Understanding Why Undergraduate Students Declare and Continue to Study an Exercise Science-Related Major

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ABSTRACT

International Journal of Exercise Science 10(5): 807-817, 2017. Understanding factors that contribute to a student’s selection of an exercise science-related major is important to student success, higher education and industry. This study sought to 1) better understand why undergraduate students study an exercise science-related major, 2) determine whether positive influences to study an exercise science-related major differ by academic classification, and 3) identify what student’s aspirations are after graduation. Department administrators from four-year colleges and universities offering an exercise science-related major in the Northwest Region of the United States (i.e., Idaho, Montana, Oregon, and Washington) were contacted. Cooperating department administrators were given self-reported questionnaires for students to complete using a snowball sampling method. A total of 388 participants completed the questionnaire. Interest in the subject and potential job opportunities were the most common reasons to study an exercise science-related major. Self-reported Holland’s codes identified that realistic and social personalities were most prevalent among participants. Seniors rated a friend’s influence and college advisors as stronger influences to study an exercise science-related major compared to freshmen. Pay in the field was a stronger influence for freshmen to study an exercise science-related major than for fifth-year seniors, whereas freshmen were less influenced by introductory courses to study an exercise-science related major than fifth-year seniors. The majority of undergraduate students studying an exercise science-related major planned on attending graduate school after completing their baccalaureate degree. These findings can be used to help guide undeclared students and better serve undergraduates enrolled in an exercise science-related major.

KEY WORDS: Academia, education, advising, career choice
INTRODUCTION

Pursuing an education from a four-year college or university is a common endeavor for many individuals, as approximately 1.4 million students earn a Bachelor of Arts degree and an additional 600,000 earn a postgraduate degree each year in the United States (8); however, in order to progress toward graduation, undergraduate students must declare a major area of study (16). Some students pursue higher education having already selected a major, whereas other students remain undeclared until much later in their program of study or choose a major without having an understanding of their career goals (12). This is particularly problematic because 45.2% of American workers report their job is only partially, or not at all related to their major, often resulting in lower than anticipated wages, job dissatisfaction, and unemployment (21).

Placing an emphasis on guiding students toward an appropriate major is necessary to help ensure student success. Many internal and external influences may impact how a student selects their major. For example, having a parent in a professional occupation may incline a student to pursue a similar area of study (13). Earnings potential, opportunities for advancement, and immediate job opportunities upon graduation are also common reasons that students decide to pursue a major area of study (13, 16). Additionally, personality-based questionnaires can be beneficial for helping students identify a compatible major (17). One of the most recognized theories used to assist students in selecting a major is Holland’s theory of vocational personalities and work environments, whereby individuals are characterized by a combination of 6 different personality types (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional) (10). Major areas of study are then recommended to students based on their personality type, thereby reinforcing student abilities, interests, and allowing students to flourish in environments that are compatible with their personalities (22).

As two of the more profound epidemiological trends of present time (i.e., obesity and an aging population) continue expanding (9, 18), there will likely be an increased demand for jobs in exercise science-related fields to better serve the needs of this growing population. Considering one-third of American undergraduate students are undeclared (6), identifying strategies for attracting students to an exercise science-related profession is critical for accommodating the projected demand in the field. Therefore, the purposes of this study were to 1) better understand why undergraduate students study an exercise science-related major, 2) determine whether factors that had a positive influence to pursue an exercise science-related major differ by academic classification, and 3) identify what undergraduate students in an exercise science-related major are planning to do after completing their baccalaureate degree.

METHODS

Participants

Department administrators (e.g., Department Chairs) at 18 colleges and 48 universities located in the Northwest Region of the United States (Idaho=6, Montana=6, Oregon=29, and
Washington=25) that offered an exercise science-related major were asked to allow their students to complete the questionnaire. Cooperating department administrators were then given the questionnaire as a hard copy or online survey link through Qualtrics (Qualtrics, Provo, UT), depending on their preference. Department administrators then either forwarded questionnaires to department faculty for their students to complete or gave questionnaires to students directly. To increase sample size, investigators encouraged department administrators to forward the survey to persons that were eligible to complete the questionnaire (i.e., snowball sampling method).

In order to be included in the analyses, participants had to be at least 18 years of age (self-report) and currently enrolled as an undergraduate student pursuing an exercise-science related major at a four-year college or university in the Northwest Region of the United States. Incomplete questionnaires from participants that did not answer all of the questions were excluded. The University of Idaho Institutional Review Board certified this study as exempt and each participant provided informed consent before taking the questionnaire.

Protocol
Base items for the self-report questionnaire came from an investigation by Malgwi et al. (14). Items from the questionnaire were modified to the target population of students studying an exercise science-related major and written to better fit the purposes of this investigation.

Each participant was asked to report their age, gender, and current academic institution at which they are studying.

Participants were asked to identify the extent to which different factors (interest in the subject, family member influence, potential job opportunities, level of compensation in the field, etc.) influenced their initial choice of an exercise science-related major. Participants rated each factor on a 5-point Likert scale ranging from “no influence” to “major influence.” A single item was also written to assess which Holland’s codes (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional) participants felt were reasons to study an exercise science-related major. Participants were asked, “Which of these reasons best describe why you chose this major or field (select all that apply)?”, and were given options that corresponded to each Holland code: 1) working with hands-on tasks in my classes and future career (realistic), 2) helping others in my classes and future career (social), 3) solving problems in my classes and future career (investigative), 4) organizing and planning in my classes and future career (conventional), 5) thinking creatively in my classes and future career (artistic), 6) leading and persuading others in my classes and future career (enterprising), and 7) none of these reasons describe why I chose my major.

Factors that had a positive influence on the student’s decision to select an exercise-related major were assessed with items modified from Malgwi et al. (14) and academic classification was self-reported by participants. More specifically, to assess positive influences, respondents were asked, “In selecting your current major to what extent were you positively influenced by the following factors?” Factors included: 1) interest in subject, 2) discussion with friends, 3)
family member influence, 4) college advisors/instructors, 5) introductory courses within the major, 6) availability of job/career opportunities, 7) high level of compensation (pay) in this field, 8) this major seemed easy, and 9) this major seemed challenging. Participants then rated the degree of influence for each factor on a 5-point Likert scale ranging from “no influence” to “major influence”.

To assess post-graduation plans, participants were asked, “What is the highest level of graduate or professional school you plan on pursuing?” Available responses were: 1) Master’s (M.A.T., M.Ed., M.S., etc.), 2) Doctorate (Ph.D., Ed.D., M.D., D.P.T., etc.), 3) I do not plan on attending graduate or professional school, and 4) other.

Statistical analysis
An investigator hand-entered responses from the hard copy questionnaires, and a second investigator checked for errors and duplicate entries. The dataset with responses from the hard copy questionnaires was then merged with the dataset that included the electronic responses to create a final dataset that combined the hard copy and electronic responses.

Descriptive characteristics of the participants and questionnaire responses are presented as mean±standard deviation or percentage. Kruskal-Wallis tests and a Nemenyi post-hoc test analyzed if responses for selecting an exercise science-related major differed between academic classifications. Analyses were conducted with SPSS version 22.0 (IBM, Armonk, NY) and an alpha level of 0.05 was used to determine statistical significance.

RESULTS
A total of 452 hard copy and electronic questionnaires were collected from participants. After excluding 64 incomplete questionnaires, the remaining 388 questionnaires (Idaho=234, Montana=59, Oregon=5, Washington=90) were included and the academic classifications of participants that completed the questionnaire are given in Table 1. The sample included 112 males (28.9%), 268 females (69.1%), and 8 persons (2.0%) that did not identify with either gender. Moreover, the mean age of participants was 20.9±2.6 years. No response rates were available because of the snowball sampling method used in the present investigation.

| Academic Class          | Percentage of Participants |
|-------------------------|---------------------------|
| Freshman                | 17.4%                     |
| Sophomore               | 19.7%                     |
| Junior                  | 26.1%                     |
| Senior                  | 25.2%                     |
| Fifth-Year Senior       | 11.6%                     |

Table 2 presents the initial reasons respondents chose to pursue an exercise science-related major. Interest, potential job opportunities, and aptitude in the subject were the most popular reasons why students initially chose an exercise science-related major. In contrast, the
least common reasons included high school guidance counselor’s influence and college open houses.

Table 2. Initial reasons for pursuing an exercise science-related major as identified by a 5-point Likert scale.

| Reason                                   | Score       |
|------------------------------------------|-------------|
| Interest                                 | 4.63 ± 0.03 |
| Potential Job Opportunities              | 3.98 ± 0.05 |
| Aptitude                                 | 3.74 ± 0.05 |
| Potential Career Advancement             | 3.67 ± 0.06 |
| Pay in the Field                         | 3.15 ± 0.06 |
| Prestige in the Field                    | 3.03 ± 0.06 |
| Challenging Classes in the Major         | 2.93 ± 0.05 |
| Reputations                              | 2.17 ± 0.06 |
| Family Member Influence                  | 2.14 ± 0.06 |
| High School Guidance Counselor Influence | 1.44 ± 0.04 |
| College Open House                       | 1.39 ± 0.04 |

Values are presented in mean ± standard deviation.

Figure 1 represents the distribution of reasons why participants chose to study an exercise science-related major based on self-selected Holland codes. “Working Hands On with Tasks (Realistic)” (59.1%) and “Helping Others (Social)” (56.3%) were the most selected reasons for studying an exercise science-related major. Conversely, “Organizing and Planning (Conventional)” (20.7%) and “Leadership (Enterprising)” (21.4%) were the least selected reasons for studying an exercise science-related major.

The positive influences for encouraging students to pursue an exercise science-related major were different across academic classifications (Figure 2). Seniors rated “friend influence” ($X^2(4)=10.98; \ p=0.02$) and “college advisors” ($X^2(4)=20.18; \ p<0.01$) as stronger influences to study an exercise science-related major than freshmen. “Pay in the field” was a stronger influence for freshmen to study an exercise science-related major compared to fifth-year seniors ($X^2(4)=11.32; \ p=0.02$), whereas freshmen were less influenced by “introductory courses” to study an exercise science-related major than fifth-year seniors ($X^2(4)=13.72; \ p<0.01$).

Of the 82% of the participants who were planning to pursue graduate studies; 42% were interested in a master’s degree and 40% a doctoral degree. Only 10% of participants were interested in another type of training after completing their baccalaureate degree (e.g., certification courses), and 8% of participants were not planning on pursuing any additional training or education.
Figure 1. Personality characteristics that were identified as to why undergraduates study an exercise science-related major as determined by Holland’s code.

Figure 2. Differences between positive influences to select an exercise science-related major by academic classification. *Results were significantly greater between academic classifications (p<0.05). Note: Responses are from a 5-point Likert scale assessing strength of influence. A, friend influence; B, pay in the field; C, introductory courses; D, college advisors.
DISCUSSION

Interest in the subject and job opportunities were the most selected reasons undergraduate students initially pursued an exercise science-related major. Holland’s code suggests that realistic and social personalities were most prevalent among participants. Seniors were more influenced by friends and college advisors to study an exercise-science related major compared to freshmen; who were more influenced by earnings potential and less influenced by introductory courses than fifth-year seniors. The majority of students currently enrolled in an exercise science-related major were planning to attend graduate school. These findings provide a better understanding as to why undergraduate students pursue an exercise science-related major, demonstrate how influences to study an exercise science-related major differ by academic classification, and highlight what students plan on doing after completing their baccalaureate degree.

Reasons why students choose a major area of study likely impacts student success, recruitment and retention strategies, and projections of what students may study. In physical education pedagogy majors, perceived importance of the content area and learning the curriculum contributed to a student’s choice in courses (3, 23). These results mostly parallel with those of the present investigation, suggesting that interest, potential job opportunities, and aptitude in the area are initial reasons students pursued an exercise science-related major. Surprisingly, participants indicated that earnings potential and family influence were not common reasons they initially decided to study an exercise science-related major. This differs from the results of other investigations, where earnings potential and family influences were more profound reasons to select a major (4, 13), thereby suggesting that reasons undergraduate students study an exercise science-related major are based on both intrinsic and extrinsic motivators.

Holland’s theory of vocational personalities and work environments may also help students with their major selection and potential success at the workplace (10). The evolution of Holland’s theory in higher education revolves around students, their academic majors, and the goodness-of-fit between students and their selected majors (22). The results of the present investigation found the realistic (“working hands on”) and social (“helping others”) personalities are prevalent in students studying an exercise science-related major. This combination of realistic and social interests demonstrates the diversity of students enrolled in exercise science-related majors (11, 24). For example, the biological and biochemical components of an exercise-science related major are commonly related to a realistic personality type, whereas the educational and recreational domains of an exercise science-related major are typically related to a social personality type (19). Colleges and universities should feature the interdisciplinary aspects of an exercise science-related major as a model for attracting different types of students, thereby potentially improving student recruitment, retention, and success (11, 24).

As each student progresses through their academic program, the factors that positively influence them to select a major area of study appear to change. In the
present investigation, freshmen were more positively influenced by anticipated salary compared to fifth-year seniors, seniors were more positively influenced by friends and college advisors compared to freshmen, and fifth-year seniors were more positively influenced by introductory-level coursework in the major compared to freshmen. These results align with previous research on business students (15), whereby college advisors and professors may have had a greater positive influence because of their ability to encourage students to study the major, particularly when students are taking introductory courses. However, the results of the present investigation differ from another similar investigation that suggested a friend’s influence becomes less impactful as students advance in their education and that a friend’s positive influence to study a major was more profound in science-related majors compared to education-related majors (5). The dissimilarities in these investigations might best be explained by the role of personality types. More specifically, previous research suggests that realistic personality types, which have a higher propensity toward science, are less influenced by friends, whereas social personality types, which have a higher propensity toward education, are more influenced by friends (19). This suggests that the importance of various external influences to study an exercise science-related major likely differ by personality type.

Pursuing graduate or professional studies is becoming an increasingly popular option for many individuals, with graduate schools reporting a 3.5% increase in first-time enrollment (1). This trend is evident in the present investigation—the majority of participants planned to pursue graduate studies or another type of training after completing their baccalaureate degree. This is encouraging for the exercise science-related professions, as individuals exploring graduate studies are often more prepared to contribute to their field (20, 24). However, our results differ from the results of a literature review that demonstrated the percentage of students pursuing graduate studies is lower in the exercise science-related fields (i.e., nutrition and fitness) compared to other fields (2). The results of this literature review did not specify the other disciplines related to exercise science-related majors (e.g., physical therapy, athletic training, etc.), thereby making comparisons with the present investigation challenging. The differences in disciplines within the exercise science-related fields may likely serve as an indicator as to which career pathways warrant graduate studies.

The present investigation has a number of strengths. Participants in the current study were all majoring in an exercise science-related discipline, and the distribution of under- and upperclassmen were similar. Furthermore, a sample of 388 respondents from a 4-state area was relatively large, strengthening the generalizability of this study. Finally, the results of this investigation are beneficial for many different types of people including students, parents or guardians, high school counselors, academic advisors, university administrators and industry. The need for identifying strategies to recruit students into exercise science-related majors, in order to support a projected demand in the job market, along with continuing to develop strategies that bolster student success through selecting an appropriate major (even outside of exercise science-related majors) should remain a priority in higher education.
Despite these strengths, some limitations of the present study should be noted. Due to the purposeful snowball sampling technique that was used, there was an uneven distribution of genders and respondents across schools. Moreover, respondents were not statistically weighted by academic institution or by their academic classification. Having respondents self-select a Holland code was only intended to give a brief glimpse into the role that personality type may play in major selection for exercise science-related majors. Finally, self-report questionnaires are subject to misinterpretation of the question and inaccurate responses via social desirability recall bias (7). Future research should investigate why students choose to major in their selected area of study across different academic disciplines. Using other data collection techniques, such as interviews, may provide greater detail as to why students choose a major. Following groups of students for a longer duration would allow for greater insight into how opinions and influences related to a student’s major field of study may change over time. Investigating what types of careers students are pursuing would give some perspective as to what types of courses students would be taking to help prepare them for those opportunities. Also, more in-depth questionnaires exist to assess Holland’s codes, and further research could expand the knowledge on how personality types, as measured by Holland’s codes, impact a student’s major selection.

Overall interest, potential job opportunities in the field, and aptitude in the area were identified as initial reasons students pursued an exercise science-related major. Realistic and social characteristics were prevalent among students studying an exercise science-related major. Seniors were more positively influenced by their friends and college advisors to study an exercise science-related major compared to freshmen. Freshmen were more positively influenced by anticipated salary to study an exercise science-related major compared to fifth-year seniors. However, fifth-year seniors were more positively influenced by introductory courses to study an exercise science-related major compared to freshmen. The majority of participants planned on pursuing graduate studies after completing their baccalaureate degree. The results of the present investigation can be used by colleges and universities to help advise students toward selecting a major that fits their personality and career interests, further preparing them to be successful in the workplace. Similarly, colleges and universities should underscore the value of exercise science-related majors, as this major will prepare students in the area of allied health, thereby helping fulfill the projected labor demand in this field.

ACKNOWLEDGEMENTS

The authors would like to thank Timothy Johnson and Hunter Heintzelman for their contributions to this study. We also gratefully acknowledge all of the department administrators, faculty, and participants for their cooperation and participation in this study. This research received no specific grant from any funding agency. The authors report no conflicts of interest.
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