SELF-PERCEPTION OF COMMUNICATION, LEADERSHIP AND CRITICAL THINKING SKILLS OF FIRST AND FOURTH YEAR VETERINARY STUDENTS

By

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(Under the direction of Dennis Duncan)

Abstract

Veterinary students are taught technical skills, but less emphasis is placed on soft skills (communication, leadership, teamwork, etc.) in veterinary school. This study evaluated first and fourth year veterinary students' self-perceived importance and competence in communication, leadership and critical thinking skills. All first and fourth year veterinary students at the University of Georgia were contacted via email to participate in the survey. The researcher developed the communication and leadership constructs and used the EMI: Critical Thinking Disposition Assessment (Irani, et al., 2007). Responses were analyzed in SPSS and mean weighted discrepancy scores (MWDS) were calculated in Excel. Based on MWDS, first and fourth year students agreed their highest needs were communicating with owners, controlling their anxiety in stressful situations while maintaining their composure and focus, and being able to explain things in a

clear and precise manner. Veterinary students should have a required communication course to improve these soft skills.

Index Words: Veterinary student, Veterinary students, Vet students, Veterinarian, Vet, College of veterinary medicine, Veterinary school, Vet school, Communication importance, Leadership importance, Critical thinking importance, Communication competence, Leadership competence, Critical thinking competence, Communication, Leadership, Critical thinking, Self-perception, Self-efficacy, Soft skills

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DEDICATION

This thesis is dedicated to God, my family, friends and advisors who helped make it possible.

To God Almighty, for carrying me through this process when I did not have the strength to walk alone and for putting people in my path to guide me along this journey.

To my parents, Robbin and Margaret Waldeck, who have never held me back from pursuing any dream I ever had and who have pushed me to be all I can be.

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CHAPTER 1

The purpose of this study was to identify the self-perception of social cognitive, or "soft skills," of first and fourth year University of Georgia veterinary students. "Soft skills are general skills that can transfer across the job spectrum," (Windels, Mallia & Broyles, 2013, p. 17). "Soft skills are the interpersonal, behavioral or people skills that can help apply hard skills in the workplace," (Windels et al. 2013, p. 17).

Based on the mean weighted discrepancy scores, first and fourth year students agreed these were their highest needs communicating with owners, controlling their anxiety in stressful situations while maintaining their composure and focus, and being able to explain things in a clear and precise manner. Students expressed that they have a need in these areas, therefore the researcher believes making a communication/leadership course a requirement would help to address these needs.

Background Information on Colleges of Veterinary Medicine

Iowa State University established the first public college of veterinary medicine in 1879 (Iowa State University, 2015). Iowa State also became the first university with a four-year veterinary medicine curriculum in 1903 (Iowa State University, 2014a). "Since Iowa State's earliest days as a land grant institution, veterinary medicine has been included in the program of study because of its

value in serving animal health and food safety needs in our society," (Iowa State University, 2014a). Iowa State saw a need in society to care for animal health and food safety and decided to do something about it by first creating veterinary courses, founding a college of veterinary medicine and creating curriculum for a four-year veterinary program.

According to the Association of American Veterinary Medical Colleges (AAVMC), the U.S. has 30 colleges or schools of veterinary medicine that are accredited or have accreditation pending. The universities are listed in alphabetical order:

Table 1.1

Colleges or Schools of Veterinary Medicine

Auburn University (Alabama)	North Carolina State University	University of Georgia
Colorado State University	The Ohio State University	University of Florida
Cornell University (New York)	Oklahoma State University	University of Minnesota
Iowa State University	Oregon State University	University of Missouri
Kansas State University	Purdue University (Indiana)	University of Pennsylvania
Lincoln Memorial University (Tennessee)	Texas A&M University	University of Tennessee
Louisiana State University	Tufts University (Massachusetts)	University of Wisconsin
Michigan State University	Tuskegee University (Alabama)	Virginia-Maryland Regional College of Veterinary Medicine (Virginia)
Midwestern University (Arizona)	University of Illinois at Urbana-Champaign	Washington State University
Mississippi State University	University of California – Davis	Western University of Health Sciences (California)

All of these schools or colleges are members of the AAVMC.

Each year the U.S. colleges of veterinary medicine graduate about 2,900 students (AAVMC, 2015a). Using 2,900 graduates per year as a basis and a four-year plan of study, this allows for an estimation of 11,600 students in colleges of veterinary medicine in the United States. The AAVMC website says about 42 percent of those who apply to veterinary medical school will attend (2015a).

Eighty percent of the veterinary universities and colleges are housed within land grant universities. “The original mission of these institutions, as set forth in the first Morrill Act, was to teach agriculture, military tactics, and the mechanic arts as well as classical studies so members of the working classes could obtain a liberal practical education,” (The Land Grant Tradition, 2012, p. 1). Land grant universities set out to provide a practical education for everyone.

The land grant system idea started in 1857 with the first Morrill Act, which took two years to pass through Congress only to be vetoed by President Buchanan. The Morrill Act of 1862 sought to provide access to higher education to more people and give them information they could use in their daily lives. The Morrill Act was able to pass after the Southern states seceded and after adding military tactics to the things taught at the land grants. In 1887, the Hatch Act created experimental research stations, so that research could be done near and brought to the people. The second Morrill Act was in 1890 to create separate land grants for African Americans as well as give the Southern states land grants. Cooperative Extension was created in 1914 with the Smith-Lever Act. In

1994, Native American colleges and universities were given land grants status. These colleges and universities focus more on high school completion, basic remediation, job training, college prep classes, and adult education programs (The Land Grant Tradition, 2012). The 1994 Land Grants help provide the needed resources for Native Americans. They also provide places for pubic libraries, public meeting places and tribal archives.

Land grant institutions have continued to introduce new curriculum and majors into their fabric, but agriculture remains an important component. These institutions continue to provide a practical education for as many students as possible. These two core beliefs, agriculture and providing a practical education, could explain why many colleges of veterinary medicine are housed within land grant institutions.

With a clearer picture of the land grant system, next is to understand what students major in so they are prepared for veterinary school as well as the curriculum that is taught at specific universities. No certain major is required for veterinary school. Many admission websites indicate as long as the prerequisites are met students can major in anything. Popular majors for pre-veterinary students include animal science, biology, agricultural biotechnology, etc. After graduating with a Bachelor's degree, students are in veterinary school for four more years before graduation.

Most veterinary schools focus primarily on small animal (cats and dogs) and large animal (cattle and horses). Some schools offer courses in exotic,

wildlife, zoo and marine animals, but these areas have fewer course options than small and large animals.

The University of Georgia curriculum is set up by students having classroom instruction their first and second year (University of Georgia, 2015a). The first semester and first eight week of their second semester during their third year are in the classroom as well (University of Georgia, 2015a). After those eight weeks, students begin their clinical rotations. These rotations continue through their fourth year (University of Georgia, 2015a). Students have approximately 32 rotations, which last for two or three weeks (University of Georgia, 2015a). These rotations will be in varying locations; some rotations will be at the veterinary school while others can be across the country (University of Georgia, 2015a).

An example of a non land grant university college of veterinary medicine curriculum is the University of Pennsylvania. The first three years are classroom instruction and the fourth year is 25 rotations. Students are able to choose electives every quarter of the third year. The University of Pennsylvania does not require a communication or leadership course, and one is not listed as an elective course on their website (University of Pennsylvania, 2015).

Iowa State University requires a one credit hour communication/leadership class during the fall semester of veterinary student's third year (Iowa State University, 2014b). Auburn University in Alabama does not require a communication or leadership course (Auburn University, 2015).

In June 2014, before the pilot study or study were sent out to students, the University of Georgia had 114 first year students and 102 fourth year students. At this time, the University of Georgia College of Veterinary Medicine does not require students to take a communication course for admission into the college or while in the college and pursuing their degree. A communications course is offered as an elective.

Veterinary students are taught the technical skills they need so that they can effectively treat animals upon graduation, but studies reveal that is only one component of the job description. Veterinary students are also going to need to be able to think critically about how to solve a problem, communicate with clients and lead others in their practice as well as their community. “Most students and graduates agree that communication skills training is essential for a successful transition to practice, however many have reported inadequate instruction during their education,” (Meehan & Menniti, 2014, p.1). The technical skills are important, but are the soft skills pushed too much to the side? This study was done so that veterinary students at the University of Georgia could be surveyed to see if the soft skills are receiving enough attention.

Definition of Terms

- *Association of American Veterinary Medical Colleges (AAVMC)* – The AAVMC mission statement states that “AAVMC provides leadership for and promotes excellence in academic veterinary medicine to prepare the veterinary workforce with the scientific knowledge and skills required to

meet societal needs through the protection of animal health, the relief of animal suffering, the conservation of animal resources, the promotion of public health, and the advancement of medical knowledge," (AAVMC, 2015b).

- *Communication competence* – "Adequate ability to pass along or give information; the ability to make known by talking or writing," (McCroskey & McCroskey, 1988, p. 109).
- *Critical thinking* – "An ability to use reason to move beyond the acquisition of facts to uncover deep meaning," (Weissberg, 2013, p. 318).
- *Curriculum* – For the purpose of this study, curriculum is the courses and clinical rotations that veterinary students complete throughout their time in the college of veterinary medicine.
- *Emotional intelligence* – "The ability to identify, use, understand, and manage emotions in positive ways to relieve stress, communicate effectively, empathize with others, overcome challenges, and defuse conflict," (Segal & Smith, 2015).
- *Extracurricular activities* – A form of involvement that occurs outside of the classroom, which includes organized involvement in on campus or community (off campus) groups or organizations (Haber, 2006). For the purpose of this study internships and related work experience were considered extracurricular activities.
- *Land grant university* – "The original mission of these institutions, as set forth in the first Morrill Act, was to teach agriculture, military tactics, and

the mechanic arts as well as classical studies so members of the working classes could obtain a liberal practical education," (The Land Grant Tradition, 2012, p.1).

- *Leadership* – "the process whereby an individual influences a group of individuals to achieve a common goal," (Northouse, 2013, p. 5).
- *Pedagogy* – "The art, science, or profession of teaching," (Merriam-Webster, 2015)
- *Reliability* – "Consistency of responses within a construct," (Fuhrman, 2014).
- *Soft skills* – "General skills that can transfer across the job spectrum," (Windels et al., 2013, p. 17). "Soft skills are the interpersonal, behavioral or people skills that can help apply hard skills in the workplace," (Windels et al. 2013, p. 17).
- *Self-efficacy* – Beliefs in one's capabilities to mobilize the motivation, cognitive resources, and courses of action needed to meet situational demands (Bandura, 1977).
- *Validity* – "Measuring what was intended to be measured," (Fuhrman, 2014).
- *Veterinarian* – "A person who is trained to give medical care and treatment to animals; an animal doctor," (Merriam-Webster, 2015)
- *Veterinary medicine* – "The science and art that deals with the maintenance of health in and the prevention, alleviation, and cure of

disease and injury in animals and especially domestic animals," (Merriam-Webster, 2015)

- *Veterinary school* – The institution where students receive training and education on how to become a veterinarian. For this study, and in many other studies, veterinary school and veterinary college are interchangeable terms.

CHAPTER 2

The purpose of this study was to identify the self-perception of social cognitive, or “soft skills,” of first and fourth year University of Georgia veterinary students. The researcher wanted to look at soft skills to see how important veterinary students thought the skills were as well as how confident they were in their ability to perform these skills. Based on the mean weighted discrepancy scores, first and fourth year students agreed these were their highest needs communicating with owners, controlling their anxiety in stressful situations while maintaining their composure and focus, and being able to explain things in a clear and precise manner. By identifying soft skills, veterinary faculty may be better able to address the soft skills students feel less competent in.

Literature Review

The purpose of this chapter is to review literature that pertains to the topic of this research. This review will explore the theoretical framework, critical thinking, communication and leadership as it applies to veterinary students.

A 2015 study done by Hart Research Associates found that employers’ priorities for the most important college learning outcomes in the intellectual and practical skills were oral communications, 85 percent, written communications, 82 percent, and critical thinking and analytic reasoning, 81 percent (2015). These employers were executives in the private sector and in nonprofit organizations

(Hart Research Associates, 2015). These were three of the four skills desired by employers. These same skills were examined using a self-efficacy instrument for this study.

A 2013 study done by Bachynsky, Kinnison, Gazzard, and Baillie, found “a significant difference between how well recent graduates perceived their veterinary school to have prepared them and recent graduates’ level of competence as judged by employers for nine SKAs (skills, knowledge and attitudes). In all nine cases, recent graduates’ perceived level of preparation was lower than recent graduates’ competence as judged by employers,” (p. 2).

Doucet and Vrins conducted a study in 2009 that studied the importance of knowledge, skills and attitudes for veterinarians in clinical and non-clinical fields of practice in Canada. The survey was sent to approximately 1,600 veterinarians. This information was obtained through a veterinary licensing body in Quebec that all practicing veterinarians must be a part of. The skills, knowledge and attitudes (SKA) model was used in the Doucet and Vrins (2009) study was also used in the Bachnynsky et al. (2013) study.

> These data support the notion that non-technical (general) skills and attitudes are of major importance for all veterinary students regardless of their career interests, and should be taught with the same rigor as other basic medical skills within the core curriculum. (Doucet & Vrins, 2009, p. 339)

General skills in this study were defined as “skills applicable to all professionals,” (Doucet & Vrins, 2009, p. 331). General skills is an interchangeable term with soft skills as defined in this research.

Studies have been done by multiple veterinary associations to examine the non-technical skills, knowledge, aptitudes, and attitudes of veterinarians, and the results suggest veterinarians may be lacking in the areas (Lloyd & King, 2004). “The question remains as to whether the veterinary schools and colleges will, or can, change in response. Clearly, the greatest leverage point for changing the profession lies with in the academic institutions where approximately 10,000 students are currently enrolled,” (Lloyd & King, 2004, p. 1923). Lloyd and King sent surveys to 27 veterinary schools and received 23 responses (2004). Lloyd and King (2004) asked the schools what areas they were changing to improve the nontechnical skills, knowledge, aptitudes and attitudes of veterinary students. In the curriculum category changes included increased emphasis on topics that included interpersonal skills and communication. Lloyd and King remark “it is clear that substantial change is also underway within the individual veterinary schools and colleges,” (Lloyd & King, 2004, p. 1924).

Theoretical Framework

Self-Efficacy

The researcher conducted a search and did not find self-efficacy studies with veterinary students related to communication, leadership or critical thinking. A study was found that looked at second year veterinary students’ self-

confidence in their ability to perform three clinical reasoning skills – making problem lists, making rule out lists and selecting appropriate diagnostic tests (Patterson, 2006). These skills were practiced each week throughout a semester in small group case discussions (Patterson, 2006). The students were asked to rate their self-confidence on the first and last day of class (Patterson, 2006). A significant increase was seen in all three areas with the greatest increase being able to select the appropriate diagnostic test (Patterson, 2006).

Self-efficacy is (as cited in Bandura, 1977 and Bandura, 1997)

> A cognitive process in which people construct beliefs about their capacity to perform at a given level of attainment. These beliefs influence how much effort people put forth, how long they will persist in the face of obstacles, how resilient they are in dealing with failures, and how much stress or depression they will experience in coping with demanding situations. (Tschannen-Moran, Woolfolk Hoy & Hoy, 1998, p. 203)

"An efficacy expectation is the conviction that one can successfully execute the behavior required to produce the outcome," (Bandura, 1978, p. 141). Bandura says, "the strength of people's convictions in their own effectiveness is likely to affect whether they will even try to cope with given situations" (1978, p. 141). Therefore, if someone does not believe they are capable of a task they will not try. This statement by Bandura demonstrates the importance for veterinary students to have a strong belief that they are able to complete any task because with a strong belief in their abilities they are more likely to try. "Efficacy

expectations determine how much effort people will expend and how long they will persist in the face of obstacles and aversive experiences. The stronger the perceived self-efficacy, the more active the efforts," (Bandura, 1978, p. 141).

"People fear and tend to avoid threatening situations they believe exceed their coping skills, whereas they get involved in activities and behave assuredly when they judge themselves capable of handling situations that would otherwise be intimidating," (Bandura, 1978, p. 141). Veterinary students need to have enough self-efficacy to feel confident in their abilities to practice medicine, use these technical skills, but also have confidence in their abilities to interact with clients, which involves the soft skills evaluated in this study.

Critical Thinking

Richard Paul (1995) defined critical thinking as:

> A unique and purposeful thinking in which the thinker systematically and habitually imposes criteria and intellectual standards upon the thinking, taking charge of the construction of thinking, guiding the construction of the thinking according to [critical thinking] standards, and assessing the effectiveness of the thinking according to the purpose, criteria and the standards [of thinking]. (p. 21)

Paul and Scriven (2003) provide another definition of critical thinking as the "intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or

generated by, observation, experience, reflection, reasoning, or communication as a guide to belief and action" (p. 1).

"The overall disposition toward critical thinking is the consistent internal motivation to employ one's critical thinking abilities in judging what to believe or to do in any situation," (Facione, Facione & Giancarlo, 1996, p. 69).

The Center for Agribusiness and Economic Development at the University of Georgia completed a study in 2008 that showed undergraduates seeking job positions focused too heavily on technical skills and not enough on soft skills, such as communication and leadership (Brooks, Flanders, Jones, Kane, McKissick, & Shepherd, 2008). The study also found that the job candidates needed to put more emphasis on critical thinking, problem solving, and analytical skills (Brooks et al., 2008). This data supports the National Association of Public and Land-grant Universities (APLU) study done by Crawford, Lang, Fink, Dalton and Fielitz (2011). In the Crawford et al. study, decision making/problem solving skills (critical thinking) was the second most important soft skill, behind communications, as ranked by employers (2011). Students and employers surveyed in this study agreed the three most important aspects of decision making/problem solving were identify and analyzing the problem, taking effective and appropriate actions, and realizing the effects of decisions (Crawford et al., 2011).

"Critical thinking has conceptual connections with reflective judgment, problem framing, higher order thinking, logical thinking, decision making, problem solving and the scientific method," (Giancarlo & Facione, 2001, p. 2). "A person

engaged in critical thinking uses a core set of cognitive skills – analysis, interpretation, inference, explanation, evaluation and self-regulation – to form that judgment and to monitor and improve the quality of that judgment," (Giancarlo & Facione, 2001, p. 3). These are cognitive skills that veterinarians must use on a daily basis.

> A more comprehensive view of critical thinking must include acknowledgement of a characterological component, often referred to as a disposition, to describe a person's inclination to use critical thinking when faced with problems to solve, ideas to evaluate, or decisions to make. (Giancarlo & Facione, 2001, p. 3)

"The disposition toward critical thinking, as a dimension of personality, refers to the likelihood that one will approach problem framing or problem solving by using reasoning," (Giancarlo & Facione, 2001, p. 3).

"Critical thinking self-confidence measures trust in one's own reasoning and ability to guide others to make rational decisions," (Facione et al., 1996, p. 71). If students are given the opportunity to make thoughtful and purposeful decisions in "environments that nurture thinking and reflective problem solving" they will be more able to use these same skills outside of the classroom (Facione et al., 1996, p. 75). Facione et al., (1996) state that leaders must model these habits for those who follow them. Veterinary students need to see faculty and staff exhibiting critical thinking skills so that they may learn from them as well as know they are in a critical thinking environment. "Every element in an organization, from personnel practices to client services and product quality,

must be scrutinized to determine whether its practices and policies enhance or inhibit thinking," (Facione et al., 1996, p. 75).

Meyers (1986) believed students must learn to think and reason critically so they could reach their fullest potential in today's society. "If one's reasoning self-confidence is founded on strong critical thinking skills and the disposition to use them, one can become successful in a wide variety of executive, managerial, client service and professional occupations," (Facione et al., 1996, p. 71). With these statements in mind, if veterinary students have confidence in their own critical thinking skills, they can reach their potential and become successful veterinarians after graduation.

The critical thinking portion of the instrument that was used for this study was the EMI: Critical Thinking Disposition Assessment (Irani, Rudd, Gallo, Ricketts, Friedel & Rhoades, 2007). Within this instrument were three constructs. The constructs were engagement, cognitive maturity and innovativeness. Students "with a high disposition in engagement would be able to anticipate situations where good reasoning will be necessary to employ," (Irani et al., 2007, p. 4-5). These students are confident communicators, confident in their ability to reason, solve problems and make decisions, and they are able to explain their reasoning process they used to reach a decision or solve a problem (Irani et al., 2007).

"An individual with a high level of cognitive maturity is aware of his own predispositions and biases in the decision making process," (Irani et, al, 2007, p. 5). These students are "aware that others may or may not agree with the

opinions and positions he holds," (Irani et al., 2007, p. 5). They are open to the ideas and opinions of others so that new ideas can be brought to the table to try and solve the problem (Irani et al., 2007). "People with high levels of cognitive maturity know that most problems are more complex than they appear on the surface and understand that rarely is there 'one-right-answer' to problems they encounter," (Irani et al., 2007, p. 5).

The final construct, within critical thinking, is innovativeness. Students with high innovativeness can be described as "hungry learners," (Irani et al., 2007, p. 6). These students "want to know more about their profession, their situation, their life and their world," (Irani et al., 2007, p. 6). These students are seeking out "new challenges and actively seeking to know more through research, reading and questioning," (Irani et al., 2007, p. 6). They want to "know the truth, even if the truth conflicts with presently held beliefs and opinions," (Irani et al., 2007, p. 6).

Communication

A study done by Crawford et al., (2011) found that employers ranked communication skills as the most important of seven soft skills. This study included 2,669 students, 898 faculty, 4,262 alum, and 282 employers who completed the survey (Crawford et al., 2011). Students were from 31 universities spaced across the country and employers involved included representation from all 50 states (Crawford et al., 2011). Fifty six percent of employers worked in the for-profit sector, 21 percent for government, 17 percent for non-profits/non-

government organization and 6 percent from higher education (Crawford et al., 2011). State or local government made up 8.5 percent of the employer organization types, followed by agricultural production (8.4%), education (8.1%), marketing, media or communications (6.7%), and the other 26 types had 5 percent or less (Crawford et al., 2011). The majority (42%) of employers surveyed worked for an organization that had 21-500 employees, and 21 percent worked in an organization with 1-20 employees (Crawford et al., 2011).

Employers ranked communication skills as the most important (Crawford et al., 2011). The communication cluster asked respondents about: listening effectively, communicating accurately and concisely, effective oral communication, communicating pleasantly and professionally, effective written communication, asking good questions, and communicating appropriately and professionally using social media (Crawford et al., 2011).

The other soft skills employers believed were important are listed in order of the employer's ranking of importance: decision making/problem solving, self-management skills, teamwork skills, professionalism skills, experiences, and leadership skills (Crawford et al., 2011).

Discipline knowledge was listed as the third most important skill, behind soft skills and discipline technical skills (Crawford et al., 2011). Discipline knowledge is the technical skills that are being taught in most veterinary medicine courses. Employers are seeking graduates who have knowledge about more than what is learned in a classroom and through a textbook.

Areas of shared concern among recent veterinary graduates and employers were non-clinical skills, such as client communication skills (Bachynsky et al., 2013). “Most students and graduates agree that communication skills training is essential for a successful transition to practice, however many have reported inadequate instruction during their education,” (Meehan & Menniti, 2014, p.1).

“Until recently none of the United Kingdom veterinary schools taught communication skills as a specific subject, and it was assumed that students would acquire them through general clinical experience during their training,” (Latham & Morris, 2007, p. 181). Students are now given formal communication skills training by using actors to role pay different scenarios the students may experience while in practice (Latham & Morris, 2007).

Students need training in communication where they are free to make mistakes, so they can learn from them. “Self-report measures, then, are most appropriate when they are directed toward matters of affect and/or perception in circumstances where the respondent has no reason to fear negative consequences from any answer given,” (McCroskey & McCroskey, 1988, p. 110). Self-reported communication competence may be helpful to determine how competent he or she thinks they are (McCroskey & McCroskey, 1988). This type of scale cannot tell how competent the person truly is (McCroskey & McCroskey, 1988). With that being said McCroskey & McCroskey do believe self-perceived competence is useful. “It is our position that many of the most important decisions people make concerning communication are made on the basis of self-

perceived competence rather than actual competence," (McCroskey & McCroskey, 1988, p. 110). McCroskey and McCroskey (1988) go on to say that many self-reported communication competence scales did not ask the respondent how competent he believed himself to be. McCroskey and McCroskey started measuring self-perceived communication competence by a scale they created called the Self-Perceived Communication Competence Scale. This scale had 12 items, and focused on "four basic communication contexts: public speaking, talking in a large meeting, talking in a small group, talking in a dyad – and three common types of receivers – strangers, acquaintances and friends," (McCroskey & McCroskey, 1988, p. 111).

Leadership

Leadership is "the process whereby an individual influences a group of individuals to achieve a common goal," (Northouse, 2013, p. 5). "There is surprisingly little discussion of leadership definitions in the literature. In fact, over 60 percent of the authors who have written on leadership since about 1910 did not define leadership in their works," (Rost, 1991, p. 7). Definitions for leadership started appearing between 1900 and 1920 (Northouse, 2013). The beginning definitions focused on domination of followers, but soon shifted to a leader's influence (Northouse, 2013).

Leadership has been studied and broken down into many different approaches and styles. The following approaches and styles were discussed in Peter Northouse's (2013) book.

- The trait approach has five major leadership traits that are associated with leaders. The traits are intelligence, self-confidence, determination, integrity and sociability (Northouse, 2013).
- Another approach discussed by Northouse is the skills approach. This approach “suggests that knowledge and abilities are needed for effective leadership,” (Northouse, 2013, p 43). “Skills are what leaders can accomplish, whereas traits are who leaders are (I.e., their innate characteristics),” (Northouse, 2013, p. 43).
- The style approach focuses on the behavior of the leader, what they do and how they act (Northouse, 2013).
- The situational approach states that, “different situations demand different kinds of leadership,” (Northouse, 2013, p. 99). To be an effective leader in this approach “a person must adapt his or her style to the demands of different situations,” (Northouse, 2013, p. 99).
- The contingency theory “suggests that a leader’s effectiveness depends on how well the leader’s style fits the context,” (Northouse, 2013, p. 123).
- “Path-goal theory is about how leaders motivate subordinates to accomplish designated goals,” (Northouse, 2013, p. 137).
- The leader-member exchange theory states that leadership is a process that is centered around the interactions between leaders and followers (Northouse, 2013).

- “Transformational leadership is a process that changes and transforms people. It is concerned with emotions, values, ethics, standards, and long term goals,” (Northouse, 2013, p. 185).
- “Servant leadership emphasizes that leaders be attentive to the concerns of their followers, empathize with them, and nurture them. Servant leaders put followers first, empower them, and help them develop their full personal capacities,” (Northouse, 2013, p. 219).
- Team leadership uses a team analogy. “A team is a specific type of group composed of members who are interdependent, who share common goals, and who must coordinate their activities to accomplish these goals,” (Northouse, 2013, p. 287).
- The psychodynamic approach emphasizes personality types. This approach “suggests that various personality types are better suited to particular leadership positions or situations,” (Northouse, 2013, p. 319).

“The core message of the Leadership Development Initiative at Michigan State University College of Veterinary Medicine was that leadership needs to exist at all levels; everyone is potentially in a position to demonstrate leadership,” (Lloyd, Chaddock, Hoblet, Bayly, Albers, & Burge, 2007, p. 1483).

The Leadership Challenge was a two-day course created by WholeSystem Consulting of Reston, Va. and the AAVMC. The objectives of the course “were to understand the major purpose and practices of leadership, understand one’s own strength and developmental needs, practice key tools of

leadership, and plan for the application of leadership skills and concept when back on the job," (Lloyd et al., 2007, p. 1482). Small group discussions and breakout sessions were used "to practice the skills of facilitating teams toward effective decisions, and participants developed action plans to apply what they learned when they returned home," (Lloyd et al., 2007, p. 1482).

The American Animal Hospital Association (AAHA) created the Veterinary Leadership Academy (VLA). The VLA believes that leadership is not just about the position one holds, but also that "leadership is a learnable discipline that takes practice," (Lloyd et al., 2007, p. 1483). The program is "an educational opportunity designed for veterinary professionals in management or leadership positions," (Lloyd et al., 2007, p. 1482). The VLA is broken down into three courses that take place over the course of 12 to 18 months. Each course lasts three days. The first course is Intrinsic Leadership. It helps participants to find their inner leader as well as set the foundation for a shift to become a more effective leader (Lloyd et al., 2007). The next course is Extrinsic Leadership, which helps participants see their leadership potential and helps them master coaching and mentoring skills (Lloyd et al., 2007). The final course is Experimental Leadership, which deals with managing and mitigating conflict among the team (Lloyd et al., 2007).

The American Veterinary Medical Association (AVMA) has a Veterinary Leadership Experience that goes by the philosophy "that leadership can be taught and emphasizes that one must first lead oneself through self-awareness and self-management before one can lead others and manifest true leadership

caliber values, principles, integrity, compassion, and emotional intelligence," (Lloyd et al., 2007, p. 1482). This program set out to "provide a foundation in character to balance the traditional emphasis on technical competency found in professional veterinary medicine academic programs," (Lloyd et al., 2007, p. 1482). This program uses a mix of "collaborative interactive activities and reflective sessions that explore self-awareness, self-leadership, social awareness, and social skills, all of which are crucial elements of emotional intelligence and leadership," (Lloyd et al., 2007, p. 1482).

Most emotional intelligence research has been done in the business and medical fields. A few studies were found examining emotional intelligence in veterinary students. Goleman (2005) identifies five main components of emotional intelligence, they are knowing one's emotions, managing emotions, motivating oneself, recognizing emotions in others, and handling relationships. Goleman believes all of these components can be learned (Timmins, 2006). "Emotional intelligence has the potential to promote client satisfaction and compliance," (Timmins, 2006, p. 73). "Emotional intelligence clearly plays a role in the effectiveness of veterinary health care provision and of the health care team through enhanced communication, improved conflict management, and early recognition and control of stress and burnout," (Timmins, 2006, p. 73). If veterinary students can learn emotional intelligence during their education, extracurricular activities and employment they could be better equipped to lead their fellow employees and clients through calm as well as difficult situations.

Leadership courses and trainings need to be offered to students, but the faculty they interact with on a daily basis also need training. “Veterinary medical students are highly influenced and mentored by faculty members and staff. For this reason, it is very important for high-quality leadership programs to be offered and accepted by faculty,” (Lloyd et al., 2007, p. 1485).

Extracurricular Activities

Extracurricular activities are activities students choose to be involved in outside of the classroom. These activities and/or organizations could include religious, sports, clubs, etc. A study done at the University of Georgia looked at all student who had participated on the livestock judging team, and the livestock judging team was classified as an extracurricular activity (Bolton, Duncan, Furhman & Flanders, 2014). Participants felt being a part of this extracurricular activity improved their communication skills with others, improved their confidence in social situations, helped them become more confident as a leader and be more assertive with others (Bolton, et al., 2014).

“Extracurricular activity is important because of its potential to reinforce and market the outcomes of the education system,” (Tchibozo, 2007, p. 38). Tchibozo also states that some types of extra-curricular activities can speed up or slow down employment after graduation (2007). “Therefore, it is essential that students and graduates understand the impact of extracurricular activity and appraise the role it may play in their strategies for transition from higher education to employment,” (Tchibozo, 2007, p. 38). In the study completed by

Tchibozo, he found that students who had graduated and did not participate in extra-curricular activities were more likely to begin their careers as office employees rather than managers (2007). Tchibozo also found that the types of involvement students participated in mattered (2007).

Extra-curricular activities allow students to apply classroom knowledge to real world situations that will help them to succeed after graduation (Astin, 1993).

> Out of class experiences presented students with personal and social challenges, encouraged them to develop more complicated views on personal, academic and other matters, and provided opportunities for synthesizing and integrating material presented in the formal academic program (classes, laboratories, studios). (Kuh, 1995, p. 146)

Kuh did a study on extra-curricular activities interviewing 149 students from across the country and found one of the most powerful experiences were "those that demanded sustained effort to complete various tasks (for example, planning, decision making) as students interacted with people from different groups (for example, faculty, administrators, trustees, employers) and peers from different backgrounds," (Kuh, 1995, p. 145-146). Veterinary students will interact with people from many different backgrounds, and their involvement in extra-curricular activities, even in their undergraduate careers, could help prepare them for interacting with people when they are in practice.

Summary

Self-efficacy is the belief in one's capabilities to mobilize the motivation, cognitive resources, and courses of action needed to meet situational demands (Bandura, 1977). The more self-efficacious a person is the more assuredly they will approach situations they would have thought otherwise to be intimidating (Bandura, 1978). Having self-confidence in one's own reasoning and ability will help someone guide others to make rational decisions (Facione, et al., 1996). Students and graduates agree that communication skills training is essential for a successful transition into practice, but they do not feel they received adequate instruction during their education (Meehan & Menniti, 2014). Everyone is possibly in a position of leadership, and they need to develop those skills so they will be able to use them when needed (Lloyd, et al. 2007). Extracurricular activities are important because they have the potential to reinforce what is taught in the classroom (Tchibozo, 2007, p. 38). Much is known about these topics, but no research has been done to look at and compare these soft skills among first and fourth year veterinary students.

CHAPTER 3

Methodology

The purpose of this study was to identify the self-perception of social cognitive, or “soft skills,” of first and fourth year University of Georgia veterinary students. The researcher wanted to look at soft skills to see how important veterinary students thought the skills were as well as how confident they were in their ability to perform these skills.

All research was reviewed and approved by the Institutional Review Board (IRB) for research involving human subjects at the University of Georgia.

The research objectives for this study were:

- Identify specific demographic characteristics of veterinary students.
- Identify veterinary students’ self-perceived communication attributes.
- Identify veterinary students’ self-perceived leadership attributes.
- Identify veterinary students’ self-perceived critical thinking attributes.
- Identify veterinary students’ greatest needs in communication, leadership and critical thinking as determined by mean weighted discrepancy scores.

Survey Design

The researcher developed three sections of the instrument (communication, leadership and demographics) because an instrument did not exist. For the communication and leadership constructs, the researcher looked at previously created surveys and selected questions that were applicable to this study, and combined those questions into one instrument. The communication construct had 11 items, and the leadership construct had 20 items. The validity and reliability of these items were tested with various populations in the previous instruments they were a part of. However, the reliability and validity had to be tested again for this study because the questions were brought together to create one instrument.

The communication, leadership and critical thinking constructs had a ranking system based on a 1 to 5 scale for importance and competence. The importance scale was: 1 = not important, 2 = little importance, 3 = somewhat important, 4 = important, 5 = very important. The competence scale was: 1 = not competent, 2 = little competence, 3 = somewhat competent, 4 = competent, 5 = very competent. These scales were developed based on Bandura's (1977) self-efficacy work.

In addition to the three constructs listed above the researcher wanted to include a critical thinking section. The critical thinking portion of the instrument that was used for this study was the EMI: Critical Thinking Disposition Assessment (Irani et al., 2007). The critical thinking construct has 26 items. Within this instrument were three constructs. The constructs were engagement,

cognitive maturity and innovativeness. Students “with a high disposition in engagement would be able to anticipate situations where good reasoning will be necessary to employ,” (Irani et al., 2007, p. 4-5). These students are confident communicators, confident in their ability to reason, solve problems and make decisions, and they are able to explain their reasoning process they used to reach a decision or solve a problem (Irani et al., 2007).

“An individual with a high level of cognitive maturity is aware of his own predispositions and biases in the decision making process,” (Irani et, al, 2007, p. 5). These students are “aware that others may or may not agree with the opinions and positions he holds,” (Irani et al., 2007, p. 5). They are open to the ideas and opinions of others so that new ideas can be brought to the table to try and solve the problem (Irani et al., 2007). “People with high levels of cognitive maturity know that most problems are more complex than they appear on the surface and understand that rarely is there ‘one-right-answer’ to problems they encounter,” (Irani et al., 2007, p. 5).

The final construct, within critical thinking, is innovativeness. Students with high innovativeness can be described as “hungry learners,” (Irani et al., 2007, p. 6). These students “want to know more about their profession, their situation, their life and their world,” (Irani et al., 2007, p. 6). These students are seeking out “new challenges and actively seeking to know more through research, reading and questioning,” (Irani et al., 2007, p. 6). They want to “know the truth, even if the truth conflicts with presently held beliefs and opinions,” (Irani et al., 2007, p. 6).

The reliability estimates for the EMI critical thinking instrument are engagement 0.906, maturity 0.787 and innovativeness 0.797 (Irani et al., 2007).

The researcher had two professors and several classmates review the survey to help reduce measurement error and ensure validity.

The survey was designed in Qualtrics and a link was embedded into the emails for students to gain access to the survey.

Web Survey Implementation

Dillman, Smyth, and Christian's (2009) recommendations for web survey implementation were followed. The Associate Dean of Academic Affairs for the College of Veterinary Medicine sent an invitation pre-notice email to all first and fourth year veterinary students. Three days later an email with the link to the Qualtrics survey was sent. Six days later the first reminder email was sent. This email thanked students who had already completed the survey as well as urged other students to participate. A final reminder was sent thirteen days later, again thanking those who had already taken the survey and reminding other students they had a few days left to complete the survey.

"One should consider when sample members are most likely to check their email and be free from other demands and then attempt to have email invitations delivered to their inboxes just prior to this time," (Dillman et al., 2009, p. 280). The survey was sent at varying times throughout the day to try and see when the veterinary students would be more likely to participate.

Dillman et al. (2009) recommends personalizing emails with the students' names, however this could not be done because the researcher did not have direct access to student emails.

Dillman et al. (2009) suggests that if the survey is sent out by someone the participants know and respect, such as a professor, they are more apt to complete the survey. All emails were sent by the Associate Dean for Academic Affairs, who is also a professor in the College of Veterinary Medicine at the University of Georgia.

The emails were changed each time so that students would be more likely to read the information instead of deleting the email right away.

Pilot Study

A pilot study was done with the communication, leadership and critical thinking sections of the survey to test the validity and reliability.

The pilot study was conducted with second and third year students from the College of Veterinary Medicine at the University of Georgia. Second and third year students were chosen for the pilot study so the researcher would not have to pull from the population that would be used for the study. An invitation email was not sent for the pilot study. The first email that was sent included a link to the Qualtrics survey was sent on November 7, 2014. The second email was sent to students on November 14, 2014. A final email was not sent for the pilot study.

Twenty-nine students completed the communication construct. The Cronbach's alpha, for the pilot study, was 0.58 for level of importance and 0.51

for level of competence. Two questions in this construct were originally reverse coded. Two students emailed the researcher saying they did not understand the question. These questions also had low Cronbach's alpha, so it was determined to remove the negative wording from this construct. The final Cronbach's alpha for the official study was 0.77 for importance and 0.83 for competence.

The leadership construct had 19 students complete it. Within this construct two statements were worded negatively. This was done to ensure students were reading the questions and not just clicking answers. The Cronbach's alpha was 0.84 for level of importance and .69 for level of competence. This construct was not changed from the pilot study to the actual study because the goal Cronbach's alpha is 0.70. According to Nunnally, an alpha of 0.70 or higher is an acceptable reliability measurement; however, a lower alpha is not necessarily a detriment (1978).

Twelve students completed the critical thinking construct. The Cronbach's alpha for the pilot study was 0.96 for level of importance and 0.94 for level of competence. This construct was not changed for the official study.

Respondents

The survey instrument was sent to all first and fourth year veterinary students in the College of Veterinary Medicine at the University of Georgia. First and fourth year students were chosen to participate in this study to compare the differences between the two. First year students have had limited training and instruction, while fourth years are about to graduate and start practicing. The

sample included approximately 114 first year and 102 fourth year veterinary students.

Little research has been done to address why or how to deal with participant dropout in regards to Internet surveys (Hoerger, 2010).

> In particular, most participants who discontinued did so early on in the studies. Approximately 10 percent of participants can be expected to drop out almost immediately, with an unremarkable 2 percent dropping out for every 100 items of survey content. (Hoerger, 2010, p. 699)

Hoerger surveyed 1,963 college undergraduate students from a large Midwestern university (2010). Students were administered one of six surveys through surveymonkey.com (Hoerger, 2010). The length of the survey ranged from 243 to 535 survey items (Hoerger, 2010).

> Based on the Kaplan-Meier estimator, 6 percent of participants dropped out immediately after providing consent (item 1), and a cumulative total of 10.1 percent of participants discontinued within the first dozen responses. After this initial item set, dropout decelerated significantly, with a cumulative 13.2 percent of participants having dropped out after 100 responses, and 20.7 percent after 500 responses. (Hoerger, 2010, p. 699)

Adding up Hoerger's dropout rate, 50 percent of participants dropped out of the study.

Data Analysis

Data were analyzed using SPSS 21 and Excel. SPSS allowed the researcher to analyze and interpret data using multivariate data analysis techniques. Descriptive statistics, including means and standard deviations were calculated. SPSS gave the researcher flexibility to compare means, frequencies and standard deviations. The researcher used an Excel file designed by McKim and Saucier (2011) to calculate the mean weighted discrepancy score to prioritize attributes needing attention.

CHAPTER 4

The purpose of this study was to identify the self-perception of social cognitive, or “soft skills,” of first and fourth year University of Georgia veterinary students. The researcher wanted to look at soft skills to see how important students thought they were as well as how confident they were in their ability to perform these skills.

Results

This chapter looks at the research findings, including a demographic analysis of the sample, by research objectives:

- Identify specific demographic characteristics of veterinary students.
- Identify veterinary students’ self-perceived communication attributes.
- Identify veterinary students’ self-perceived leadership attributes.
- Identify veterinary students’ self-perceived critical thinking attributes.
- Identify veterinary students’ greatest needs in communication, leadership and critical thinking as determined by mean weighted discrepancy scores.

A total of 216 students were asked to participate in the survey. Seventy-seven students completed the communication construct, which was a response

rate of 35.6 percent. For the leadership construct, 61 students completed the construct, resulting in a 28.2 percent response rate. Of the 216 students, 48 completed the critical thinking and demographics sections, resulting in a 22.2 percent response rate. Based on the data collected from 46 respondents, results are presented by the associated research objective.

Objective 1 - Identify specific demographic characteristics of veterinary students.

Of those who responded 38 were females (82.6%) and 8 were male (17.4%). Females make up 72.3 percent of first year students and males are 27.7 percent (University of Georgia, 2015b). Within fourth year students, 76.5 percent are female and 23.5 percent are male.

The ages ranged from 21 to 38 years old. The highest percentage of respondents was 21-25 years old (54.8%). The lowest percentage of respondents was 31 years old and older (12%). The highest percentage of respondents was white (91.7%). Asian/Pacific Islander and Other (Mixed) received the lowest percentage of respondents with 2.1 percent. Of participants who responded to the statement “where did you grow up,” suburban living had the highest percentage (52.1%). Urban living had the lowest percentage (4.2%).

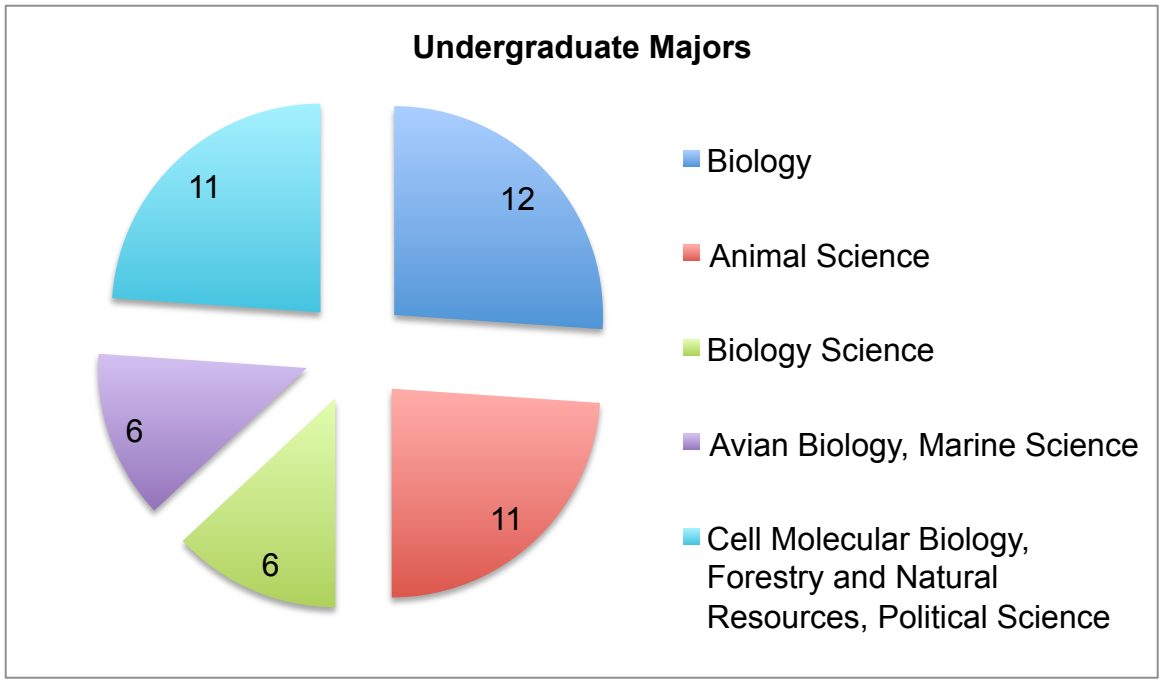
First year students (N = 28) made up 59.6 percent of respondents and fourth year students (N = 19) made up the other 40.4 percent.

Twelve students (25.5%) were biology majors and 11 students (23.9%) were animal science majors (Graph 4.1). Six students were biology science

majors. Three majors had two students each. The majors included avian biology and marine science. Several majors had only one student who majored in that during their undergraduate career, and these majors were combined in the graph. The range of majors with only one student included cell molecular biology, forestry and natural resources, and political science. Some students did have dual or double majors. These dual/double majors were treated as separate majors and listed separately.

Graph 4.1

Undergraduate Majors

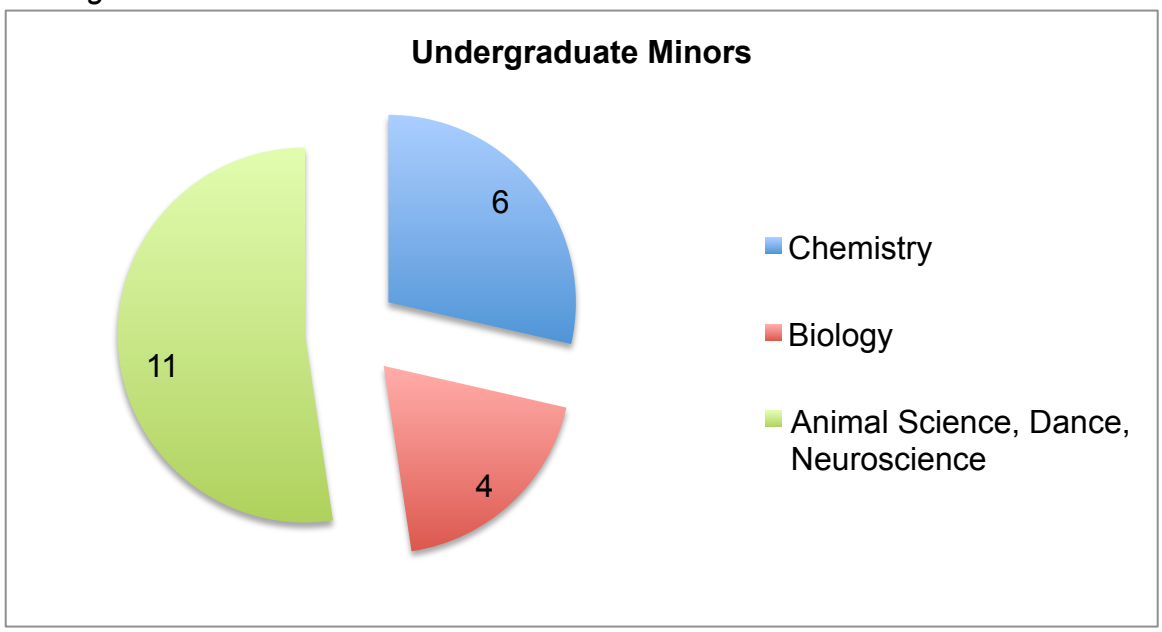


Graph 4.2 shows the undergraduate minors of the participants. Six students had a minor in chemistry (28.6%) and four had a minor in biology (19%). Several minors had only one student who minored in that during their undergraduate career, and these minors were combined in the graph. The range

of minors with only one student included animal science, dance and neuroscience. Many students did not have minors. Some students had two minors. These minors were treated as separate minors and listed separately.

Graph 4.2

Undergraduate Minors



These demographic data represent the veterinary students involvement during their undergraduate career. Thirty-nine participants (81.3%) did not participate in a social sorority/fraternity. Two participants were committee chairs in a social sorority/fraternity (4.2%). Twenty-seven participants were a member of a honor society (56.3%). One participant was a national officer of a honor society (2.1%). Nineteen participants (40.4%) were members of a departmental or academic major student organization. Two participants (4.3%) were committee chairs members of a departmental or academic major student organization. Nineteen participants (40.4%) were members of a campus wide student

organization, while two participants (4.3%) served as committee chairs. Of the students who answered the college involvement – religious organization, 59.6 percent (n=28) did not participate. One student was involved as a committee chair and another as an officer (2.1%). Four of the five other college involvement responses were sports. The other one listed was the Guide Dog Foundation.

Objective 2 - Identify veterinary students' self-perceived communication attributes.

First Year Students' Communication Responses

First year students considered all of the communication questions important and themselves at least somewhat competent (Table 4.1). First year students believed being able to explain a situation to an owner (M = 4.89, SD = 0.32) was the most important. First year students ranked being a good listener (M = 4.75, SD = 0.52) and showing empathy to owners (M = 4.75, SD = 0.65) as the next most important questions. Utilizing open-ended questions to get other's opinions was the least important question (M = 4.21, SD = .74).

First year students believed they were most competent at showing empathy when talking to owners (M = 4.14, SD = 1.04). These students ranked being comfortable speaking in a small group (M = 4.11, SD = 0.83) and being a good listener (M = 4.11, 0.79) as their next most important statements. Utilizing open-ended questions to get other's opinions was what first year students considered themselves to be least competent at (M = 3.43, SD = 1.03).

Table 4.1

First Year Veterinary Students' Perceived Level of Importance and Competence in Communication

Importance			Question	Competence		
N	*M*	*SD*		*N*	*M*	*SD*
28	4.71	0.46	Eye contact is important when talking to others.	28	3.96	0.69
28	4.46	0.69	I am comfortable speaking in small groups.	28	**4.11**	0.83
28	**4.75**	0.52	I am a good listener.	28	**4.11**	0.79
28	4.46	0.58	I can use summary statements to clarify.	28	3.86	0.71
28	4.21	0.74	I utilize open-ended questions to get other's opinions.	28	3.43	1.03
28	4.39	0.69	I feel comfortable teaching others.	27	3.78	0.89
28	**4.89**	0.32	I can explain a situation to an owner.	28	3.96	0.99
28	4.57	0.50	I can pick up on people's nonverbal communication.	28	4.04	0.99
28	4.57	0.57	I can explain myself in writing.	28	4.04	0.74
28	**4.75**	0.65	I can show empathy when talking to owners.	28	**4.14**	1.04
28	4.68	0.72	I actively listen.	28	3.93	0.90

Note. 1 = not important, 2 = little importance, 3 = somewhat important, 4 = important, 5 = very important

Note. 1 = not competent, 2 = little competence, 3 = somewhat competent, 4 = competent, 5 = very competent

Fourth Year Students' Communication Responses

Fourth year students considered all communication questions as important. These students also believed they were somewhat competent with regards to each question. Fourth year students ranked eye contact is important when talking to others (M = 4.72, SD = 0.46) and I can explain a situation to an owner (M = 4.72, SD = 0.58) as the most important questions. The second most important question to fourth year students was showing empathy when talking to

owners (M = 4.67, SD = 0.59). They ranked being comfortable speaking in small groups as the least important (M = 4.22, SD = 0.65).

Fourth year students considered themselves most competent at keeping eye contact when talking to others (M = 4.28, SD = 0.67). Showing empathy when talking to owners (M = 4.22, SD = 0.88) and actively listening (M = 4.22, SD = 0.73) were the questions they were next most competent at. These students believed they were least competent feeling comfortable teaching others (M = 3.41, SD = 0.80).

Table 4.2

Fourth Year Veterinary Students' Perceived Level of Importance and Competence in Communication

Importance			Question	Competence		
N	*M*	*SD*		*N*	*M*	*SD*
18	**4.72**	0.46	Eye contact is important when talking to others.	18	**4.28**	0.67
18	4.22	0.65	I am comfortable speaking in small groups.	18	3.94	0.80
18	4.56	0.71	I am a good listener.	18	4.17	0.62
18	4.56	0.62	I can use summary statements to clarify.	18	3.67	0.69
18	4.44	0.62	I utilize open-ended questions to get other's opinions.	18	3.44	0.78
18	4.50	0.62	I feel comfortable teaching others.	18	3.41	0.80
18	**4.72**	0.58	I can explain a situation to an owner.	18	3.67	0.84
18	4.56	0.51	I can pick up on people's nonverbal communication.	18	4.11	0.83
18	4.33	0.69	I can explain myself in writing.	18	4.11	0.90
18	**4.67**	0.59	I can show empathy when talking to owners.	18	**4.22**	0.88
18	4.61	0.61	I actively listen.	18	**4.22**	0.73

Note. 1 = not important, 2 = little importance, 3 = somewhat important, 4 = important, 5 = very important

Note. 1 = not competent, 2 = little competence, 3 = somewhat competent, 4 = competent, 5 = very competent

Objective 3 - Identify veterinary students' self-perceived leadership attributes.

First Year Students' Leadership Responses

First year students considered all of the positive worded questions important in the leadership construct. These students considered themselves at least somewhat competent with each positively worded leadership question. First year students believed learning to control anxiety in stressful situations while

maintaining their composure and focus was the most important leadership question (M = 4.79, SD = 0.42). These students believed feeling responsible for their actions (M = 4.71, SD = 0.60) and being able to follow directions (M = 4.71, SD = 0.46) were the next most important questions. “I am unsure of my abilities,” was the question first year students thought was the least important (M = 2.64, SD = 1.13). Looking at the questions that were positively worded, first year students thought leading a discussion was the least important (M = 4.04, SD = 0.69).

First year students were most competent in their abilities to control their actions (M = 4.68, SD = 0.61). These students believed they were next most competent at feeling responsible for their decisions (M = 4.67, SD = 0.62). The question first year students believed they were third most competent at was being able to follow directions (M = 4.61, SD = 0.50). First year students believed they were least competent at “I am unsure of my abilities,” (M = 2.93, SD = 1.15). Of the questions that was positively worded first year students believed they were least competent at being able to control anxiety in stressful situations while maintaining my composure and focus (M = 3.61, SD = 1.07).

Table 4.3

First Year Veterinary Students' Perceived Level of Importance and Competence in Leadership

Importance			Question	Competence		
N	*M*	*SD*		*N*	*M*	*SD*
28	4.64	0.49	I can cooperate in a group.	27	4.44	0.64
28	4.64	0.49	I can work in a group.	28	4.36	0.68
28	4.54	0.58	I get along with people around me.	28	4.18	0.82
28	4.04	0.69	I can lead a discussion.	28	3.71	1.01
28	4.68	0.48	I can use information in making decisions.	28	4.39	0.63
28	4.21	0.79	I have learned how to be self-assertive.	28	3.71	1.01
28	4.29	0.66	I am respected by others my age.	28	3.96	0.84
28	4.32	0.67	I am respected by those older than me.	28	4.04	0.92
28	4.61	0.57	I consider all choices before making a decision.	28	4.18	0.61
28	4.54	0.69	I use past experiences in making decisions.	28	4.46	0.58
28	2.64	1.13	I am unsure of my abilities.	28	2.93	1.15
28	**4.71**	0.60	I feel responsible for my actions.	28	**4.68**	0.61
28	4.68	0.61	I feel responsible for my decisions.	27	**4.67**	0.62
28	4.11	0.92	I am comfortable being a group leader.	28	3.79	1.03
28	4.54	0.58	I can give clear directions.	28	4.11	0.63
28	**4.71**	0.46	I can follow directions.	28	**4.61**	0.50
28	4.39	0.69	I am patient.	28	4.14	0.85
28	4.57	0.50	I learned how to maintain my personal opinion while still being open minded to the suggestions of others.	28	4.18	0.82
28	3.25	1.40	I am not comfortable teaching others.	28	3.39	1.29
28	**4.79**	0.42	I learned to control anxiety in stressful situations while maintaining my composure and focus.	28	3.61	1.07

Note. 1 = not important, 2 = little importance, 3 = somewhat important, 4 = important, 5 = very important

Note. 1 = not competent, 2 = little competence, 3 = somewhat competent, 4 = competent, 5 = very competent

Fourth Year Students' Leadership Responses

Fourth year students considered all of the positive worded leadership questions at least somewhat important. They also thought they were at least somewhat competent in each area, regarding the positively worded questions. Fourth year students thought giving clear directions was the most important (M = 4.83, SD = 0.38). The second most important question was "I learned to control anxiety in stressful situations while maintaining my composure and focus," (M = 4.78, SD = 0.43). The next most important questions were being able to use information in decision making (M = 4.67, SD = 0.49), feeling responsible for their actions (M = 4.67, SD = 0.59), feeling responsible for their decisions (M = 4.67, 0.69), and being able to follow directions (M = 4.67, 0.59). These students thought "I am unsure of my abilities," was the least important question (M= 2.59, SD = 1.28). Of the positively worded questions, leading a discussion was the least important question (M = 3.89, SD = 0.76).

Fourth year students were most competent at feeling responsible for their decisions (M = 4.72, SD = 0.46). These students were next most competent at feeling responsible for their actions (M = 4.61, SD = 0.61). Being able to cooperate in a group (M = 4.39, SD = 0.61) and being able to follow directions (M = 4.39, SD = 0.50) were the next questions fourth year students felt most competent in. They were least competent at "I am unsure of my abilities," (M = 3.11, SD = 1.08). Of the positively worded questions, being patient was what fourth year students considered themselves least competent at (M = 3.39, SD = 0.85).

Table 4.4

Fourth Year Veterinary Students' Perceived Level of Importance and Competence in Leadership

Importance			Question	Competence		
N	*M*	*SD*		*N*	*M*	*SD*
18	4.61	0.61	I can cooperate in a group.	18	**4.39**	0.61
17	4.33	0.77	I can work in a group.	17	4.29	0.77
18	4.53	0.87	I get along with people around me.	18	4.33	0.69
18	3.89	0.76	I can lead a discussion.	18	3.72	0.67
18	**4.67**	0.49	I can use information in making decisions.	18	4.22	0.55
18	4.44	0.62	I have learned how to be self-assertive.	18	3.83	0.92
18	4.00	0.91	I am respected by others my age.	18	3.89	0.58
18	4.12	0.60	I am respected by those older than me.	17	3.82	0.81
17	4.56	0.51	I consider all choices before making a decision.	18	3.83	0.71
18	4.33	0.77	I use past experiences in making decisions.	18	4.28	0.67
17	2.59	1.28	I am unsure of my abilities.	18	3.11	1.08
18	**4.67**	0.59	I feel responsible for my actions.	18	**4.61**	0.61
18	**4.67**	0.69	I feel responsible for my decisions.	18	**4.72**	0.46
18	4.11	0.68	I am comfortable being a group leader.	18	3.72	0.75
18	**4.83**	0.38	I can give clear directions.	18	3.89	0.68
18	**4.67**	0.59	I can follow directions.	18	**4.39**	0.50
18	4.39	0.70	I am patient.	18	3.39	0.85
18	4.44	0.51	I learned how to maintain my personal opinion while still being open minded to the suggestions of others.	18	3.94	0.64
18	2.78	1.31	I am not comfortable teaching others.	18	3.39	1.14
18	**4.78**	0.43	I learned to control anxiety in stressful situations while maintaining my composure and focus.	18	3.72	0.90

Note. 1 = not important, 2 = little importance, 3 = somewhat important, 4 = important, 5 = very important

Note. 1 = not competent, 2 = little competence, 3 = somewhat competent, 4 = competent, 5 = very competent

Objective 4 - Identify veterinary students' self-perceived critical thinking attributes.

First Year Students' Critical Thinking Responses

First year students considered all of the critical thinking questions at least somewhat important. They also said they were at least competent with each critical thinking question. First year students thought trying to consider the facts and not letting their biases affect their decisions was the most important critical thinking question (M = 4.71, SD = 0.46). These students ranked working on things until they get them right (M = 4.70, SD = 0.54) as the second most important question. The third most important critical thinking question was being able to explain things clearly (M = 4.68, SD = 0.48). First year students ranked, "I am likely to change my opinion when I am given new information that conflicts with my current opinion" lowest in importance (M = 3.75, SD = 1.18).

Working on things until they get them right was what first year students ranked as their highest competence (M = 4.48, SD = 0.58). First year students believed they were next most competent at enjoying learning about new topics (M = 4.36, SD = 0.68). Third most competent question among first year students was enjoying learning outside of school (M = 4.29, SD = 0.76). First year students were least competent at asking questions in a learning environment (M = 3.22, SD = 1.22).

Table 4.5

First Year Veterinary Students' Perceived Level of Importance and Competence in Critical Thinking

Importance			Question	Competence		
N	*M*	*SD*		*N*	*M*	*SD*
28	4.54	0.51	I listen carefully to the opinions of others even when they disagree with me.	28	3.96	0.74
28	4.39	0.74	I look for opportunities to solve problems.	28	4.04	0.79
28	4.07	0.86	I am interested in many issues.	28	4.25	0.80
28	4.21	0.69	I enjoy learning about many topics.	28	**4.36**	0.68
28	4.11	0.74	I am able to relate to a wide variety of issues.	28	3.96	0.69
28	3.89	0.92	I ask lots of questions in a learning environment.	27	3.22	1.22
28	4.29	0.71	I enjoy finding answers to challenging questions.	28	3.93	0.81
28	4.57	0.63	I am a good problem solver.	28	4.04	0.83
27	4.59	0.50	I am confident that I can reach a reasonable conclusion.	27	4.26	0.71
28	4.61	0.57	I strive to be well informed.	28	4.11	0.74
28	3.75	1.18	I am likely to change my opinion when I am given new information that conflicts with my current opinion.	28	3.57	1.07
28	4.39	0.69	I enjoy solving problems.	28	4.21	0.69
28	**4.71**	0.46	I try to consider the facts and not let my biases affect my decisions.	28	4.11	0.69
28	4.54	0.64	I am able to apply my knowledge to a wide variety of issues.	28	4.00	0.82
28	4.36	0.73	I enjoy learning even when I am not in school.	28	**4.29**	0.76
28	4.61	0.57	I can get along with people who do not share my opinions.	28	4.07	0.90
28	**4.68**	0.48	I am able to explain things clearly.	28	4.04	0.74
28	4.29	0.71	I ask good questions to clarify a solution.	28	3.64	1.06
28	4.50	0.58	I present issues in a clear and precise	28	3.82	0.98

			manner.			
28	4.39	0.63	I consider how my own biases affect my opinions.	28	3.79	0.83
28	4.43	0.63	I search for the truth even when it makes me uncomfortable.	28	3.82	0.91
27	**4.70**	0.54	I keep on working on things until I get them right.	27	**4.48**	0.58
28	4.43	0.63	I will go out of my way to find the right answers to a problem.	28	4.04	0.69
28	4.32	0.77	I try to find multiple solutions to problems.	28	3.93	0.90
28	4.18	0.82	I ask many questions when making a decision.	28	3.82	0.98
28	4.43	0.79	I believe that most problems have more than one solution.	28	4.00	1.02

Note. 1 = not important, 2 = little importance, 3 = somewhat important, 4 = important, 5 = very important
Note. 1 = not competent, 2 = little competence, 3 = somewhat competent, 4 = competent, 5 = very competent

Fourth Year Students' Critical Thinking Responses

Fourth year students considered all of the critical thinking questions important. They believed they were at least somewhat competent with each question. Fourth year students ranked, "I keep on working on things until I get them right" as the most important (M = 4.71, SD = 0.59). The second most important questions were being a good problem solver (M = 4.65, SD = 0.49) and striving to be well informed (M = 4.65, SD = 0.70). They ranked "I am likely to change my opinion when I am given new information that conflicts with my current opinion" as the least important (M = 4.00, SD = 0.61).

Fourth year students ranked the following as what they were most competent in the critical thinking construct: enjoy finding the answers to

challenging questions (M = 4.41, SD = 0.87), enjoy solving problems (M = 4.41, SD = 0.80), and enjoy learning even when they are not in school (M = 4.41, SD = 0.71). They said they were least competent at presenting issues in a clear and precise manner (M = 3.41, SD = 0.80).

Table 4.6

Fourth Year Veterinary Students' Perceived Level of Importance and Competence in Critical Thinking

Importance			**Question**	**Competence**		
N	*M*	*SD*		*N*	*M*	*SD*
18	4.22	0.94	I listen carefully to the opinions of others even when they disagree with me.	18	3.94	0.94
17	4.35	0.70	I look for opportunities to solve problems.	18	4.28	0.67
18	4.22	0.73	I am interested in many issues.	18	4.11	0.90
18	4.39	0.61	I enjoy learning about many topics.	18	4.39	0.70
18	4.33	0.69	I am able to relate to a wide variety of issues.	18	4.06	0.73
18	4.06	0.87	I ask lots of questions in a learning environment.	18	3.78	1.00
17	4.18	0.88	I enjoy finding answers to challenging questions.	17	**4.41**	0.87
17	**4.65**	0.49	I am a good problem solver.	17	4.00	0.79
17	4.53	0.62	I am confident that I can reach a reasonable conclusion.	17	4.00	0.79
17	**4.65**	0.70	I strive to be well informed.	17	4.06	0.75
17	4.00	0.61	I am likely to change my opinion when I am given new information that conflicts with my current opinion.	17	3.82	0.88
17	4.59	0.62	I enjoy solving problems.	17	**4.41**	0.80
17	4.59	0.51	I try to consider the facts and not let my biases affect my decisions.	17	3.88	0.60
17	4.53	0.62	I am able to apply my knowledge to a wide	17	4.06	0.83

			variety of issues.			
17	4.47	0.72	I enjoy learning even when I am not in school.	17	**4.41**	0.71
17	4.53	0.51	I can get along with people who do not share my opinions.	17	4.12	0.60
17	4.59	0.51	I am able to explain things clearly.	17	3.65	0.70
17	4.47	0.51	I ask good questions to clarify a solution.	17	3.88	0.60
17	4.47	0.62	I present issues in a clear and precise manner.	17	3.41	0.80
17	4.29	0.69	I consider how my own biases affect my opinions.	17	3.53	0.94
17	4.24	0.66	I search for the truth even when it makes me uncomfortable.	17	4.00	1.06
17	**4.71**	0.59	I keep on working on things until I get them right.	17	4.24	0.75
17	4.59	0.71	I will go out of my way to find the right answers to a problem.	17	4.24	0.75
17	4.59	0.51	I try to find multiple solutions to problems.	17	4.29	0.69
17	4.24	0.75	I ask many questions when making a decision.	17	4.12	0.86
17	4.47	0.51	I believe that most problems have more than one solution.	17	4.35	0.61

Note. 1 = not important, 2 = little importance, 3 = somewhat important, 4 = important, 5 = very important

Note. 1 = not competent, 2 = little competence, 3 = somewhat competent, 4 = competent, 5 = very competent

Objective 5 - Identify veterinary students' greatest needs in communication, leadership and critical thinking as determined by mean weighted discrepancy scores.

First and fourth year veterinary students' needs are represented by the Mean Weighted Discrepancy Score (MWDS). MWDS were calculated using an Excel file designed by McKim and Saucier (2011). To calculate MWDS by hand follow these directions.

> A discrepancy score was initially calculated for each teacher for each competency by subtracting the competency score from the importance score. A weighted discrepancy score was then calculated by multiplying the discrepancy score by the mean importance rating for each competency. A mean weighted discrepancy score (MWDS) was calculated by taking the sum of the weighted discrepancy scores and dividing by the number of complete participant responses for the competency. (Joerger, 2002, p. 13)

All of the MWDS tables below list competences in descending order from most needed to least needed.

Communication Mean Weighted Discrepancy Scores

First Year Veterinary Students' Scores

Table 4.7 looks at first year veterinary students' needs in communication. The highest rated communication need was explaining a situation to an owner (MWDS = 4.54). First year students ranked "eye contact is important when

talking to others" as their second highest communication need (MWDS = 3.54). The third highest communication need was being able to actively listen (MWDS = 3.51). The lowest rated communication need was being comfortable speaking in small groups (MWDS = 1.59).

Table 4.7

First Year Veterinary Students' Needs in Communication

Question	*N*	MWDS
I can explain a situation to an owner.	28	4.54
Eye contact is important when talking to others.	28	3.54
I actively listen.	28	3.51
I utilize open-ended questions to get other's opinions.	28	3.31
I am a good listener.	28	3.05
I can show empathy when talking to owners.	28	2.88
I feel comfortable teaching others.	27	2.78
I can use summary statements to clarify.	28	2.71
I can pick up on people's nonverbal communication.	28	2.45
I can explain myself in writing.	28	2.45
I am comfortable speaking in small groups.	28	1.59

Fourth Year Veterinary Students' Scores

Fourth year students ranked being able to explain a situation to an owner as being their biggest need in communication (MWDS = 5.39). These students believed their second highest need was feeling comfortable teaching others (MWDS = 5.13). Utilizing open-ended questions to get other's opinions was the third highest need (MWDS = 4.80). These students ranked being comfortable speaking in small groups as their lowest communication need (MWDS = 1.52).

Table 4.8

Fourth Year Veterinary Students' Needs in Communication

Question	*N*	MWDS
I can explain a situation to an owner.	17	5.39
I feel comfortable teaching others.	16	5.13
I utilize open-ended questions to get other's opinions.	17	4.80
I can use summary statements to clarify.	17	3.73
Eye contact is important when talking to others.	17	2.52
I actively listen.	17	2.49
I am a good listener.	17	2.46
I can pick up on people's nonverbal communication.	17	2.43
I can show empathy when talking to owners.	17	2.24
I can explain myself in writing.	17	1.56
I am comfortable speaking in small groups.	17	1.52

Leadership Mean Weighted Discrepancy Scores

First Year Veterinary Students' Scores

Table 4.9 shows first year veterinary students' need in the leadership construct. The highest ranked leadership need was "I learned to control anxiety in stressful situation while maintaining my composure and focus," (MWDS = 5.64). The second highest need was learning how to be self-assertive (MWDS = 2.11). Considering all choices before making a decision was the next highest leadership need (MWDS = 1.97). The lowest ranked leadership need was "I am unsure of my abilities," (MWDS = -0.47). Of the positively worded questions, "I feel responsible for my decisions," was ranked the lowest (MWDS = 0.00).

Table 4.9

First Year Veterinary Students' Needs in Leadership

Question	*N*	MWDS
I learned to control anxiety in stressful situations while maintaining my composure and focus.	28	5.64
I have learned how to be self-assertive.	28	2.11
I consider all choices before making a decision.	28	1.97
I can give clear directions.	28	1.94
I learned how to maintain my personal opinion while still being open minded to the suggestions of others.	28	1.80
I can cooperate in a group.	28	1.66
I get along with people around me.	28	1.62
I am respected by others my age.	28	1.38
I can use information in making decisions.	28	1.34
I can work in a group.	28	1.33
I am comfortable being a group leader.	28	1.32
I can lead a discussion.	28	1.30
I am respected by those older than me.	28	1.23
I am patient.	28	1.10
I can follow directions.	28	0.51
I use past experiences in making decisions.	28	0.32
I feel responsible for my actions.	28	0.17
I feel responsible for my decisions.	27	0.00
I am not comfortable teaching others.	28	-0.12
I am unsure of my abilities.	28	-0.47

Fourth Years Veterinary Students' Scores

Fourth year students ranked their highest leadership need as "I learned to control anxiety in stressful situations while maintaining my composure and focus," (MWDS = 5.39). Being patient was the second highest leadership need among fourth year students (MWDS = 4.35). The third highest need was being

able to give clear directions (MWDS = 4.26). These students ranked being unsure of their abilities as their lowest leadership need (MWDS = -1.92). Their lowest leadership need in the positively worded questions was “I feel responsible for my decisions,” (MWDS = 0.28).

Table 4.10

Fourth Year Veterinary Students’ Needs in Leadership

Question	*N*	MWDS
I learned to control anxiety in stressful situations while maintaining my composure and focus.	17	5.39
I am patient.	17	4.35
I can give clear directions.	17	4.26
I consider all choices before making a decision.	17	3.78
I have learned how to be self-assertive.	17	3.20
I learned how to maintain my personal opinion while still being open minded to the suggestions of others.	17	2.34
I can use information in making decisions.	17	2.21
I get along with people around me.	16	2.05
I am comfortable being a group leader.	17	1.97
I can follow directions.	17	1.66
I can cooperate in a group.	17	1.37
I am respected by those older than me.	16	1.31
I can lead a discussion.	17	0.93
I can work in a group.	16	0.83
I use past experiences in making decisions.	17	0.78
I feel responsible for my actions.	17	0.55
I am respected by others my age.	17	0.47
I feel responsible for my decisions.	17	0.28
I am not comfortable teaching others.	17	-1.66
I am unsure of my abilities.	16	-1.92

Critical Thinking Mean Weighted Discrepancy Scores

First Year Veterinary Students' Scores

First year veterinary students' need in critical thinking was looked at in Table 4.11. These students ranked presenting issues in a clear and precise manner as the highest critical thinking need (MWDS = 3.05). The second highest need was being able to explain things clearly (MWDS = 3.01). Trying to consider the facts and not let their biases affect their decisions was the third highest need (MWDS = 2.86). The lowest need was "I am interested in many issues," (MWDS = -0.73).

Table 4.11

First Year Veterinary Students' Needs in Critical Thinking

Question	*N*	MWDS
I present issues in a clear and precise manner.	28	3.05
I am able to explain things clearly.	28	3.01
I try to consider the facts and not let my biases affect my decisions.	28	2.86
I ask lots of questions in a learning environment.	27	2.76
I ask good questions to clarify a solution.	28	2.76
I search for the truth even when it makes me uncomfortable.	27	2.69
I consider how my own biases affect my opinions.	28	2.67
I listen carefully to the opinions of others even when they disagree with me.	28	2.59
I can get along with people who do not share my opinions.	28	2.47
I am a good problem solver.	28	2.45
I am able to apply my knowledge to a wide variety of issues.	28	2.43
I strive to be well informed.	28	2.30
I believe that most problems have more than one solution.	28	1.90
I will go out of my way to find the right answers to a problem.	28	1.74
I try to find multiple solutions to problems.	28	1.70
I look for opportunities to solve problems.	28	1.57
I enjoy finding answers to challenging questions.	28	1.53
I am confident that I can reach a reasonable conclusion.	27	1.53
I ask many questions when making a decision.	28	1.49
I keep on working on things until I get them right.	28	1.05
I enjoy solving problems.	28	0.78
I am likely to change my opinion when I am given new information that conflicts with my current opinion.	28	0.67
I am able to relate to a wide variety of issues.	28	0.59
I enjoy learning even when I am not in school.	28	0.31
I enjoy learning about many topics.	28	-0.60
I am interested in many issues.	28	-0.73

Fourth Year Veterinary Students' Scores

Fourth year students ranked being able to present issues in a clear and precise manner as their highest need (MWDS = 4.85). The second highest need was being able to explain things clearly (MWDS = 4.34). Striving to be well informed was the third highest need (MWDS = 3.56). These students believed their lowest critical thinking need was, "I enjoy finding answers to challenging answers," (MWDS = -0.53).

Table 4.12

Fourth Year Veterinary Students' Needs in Critical Thinking

Question	*N*	MWDS
I present issues in a clear and precise manner.	16	4.85
I am able to explain things clearly.	16	4.34
I strive to be well informed.	16	3.56
I try to consider the facts and not let my biases affect my decisions.	16	3.47
I consider how my own biases affect my opinions.	16	3.23
I am a good problem solver.	16	2.93
I am confident that I can reach a reasonable conclusion.	16	2.89
I keep working on things until I get them right.	16	2.67
I am able to apply my knowledge to a wide variety of issues.	16	2.60
I ask good questions to clarify a solution.	16	2.50
I can get along with people who do not share my opinions.	16	2.28
I listen carefully to the opinions of others even when they disagree with me.	17	1.77
I try to find multiple solutions to a problem.	16	1.73
I ask lots of questions in a learning environment.	17	1.43
I will go out of my way to find the right answers to a problem.	16	1.43
I search for the truth even when it makes me uncomfortable.	16	1.33
I am able to relate to a wide variety of issues.	17	1.26
I look for opportunities to solve problems.	16	1.11
I believe that most problems have more than one solution.	16	0.84
I ask many questions when making a decision.	16	0.80
I am interested in many issues.	17	0.75
I enjoy learning even when I am not in school.	16	0.56
I am likely to change my opinion when I am given new information that conflicts with my current opinion.	16	0.50
I enjoy solving problems.	16	0.29
I enjoy learning about many topics.	17	0.26
I enjoy finding answers to challenging questions.	16	-0.53

First and Fourth Year Veterinary Students' Highest and Lowest Communication Needs

The highest rated communication need for first year students was explaining a situation to an owner (MWDS = 4.54). First year students ranked "eye contact is important when talking to others" as the second highest communication need (MWDS = 3.54). The third highest communication need was being able to actively listen (MWDS = 3.51). The lowest rated communication need was being comfortable speaking in small groups (MWDS = 1.59).

Fourth year students ranked being able to explain a situation to an owner as being their biggest need in communication (MWDS = 5.39). These students believed their second highest need was feeling comfortable teaching others (MWDS = 5.13). Utilizing open-ended questions to get other's opinions was the third highest need (MWDS = 4.80). These students ranked being comfortable to speak in small groups as their lowest communication need (MWDS = 1.52).

First and fourth year students agreed on their highest and lowest communication need. Within their top five communications needs both listed eye contact being important when talking to others and utilizing open-ended questions to get other's opinions.

Table 4.13

First and Fourth Year Veterinary Students' Top Five Communication Needs and Lowest Need

First Year Veterinary Students' Responses	MWDS	Fourth Year Veterinary Students' Responses	MWDS
I can explain a situation to an owner.	4.54	I can explain a situation to an owner.	5.39
Eye contact is important when talking to others.	3.54	I feel comfortable teaching others.	5.13
I actively listen.	3.51	I utilize open-ended questions to get other's opinions.	4.80
I utilize open-ended questions to get other's opinions.	3.31	I can use summary statements to clarify.	3.73
I am a good listener.	3.05	Eye contact is important when talking to others.	2.52
I am comfortable speaking in small groups.	1.59	I am comfortable speaking in small groups.	1.52

First and Fourth Year Veterinary Students' Highest and Lowest Leadership Needs

The highest ranked leadership need for first year students in the leadership construct was "I learned to control anxiety in stressful situation while maintaining my composure and focus," (MWDS = 5.64). The second highest need was learning how to be self-assertive (MWDS = 2.11). Considering all choices before making a decision was the next highest leadership need (MWDS = 1.97). The lowest ranked leadership need was "I am unsure of my abilities," (MWDS = -0.47). Of the positively worded questions, "I feel responsible for my decisions," was ranked the lowest (MWDS = 0.00).

Fourth year students ranked their highest leadership need as “I learned to control anxiety in stressful situations while maintaining my composure and focus,” (MWDS = 5.39). Being patient was the second highest leadership need among fourth year students (MWDS = 4.35). The third highest need was being able to give clear directions (MWDS = 4.26). These students ranked being unsure of their abilities as their lowest leadership need (MWDS = -1.92). Their lowest leadership need in the positively worded questions was “I feel responsible for my decisions,” (MWDS = 0.28).

First and fourth year students had the same highest and lowest need in the leadership construct, as well. Within their top five leadership needs both groups of students listed “I have learned how to be self-assertive,” “I can give clear directions” and “I consider all choices before making a decision.”

Table 4.14

First and Fourth Year Veterinary Students' Top Five Leadership Needs and Lowest Need

First Year Veterinary Students' Responses	MWDS	Fourth Year Veterinary Students' Responses	MWDS
I learned to control anxiety in stressful situations while maintaining my composure and focus.	5.64	I learned to control anxiety in stressful situations while maintaining my composure and focus.	5.39
I have learned how to be self-assertive.	2.11	I am patient.	4.35
I consider all choices before making a decision.	1.97	I can give clear directions.	4.26
I can give clear directions.	1.94	I consider all choices before making a decision.	3.78
I learned how to maintain my personal opinion while still being open minded to the suggestions of others.	1.80	I have learned how to be self-assertive.	3.20
I am unsure of my abilities.	-0.47	I am unsure of my abilities.	-1.92

First and Fourth Year Veterinary Students' Highest and Lowest Critical Thinking Needs

First year students ranked presenting issues in a clear and precise manner as the highest critical thinking need (MWDS = 3.05). The second highest need was being able to explain things clearly (MWDS = 3.01). Trying to consider the facts and not let their biases affect their decisions was the third highest need (MWDS = 2.86). The lowest need was "I am interested in many issues," (MWDS = -0.73).

Fourth year students ranked being able to present issues in a clear and precise manner as their highest need (MWDS = 4.85). The second highest need was being able to explain things clearly (MWDS = 4.34). Striving to be well informed was the third highest need (MWDS = 3.56). These students believed their lowest critical thinking need was, “I enjoy finding answers to challenging answers,” (MWDS = -0.53).

First and fourth year students had the same first two critical thinking needs, which were being able to present issues in a clear and precise manner and being able to explain things clearly. Both groups also listed “I try to consider the facts and not let my biases affect my decisions.”

Table 4.15

First and Fourth Year Veterinary Students' Top Five Critical Thinking Needs and Lowest Need

First Year Veterinary Students' Responses	MWDS	Fourth Year Veterinary Students' Responses	MWDS
I present issues in a clear and precise manner.	3.05	I present issues in a clear and precise manner.	4.85
I am able to explain things clearly.	3.01	I am able to explain things clearly.	4.34
I try to consider the facts and not let my biases affect my decisions.	2.86	I strive to be well informed.	3.56
I ask lots of questions in a learning environment.	2.76	I try to consider the facts and not let my biases affect my decisions.	3.47
I ask good questions to clarify a solution.	2.76	I consider how my own biases affect my opinions.	3.23
I am interested in many issues.	-0.73	I enjoy finding answers to challenging questions.	-0.53

Limitations

Most inferential statistics tests require a minimum of 30 respondents to be able to run the test. For this study, 30 respondents were not received for first and fourth year. Therefore, this study cannot be generalized to other institutions and groups of students as effectively.

The researcher had limited control over when email messages and reminders were sent out to the students. This issue may have caused a lower response rate because of when the emails were sent out.

Summary

First and fourth year veterinary students ranked the same question as their highest need in all three constructs, when looking at the mean weighted discrepancy scores. Their highest needs were for communication – explaining a situation to an owner, for leadership – learning to control anxiety in stressful situations while maintaining composure and focus, and for critical thinking – presenting issues in a clear and precise manner. Two themes that emerged from the results were first and fourth year students need help knowing how to explain things to owners in everyday language and they need help showing assertiveness and confidence when sharing information with others.

Chapter four looked at the research findings, including a demographic analysis of the sample and the research objectives:

- Identify specific demographic characteristics of veterinary students.
- Identify veterinary students' self-perceived communication attributes.
- Identify veterinary students' self-perceived leadership attributes.
- Identify veterinary students' self-perceived critical thinking attributes.
- Identify veterinary students' greatest needs in communication, leadership and critical thinking as determined by mean weighted discrepancy scores.

CHAPTER 5

Purpose of Study

The purpose of this study was to identify the self-perception of social cognitive, or “soft skills,” of first and fourth year University of Georgia veterinary students. The researcher wanted to look at soft skills to see how important students thought they were as well as how confident they were in their ability to perform these skills.

There is a lack of research in this field of study, therefore the researcher does not have comparable data to compare results to. The findings from this study will be linked back to ideas addressed in the theoretical framework and literature review.

The research objectives for this study were:

- Identify specific demographic characteristics of veterinary students.
- Identify veterinary students’ self-perceived communication attributes.
- Identify veterinary students’ self-perceived leadership attributes.
- Identify veterinary students’ self-perceived critical thinking attributes.
- Identify veterinary students’ greatest needs in communication, leadership and critical thinking as determined by mean weighted discrepancy scores.

Summary of Methods

The survey instrument was sent to all first and fourth year veterinary students in the College of Veterinary Medicine at the University of Georgia. This included approximately 114 first year and 102 fourth year veterinary students.

A total of 216 students were asked to participate in the survey. Seventy-seven students completed the communication construct, which was a response rate of 35.6 percent. For the leadership construct, 61 students completed the construct, resulting in a 28.2 percent response rate. Of the 216 students, 48 completed the critical thinking and demographics sections, resulting in a 22.2 percent response rate.

It could be suggested that the length of the survey was one reason for participant dropout. This survey instrument had 130 items. However, the researcher believed all of the questions asked were needed to get a full picture of each construct.

Data was analyzed using SPSS 21 and Excel. SPSS allowed the researcher to analyze and interpret data using multivariate data analysis techniques. Descriptive statistics, including means and standard deviations were calculated. SPSS gave the researcher flexibility to compare means, frequencies and standard deviations. The researcher used an Excel file designed by McKim and Saucier (2011) to calculate the mean weighted discrepancy score.

Summary of Findings

Objective 1 - Identify specific demographic characteristics of veterinary students.

Of those who responded 38 were females (82.6%) and 8 were male (17.4%). Females make up 72.3 percent of first year students and males are 27.7 percent (University of Georgia, 2015b). Within fourth year students, 76.5 percent are female and 23.5 percent are male.

The ages ranged from 21 to 38 years old. The highest percentage of respondents was 21-25 years old (54.8%). The lowest percentage of respondents was 31 years old and older (12%). The highest percentage of respondents was white (91.7%). Asian/Pacific Islander and Other (Mixed) received the lowest percentage of respondents with 2.1 percent. Of participants who responded to the statement “where did you grow up,” suburban living had the highest percentage (52.1%). Urban living had the lowest percentage (4.2%).

First year students (N = 28) made up 59.6 percent of respondents and fourth year students (N = 19) made up the other 40.4 percent.

Twelve students (25.5%) were biology majors and 11 students (23.9%) were animal science majors (Graph 4.1). Six students were biology science majors. Three majors had two students each. The majors included avian biology and marine science. Several majors had only one student who majored in that during their undergraduate career, and these majors were combined in the graph. The range of majors with only one student included cell molecular biology, forestry and natural resources, and political science. Some students did have

dual or double majors. These dual/double majors were treated as separate majors and listed separately.

Objective 2 - Identify veterinary students' self-perceived communication attributes.

"Most students and graduates agree that communication skills training is essential for a successful transition to practice, however many have reported inadequate instruction during their education," (Meehan & Menniti, 2014, p.1). Communication skills are an area of concern among recent veterinary graduates and employers (Bachynsky et al., 2013). "Until recently none of the United Kingdom veterinary schools taught communication skills as a specific subject, and it was assumed that students would acquire them through general clinical experience during their training," (Latham & Morris, 2007, p. 181). Students are now given formal communication skills training by using actors to role pay different scenarios the students may experience while in practice (Latham & Morris, 2007).

Self-reported communication competence may be helpful to determine how competent he or she thinks they are (McCroskey & McCroskey, 1988). This type of scale cannot tell how competent the person truly is (McCroskey & McCroskey, 1988). With that being said McCroskey and McCroskey do believe self-perceived competence is useful. "It is our position that many of the most important decisions people make concerning communication are made on the basis of self-perceived competence rather than actual competence," (McCroskey

& McCroskey, 1988, p. 110). McCroskey and McCroskey (1988) go on to say that many self-reported communication competence scales did not ask the respondent how competent he believed himself to be.

The researcher set out to use this survey to see how important communication skills were to first and fourth year veterinary students, and to see how competent they believed themselves to be in communication.

First year students believed being able to explain a situation to an owner (M = 4.89, SD = 0.32) was the most important. First year students ranked being a good listener (M = 4.75, SD = 0.52) and showing empathy to owners (M = 4.75, SD = 0.65) as the next most important questions. Utilizing open-ended questions to get other's opinions was the least important (M = 4.21, SD = 0.74).

First year students believed they were most competent at showing empathy when talking to owners (M = 4.14, SD = 1.04). These students ranked being comfortable speaking in a small group (M = 4.11, SD = 0.83) and being a good listener as what they next most competent at (M = 4.11, 0.79). Utilizing open-ended questions to get other's opinions was what first year students considered themselves to be least competent at (M = 3.43, SD = 1.03).

Fourth year students ranked eye contact as important when talking to others (M = 4.72, SD = 0.46) and I can explain a situation to an owner (M = 4.72, SD = 0.58) as the most important questions. The second most important question to fourth year students was showing empathy when talking to owners (M = 4.67, SD = 0.59). They ranked being comfortable speaking in small groups as the least important (M = 4.22, SD = 0.65).

Fourth year students considered themselves most competent at keeping eye contact when talking to others (M = 4.28, SD = 0.67). Showing empathy when talking to owners (M = 4.22, SD = 0.88) and actively listening (M = 4.22, SD = 0.73) were the questions they were next most competent at. These students believed they were least competent at feeling comfortable teaching others (M = 3.41, SD = 0.80).

First and fourth year students believed all of the communication questions in the questionnaire were at least somewhat important, and they thought they were at least somewhat competent with each communication question. Both groups of students believed that being able to explain a situation to an owner was the most important communication question.

Objective 3 - Identify veterinary students' self-perceived leadership attributes.

Leadership is "the process whereby an individual influences a group of individuals to achieve a common goal," (Northouse, 2013, p. 5). These veterinary students are using leadership skills on a daily basis with their classmates and clients. These leadership skills will become more important as they begin practicing full time.

First year students believed learning to control anxiety in stressful situations while maintaining their composure and focus was the most important leadership question (M = 4.79, SD = 0.42). These students believed feeling responsible for their actions (M = 4.71, SD = 0.60) and being able to follow

directions (M = 4.71, SD = 0.46) as the next most important questions. “I am unsure of my abilities,” was the question first year students’ thought was the least important (M = 2.64, SD = 1.13). Looking at the questions that were positively worded, first year students thought leading a discussion was the least important (M = 4.04, SD = 0.69).

First year students were most competent in their abilities to control their actions (M = 4.68, SD = 0.61). These students believed they were next most competent at feeling responsible for their decisions (M = 4.67, SD = 0.62). The question first year students believed they were third most competent at was being able to follow directions (M = 4.61, SD = 0.50). First year students believed they were least competent at “I am unsure of my abilities,” (M = 2.93, SD = 1.15). Of the questions that was positively worded first year students believed they were least competent at being able to control anxiety in stressful situations while maintaining my composure and focus (M = 3.61, SD = 1.07).

Fourth year students thought giving clear directions was the most important question (M = 4.83, SD = 0.38). The second most important question was “I learned to control anxiety in stressful situations while maintaining my composure and focus,” (M = 4.78, SD = 0.43). The next most important questions were being able to use information in decision making (M = 4.67, SD = 0.49), feeling responsible for their actions (M = 4.67, SD = 0.59), feeling responsible for their decisions (M = 4.67, 0.69), and being able to follow directions (M = 4.67, 0.59). These students thought “I am unsure of my abilities,” was the least

important question (M= 2.59, SD = 1.28). Of the positively worded questions, leading a discussion was the least important question (M = 3.89, SD = 0.76).

Fourth year students are most competent feeling responsible for their decisions (M = 4.72, SD = 0.46). These students were next most competent at feeling responsible for their actions (M = 4.61, SD = 0.61). Being able to cooperate in a group (M = 4.39, SD = 0.61) and being able to follow directions (M = 4.39, SD = 0.50) were the next questions fourth year students felt most competent in. They were least competent at “I am unsure of my abilities,” (M = 3.11, SD = 1.08). Of the positively worded questions, being patient was what fourth year students considered themselves least competent at (M = 3.39, SD = 0.85).

First and fourth year students considered each positively worded question at least somewhat important, and they said they were at least somewhat competent based on each question. First year students may believe learning to control anxiety in stressful situations while maintaining their composure and focus is the most important question because they have had little experience with handling stressful situations. Fourth year students may believe giving clear direction is the most important because of their experience working with other people during their clinical rotations.

Objective 4 - Identify veterinary students' self-perceived critical thinking attributes.

The Center for Agribusiness and Economic Development at the University of Georgia completed a study in 2008 that showed undergraduates seeking job positions focused too heavily on technical skills and not enough on soft skills, such as communication and leadership. The study also found that the job candidates needed to put more emphasis on critical thinking, problem solving and analytical skills.

First year students thought trying to consider the facts and not letting their biases affect their decisions was the most important critical thinking question (M = 4.71, SD = 0.46). These students ranked working on things until they get them right (M = 4.70, SD = 0.54) as the second most important question. The third most important critical thinking question was being able to explain things clearly (M = 4.68, SD = 0.48). First year students ranked, "I am likely to change my opinion when I am given new information that conflicts with my current opinion" lowest in importance (M = 3.75, SD = 1.18).

Working on things until they get them right was what first year students ranked with the highest competence (M = 4.48, SD = 0.58). First year students believed they were next competent enjoying learning about new topics (M = 4.36, SD = 0.68). Third most competent question among first year students was enjoying learning outside of school (M = 4.29, SD = 0.76). First year students were least somewhat competent at asking questions in a learning environment (M = 3.22, SD = 1.22).

Fourth year students ranked, “I keep on working on things until I get them right” as the most important (M = 4.71, SD = 0.59). The second most important questions were being a good problem solver (M = 4.65, SD = 0.49) and striving to be well informed (M = 4.65, SD = 0.70). They ranked “I am likely to change my opinion when I am given new information that conflicts with my current opinion” as the least important (M = 4.00, SD = 0.61).

Fourth year students ranked the following as what they were most competent in the critical thinking construct: enjoy finding the answers to challenging questions (M = 4.41, SD = 0.87), enjoy solving problems (M = 4.41, SD = 0.80), and enjoy learning even when they are not in school (M = 4.41, SD = 0.71). They said they were least competent at presenting issues in a clear and precise manner (M = 3.41, SD = 0.80).

Both groups of students believed all of the critical thinking questions were at least somewhat important, and they believed they were at least somewhat competent based on each question. First and fourth year students agreed that the least important question was, “I am likely to change my opinion when I am given new information that conflicts with my current opinion.” This critical thinking aspect could become a problem between the student, when they are practicing, and an owner. If an owner provides the veterinarian with a possible solution to why their animal is sick the veterinarian needs to consider the idea, even if the idea is different from their own.

Objective 5 - Identify veterinary students' greatest needs in communication, leadership and critical thinking as determined by mean weighted discrepancy scores.

Using a MWDS allowed the researcher to look at which questions in each construct students identified as having the greatest need. By understanding what students feel is most important, but they are least competent in, adjustments can be made to ensure that students get the most out of their education to help prepare them for veterinary practice.

Communication

The highest rated communication need for first year students was explaining a situation to an owner (MWDS = 4.54). First year students ranked "eye contact is important when talking to others" as the second highest communication need (MWDS = 3.54). The third highest communication need was being able to actively listen (MWDS = 3.51). The lowest rated communication need was being comfortable speaking in small groups (MWDS = 1.59).

Fourth year students ranked being able to explain a situation to an owner as being their biggest need in communication (MWDS = 5.39). These students believed their second highest need was feeling comfortable teaching others (MWDS = 5.13). Utilizing open-ended questions to get other's opinions was the third highest need (MWDS = 4.80). These students ranked being comfortable to speak in small groups as their lowest communication need (MWDS = 1.52).

First year students may have the highest need in explaining a situation to an owner because they have had little direct contact with owners. Fourth year students may believe that explaining a situation to an owner is their highest need because they are in their clinical rotations and are dealing with stressful situations with animals and clients.

A study done at the Ontario Veterinary College "investigated veterinary students' perceptions of (1) their communication skills and (2) the usefulness of a communication skills training program designed with Kolb's Experiential Learning Theory (ELT) the usefulness of as a framework and implemented in a primary care setting. Twenty nine final year veterinary students from the Ontario Veterinary College attended in a three week communication skills training rotation," (Meehan & Menniti, 2014, p. 1). The objectives of the study were "(1) to explore veterinary students' perceptive on their communication competencies before and after attending a three week training program and (2) to explore the usefulness of specific communication skills training strategies, based on the stages of Kolb's experimental learning cycle," (Meehan & Menniti, 2014, p. 3).

The study was done in a training facility that has microphones and cameras in each exam room. If the client and student gave consent, the visit was recorded for the student to go back and review. They also reviewed the videos in small groups. One-way mirrors were also in each room for professors and students to watch the visit. Creating a training facility similar to this one could allow for students to explain things to owners throughout their veterinary school career. They would be able to see how they can improve by watching themselves

and by getting feedback from faculty and classmates. This type of facility would allow students to see their actions and reactions while speaking with owners throughout their years in veterinary school, and this information would help them know how to explain things to owners in the future.

Leadership

The highest ranked leadership need for first year students in the leadership construct was “I learned to control anxiety in stressful situation while maintaining my composure and focus,” (MWDS = 5.64). The second highest need was learning how to be self-assertive (MWDS = 2.11). Considering all choices before making a decision was the next highest leadership need (MWDS = 1.97). The lowest ranked leadership need was “I am unsure of my abilities,” (MWDS = -0.47). Of the positively worded questions, “I feel responsible for my decisions,” was ranked the lowest (MWDS = 0.00).

Fourth year students ranked their highest leadership need as “I learned to control anxiety in stressful situations while maintaining my composure and focus,” (MWDS = 5.39). Being patient was the second highest leadership need among fourth year students (MWDS = 4.35). The third highest need was being able to clear directions (MWDS = 4.26). These students ranked being unsure of their abilities as their lowest leadership need (MWDS = -1.92). Their lowest leadership need in the positively worded questions was “I feel responsible for my decisions,” (MWDS = 0.28).

First and fourth year students ranked “I learned to control anxiety in stressful situations while maintaining my composure and focus” as their highest leadership need. Students need to be given the opportunity to role-play stressful situations, so they are in a learning environment where they feel more comfortable making mistakes.

“People fear and tend to avoid threatening situations they believe exceed their coping skills, whereas they get involved in activities and behave assuredly when they judge themselves capable of handling situations that would otherwise be intimidating,” (Bandura, 1977, p. 141). Veterinary students need to have enough self-efficacy to feel confident in their abilities to practice medicine, the technical skills, but also have confidence in their abilities to interact with clients, which involves the soft skills.

Critical Thinking

First year students ranked presenting issues in a clear and precise manner as the highest critical thinking need (MWDS = 3.05). The second highest need was being able to explain things clearly (MWDS = 3.01). Trying to consider the facts and not let their biases affect their decisions was the third highest need (MWDS = 2.86). The lowest need was “I am interested in many issues,” (MWDS = -0.73).

Fourth year students ranked being able to present issues in a clear and precise manner as their highest need (MWDS = 4.85). The second highest need was being able to explain things clearly (MWDS = 4.34). Striving to be well

informed was the third highest need (MWDS = 3.56). These students believed their lowest critical thinking need was, “I enjoy finding answers to challenging answers,” (MWDS = -0.53).

First and fourth year students had the highest need in presenting issues in a clear and precise manner. This question falls under the engagement construct of the critical thinking instrument. Students “with a high disposition in engagement would be able to anticipate situations where good reasoning will be necessary to employ,” (Irani et al., 2007, p. 4-5). These students are confident communicators, confident in their ability to reason, solve problems and make decisions, and they are able to explain their reasoning process they used to reach a decision or solve a problem (Irani et al., 2007).

Fourth year students reported having a higher need (MWDS = 4.85) than first year students (MWDS = 3.05). First year students have had little experience with clients since being accepted into veterinary school. Fourth year students have been through clinical rotations and should have experience explaining things to owners.

Implications

If this study is replicated in the future, researchers may want to take out the negatively worded questions in the leadership construct because respondents may not have understood what the question was asking.

Also, the question under leadership that said “I am patient” may be too situation dependent to provide an accurate picture, leading to measurement error.

Recommendations for Research

The researcher would like to see this study replicated at several colleges of veterinary medicine across the United States. The Central Limit Theorem states that for data to be generalizable across populations you need at least 30 respondents. If the study has less than 30 respondents it is more difficult to apply that data to other groups of people and situations. Therefore, the researcher would like to see more than 30 students complete the survey so the data can be applied to more people and situations.

A focus group could be conducted with veterinary students to get more detailed information. The focus group could go into detail about what courses the students thought were most beneficial in preparing them to be more efficacious in regards to communication, leadership and critical thinking. Also, the veterinary students could be asked what they recommend changing in their classes so they feel more prepared to enter into practice.

Another recommendation for research is to do a longitudinal study with students throughout their years in veterinary school to see what changes over the course of their time in veterinary school.

This study looked at self-perception of students’ communication, leadership and critical thinking skills. Another research study could look at these

same skills from an employer perspective. This study would show if students' perceptions are the same as what employers are observing.

A study could look at giving veterinary students the experience early on in their veterinary school careers to present in front of other people. This could help them to deal with some anxiety when communicating with owners because they have had more practice speaking in front of others. Students giving presentations and participating in role-plays could be implemented in a communication course. This study could examine how confident students felt with their communications skills before and after the course.

Recommendations for Practice

The researcher would recommend making a communication/leadership course a requirement for all veterinary students. To help students learn how to explain technical jargon to clients, the veterinary students could have to explain the situation to a middle school student who would be serving as the client. Being able to explain the situation to this audience will require veterinary students to break down the information so the "client" will understand what they are saying. To help students control their anxiety in stressful situations while maintaining their composure and focus, students could participate in a role-playing exercise. The role-playing could include actors. The actors and veterinary students could go through several situations where the situations could become stressful to see how the veterinary students react.

Doucet and Vrins did a study in 2009 that looked at the importance of knowledge, skills and attitudes for veterinarians in clinical and non-clinical fields of practice in Canada. This study found that:

> These data support the notion that non-technical (general) skills and attitudes are of major importance for all veterinary students regardless of their career interests, and should be taught with the same rigor as other basic medical skills within the core curriculum. (Doucet & Vrins, 2009, p. 339)

General skills in this study were defined as “skills applicable to all professionals,” (Doucet & Vrins, 2009, p. 331). General skills is an interchangeable term with soft skills as defined in this research.

Studies have been done by multiple veterinary associations to examine the non-technical skills, knowledge, aptitudes, and attitudes of veterinarians, and the results suggest veterinarians may be lacking in the areas (Lloyd & King, 2004). “The question remains as to whether the veterinary schools and colleges will, or can, change in response. Clearly, the greatest leverage point for changing the profession lies with in the academic institutions where approximately 10,000 students are currently enrolled,” (Lloyd & King, 2004, p. 1923).

The researcher also recommends veterinary science faculty and staff embrace these “soft skills” courses. Leadership courses and trainings need to be offered to students, but the faculty they interact with on a daily basis also need training. “Veterinary medical students are highly influenced and mentored by faculty members and staff. For this reason, it is very important for high-quality

leadership programs to be offered and accepted by faculty," (Lloyd et al., 2007, p. 1485). Centers for teaching and learning on college campuses could come in to help faculty understand how to change their course structure to help students learn these soft skills alongside their technical skills.

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APPENDICES

Appendix A – Consent Letter

May 5, 2014

Dear University of Georgia Veterinary Students,

I am currently a graduate student under the direction of Dennis Duncan, Ph.D. in the Department of Agricultural Leadership, Education, and Communication at the University of Georgia. I invite you to participate in a research study entitled "Self-perception of leadership, critical thinking and communication skills of first and fourth year veterinary students" that is being conducted. Your input as a veterinary student is vital. The purpose of this study was to identify the self-perceptions of first and fourth year veterinary students in regards to the development of competencies based in leadership, critical thinking and communications.

Your participation will involve you completing an online survey instrument and should take about 20 minutes. Your involvement in this study is voluntary, and you can choose not to participate or to stop at any time without penalty of loss or benefits to which you are otherwise entitled. Your decision about participation will have no bearing on your grades or class standing.

Internet communications are insecure and there is a limit to the confidentiality that can be guaranteed due to the technology itself. However, once the materials are received by the researcher, standard confidentiality procedures will be employed.

The results of the research study will be published in summary form only. However, published demographic data will indicate a respondent's gender and year in veterinary school.

The findings of this project may provide information that identifies the benefits of leadership, critical thinking and communications skills as a veterinarian. There are no known risks or discomforts associated with this research.

If you have any questions about this research project, please feel free to call me at (270) 401-4385 or send an email to awaldeck@uga.edu. Questions or concerns about your rights as a research participant should be directed to the

Chairperson, University of Georgia Institutional review Board, 609 Boyd GSRC, Athens, Georgia 30602; telephone (706)-542-3199; email address irb@uga.edu.

By completing this questionnaire, you are agreeing to participate in the above described research project.

Thank you for your time and consideration! Please keep this letter for your records.

Sincerely,

Ariel Waldeck

Appendix B – Recruitment Letter

May 5, 2014

Dear University of Georgia Veterinary Students,

I am currently a graduate student under the direction of Dennis Duncan, Ph.D. in the Department of Agricultural Leadership, Education, and Communication at the University of Georgia. I invite you to participate in a research study entitled “Self-perception of leadership, critical thinking and communication skills of first and fourth year veterinary students” that is being conducted. Your input as a veterinary student is vital. The purpose of this study was to identify the self-perceptions of first and fourth year veterinary students in regards to the development of competencies based in leadership, critical thinking and communications.

Your participation will involve you completing an online survey instrument and should take about 15 minutes. Your involvement in this study is voluntary, and you can choose not to participate or to stop at any time without penalty of loss or benefits to which you are otherwise entitled.

I have contacted faculty in the College of Veterinary Medicine and asked them if they would be willing to allow me to distribute the survey instrument via email.

The consent form will be included at the beginning of the Qualtrics survey that is emailed to first and fourth year veterinary students. It explains to students that this study is part of my thesis research and that it is strictly a voluntary study. Answers will be kept confidential and no identifiers will be used during data collection. The data will be stored for three years after the study is completed. After this time the data results will be destroyed.

Thank you for your time and consideration!

Sincerely,

Ariel Waldeck

Appendix C – Pilot Study Emails

This is the initial email that was sent to second and third year veterinary students to invite them to participate in the pilot study.

Dear Vet Students,

I am writing to ask for your participation in a survey that I am conducting with the College of Veterinary Medicine at the University of Georgia. I am asking vet students, like yourself, to reflect on specific skills and abilities in communication, leadership, and critical thinking.

Your response to this survey is very important and will help in advancing teaching and research in the College of Veterinary Medicine at UGA and also help me to graduate with my Master's degree. As part of the survey, I will be looking at your communications, leadership and critical thinking skills.

This survey should take about 20 minutes to complete. Please click the link below to go to the survey website or copy and paste the survey link into your internet browser.

Please click the link below to go to the survey.
https://ugeorgia.qualtrics.com/SE/?SID=SV_6sxXEIjYrqtWuhv

Your participation in this survey is entirely voluntary and all of your responses will be anonymous. No personally identifiable information will be associated with your responses in any reports of this data. Should you have any further questions or comments, please feel free to contact me at awaldeck@uga.edu.

I appreciate your time and consideration in completing this survey. Your responses will help me to write my thesis and move toward graduation. Thank you for participating in this study!

Thank you very much,
Ariel Waldeck

This is the second email that was sent to second and third year veterinary students to remind them to participate in the pilot study.

Dear Vet Students,

Last week Dr. Brown sent you all an email on my behalf. The email asked you to participate in a survey about your communication, leadership and critical thinking skills and abilities. Your responses are necessary for me to be able to write my thesis and graduate in May.

This survey should take you about 20 minutes to complete. If you have already completed the survey, I appreciate your participation! If you have not yet completed the survey, I encourage you to take a few minutes and complete it.

Please click the link below to go to the survey website or copy and paste the survey link into your internet browser.

Please click the link below to go to the survey.
https://ugeorgia.qualtrics.com/SE/?SID=SV_6sxXEIjYrqtWuhv

Your feedback is important. Getting direct information from students is crucial in improving the quality of education offered by the University of Georgia. I appreciate you time and consideration in completing this survey.

Should you have any further questions or comments, please feel free to contact me at awaldeck@uga.edu.

Thank you very much,
Ariel Waldeck

Appendix D – Study Emails

This is the invitation email that was sent on January 21, 2015 to first and fourth year veterinary students.

Dear Vet Students,

I am writing to ask for your participation in a survey that I am conducting with the College of Veterinary Medicine at the University of Georgia. In a couple of days a link to this survey will be sent to you. This email is to provide you with basic information about the survey, and help you know what to be looking for.

The purpose of this survey is for each of you to reflect on specific skills and abilities in communication, leadership, and critical thinking. You all were selected to complete this survey because you are veterinary students at UGA. The survey will take about 20 minutes to complete.

Your participation in this survey is voluntary. The information I gather through this survey will help me to write my thesis and graduate in May. If you have any question, feel free to contact me at awaldeck@uga.edu.

Thank you so much for your time,

Ariel Waldeck

This is the first email that was sent to first and fourth year students containing the link to the survey. The email was sent on January 24, 2015.

Hello everyone,

Here is the follow-up to the email I sent you earlier this week regarding a survey for Ariel Waldeck. I know you are all busy but she would greatly appreciate it if you would take a few minutes to complete the survey at the link below.

Thanks!
Dr C

Dear Vet Students,

I am writing to ask for your participation in a survey that I am conducting with the College of Veterinary Medicine at the University of Georgia. I am asking vet students, like yourself, to reflect on specific skills and abilities in communication, leadership, and critical thinking.

Your response to this survey is very important and will help in advancing teaching and research in the College of Veterinary Medicine at UGA and also help me to graduate with my Master's degree, in May. As part of the survey, I will be looking at your communications, leadership and critical thinking skills.

This survey should take about 20 minutes to complete. Please click the link below to go to the survey website or copy and paste the survey link into your internet browser.

Please click the link below to go to the survey.
https://ugeorgia.qualtrics.com/SE/?SID=SV_bPMjieeYtQGmdXn

Your participation in this survey is entirely voluntary and all of your responses will be anonymous. No personally identifiable information will be associated with your responses in any reports of this data. Should you have any further questions or comments, please feel free to contact me at awaldeck@uga.edu.

I appreciate your time and consideration in completing this survey. Your responses will help me to write my thesis and move toward graduation. Thank you for participating in this study!

Thank you very much,
Ariel Waldeck

This is the first reminder email that was sent to first and fourth year students on January 29, 2015.

Dear Vet Students,

Last week Dr. Cornell sent you all an email on my behalf. The email asked you to participate in a survey about your communication, leadership and critical thinking skills and abilities. Your responses are necessary for me to be able to write my thesis and graduate in May.

This survey should take you about 20 minutes to complete. If you have already completed the survey, I appreciate your participation! If you started the survey, but were not able to finish it, you should be able to start where you left off. If you have not yet completed the survey, I encourage you to take a few minutes and complete it.

Please click the link below to go to the survey website or copy and paste the survey link into your internet browser.

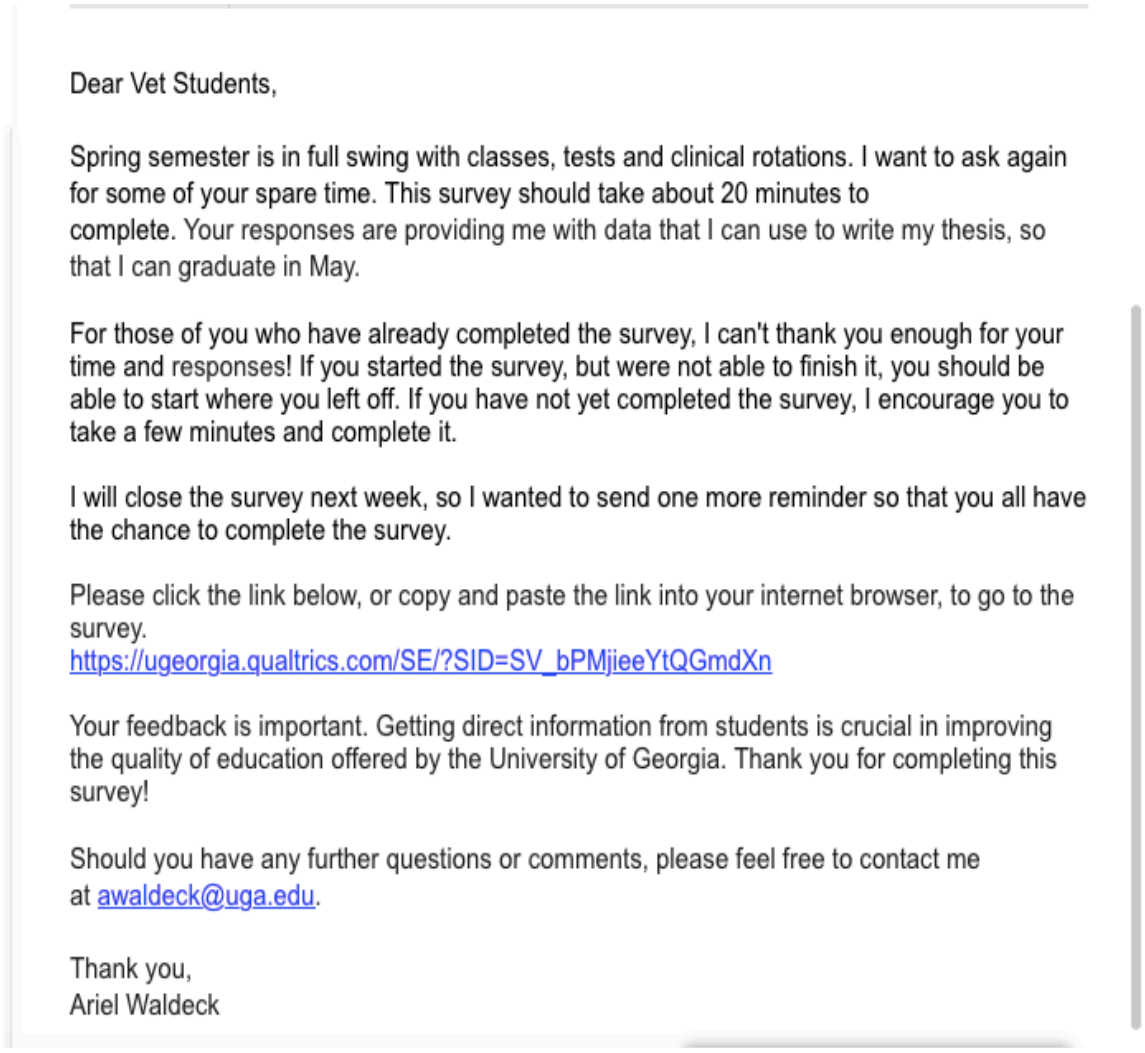
Please click the link below to go to the survey.
https://ugeorgia.qualtrics.com/SE/?SID=SV_6sxXEIjYrqtWuhv

Your feedback is important. Getting direct information from students is crucial in improving the quality of education offered by the University of Georgia. I appreciate you time and consideration in completing this survey.

Should you have any further questions or comments, please feel free to contact me at awaldeck@uga.edu.

Thank you very much,
Ariel Waldeck

This is the final reminder email that was sent to first and fourth year veterinary students on February 11, 2015.



Dear Vet Students,

Spring semester is in full swing with classes, tests and clinical rotations. I want to ask again for some of your spare time. This survey should take about 20 minutes to complete. Your responses are providing me with data that I can use to write my thesis, so that I can graduate in May.

For those of you who have already completed the survey, I can't thank you enough for your time and responses! If you started the survey, but were not able to finish it, you should be able to start where you left off. If you have not yet completed the survey, I encourage you to take a few minutes and complete it.

I will close the survey next week, so I wanted to send one more reminder so that you all have the chance to complete the survey.

Please click the link below, or copy and paste the link into your internet browser, to go to the survey.
https://ugeorgia.qualtrics.com/SE/?SID=SV_bPMjieeYtQGmdXn

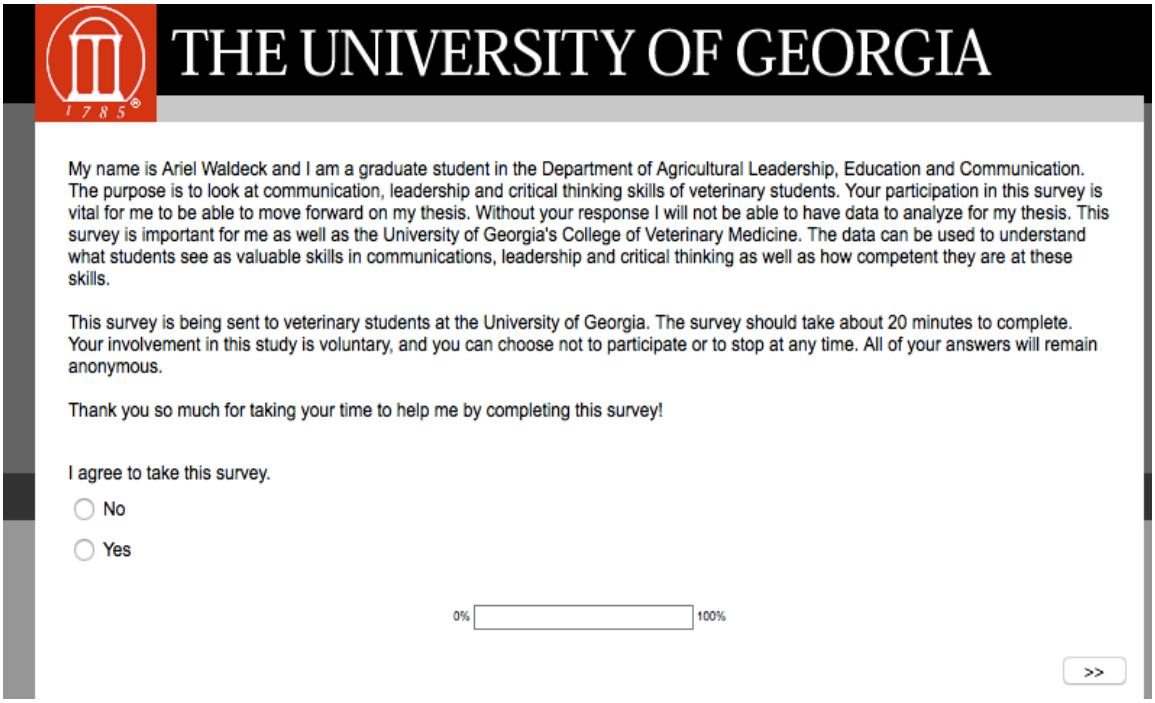
Your feedback is important. Getting direct information from students is crucial in improving the quality of education offered by the University of Georgia. Thank you for completing this survey!

Should you have any further questions or comments, please feel free to contact me at awaldeck@uga.edu.

Thank you,
Ariel Waldeck

Appendix E – Survey

Screenshots were taken to show what the survey looked like to the veterinary students who took it.



Example Question

The question should be answered from left to right. The left section is how important you believe the statement is. The right section is how competent you believe you are regarding the statement.

This example will help to explain how to answer the following questions.

THE UNIVERSITY OF GEORGIA

Example Question - You do NOT have to answer this question.

The question should be answered from left to right. The left section is how important you believe the statement is. The right section is how competent you believe you are regarding the statement.

This example will help to explain how to answer the following questions.

Level of Importance						Level of Competence				
Not Important	Little Importance	Somewhat Important	Important	Very Important		Not Competent	Little Competence	Somewhat Competent	Competent	Very Competent
○	○	○	○	●	I am comfortable speaking to strangers.	○	●	○	○	○

This person perceived the topic "I am comfortable speaking to strangers " as *Very Important* and perceived that they had *Little Competence* in this area.

COMMUNICATION

Level of Importance						Level of Competence				
Not Important	Little Importance	Somewhat Important	Important	Very Important		Not Competent	Little Competence	Somewhat Competent	Competent	Very Competent
○	○	○	○	○	Eye contact is important when talking to others.	○	○	○	○	○
○	○	○	○	○	I am comfortable speaking in small groups.	○	○	○	○	○
○	○	○	○	○	I am a good listener.	○	○	○	○	○
○	○	○	○	○	I can use summary statements to clarify.	○	○	○	○	○
○	○	○	○	○	I utilize open ended questions to get other's opinions.	○	○	○	○	○
○	○	○	○	○	I feel comfortable teaching others.	○	○	○	○	○
○	○	○	○	○	I can explain a situation to an owner.	○	○	○	○	○
○	○	○	○	○	I can pick up on people's nonverbal communication.	○	○	○	○	○
○	○	○	○	○	I can explain myself in writing.	○	○	○	○	○
○	○	○	○	○	I can show empathy when talking to owners.	○	○	○	○	○
○	○	○	○	○	I actively listen.	○	○	○	○	○

LEADERSHIP

Level of Importance						Level of Competence				
Not Important	Little Importance	Somewhat Important	Important	Very Important		Not Competent	Little Competence	Somewhat Competent	Competent	Very Competent
○	○	○	○	○	I can cooperate in a group.	○	○	○	○	○
○	○	○	○	○	I can work in a group.	○	○	○	○	○
○	○	○	○	○	I get along with people around me.	○	○	○	○	○
○	○	○	○	○	I can lead a discussion.	○	○	○	○	○
○	○	○	○	○	I can lead a discussion.	○	○	○	○	○
○	○	○	○	○	I can use information in making decisions.	○	○	○	○	○
○	○	○	○	○	I have learned how to be self-assertive.	○	○	○	○	○
○	○	○	○	○	I am respected by others my age.	○	○	○	○	○
○	○	○	○	○	I am respected by those older than me.	○	○	○	○	○
○	○	○	○	○	I consider all choices before making a decision.	○	○	○	○	○
○	○	○	○	○	I use past experiences in making decisions.	○	○	○	○	○
○	○	○	○	○	I am unsure of my abilities.	○	○	○	○	○
○	○	○	○	○	I feel responsible for my actions.	○	○	○	○	○
○	○	○	○	○	I feel responsible for my decisions.	○	○	○	○	○
○	○	○	○	○	I feel comfortable being a group leader.	○	○	○	○	○
○	○	○	○	○	I can give clear directions.	○	○	○	○	○
○	○	○	○	○	I can follow directions.	○	○	○	○	○
○	○	○	○	○	I am patient.	○	○	○	○	○
○	○	○	○	○	I learned how to maintain my personal opinion while still being open minded to the suggestions of others.	○	○	○	○	○
○	○	○	○	○	I am not comfortable teaching others.	○	○	○	○	○
○	○	○	○	○	I learned to control anxiety in stressful situations while maintaining my composure and focus.	○	○	○	○	○

CRITICAL THINKING

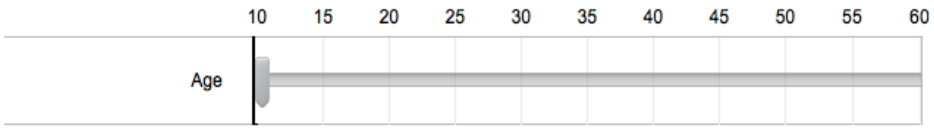
Level of Importance						Level of Competence				
Not Important	Little Importance	Somewhat Important	Important	Very Important		Not Competent	Little Competence	Somewhat Competent	Competent	Very Competent
○	○	○	○	○	I listen carefully to the opinions of others even when they disagree with me.	○	○	○	○	○
○	○	○	○	○	I look for opportunities to solve problems.	○	○	○	○	○
○	○	○	○	○	I am interested in many issues.	○	○	○	○	○
○	○	○	○	○	I enjoy learning about many topics.	○	○	○	○	○
○	○	○	○	○	I am able to relate to a wide variety of issues.	○	○	○	○	○
○	○	○	○	○	I ask lots of questions in a learning environment.	○	○	○	○	○
○	○	○	○	○	I enjoy finding answers to challenging questions.	○	○	○	○	○
○	○	○	○	○	I am a good problem solver.	○	○	○	○	○
○	○	○	○	○	I am confident that I can reach a reasonable conclusion.	○	○	○	○	○
○	○	○	○	○	I strive to be well informed.	○	○	○	○	○
○	○	○	○	○	I am likely to change my opinion when I am given new information that conflicts with my current opinion.	○	○	○	○	○
○	○	○	○	○	I enjoy solving problems.	○	○	○	○	○
○	○	○	○	○	I try to consider the facts and not let my biases affect my decisions.	○	○	○	○	○
○	○	○	○	○	I am able to apply my knowledge to a wide variety of issues.	○	○	○	○	○
○	○	○	○	○	I enjoy learning even when I am not in school.	○	○	○	○	○
○	○	○	○	○	I can get along with people who do not share my opinions.	○	○	○	○	○
○	○	○	○	○	I am able to explain things clearly.	○	○	○	○	○
○	○	○	○	○	I ask good questions to clarify a solution.	○	○	○	○	○
○	○	○	○	○	I present issues in a clear and precise manner.	○	○	○	○	○
○	○	○	○	○	I consider how my own biases affect my opinions.	○	○	○	○	○
○	○	○	○	○	I search for the truth even when it makes me uncomfortable.	○	○	○	○	○
○	○	○	○	○	I keep on working on things until I get them right.	○	○	○	○	○
○	○	○	○	○	I will go out of my way to find the right answers to a problem.	○	○	○	○	○
○	○	○	○	○	I try to find multiple solutions to problems.	○	○	○	○	○
○	○	○	○	○	I ask many questions when making a decision.	○	○	○	○	○
○	○	○	○	○	I believe that most problems have more than one solution.	○	○	○	○	○

Please complete the following statements so that the researcher can learn more about the participants.

Click to write the question text

- Male
- Female

Click to write the question text



Race/Ethnicity

- White
- Black/African American
- Hispanic/Latino
- Native American/American Indian
- Asian/Pacific Islander
- Other

Where did you grow up?

- Urban
- Suburban
- Rural - Non Farm
- Rural - Farm

0% 100%

>>

Bachelor's Degree

Minor

College Involvement

	I did not participate	Member	Committee Chair	Club Officer	Officer at the State or Regional Level	National Officer
Social Sorority/Fraternity	○	○	○	○	○	○
Honor Society	○	○	○	○	○	○
Departmental or Academic Major Student Organization	○	○	○	○	○	○
Campus Wide Student Club	○	○	○	○	○	○
Religious Organization	○	○	○	○	○	○
Other	○	○	○	○	○	○

What were communication and/or leadership courses in undergrad that were helpful?

Please describe the course and list course name, prefix and number, if possible.

What were communication and/or leadership courses in vet school that were helpful?

Please describe the course and list course name, prefix and number, if possible.

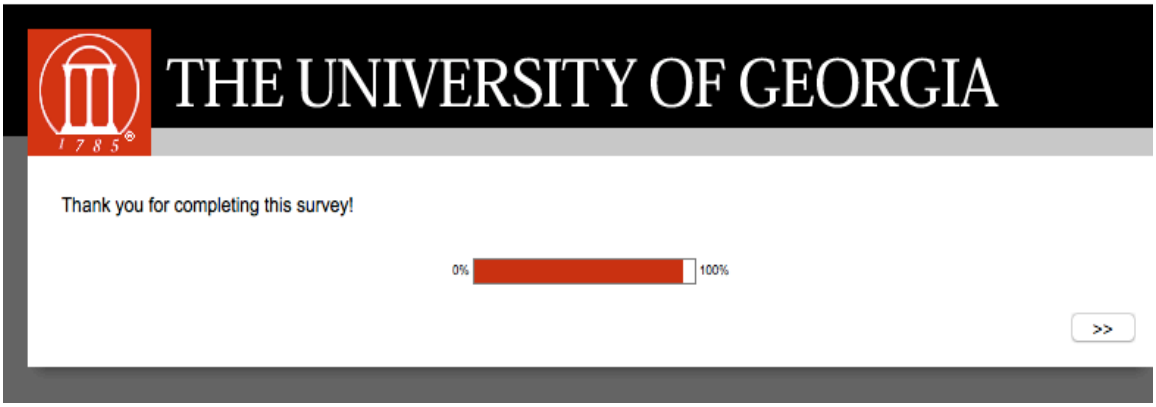
Have you had an internship/work experience at a veterinary office?

- ○ No
- ○ Yes

If yes, explain what you did.

Year in vet school

- ○ First year
- ○ Second year
- ○ Third year
- ○ Fourth year


THE UNIVERSITY OF GEORGIA
1785
Thank you for completing this survey!
0%
100%
>>