course assignments at the beginning of the semester (Mean=4.444), but responses from Survey 2 imply that some students did not perceive completion of those assignments to be beneficial towards their success in HAP (Mean=3.3992) (Table 4). This suggests that in the minds of HAP students, course assignments may lose value as the semester progresses, which may be indicative of a loss of motivation and diminished chances of assignment completion. These findings further emphasize the idea to structure course assignments in a manner that would serve to counter students' decline in course assignment valuation (Planchard et al. 2015). Similarly, the decline in mean responses to questions regarding lecture attendance from Survey 1 and Survey 2 suggests that students lost motivation to go to class as the semester progressed (Tables 3 and 4). The loss of motivation to attend lectures may have caused some students to stop attending lectures.

Findings regarding the influence of the weighting of course assessments were intriguing. The negative correlation found between total weight scores and students' academic performance suggests that higher levels of student emphasis on the weighting of assessments may actually negatively impact how students perform in HAP (Figures 3c and 4c). This may show that when HAP students are more heavily concerned with the

extent to which an assignment or exam contributes toward their grade, they may actually perform worse. Interestingly, responses on Survey 2 imply that many students wanted their final exam scores to be worth less of their overall grade, but wanted homework assignments to increase in weight (Table 4). Further, it was evident that students were less motivated by the weight of course assessments at the end of the semester than at the beginning of the semester (Tables 3 and 4).

Ecological momentary analysis of data from each Google poll administered to HAP students led to multiple observations. Prior to the conduction of this study, it was hypothesized that student motivation would increase as each exam date approached. While data from this study did not entirely disagree with this theory, there were inconsistencies in the findings. By comparing data from each google poll, it is evident that mean motivation scores relevant to exam one alone increased as the exam date approach. Data relevant to other course exams did not follow such a consistent pattern (Table 6).

Regardless of the number of days remaining until a particular exam, the number of HAP students that conveyed that they had begun studying always exceeded the number of students that had not begun studying. There was also an increase in participation in each poll administered as each exam date closed in; the number of students that responded to the polls one day before an exam was always higher than the number of students that responded to the polls than five days before an exam. This implies that students became increasingly engaged and aware of course announcements as each course exam date approached. Further, the increase in student responses to each poll may reflect students' tendencies to procrastinate exam preparation.

Studies have shown that some students intentionally put off exam preparation or course assignments until the exam or due date is extremely close as a means to maximize their motivation to complete the task (Hensley 2014). Conversely, other students may have intended to begin exam preparation prior to the night before the exam, but failed to follow through with these intentions, which ultimately forced them to cram exam material (Van Etten et al. 1997). It is implicit in these findings that when students forego exam preparation until last minute, they are simultaneously choosing to allocate their time toward other activities, which may suggest that HAP does not become a priority to students until they essentially have no choice.

Responses from each poll illustrated that a majority of the HAP students that responded to each poll conveyed that they did not feel confident about their impending performance on each exam (Figures 5-9). A student's level of self-confidence has been shown to possess the potential to significantly impact one's academic performance, in both a positive and negative manner (Fuente et al. 2013). While students' academic performance does largely influence their overall self-confidence, it is important to note that previous research has indicated that there are other external factors that contribute to students' confidence levels (Sheldrake 2016).

Notably, of the 72 A&P students that responded to the 1 Day Prior Google Poll, 75% indicated that they did not feel confident that they would do well on exam four (Figure 8a). This may be indicative of the increased difficulty level of the exam four material, which was more physiological than preceding exams. Exam four material consisted of molecular and cellular processes of muscle contraction, action potential generation, and action potential conduction. Previous research that suggested that

increased content difficulty may negatively impact student exam preparation time, as students may perceive efforts to understand the material as futile (Van Etten et al. 1997). Thus, it is reasonable to infer that this lack of confidence contributed to a decrease in motivation in HAP students to prepare for this exam.

Academic outcomes have lasting impressions on the mindset of students. Some students become consumed by the need to succeed – in other words, they become obsessed with academic perfection. In some instances, some students equate academic perfection with their sense of self-worth. In these scenarios, students become heavily reliant upon their success to uphold their self-confidence. Conversely, these students' self-esteem shatters with news of failure. Students' desire for academic validation often serves to motivate these students to work hard in order to ensure they will be able to achieve above average marks (Lawrence and Smith 2017). This goes to say that many students are motivated to do well on exams because they want to earn a higher numerical score rather than obtain a deeper, more thorough understanding of the material.

The poll intended to be distributed five days prior to exam three was not sent to the students, preventing collection of data from that particular day. It is important to note that there was a traumatic incident in Oxford, where the UofM is located, that claimed the life of a University student the weekend that the surveys preceding exam three. This individual was the same age as many of the students enrolled in HAP during the Fall 2022 semester, which undoubtedly impacted many students' preparation for and performance on the exam.

College anatomy and physiology courses set the foundation for students' future endeavors, especially endeavors that are related to health-related fields (Russell et al.

2016). Thus, it is crucial to continue to research strategies and sources of student motivation in order to maximize the possibilities for students' successes in both their professional and educational careers. Future research should delve further into the amount of time that students dedicate towards HAP per week, why students prioritize other activities over HAP, and the implications of HAP students' levels of self-confidence. Research should also seek to grasp a deeper understanding of students' perceptions of their respective study habits, HAP assignment value, and lecture attendance. Additionally, the methodology of this study did not aim to directly address the concept of student procrastination, so it may be beneficial for future research to address its association with academic performance and how to discourage students from waiting until the night before an exam to begin exam preparation.

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**Table 1.** Timeline of surveys administered to students enrolled in Human Anatomy & Physiology I throughout the Fall 2022 along with their respective method of administration.

Date of Survey	Title of Survey	Method of Administration
Week of 08/29-09/02	Survey 1	In Lab
09/07/2022	5 Days Prior Exam 1	Google Form Sent Through Blackboard
09/09/2022	3 Days Prior Exam 1	Google Form Sent Through Blackboard
09/11/2022	1 Day Prior Exam 1	Google Form Sent Through Blackboard
09/25/2022	5 Days Prior Exam 2	Google Form Sent Through Blackboard
09/27/2022	3 Days Prior Exam 2	Google Form Sent Through Blackboard
09/29/2022	1 Day Prior Exam 2	Google Form Sent Through Blackboard
10/16/2022	3 Days Prior Exam 3	Google Form Sent Through Blackboard
10/18/2022	1 Day Prior Exam 3	Google Form Sent Through Blackboard
11/04/2022	5 Days Prior Exam 4	Google Form Sent Through Blackboard
11/06/2022	3 Days Prior Exam 4	Google Form Sent Through Blackboard
11/08/2022	1 Day Prior Exam 4	Google Form Sent Through Blackboard
Week of 11/7-11/11	Survey 2	In Lab
11/30/2022	5 Days Prior Exam 5	Google Form Sent Through Blackboard
12/2/2022	3 Days Prior Exam 5	Google Form Sent Through Blackboard
12/4/2022	1 Day Prior Exam 5	Google Form Sent Through Blackboard

**Table 2.** Question categorizations and their corresponding descriptions. Each question from Survey 1 and Survey 2 was placed into one of these categories.

Category	Description
Weight	Question reflects the student’s opinion on the weighting of assessments and how they contribute to his/her overall course grade.
Motivation	Question reflects how students perceive their respective motivation levels. Question may also reflect what does or does not motivate them to do well A&P.
Effort	Question reflects how students perceive the amount of effort they put into A&P. (class attendance, completion of assignments, etc)

**Table 3.** Student responses to each question on Survey 1. Questions used to compute total weight, total motivation, and total effort scores are identified when relevant. For questions marked with an asterisk (\*), 1 is the minimum and 5 is the maximum.

(AS=Assigned Category, S.D.=Standard Deviation, HW=Homework, E=Effort,

W=Weight, M=Motivation, SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree,

SA=Strongly Agree)

Survey Question/Statement	SD (1)	D (2)	N (3)	A (4)	SA (5)	n	Mean/ S.D.	AS
I am motivated to learn the material of this course.	0 (0%)	1 (0.36%)	3 (1.07%)	98 (35.00%)	178 (63.57%)	280	4.6179/ 0.52912	
I have completed most/all of the course HW assignments so far this semester.	1 (0.36%)	11 (3.93%)	13 (4.64%)	67 (23.93%)	188 (67.14%)	280	4.5357/ 0.78891	
I have put maximum effort into the HW assignments.	0 (0%)	2 (0.71%)	29 (10.36%)	114 (40.71%)	135 (48.21%)	280	4.3643/ 0.69520	E
I think the homework assignments should be worth more of my grade.	1 (0.36%)	20 (7.17%)	115 (41.22%)	76 (27.24%)	67 (24.01%)	279	3.6738/ 0.93169	W
I make an effort to attend class regularly.	0 (0%)	1 (0.36%)	1 (0.36%)	51 (18.21%)	227 (81.07%)	280	4.8000/ 0.43503	
Were you motivated to complete those assignments?	0 (0%)	4 (1.43%)	24 (8.60%)	118 (42.29%)	133 (47.67%)	279	4.3620/ 0.70056	
Did you see the purpose in completing these HW assignments?	0 (0%)	0 (0%)	18 (6.45%)	119 (42.65%)	142 (50.90%)	279	4.4444/ 0.61425	M
Have you begun studying for the first exam?	10 (3.57%)	73 (26.07%)	73 (26.07%)	82 (29.29%)	42 (15%)	280	3.2607/ 1.11034	E
Have you attended most, if not all, of the classes held up to this point?	0 (0%)	2 (0.71%)	6 (2.14%)	51 (18.21%)	221 (78.93%)	280	4.7536/ 0.52191	E
On a scale of 1-5, how motivated are you to do well in this course? *	3 (1.07%)	0 (0%)	8 (2.86%)	44 (15.71%)	225 (80.36%)	280	4.7429/ 0.61489	M
On a scale of 1-5, how motivated are you to do well on this exam? *	3 (1.07%)	1 (0.36%)	6 (2.14%)	40 (14.29%)	230 (82.14%)	280	4.7607/ 0.61337	M
Did you pay attention to how much this exam contributes to your overall grade?	5 (1.79%)	16 (5.71%)	37 (13.21%)	118 (42.14%)	104 (37.14%)	280	4.0714/ 0.94389	W
Does the weight, or importance, of this exam motivate you to study?	6 (2.14%)	1 (0.36%)	19 (6.79%)	91 (32.50%)	163 (58.21%)	280	4.4429/ 0.81449	W

**Table 4.** Student responses to each question on Survey 2. Statements used to compute total weight, total motivation, and total effort scores are identified. (AS=Assigned category, HW=Homework, S.D.=Standard Deviation, M=Motivation, E=Effort, W=Weight, SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree)

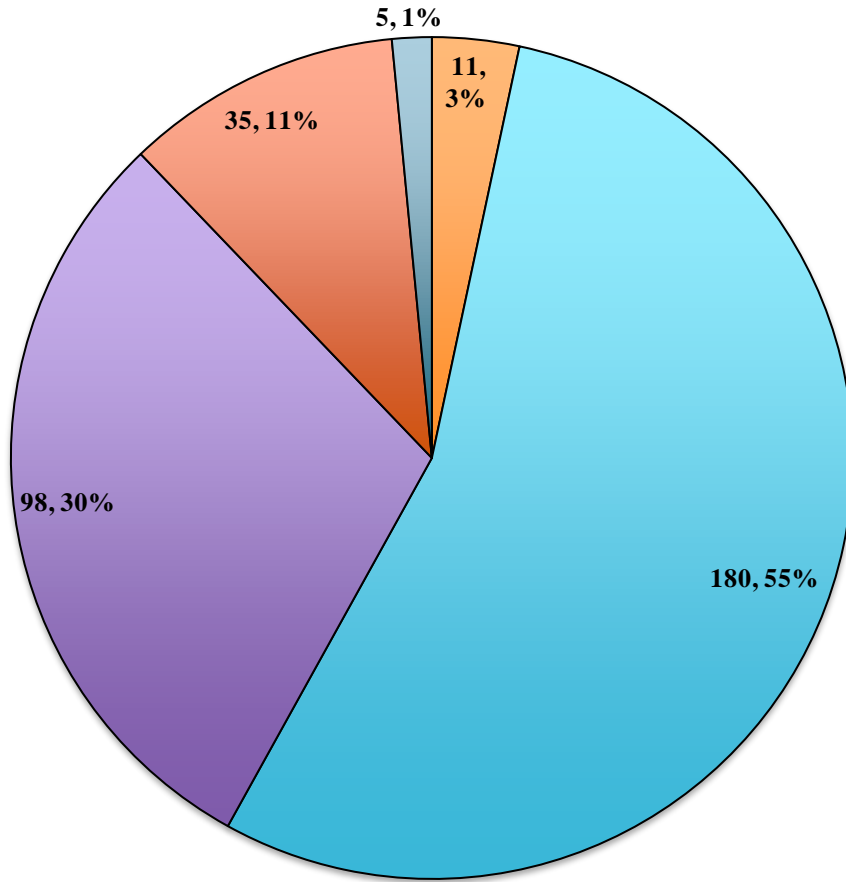
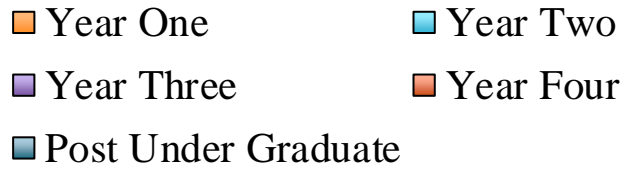
Survey Statement	SD (1)	D (2)	N (3)	A (4)	SA (5)	n	Mean/ S.D.	AS
Throughout a majority of the semester, I was motivated to learn the material of this course.	6 (2.51%)	13 (5.44%)	36 (15.06%)	134 (56.07%)	50 (20.92%)	239	3.8762/ .88805	M
I completed most/all of the course HW assignments throughout the semester.	0 (0.00%)	5 (2.98%)	14 (5.86%)	98 (41.00%)	122 (51.05%)	239	4.4100/ .69758	E
I put maximum effort into most, if not all, HW assignments.	1 (0.42%)	7 (2.93%)	36 (15.06%)	116 (48.54%)	79 (33.05%)	239	4.1088/ .79169	E
I feel like the HW assignments helped me to do better in this course.	6 (2.50%)	38 (15.83%)	77 (32.08%)	92 (38.33%)	27 (11.25%)	240	3.3992/ .96815	M
I think the HW assignments should be worth more of my grade.	1 (0.42%)	11 (4.58%)	27 (11.25%)	77 (32.08%)	124 (51.67%)	240	4.2992/ .87414	W
I attended most, if not all, classes.	5 (2.09%)	27 (11.30%)	42 (17.57%)	79 (33.05%)	86 (35.98%)	239	3.8954/ 1.08152	E
I wish the final exam was worth more of my overall grade.	44 (19.21%)	96 (41.92%)	61 (26.64%)	18 (7.86%)	10 (4.37%)	229	2.3624/ 1.01937	W
When studying for exams, I took into consideration how much each exam was worth.	14 (6.14%)	48 (21.05%)	46 (20.18%)	83 (36.40%)	37 (16.23%)	228	3.3553/ 1.16147	W
I am motivated to study by the weight, or importance of exams.	10 (4.35%)	30 (13.04%)	58 (25.22%)	91 (39.57%)	41 (17.83%)	230	3.5348/ 1.06394	W
It is important to me that I excel in this class.	0 (0%)	0 (0%)	4 (1.74%)	78 (33.91%)	148 (64.35%)	230	4.6261	M

**Table 5.** Student responses to questions from Survey 1 that addressed students’ reasons for enrollment in HAP I in Fall 2022 in addition to students’ relevant experience levels from Survey 1.

Survey Question	Yes	No
Are you taking this course as a prerequisite for professional school?	233	32
Is this course required to complete your degree?	240	27
Are you taking this course for a reason other than as a prerequisite or a graduate requirement?	31	237
Is this your first time taking this course?	254	14
Is this course your first college-level science course?	36	232

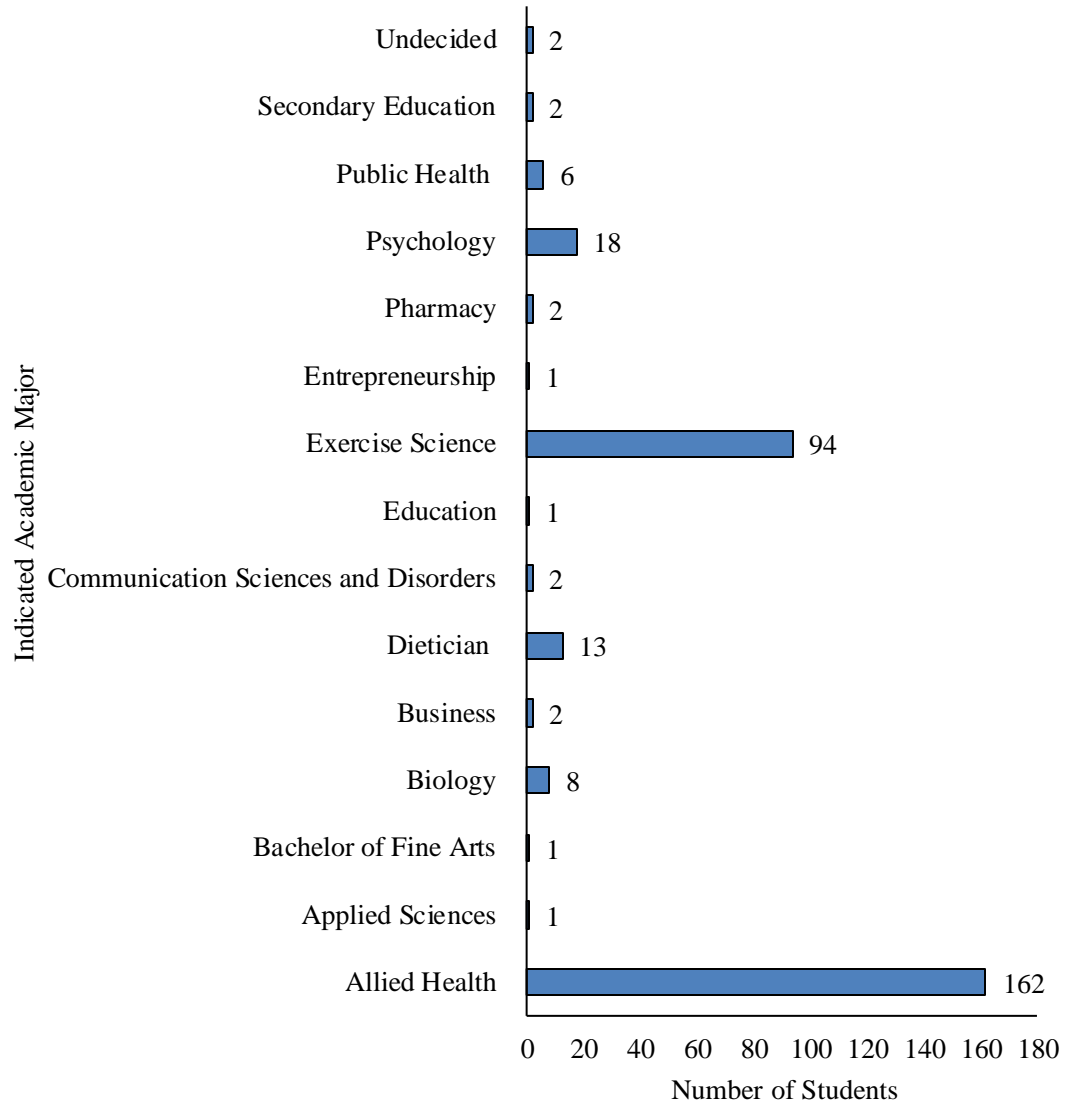
**Table 6.** Mean scores from student responses to the Google poll question, “On a scale from 1-3, how motivated are you to do well on this exam?”

	Days Prior to Respective Exam	Mean Motivation Score
Exam One	5	2.483
	3	2.599
	1	2.641
Exam Two	5	2.572
	3	2.482
	1	2.606
Exam Three	3	2.462
	1	2.644
Exam Four	5	2.556
	3	2.453
	1	2.498
Exam Five	5	2.499
	3	2.624
	1	2.503
Total	5	2.527
	3	2.522
	1	2.578



**Figure 1.** Number of students per academic year enrolled in Human A&P at the University of MS in Fall 2022. Students indicated their academic year on Survey 1.

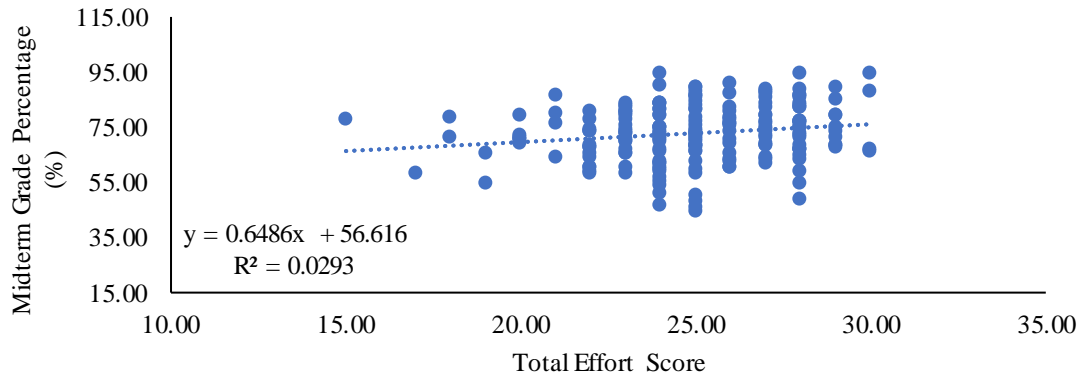




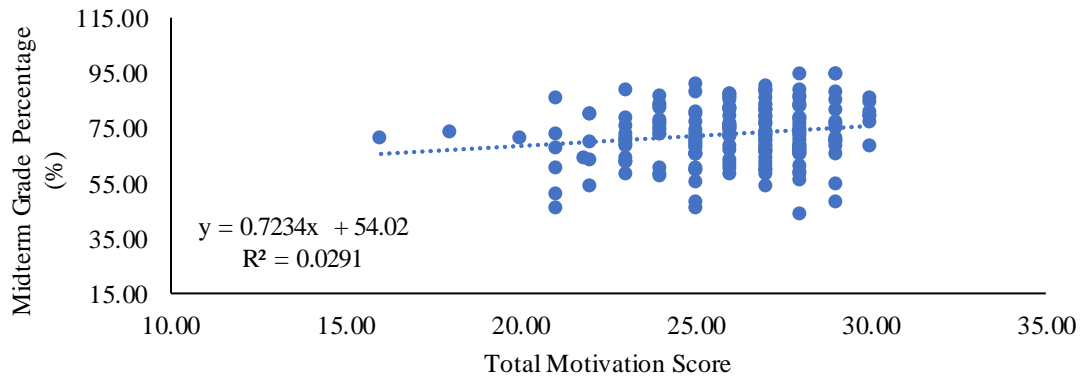
**Figure 2.** Academic majors of students enrolled in Human A&P in the Fall of 2022.

Students indicated their respective majors on Survey 1.

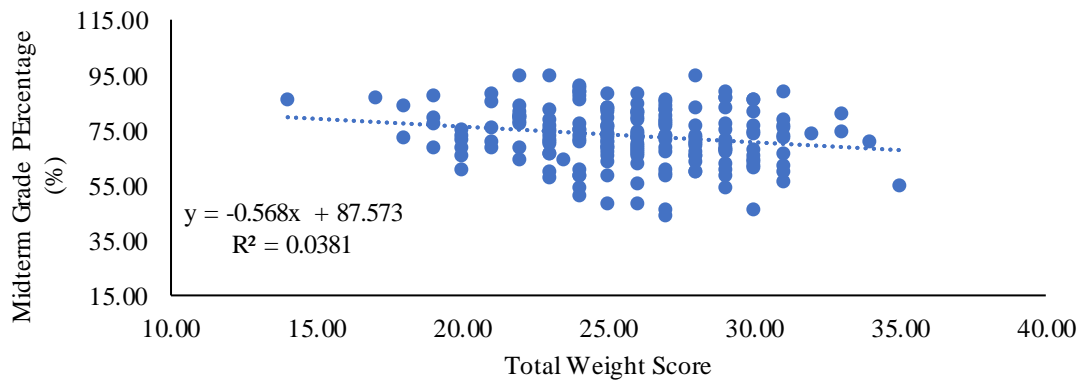
(A)



(B)

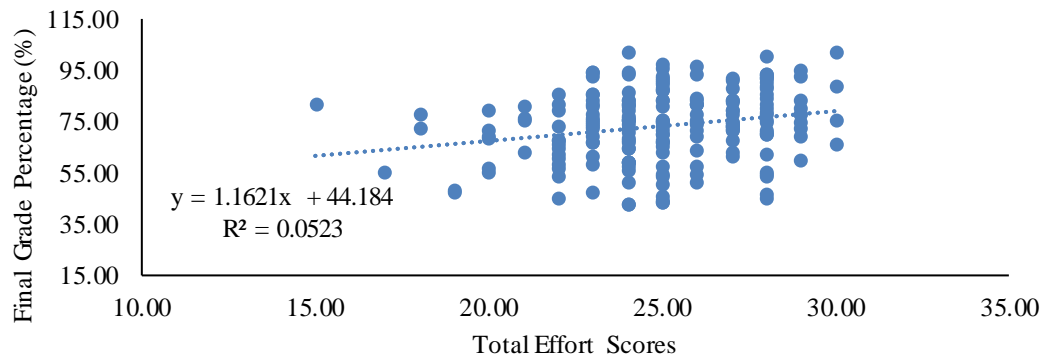


(C)

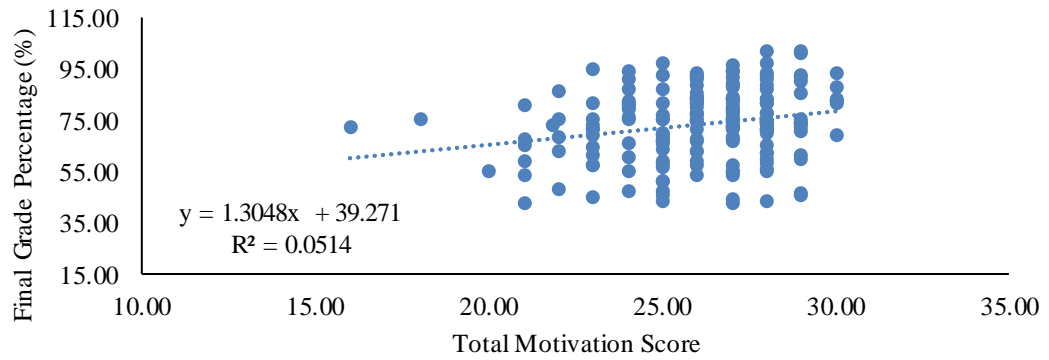


**Figure 3.** Scatter plots depicting the relationship between Human A&P students' midterm grade percentages and their respective total effort (A), motivation (B), and weight (C) scores.

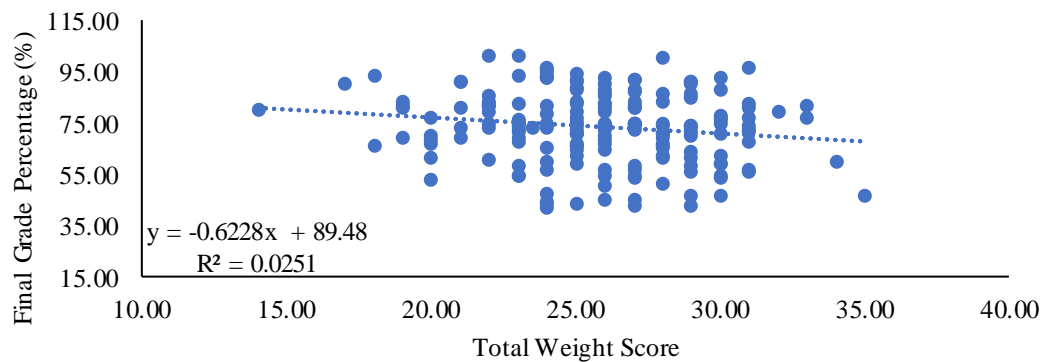
(A)



(B)

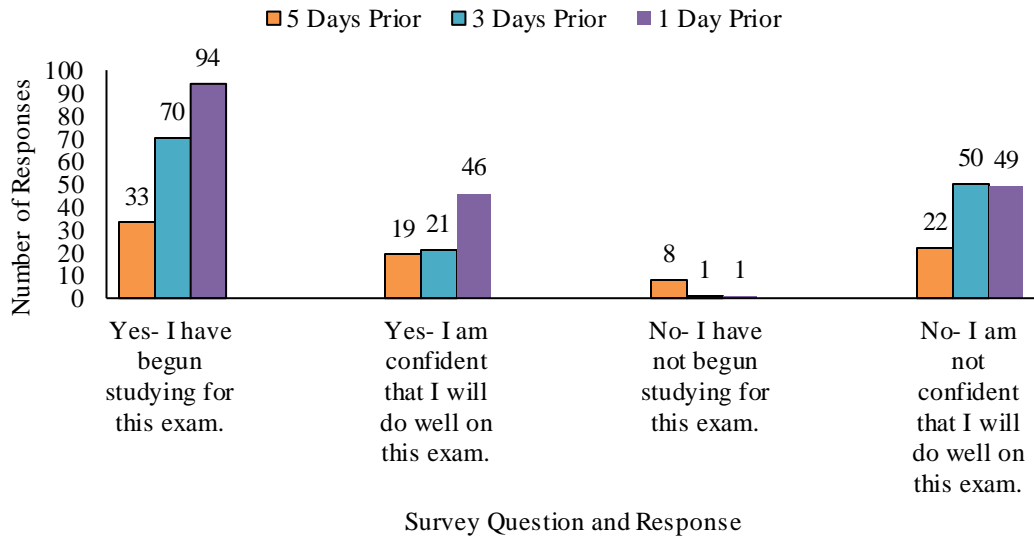


(C)

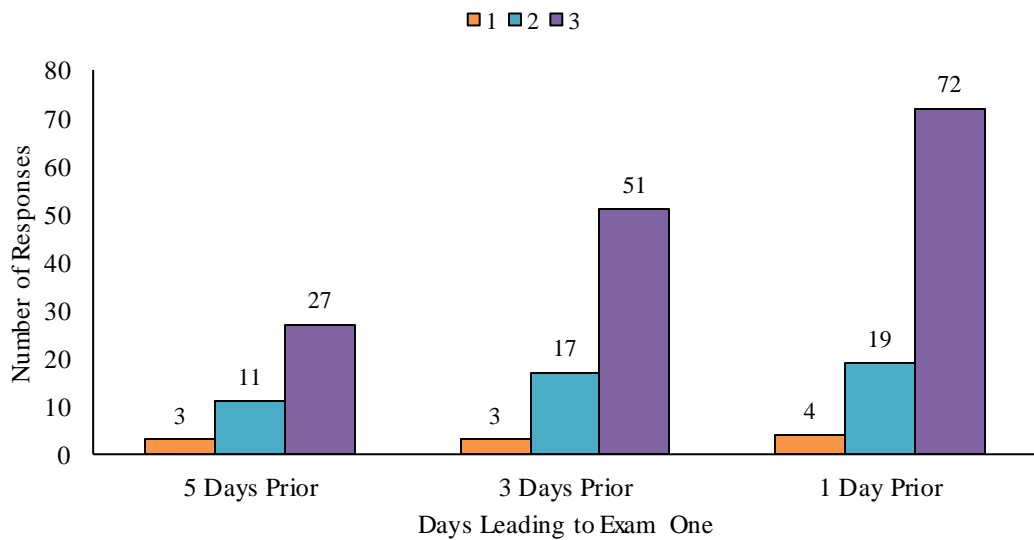


**Figure 4.** Scatter plots depicting the relationship between Human A&P students' final grade percentages and their respective total effort (A), motivation (B), and weight (C) scores.

(A)

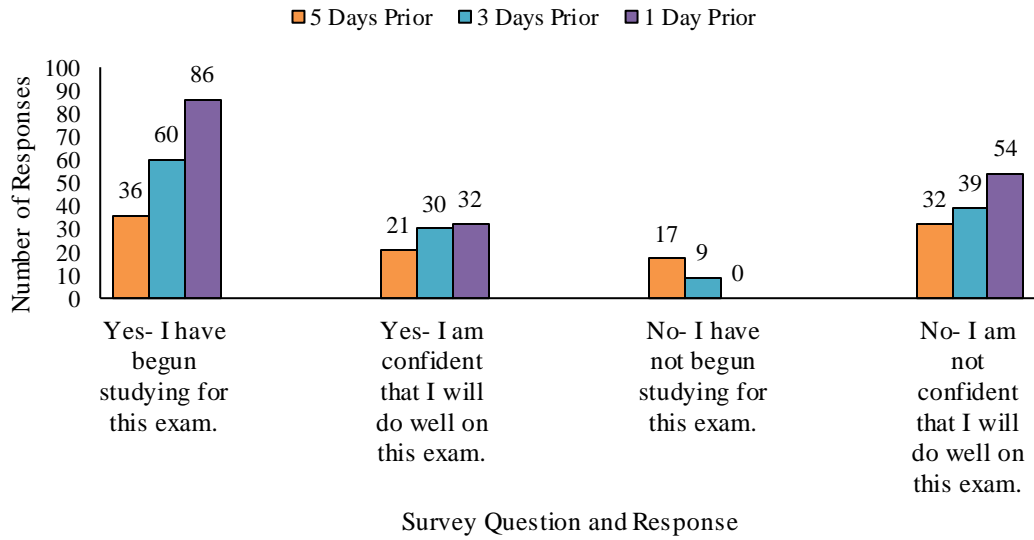


(B)

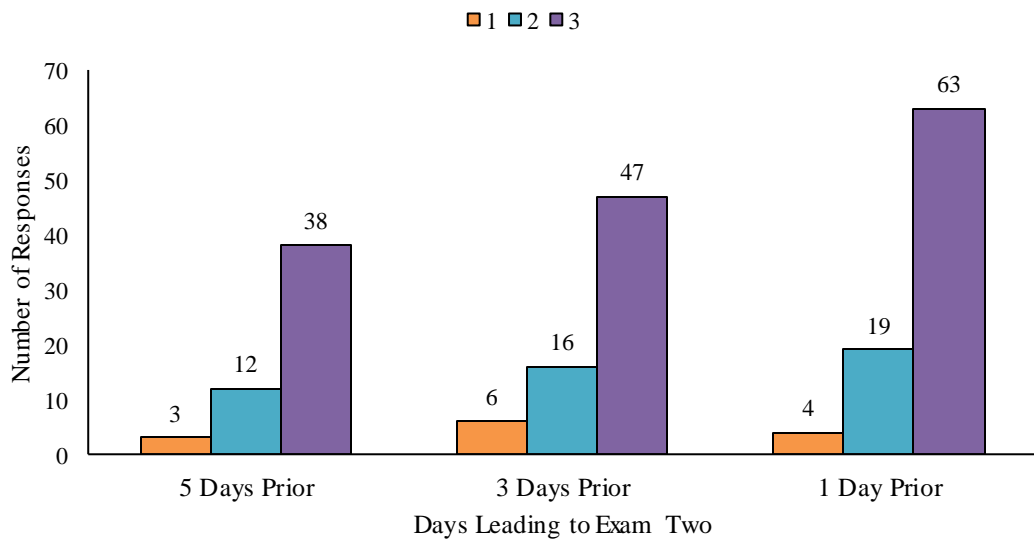


**Figure 5.** (A) Student responses to each question 5 days, 3 days, and 1 day prior to exam one. (B) Student responses to the question "On a scale from 1-3, how motivated are you to do well on this exam?" 5 days, 3 days, and 1 day prior to exam one. (1=Low Motivation and 3=High Motivation)

(A)

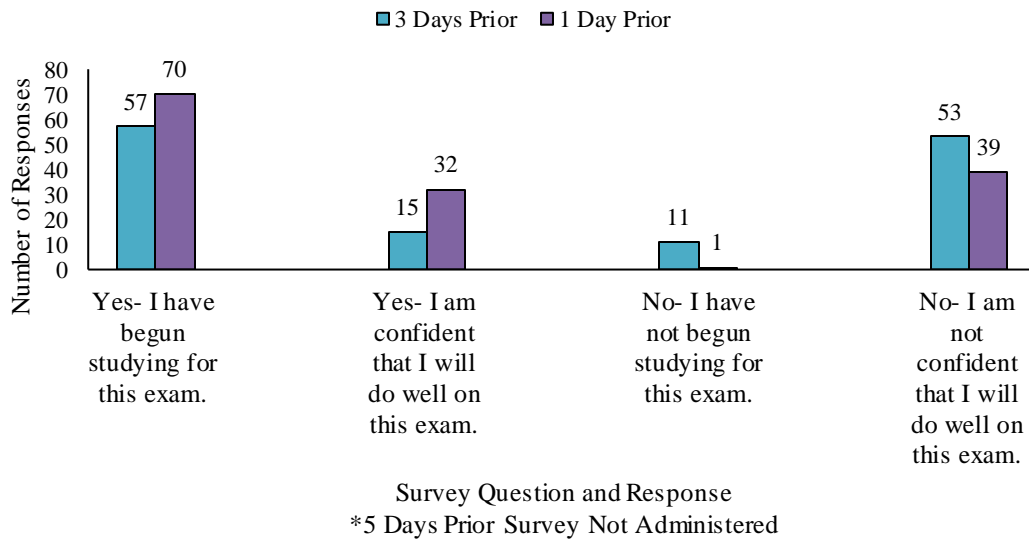


(B)

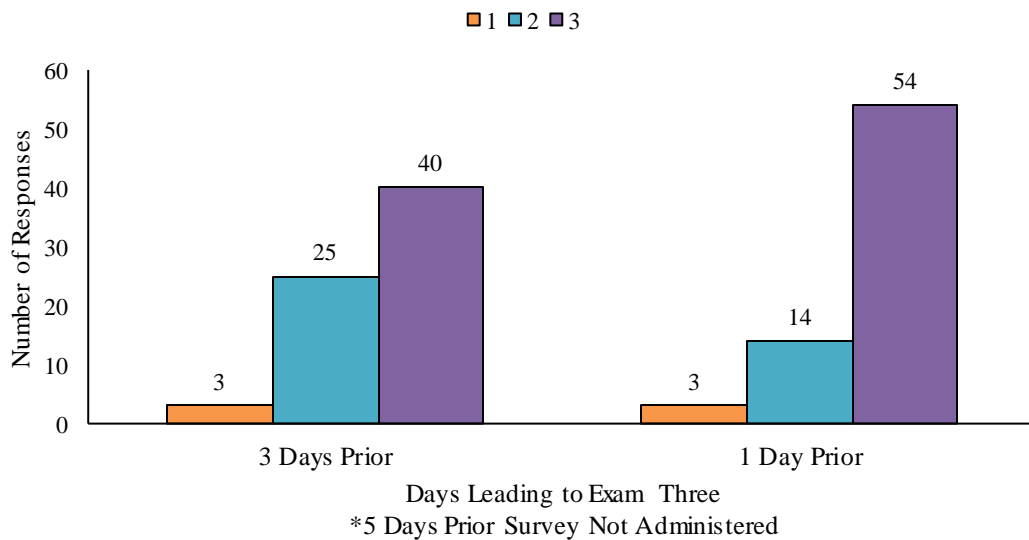


**Figure 6.** (A) Student responses to each question 5 days, 3 days, and 1 day prior to exam two. (B) Student responses to the question “On a scale from 1-3, how motivated are you to do well on this exam?” on 5 days, 3 days, and 1 day prior to exam two. (1=Low Motivation and 3=High Motivation)

(A)

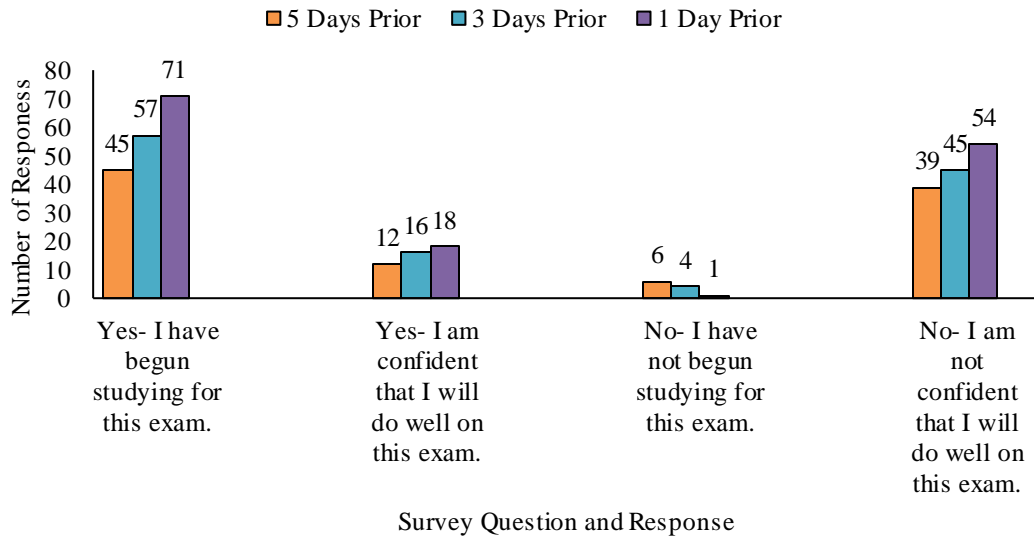


(B)

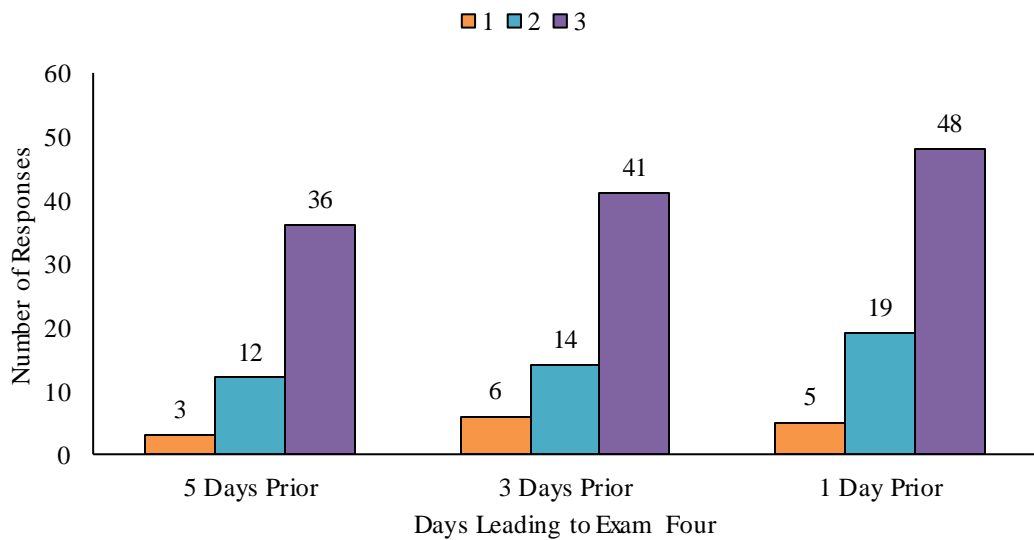


**Figure 7.** (A) Student responses to each question 5 days, 3 days, and 1 day prior to exam three. (B) Student responses to the question “On a scale from 1-3, how motivated are you to do well on this exam?” on 5 days, 3 days, and 1 day prior to exam three. (1=Low Motivation and 3=High Motivation)

(A)

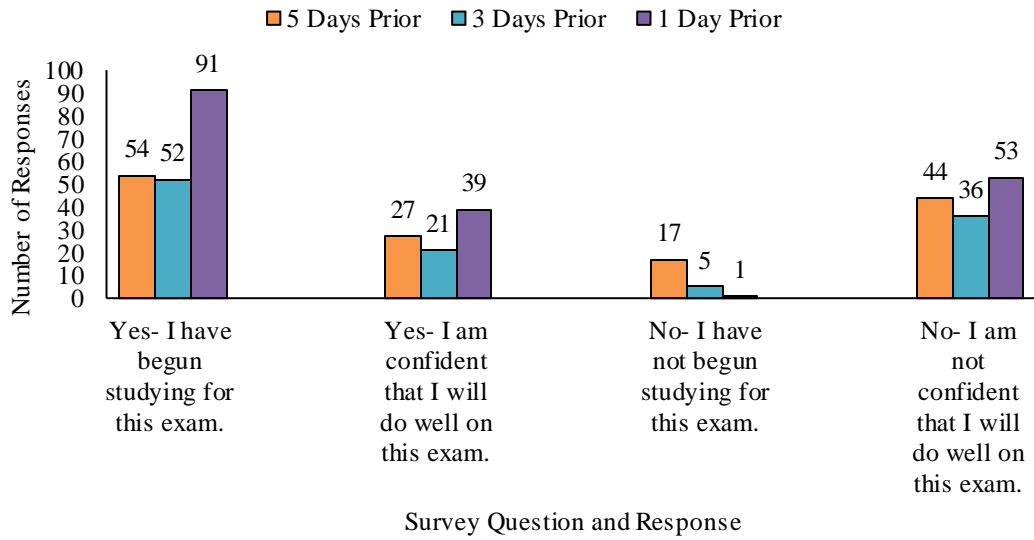


(B)

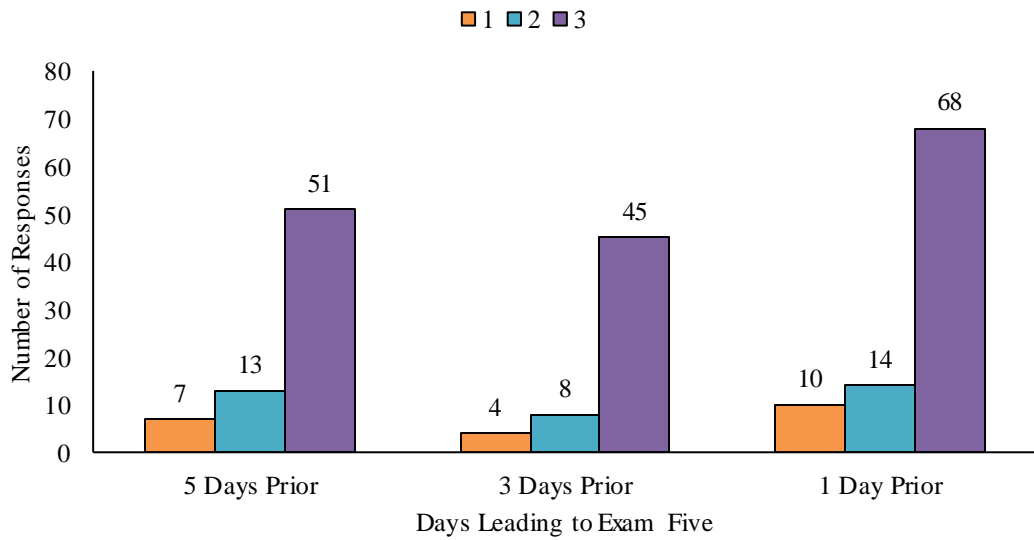


**Figure 8.** (A) Student responses to each question 5 days, 3 days, and 1 day prior to exam four. (B) Student responses to the question “On a scale from 1-3, how motivated are you to do well on this exam?” on 5 days, 3 days, and 1 day prior to exam four. (1=Low Motivation and 3=High Motivation)

(A)



(B)



**Figure 9.** (A) Student responses to each question 5 days, 3 days, and 1 day prior to exam five. (B) Student responses to the question “On a scale from 1-3, how motivated are you to do well on this exam?” on 5 days, 3 days, and 1 day prior to exam five. (1=Low Motivation and 3=High Motivation).