

# **A Uses and Gratifications Approach to Communicating with Prospective Graduate Students in Agricultural and Environmental Sciences**

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## **Abstract**

*Universities often overlook prospective graduate students—significant contributors to research productivity—as an audience requiring strategic recruitment communication. Uses and gratifications theory posits audiences intentionally select specific communication channels to fulfill self-actualization needs. Therefore, the purpose of this study was to explore how high-achieving graduate students fulfilled self-actualization needs using communication channels during their graduate school recruitment processes. This qualitative study utilized semi-structured interviews with 19 graduate students from the College of Agricultural and Environmental Sciences at the University of Georgia. Deductive analysis revealed participants' cognitive needs were fulfilled by websites, interpersonal communication, emails, peer-reviewed journal articles, and social media. Affective needs were fulfilled by emails, in-person visits, and reputation. Personal integrative needs were fulfilled by emails, websites, direct communication, and peer-reviewed journal articles. Social integrative needs were fulfilled by personal connections, in-person visits, emails, and social media. Emails fulfilled four self-actualization needs and should be prioritized during recruitment. Websites, journal articles, and social media gave students a holistic view of university life and provided them with the confidence to explore the university further. Results additionally implied the importance of interpersonal communication and professional relationships.*

## **Introduction**

The quality of graduate education has long played a role in the rankings of U.S. universities (Wilbers & Brankovic, 2021) with graduate students making a significant contribution to scientific research publications (Black & Stephan, 2010) adding to the research prowess of their respective universities. However, the resources needed for strategically recruiting prospective graduate students are often overlooked when universities are marketing their programs to recruit graduate students (Balayan et al., 2022). For students aspiring to careers in academia, the graduate experience is the first meaningful step in their academic career (Austin & Wulff, 2004, as cited by Bagdonis & Dodd, 2010). Graduate students are individuals who will one day be academic scientists responsible not only for communicating science but serving their communities through research, outreach, and teaching at their respective universities (Shaffer, 2012). While graduate students play a prominent role in the research productivity and ranking of their universities, there has been little focus on how to market to the critical graduate student researcher audience. Appealing to the graduate student researcher audience is paramount because graduate students in research programs are impacted differently by marketing activities than graduate students in professional programs (Chen, 2008).

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There are distinct differences in how graduate and undergraduate students choose an institution at which to study (Chen, 2008). Additionally, universities may have centralized, decentralized, or hybrid models for graduate education administration in which central graduate administration handles some aspects—such as overall admission requirements and awarding of scholarships—but leaves other elements to the discretion of schools or departments (Hassanein, 2020). The differences between the graduate and undergraduate recruitment process are so pronounced that in the past decade, graduate enrollment management (GEM) has emerged as a distinct field of study from enrollment management (EM), which was developed in institutions of higher education surrounding undergraduate admissions (Balayan et al., 2022). GEM seeks to support graduate students through their distinctive lifecycles from prospective recruits to alumni. The field recognizes “each institution, academic unit, department, or program has unique characteristics that must be reasonably understood and respected” (Balayan et al., 2022, p. 38). GEM acknowledges academic requirements of graduate students are more niche and program-specific than undergraduate requirements but recognizes GEM’s limitations because strategic communication and recruitment in GEM often receives less support from campus leadership (Balayan et al., 2022).

In addition to the unique elements of graduate program recruitment, enrollment, and admission, prospective students also possess distinctive motivations for pursuing graduate education and research experiences including funding availability, faculty advisor research interests, and the classes they are interested in taking (English & Umbach, 2016; Poock & Love, 2001; Shellhouse et al., 2020). In the natural sciences, graduate students—guided by principal investigators—undergo apprenticeships (or assistantships) in research labs to become scientific professionals and active members of research groups (Feldman et al., 2013). The guidance of their academic advisors throughout graduate education additionally shapes how students approach their future as researchers inside and outside academia (Feldman et al., 2013; Shaffer, 2012). Several demographic factors also influence selection of institutions for graduate education, including gender, minority status, socioeconomic status, and age (Lei & Chuang, 2010). Therefore, previous literature has identified the need for graduate departments to delve into the needs of their target student populations in order to market to them based on their unique needs and motivations (Lei & Chuang, 2010).

Given the unique experiences contained within the graduate education and research apprenticeship/assistantship experience and the lack of attention to these nuances in existing literature, a study exploring the recruitment processes prospective students are using to seek graduate programs and the gratifications they receive from using specific communication processes is warranted. Because agricultural education researchers are committed to helping develop a scientific and agricultural workforce prepared to face the challenges of an ever-evolving food system, understanding the communication experiences and needs of the next generation of agricultural scientists is crucial. Therefore, the present study aimed to explore the recruitment needs of successful graduate students performing research within a college and how those needs were met through communication channels during the graduate school recruitment process.

## **Literature Review**

### **Theoretical Framework - Uses and Gratifications Theory**

Herzog’s (1940) uses and gratifications (U&G) theory was used to frame the study. Katz et al. (1974) outlined the principal U&G assumptions that viewers are directed by their goals, are active users of media, and are aware of their specific needs (Rubin, 2002). Because users are aware of their needs, they select vehicles of communication to satisfy—or gratify—those needs (Katz et al., 1973). U&G theory assumes people are aware of their needs from media and therefore examines what audiences actively choose to do with specific media (Katz et al., 1973). U&G is interested in determining not only why individuals choose to use a type of media but what gratifications they receive from using the media and motives they have when utilizing the media (Hossain, 2019).

U&G posits individuals are motivated to select certain media sources to fulfill specific self-actualization needs (Blumler, 1985). To realize self-actualization needs—which may aid in personal development—individuals do not have to depend on others but instead look to outside sources (Blumler, 1985). U&G theory posits the following five self-actualization needs are related to media choice: cognitive, affective, personal integrative, social integrative, and tension release (Katz et al., 1973). Cognitive needs are associated with increasing knowledge and informational understanding. Affective needs are associated with pleasure, aesthetics, or emotions. Personal integrative needs are associated with “strengthening credibility, confidence, stability, and status” (Katz et al., 1973, p. 167). Social integrative needs are related to bolstering contact with friends, family, or others in the world. Finally, tension release needs are those associated with a desire to escape from others and the world (Katz et al., 1973).

U&G and the fulfillment of self-actualization needs through selection of specific online channels has been used to explain the motives and experiences of stakeholders who use various forms of communication technologies to achieve fulfillment in their roles (Can et al., 2019). Therefore, U&G and the self-actualization needs serve as an appropriate lens through which to examine communication needs and experiences of prospective graduate students.

### **Recruitment and Background Characteristics**

According to Blumler (1985), self-actualization needs may be related to social characteristics and varying experiential backgrounds. Therefore, various background characteristics have been used to examine the use of communication channels in a variety of contexts within graduate student recruitment, even if not specifically from a U&G lens. Institutions have utilized undergraduate research projects as a graduate recruitment method to encourage students to continue at the institution (Colucci-Ríos & Briano, 2001; Narayanan, 1999). Notably, mentoring and direct experiences with faculty are often cited as the most influential factors in the successful recruitment of students into graduate programs (Colucci-Ríos & Briano, 2001). Faculty consistently play a large role in graduate recruitment. The personal brand equity of academic faculty has been investigated to reveal that trust, likability, and commitment influence a competent faculty member’s brand equity (Shafaei et al., 2019). Previous studies have suggested encouraging faculty interactions and campus visits in which students get to know the culture of campus are crucial in graduate student recruitment (Pooch & Love, 2001). However, the literature has also revealed deeply personal demographic factors influencing choice of graduate institutions include gender, socioeconomic status, ethnicity, age, marital status, and citizenship (Lei & Chuang, 2010).

### **Prospective Graduate Student Communication Tool Use**

Though personal interactions with faculty and demographics have been shown to influence institutional choice, there is limited research surrounding prospective graduate students’ use of communication tools in exploring, interacting with, and ultimately choosing an institution for graduate education and research. McNicholas and Marcella (2022) attempted to segment international graduate students by their information-seeking habits and the rigor of their search process when seeking a graduate institution. Qualitative analysis of semi-structured interviews revealed decision-making was an iterative, cyclical process often informed by personal recommendations from trusted sources as well as university ranking sites and online reviews, but social media, emails, and in-person visits were not especially influential in this process (McNicholas & Marcella, 2022). Ultimately, the complexity of the decision-making process was recognized, and McNicholas and Marcella (2022) proposed classifying prospective students according to their information-seeking approaches and stage in the decision-making process.

Additionally, from a decision-making perspective, universities have attempted to address complex graduate student recruitment issues by exploring innovative techniques, such as inbound marketing, to recruit national and international students to higher education institutions (HEIs; Royo-Vela & Hünermund, 2016). Royo-Vela and Hünermund (2016) found graduate students preferred HEIs with interactive online communication platforms that built trust toward HEIs and positively influenced student decision making.

Both positive and negative electronic word-of-mouth (eWOM) marketing has been studied for its influence on brand equity for European HEIs (Carvalho et al., 2021) with qualitative findings revealing positive eWOM—such as online reviews, discussion forums, blogs, rating websites, etc.—influenced perceptions of a HEI more than negative eWOM, and eWOM that was not generated by students (such as rankings) was even more influential than eWOM generated by students. Additionally, Amirali and Bakken (2015) found success in implementing a social media strategy to connect, communicate, and collaborate with international graduate student recruits. While the importance of using marketing tools to successfully reach prospective graduate students is crucial to overall graduate student recruitment, specific literature surrounding the complex communication needs of graduate enrollment management is still within its developing stages and worthy of further examination (Balayan et al., 2022).

### **Purpose and Research Question**

The purpose of this study was to explore how successful high-achieving students fulfilled self-actualization needs using specific communication channels during their graduate school recruitment processes. The study was guided by the following research question: When searching for graduate research programs, what communication channels are prospective graduate students using to fulfill self-actualization needs?

### **Methods**

#### **Research Approach**

The study utilized a qualitative research design to explore graduate students' experiences with communication channels when searching for graduate programs, seeking to gain knowledge from participant experiences with phenomena and develop practices based on that knowledge (Creswell, 2007; Dowling, 2007). Employing in-depth, semi-structured interviews allowed participants to share their experiences while being guided by probes contained in the interview guide that aligned with U&G theory. The interview guide and research protocol were created by the authors of the study and reviewed by experts in agricultural leadership, education, and communication and approved by the University of Georgia Institutional Review Board (IRB; Protocol # 00004686). Additionally, throughout the interviews, participants were asked follow-up questions based upon their responses to further interpret their experiences (Seidman, 2006).

In qualitative research, researchers may possess biases based upon their own experiences and therefore must reflect upon their backgrounds through bracketing (Creswell & Poth, 2018; Farrell, 2020) to increase trustworthiness in the interpretation of the qualitative analysis. The following statements help the reader understand the authors' backgrounds and serve as a form of bracketing. The first author was a graduate student within the University of Georgia's College of Agricultural and Environmental Science (UGA CAES) in which the interviews were conducted. As the sole interviewer and coder, the first author's interview style and interpretation of the codes may have been influenced by her personal graduate program search experience in which she was recruited to become a full-time graduate student under a faculty member after working in administrative capacity within an academic department in CAES. She is originally from the United States, a native of Georgia, and received her bachelor's and master's degrees from the University of Georgia. At the time of data collection, the first author was pursuing her master's degree. During data analysis, she was a Ph.D. student and is a faculty member at the University of Georgia at the time of publication. The second author is a professor at University of Georgia specializing in science communication. She is the faculty member who recruited the first author to pursue graduate education at the University of Georgia. As a former graduate coordinator and advisor to 58 graduate students during her tenure, the second author considered these influences throughout the interview protocol creation, peer debriefing, and writing process.

**Participant Information**

The target population for this study was high-achieving graduate researchers within a CAES at a research-heavy university. This population was chosen because existing literature on recruitment efforts in CAES has largely centered around targeting undergraduate students (i.e., Baker et al., 2013; Beyl et al., 2016; Westbrook & Alston, 2007). Additionally, within CAES, research apprenticeships or research assistantships experienced by natural science students are often made possible with funding from agricultural commodity commission groups (Lee & Dudley, 2008). Such apprenticeships allow for the sustained development of agricultural fields through academic and technical skill training (Lee & Dudley, 2008), benefitting both academia and the agriculture industry. Therefore, a deeper understanding of the recruitment experiences of prospective students who are funded through research assistantships is needed to better understand their communication preferences.

Nineteen graduate students from UGA CAES were purposively selected to participate in the study. To identify high-achieving graduate students within CAES, a college administrator emailed each department head requesting the names of two graduate students their faculty perceived as strong in research and academics. Because this research project was part of a larger study to identify the cultural differences that may exist in prospective graduate students' communication preferences, each department submitted the name of one international student and one domestic student. Twenty-three students were invited to participate in the interviews, and 19 accepted the invitation, representing 10 departments. Of the 19, nine were international and 10 were domestic students. Sixteen students were currently in Ph.D. programs, and three were in master's programs. Eight of the students were either receiving both a master's degree and doctoral degree from the same department within CAES or were in direct-to-Ph.D. programs that did not require a master's degree for admission. All interviewees were full-time graduate students receiving assistantship funding with at least some time spent on a main or satellite campus during their degree programs. Additional information about each individual participant is provided in Table 1.

**Table 1***Participant Demographic and Educational Characteristics*

Pseudonym	Gender	Degree Sought	Student Status	Country of Origin	Marital Status	Most Recent Institution	
						Location	LGU Status <sup>a</sup>
Allie	Female	Master's	Domestic	U.S.	Single	U.S.	Non-LGU
Charles	Male	Ph.D.	International	South Korea	Married	U.S.	LGU
Elijah	Male	Ph.D.	International	Benin	Married	Denmark	Non-LGU
Jack	Male	Ph.D.	International	Jamaica	Single	U.S.	LGU
Josh	Male	Ph.D.	Domestic	U.S.	Single	U.S.	LGU
Karter	Female	Ph.D.	Domestic	U.S.	Married	U.S.	LGU
Kimberly	Female	Ph.D.	Domestic	U.S.	Single	U.S.	LGU
Lacy	Female	Ph.D.	Domestic	U.S.	Single	U.S.	Non-LGU
Leah	Female	Ph.D.	International	Philippines	Married	Philippines	Non-LGU
Lorelai	Female	Ph.D.	International	China	Single	U.K.	Non-LGU
Matt	Male	Ph.D.	International	Nepal	Married	Nepal	Non-LGU
Natasha	Female	Ph.D.	Domestic	U.S.	Married	U.S.	Non-LGU
Nate	Male	Ph.D.	Domestic	U.S.	Engaged	U.S.	LGU
Oliver	Male	Ph.D.	International	Turkey	Married	U.S.	LGU
Rachel	Female	Master's	Domestic	U.S.	Married	U.S.	LGU
Sara	Female	Ph.D.	International	India	Married	India	Non-LGU
Tonya	Female	Ph.D.	Domestic	U.S.	Engaged	U.S.	LGU
Victoria	Female	Master's	Domestic	U.S.	Single	U.S.	LGU
Yvette	Female	Ph.D.	International	China	Married	U.S.	LGU

<sup>a</sup>LGU is an abbreviation for land-grant university, a type of post-secondary institution for which the federal government granted land through the Morrill Acts of 1862 and 1890 to establish colleges teaching agricultural sciences. LGUs are focused on teaching, research, and Extension throughout the United States (Croft, 2022).

### **Data Collection**

The semi-structured interviews were conducted face-to-face or over the Zoom video conferencing platform based upon the personal comfort levels associated with in-person meetings due to the COVID-19 pandemic circumstances during the 2021 fall semester and location of graduate students. The interviewer offered to drive to satellite campus locations, but participants asked to be interviewed over Zoom instead. To address confidentiality and privacy concerns with interviews conducted over the internet, the participants were assured only the audio portion of the interviews would be retained, in accordance with IRB protocol.

Each interview lasted an average of 60 minutes, and students were ensured all data would only be reported in aggregate, while pseudonyms were also used to ensure confidentiality. For consistency in protocol across all lines of questioning, a single interviewer conducted all the interviews. The interview protocol contained fifteen questions total with probing questions to encourage richer responses from participants if they were unclear on the original questions. First, participants were asked seven open-ended questions about their personal backgrounds—both familial and cultural. Examples of questions asked during the first portion of the interview included: “Where did you come from before working on your graduate degree here at UGA CAES?”, “What graduate degree are you pursuing?”, and “How did you become interested in this subject matter?”. The interviewer then moved into a set of eight questions that asked participants to describe the communication channels they used to search for graduate programs, how they corresponded with individuals affiliated with universities, learned about research at universities, and ultimately made their decision to study at UGA. Examples of questions asked during the second portion of the interview included: “What communication tools did you find most useful when you were exploring graduate programs?”, “How did you learn about the research faculty members were engaged in at the schools you were considering?”, and “What was the most useful communication tool when making your decision about graduate programs? This could be direct communication with a person or independent interaction with digital tools.” While they were not provided with a list of specific media channels, participants were welcome to ask the interviewer for clarification, which the interviewer sought to keep consistent across interviews.

### **Data Analysis**

After data collection was complete, audio recordings of each interview were transcribed verbatim by a third-party service and uploaded to the data analysis software MAXQDA for thematic analysis. The thematic analysis utilized a single lead coder—the first author and interviewer—to manually code all the interview transcripts, creating and maintaining a codebook which served as an audit trail to ensure credibility and integrity (Lincoln & Guba, 1985). To establish reliability, trustworthiness of the findings, and dependability, the lead coder participated in peer debriefing with the second author whose expertise is in social science research within a science communication context (Barber & Walczak, 2009; Lincoln & Guba, 1985).

Data were analyzed using deductive content analysis which utilizes existing theoretical models to assign data categories a priori (Gale et al., 2013; Lincoln & Guba, 1985). This study utilized Katz et al.’s (1974) U&G theory constructs of consumers’ communication channel choice to fulfill five self-actualization needs—the five of which were the themes established a priori and searched for within deductive content analysis. In advance of thematic analysis, the researcher reviewed the theoretical underpinnings of U&G theory to gain a deeper understanding of how the five self-actualization needs could be applied to graduate student communication channel choice in exploring a prospective graduate program. Upon completion of data analysis, the lead coder conducted a peer debrief with a faculty member to ensure the tenets of U&G theory were appropriately applied to the study. Additionally, this peer debriefing gave the lead coder an opportunity to share the audit trail and justify the coding of communication channels into specific categories of self-actualization needs to mitigate bias and increase rigor (Lincoln & Guba, 1985).

Data analysis provided rich description supporting the influence of self-actualization need fulfillment on communication channel choice.

## Results

### Cognitive Needs

Participants utilized a variety of communication channels to gratify their cognitive needs. The communication channels that emerged related to fulfilling cognitive needs were *websites*, *interpersonal communication*, *emails*, *peer-reviewed journal articles*, and *social media*.

Participants indicated university, departmental, and lab *websites* helped them gain initial information about degree programs and faculty. Cognitive needs fulfilled by *websites* included gaining information about the amount of time it would take to receive a degree in the program, the courses offered, course hour requirements, and financial information, or as Kimberly called them “the practical requirements.” Karter, a female Ph.D. student previously educated in the U.S. at a LGU, said exploring the *websites* of different programs within a university expanded her knowledge about the possibilities to integrate with other departments when she stated, “The program of study on the website drew me to wanting to do a certificate because I saw all the options.” Faculty research interests stated on *websites* also fulfilled cognitive needs by categorizing information about faculty research specialties and labs. Charles, a male international student pursuing his Ph.D. previously educated in the U.S. at a LGU, said *websites* with short, bold wording were most useful because “at least for the first impression, the first word or first sentence is most important.” Other participants said they delved into the lab *websites* of faculty members to learn their specific interests, current projects, publications, the type of graduate students currently working within the lab, and availability of assistantship funding. Natasha, a domestic direct-to-Ph.D. student previously educated at a non-LGU in the U.S., stated,

I was able to learn the most information that I could about what the lab was doing without directly communicating with a faculty member. It helped me reduce the faculty members that I reached out to or increased my want to reach out to a faculty member.

*Interpersonal communication*, specifically gaining information from existing connections, was the second communication channel found to fulfill cognitive needs. These *interpersonal communication* channels were not explicitly stated by the participants but were indicative of the personal connections they had that fulfilled their cognitive needs in the graduate program search. *Interpersonal communication* was identified as an acquaintance or mentor providing information to the participant about the program. In Oliver’s case he heard from a friend in an intensive English course that the department at the university was a strong one. “He told me that there [were] a couple of great professors in the [department] working in nutrition, immunology, microbiology, all those stuff I’m interested in,” said Oliver, an international male Ph.D. student pursuing his second degree from the University of Georgia. Sara used the alumni networks from her previous graduate and undergraduate institutions in her home country to gain information about prospective graduate schools in the U.S., saying “You kind of learn from the alumni where they are right now...their current affiliations, if they were once in the same school as you are in India, and now they are somewhere in [the] US.” Additionally, Tonya found her faculty mentors from an undergraduate LGU were instrumental in giving her information about programs and prospective faculty advisors as she searched for master’s degree opportunities.

The third communication channel that fulfilled cognitive needs was *email*. Josh, a domestic Ph.D. student who previously attended a LGU, had his cognitive needs fulfilled because a mass *email* message went out to members of a professional society joined during his master’s program. The email advertised the availability of a funded position. *Email* was also used with personal or professional contacts to point participants in the right direction. Participants repeatedly mentioned *email* communications helped them

narrow down where to apply based upon their correspondence with faculty members, specifically if there was funding available. Matt, an international Ph.D. student who previously worked at a research station in his home country before beginning graduate school, said, "First, you know whether they would want new students or not because you don't want to just apply and then find out no one needs you."

*Peer-reviewed journal articles*, in combination with faculty members' CVs, also fulfilled cognitive needs. Sara, who completed her master's degree in her home country before pursuing her Ph.D. stated, "So the publications speak a lot about the kind of research going on in a department." Participants used *peer-reviewed journal articles* to gain information about prospective faculty research methods and identify their research specialties. Though the departmental websites sometimes identified a faculty member in one area, further exploration of their current publications revealed they were not focusing in the exact content area that piqued the student's interest. This led participants to search elsewhere.

The final communication channel that prominently fulfilled cognitive needs was *social media*. Participants indicated *social media* helped them access current information about faculty members through platforms such as LinkedIn, Twitter/X, Facebook, or ResearchGate. These platforms tended to be updated more frequently than lab or departmental sites. Once participants' interests were piqued, they often chose their favorite forms of *social media* to obtain current knowledge and information about the happenings of the department or college. Yvette, an international Ph.D. student who received her master's degree at a LGU, said,

In our field, there are a few very professional platforms we can use or maybe some journal publication websites that, every once in a while, will post some information...we probably won't check those websites every day. But we definitely will use social media a couple times a day. I feel social media like Instagram, Twitter, or Facebook...it's probably an easier way to draw our attention to any potential opportunity.

### **Affective Needs**

The communication channels that fulfilled students' affective needs were *emails*, *in-person visits*, and *reputation*.

*Emails* fulfilled affective needs because participants who mentioned *email* communication were often met with enthusiasm by their prospective faculty advisors in their *email* correspondence. Participants repeatedly mentioned faculty members responding to them quickly and with kind words as building their confidence and affirming their interest. *Emails* also gave participants a glimpse into the type of person their advisor would be to work with during a graduate program. A master's student who attended a non-LGU school in for her undergraduate degree, Allie said,

The two professors that I'm working with ... both responded with excitement ... and even recommended I consider applying to the Ph.D. program. So that was positive affirmation for me, that they were interested in working with me ... which was great.

Participants were especially grateful for constant *email* correspondence with advisors after their acceptance to the program, solidifying their choices to accept an offer. *Email* correspondence was additionally useful in connecting participants with current students or alumni from whom they felt they could gain a full picture of the program itself, appreciating the helpfulness of the students and their honest opinions of what working within a department may be like. Participants also praised the staff who made their transition into graduate positions easy because of quick, enthusiastic, and helpful *email* correspondence. However, *email* also came with pitfalls. Participants emailed multiple faculty and failed to receive a response or reached out to several students with no reply. Nate, a domestic student who

completed his master's degree in the same department before immediately beginning his Ph.D., emphasized this feeling when speaking about his search for his master's degree program and advisor.

There are several people that I would email two or three times and no response. I mean, those are some of the schools that I really was hoping to get a response from and really looking forward to attending. But once they never emailed me back or made no effort to get to know me, I was like, 'It's done. It's over with.'

*In-person visits* were also particularly influential in fulfilling participants' affective needs. *Visiting in-person* gave participants confidence about the faculty members' personalities. Participants emphasized the importance of building relationships during these visits, recalling they helped them envision making friends or working with faculty members. Domestic master's student Allie discussed how the graduate student association president for the department showed her around and introduced her to various students, faculty, and staff while casually answering her questions. Beyond student greetings, Allie remembered, "The professors were very welcoming and seemed to care about me as a person, beyond just being a student in the department." Natasha, who was a domestic student choosing between two direct-to-Ph.D. programs within the same state, chose her current program over another university stating, "The real seller was way better interactions with actual students in the program. I think they provided me with a lot more information about what it's like to be here, what it's like to interact with the faculty members."

Finally, *reputation*—of faculty, departments, or the university overall—though not necessarily a communication channel, was mentioned multiple times as an influential factor fulfilling affective needs of participants and is therefore listed amidst the communication channels within this study. Some participants, like Lorelai and Charles, both international Ph.D. students, felt good about attending the school because of the *reputation* of their advisors—both personal and academic. Lorelai, who had received her undergraduate and master's degrees in two different countries outside the U.S., said, "Another important thing I consider is the ethical background of my PI. So just to make sure he is someone who can do research in a moral manner. I think morality is a big thing." Oliver, who obtained graduate degrees in his home country before pursuing both a master's and Ph.D. at U.S. LGUs, mentioned his previous negative experiences in contributing to research projects and not receiving credit for his work in publications. He was looking for a department with a *reputation* of acknowledging academic contributions. Oliver said, "I really look for that specifically. I don't ask people directly, but you can hear that if you've been around for a long time, you can see who is giving you the most credit or who is just patting you on the back." Other participants had connections to the school and its *reputation* as an institution. Leah, a Ph.D. student whose previous degrees were outside the U.S., said, "I learned about land-grant universities and I wanted to focus on the service factor, giving back to the community."

### **Personal Integrative Needs**

In identifying the gratifications associated with communication channels, students recognized fulfillment of personal integrative needs. Communication channels were classified as personal integrative if information found through the channel made students feel confident about the credibility and status they would receive by becoming a graduate student at the university. Communication channels identified were *email*, *websites*, *direct communication*, and *peer-reviewed journal articles*.

*Email* was most prominent in participant responses. Participants recalled *emails* with professors helped them feel secure about the place they would have within the research program, particularly with their research projects. Participants wanted to feel supported and know faculty research interests aligned with their personal goals. International Ph.D. student Lorelai stated,

So, I have to be 100% dedicated to this research project. I have to make sure that I'm very excited about this project and I know what to do. ... I actually had a lot of email exchanges between me and my PI just to figure out what kind of experiment that I'm going to do.

Similar to the affective gratifications, participants used *email* to learn about their future advisors' research ethics and, thus, the ethics associated with their future work, ensuring research methods were in alignment with their personal values. These *email* conversations with faculty helped participants determine if they would fit into a researcher's lab dynamic. Notably, participants also used *email* to correspond with staff or students within the department about the dynamics of the student experience, work out pay information, and—in the case of international students—ensure all was in order concerning their visas.

*Websites* were primarily used to fulfill participants' personal integrative needs by identifying faculty whose specific research interests aligned with their own. This alignment of research interests gave participants confidence in their ability to fit in with the research activities of the lab and convinced them work in the lab aligned with their career goals. Participants used *websites* to conduct searches of faculty interests, comb through CVs, and peruse current lists of faculty research articles. As a Ph.D. student who earned her master's degree at a LGU Karter shared,

Whenever I get to a faculty [web]page that just has a phone number, I'm disappointed because I like to read what people do. I like knowing that I'm in a place where I can go have a meeting with somebody who has a specific skillset and learn from them.

Other participants were interested in faculty members' individual lab *websites* because they showed what the lab prioritized—whether it was publishing, sharing scientific information with the public, displaying student successes, or displaying innovative research equipment. Lab *websites* contributed to participants' sense of stability because they began to imagine themselves in the labs. Some participants were particularly stringent about checking the most recent publications listed on faculty lab *websites*. They were searching for advisors who were publishing actively, which would give them an advantage in future job prospects. As she sifted through lab *websites*, Ph.D. student Lorelai asked herself, “Do they have current publication years or do they only, for example, have one publication five years ago and they haven't published new things?”

Participants repeatedly cited *direct communication* as the third personal integrative communication channel. Participants did not specify the specific channels, instead focusing on descriptions of the conversations that solidified their opinions of the status and stability they would receive in a graduate program. Participants primarily found out about lab and departmental culture through *direct communication*—whether speaking with alumni, technicians working in their lab, or staff within the department. Participants appreciated honesty from their prospective advisors that happened through *direct communication*. A Ph.D. student who connected with her advisor through connections from her undergraduate LSU, Tonya recalled,

I felt like I could be blunt with [my advisor]. ...I mean, he understood when I came into grad school that I was going to be uncomfortable moving away from home. I feel like I was just honest with him ...He was able to give me insight into areas that I feel like I probably couldn't have gotten through digital communication.

Other participants relied upon *direct communication* with people who had attended graduate school to help them feel confident in its benefits. For example, a domestic master's student who attended a LGU in her bachelor's, Victoria, stated she asked graduate school alumni “whether or not it was worth it to go to grad school, what skills they learned, kind of a lot of research skills and project planning time management and how that could benefit me going forward.”

Participants briefly mentioned using *peer-reviewed journal articles* to satisfy personal integrative needs. Some participants used journal articles to spark research inspiration, giving them confidence in choosing a certain faculty member or program. Lacy, a direct-to-Ph.D. domestic student who previously attended a non-LGU, confessed that a large draw for her was being able to understand her prospective advisor's academic work, increasing her personal self-efficacy to succeed. Lacy stated, "That was a part of the reason why I said yes to Dr. [Advisor] is I could read her papers and mostly understand them." Finally, the research methodology and impact factor of *peer-reviewed journal articles* helped participants choose a program because they felt confident in the status they would receive as a researcher using reputable methods. An international Ph.D. student with extensive previous research experience, Oliver explained how *peer-reviewed journal articles* affected his evaluation by stating,

I look at the names, how many names do we have as an author? And then see how many of them are from [the] university. And I look at the materials and methods. If they really send their samples to another division or department, that's a big no for me. An institution or a department has to be self-dependent on analyzing the results of their studies.

### Social Integrative Needs

Finally, participants identified communication channels that fulfilled social integrative needs. Though participants' social integrative needs were not as common as the other needs fulfilled, they were still notable within program searches. Students identified the following communication channels that helped them strengthen "contact with family, friends, and the world" (Katz et al., 1973, p. 167): *personal connections, in-person visits, emails, and social media*.

First, participants were influenced by *direct communication*, considering not only the attitudes and friendliness of their prospective advisors, but the views of their close friends and family. An international Ph.D. student with previous LGU experience, Charles said, "I'm not the person who really asks anonymously to some [online] community thing....I really consider crucially about the opinions from my close friends or my family." Participants also valued personal interactions with faculty or staff at the university who were willing to point them in the right direction, even if they could not offer the participant an opportunity themselves. These experiences helped strengthen participants' opinions of relationships with the university.

Students' *in-person visits* helped them form relationships with faculty and students, thus fulfilling social integrative needs. Visiting from a LGU at another state, Nate shared he formed a comfortable relationship with his then prospective master's advisor and current Ph.D. advisor during the visit stating, "It seemed like he was really concerned about my education and my future rather than getting two or three years work out of me, then just pushing me out of the program."

*Emails* also satisfied social integrative needs. *Email* served as a way for participants to relate to their advisors if they were located in vastly distant locations. *Emails* were especially useful for participants who did not have an opportunity to visit. International Ph.D. student Leah said, "Those email conversations are very helpful in building trust. Oh, okay, this is where I want to finish my education because those people are concerned about me, and they're willing to spend their time."

Finally, *social media* fulfilled social integrative needs by providing a mechanism through which participants felt comfortable building relationships with current students, institutional alumni, or otherwise unapproachable faculty. LinkedIn provided opportunities to build upon professional relationships after initial contact was made through conferences or emails. International participants found other students on Facebook to build relationships with them and develop a deeper understanding of the university or departmental situation. A direct-to-Ph.D. international student, Matt described, "I used to use Facebook. ...

I didn't know them before, but I added them. And then they would accept my request.... And it was really helpful to know how the department is, what environment the department has.”

### **Tension Release Needs**

No communication channels emerged as fulfilling tension release needs.

## **Discussion**

The findings indicated successful high-achieving graduate students used a variety of communication channels to fulfill self-actualization needs identified by U&G theory in their searches for graduate programs in CAES. No two students described their searches the same, but communication channels emerged in the analysis with some fulfilling multiple self-actualization needs, consistent with previous findings of U&G theory (Katz et al., 1973).

However, before the implications and recommendations from the present study can be discussed, the limitations thereof must be acknowledged. First, participants were already students within their respective disciplines with existing experiences at the University of Georgia. Participants' responses may have been skewed by the knowledge they possessed at the time of the interviews concerning what to search for within a graduate program and should, therefore, be considered when interpreting the findings. Additionally, the variety of scientific disciplines in which each of the participants were engaged should be considered a limitation as the admission requirements and application processes vary according to disciplinary requirements. The discipline in which each student was engaged may have affected their graduate school search process and should be considered in interpretation of the study's results. Because a maximum of two students were interviewed from each department within UGA CAES, revealing their discipline would affect the anonymity of the participants and could be a violation of the privacy they were ensured during the interview process.

*Emails* were identified as communication channels that fulfilled four self-actualization needs. Timely responses with information about funding fulfilled cognitive needs for students who were narrowing down their top university choices, while enthusiastic responses stood out in the minds of sometimes discouraged graduate students to fulfill affective needs. The enthusiastic responses were especially helpful to prospective master's students or those exploring direct-to-Ph.D. programs, perhaps because of their age and lack of familiarity with the graduate program process. Many participants expressed their frustration in never receiving a response from faculty members or reaching out several times before receiving a reply. Interest in pursuing graduate education would fade until a faculty member expressed excitement about corresponding, implying it was this initial frustration that made the faculty communication—when it came—so positive and fulfilled an affective need.

Many participants chose a graduate institution far from home, and interactions with faculty over *email* increased their confidence in moving their lives across states or oceans. *Emails* ensured participants' sense of status in a program and fulfilled personal integrative needs because they were able to understand lab and departmental dynamics from the written interactions, which seemed especially important to Ph.D. students. Though these *emails* did convey professionalism, they also formed relationships that were not associated with academia and fulfilled social needs. Participants cited *emails* as a constant line of communication in which they felt they could begin to form a relationship with their advisor. These findings aligned with previous literature indicating students prefer personal contact (Baker et al., 2013) and the involvement of faculty in recruitment efforts (Colucci-Ríos & Briano, 2001; Westbrook & Alston, 2007), especially if a faculty member seems trustworthy, likable, and committed (Shafaei et al., 2019). However, the importance of emails within the search for prospective graduate programs revealed in this study does not align with the findings of McNicholas and Marcella (2022), in which emails and social media did not play a prominent role in the decision-making processes of international graduate students. This could be

due to the differences in populations sampled and types of degrees sought as McNicholas and Marcella (2022) examined students in business courses, which could be categorized as professional graduate programs as opposed to research graduate programs of participants in the present study. Chen (2008) identified marketing preferences differ between research-focused and professional-focused graduate students.

The findings surrounding *email* communication imply faculty seeking to recruit high-achieving graduate students should prioritize response times and proper enthusiasm within *emails* to first-time graduate students, even if they are just forming an initial connection with a prospective student and will subsequently schedule follow-up communication. Faculty should consider creating an *email* template to quickly reply to interested graduate students, in which they can customize a response based on individual student needs—whether confirming funding interest or pointing a student in the direction of another prospective advisor. The creation of such templates would save both faculty and students time because *emails* are often a quick way to help Ph.D. students with narrowing down options for prospective programs.

*Websites* fulfilled both cognitive and personal integrative needs. Participants felt they could get to know what the departmental experience was like without directly reaching out to a source through both departmental and lab *websites*. By exploring *websites* participants began to understand the research priorities of the department and specific faculty, therefore fulfilling informational needs. In addition, the participants were able to determine if they would feel a sense of belonging in the lab based upon the characteristics of the lab displayed online, thus fulfilling needs associated with stability and status. This finding implies departments and faculty members should prioritize the creation and maintenance of strong departmental and lab *websites* with rich descriptions of current research projects to attract students. Ph.D. students tended to emphasize the importance of a well-structured website that highlighted the research interests of each faculty member, therefore implying the need to examine the organization of faculty research interests to attract the right student for each faculty member.

*Peer-reviewed journal articles* fulfilled cognitive and personal integrative needs by giving participants additional insight into faculty research focus while simultaneously indicating research caliber. When research interests and methods aligned with participants' priorities, they were more likely to reach out to faculty. Ph.D. students spoke about peer-reviewed journal articles more than master's students or direct-to-Ph.D. students, indicating a clear familiarity with the research publishing process. However, participants struggled when stated research interests on the *websites* differed from that of the current publications, or the available faculty CVs did not contain current publications. Faculty should ensure their CVs and research interests are current in online profiles to appropriately represent their recent work to cut down on unnecessary correspondence from prospective Ph.D. students who would not align well with them. Additionally, participants felt personal integrative needs fulfilled when faculty emailed them current papers or manuscripts central to their primary research. The two participants who mentioned their current advisors doing so were entering graduate school for the first time. The finding implies faculty should consider including current manuscripts in emails to promising prospective students who are at the beginning of their research careers. The inclusion of current manuscripts could serve as a tool to examine alignment of student research capacities and interests with that of the faculty member and encourage the prospective student.

*Social media* was a digital channel that fulfilled both cognitive and social integrative needs. *Social media* offered a way in which participants could keep up with current events in their field and find additional information about programs once their interest was piqued—all from platforms they accessed regularly. This is in alignment with the findings of Amirali and Bakken (2015) in which connection and interactivity on *social media* increased international graduate student recruitment success. However, McNicholas and Marcella (2022) found international graduate students did not identify social media an important factor in their institutional decision-making process, perhaps explaining why social media was only mentioned briefly by some international students pursuing both master's and doctoral degrees. *Social media* also

provided an avenue through which prospective students could connect with current students or alumni. By forming relationships and finding out about the university, prospective students were influenced by positive experiences relayed to them over social media, which aligns with Carlvaho et al. (2020)'s findings on positive eWOM. This finding implies departments should consider the current upkeep of departmental *social media* accounts for the benefit of prospective students but remain diligent in understanding the platforms on which prospective students are active, such as a professional platform like LinkedIn. Additionally, current students' *social media* activity could affect the department overall because some prospective Ph.D. students reached out to and formed relationships with current students over social media. Therefore, basic education about professional communication over social media could be useful to both students and their departments.

Finally, the findings implied participants were heavily influenced by several types of personal communication with faculty, staff, current students, existing connections, and alumni. *Interpersonal communication, direct communication, in-person visits, and reputation* were communication channels indicative of participants' interests and desires to attend a university because of the cognitive, affective, personal integrative, and social integrative needs fulfilled by these conversations. The emphasis on rankings aligns with Carvalho et al.'s (2021) findings that eWOM generated by a reputable source is even more effective than user-generated eWOM. Additionally, the preference for a positive *reputation* within the academic community aligns with McNicholas and Marcella's (2022) findings that prospective graduate students turn to personal sources when making a decision about institutions. The repeated emergence of these more personal channels implies the importance of maintaining relationships and connections by providing current graduate students' contact information and making prospective graduate students feel welcome and secure. Social relationships (Bagdonis & Dodd, 2010) and faculty relationships (Feldman et al., 2013; Shaffer, 2012) are instrumental in shaping students' future in academia. In a world immersed in digital communication, relationships should not be forgotten as a key driver of academic work.

### Conclusion

Communicating about graduate programs to prospective graduate students to recruit them is complex, made increasingly so by the nuance of departments within colleges that have their own program-specific requirements and little support from campus leadership (Balayan et al., 2022). The present study revealed high-achieving graduate students in agricultural and environmental sciences used a combination of communication channels to satisfy their self-actualization needs throughout the graduate program search. There were some universal cognitive experiences shared by most students, such as exploring departmental websites and emailing prospective advisors. Each student seemed to want initial information about a program and then seek a form of communication that would address their concerns about attending a university beyond mere acceptance into the program. By utilizing a variety of communication tools and strategies—from digital to personal—each student ultimately found what they needed to select a program.

However, many of the self-actualization needs obtained from web searches and email exchanges appeared to be dependent upon participants' previous research and graduate school experience. The current study suggests students who were pursuing their master's degrees or entering directly into Ph.D. programs were more concerned about fulfilling affective needs. Conversely, Ph.D. students who had experience in research or previous graduate programs were more meticulous about fulfilling personal-integrative needs related to securing a research project in which they were interested in or ensuring the research credibility of an institution or prospective faculty advisor. To create effective recruitment strategies, future research should determine if communication channel use and needs satisfaction differ based upon degree level and prior research experience, therefore determining the best way to distinguish communication strategies between the two.

Previous literature has shown personal characteristics also influence the graduate program selection process (Lei & Chuang, 2010), demonstrating the need for further understanding the individual characteristics of graduate students and how these characteristics influence the self-actualization needs they are seeking. Not only can self-actualization needs be useful in understanding students' desires during the graduate program search, but what they are seeking from a graduate program itself. Future studies should examine students' personal characteristics, the needs they seek to fulfill in using communication tools to find a graduate program, and the needs they seek to fulfill by participating in a graduate program. Such results may shed light on how departments—or even individual faculty members—within colleges of agriculture should adjust their communication to appeal to students who will be the ideal fit for their program. By appealing to ideal students, it would save both faculty members and students time in the recruitment process.

Finally, there are nuances of graduate programs and their acceptance procedures that tend to vary across disciplines (Balayan et al., 2022). The present study should be used as a basis upon which departments can begin to learn more about the targeted students within their own disciplines by conducting further research. However, it must be recognized that the communication needs and preferences of faculty within a discipline may be just as important as that of students. Findings demonstrate faculty bolster students by showing they care about their future, ensure their research expertise aligns with the students' goals, and create connections with faculty members across the country and the world. Therefore, it is crucial to connect faculty communication preferences with that of students within a discipline to form a more seamless recruitment process.

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