The demands placed upon student-athletes are well documented and include balancing academic and athletic responsibilities, negotiating multiple personal relationships, upkeeping physical and mental health, and succeeding academically, among others (e.g., Broughton & Neyer, 2001; Comeaux & Harrison, 2011; Gould & Whitley, 2009; Horton, 2011; Melendez, 2006; Ting, 2009). Student athletes are often appropriately characterized as overworked with more commitments to balance than their non-athlete student peers (e.g., Gould & Whitley, 2009). The demands placed upon student-athletes serve as barriers to access to opportunities available to their peers, particularly high impact practices (HIPs) like internships, research opportunities, and study abroad experiences (Ishaq & Bass, 2019). Ishaq and Bass found many specific barriers to accessing HIPs in their research on student-athletes, notably time commitments, coaches’ attitudes, lack of funding, and institutional structures.

Our article examines a successful faculty-mentored undergraduate research experience that engaged student-athletes in research about the experiences and needs of student-athletes. The research project scaffolded the learning experience across multiple semesters and utilized small campus grants to provide financial support to the student-athletes who served as undergraduate research assistants (URA). The faculty mentors’ understanding of the demands placed upon student-athletes helped them remain flexible and adaptable to accommodate working with student-athletes. The URAs identified specific educational and professional goals that were accomplished by their engagement in the project. This article further augments our research on faculty-student partnerships that support undergraduate research (Sterrett et al., 2018) with a focus on a multi-year experience and student perceptions of the work.

Literature Review
The extant research on undergraduate research (UR) often focuses on the mentoring model, the mentoring relationship, or the academic and cognitive benefits to the student by conducting research. The study of student-athletes often compares the experiences of athletes to their non-athlete peers or how participation in sports affects the student. We are unaware of studies that specifically examine the mentoring of student-athletes as undergraduate researchers. With a dearth of literature specifically addressing student-athletes conducting undergraduate research, we draw upon related research to lay a foundational understanding for this study.
Undergraduate Research Mentoring

There is no consistent definition of mentoring within the literature on mentoring related to undergraduate research (for a thorough review of mentoring definitions see Crisp & Cruz, 2009). Mentoring typically involves two or more individuals where one is more knowledgeable about a process or subject and coaches, guides, or instructs the others to accomplish personal or professional goals (Crisp & Cruz, 2009; Long et. al., 2010). Although most literature focuses on the impact mentoring has on the mentee, the relationship is bi-directional and does affect the mentor (Long et. al., 2010; Stanford et al., 2017). Faculty find value in the UR mentoring relationship, including 80% of full-professors saying it helped motivate them to do their own research (Potter et. al, 2009). Although faculty interest in UR mentorship exists, time, underprepared undergraduates (for research), and general lack of support have been cited as barriers to mentoring undergraduates in research (Morales et. al., 2017; Morrison et. al., 2018).

In defining a mentor, students were more likely to identify someone as a mentor who provided informational, emotional, appraisal, logistical, and networking support throughout their research project (Bradley et. al., 2017). Mentors for UR may be faculty, graduate students, staff members, librarians, or peers. Additionally, a student may identify multiple individuals as a mentor for their project. In a comparative study between natural science UR projects and social science, humanities, and interdisciplinary UR projects, 63% of students identified multiple mentors related to their projects. Findings suggest those with social science or humanities projects had more multiple mentors on average than their natural science project peers (Bradley et. al., 2017).

Models for faculty mentoring undergraduate researchers can be formal or informal and vary on the level and type of support provided by the faculty and institution. The literature on mentoring models is often descriptive (Collins et. al., 2009; Long et. al., 2010) rather than providing quantitative findings of which model is most effective. In two case studies (Crowe & Boe, 2019; Horowitz & Christopher, 2013), surveys were conducted at the end of the students' involvement with the research to assess satisfaction with their mentor and experience and to examine learning outcomes.

In only one study was there a comparison between two types of UR models: a senior seminar that designed a method, implemented the study, and analyzed data; and a community outreach project where students primarily administered surveys door-to-door in the community and entered survey data (Crowe & Boe, 2019). Crowe and Boe (2019) utilized a “survey includ[ing] 11 Likert scale items asking students to rate how much they agreed (5 = strongly agree) or disagreed (1 = strongly disagreed) about different aspects of developing and administering the survey, learning survey research, and participation in the course... Of the 11 items, seven were included in surveys administered to students in both research experiences” (p. 6). Findings indicated that students were more satisfied with a senior seminar model versus a community outreach project (Crowe & Boe, 2019). Crowe and Boe (2019) suggested that this was primarily due to the limited involvement the community outreach students had in the design and analysis of the research. This suggestion is supported by Horowitz and Christopher’s (2013) findings for the undergraduate research model they examined. Graduate students were paired with undergraduate researchers to assist with the graduate students’ dissertation research. In a post-program evaluation, 100% of the undergraduate students reported gains in several areas including technical skills, critical analysis, problem solving, and research methods, among others (Horowitz & Christopher, 2013). Although the findings indicate valuable benefits for undergraduate researchers, the aforementioned studies (Crowe & Boe, 2019; Horowitz & Christopher, 2013) had small sample sizes, which further limits the generalizability of their findings.
Within the social sciences, the level of mentor-student interaction can vary greatly. Among several UR models examined, mentor interaction ranged from primarily logistical support (e.g., acquiring IRB approval or proposal review; Bradley et. al., 2017; Collins et. al., 2009) to true collaboration and guidance through the research process (Crowe & Boe, 2019; Horowitz & Christopher, 2013). In two studies (Crowe & Boe, 2019; Horowitz & Christopher, 2013), students reported that a high level of interaction with faculty or graduate assistants throughout the research was an overall positive experience and increased their knowledge of and confidence in conducting research. Mentoring in undergraduate research has also been found to increase students’ satisfaction with their major and help students develop an identity related to their academic discipline (Davis & Wagner, 2019). In many cases, formal mentoring programs are highly selective and limit the number of students who can participate (Collins et. al., 2009; Crowe & Boe, 2019; Horowitz & Christopher, 2013). Although UR can be beneficial to the academic success of participating students (Ishiyama, 2002), insufficient resources and faculty availability have been cited as reasons for less expansive UR programs (Collins et. al., 2009). In a multi-institutional study, Mahatmya and colleagues (2017) found that 27% of students were participating in research and 45% wanted to participate in research; the main barriers to participation were lack of information about opportunities, not enough time to participate, or the need to earn income. The time commitment to conduct research may be a significant barrier for undergraduate students, especially for those who have outside-of-class time-consuming commitments, such as student-athletes (e.g., Gould & Whitley, 2009).

**Student Outcomes and Undergraduate Research**

For the students who are able to participate in UR, there are significant and positive outcomes in analytical and learning skills (Ishiyama, 2002). More tangibly, students involved in UR are likely to attend graduate school (Collins et. al., 2009; Long et. al., 2010; Stanford et. al., 2017), consider a career in a research field (Stanford et. al., 2017), or use their experience to improve their professional and academic lives (Collins et. al., 2009; Crowe & Boe, 2019; Stanford et. al., 2017). Collins and colleagues (2009) found that a high percentage of UR participants (up to 65%) of the three models they examined enrolled in graduate programs. In several UR models, undergraduates were either required or encouraged to present their findings via article submission, posters, or conference presentation (Collins et. al., 2009; Crowe & Boe, 2019).

**Student Athlete and Academic Engagement**

Student-athletes are students and the benefits of engagement in HIPs affects them as it does their non-athlete peers. In a secondary data analysis of a survey of student-athletes conducted at 21 Division I institutions, student-athletes who were more engaged in academic activities and interacted more with faculty reported having greater gains in learning and communication skills (Gayles & Hu, 2009). In another Division I multi-institutional study student-athletes were found to be more interactive with faculty and more engaged in enriching educational practices than their non-athlete peers. There was no significant difference between athletes and non-athletes in the level of collaborative learning they experienced (Rettig & Hu, 2016). Although these studies suggest student-athlete engagement is as much or greater than non-athletes, there are barriers to student-athletes engaging in HIPs. In their study, Ishaq and Bass (2019) found the following barriers preventing student-athletes from participating in HIPs: institutional control, time commitment of athletes, lack of resources, and coaches’ unwillingness to allow time away from sport.

**Faculty Perceptions of Student-athletes**

One barrier to student-athlete involvement in high-impact academic practices, like undergraduate research, is the perception faculty hold of student-athletes and their academic abilities. In a study of faculty perceptions of student-athletes at one Division I, major research institution, Comeaux (2011a; 2011b) found that faculty were prejudicial toward male and female student-athletes including their belief about the likelihood that the athlete could earn an A in their course.
Student-athletes may also perceive that faculty are not supportive which could limit academic engagement. Parsons (2013) conducted a mixed methods study at one Division II institution to examine how student-athletes perceive their faculty’s views toward them and other athletes. In the closed question portions of the survey, a majority of respondents for each question indicated faculty held positive views toward athletes. However, the percentage of athletes indicating negative views or remarks remained relatively high; 36% believed faculty viewed athletes as expecting special treatment and 37% believed faculty thought athletes were only interested in sports. In the open-ended responses, of those who gave responses, 45% indicated having experienced negative comments toward athletes by faculty. These findings are similar to Verbeck’s (2010) qualitative analysis of male, revenue-sport, student-athletes at a Division I institution. In Verbeck’s (2010) study, each participant believed faculty held negative perceptions of student-athletes although they also cited supportive and helpful support staff.

Our review of the extant literature on mentoring undergraduates and on student-athlete engagement in HIPs suggests that student-athletes are less likely to engage in undergraduate research. Indeed, this was true at University of North Carolina in Wilmington (UNCW) and motivated the faculty mentors to create an opportunity for student-athletes to collaborate on a research project. The demands on student-athletes as both students and athletes, as well as potentially negative biases by faculty towards student-athletes are potential reasons for student-athletes’ limited access to undergraduate research. In the following section we described the mentoring model we utilized to successfully collaborate on an in-depth qualitative research study with URAs who were also student-athletes.

**Faculty Mentored Undergraduate Research with Student-Athletes at UNCW**

The University of North Carolina Wilmington is a regional university of nearly 17,500 students, including undergraduate and graduate students, that is “dedicated to the integration of teaching and mentoring with research and service” with a “commitment to student engagement, creative inquiry, critical thinking, thoughtful expression, and responsible citizenship” (UNCW a, n.d., para. 1). To support this work the university provides a series of internal grants called Spring/Summer Undergraduate Research and Creativity Awards (SURCA) that are offered each year “to support undergraduate students engaged in research, creative scholarship, or other independent academic work outside of their courses” (UNCW b, n.d., para 1). Three faculty members (DeVita, Sterrett, and Combs) applied for these grants over a two-year period, with student input and involvement, to support our research project and provide the undergraduate student-athletes with stipends. The three faculty members represented three program areas across the university. Their work had intersected through their shared time on the university’s Faculty Athletic Council and their mutual desire to mentor undergraduate students in research.

**Research Project: Year 1**

The research project that formed the foundation of the mentoring partnership was framed as an exploratory qualitative research study focused on student-athletes’ experiences with multiple aspects of campus (e.g., athletics and academics). Qualitative methods allowed us (faculty mentors and URAs) to examine participant perspectives within natural settings in order to gain an in-depth understanding of their everyday, lived experiences (Hatch, 2002). Although the faculty mentors developed the methods used in the research project, the URAs reviewed literature and created annotated bibliographies that were immediately used to develop the interview protocol, and later used to develop presentations and publications. The URAs were considered full team members on the project from day one and engaged in all aspects of data collection and analysis. All researchers worked collaboratively to engage in data collection and analysis, including the development of a semi-structured interview protocol that collected information about the following research questions:
1. How do student-athletes describe their overall satisfaction with their academic experiences and supports/services at UNCW?

2. What experiences (programs, services) do student-athletes participate in that encourages their growth and development as students? Why are these experiences meaningful to student-athletes?

3. What supports (programs, services) do student-athletes identify as necessary to their success are inaccessible to them? What obstacles prevent student-athletes from accessing these services?

The URAs were current student-athletes and leaders on the Student Athlete Advisory Committee (SAAC) who served as gatekeepers to access and recruit their peers for participation in focus groups. We were successful at recruiting at least one participant from each of the 19 athletic teams at the institution to participate in a focus group. Faculty mentors worked collaboratively to mentor URAs through each stage of the project, including the co-facilitation of focus groups. In several focus groups, the URAs served as the lead facilitator with faculty mentors serving as notetakers and timekeepers. Since all researchers were connected to the athletics department at the university, we each developed reflexivity statements to interrogate our subjectivities and biases (Hatch, 2002).

Once data collection was complete, the URAs manually transcribed the focus groups to prepare data for analysis. The process of transcription required the URAs to listen to recordings and transcribe the recordings into a Word document. While time consuming, the process benefited the URAs by giving them a chance to familiarize themselves with data from multiple focus groups. The whole team worked collaboratively on a multiphase analysis plan that started with an inductive coding process (Hatch, 2002), in which the team members independently coded data. During the first phase of analysis, each team member relied on their knowledge of the existing literature to assign codes, however no pre-defined coding map was developed. Thus, the process most closely resembled an open coding process (Hatch, 2002). Next, we scheduled multiple meetings to discuss the codes developed by all members of the team, refine our codes, and to develop and refine themes. This phase most closely resembled a constant comparative analysis process (Glaser & Strauss, 1999).

The URAs and faculty mentors worked collaboratively to disseminate initial findings from the project both on and off campus. Findings were shared with the Faculty Athletic Council. They co-presented presentations and co-published manuscripts in order to learn the process of preparation, authorship, submission, review, and revision.
Mentorship Model on Project
Each faculty mentor on the project was paired with one URA in order to develop a long-term mentoring relationship throughout the completion of the project. Although initially planned as a one-year project, the work needed to move forward with publications from the data collected warranted a second year of support and engagement. This allowed the mentoring relationships to develop for a second year with two of the three URAs. The third URA graduated and went to graduate school for nursing with references from two of the faculty mentors.

Faculty mentors and URAs met regularly in both their two-member teams (mentor and URA) and as a larger research team during both years of the program. URAs were guided through assigned tasks by their faculty mentors who worked collaboratively to co-construct the research project and achieve associated outcomes. Because we utilized a collaborative approach to the project, URAs were considered to be and treated as equal members of the research team. Additionally, we utilized a layered approach to mentorship to engage with URAs both individually and as a team. This was accomplished through large group meetings that occurred biweekly during both years of the grant. URAs and faculty mentors were able to develop relationships that extended beyond small-team pairings.

It is also important to note that we sought representation across multiple disciplines on the grant team, which strengthened our mentoring process as well as the methodology we utilized. Faculty mentors represented Education (DeVita and Sterrett) and Health and Human Services (CHHS) (Combs), while URAs majored in Business (URA #1), Communication Studies (URA #2), and Nursing (URA #3). Interdisciplinary perspectives enhanced the project overall and provided a unique mentoring experience for both URAs and faculty mentors. The diverse perspectives also contributed to the trustworthiness and validity of our qualitative research by providing multiple opportunities to triangulate our findings among team members (e.g., Creswell & Creswell, 2018). Moreover, the use of URAs who were also student-athletes provided us with multiple team members who identified as members of the population we researched, thus enhancing the credibility of our results (e.g., Creswell & Creswell, 2018). Their scrutiny and feedback informed each stage of the process from development of the interview protocol to interpretation of the results.

Undergraduate Research Assistant Reflections: Year 1
URAs were required to submit intention reflections that helped to set their goals for engaging in the research project. In Year 1, URAs discussed personal and professional goals for their engagement in the research project as well as goals for the athletics department. The URAs also noted how this opportunity could help them develop skills and fill gaps in their undergraduate education experiences. These intention reflections helped the faculty mentors to identify the best mentorship pairings discussed above, and to scaffold the learning experience for the URAs to meet their particular goals for engagement.

URA #1: Female Volleyball Player, Junior, Business Major
“I have chosen to take part in this applied learning experience because it will give me an opportunity to better my skills and continue to grow. The fact that I will have first-hand exposure to professional research and to be able to have it directly benefit my school is extremely appealing. Being a student-athlete means everything to me and to be given the chance to improve other athletes' experiences is something I have always been interested in. I want to give back to UNCW in any way that I can, and this experience has given me the perfect opportunity. I hope this project will be able to elevate the UNCW athletic department to a higher level and allow the student-athletes to have the resources they need. Personally, I know I will gain knowledge that will help shape a future full of success and directly help me when I apply for graduate school. I am honored to be a part of this applied learning experience and am anxious to get started.”
URA #2: Male Soccer Player, Junior, Communication Studies Major
“I have chosen to take part in this applied learning experience because I see this as an excellent opportunity to represent my fellow student-athlete peers, network with professionals, and pursue my personal endeavors. I am a Communication Studies major and have acquired some experience in qualitative research through COM 200: "Research Methods." I find this project very interesting because I will be involved in first-hand exposure to data gathering and analysis. This position as an Undergraduate Research Assistant allows me to gather information conducted on a personal level which I can then distribute to my mentors as information that could be used to take certain initiatives in the future. I am all about making a difference, I see this as a chance to interview my peers and have them voice their opinion about certain issues that may be involved with their student-athlete lifestyles. While this is not necessarily what I want to pursue as a profession, it is familiar in my field of study and it is a great way to exercise my current communication studies skills while improving my research capabilities.”

URA #3: Female Soccer Player, Senior, Exercise Science Major (Nursing Post-Grad)
“As a student athlete, I was unable to enroll in the Nursing program at our university, due to scheduling conflicts. I have chosen to take part in this applied learning experience to better prepare me for an accelerated Nursing program. It is essential for any candidate interested in an accelerated program to have learning experiences outside of the classroom, demonstrate they work well on a team, and have strong time management skills. This research will help make me a more well-rounded candidate, focusing on those specific areas. My personal research goal is to have student-athletes be able to help bridge the gap between athletics and academics. As an athlete, we have limited time to seek out and receive support available to the general population. I hope this project will provide me with an opportunity to give back to athletics, as they have impacted my life a tremendous amount in the past couple of years.”

Undergraduate Research Assistant Reflections: Year 2
The two URAs who engaged in the second year of the program noted not only how they grew from their first experience, but also discussed how the second year would provide them additional learning and publication opportunities. Both URAs concluded their experiences by transitioning to graduate school in law and instructional technology, respectively. Faculty mentors on the project were able to provide meaningful insights on career and educational trajectories for the URAs because of the relationships we developed across the two years of the project.

URA #1: Female Volleyball Player, Senior, Business Major
“My experience as an undergraduate research assistant last spring was an amazing learning opportunity that has helped me grow in many aspects. I had the opportunity to not only come up with ideas and probing questions, but I was actually allowed to conduct interviews with other student-athletes. Being able to then later analyze this data gave me a new perspective. Also, being able to openly discuss our findings with my colleagues allowed more room for new ideas and different solutions to some of the bigger problems. To be able to continue this work would allow me the opportunity to really hone my writing skills and allow us to put all of our work together.”

URA #2: Male Soccer Player, Senior, Communication Studies Major
“My experience as an undergraduate research assistant last spring for the SURCA grant was beneficial in many aspects. Throughout my experience, I took on the role as a representative for the UNCW athletic department. Additionally, I helped facilitate group discussions, delve[d] deep into the issues facing student-athletes, teams, and the department as a whole, as well as develop[ed] new perspectives about conditions I was unaware of. Research and transcribing practices improved my ability to analyze qualitative and quantitative data which was then attributed to common themes. I have established professional relationships with people of influence regarding the issues
surrounding student-athletes and I have also strengthened my organizational and small group communication skills. I look forward to continuing my work with my colleagues on the SURCA grant team.

**Discussion**

There are two factors that appear to converge to limit student-athletes’ opportunities for engagement in HIPs such as undergraduate research. First, the demands placed upon student-athletes’ schedules limit their availability to participate in HIPs (e.g., Gould & Whitley, 2009; Ishaq & Bass, 2019). The URAs noted in their reflections that their engagement in our research project was motivated, in part, by their interest to engage in a HIP that would help them develop skills for their future. They also reflected on their limited access to HIPs and one of our URA’s noted that her access to her particular major was also limited because of the demands of her role as a student-athlete. The limited availability in student-athletes’ schedules makes access to what are often highly selective mentoring programs (Collins et. al., 2009; Crowe & Boe, 2019; Horowitz & Christopher, 2013) even less likely to be available to them. Thus, we knew we had to be intentional when designing this experience in order to be able to effectively engage with the URAs throughout this collaboration.

We encourage others to engage in collaborative research with undergraduate student-athletes; however, faculty mentors must be aware of the demands placed upon student-athletes and structure mentoring experiences that work with the student-athlete schedules and commitments. The team had early morning meetings in order to meet with URAs between morning workouts and their first classes. We met in the evenings (7-9 PM) to engage in data collection because that was when both the URAs and participants were available. We communicated via text, phone, and Zoom when URAs were traveling to maintain regular contact.

The collaboration was designed to provide the student-athletes with in-depth engagement in a research project. Counter to faculty biases about student-athletes that position them as less motivated and capable than their non-athlete peers (Comeaux 2011a; 2011b; Parsons, 2013), the faculty mentors believed in the abilities of the URAs to engage as collaborators throughout the research process. In fact, because we were examining the experiences of student-athletes on campus, the URAs played critical roles in both access to the population and credibility with our participants during data collection. The student-athletes we interviewed were open and comfortable sharing because they were talking with their peers (i.e., URAs facilitated focus groups). Simply put, the team was able to compile a rich data set because we engaged URAs as collaborators.

The project was successful because we implemented a high touch approach that scaffolded mentoring and accommodated student-athletes’ demanding schedules. This approach was similar to the mentoring models used by Crowe and Boe (2019) and Horowitz and Christopher (2013) who found that students expressed greater satisfaction and outcomes from a more collaborative mentorship model. Prolonged engagement on the project helped our URAs to achieve particular goals, including acceptance to graduate school and publication opportunities. These outcomes are consistent with other findings that students who engage in undergraduate research are more likely to go to graduate school, pursue careers in research, and/or use research skills in their lives (Collins et. al., 2009; Crowe & Boe, 2019; Stanford et. al., 2017).

It is important to note that the project was funded by an on-campus mini-grant program that supported faculty mentored undergraduate research. As stated above, faculty members are often interested in engaging in more undergraduate research but lack the time and funding to do so (Morales et. al., 2017; Morrison et. al., 2018). The funds provided via the campus mini-grant program provided stipends to the URAs and faculty mentors to engage in the project. Although small awards overall, the funds recognized and rewarded the time committed to the project since no course credit was given for the experience.
One less tangible benefit from the project was the intersection of the team members’ roles in athletics and their interest in research on student-athletes. The URAs reflections included their interest in benefitting student-athletes at the institution among their goals, which was tied to their identities as student-athletes. The faculty mentors on the project were also members of the University’s Faculty Athletic Council (FAC) and had been seeking a mechanism for collecting more in-depth data about the experiences of student-athletes on campus. Indeed, the project provided a rich description of the experiences of student-athletes at UNCW that was shared with the FAC, members of athletic administration, and members of academic administration on campus. The preparation of the report and presentation provided a tangible outcome and opportunity to disseminate findings to a key group of stakeholders. The research project exposed both positive and negative aspects of the athletics department, which allowed the URAs to connect to their own experiences and to identify meaningful recommendations.

Additional implications of this work included an enhanced understanding of the issues facing student-athletes at UNCW. This project helped create connections between student-athletes and the FAC that had not previously existed and helped inform the work of the FAC in subsequent years. For example, the FAC initiated a mentoring program whose aim was to open communication between student-athletes, coaches, and faculty members at UNCW. The project also opened collaborative opportunities for both research on student-athletes and programming to engage student-athletes in HIPs at UNCW. Partnerships between faculty members involved on the project and the student-athlete advising team have resulted in ongoing research projects in this area as well as the development of a student-athlete leadership program.

**Conclusion**

Engaging undergraduate student-athletes in undergraduate research can be a rewarding experience for both the faculty mentors and student-athletes. In our case, the intentionality with which we approached the structure of the experience and the design of the research process helped us to effectively collaborate on an in-depth qualitative study. Beyond the tangible benefits to both the faculty mentors (i.e., scholarly publications, presentations, grant applications) and the student-athletes (i.e., scholarly publications, presentations, acceptance to graduate school), the project provided important information about the needs and experiences of student-athletes on campus. We hope this article inspires other faculty members to intentionally reach out to student-athletes to engage in research. Our experience demonstrates the value of engaging students, including those who are often overlooked and underrepresented, in the high impact practice of undergraduate research through a structure of mentoring and support.

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