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CHANGE IN ACADEMIC SELF-EFFICACY ACROSS GENDER AND YEAR IN SCHOOL FOR UNDERGRADUATE SPORT MANAGEMENT STUDENTS

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Abstract

CHANGE IN ACADEMIC SELF-EFFICACY ACROSS GENDER AND YEAR IN SCHOOL FOR UNDERGRADUATE SPORT MANAGEMENT STUDENTS

Academic self-efficacy (ASE) is a construct derived from social cognitive theory developed to assess an individuals perceived competence in academia. It has been found to significantly relate to academic achievement. Students scoring higher in ASE are more likely to obtain higher cumulative grade point averages and higher test scores. Studies assessing ASE have examined degree programs such as science, technology, engineering, and mathematics (i.e., STEM), business, and the humanities. Despite the wide scope of fields studied, sport management programs have yet to be assessed. This study aims to fill this gap. Part of the study aimed to construct a valid ASE questionnaire designed specifically to assess sport management students' ASE. The second aim of the study was to test three main hypotheses. H1: There will be a significant relationship between high academic achievement and a student's ASE. H2: There will be a significant difference in ASE among male and female students. H3: There will be a significant difference in ASE scores based on a student's year in school. The first round of the questionnaire design involved 189 undergraduate students enrolled in one sport management course in one Sport Management program. The second round of questionnaire design involved 103 undergraduate students enrolled in a sport management course from the same Sport Management Program. The exploratory factor analysis revealed that only two of the seven constructs loaded sufficiently: Working in Groups ($\alpha = .700$) and Learning Strategies ($\alpha = .748$). Analysis of each hypothesis were found to be insignificant, and each hypothesis was rejected.

Key Words: Academic Self-Efficacy, Academic Achievement, Scale Development and Validation

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Chapter 1: Introduction

A main facet of education is student success (Kahu & Nelson, 2018; Kuh et al., 2006). It aims to ensure a student is capable of showing their increase in knowledge through achievement of academic goals (York et al., 2019). In higher education, according to the National Center for Education Statistics (2023), in the 2021-2022 academic year, 5.2 million bachelor's degrees were awarded in the United States alone, while 15.4 million students were pursuing a bachelor's degree. Of students pursuing a bachelor's degree, approximately 40% drop out every year (Bouchrika, 2023). Academic pressures account for 28% of those students' reason for not continuing their education (Bouchrika, 2023). First-time freshmen make up more than half of the overall population with a dropout rate of 24.1% (Education Data Initiative, 2022). This is unfortunate for these students given the fact that, on average, college graduates make more money over their life-span than non-college graduates (Indeed.com, 2023). According to Pew Research Center, individuals between the ages of 22 and 27 make on average $20,000 more a year than their non-college-educated counterparts (Schaeffer, 2022).

Given the life-long financial value of a college degree, it is important for students to graduate. One avenue that could help universities with retention is examining students' perceived level of ability. Percieved level of ability is important as it relates to a student's ability to succeed (Hyseni Duraku & Hoxha, 2018). Students who believe themselves to be low in their ability will make different and more detrimental decisions than students who see themselves as academically competent (Jebram et al., 2023). This difference in perceived ability is measured as a mediating role in student study behaviors, degree persistence, and the likelihood that a student will graduate (Hayward, 2020; Putwain et al., 2013). Thus, retention efforts could focus attention on how students perceive their academic competence as a means for helping students graduate (Bowman et al., 2019).

Bandura (1977), created a construct called self-efficacy which measures an individuals' perceived competence in a given domain (i.e. their ability to accomplish tasks, goals, or achievements). When a student is struggling, they need a reason to persist and a belief that they can be successful. Self-efficacy provides the layer of confidence and is an important component of social cognitive theory (Bandura, 1977). In higher education the measurement used for assessing a student's perceived confidence in their academic ability is academic self-efficacy (ASE), and it has been found to correlate consistently with academic achievement (Bresó et al., 2011; Moghadari-Koosha et al., 2020; Sachitra & Bandara, 2017; Taghani & Razavi, 2022; Wang & Neihart, 2015). In the academic setting, this applies to a student's belief in their ability to meet assignment deadlines on time, maintain a good relationship with their professors, and engage in the classroom (Bandura et al., 1996).

ASE has been used as a predictor for student success (Byrne et al., 2014; Gore, 2006; Huang, 2013; Sachitra & Bandara, 2017) and the link between ASE and student academic achievement and persistence has been researched extensively (Chemers et al., 2001; Gore, 2006; Hwang et al., 2015; Kolo et al., 2017). Students higher in ASE are more likely to perform better on test, course grades, and GPA, and are more likely to graduate than those who are low in ASE (Fokkens-Bruinsma et al., 2021; Hwang et al., 2015; Kolo et al., 2017). Students scoring low on self-efficacy are more likely to end up on academic probation or to drop out of college (Conner, 2015; Hsieh et al., 2007). Test anxiety has also been found to have a negative relationship with ASE, and the worse a student perceives their ability, the more likely they are to feel anxious about their performance in school (Medrano et al., 2016; Raufelder & Ringeisen, 2016; Warshawski et al., 2019). The four components that make up ASE are not fixed characteristics. Therefore, they can be developed for positive increases in a student's perceived academic competences (Bulfone et

al., 2021; Putwain et al., 2013), which, in turn will increase a student's level of academic achievement (Schunk & Pajares, 2002).

The overarching purpose of this study is to understand what differences can be found, if any, in undergraduate sport management students' ASE across year in school and gender, and if these variables produce differences in academic achievement.

Hypothesis

A strong sense of self-efficacy acts as a protector against students falling into a pitfall of self-disbelief and disengagement (Liem et al., 2008). Understanding where students may come up short is of value to educators as it can help shape course curriculum, help prevent students from falling behind, and shape how advising meetings are performed. This study aims to assess how ASE changes from freshmen, sophomore, junior, to senior sport management students and if there are any gender differences among students' ASE . This less researched variable, the difference in ASE scores across undergraduate student year in school, assumes students' mastery skills progress year after year in their field of study, and become more academically efficacious (Bandura, 2015; Concannon & Barrow, 2009).

H1: There will be a significant relationship between high academic achievement and a student's ASE. Academic achievement is measured by overall GPA.

H2: There will be a significant difference in ASE among male and female students.

H3: There will be a significant difference in ASE scores based on a student's year in school. Research has found that it isn't always the case that the more years a student has in school, the more efficacious they are (Marra et al., 2009). Exploring if this holds true among sport management students could be a useful resource for professors.

Limitations

1) This study's sample group is from 11 classes in one program at one university. By not branching out to other programs at other universities, the findings from this study could be overly specific to this program and therefore not transferrable or generalizable.
2) This study is analyzing each year in school (freshman, sophomore, junior, and senior) as different groups. Since the program being studied has no more than 200 students per sample, each group will be a small sample size affecting the statistical significance and the validation of our posttest assumptions (Ryan, 2013).
3) Methodologically, student responses were gathered across 11 classes and administered in person. This increases the likelihood of tracking duplicate student responses.
4) Another limitation in this study is that when administering the questionnaire in-person, students took their questionnaires in close proximity of their peers. Responses could be altered due to a student's feeling of embarassement about their responses to the questionnaire (Reis Pessalacia et al., 2013).
5) This manuscript aimed to assess sport management students' ASE. The criteria to be considered in this population was to be enrolled in a sport management course and not necessarily the major. Thus, another limitation is that there were 32% of participants who were not seeking a sport management degree.

Definition of Terms

Academic Self-Efficacy (ASE). This refers to a student's judgments about their ability to successfully achieve their educational goals (Bandura, 1977). It originates from Bandura's (1977) behavioral change aspect of the social cognitive theory, which was originally just self-efficacy, and later studies specified ASE.

Year in School. This refers to the undergraduate student's status as a freshman, sophomore, junior, or senior and is determined by the level of credits they had at the time they answered the questionnaire. 0-30 credits are freshmen, 30-60 are sophomores, 60-90 are juniors, and 90-120 are seniors.

Academic Achievement. Is the fulfillment of a student's instructional requirements within a university setting (Steinmayr et al., 2015). Some examples are literacy, numeracy, and speaking. The measurement for academic achievement is established through cumulative grade point average (GPA).

Chapter 2: Literature Review

Self-Efficacy

Self-efficacy (SE) is the "conviction that one can successfully execute the behavior required to produce the outcomes," (Bandura, 1977, p. 193). It was first termed by Albert Bandura in a research paper where he hypothesized its influence on coping behavior, effort expanded, and effort persistence in the face adversity (Bandura, 1977). Bandura theorized that an individual's SE can directly influence their "choice of activities and settings…through expectations of eventual success" (Bandura, 1977, 194) such that people tend to avoid fearful situations that they believe to be outside of their known capabilities. Bandura (1977) conceived that SE is formulated, built, and maintained through four psychological structures: 1) mastery experience, 2) vicarious experience, 3) verbal persuasion, and 4) physiological states.

Mastery experience is the psychological structure most commonly found to strongly correlate with SE (Britner & Pajares, 2006; Capa-Aydin et al., 2018; Ford et al., 1998) and is how one interprets their own performance results, judged through previous success or failure (Bandura, 1977). When an individual continually succeeds, they will see themselves as being more competent in the given domain and will perceive their SE as being higher than an individual who continually fails in the same domain (Bandura, 1977; Mamaril et al., 2016). It is this relationship between mastery experience and self-efficacy that has led researchers to believe it has the most influential effect on SE (Bandura, 1977; Loo & Choy, 2013). This impact on self-efficacy is more influential in the early stages of mastery as it helps build one's confidence in themselves through tangible evidence (Bandura, 1977).

Vicarious experience is twofold; It relates to how an individual measures their level of competence by comparison of their successes with the achievements and competencies of others. In a classroom setting, Student A, through vicarious experience, determines their level of ASE

through comparison of their academic ability to the academic ability of other students (Bandura, 1997). Vicarious experience also suggests this same student can model their behavior based of other successful academics with the aim of being successful (Bandura, 1977). Bartsch et al. (2012) believed that this modeling of behavior was at its most influential when the individual perceived their behavior modelist as being similar to them, and that vicarious experience may have the most immediate effect on SE. However, other researchers have found that self-efficacy attained by observation and modeling of others tends to be, "weaker and more susceptible to change," (Artino, 2012, p. 79).

Verbal persuasion is the way others speak about an individual's ability. Words of encouragement and positive affirmations about a student's skill, in theory, raise the student's perceived ASE (Bandura, 1997). Talking down to students can lower ASE (Bandura, 1997). Much like a professor who provides a student feedback on a written research paper, how they choose to provide feedback, depending on the student, can either encourage them or debilitate them. Of the four factors that influence one's SE, Bandura (1977) believed that in education, verbal persuasion is "widely used because of its ease and ready availability" (p. 198). When a student is struggling or engaging in a difficult task, verbal persuasion can express confidence in a student's capabilities to succeed, and in return raise their sense of SE (Bandura, 1977). The ease with which verbal persuasion is used makes it accepable in abundance across several domains from academics, sports, and family. Its use and effects on SE make it a valuable component.

Lastly, physiological and affective states encompass feelings such as stress, anxiety, and fatigue. An individual who feels a heightened state of stress or anxiety may also feel a sense of "dysfunction" (Bandura, 1997) and, in return, perceive this "dysfunction" as a lack of SE. It is also important to understand how external environments may influence the perceptions of one's internal arousals. A guitarist performing in front of their instructor may feel less fear from mistake than

when performing in front of an audience of strangers. This change in setting can form a familiar environment to an unfamiliar one and can inhibit the individual because of overestimating the quality of threat around them and lead to a heighten state of fear from an unknown set of consequences (Loo & Choy, 2013).

When measuring these four components, it is important to understand that SE is domain-specific. For each domain, the four psychological structures will be internalized differently (Bandura, 1977). A Sport Management student may feel a high sense of ASE in relation to their field, and this same student may feel a sense of low ASE in an unrelated field such as engineering, and vice-versa. However, Bandura and Adams (1977) found that increases in SE in one domain may permeate into others. In a study examining the phobia of snakes, they found that subjects who were more successful in overcoming their fear of snakes grew more persistent in the face of the anxiety-provoking experiences. Those same individuals who grew in their ability to confront their phobia of snakes also slightly grew more resilient in their overall SE unrelated to confronting snakes. However, even with the development in one's general self-efficacy (GSE), there are limitations to its cross-over effect (Bandura & Adams, 1977) As mentioned above, the increase in one domain of self-efficacy such as an English student's capacity to engage with creative writing does not translate into their sense of self-efficacy to pilot a commercial airplane, but it may influence their belief in their sense to have the capacity to learn how to fly a commercial airplane.

Cervone (1989) studied how this difference between domain specific SE and a more general sense of SE is to be understood. What was introduced is the role that envisioning the future has on behavior. One group of subjects in this study were told to focus on their potential limitations to solve a task given to them while another group was told to focus on their positive attributes to help them solve the task. The subjects who envisioned their limitations had lower judgments of their ability to perform than those who focused on factors that would improve their

performance. What an individual chooses to focus on, whether negative or positive, impacts their performance outcome (Cervone, 1989). Locke and Latham (2002) expanded the research on future forecasting and found that people who viewed intellectual ability as fixed saw errors as confirmation that they were not intelligent. Over time the fixed mindset decreased aspirations and performance. Whereas when viewing skills as acquirable, individuals perceive their missteps as a part of the process rather than being personal deficiencies. Those inidviduals who saw skills as acquirable were also more motivated and persisted longer in the face of adversity (Locke & Latham, 2002). These findings express how an individual's sense of a GSE influences their behavior when approaching adversity. It also gives reasoning to how GSE is influential in the behavior of an individual when approaching a situation with the belief of failure and how mastery experience and the physiological state may influence behavior. When dealing with a psychologically stressful situation, the body feels this intense negative arousal (physiological state). Depending on previous experience with handling difficult situations (mastery experience), the future projection of how the event is likely to turn out can either positively or negatively affect performance.

Wood and Bandura (1989) investigated how the development of SE over time led to better decision making. In a study that used graduate students enrolled in business studies, each subject was put through a simulation where they had to make managerial decisions for an organization that would influence the growth or the decline of the organization. They found that SE had a positive effect on self-regulatory mechanisms. Over time, those who were higher in perceived SE made more beneficial decisions, whereas the graduate students who were low in SE became sporadic in their decision making, and in return lowered their organization’s aspirations by aiming to fulfill less influential task, and made fewer beneficial decisions (Wood & Bandura, 1989). The high SE

managers' ability to part ways with ineffective strategies more quickly was the most important self-regulatory mechanism in the decision-making process.

Academic Self-Efficacy

ASE uses the same theoretical background as GSE when measuring itself as a specific domain of competence and concludes similar findings as the ones mentioned in the previous section (e.g., better decision making, future expectations' effect on behavior, fixed and acquirable skills). ASE is often referred to collectively as a student's belief in their capacity to succeed in an educational setting and the student's engagement, participation, and persistence in attaining their academic goals (Bandura et al., 1996; Honicke & Broadbent, 2016; Huang & Wang, 2023). Research examining ASE commonly measures a stable set of variables such as achievement, amount of experience in the subject, learning strategies, skills in the classroom, relationship with teachers, and stress management (Bandura, 2012). Ways of measuring ASE as a proxy of performance have used variables such as the time it takes to complete work, course grades, GPA, standardized tests, and others (e.g., receiving honors, receiving certifications, and graduation) (Caprara et al., 2011; Schunk & Pajares, 2002). One study looking at the effects of deep processing, metacognition, and SE found that the most important factor in academic success was ASE (Coutinho & Neuman, 2008). Although historically deep processing and metacognition have a positive relationship with student success, the authors suggested that for students digesting new material, the use of deep processing is not as effective for students further along in their mastery of a subject, and that ASE is the catalyst for early success. Students convinced of their ability to master information are more likely to do just that (Ford et al., 1998; Pajares et al., 2000).

In congruence with GSE, mastery experience in ASE is the strongest predictor of academic achievement (Loo & Choy, 2013). In a longitudinal study done by Phan and Ngu (2016), ASE was measured in three separate time slots over one year, finding that mastery experience was the

strongest predictor of academic achievement at each measurement interval. Caprara et al. (2011) also found that ASE accounted for 27% variance in males and 25% variance in females for academic achievement supporting ASE's importance for academic success.

Verbal persuasion has been proven to influence college students' ASE even when the verbal feedback is false. Instead of studying students' actual perceived SE, Bouffard-Bouchard (1990), gave students bogus feedback through positive verbal persuasion that reflected their problem-solving skills in relation to their peers. Students who were given positive feedback about their efficacy saw an increase in their performance, efficient use of strategies, and an increase in the standards they set for themselves. Those who received negative efficacy feedback saw a decrease in these same domains. Bouffard-Bouchard et al. (1991), modeled a similar study, where they found that despite a student's actual ability, an individual high in SE was still more successful in their academic performance. These findings are similar to the findings of Wood and Bandura (1989) at the graduate level where perceived ASE can be more important than actual competence, and verbal persuasion can influence one's ASE despite false feedback.

Another component of verbal persuasion is the student's relationship with their professors, which can impact the student's ASE through both verbal persuasion and vicarious experience. Huang and Wang (2023) saw a significant influence in a university student's ASE and academic achievement when they perceived themselves as having a beneficial relationship with their professor that was encouraging and supportive.

The physiological aspect of an individual's ASE is typically studied through test anxiety and depression, which academically is derived from a lack of confidence or states of worry. Heightened states of anxiety and depression are negatively correlated with ASE and academic achievement (Raufelder & Ringeisen, 2016). Chemers et al. (2001) found that students who perceive themselves to have higher levels of ASE were less likely to be affected by feelings of

anxiety. Since Jia et al. (2023) suggest that test anxiety stems from a fear of failure and that students high in ASE feal as though they are less likely to fail exams. Taken together, the findings from Jia et al. (2023) and Chemers et al. (2001) suggest that students higher in ASE felt less anxiety because they were more confident of success and less focused on potential failure. Unsurprisingly, Roick and Ringeisen (2017) found that the more important the test was, the higher the student's test anxiety was despite the student's level of ASE.

Although perceived social self-efficacy (PSSE)—An individual's belief in their ability to interact with others by initiating and maintaining interpersonal relationships (Smith & Betz, 2000)—and depression are not directly studied in this paper, they have an indirect effect on one's ASE score. Bandura (1992) found that students who scored high in PSSE were more likely to score high in ASE. Research connecting PSSE and academic performance has found that PSSE influences the mental health of an individual, resulting in higher levels of depression, loneliness, and typically lower levels of perceived social support (McFarlane et al., 1995; Riaz Ahmad et al., 2014; Wei et al., 2005). Depression is a negative predictor of academic success (Bisson, 2017; Deng et al., 2022; Deroma et al., 2009; Mihăilescu et al., 2016; Owens et al., 2012), along with loneliness (Bonner & Rich, 1988), and lack of social support (McKenzie & Schweitzer, 2001; Torres & Solberg, 2001; Zander et al., 2018). To examine these physiological effects on ASE, Chipchase et al. (2017) conducted a review of student disengagement—when students fail to do what is required of them in an academic setting. They found that students with lower confidence more often lacked consistent success in their academic performance because of increased levels of disengagement. Baik et al. (2015) found emotional health and psychological stress (physiological state) as reasons for withdrawal from academic work. Disengagement in students was addressed in a study by Bresó et al. (2011) where they used social cognitive theory to create an intervention program with the aim of decreasing burnout and increasing ASE, engagement, and performance

among university students. To achieve this, they created four, 2-hour, one-on-one sessions where they discussed topics related to “students' intolerance of uncertainty, erroneous beliefs about worry, poor problem orientation, and cognitive avoidance” (Bresó et al., 2010, p. 343). This study’s intervention program was helpful in improving verbal persuasion, and physiological SE components by talking the students through their issues and helping them understand their inner emotions. Given that the literature on ASE has found support for the notion that ASE and academic achievement are positively correlated, this study hypothesizes that:

H1: There will be a significant relationship between high academic achievement and a student’s ASE.

Gender

ASE has been measured across fields of study such as science, technology, engineering, and mathematics (i.e., STEM), business, and the humanities. The STEM field has been extensively researched because degrees in STEM have disparities in gender depending on the discipline, such as male-dominated physics degrees and female-dominated nursing degrees (Bottomley et al, 2023; Cwik & Singh, 2022; Huang, 2013; Nissen, 2019). Kalender et al. (2020) found small gender differences between males and females in physics courses. Women averaged a mean ASE score of 2.6 and men average a mean of 3.0. Huang (2013) conducted a meta-analysis of gender and ASE finding a similar relationship between ASE, gender, and the STEM field holding that male students scored higher. They also found that across all the studies measured, the average male ASE was only .08 standard deviations higher than female ASE. Cwik and Singh (2022) explored the gender differences between males and females in physics courses as well, finding that ASE was a strong predictor of success and that women scored lower on their ASE scores. They also found that this was in part because females in their study also scored lower on SAT math scores, physics 1 final grade, and physics 2 final grade, which can be explained with some variance by their ASE scores.

Bottomley et al. (2023) found that across the academic year, males in physics reported higher levels of ASE, maintained higher grades, and reported higher levels of identifying themselves as a physicist. These findings are also reflected between high school male and female physics students (Nissen, 2019). When studying female engineering students, Marra et al. (2009) found that from the first to second year reports, female students felt less included in their program. Much like Bottomley et al. (2023), Marra et al. (2009) found this lack of identity within the program negatively affecting female students ASE, and linearly affecting academic performance.

It could be that in male-dominated fields, females are viewed as outsiders and not accepted in the same way male students are. This theory may explain a portion of what is happening with female students in male-dominated fields. However, in nursing programs, where the majority of students are female, a similar conclusion is found where female students report lower levels of ASE. Warshawski et al. (2019) found that when studying the differences between male and female nursing students' ASE, males had higher levels of ASE. However, the study also found that female students' ASE was lowered due to female nursing students reporting heighten levels of test anxiety, which is a common finding between male and female students (Ye et al., 2018), offering one rational for the difference between male and female ASE. Schunk and Pajares (2002) found a similar relationship between female students and personal responsibility. In their study, female students reported higher levels of self-regulated learning than male students.

Aside from nursing, physics, and engineering students, in general science courses, gender was used to help predict 62% of academic performance among males taking a 100 level science course where the measurement of general prediction score was 24% of students' academic performance for both male and female students (Owen & Froman, 1988).

It seems apparent that a gender difference in the STEM field can be found regardless of male or female majority majors often finding male students reporting higher levels of ASE.

However, there are a few studies that suggest female students report higher levels of ASE in fields related to language and writing (Ersanlı, 2015; Mahyuddin et al., 2006; Pajares, 1996). Huang (2013) found that female students reported higher ASE scores in language arts than male language arts students. This is similar to the findings of Pajares (2003, 2005) who found that female students scored higher in written SE than male students. Previous literature supports the notion that there is a gender difference in ASE depending on the program being assessed. With this in mind, the second hypothesis addresses this difference

H2: There will be a significant difference in ASE among male and female students.

ASE Across Time

In congruence with GSE, mastery experience in ASE is the strongest predictor of academic achievement (Loo & Choy, 2013). Over time, mastery experience suggests continual improvement resulting in a higher ASE score. In a longitudinal study done by Phan and Ngu (2016), ASE was measured in three separate time slots over one year, finding that mastery experience, which the researchers define as enactive learning, was the strongest predictor of academic achievement across each measurement period. They also found that ASE had a significant impact on academic achievement (Phan & Ngu, 2016). Caprara et al. (2004, 2008, 2011) examined the relationship that ASE has with academic achievement across time. Students at the age of 13 who were high in ASE were more likely to be successful academically in junior high and high school (Caprara et al., 2011). Students who had previous experience of success were more likely to have a higher sense of SE, suggesting their strength in mastery experience of the academic domain and furthering the notion that mastery experience is the most influential component of ASE, especially in the earlier stages of domain exposure. Caprara et al. (2011) also found that ASE accounted for 27% variance in males and 25% variance in females for academic achievement, supporting the importance of ASE for academic success.

Elias and MacDonald (2007) also found a connection between prior academic performance, ASE beliefs, and future academic success. They found that high school GPA was a strong predictive variable for university academic achievement. Those who did well in high school were more likely to perform well in their undergraduate studies. In Santiago and Einarson's (1998) study, graduate students' undergraduate GPA was a predicting factor of graduate academic achievement. This predictive academic achievement is seen in the Kalender et al. (2020) study where they found that ASE was a predictor of success in physics courses. These findings suggest that previous academic success as a proxy for mastery experience builds one's ASE which can influence future academic achievement.

Bulfone et al. (2021) analyzed the change in ASE among nursing students across the span of three years. They found that males started with a higher sense of ASE, but it gradually declined over the three years. Females started with a lower sense of ASE, but it gradually rose over the three-year span, until both females and males were equal in ASE at the end of the study. This study highlights both how SE changes over time, and that there are gender differences in ASE.

When looking at longitudinal differences in mathematical and English SE of Korean high school students, Lee & Seo (2021) found a positive unidirectional relationship in ASE from grades eight to 11, when students felt a reciprocal relationship between their values and expectancy (i.e. the expectation for success and the value they place on the task). Friedel et al. (2007) also explored ASE for K-12 math students but saw no difference in ASE. Huang (2013) found a general conclusion that no differences in mathematical ASE among children ages six-14 and found the highest ASE disparity among students ages 23 and older. These findings suggest that earlier in the educational system, ASE disparities are uncommon across gender, but as students age, it becomes more prevalent. Given the documented difference in ASE across time, this study hypothesized that:

H3: There will be a significant difference in academic self-efficacy scores based on a student's year in school.

Chapter 3: Methodology

This study is structured as a non-experimental survey in design using an ASE questionnaire from Greco et al. (2022) which follows the self-efficacy questionnaire guidelines set forth by Bandura (2006). Their questionnaire was developed through multiple stages, the first being the design phase where a professor and nine volunteer students answered open ended questions pertaining to what they deemed to be a part of their academic task and challenges. In this same phase they were told to explain how they would go about solving each task and academic situation. From this phase, seven categories emerged that helped define different aspects of academic experience. These categories are planning, learning strategies, information retrieval, working in groups, management of relationships with teachers, in-class competency, and stress management. Following this step, a different professor and three different students voluntarily provided feedback on the comprehensibility of the questionnaire. The result was a 37-general-question survey. Questions were answered using a five-point Likert scale ranging from 1) perceived inability, to 5) complete self-assurance in one's ability.

For this present study, the Greco et al. (2022) questionnaire was altered to fit the context of the study, and some questions were omitted based on their low factor loading ($\beta < .60$). Other questions were altered due to them being double-barreled. The questionnaire originally contained 30 items, and each question was deemed significant at the .001 confidence interval. After the inclusion of demographic questions, the removal of low factor loading questions, and the addition of questions, the revised questionnaire included 49 items and was formed following the guidelines for creating a self-efficacy instrument (Bandura, 2006).

Questions removed for their ambiguous context were: 1) "set achievable goals by knowing your abilities and your limitations," and 2) "make connections, analogies, and distinctions among the various subjects you are taking." Since each of those questions were not specific, meaning that

multiple assumptions could be made from them, they were omitted based on various research design manuscripts (Graesser et al., 2006; Krosnick, 2018).

The following questions were removed for their double-barreled nature and low beta coefficients ($\beta < .60$): 1) “Enhance your exam preparation with personalized, in-depth study,” and 2) “attend class regularly even when the exam session approaches.” When analyzing a double-barreled question, there is not a clear distinction between whether the student felt that their study methods were personalized or that they were in-depth. It is also unclear whether students normally attend class regularly regardless of exams or they only attended class regularly because they were approaching exam dates. Because of this, they were removed.

The final set of questions were removed because of their lack of relevance to the population being tested. They were: 1) “plan the number of exams you will take in each session based on how difficult they are,” and 2) “adjust your way of expressing yourself according to the situation and the person you’re talking to.” The wording of other questions was altered to better fit our population. These questions were: 1) “keep with the study schedule you set up,” 2) “sort what you have to study in the time you have left to prepare for the exam,” 3) “organize your time in order to finish a paper by the deadline,” 4) “at the exam, convey in writing what you studied,” and 5) “demonstrate your knowledge of what you’ve studied.” These questions were altered into a new question worded as, “I create a study schedule to keep track of my academic work,” “I complete test study material given to me by my professor,” “I complete assignments on time,” “during the exam I can convey what I have studied,” and “I can demonstrate my knowledge on assignments.” This wording is more encompassing of one’s overall academic competencies. The question, “regularly check the departmental notice board to get information about your degree course,” was changed to, “I regularly check the departmental blackboard page to get information about my degree,” as the population being tested uses blackboard to disseminate information about the

degree. The question, “start efficient study groups,” was broken into two questions, the first being, “I regularly start study groups,” to assess how often the student makes study groups, and then a follow up question, “my study groups are efficient,” was created. These questions were altered due to their double-barreled nature, “work together productively by defining specific goals and task,” “I can stay focused in class even when it is noisy or crowded,” “take clear, useful notes in class,” and “glean and process the essential points in a lecture.” These questions were changed to, “I work productively in groups by defining our specific goals,” “I can stay focused in class even when it is noisy,” “I can stay focused in class even when it is crowded,” “I take useful notes in class,” and “I reprocess the essential points in a lecture.” By altering these questions to be more specific, when analyzing the data, inferences made by the students will be clearer so that during coding we can conclude across sample responses the same conclusions (Bourke et al., 2010).

Of the subcategories, 6 sections had questions added to create a minimum of 5 questions per subcategory. The question added for the Planning academic activities section was, 1) “I have a clear idea of what job I want after graduation,” as according to Bandura, (2006) a student’s future plans effect their ASE and decision making. For learning strategies, the questions added were, 1) “I know the definitions of basic sport management concepts,” 2) “I understand the basic skills required to work in sport management,” 3) “I can apply basic theory to the field of sport management,” and 4) “I learn about sport management by gaining experience through working in sport management related fields,” as the questions are specific to the degree being assessed. No questions were added for information retrieval.

Working in groups questions were, 1) “I can explain my point of view to other students,” 2) “I work well with other students in my class,” and 3) “When other students are confused, I help them understand the classroom material.” These questions help explain the peer-to-peer relationships component of ASE (Bandura, 2006).

In the management of relationship with professors' section, questions included were, 1) “I attend my professor’s office hours,” 2) “I find it easy to talk to my professor’s outside of class,” and 3) “I email my professor if I have questions about the course.” These additional questions fulfill the teacher to student relationship aspect of ASE (Bandura, 2006).

The skills for lessons section was renamed to in class competencies as it was a better term for what was being measured, and the question added was, 1) “When I notice that I have not be listening to my professor, I try to concentrate harder” (Patrick et al., 2007).

The final section assessed stress management, an important factor of ASE, and only had two questions. As such, three more questions were added, 1) “I know how to handle unforeseen situations,” 2) “I remain calm when facing difficult situations at school because I can rely on my academic abilities,” (Rimm & Jerusalem, 1999), and 3) “I can rely on my academic abilities when faced with a difficult academic situation.” These questions address the confidence one has in the ability despite facing components of adversity which is a characteristic of ASE (Bandura, 1977).

In addition to the alteration of Greco et al. (2022) questionnaire, a demographics section was added which asked the students to share their age, gender, student-athlete status, first-generation college student, ethnicity, year in school, GPA, diagnoses of a disability, and level of employment (fulltime, parttime, unemployed).

Participants

In this study, participants were all undergraduate students enrolled in a class with a sport management prefix. They were recruited using a convenience sampling strategy of administering test to participants in-person during students regular class time. Student participation was voluntary and they received no remuneration for participation.

In the original questionnaire the sample size was comprised of 189 participants. Most students were Juniors (40.2%) and the fewest were freshman (15.2%). Their average age was 20.

Particpants had an average GPA of 3.11 on a 4.0 scale. Most of the participants were Male (76.5%), caucasion (67.6%), and non-student-athletes (73%). Students were mostly unemployed (46.6%) and many worked part time (36.8%).

In the second questionnaire the sample size was comprised of 103 participants. The majority of students were Juniors (45.6%) and the fewest were Freshmen (7.8%). Ages ranged from 18 to 34 with an average age of 20. The average GPA was 3.18 in a 4.0 scale. The majority of participants were male (76.7%), caucasion (72.8%), and non-student-athletes (78.6%). Most students held a part time job (41.7%), however, a similarly large portion of students were unemployed (37.9%). The vast majority of students were Sport Management majors (68%). The remaining students were either unknown or spread across a variety of programs across the university.

Procedure

Upon receiving approval from the university's institutional review board, an email was sent to each professor instructing in the sport management program at a mid-sized university located in the southern part of the United States to schedule a time to administer the questionnaire in person during the spring 2024 semester. Students reviewed and signed a consent form and were then given a 49 item questionnaire in person so as to maximize response rates (Bergmann, et al., 2004; Nix et al., 2017; Roinick et al., 1989). Students were asked to answer each question in full and to finish it before the end of their class. It was estimated to take between 10-20 minutes to finish. Upon completion, students handed their questionnaire to the researcher who had administered the questionnaires. Once all subjects from each class had completed their questionnaire, answers were entered into SPSS statistics software and prepared for data analysis.

Data Analysis

After the collection of the data, all results were input into SPSS Statistics 24 software to examine test the reliability of the instrument. An exploratory factor analysis (EFA) was run to determine if each Likert-scale item aptly loaded on the ascribed construct. Due to the exploratory nature of the study, Hair et al.'s (1998) definition of an acceptable factor loading was followed and all items with a factor loading (β) less than .60 were removed from the study. That is, items with a β less than .60 were dropped due to the fact that they did not explain a significant portion of the variance of the construct in question. Following the removal of all items that did not load properly, the reliability of the construct was examined through the calculation and assessment of constructs Cronbach's alpha (α). Cronbach's alphas scores of .70 of greater reflected that the construct to be reliable, while those that fell below .70 were determined to be unreliable (Hair et al., 1998). The factor loadings and reliability of each item and construct can be found in Table 1.

Given the poor factor loadings and low reliability of the initial instrument changes were to items to help improve the measurement of ASE and all its subcomponents (see Table 2 and the results section below for a discussion of changes). Data were gathered using the new instrument and a second EFA and reliability check were performed. Again using Hair et al.'s (1998) definitions, items that did not load properly were removed before the Cronbach's alphas of each construct were calculated.

Following the EFA and reliability checks, only those constructs that were found to be reliable were retained and further examined. More specifically, SPSS Statistics 24 software was again used to test the three proposed hypotheses in relation to the reliable constructs. In testing both Hypotheses 1 (i.e., there will be a significant difference in ASE scores based on the student's year in school) and 2 (i.e., there will be a difference in ASE among male and female students) an analysis of variance (ANOVA) was performed. To test Hypothesis 3 (i.e. there will be a significant

relationship between students high in ASE and academic achievement) a correlation analysis was conducted.

Chapter 4: Results

Factor Loading and Reliability of Original Questionnaire

To assess the loading of individual items onto the ascribed constructs, an exploratory factor analysis (EFA) was first run. Analysis of the original questionnaire (see table 1), which was closely related to Greco et al. (2022), showed the instrument struggled to consistently measure ASE when applied to the study's population. More specifically, the "working in groups" category had three factors that did not load (i.e. WIG1 $\beta = -.317$, WIG2 $\beta = .536$, WIG5 $\beta = .384$). The Cronbach's alpha for the remaining four items was .595.

"In class competency", which for Greco et al., was "skills for lessons", had two items that failed to load (I.e. ICC4 $\beta = .200$ and ICC5 $\beta = .458$) and the Cronbach's alpha was .675. "Stress Management" was similar to "in class competencies" with only two factors not loading sufficiently (i.e. SM1 $\beta = -.494$, and SM2 $\beta = .382$) and a Cronbach's alpha of .679. "Managing relationships with teachers" had three factors load poorly (MRT3 $\beta = -.245$, MRT4 $\beta = -.655$, MRT5 $\beta = .583$), and its Cronbach's alpha score was only .618. "Information retrieval" had two factors load improperly (i.e., IR3 $\beta = .486$ and IR5 $\beta = .557$) and a Cronbach's alpha of .7. "Planning academic activities" loaded well with only two questions having a poor loading (i.e., PAC3 $\beta = .453$ and PAC 7 $\beta = .205$) and a Cronbach's alpha score of .716. "Learning strategies" was the most aptly measured component with all but one factor loading properly (i.e., LS1 $\beta = .592$). Moreover, it had a Cronbach's alpha of .748. Taken together, 3 of the groups had a Cronbach alpha above .7 which was not sufficient to suggest that our questionnaire had consistently and accurately measured ASE (Tavakol & Dennick, 2011). As a result of the original questionnaire's poorly loading items and poor statistical significance, the questions were reassessed and altered.

Update to the Questions

The creation of an updated instrument began with first reexamining all items in the initial instrument to determine what changes might be made to improve overall fit and reliability while remaining true to the theoretical definitions of each construct and ASE (see table 2). Beginning with "working in groups", it was determined that whether the student creates study groups or not has no direct influence on how well they work in groups. Moreover, use of the word "regularly" was found to be ambiguous as students could have different perceptions for how often a behavior is needed to occur before it becomes regular. To avoid the confusion of the wording and the poor measurement of ASE the question was modified to "I don't regularly create study groups" (WIG IV 1, $\beta = -.317$), was changed to "I work well in group settings." Research supports this change as it notes that students who work better in groups have higher ASE (Aikens and Kulacki, 2023). Working well in groups also helps a student maintain consistency through peer support which can heighten ASE (Altermatt, 2019). Building off this changing of wording of WIG IV 1, the question "My study groups are efficient" (WIG2) was deleted because we were no longer measuring whether students created study groups, and working well in groups settings should capture if they have good study groups.

Research notes that students higher in ASE are more likely to share their information with others and help their peers (Poortviliet & Darnon, 2014). Thus, measuring a student's perceived ability to convey their knowledge and share their information remained important despite WIG5's (i.e., I can explain my point of view to other students) poor loading ($\beta = .384$). It was determined that the original wording of this question was too all encompassing. Being able to explain one's point of view to other students fails to clarify which of their points of views they are explaining. Students taking the questionnaire most likely all understood this question differently formulating unique scenarios of what point of view they were explaining (Abraham & Oppenheim, 1992). To

provide more clarity, the wording was altered to specify how comfortable the students feel stating their opinion as a proxy for ASE. Its alteration was, “I feel comfortable stating my opinions when I am working in a group.” This question provides more congruency across student answers. It also highlights a significant aspect of ASE which is confidence to state publicly one’s opinion (Yilmaz, 2016).

ICC IV 4 (i.e., “I can’t reprocess the essential points in a lecture”) had issues with its wording, which the poor factor loading highlighted (β = .200). “Reprocessing” is a loaded word. How each student interpreted it could vary. “Essential points” was also deemed to be vague. Clarifying what was meant by essential points by changing it to “key concepts” and providing support to provide more clarity as to what is being asked helps the students consistently answer the same question. To help create this cohesion the question wording was changed to “I remember key concepts of my professor's lectures (e.g., key words, theoretical concepts, e.g.).”

“When I notice that I have not been listening to my professor, I try to concentrate harder” (ICC5, β = .458) originally was determined to be priming respondents to reflect on past events when they lacked focus in class, and how they responded to that lack of focus. Though it may seem as though one concept was being measured, there were two. Losing focus and how well a student concentrates in class. As a result, the question was simplified to measure one clear concept (i.e., “I struggle to concentrate when my professor is talking,”) highlighting a student’s lack of attention in class which fits into either a task-avoidance or task-irrelevant behaviors which negatively impact ASE (Andres, 2020).

Since test anxiety is an indicator of the student's perceived belief in their ability to succeed when taking exams, which relates to a student’s ASE, measuring for it is important (Nie et al., 2011; Roick & Ringeisen, 2017). Unfortunately, the loading (β = -.494) on SM1 IV (i.e., “I don’t keep exam anxiety under control”) was below the desired mark, thus indicating the item was not an

apt measure of stress management. As an individual's ability to control anxiety is an apt aspect of stress management (Greco et al., 2022) it was determined the instrument should still include some measure of anxiety. Thus, to more accurately measure test anxiety the wording was changed to "When I feel "test anxiety", I can keep it under control."

Bandura suggests that self-regulatory skills are important measurements for self-efficacy in any domain (Bandura, 2006). Managing "debilitating intrusive thoughts" is a facet of a student's capacity to self-regulate, including in stressful situations (Vrugt & Langereis, 1997). Item SM2 (i.e., "I avoid getting discouraged when I fail an exam", $\beta = .382$) aimed to measure a student's capacity to deal with debilitating thoughts after a failed exam. Where the question fell short was in its lengthy wording which convoluted what it meant to capture. By simplifying the wording, when the student answers on a Likert-type scale, the item will more effectively measure to what degree they feel discouraged, if at all. To achieve this the wording was changed to "I can stay positive even if I do poorly on an exam."

Next, "I don't complete test study materials given to me by my professors" (PAC IV 3, $\beta = .453$) had two problems, the first being it assumes that professors are giving their students study test materials. The second assumption is when measuring for ASE, even if a student does not complete a professor's study material, it cannot be assumed they do not have alternative methods for studying. Instead, the question was altered to "when supplied, I complete study guides given to me by my professors."

Self-efficacy has an element of future projection that suggests when someone is higher in self-efficacy, they see the future as more manageable (Mazzetti, et al., 2020). Finding out if students had a good understanding of what job they wanted after school was thought to be predictive of confidence and belief. However, due to the question "I don't have a clear idea of

what job I want after I graduate" (PAC IV 7) having such a low loading of .205, the question was deleted.

Moving onto "managing relationships with teachers", MRT3 IV (i.e., "I don't attend my teacher's office hours") was next assessed. After further reflection, the notion that students who need help should attend their teacher's office hours to help clarify any gaps in their information so that they may do better on exams and assignments was deemed just. The poor performance of the item though led to a deeper investigation into what was being asked. As such, it was concluded that what is important to measure is if the student is comfortable going to their professor's office hours if they need help rather than them attending. Thus, the item was changed to "I will attend my teacher's office hours if I need help in a class." With the change in wording, the question became about the student's confidence in obtaining support from their professor which Affuso et al. (2017) and Liu et al. (2018) noted is correlated with ASE .

A student's relationship with their professors impacts ASE (Chen et al., 2021; Hughes & Chen, 2011), which is why the question "I don't find it easy to talk to my teacher outside of class" (MRT4 IV) was altered and not deleted. Because this section originally loaded poorly ($\beta = -.655$), significant changes were needed to better capture what it meant for a student to manage their relationships with professors. Instead of finding it easy to talk to them outside of the class, the wording was changed to, "I am willing to stay after class and talk to my teacher if I need help." The willingness to approach a professor after class for guidance is a helpful measurement of managing relationships with professors, as well as a student's perceived confidence.

In the sport management field internships make up a large portion of the students field experience (Schoepfer & Dodds, 2010). It is an industry where hands on experience is vital for opportunity. Graduating with a strong resume is important for students in obtaining a job. Since students have advising meetings with professor's, checking their degrees blackboard page has a

significant impact on opportunity obtainment. It highlights how proactive they are in their search for opportunities outside of the classroom. Measuring whether a student checks the website for opportunities could be an indicator of a proactive student and one seeking opportunity outside of the classroom and one who is more motivated and academically self-efficacious. Changing the wording of this question from "I regularly check the departmental blackboard page to get information about my degree" (IR3) to "I check the sport management blackboard page to learn about internship opportunities" was a better reflection of what was attempted to be measured.

Obtaining exam information is vital when figuring out what material a student should study and how they should study. If a student is competent at asking their professor the right question(s) before an exam, then they are getting information ahead of time that could help them study more efficiently and obtain higher scores on exams. This highlights a student's self-regulation which is correlated with higher levels of ASE (Fernadez-Rio et al., 2017). When students take their learning into their own hands, asking professors questions about the exams, then they are more likely to score higher on ASE and perform better in school (Duchatelet & Donche, 2019). The question "I can get information on exam formats ahead of time" (IR5, $\beta = .557$) failed to assess if a student was asking questions on the material the exam will covering. Instead, it measures if a student can find out if the exam will be multiple choice, short answer, essay, or a culmination of these. As such, to more accurately measure a student's ability to ask their professor's questions about the exam material, the wording of the question IR5 was changed to "I ask my professors about exams ahead of time."

Students who study efficiently score higher on their test and ASE (Putwain et al., 2013; Wernersbach et al., 2014). Study habits reflect the student's mastery skill of the ASE through filtering through good and poor study habits, keeping the effective ones, and discarding the ineffective ones. Gauging how the student feels on an exam related to their study habits can reveal

a lot about their perceived ability to study efficiently and test well. “During the exam I can convey what I have studied” (LS1, β = .592), could be measured through a variety of other sources, such as test scores or cumulative GPA, since the success of all variables are assessing the student’s recollection of classroom content, and thus the prescribed measure was deemed in accurate. To more effectively assess how a student perceives their study habits, the wording was changed to “I believe the methods I use to study help me perform well on exams.”

Factor Loading and Reliability of Second Questionnaire

After the instrument was revised, it was again distributed to sample of sport management students. After data was collected an EFA was again run to determine if the revised items more aptly measured the constructs, followed by an analysis of construct reliability (see table 3). “Working in groups” had three factors load poorly (i.e. WIG3, β = .494 ; WIG4A, β = .452; and WIG5B, β = 579). Which was the same number of factors that did not load in the original questionnaire. However, the Cronbach’s alpha improved to .700 thus indicating the measures to be reliable Interestingly, when examining “working in groups” WG1 (i.e., “I work well in groups”) a β of .729 was found. Other questions in this group that aimed to express the skills required to work well in groups loaded poorly (WIG5B, When working in a group, I can explain key concepts from class to other students, β = .581; WIG3, When I study in a group, I use good group study strategies (e.g., quiz each other, flashcards, share notes, etc., β = .491). These other questions were components of measuring how well a student works in a group but did not load properly compared to the general question of working well in a group (WG1).

“In class competencies” did not improve enough from the first to second instrument to become reliable. The same two factors did not load sufficiently (i.e., ICC3, β = .583; and ICC4, β = .521) and the resulting Cronbach’s alpha was .683. “Stress management” had all its factor’s load properly, but the resulting Cronbach’s alpha was only .675, indicating an unreliable measure.

"Planning academic activities" was similar to "in class competencies" in that despite each factor loading properly, its Cronbach's alpha score was .679. "Managing relationship with teachers" saw only MRT4A (β = .373) load poorly. However, even with the other factors loading sufficiently, MRT's Cronbach's alpha score was only .661. "Information retrieval" had three factors that did not load properly (i.e. IR3, β = .229; IR4, β = .556; IR5, β = -.109). Its Cronbach's alpha score was the worst of all the other groups at .651. "Learning strategies" had the highest Cronbach alpha score of all the groups (β = .837). It had only one factor that did not load (i.e. LS1, β = .449).

Altogether, even though some of the measurements improved after the administration of the second questionnaire the data showed that the instrument was insufficient in measuring ASE. More specifically, only "working in groups" and "learning strategies" were found to be reliable measures, with all other variables being deemed inconsistent and inaccurate. As such, the current study could not conclude a reliable effectively measurement of ASE in sport management.

Hypothesis

Based on the findings of only two aptly measured components of ASE, all the hypotheses were altered. These components were Working in Groups and Learning Strategies. Each hypothesis was tested with these two components and none other.

H1: There will be a significant relationship between high academic achievement and a student's ASE, found both Working in Groups (r = -.034, α = .733), and Learning Strategies (r = .067, α = .502) to be insignificant, so the hypothesis was rejected.

H2: There will be a significant difference in ASE among male and female students. There was no significant relationship found for Working in Groups ($F(1,99)$ = .049, α = .825), and for Learning Strategies ($F(1,99)$ = .772, α = .279) therefor the hypothesis was rejected.

H3: : There will be a significant difference in ASE scores based on a student's year in school— tested whether working in groups and learning strategies varied significantly by year in

school. In testing H1 regarding working in groups, no significant differences were found and thus the hypothesis was rejected ($F(1,99) = .379,\ \alpha = .768$). Similarly, H1 learning strategies was also rejected ($F(1,99) = .258,\ \alpha = .855$).

These results were contradictory to previous literature which found differences across the three hypotheses.

Chapter 5: Discussion

The purpose of this study was to measure differences across gender and year in school among undergraduate sport management students. To measure ASE, we examined how past scholars have applied the theory of SE to various academic programs and created an instrument based on past research by Greco et al. (2022). The instrument sought to measure six components of ASE labeled "Working in Groups," "In-class Competencies," "Stress Management," "Planning Academic Activities," "Managing Relationships with Professors," and "Learning Strategies." Analysis of the initial survey showed that only three of the seven components ("Information Retrieval" $\alpha = .759$, "Learning Strategies" $\alpha = .847$, and "Planning Academic Activities " $\alpha = .716$) of ASE were consistently measured and that numerous items did not load onto their ascribed construct.

As a result, the instrument was modified and administered to a second group of sport management students. While analysis of the second instrument did result in a more apt measure of the components of ASE, four of the six items were still lacking in reliability. Thus, the question arises as to why past valid and reliable instruments were invalid and unreliable for the current study. Since the questionnaire was adopted from another questionnaire that measured a general population of undergraduate students at an Italian University, two conclusions were made. When creating an ASE questionnaire, (1) the program of study and (2) the culture of the population being sampled should be considered when in the questionnaire design phase. Questionnaire design would benefit from defining what skills and assessment make sport management a unique field of study.

Across Field of Study

Previous research on ASE questionnaire design supported the notion that ASE is "domain specific" and questionnaires should be reflective of that (Artino Jr, 2012; Bandura, 2006). This raises the question of how the degree being sought impacts the scale's reliability. Some questions

were universal across domains such as student's ability to overcome exam anxiety (Bulfone et al., 2019; Greco et al., 2022; Lian et al., 2014), student's confidence in their ability to participate in the classroom (Loo & Choy, 2013; Shaufeli et al., 2002), and a student's ability to study sufficiently for exams (Byrne et al., 2014). Looking at the previous literature, and similar questions as ours, the administration of ASE questionnaires is dominated by the science, technology, engineering, and mathematics (i.e., STEM) fields. In particular, nursing, physics, and engineering majors have been widely researched (Bottomley et al., 2023; Bulfone et al., 2021; Cwik, & Singh, 2022; Ersoy & Ayaz-Alkaya, 2024; Mamaril et al., 2016). ASE questionnaires in these degrees asked questions unique to the student's curriculum. To better understand uniqueness in questionnaire design, reviewing other questionnaires offers a clearer conception of how to approach sport management as a unique field of study.

Nursing Students

Through the examination of ASE questionnaires for nursing programs, insight into how differences across fields can impact reliability is observed. A study conducted on nursing students at a large Italian university using similar questions had larger factor loadings and overall Cronbach's alpha of .84 for measures of ASE (Bulfone et al., 2019). An examination of the items within the instrument reveals Bulfone et al. (2019) sought to measure ASE in a similar manner as the current study. This becomes more evident when examining items that are similar on both the current study's and Bulfone et al.'s (2019) scale. For example, Bulfone et al. (2019) used the item "Keeping calm during an exam" which had a factor loading of .868. Comparing this to the current study that used the item, "When I feel "test anxiety", I can keep it under control" the factor loading was only .673. Though the wording is slightly different with the specification of anxiety, overall, the same construct is arguably being measured. This suggests the difference in subject material the

students are being tested on, the level of confidence of the students, and the perceived capability of the students across the two fields may be different.

As such, it becomes important to investigate the potential differences between the fields of study to determine if said differences might be affecting the measurement of ASE. That is, in highlighting the differences of domain related tasks, one interesting distinction between sport management students and nursing students is the difference in questions that are asked of each. Nursing programs ask questions related to judgements or mistakes made in class (i.e., “dominating shame when your frailties have been highlighted in front of the class" $\beta = .839$,). Perhaps there are differences in the personalities of students in these unique fields that lead nursing students to feel a higher sense of shame than sport management students. It could also be that a sense of shame is a driving factor for academic motivation through avoidance. Future studies could examine how shame influences ASE. There are also gender differences across these two fields, with nursing being female-dominant and sport management being male-dominant. As past research has suggested that ASE might be gender specific (Bottomley et al., 2023; Cwik & Singh, 2022; Kalender et al., 2020), these differences in populations might have resulted in the variance in responses from nursing to sport management students. Creating an ASE questionnaire that is aware of these differences in the populations being examined could lead to better results.

Physics and Engineering Students

Much like nursing majors, physics and engineering students are a part of the STEM field. Unlike sport management, mathematics makes up a significant part of students’ course load in the STEM field, which influences questionnaire design for ASE. In a study conducted by Lian et al. (2014) – whose population was of Taiwanese physics students – there were questions specific to physics courses. Although there were similarities in items asked, much like with the items used for nursing students (i.e., test anxiety), generally physics students are required to take courses on

thermodynamics and quantum mechanics which cannot be assessed in an ASE questionnaire designed for nursing or sport management students. It, thus, requires a unique set of constructs to measure physics student's ASE given the differing course work. In Lian et al.'s (2014) questionnaire, one aspect they measured was "practical work" such as a student's comfortability with lab equipment (i.e., Practical Work 2: I know how to use equipment in the physics laboratory $\beta = .78$), analyzing data (i.e., Practical Work 3: I can interpret data during the laboratory sessions $\beta = .76$), and collecting data (i.e., Practical Work 5: I know how to collect data during the physics laboratory $\beta = .61$). Among engineering students, who were also required to take numerous math intensive courses, Loo and Choy's (2013) questionnaire addressed items related to student's adeptness with math (i.e., item 3: In math classes, I rarely get the answers before my classmates do; Item 10: I have always had a natural talent for math). The fact that the current study's instrument was adopted from a study of the general academic population, it did not include enough academic domain specification, which might have resulted in the difference in our results from past research. That is, the sport management field represents a unique curriculum and skill set that might require a more unique questionnaire rather than broad scoping items such as those from Greco et al. (2022) which the current study was modeled after. Given the analysis of the current instrument, it can be concluded that study's adaptation of Greco et al.'s (2022) ASE measures failed to properly account for all that makes sport management a unique field of study. Future research should thus assess sport management as a whole when developing a unique questionnaire based on the academic skills that sport management aims to cultivate from their students.

English as a Second Language

Zheng et al. (2017) expanded on this difference in self-efficacy measurements with their population of students which are learning English at a Chinese university. Similar to the universal approach to measuring ASE, Zheng et al. (2017) had sections related to "mastery experience,"

"physical state," and "modeling experience from others." Some of their questions were in line with the general measurements of ASE used in the current study and applicable across domains, such as "Just being in English class makes me feel stressed and nervous," or "I do well on English assignments." What stands out is how learning a language requires different assessment. When learning a new language, academic performance is measured by the student's capacity to speak, read, write, and listen to the new language. Zheng et al. (2017) found that social persuasion was the most statistically significant factor in positive influence of ASE. Unlike most STEM degrees, engaging in verbal communication with others is how one develops their ASE. Sport management, which implies leadership skills, and the management of others, also requires a significant amount of social interaction, and social persuasion unlike physics or engineering which measures academic success based on a student's capacity to solve mathematical problems. Questionnaire design for sport management students should acknowledge what aspects of social interaction students are being assessed on and encounter throughout their degree. However, it is not only the degree being studied that should be assessed but the culture as well.

Cultural Differences

Italian Students

It has already been addressed how difference in degree can have an impact of the measuring of ASE, but another hypothesis as to why the current study's instrument was not found to be a reliable measure of ASE stems from the differences across cultures. This hypothesis is in line with Gebauer et al.'s (2021) findings that culture influences how a person identifies themself and, in turn, influences their perception of ASE. Thus, though our questionnaire was adapted from Greco et al. (2022), the cultural difference of the populations used in the two studies could have been reflected in the variance in factor loadings and reliability of the instrument. Often, our questions adopted from Greco et al. (2022) loaded worse on our questionnaire than on theirs. For

example, our question for PAC5 from the original questionnaire "I don't keep exam anxiety under control," (β = .697) which was the altered version of Greco et al.'s questionnaire item 29 "keep exam anxiety under control," (β = .870). This change in loading could be because of the inverted wording of the question, but another similar item such as ICC3 "I take useful notes in class" (β = .578), also loaded worse than the Greco et al.'s items "take clear, useful notes in class," (β = .700). A review of the population in Greco et al.'s study reveals that participants were students from 24 different Italian universities. Italian universities arguably have a different culture and approach to academics than U.S. universities. Their students, teaching methodology, and academic curriculum may all vary from the institution used in the current student, therefore, measuring the same components may be insufficient to account for these variances. This difference could be why their questions loaded better for Greco et al.'s instrument than ours. More specifically, their questions were more appropriate for the culture of Italian universities and less so for American universities.

Filipino Students

Looking at another culturally different population, Dullas (2018) examined Filipino high school students. While the four categories this study used were labeled differently than the current study (i.e., perceived control, competence, persistence, and self-regulated learning) an examination of items comprising each construct reveals there is a degree of overlap between Dullas's scale and the two instruments tested in the current study. For example, Dullas's item 16 stated "During exams, I do not feel anxious because I know I can pass the test with high marks". This item is akin to stress management item 1 ("I don't keep exam anxiety under control) and stress management item 4 ("I remain calm when facing difficult situations at school, because I can rely on my academic abilities") on the current study's round one instrument and stress management item one ("When I feel "test anxiety" I can keep it under control) and stress management item five (I can rely on my academic abilities when faced with a difficult academic situation) on the round two

instrument. Regardless of the similarities, though, round one and two items in the current study did not produce reliable results, while Dullas's study did. An in-depth review of each item reveals a similar trend, thus resulting in questions about the applicability of Dullas's instrument to other contexts.

More specifically, just as Greco et al.'s (2022) instrument and results might not be generalizable to university in the U.S. given the cultural differences between the populations, Dullas's (2018) instrument might also struggle to be generalized to other populations. More specifically, there are undoubtfully cultural differences between Filipino and U.S. students. Given that the level of education also varied between studies (i.e., junior high school students in Dullas's study versus undergraduate students in the current study) the variance in populations may have caused similar items to vary in their loading and reliability.

Implications

From the results it was concluded that the uniqueness of sport management students should be assessed when designing an ASE questionnaire. This finding is conclusive with previous questionnaire's in physics, nursing, and foreign languages (Huang, 2013; Mahyuddin et al., 2006; Pajares, 1996). Though all three had similar general questions (i.e., test anxiety, knowledge of subject, etc.), they too had unique questions related to the population being assessed. This uniqueness was derived from the culture of the students and the field of study. Sport management as its own unique field of study would be no different.

A culturally significant factor is the large portion of sport management students who are, or once were, athletes. Of the two samples measured in this study, both had a student athlete population that accounted for more than 20% of responses. Student-athletes grapple with differing challenges than non-student athletes such as traveling during season and missing class. In the field of sport this could cultivate a student population that prefers flexibility that other programs cannot

offer. Questions that could assess this difference should ask students to judge their competence on time management, corridination with professor when they have to miss a class for travel, and if their athletic program requires mandatory study hours. Further exploration of differences in academic experience between student-athletes and non-student-athletes could be insightful in assessing the cultural affect that sport management students have in relation to ASE questionnaires.

Another cultural aspect of athletes in education is relationship between former athletes and their approach to education. Even though assessing whether participants were former athletes was not measured in either questionnaire, most students in sport management were at some point competitive athletes. Since most students played youth sports that are predominantly team centered (i.e., football, basketball, soccer), former athletes have experience developing their teamwork skills. Knowing that mastery experience has been found to be the most influential component of ASE, future research on sport management students could expand on the working in groups component. Considering it was a reliable and valid component in the second questionnaire, this could reflect athletes early introduction to working in teams, and its impact on their confidence when working together as groups. Future questionnaire design could explore this relationship between working in groups and ASE for sport management students.

An examination of sport mananegment curriculum would be also be beneficial for future questionnaire design. Unlike STEM degrees, sport management as a degree is much more social. In many introductory courses, the importance of networking is established early, and reinforced as an integral aspect of having a career in sport. Aspects of networking involve social skills such as reaching out and communicating with others, as well as building and maintaining relationships.

It is also worth noting that sport management careers involve a high level of social competence. Career pathways such as Athletic directors, facility management, and agents all

require the ability to communicate and coordinate with a large and diverse group of departments. An aspect of each of these careers also involves negotiation. Whether it is a departments budget, the ability to host an event, or haggling over contracts, success in these careers requires social competence. This communication aspect of sport management is important in understanding how ASE impacts sport management students. As found in the STEM field, the majority of students in this sample were male. Previous literature found that males on average have higher ASE scores in STEM, where as degrees in language and writing, females had higher average ASE scores. Since this questionnaire failed to measure a students perceived level of competence of networking, its underlying aspects, and their ability to communicate effectively, further understanding of the social nature of the sport management students could help improve questionnaire reliability and validity.

This questionnaires sample also had limitations which may have impacted the results. The sample included students with degrees other than sport management. Although the Greco et al., (2022) questionnaire was designed to assess general ASE, the researchers adaptation altered it in a way that was more specific to sport management majors. Knowing that ASE questionnaires are specific to the population being assessed, having students with multiple majors take a sport management ASE questionnaire could have altered the results. Also, non-sport-management students were included due to the small sample size. If the sample size were increased, the need for non-sport management majors would be eliminated. To improve upon this aspect of the findings, future research could expand the sample size to other sport management programs. This will increase the amount of students majoring in sport management, and will provide a more accurate assessement of sport management students' ASE.

Since measurements of ASE are unique to their population, research on sport management students' ASE should build a questionnaire that is specific to the students, their culture, and the

degrees curriculum. Aspects of sport management students include taking into account the impact that an above average number of student-athletes has on students approach to academia, and their ability to work in groups. Sport management is also a largely social degree. Knowing that there are gender differences depending on the ASE skill being assessed (i.e., writing, speaking, mathematics), questionnaire design should include a component that measures students social competence in an academic setting. These specific aspects of sport management should be assessed for future questionnaire design.

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Table 1

Original questionnaire reliability and validity

Mean (μ), standard deviation (S.D), factor loadings (β) and Cronbach alphas (α) for observed variables

Factor and Item	μ (S.D.)	β	α
Working in Groups			.595
WIG1 I don't regularly create study groups.	2.69 (1.57)	-.317	
WIG2 My study groups are efficient.	3.97 (1.32)	.536	
WIG3 I use good group study strategies (quiz each other, etc).	3.69 (1.48)	.636	
WIG4 I work productively in groups by defining our specific goals.	4.58 (1.08)	.690	
WIG5 I can explain my point of view to other students	4.96 (.927)	.384	
WIG6 I work well with other students in my class	5.25 (.864)	.610	
WIG7 When other students are confused, I help them understand the classroom material.	4.11 (1.36)	.653	
In Class Competencies			.675
ICC1 I can stay focused in class even when it is noisy.	3.83 (1.53)	.798	
ICC2 I can stay focused in class even when it is crowded.	4.26 (1.34)	.810	
ICC3 I Take useful notes in class.	4.25 (1.23)	.656	
ICC4 I can't reprocess the essential points in a lecture.	3.92 (1.34)	.200	
ICC5 When I notice that I have not be listening to my professor, I try to concentrate harder.	4.57 (1.27)	.458	
Stress Management			.679
SM1 I don't keep exam anxiety under control.	3.91 (1.45)	-.494	
SM2 I avoid getting discouraged when I fail an exam.	3.78 (1.47)	.382	

SM3 I know how to handle unforeseen situations.	4.44 (1.09)	.758	
SM4 I remain calm when facing difficult situations at school, because I can rely on my academic abilities.	4.45 (1.15)	.758	
SM5 I can rely on my academic abilities when faced with a difficult academic situation.	4.56 (.985)	.694	
Planning Academic Activities			.716
PAC1 I create a schedule to keep track of my academic work.	4.17 (1.53)	.610	
PAC2 I follow my academic work schedule.	4.69 (1.18)	.778	
PAC3 I don't complete test study materials given to me by my professors (e.g., study guides).	4.56 (1.46)	.453	
PAC4 I complete assignments on time.	5.26 (.972)	.645	
PAC5 I keep up continuous study habits throughout the school year.	4.14 (1.24)	.639	
PAC6 I don't organize my time efficiently to help complete assignments.	3.95 (1.42)	.713	
PAC7 I don't have a clear idea of what job I want after I graduate.	3.58 (1.77)	.205	
Managing Relationships with Teachers			.618
MRT1 I raise my hand to ask the professor to explain parts of the lesson that I don't understand.	3.65 (1.65)	.745	
MRT2 I participate actively in in–class discussion.	4.24 (1.41)	.732	
MRT3 I don't attend my teacher's office hours.	2.78 (1.55)	-.245	
MRT4 I don't find it easy to talk to my teacher outside of class.	4.36 (1.37)	-.655	
MRT5 I email my professor if I have questions about the course.	4.68 (1.43)	.583	
Information Retrieval			.700
IR1 I know how to obtain the information I need	4.83 (1.20)	.723	

about university administrative offices (opening time, how to contact them).			
IR2 I know how to obtain information from the university website.	4.94 (1.08)	.762	
IR3 I regularly check the departmental blackboard page to get information about my degree.	3.61 (1.63)	.477	
IR4 I know how to access the course requirements of my degree.	5.06 (1.06)	.739	
IR5 I can get information on exam formats ahead of time.	3.92 (1.27)	.541	
Learning Strategies			.748
LS1 During the exam I can convey what I have studied.	4.45 (1.05)	.592	
LS2 I can demonstrate my knowledge in assignments.	4.93 (.893)	.662	
LS3 I know the definitions of basic sport management concepts.	4.61 (1.04)	.706	
LS4 I understand the basic skills required to work in sport management.	4.96 (1.06)	.754	
LS5 I can apply basic theory to the field of sport management.	4.72 (1.04)	.764	
LS6 I learn about sport management by gaining experience through working in sport management related fields.	4.55 (1.47)	.625	

Table 2

List of original and revised questionnaire questions

Original Question	Revised Question
Working in Groups	
WIG1 I don't regularly create study groups.	I work well in groups.
WIG2 My study groups are efficient.	Deleted.
WIG3 I use good group study strategies, (quiz each other, etc.).	When I study in a group, I use good group study strategies (e.g., quiz each other, flashcards, share notes, etc.).
WIG4 I work productively in groups by defining our specific goals.	When I study in a group, I set clear study goals before we begin.
WIG5A I can explain my point of view to other students.	I feel comfortable stating my opinions when I am working in a group.
WIG5B I can explain my point of view to other students.	When working in a group, I can explain key concepts from class to other students.
In Class Competencies	
ICC4 I can't reprocess the essential points in a lecture.	I remember key concepts from my professors' Lectures.
ICC5 When I notice that I have not be listening to my professor, I try to concentrate harder.	When I find my mind wandering in class, I am able to refocus on the lecture.
Stress Management	
SM1 I don't keep exam anxiety under control.	When I feel "test anxiety", I can keep it under control.
SM2 I avoid getting Discouraged when I fail an exam.	I can stay positive even if I do poorly on an exam.
SM4 I remain calm when facing difficult situations at school because I can rely on my academic abilities.	I remain calm when facing difficult situations at school.
Planning Academic Activities	

PAC3 I don't complete test study materials Given to me by my professors (e.g., study guides).	When supplied, I complete study guides given to me by my professors.
PAC6 I don't organize my time efficiently to help complete assignments.	I organize my time efficiently to help complete assignments on time.
PAC7 I don't have a clear idea of what job I want after I graduate.	Deleted.
Managing Relationships with Teachers	
MRT1 I raise my hand to ask the professor to explain parts of the lesson I don't understand.	I am not afraid to ask my teacher questions in class if I don't understand part of the lesson
MRT3 I don't attend my teacher's office hours.	I will attend my teacher's office hours if I need help in a class.
MRT4A I don't find it easy to talk to my Teacher outside of class	I find it hard to talk to my teacher outside of class.
Information Retrieval	
IR3 I regularly check the departmental Blackboard page to get information About my degree.	I check the sport management blackboard page to learn about internship opportunities.
IR5 I can get information on exam formats ahead of time.	I ask my professors questions about exams ahead of time
Learning Strategies	
LS1 During the exam I can convey what I have studied.	I believe the methods I use to study help me perform well on exams.
LS2 I can demonstrate my knowledge in assignments.	I can demonstrate my knowledge of sport management concepts on assignments

Table 3

Revised questionnaire reliability and validity

Mean (μ), standard deviation (S.D), factor loadings (β) and Cronbach alphas (α) for observed variables.

Italicized questions represent original questionnaire question.

Factor and Item	μ (S.D.)	β	α
Working in Groups			.700
WIG1 I work well in groups.	4.78 (1.03)	.729	
I don't regularly create study groups.			
WIG3 When I study in a group, I use good group study strategies (e.g., quiz each other, flashcards, share notes, etc.).	3.91 (1.28)	.494	
I use good group study strategies (quiz each other, etc.).			
WIG4 When I study in a group, I set clear study goals before we begin.	3.47 (1.36)	.542	
I work productively in groups by defining our specific goals.			
WIG5A I feel comfortable stating my opinions when I am working in a group.	4.68 (.992)	.646	
I can explain my point of view to other students.			
WIG5B When working in a group, I can explain key concepts from class to other students.	4.53 (.937)	.579	
WIG6 I work well with other students in my class.	4.97 (.965)	.677	
WIG7 When other students are confused, I help them understand the classroom material.	4.32 (1.17)	.680	
In Class Competencies			.694
ICC1 I can stay focused in class even when it is noisy.	3.33 (1.37)	.639	

ICC2 I can stay focused in class even when it is crowded.	3.78 (1.28)	.709	
ICC3 I Take useful notes in class.	4.21 (1.33)	.583	
ICC4 I remember key concepts from my professors' Lectures.	4.33 (.922)	.521	
I can't reprocess the essential points in a lecture.			
ICC5 When I find my mind wandering in class, I am able to refocus on the lecture.	3.54 (1.33)	.681	
When I notice that I have not be listening to my professor, I try to concentrate harder.			
Stress Management			.664
SM1 When I feel "test anxiety", I can keep it under control.	3.87 (1.36)	.673	
I don't keep exam anxiety under control.			
SM2 I can stay positive even if I do poorly on an exam.	3.99 (1.38)	.618	
I avoid getting discouraged when I fail an exam.			
SM3 I know how to handle unforeseen situations.	4.40 (.932)	.649	
SM4 I remain calm when facing difficult situations. at school.	4.47 (.968)	.750	
I remain calm when facing difficult situations at school, because I can rely on my academic abilities.			
SM5 I can rely on my academic abilities when faced with a difficult academic situation.	4.32 (1.06)	.611	
Planning Academic Activities			.653
PAC1 I create a schedule to keep track of my academic work.	4.23 (1.54)	.596	
PAC3 When supplied, I complete study guides given to me by my professor.	4.61 (1.20)	.595	
I don't complete test study materials given to me by my professors (e.g., study guides).			

PAC4 I complete assignments on time.	5.27 (.962)	.702	
PAC5 I keep up continuous study habits throughout the school year.	3.93 (1.12)	.585	
PAC6 I organize my time efficiently to help complete assignments on time. *I don't organize my time efficiently to help complete assignments.*	4.48 (1.20)	.853	
PAC7 I don't have a clear idea of what job I want after I graduate.	3.58 (1.77)	.205	
Managing Relationships with Teachers			.660
MRT1 I am not afraid to ask my teacher questions in class if I don't understand part of a lesson. *I raise my hand to ask the professor to explain parts of the lesson that I don't understand.*	3.93 (1.46)	.672	
MRT3 I will attend my teacher's office hours if I need help in a class. *I don't attend my teacher's office hours.*	3.46 (1.56)	.714	
MRT4 I am willing to stay after class and talk to my teacher if I need help.	4.55 (1.25)	.774	
MRT4A I find it hard to talk to my teacher outside of class. *I don't find it easy to talk to my teacher outside of class.*	3.94 (1.41)	.373	
MRT5 I email my professor if I have questions about the course.	4.94 (1.13)	.608	
Information Retrieval			.651
IR1 I know how to obtain the information I need about university administrative offices (opening time, how to contact them, etc.).	4.95 (1.12)	.807	
IR2 I know how to obtain information from the university website.	4.85 (1.09)	.876	
IR3 I check the sport management blackboard	3.32 (1.75)	.229	

page to learn about internship opportunities. *I regularly check the departmental blackboard page to get information about my degree.*			
IR4 I know how to access the course requirements of my degree.	5.20 (.964)	.556	
IR5 I ask my professors questions about exams ahead of time. *I can get information on exam formats ahead of time.*	3.64 (1.35)	-.109	
Learning Strategies			.837
LS1 I believe the methods I use to study help me perform well on exams. *During the exam I can convey what I have studied.*	4.14 (1.05)	.449	
LS2 I can demonstrate my knowledge of sport management concepts on assignments. *I can demonstrate my knowledge in assignments.*	4.71 (.956)	.791	
LS3 I know the definitions of basic sport management concepts.	4.76 (1.05)	.843	
LS4 I understand the basic skills required to work in sport management.	5.10 (.902)	.856	
LS5 I can apply basic theory to the field of sport management.	4.62 (1.01)	.791	

Appendix A

INSTITUTIONAL REVIEW BOARD
OFFICE OF RESEARCH INTEGRITY

DATE:	February 1, 2024
TO:	Jarid Morton, M.S.
FROM:	Western Kentucky University (WKU) IRB
PROJECT TITLE:	[2157128-1] CHANGE IN ACADEMIC SELF-EFFICACY ACROSS GENDER AND YEAR IN SCHOOL FOR UNDERGRADUATE SPORT MANAGEMENT STUDENTS
REFERENCE #:	IRB# 24-187
SUBMISSION TYPE:	New Project
ACTION:	APPROVED
APPROVAL DATE:	February 1, 2024
REVIEW TYPE:	Exempt Review

Thank you for your submission of New Project materials for this project. The Western Kentucky University (WKU) IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Exempt Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding followed by an *implied* consent form. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. Please use the appropriate reporting forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

This project has been determined to be a MINIMAL RISK project.

Please note that all research records must be retained for a minimum of three years after the completion of the project.

If you have any questions, please contact Robin Pyles at (270) 745-3360 or Robin.Pyles@wku.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Western Kentucky University (WKU) IRB's records.

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