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University Music Students' Choice of Music Listening Sources: Use of Library Resources as
Compared with Non-Academic Streaming Services

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Abstract

The rise of streaming services and decline of analog media have affected academic music libraries in their traditional role as a resource of listening materials. This study examines the listening-source preferences of college-level music students across multiple institutions through a survey in which students compared electronic non-academic streaming services and both electronic and analog library multimedia collections to determine the factors that lead to the use of one source over the other. Findings indicate a strong preference for non-academic streaming services over library materials, emphasizing the importance of convenience. However, the perceived quality of library materials remains high among participants.

Keywords: academic libraries, listening preferences, music libraries, music students, media obsolescence, streaming services, YouTube

Introduction

Music librarians must remain in sync with the needs of their users in order to provide the highest level of service and continued access to materials. This mandate has become a test, however, within the context of a rapidly changing music industry. Transitions in the listening preferences of the general consumer population have also altered the behavior and resource expectations of college-level music students. Increasingly popular internet-based music sources like YouTube, as well as online streaming services such as Apple Music, Spotify, and others have drawn students away from traditional academic library collections (Forstot-Burke, 2019). This has led to concerns about whether the listening resources being used by students meet the quality standards that are imperative for a music education. These platforms pose a challenge to music libraries because of their widespread availability and simple user interface design. Issues of media obsolescence, the convenience of online resources, and the diverse requirements of music students across disciplines further complicate the tasks facing music librarians in fully meeting the needs of their users. As the literature surrounding this topic grows, it is clear that library professionals must reexamine conventional collection-curation methods and devise innovative solutions to assist students in utilizing the highest quality of materials for their educational development.

Background of the Problem

Conventional collection-building practice for libraries has been to act as an intermediary between patrons and information, including music, with the use of a patron-driven model becoming more prevalent recently (in addition to filling other roles such as those more archival in nature). However, patrons may have grown accustomed to eschewing the library as an intermediary and acquiring content themselves with the wealth of available internet-based

resources. Non-academic streaming services allow users to perform a more direct role in searching for information, including music, and to actively affect those resources through commenting, liking, and posting their own material, which may particularly appeal to those in the arts (Dougan, 2014). Librarians cannot be certain if music faculty expect their students to rely on the library for their audio needs, as may have previously been assumed (Dougan, 2016). Complicating libraries' efforts to maintain an audio collection that meets their users' needs is the rapid advancement of music-listening technology. While many music libraries possess collections of CDs, disk drives are no longer a standard component of laptop computers. As a result, it can no longer be expected that students will have the ability to play CDs outside the library. Additionally, newer formats of music are typically accompanied by license agreements that inhibit libraries' ability to provide access as well as to preserve music (Forstot-Burke, 2019). These barriers may further push music students away from library multimedia collections toward alternative listening sources.

Purpose of the Study

To thoroughly examine the listening-resource preferences of university music students, direct input from the stakeholder group in question must be considered. The purpose of this research study is to determine when college-level music students prefer to use library-provided listening sources over non-academic choices, such as Apple Music, Spotify, YouTube and other sources, and to investigate why students make such decisions. The circumstances under which music students choose one listening source versus another to prepare for their academic studies will be explored, as well as other factors that influence selection, such as performance quality and diversity of offerings. Facets of listening behaviors will be examined including frequency of use and whether students typically begin their search with library resources or non-academic

options. Within this broader query, special attention will be paid to the role of convenience as an element in shaping these habits, as it relates to both the issue of increasing physical-media obsolescence and the general availability of music resources. Additionally, the implications of a students' specific academic program and year of study will be explored to determine if demographics correlate to differing music-source preferences.

To fully investigate this topic, the following research questions have been developed:

RQ1: When do music students prefer to use library-provided listening sources over other sources, such as YouTube?

RQ2: Why do music students choose either library-provided sources or other sources, such as YouTube?

RQ3: How does the level of convenience, such as access to equipment, affect music students' choice of listening sources?

RQ4: What is the impact, if any, of students' specific program or year of study on their choice of listening sources?

With the rapid advancement of listening technology and the continual development of non-academic listening services, the question of what role libraries can serve in providing for the listening needs of their students now and in the future continues to weigh on the field of music librarianship. A contemporary assessment of the perspectives of music students is necessary to determine how students perceive library audio collections as compared to non-academic alternatives. This information is imperative in order to determine where academic music libraries should go from here in order to best serve their patrons.

Literature Review

Changes in the Music Industry

There has been a tremendous, two-fold shift in the music industry over the past twenty years from physical to digital formats and from purchased media to non-ownership streaming services. Following an all-time high in 1999, the overall consumption of physical music assets has steadily declined, and CDs as well as cassette tapes and 8-track tapes have become increasingly obsolete (Richter, 2020). A recent uptick in the sale of vinyl records, while an exception to this trend, is not significant enough to counteract the general movement away from analog media (2020). The drop-off of physical formats has been oppositely paralleled by the growth of digital music, and, for the first time in 2011, sales of online music outstripped those of all other types of assets (Tsou & Vallier, 2016, p. 462). This turning point marked the tipping of the scale from physical to digital media, and the gap between the two has continued to widen over time. At the close of 2019, despite a slight bump in the category of vinyl, physical album sales were down 20.9% from the previous year while consumption of digital music had increased by 32% (BuzzAngle Music, 2019, p. 5).

Because physical music formats are directly tied to ownership in a way that digital media is not, the second significant transition in the music industry, precipitated by the decline of analog formats, has been that of decreased music ownership in favor of online streaming services. This transition has taken place in three stages. Initially, physical music media were replaced by songs and albums available for download through platforms like iTunes and other mp3 distribution sites (Clark & Evans, 2015). Although this mirrored the shift from analog to digital formats, consumers were still able to own the music that they purchased online. However, music sales, and along with it music ownership, as well as music consumption declined in

response to the increasing obsolescence of analog formats, despite the digital download alternative (2015).

The second phase of the shift in music consumption represents the divergence of the previously interconnected metrics of ownership and sales. The creation and rise of non-ownership streaming services in the mid-2000s, originally built on the premise that users can purchase and consume music without possessing their own copy, furthered the conversion from analog to digital media (Hooper, 2018). In 2016, 51% of total music sales in the United States came from subscription-based streaming services, not only reversing the decline in revenue in the industry but also ushering in a new era of non-ownership music consumption (2018, p. 114). Finally, the separation of sales and consumption marks the most recent stage of the transformations from analog to digital and ownership to streaming within the music industry. Thanks to free-of-charge streaming services and digital music platforms, music consumption has skyrocketed in the past three years, with over one trillion on-demand streams over the course of 2019 (BuzzAngle Music, 2019, p. 2). However, overall music sales, while much improved compared to previous years, have not kept pace with consumption rates for the same reason: listeners no longer need to purchase or own music to interact with it (2019, p. 8). The totality of these changes has created an entirely new landscape for music-consumer behavior with an emphasis on digital, streaming media and non-ownership transactions.

Changes in Student Information-Seeking Behavior

Circumstances affecting information-seeking behavior.

For academic music libraries to provide the best possible collections and services to their patrons, it would be advantageous to gain an understanding of the contexts in which students are choosing to use library-provided listening sources or non-academic streaming services as well as how format preference may be contributing to those information-seeking choices. In her 2013 study, Katie Lai found that music students surveyed at Hong Kong Baptist University preferred YouTube for “performance needs,” such as lesson preparation, but preferred the library collection for “academic needs,” such as research papers (p. 207). Similarly, Lai found that students’ level of satisfaction with library resources and with YouTube varied based on the purpose of their search. This suggests that students based their behaviors on the reason for their search rather than considering one to be universally superior to the other. Lai’s assessment indicates that YouTube (as well as other non-academic streaming services) can potentially be used by libraries as a supplementary source rather than as a competitor. However, it is worth noting that continual changes in music technology have revealed some of the limits of Lai’s results.

Although Lai’s (2013) study provides an initial impression of music-student listening preferences in their information-seeking behavior, more recent literature indicates a persistent trend away from physical media toward streaming services, as well as a shift from library-provided multimedia sources to non-academic options. It appears that these changes, while incremental, have rapidly transformed music students’ opinions of the best resources to suit their needs. Echoing earlier research (Clark, 2013; Lai, 2013), Clark and Evans (2015) discovered that music students at Kent State University in Ohio were still eager to use CDs as a listening

resource. However, based on findings by Tsuo and Vallier (2016), this willingness to engage with physical media appears to have dissipated over time. As part of the same mixed-methods survey, the authors found that, while CDs had not been completely disregarded, both music and non-music majors favored streaming services over physical music media for personal and academic reasons, regardless of provider (commercial or library collection). Later research done by Forstot-Burke (2019) at the University of Kansas provides further evidence of this change in behavior. The study, based on circulation and spending data, determined that subscription-based streaming services had overtaken CDs in popularity at the university library in the time between 2008 and 2017. Although the applicability of circulation and spending data is limited by the possibility that there is usage that does not appear in circulation data, the triangulation of both qualitative and quantitative findings across multiple studies suggest that streaming services and digital music continue to be increasingly favored over physical music media.

In addition to stronger preferences for streaming services, music students have also shown an increased inclination over time toward non-academic resources in lieu of those offered by library multimedia collections. As Lai states in her 2013 findings, of all available streaming services YouTube is the preferred platform of choice. This result, reinforced by Clark and Evans's (2015) research, indicates that when students are turning to digital formats for their music, their first step is to access a resource not housed by libraries. Forstot-Burke's 2019 study also supports this conclusion. Although library subscription streaming database services surpassed CDs in circulation at the University of Kansas, there was decreased borrowing across all forms of audio media, implying that users are turning to alternative resources to meet their needs.

Finally, in a 2018 paper Hooper similarly states “students are increasingly leaving the physical CD and booklet behind and turning to online streaming resources that may or may not be provided by the library” (p. 115). Music students have not only altered their choice of audio sources from analog to digital, but their information-seeking behavior has moved toward extra-institutional providers and away from library offerings.

The narrative woven throughout recent literature of the combined departure from physical music formats and library multimedia collections indicates that Lai’s study, while foundational to the investigation of the information-seeking behaviors of music students, must be updated for the current context. Although Lai’s initial assessment indicated that YouTube (as well as other non-academic streaming services) could potentially be used by libraries as an auxiliary tool instead of as a rival resource, it now appears that this is no longer the case. In a 2019 interview, Lai herself acknowledges that her study “was a few years ago...I am not sure if the behavior has changed” (Liu, Lo, & Chin, 2019, p. 157). Indeed, there has been a dramatic shift in information-seeking behavior of music students in a relatively short period of time. The listening behaviors of music students bear continued examination against the backdrop of a fluctuating music industry to best equip library professionals to meet the needs of their users.

Advantages of streaming services.

A number of possible factors exist for why music students may choose either library-provided sources or non-academic streaming sources for their listening needs. Academic libraries cannot hope to compete with the quantity and variety of recordings on YouTube alone (Dougan, 2014), and the number of streaming services, including those tailored specifically for genres like classical music, are on the rise (Sisario, 2019). Because many students may be accustomed to using non-academic streaming services prior to entering college, their learning habits may

include non-academic streaming services (Lai, 2013). Additionally, there are marketing challenges for libraries to convey the full capabilities of their collections to students and faculty who may not be aware of the range of their libraries' audio collection or assume that non-academic streaming services are superior (Clark et al., 2018). In Kirsten Dougan's (2015) observation of the behavior of music students when searching for music scores and recordings, she found that the students did not appear to be aware of their library's audio streaming subscriptions.

Non-academic streaming services also possess social components that may appeal to students. Users of YouTube, for example, are able to engage with other users by commenting, liking, disliking, and sharing videos. Numerous "likes" and positive comments may signal popularity and validity of certain posts, reinforcing students' decisions to choose them as listening resources (Whitaker, Orman, & Yarbrough, 2016). Students of the arts, in particular, may be drawn to the ability to participate in the social-media culture of non-academic streaming services by creating contexts for videos with their own opinions as well as posting their own material (Lai, 2013). Alternative online music sources likewise offer extra features, such as enhanced video-production elements, that correlate to higher levels of user engagement (Shoufan & Mohamed, 2017). Vittorio Marone and Ruben C. Rodriguez (2019) found in their study of popular guitar instructors on YouTube that users were drawn to an informal presentation style in which instructors used humor and responded conversationally to comments. It is unclear from Marone and Rodriguez's study if these characteristics resulted in improvements of viewers' guitar abilities, but it is important to recognize qualities that appeal to students. These ancillary traits may entice students away from more static library multimedia sources toward more dynamic, non-academic options.

Students have a tendency to develop information-seeking behaviors in which they go to the sources that they are accustomed to regardless of whether or not better options exist (Dougan, 2012). Because most students are well versed in using non-academic streaming services prior to being introduced to their university's music library, non-academic streaming services are a more comfortable choice (Forstot-Burke, 2019). While instruction in information literacy for music materials can limit discomfort with library resources, frustration with library search tools can linger (Dougan, 2012). Clark and Yeager (2018) cite poor interface design and limitations of online public access catalogs (OPACs) as additional reasons why music students struggle to successfully locate library resources. This is exacerbated by the notorious difficulty of incorporating music into library catalogs (Dougan, 2014; Myers & Ishimura, 2016), compounded by the uniquely complex needs of music students (Liu, 2019). However, many non-academic streaming services, such as Apple Music, Spotify, and others are designed primarily for music.

There is even evidence that YouTube, while having a broader scope, is better suited for simple search terms. In 2016, Nathan Garrett found in his study about searches on YouTube for Excel tutorials that most users employ simple search terms without referencing specific functions. Nevertheless, though searches were unsophisticated, users received advanced tutorials in results. Garrett suggested that the use of simple search terms is likely because "novices may not know what they need to know" (p. 327). Although this study was limited to Excel searches, the same may be applicable of those searching for academic enrichment in other subjects. It is possible that music students prefer to use simple searches rather than sophisticated search methods that are available through library catalogs and databases. This is consistent with findings by Jennifer Mayer (2015) in which focus groups of performing-arts students agreed that commercial websites, such as iTunes, were more user-friendly than library databases. Kirsten

Dougan (2015) also found that students found the lack of scope limitations in resources such as YouTube to be attractive to music students' search methodology, particularly when searching for music of which they were not already knowledgeable.

Advantages of libraries.

Although alternative listening sources possess many advantageous characteristics, reasons also exist for why students may favor library audio collections over non-academic streaming services in their information-seeking behavior. Libraries strive to continually curate their collections to provide recordings of high-performance standards, causing the students in Lai's (2013) study to indicate that they considered the library collection to have superior "performance authenticity" and "sound/video quality" than YouTube (p. 207). The importance of locating quality materials when conducting academic research is reiterated in Mayer's (2015) findings. Focus groups comprised of performing-arts students, including music majors, indicated that recordings by well-respected musicians were essential to their studies and that continued access to the university library after graduation was crucial to locating such professional sources. These impressions may be further affected by the attitudes and teaching practices of academic faculty. In her 2016 study, Kirstin Dougan found that, while some music-department faculty are accepting of YouTube for reasons of contemporaneousness and diversity, the majority of respondents surveyed were preeminently concerned with the poor quality of both content and recordings on the site (p. 502). Reluctance on the part of teachers to use or give weight to streaming services and other online platforms outside of the library as trustworthy music sources may also sway the opinions of their classes. Overall, it appears that students feel libraries are highly credible in providing quality music materials, and this is influential in their decision-making when searching for appropriate listening sources.

In addition to issues of perceived quality, resources at academic music libraries serve primarily as educational tools, unlike many web-based resources, which focus on entertainment. Items that may be considered rare or too niche to have mass appeal are often housed in library collections that cannot be found on the Internet (Lai, 2013). Similarly, even when genre-specific or uncommon music resources can be found on non-academic platforms, they lack the thorough cataloging and metadata standards found in libraries. With YouTube especially, descriptive information about the material is “provided by the uploader, and not held to any metadata standard as in library catalogs” (Dogan, 2016, p. 493). Streaming services, more broadly, have been designed to provide access to popular music and do not sufficiently take into account the structured elements of other genres (Sisario, 2019). The inability to filter streaming platforms by facets such as composer versus performer, movement number, and language presents a challenge to students when searching for highly specific pieces of music.

The impact of convenience.

Convenience is a factor that has been cited by subjects in multiple studies exploring information-seeking behaviors in the use of academic performing-arts libraries as opposed to non-academic sources (Clark, 2013; Dogan, 2014; Lai, 2013). Perceptions of convenience can be affected by multiple variables. A significant variable is media format. In his 2013 study, Joe C. Clark found that 61% of students preferred online access to physical resources for their audio needs (p. 301). When the same author performed an expanded study along with Stormes and Saucedo in 2018, the authors found that the preference for online access was now shared by 97% of students (p. 624). In her 2019 study, Corinne Forstot-Burke found a 93% decline in CD circulation over eight years (p. 195). The general aversion to physical materials can be partially attributed to a desire to access audio collections at hours in which the library may be closed and

without having to travel (Cox, 2007; Dougan, 2014). Music students typically have busy schedules, which make it difficult for them to find time to search for library materials during the day (Mayer, 2015). The convenience of digital listening resources, coupled with the increasing obsolescence of physical media and the decreased prevalence of analog playback devices (Knopper, 2018), may push music students further toward online alternatives.

The impact of program or year of study.

Within the context of music students, there may be variance in information-seeking behaviors for listening needs. Some variables that may affect the behavior of different students include the specific program or year of study of each student. Lai (2013) found that the underclass students in her study used the library more often for assignments and papers than upperclassmen. Lai suggested that the library orientation provided to freshmen at Hong Kong Baptist University may have contributed to a difference in information-seeking behavior. Similarly, Kirstin Dougan (2012) found differences in music-research tactics between those of underclassmen and those of upperclassmen and graduate students. Specifically, underclassmen were more likely to rely heavily on faculty recommendations and less likely to seek materials using non-traditional methods. Dougan speculated that upperclassmen and graduate students may have developed an increased prioritization of convenience throughout their education, leading them to sources such as YouTube that they view as more convenient than library sources.

Additionally, Dougan (2012) found distinctions between the behaviors of different specialties, discovering that performers and musicologists used the library's audio streaming services more than other specialties. Ethnomusicologists had the lowest level of usage of the library's audio streaming services, possibly because the content within these resources was less relevant to their specialty. This hypothesis is consistent with Dougan's 2016 study in which the

author interviewed music faculty and found that jazz and ethnomusicology professors relied on YouTube more than faculty of other specialties due to the need to access current and esoteric material. The author also found that musicology, music theory, and composition faculty had the highest levels of library use, followed by music-education faculty. Dougan's findings are supported by those of Shannon Marie Robinson (2016) in her interviews with dance faculty. Robinson's study had a small sample size of dance faculty, but the findings were consistent with studies of other performing-arts faculty (e.g. Dougan, 2016) in showing that non-academic streaming sites were used more by performance-based faculty than text-based faculty. It is possible that faculty influence their students' information-seeking behaviors. Therefore, the faculty that use YouTube and other non-academic streaming services may be directly or indirectly encouraging their students to do the same.

Methodology

Description of Research Methods

In order to gather information about university students who are music majors, the authors of this study surveyed students at the Aaron Copland School of Music (ACSM). The ACSM is part of the City University of New York, Queens College in Flushing, New York and is made up of both undergraduate- and graduate-level music majors as well as special certificate programs across multiple concentrations and programs of study. Students who apply to the ACSM must meet program admission requirements in addition to those of Queens College in order to be admitted, including an audition for performance and education majors (Aaron Copland School of Music, n.d.). In order to accurately gather responses from the students at the ACSM, a 12-question survey was developed that consisted of multiple-choice questions with pre-populated possible answers to allow for quantitative analyses (see Appendix A and Appendix B). Of the 12 multiple-choice questions, five included an open-ended option labeled "Other" with space to add free text to provide students the opportunity to most accurately reply if the choices listed did not adequately describe their response. The survey was finalized for dissemination as a Google Form, and a link to the questionnaire was emailed to all of the 428 current students at the ACSM via a school-wide distribution list (J. Cho, personal communication, March 31, 2020). A link to the survey was also posted on the Aaron Copland School of Music Facebook group with a request for current ACSM students to spend two minutes completing the survey. The instructions then directed students to share the survey with any other current ACSM students who may not have been reached through the posting. The Facebook group has 582 members, but many are alumni who are not within the criteria for this study. Links to the questionnaire were sent on March 16, 2020, and again on March 26, 2020.

The questionnaire was distributed again on April 5, 2020 with an added incentive that for each of the first 100 responses \$1 would be donated to the MusiCares COVID-19 Relief Fund for musicians affected by COVID-19.

After receiving a low number of responses, possibly related to the COVID-19 pandemic that was occurring at the same time, the survey was expanded to students who are majoring in music attending any university in the United States. In addition to the Aaron Copland School of Music, the questionnaire was distributed directly to students enrolled in the Steinhardt School's Department of Music and Performing Arts Professions at New York University. The questionnaire was also emailed to 20 staff members at university music departments with requests to forward the questionnaire to students. A response was received from a music-education professor at Roosevelt University that students who participated would receive extra credit (on the honor system because the questionnaire was online and anonymous). A post was also made on a Facebook group for SUNY Purchase College music students and alumni. Similar to the instructions delivered to potential ACSM respondents, students were encouraged to share the survey with other current college-level music students in an attempt to reach the widest possible participant pool and gather the greatest number of responses feasible.

The questionnaire (see Appendix B) implemented in this study was based on the original survey used by Katie Lai (2013) to conduct her research on the same topic. However, the questionnaire developed by Lai was adjusted to account for recent changes in the overall music industry landscape that have occurred since 2013 as well as the desire to explore particular issues more closely. Most notably, the decision was made to expand the study to compare the use of the library multimedia collection to all non-academic streaming services instead of only YouTube. As a result, any of Lai's questions that stated "YouTube" (p. 215) were changed to "non-

academic streaming services.” The first instance of the phrase on the reworked survey included examples “e.g. YouTube, Apple Music, Spotify, etc.” to signal to students that all non-academic streaming services should be considered when formulating their answers.

In addition to broadening the scope of listening sources from YouTube to non-academic platforms more generally, the survey used in this study expanded on Lai’s original questions with regard to the issue of increasing obsolescence of physical music media. Because the authors found evidence in their literature review that obsolescence of devices needed to listen to certain forms of media is a barrier for use of library multimedia collections, the authors decided that it would be beneficial to gather information on where students who are using the library multimedia collection are listening to the selected materials. Therefore, the survey for this study also included a question (Q7) about where students listen to library materials (library, home, or other) that was not included in Lai’s initial study. A question about students’ academic concentration was also added (Q12) because prior literature suggested that the particular concentration of students who are majoring in music (e.g. education, composition, musicology) may have an impact on their listening choices. It was decided that the correlation between these two metrics bore further examination. Finally, when the study was expanded to all universities in the United States with music programs, an additional question was added (Q13) to the questionnaire for students to write in what college/university they attend.

Limitations

As with all studies using surveys, this study assumes honesty in questionnaire responses but acknowledges that the results are self-reported by students. Similarly, this study only examines perceptions of music students and does not evaluate possible contributing factors to those perceptions, such as the effects of marketing or the influence of teachers or peers. This survey also provides only a snapshot of student preferences at a single point in time against a backdrop of a rapidly transforming commercial music industry. As Lai's (2013) original results required fresh examination due to significant changes in consumer tastes, it is likely that the findings from this research study will also necessitate reconsideration in the near future.

Findings

Results

RQ1: When do music students prefer to use library-provided listening sources over other sources, such as YouTube?

A total of 33 survey responses were received, though some respondents chose not to answer every question (as reflected in sample sizes indicated for each question). Survey respondents reported overwhelmingly preferring non-academic streaming services over library-provided listening sources. A complete 100% (n=32) reported usually using streaming services first when preparing for lessons or rehearsals as shown in Table 1. Similarly, 96.9% (n=32) preferred streaming services for class preparation as illustrated in Table 2. When asked how often they use the library to prepare for one-on-one music lessons or ensemble rehearsals, only 3.0% of respondents (n=33) indicated “usually” or “always” as shown in Figure 1. Library usage fared slightly better on tasks of enhancing general musical knowledge (12.1%, n=33) and doing an assignment/paper (15.1%, n=33)--compared with the respective tasks using streaming services receiving 72.7% (n=33), 75.8% (n=33), and 71.9% (n=32) positive responses as illustrated in Tables 3 and 4 and Figures 2 and 3. When asked specifically to compare their citations of audio sources, students were evenly split with 41.9% having cited sources from streaming services more frequently and 41.9% (n=31) having cited library sources more frequently as reported in Table 5 and Figure 4.

Table 1. When you need multimedia for preparing for your academic music lessons or group rehearsals, what do you usually use FIRST (choose one only)? (Based on Q2)

	Non-academic streaming services (YouTube, Apple Music, Spotify, etc.)	Library's multimedia collection (CDs, DVDs, LPs, Naxos, etc.)	Other
Responses Indicated (n=32)	32	0	0

Table 2. For class preparation, do you prefer... (Based on Q8)

	Non-academic streaming services more than the Library's multimedia collection	Library's multimedia collection more than non-academic streaming services
Responses Indicated (n=32)	31	1

Table 3. How often do you use the LIBRARY'S MULTIMEDIA COLLECTION to perform the following tasks:

(Based on Q6)

TASK	NEVER	OCCASIONALLY	ABOUT HALF THE TIME	USUALLY	ALWAYS
To prepare for my one-on-one music lesson or ensemble rehearsal (n=33)	17	14	1	1	0
To do my assignment/paper (n=33)	9	14	5	4	1
To enhance/broaden my general musical knowledge, not specifically related to any work or assignment (n=33)	14	12	3	4	0

Table 4. How often do you use NON-ACADEMIC STREAMING SERVICES to perform the following tasks:

(Based on Q5)

TASK	NEVER	OCCASIONALLY	ABOUT HALF THE TIME	USUALLY	ALWAYS
To prepare for my one-on-one music lesson or ensemble rehearsal (n=33)	2	6	1	9	15
To do my assignment/ paper (n=32)	2	3	4	8	15
To enhance/ broaden my general musical knowledge, not specifically related to any work or assignment (n=33)	1	4	3	8	17

Table 5. Based on the music assignments or papers you have done thus far in which sound recordings or videos were consulted, which of the following have you cited in your bibliography (the list of references located at the end of your paper) more frequently? (Based on Q10)

	More Non-Academic Streaming Services 1	2	3	4	More Library Collection 5
Responses Indicated (n=31)	6	7	5	6	7

Figure 1. Rate at which students reported using their library or streaming services for lessons or rehearsals.

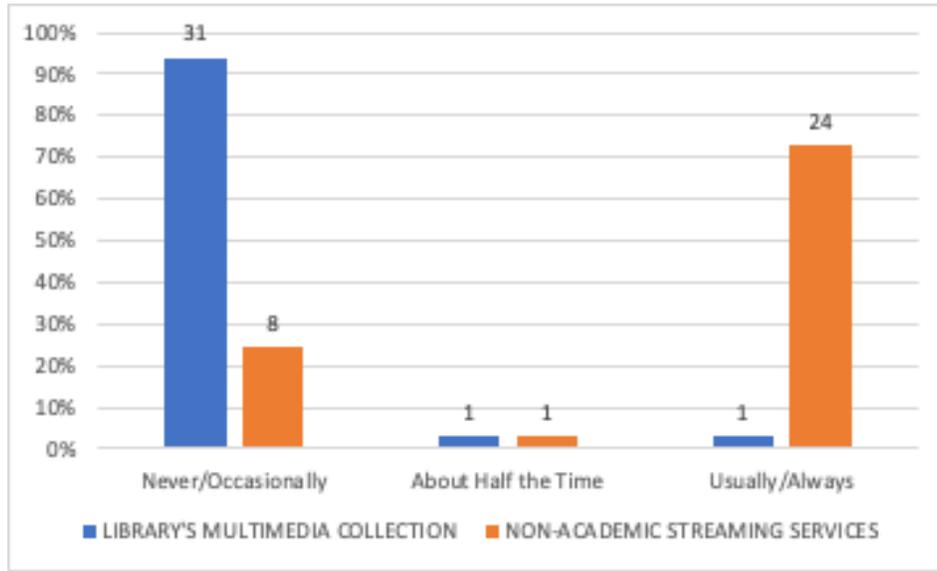


Figure 2. Rate at which students reported using their library or streaming services for assignments/papers.

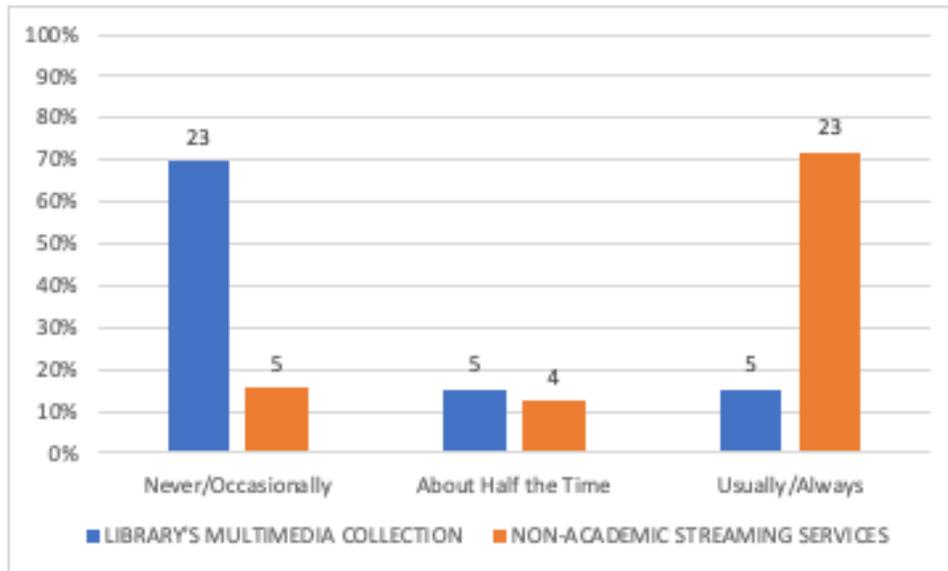


Figure 3. Rate at which students reported using their library or streaming services for general musical knowledge.

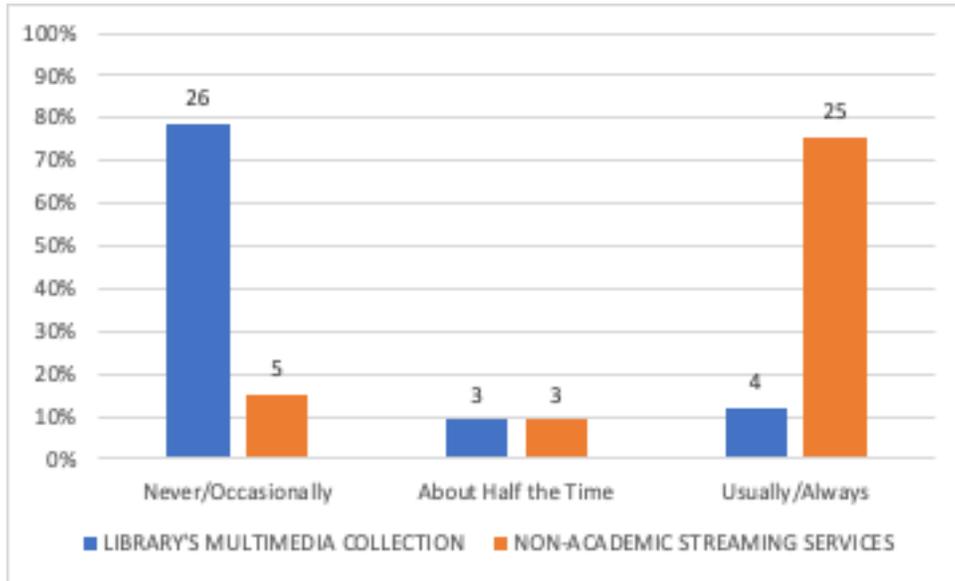
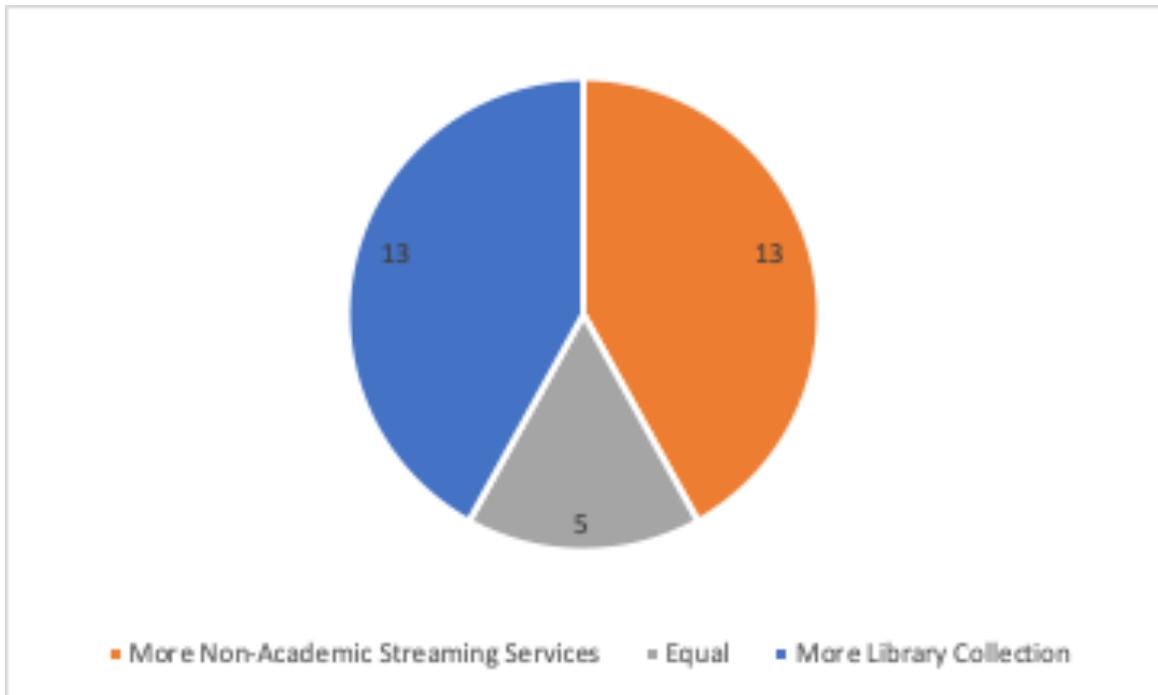


Figure 4. Rate at which students reported citing sources from their library or streaming services in bibliographies.



RQ2: Why do music students choose either library-provided sources or other sources, such as YouTube?

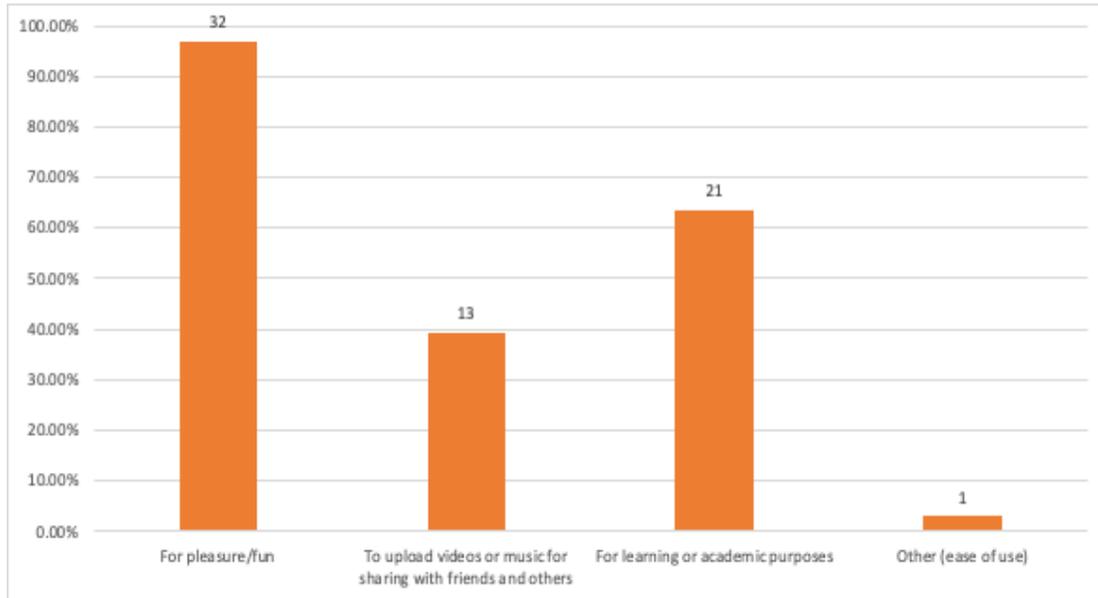
After determining in what instances music students use their library multimedia collection or non-academic streaming services, the next logical question is what led them to those choices? The clearest indicator of students' motivations in their preference for streaming services is in their responses to Q1 about why they use streaming services. The "pleasure/fun" option was chosen by 97.0% of students (n=33), followed by "for learning or academic purposes," which was chosen by 63.6% of students as displayed in Table 6 and Figure 5.

Table 6. Generally, why do you use non-academic streaming services (e.g. YouTube, Apple Music, Spotify, etc.)?

(choose all that apply) (Based on Q1)

	For pleasure/fun	To upload videos or music for sharing with friends and others	For learning or academic purposes	Other (ease of use)
Responses Indicated (n=33)	32	13	21	1

Figure 5. Reasons students reported using non-academic streaming services.



Another possible motivator is level of satisfaction. When asked, to what extent the performance quality of streaming services satisfied their musical needs, 45.5% of students (n=33) indicated that they were completely satisfied, and 54.6% of students indicated that they were somewhat satisfied, as illustrated in Table 7. In contrast, only 24.2% of students (n=33) indicated complete satisfaction with the performance quality of their library while 66.7% reported being somewhat satisfied and 9.1% not satisfied at all as shown in Table 8 and Figure 6.

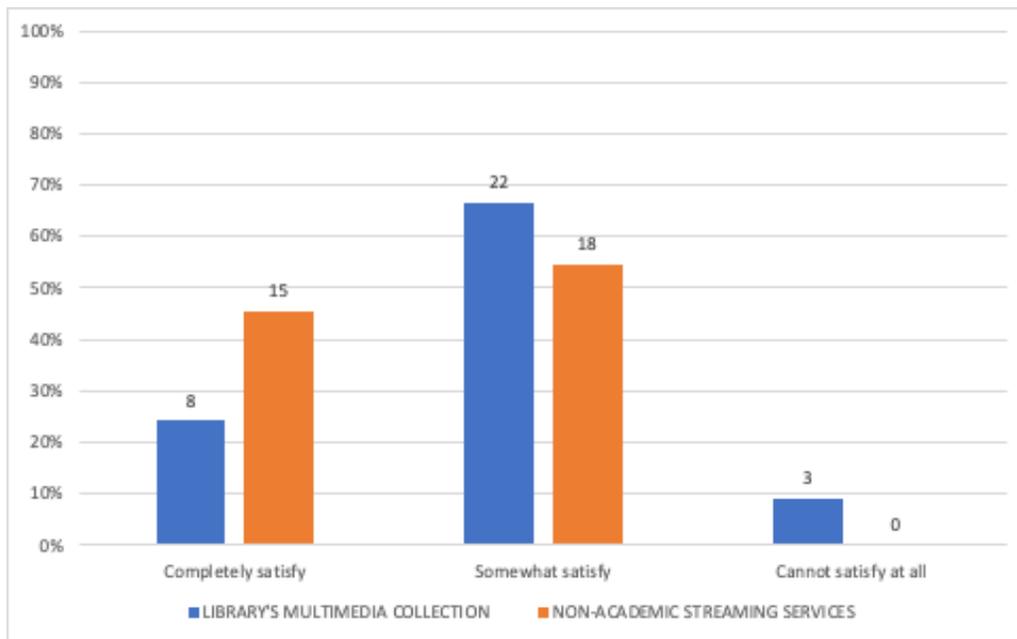
Table 7. To what extent does the performance quality of material in NON-ACADEMIC STREAMING SERVICES satisfy your musical needs? (Based on Q3)

	Completely satisfy	Somewhat satisfy	Cannot satisfy at all
Responses Indicated (n=33)	15	18	0

Table 8. To what extent does the performance quality of material in LIBRARY'S MULTIMEDIA COLLECTION satisfy your musical needs? (Based on Q4)

	Completely satisfy	Somewhat satisfy	Cannot satisfy at all
Responses Indicated (n=33)	8	22	3

Figure 6. Reported satisfaction in performance quality for students' musical needs.



RQ3: How does the level of convenience, such as access to equipment, affect music students' choice of listening sources?

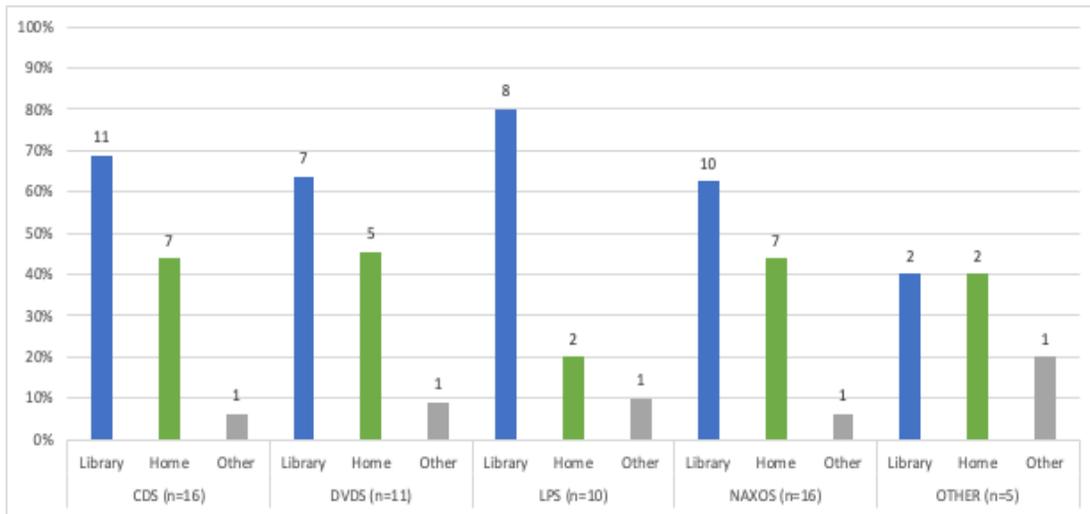
Level of convenience with respect to listening-source access was found to be a significant factor in determining student preferences. The majority of students who utilized library multimedia resources such as CDs, DVDs, LPs, and the streaming service Naxos indicated that the primary location in which they listened to those music sources was inside of the library as opposed to home and/or other locations as noted in Table 9 and Figure 7. Respondents further indicated that this choice was the result of limited personal access to appropriate playback

equipment stating, “I don’t own a record player or CD player” as well as, “CDs and DVDs are becoming obsolete as technology generally no longer includes components to accommodate them.” Students appear to be restricted to the physical library space when using library materials because they do not personally own the devices necessary to listen to the available media formats.

Table 9. If you use the Library’s multimedia collection, please indicate which formats you select and WHERE you listen to each media type: (Based on Q7)

MEDIA TYPE	Library	Home	Other
CDs (n=16)	11	7	1
DVDs (n=11)	7	5	1
LPs (n=10)	8	2	1
Naxos (n=16)	10	7	1
Other (n=5)	2	2	1

Figure 7. Locations students reported listening to each media type in their library’s collection.



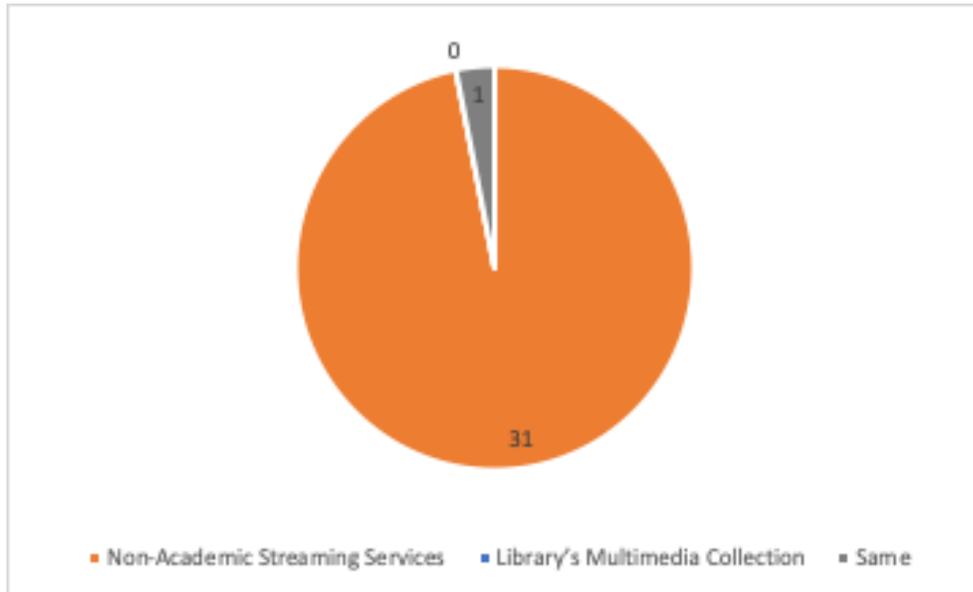
Additionally, when compared to other factors that affect listening-source selection, level of convenience garnered the highest degree of consensus among respondents (n=32) with 96.8% indicating that they felt non-academic streaming services were more convenient than library

multimedia collections and 3.2% stating that the level of convenience between the two sources was the same as illustrated in Table 10 and Figure 8.

Table 10. For the following factors, do you consider the Library's multimedia collection or non-academic streaming services to be better? (Based on Q9)

FACTOR	Library's Multimedia Collection	Non-Academic Streaming Services	Same
More convenient (n=32)	0	31	1
Easier to access (n=32)	0	29	3
Easier to find the pieces I want (n=32)	4	23	5
Easier to find the performances/ensembles I want (n=32)	4	23	5
Easier to find music I cannot find anywhere else (n=32)	14	11	7
Better sound/video quality (n=31)	8	6	17
Better performance quality (n=31)	7	6	18

Figure 8. Students' ratings of streaming services' convenience compared with library's convenience



RQ4: What is the impact, if any, of students' specific program or year of study on their choice of listening sources?

In addition to analyzing the results of the questionnaire in aggregate, the data were evaluated with respect to both the participants' concentration and program of study to determine any correlations to preferred listening sources. No direct statistical correlations were found to exist between either academic concentration or program of study when analyzing their impact on music students' listening choices, in part because limited sample sizes in general and of certain concentrations made it impossible to determine significance of many cases of variance.

However, there were some evident trends in the results that warrant further examination in a larger study. One notable difference between responses based on concentration (classical performances versus composition) was with respect to Q10. Of performance students (n=16), 56.2% expressed that they had cited more library sources compared to only 27.3% of composition students (n=11). Alternatively, based on the same groups, 6 (54.5%) of the 11

composition students indicated more streaming-service citations, while only 31.3% of performance students stated that to be true as illustrated in Table 11 and Figures 9 and 10.

Table 11. Based on the music assignments or papers you have done thus far in which sound recordings or videos were consulted, which of the following have you cited in your bibliography (the list of references located at the end of your paper) more frequently? (Based on Q10)

CONCENTRATION	More Non-Academic Streaming Services	1	2	3	4	More Library Collection	5
Classical Performance (n=16)	3	2	2	4	5		
Composition (n=11)	3	3	2	1	2		

Figure 9. Rate at which classical performance majors reported citing sources from their library or streaming services in bibliographies.

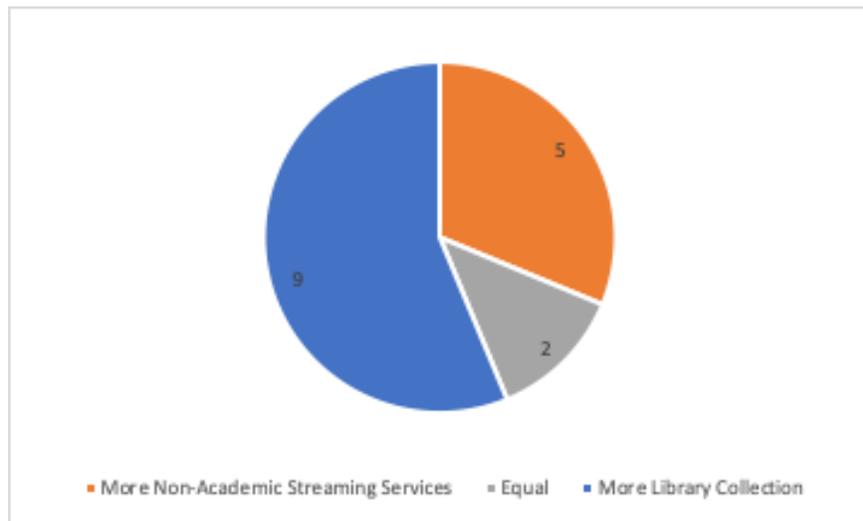
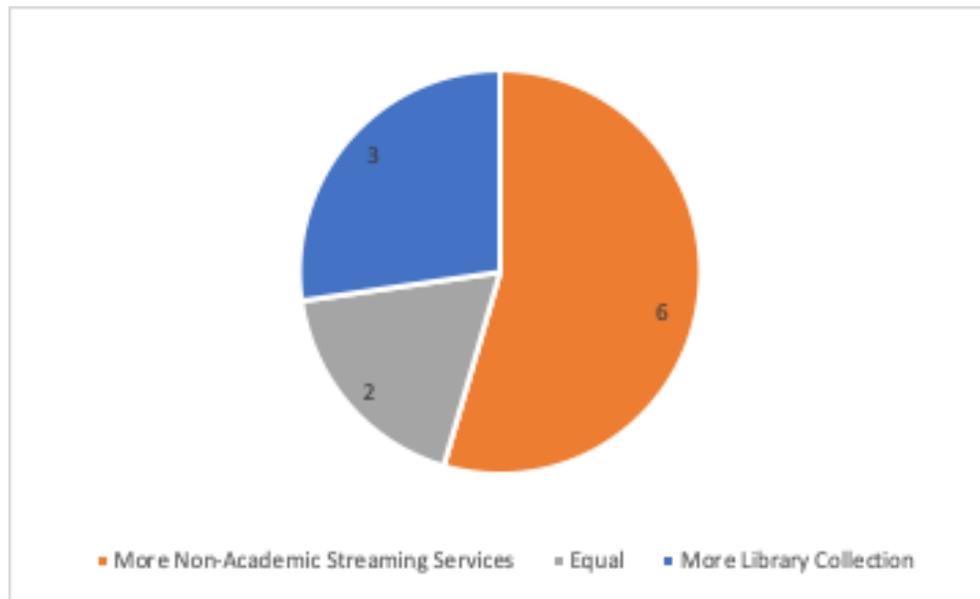


Figure 10. Rate at which composition majors reported citing sources from their library or streaming services in bibliographies.



As with the analysis based on students' concentration, the examination of responses organized by program of study did not establish any correlation between undergraduate or graduate programs and preferred listening sources. An even greater alignment of answers from these two groups was found than those from classical performance and composition students. The findings indicate that the only point of deviation between undergraduate and graduate students relates to Q3 and Q4 and the perceived performance quality of listening-source materials. Undergraduate students (n=15) reported higher rates of quality satisfaction with both non-academic streaming services (53.3%) and library multimedia items (40.0%) than graduate students (n=18) (38.9% and 11.1%, respectively), but both groups still found non-academic streaming services to be more satisfactory than library materials, overall as noted in Tables 12 and 13 and Figures 11 and 12.

Table 12. To what extent does the performance quality of material in NON-ACADEMIC STREAMING SERVICES satisfy your musical needs? (Based on Q3)

DEGREE	Completely satisfy	Somewhat satisfy	Cannot satisfy at all
Undergraduate (n=15)	8	7	0
Graduate (n=18)	7	11	0

Table 13. To what extent does the performance quality of material in the LIBRARY'S MULTIMEDIA COLLECTION satisfy your musical needs? (Based on Q4)

DEGREE	Completely satisfy	Somewhat satisfy	Cannot satisfy at all
Undergraduate (n=15)	6	8	1
Graduate (n=18)	2	14	2

Figure 11. Reported satisfaction in performance quality for undergraduate students' musical needs.

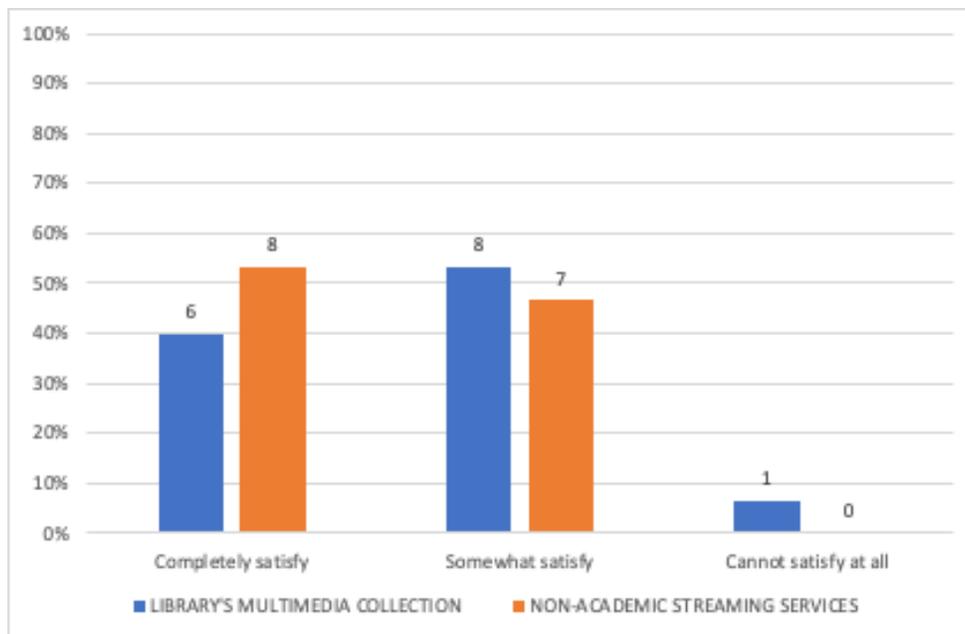
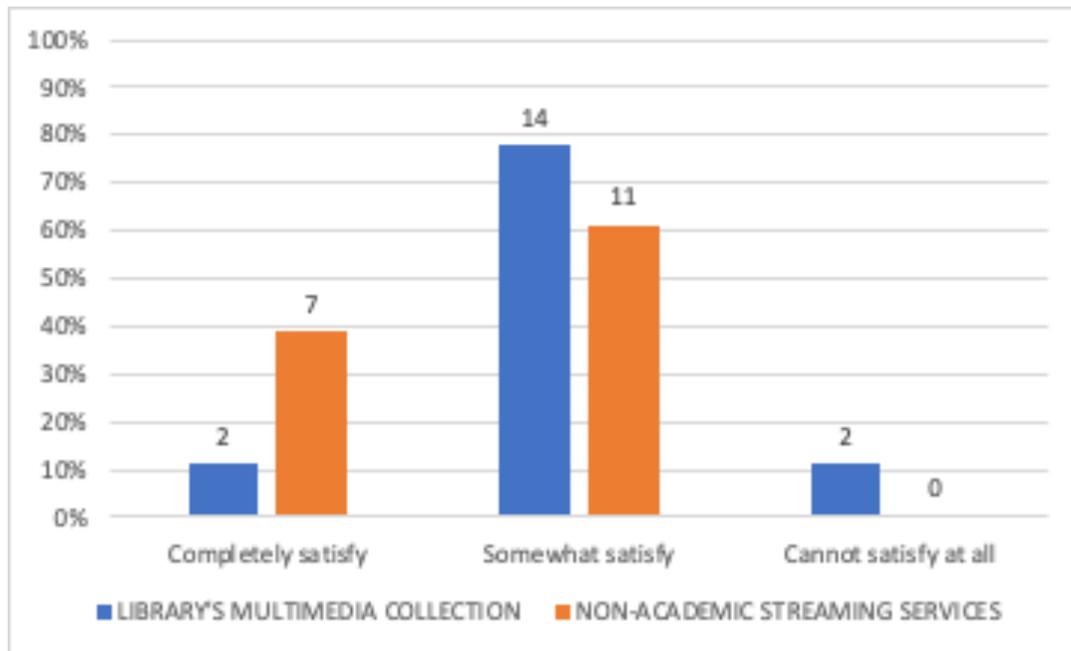


Figure 12. Reported satisfaction in performance quality for graduate students' musical needs.



Discussion

The findings from RQ1 noted above indicate that music students generally prefer streaming service over their university library in greater levels than seen by Katie Lai (2013). Preparation for lessons and rehearsals appears to be an area where music students most heavily favor streaming services. In other areas, a portion of students indicated using a combination of streaming services and their library. Most notably, 28.1% of respondents (n=32) reported using both resources to do an assignment or paper at least half of the time. It appears that while the music students avoid the library in preparing for lessons and rehearsals, some students supplement library resources and streaming services for other tasks. This is reinforced by responses to whether students cite sources from streaming services or from their library more frequently. On the five-point Likert scale, 58.1% of students (n=31) chose one of the middle three options. The library had higher rates of usage in more formal tasks, such as writing a paper, than other tasks. Meanwhile the rise in use of streaming services may mean that many students do not feel compelled to use university-sanctioned sources.

The results of RQ2 indicate both an alignment with Lai's original study in some respects while simultaneously signaling a shift in satisfaction with streaming services. Although the high usage rates of streaming services found in this study at first glance appear to indicate a diminished level of satisfaction with library multimedia collections, that does not appear to be the case. Levels of satisfaction with library collections remained the same as Lai's (2013) results, implying dissatisfaction with music libraries' audio collections is not driving students away. In contrast, the level of satisfaction with streaming services rose considerably from Lai's findings. This is consistent with responses to frequency of citing audio sources from the library compared with citing sources from streaming services, in which the frequency of citations from the library

remained the same but citations from streaming services rose dramatically. This signifies that music students' opinion of their library has not changed, but their opinion of streaming services has improved, leading music students to often use streaming services instead of their library.

The findings of RQ3 pertaining to levels of convenience of listening sources, combined with the reported physical-use restrictions on library materials, indicates that students feel non-academic listening sources are more convenient in part because they are not limited solely to the library as a place of use. The ability to listen to non-academic streaming services outside of the library appears to positively affect students' decisions in favor of those services over library multimedia collections in terms of convenience. Finally, the results of RQ4 and the correlation between listening sources and concentration illustrates a contrast to earlier, related studies. The disparity between concentration groups, with performance students preferring to cite library sources and composition students favoring non-academic sources, is a reversal from Dougan's findings (2016, p. 504). The implication that there has been a shift in opinion over what constitutes an acceptable, credible research resource for each concentration necessitates additional research, such as determining if there are distinctions between concentrations in requirements for quality of sources. The same examination between listening source and program of study however, failed to reveal any meaningful correlation. It appears there is no significant relationship between program of study and music students' choice of listening sources.

Summary and Conclusions

Perceptions of non-academic streaming services appear to have risen among university music students since Katie Lai's 2013 study, in many cases at the expense of library usage. This is not surprising given general trends in the music industry of skyrocketing popularity of streaming service with an inverse relationship to the popularity of other music formats, especially CDs (BuzzAngle Music, 2020). Although many academic music libraries have incorporated streaming services into their collections, it is still common for CDs to represent a significant portion of a library's multimedia collection. For example, the Queens College Libraries (n.d.) advertise their collection of "over 10,000 CDs" on their website (para. 3). The increased reliance on streaming services and decreased reliance on libraries found in this study are consistent with recent studies on music-library usage (Forstot-Burke, 2019; Clark, et al., 2018). As expected, findings suggest that convenience, including limited access to CD players, is an important motivator for music students to depend heavily on non-academic streaming services. However, similarly to Clark, et al.'s (2018) findings, there was evidence that some students rely on their libraries in combination with other sources.

It is important to remember that streaming services do not need to be viewed in competition with libraries. If students are able to get the listening resources that they need in order to optimize their musical education, the library's goal is achieved regardless of where the resources were found. Libraries should consider increasing their focus on information-literacy instruction as it pertains to music so that students are able to effectively evaluate internet-based sources. Additionally, future studies should explore if certain categories of library-provided listening sources are of particular value to music students so that the development of audio collections can be focused on those categories. Although rapid developments in the music

industry present new and constantly evolving challenges, music libraries have a valuable role to fill and should continue adapting to best serve their patrons.

Acknowledgments

Our greatest thanks go to Professor Simone L. Yearwood for her continuous guidance in researching and writing this paper. We also thank Dr. Roberta Brody for her assistance in our research design and all of the faculty at the Graduate School of Library and Information Studies, Queens College, City University of New York for their support in preparing us for this undertaking.

Additionally, we would like to thank the administrative staff at the Aaron Copland School of Music, especially Jane Cho, for providing us with important information for our research. We are also grateful to the many people who assisted in distributing our survey, in particular Mike Flanagan, and all of the students who contributed their insights by participating in our study in the midst of a chaotic time.

Furthermore, we thank Katie Lai for providing the inspiration and basis for our research with her 2013 publication.

Most importantly, we thank our families and friends for their unending support, especially Joseph C. Czeisel and Terry and Vivian Smith.

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Appendix A

Research Instrument Checklist

Research Question	Corresponding Survey Question
RQ1: When do music students prefer to use library-provided listening sources over other sources, such as YouTube?	1, 2, 5, 6, 8, 9, 10
RQ2: Why do music students choose either library-provided sources or other sources, such as YouTube?	1, 3, 4, 9, 10
RQ3: How does the level of convenience, such as access to equipment, affect music students' choice of listening sources?	7, 9
RQ4: What is the impact, if any, of a students' specific program or year of study on their choice of listening sources?	11, 12

Appendix B

Music Source Preference Questionnaire

The purpose of this survey is to gather feedback on your use of non-academic streaming services and the Library's multimedia collection for your music studies in the university. Your input is useful in improving library music collections. All responses will be kept confidential and used anonymously.

Q1. Generally, why do you use non-academic streaming services (e.g. YouTube, Apple Music, Spotify, etc.)? (choose all that apply)

- a. For pleasure/fun
- b. To upload videos or music for sharing with friends and others
- c. For learning or academic purposes
- d. I never use non-academic streaming services
- e. Other (please specify: _____)

Q2. When you need multimedia for preparing for your academic music lessons or group rehearsals, what do you usually use *FIRST* (choose one only)?

- a. Non-academic streaming services (YouTube, Apple Music, Spotify, etc.)
- b. Library's multimedia collection (CDs, DVDs, LPs, Naxos, etc.)
- c. Other (please specify: _____)

Q3. To what extent does the performance quality of material in *non-academic streaming services* satisfy your musical needs?

- a. Completely satisfy
- b. Somewhat satisfy
- c. Cannot satisfy at all

Q4. To what extent does the performance quality of material in the *Library's multimedia collection* satisfy your musical needs?

- a. Completely satisfy
- b. Somewhat satisfy
- c. Cannot satisfy at all

Q5. How often do you use *non-academic streaming services* to perform the following tasks:

	Never	Occasionally	About Half the Time	Usually	Always
To prepare for my one-on-one music lesson or ensemble rehearsal					
To do my assignment/paper					
To enhance/broaden my general musical knowledge, not specifically related to any work or assignment					

Q6. How often do you use the *Library's multimedia collection* to perform the following tasks:

	Never	Occasionally	About Half the Time	Usually	Always
To prepare for my one-on-one music lesson or ensemble rehearsal					
To do my assignment/paper					
To enhance/broaden my general musical knowledge, not specifically related to any work or assignment					

Q7. If you use the Library's multimedia collection, please indicate which formats you select and *WHERE* you listen to each media type (if not, please proceed to Q8):

	Library	Home	Other (please specify)
CDs			
DVDs			
LPs			
Naxos			
Other (please specify)			

Q8. For class preparation, do you prefer...

- a. Non-academic streaming services more than the Library's multimedia collection
- b. Library's multimedia collection more than non-academic streaming services

Q9. For the following factors, do you consider the Library's multimedia collection or non-academic streaming services to be better?

	Library's Multimedia Collection	Non-Academic Streaming Services	Same
More convenient			
Easier to access			
Easier to find the pieces I want			
Easier to find the performances/ensembles I want			
Easier to find music I cannot find anywhere else			
Better sound/video quality			
Better performance quality			

Q10. Based on the music assignments or papers you have done thus far in which sound recordings or videos were consulted, which of the following have you cited in your bibliography (the list of references located at the end of your paper) *more frequently*?

More Non-Academic

Streaming Services

Equally Frequent

More Library Collection

|-----|-----|-----|-----|

Q11. What is your academic program of study (choose one only)?

- a. BA/BMus year 1
- b. BA/BMus year 2
- c. BA/BMus year 3
- d. BA/BMus year 4
- e. MA/MM/MS
- f. Graduate Certificate/Advanced Diploma
- g. Other (please specify: _____)

Q12. What is your concentration (choose all that apply)?

- a. Education
- b. Classical Performance
- c. Jazz Performance
- d. Composition
- e. Musicology
- f. Music Theory
- g. Other (please specify: _____)

Q13. What college/university do you attend?

Thank you for your participation.

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