ListenUp: Digitization of Music Devotion

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Abstract

Prior research indicates that music engagement is related to listening context. As digitization reshapes context, novel forms of engagement emerge. The present study conceptualized and quantified music engagement in relation to the modern listening contexts through which it manifests. The ListenUp Questionnaire captured engagement styles across preferred listening activities and mediums. Furthermore, it embodied engagement through self-rated subscales of attentional, emotional, financial, and time investment as represented by a composite factor of Music Devotion. A textual analysis revealed themes of listening motivations and groupings of music use functions. Descriptive and inferential analyses demonstrated significantly higher Music Devotion when a medium was used for purposes of curation and catalog, as opposed to convenience. This implies that the functionality of a listening medium and the subsequent ways by which it is used might influence the listener's devotion to music.

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Introduction

"Music is a world within itself, it's a language we all understand," sings Stevie Wonder in "Sir Duke." This line has dualistic implications: music is complex, and music is simple; it is uniquely universal. Music's complexity as "a world within itself" resonates in the myriad ways through which it is processed by individuals. It offers a personally unique experience with a variety of outcomes. Music's simplicity as "a language we all understand" creates mutual sensations and synergy across experiences. It unites us in collective harmony. The individuality of musical experiences and the unified understanding that we share through music intersect at the gates to the mysterious labyrinth of music psychology.

Research Question

How do we connect individual and collective experiences? Previous research has identified common styles of music engagement (Chin et al., 2018; Saarikallio, 2012), listening contexts (Greb et al., 2019; North et al., 2004), and motivations for listening (Lonsdale & North, 2011; Saarikallio et al., 2020). As society grows digitally dependent, these styles, contexts, and motivations are evolving. The ritual of listening is now a facet of on-the-go access. How does contemporary listening context manifest across and within activities and mediums for listening? How do these manifestations influence music engagement today? Through the ListenUp Questionnaire we defined a composite factor of music engagement and examined its relation to listening context. We then synthesized music use functions that reflect engagement level and explored universal listening motivation themes. To lay the path of this journey, let's embark on a road through time and examine a bit of prior research on music listening.

Exploring Engagement

Music listening is multidimensional (Lilliestam, 2013). Styles of music engagement have been explored across a variety of uses, including using music for background (Chamorro-Premuzic & Furnham, 2007), cognitive (Chamorro-Premuzic & Furnham, 2007; Chin & Rickard, 2012), emotional (Chamorro-Premuzic & Furnham, 2007; Chin & Rickard, 2012; Hollebeek et al., 2016; Saarikallio, 2012), and social (Chin & Rickard, 2012; Hollebeek et al., 2016) purposes. Engaging in a different listening style might yield different results for the listener. Moreover, different listeners might be particularly prone to a specific style and purpose for listening.

While individuals are drawn to music for various reasons, research has consistently indicated that mood regulation is an important motivator for listening to music (Lilliestam, 2013; Lonsdale & North, 2011; Saarikallio, 2012). This implies that emotional impacts of listening are a driving component of music's appeal. The emotional outcomes might fluctuate depending on music engagement style and regulation strategy (Chin & Rickard, 2014), choice of music (Baltazar et al., 2019; Randall & Rickard, 2017), or the situation (Randall & Rickard, 2017).

Regulation strategies. Emotion regulation strategies can involve cognitive reinterpretation of emotional stimuli (reappraisal), or inhibition of emotional expression (suppression; Gross & John, 2003). Chin and Rickard (2014) associated music engagement with greater well-being when mediated by reappraisal and lesser well-being when mediated by suppression. Individuals who use music for cognitive and emotional regulation tend to do so through reappraisal rather than suppression. Saarikallio (2012) identified seven distinct strategies of music for mood regulation, including using music to divert from unwanted thoughts and using

music for contemplation and emotional clarity. All strategies associated with more time spent listening and higher self-perceived importance of music listening. These findings imply that listening to more music, valuing the music, and connecting with it emotionally can improve one's life.

Music choice. In addition to regulation strategy, the music choice is essential to optimum emotional outcomes. Baltazar and colleagues (2019) found that efficacious music had a greater effect on short-term stress reduction than efficacious regulation strategy. Liljeström and colleagues (2013) found that as opposed to randomly selected music, self-selected music resulted in more intense and positive emotions. Personal music selection proves a valuable tool for individuals to manipulate affect state and achieve an emotional goal. This can work either way across the emotional spectrum. While music has the ability to enhance a positive mood or uplift a negative mood (Lonsdale & North, 2011), mood-congruent music can also intensify a negative mood (Randall & Rickard, 2017).

Situations. As the emotions in music vary across situations, people might choose different music for different situations (Greb et al., 2019; North et al., 2004). A study of music in daily life indicated that people who listen to music alone experienced greater enjoyment and more frequently tended to listen for emotional reasons (Randall & Rickard, 2017). Another study of music in everyday life indicated that 91% of music listening episodes happened alone and that listening alone correlated with increased focus and internal agency (Saarikallio et al., 2020). By contrast, an earlier experimental study found that emotions improved when listening with a friend or partner that had similar taste in music (Liljeström et al., 2013). These different results

imply that the setting might exhibit influence on music's individual versus social appeal. In the familiarity of daily life, listening alone might be ideal for optimum emotional outcomes, but in an unfamiliar setting, the familiarity of a friend might heighten emotions with music. Many factors comprise a listening situation. Here, we turn our gaze to the broader contexts of listening to music.

Considering Context

In Aldous Huxley's novel *Island,* Dr. Roberts asks Will Faranby: "Do you like music?", to which Will replies, "More than most things" (Huxley, 1962). The affinity for music has resonated throughout society's past, continues to do so in the present, and will likely follow suit in the future. The ways that these musical echoes are processed by individuals makes a complex story, with as many characters as there are music listeners in the world, and an ever-changing setting as technology repeatedly reforms the habits of listening practices. To better understand listening context, we must consider the activities during which individuals listen to music, functions of use, and motivations for listening.

Activities. Many have expressed the same sentiment as the fictitious Will Faranby. Studies have demonstrated that people generally prefer listening to music over most other activities (Lonsdale & North, 2011; Rentfrow & Gosling, 2003). Additionally, music listening occurs more often than other activities across a variety of situations. In other words, the activity of listening to music is frequently used to supplement other activities. This is especially the case while on the move (Greb et al., 2019), and particularly while driving (Lonsdale & North, 2011; Rentfrow & Gosling, 2003). An affinity for pairing music listening and driving was even

expressed by music legend Neil Young, who qualified that the mind is more open as we consciously drive a car (Samuels, 2019). Young's testament of driving's ability to prompt an open mind while listening to music aligns with empirical evidence that has suggested that more focused listening is associated with lower external agency, such as traveling through different environments (Saarikallio et al., 2020).

Nonetheless, pairing music with another activity can occur at the expense of musical focus. Studies have indicated that listening to music commonly takes place alongside another task, and total concentration on the music itself is rare (Lilliestam, 2013; North et al., 2004). Instead, music is most often used as "sonic wallpaper" to optimize mood during the task, suggesting that though people's relationship to music is complex, it doesn't necessarily involve deep emotional investment. Moreover, with the advent of other forms of lean-forward interactive media, such as on-demand television and video games, we've seen a rise in the use of music as a background function (Mulligan, 2015).

But didn't this paper suggest that the emotional implications of music are of the utmost importance? Yes; (but) the emotional importance of music and the emotional investment in the music *itself* aren't mutually inclusive. Though the music might be absorbed passively while the listener is more actively engaged in another task, the music's effects on the listener can enhance the listener's experience of the task. In this way, the concurrent activity might be of prime significance in inspiring music listening, so that the ideal music is selected to optimize the experience. To better understand fluctuating listening experiences, we examine functions and motivations for music use.

Functions. The situation's influence on music-selection behavior is mediated by listening functions (Greb et al., 2019). Music can enable cognitive work, exercise, or commerce, and can support perceptuo-cognitive, affective, attentional, and perceptuo-motor tasks (Ashley & Timmers, 2017). An important inquiry into music's functional roles is the listener's perspective on why they listen. A study of 189 psychology undergraduates indicated that the main reasons for listening to music—from more frequent to less frequent—were mood management, background noise, musical participation, enjoyment, distraction, reflection on the past, or social interaction (Lonsdale & North, 2011). These findings point to similar themes as some of our previously mentioned studies of the dimensions of engagement, such as using music for emotional regulation (Saarikallio, 2012) or for background noise (Chamorro-Premuzic & Furnham, 2007). Another study of 44 adolescents found that the most frequently reported reasons for listening to music in daily life were for entertainment, for the current activity, out of boredom or habit, and for relaxation (Saarikallio et al., 2020).

Motivations. North and colleagues (2004) explored music listening motivations across various activities. It was found that music was selected to help concentration during intellectually demanding tasks, but while driving or riding on a bus or train, music was used to help pass the time. Music was also commonly selected for enjoyment while in transit, as well as listening at home. Habitual listening was associated with routine activities such as driving, eating, or doing housework. In social environments such as a bar or club, music was used to create an appropriate atmosphere, whereas at a friend's house, exposure to the music often occurred because the friend enjoyed it, implying music use as a means of social cohesion. Other ways in which music was used suggested a more internal experience with the music itself: to bring back certain memories,

to help create or accentuate an emotion, to help create an image, or to learn more about the music. Overall, there are clearly a variety of ways that people use music, but congruencies among motivations for use can be shaped by mutual experiences. As the human experience is ever-adapting to new technological innovations, music activities, functions, and motivations are also shifting.

Digitizing Devotion

The transition from physical to digital moves musical product along the spectrum of tangible to intangible (Styvén, 2007). This increasing intangibility reshapes listening habits. With the permeation of mobile devices, music listening has become characterized by immediacy, abundance, and an increasing variety of listening contexts (Hagen, 2015). We will now assess how the path of music dissemination has evolved over the years, the type of music/listener relationship that this evolution has promoted, and what effects this might have on the perceived value of music.

Celestial jukebox. Music transmission shapes the contexts of listener reception. Recorded music has traveled through the phonograph in 1877, the compact cassette in 1962, the CD in 1982, the MP3 in 1993, and streaming services in the 21st century (Mulligan, 2015). Curatorial organization is directed through these different mediums. Singles and unbundled downloads promoted the individual-song format. Albums and playlists promoted the collection-of-songs format. As opposed to a world of physical music mediums wherein the curatorial journey was largely bound to the format, streaming services grant more options to choose the curatorial flow that suits one’s listening desires.

The invention of music streaming was inevitable, as the concept of a "celestial jukebox" existed years before streaming's inception and decades before mainstream popularization. Longtime music industry observer Seth Greenstein noted that the term "celestial jukebox" might have first been used by the Recording Industry Association of America around 1989–1990 (Burkart & McCourt, 2004). It gained widespread attention in Paul Goldstein's 1994 book *Copyright's Highway: The Law and Lore of Copyright from Gutenberg to the Celestial Jukebox*, and was born into reality in 1997 with the launch of MP3.com—the first digital music database of scale (Mulligan, 2015). This reality of an instantly accessible archive of seemingly endless music became increasingly vivid through the decentralized networks of peer-to-peer file sharing such as 1999's Napster, the centralized mobile-listening-inspiring library of the iTunes Store in 2003, and the music industry's Swedish rocket ship into access-based consumption via Spotify in 2008. If listening to music was once like sit-down dining, it now more closely resembles all the all-you-can-eat buffets put together, available to-go. A pressing question is: if consumers are rapidly shoveling back more and more musical entrées, are they still tasting the individual flavors?

The "use" era. The term "consumer" is a staple of our 21st century identity, particularly in America's infamously consumption-heavy society. This is all but true of the music industry. Mulligan (2015) explained that in a world of music access, we are transitioning into the "consumption era." The ease of acquiring digital content has increased overall consumption, and with this increase comes the need for immediacy. In the words of Spotify's former Chief Content Officer Ken Parks: "Napster […] created a generation of music fans accustomed to speed of light consumption" (Mulligan, 2015).

The irony of the consumption era is that the term "consumption" might in fact be an inaccurate label of what the current process actually resembles. Andersson (2010) wrote that the term "consumer" implies finality whereas "user" implies continuation. If a purchase of a physical copy or digital download is final, accessing music via subscription or ad-supported free listening is more descriptive of "using" rather than "consuming." Moreover, Barr (2013) noted that by primarily obtaining music via access, consumption is no longer necessary. This likens with Hagen's (2015) notion that accessing music, as opposed to buying, is a form of "renting." With this in mind, the "use era" might be a more appropriate term for today's music economy. Word choice aside, consumers/users/listeners are consuming/using/listening to more music now than ever before. Surely, such abundance has an effect on the listener's appetite and tastes. Not to mention, the price of an all-you-can-eat buffet is similar to the price of just one entrée.

Value. North and colleagues (2004) proposed that the mass dissemination of music has resulted in a reduced automatic value and an increasingly passive attitude toward music. This makes the cultural value of the music less dependent on the content itself and more dependent on the context of its use. Services are now selling experiences rather than products (Styvén, 2007). Digital abundance has transformed music from a commodity to a resource, and with streaming's immediacy, this resource is as renewable as the press of a thumb.

And yet, value has various shapes and forms. The value of a cultural object can be assessed in terms of exchange/commodity value, use value, emotional/affective value, social/co-productive value, and attention value (Andersson, 2010). While a digital file or stream might have a lower exchange/commodity value than a physical record, other aspects of the content's value depend on how it is used. Though abundance reduces scarcity, accessibility increases the

possibility for innovative reformatting of the content. With mobile listening one can access any desired music in any moment to fulfill emotional needs (Randall & Rickard, 2017). Moreover, streaming services increase the capability of managing one's mood in various situations (Maasø, 2018). As music goes digital, content value is reconfigured. How do we measure this change?

Merits of Measurement

The study of individual relationships with music have taken place in a variety of settings. So far, we've reviewed results from qualitative interviews (Hagen, 2015; Lilliestam, 2013), quantitative questionnaires (Chamorro-Premuzic & Furnham, 2007; Chin & Rickard, 2012), experimental settings (Baltazar et al., 2019; Liljeström et al., 2013), and the experience sampling method (Randall & Rickard, 2017; Saarikallio et al., 2020). Each of these approaches has advantages and disadvantages that yield differences in defining and measuring music engagement.

Pros and cons. Qualitative interviews give greater room for exploration but consequently cover a smaller population and are more difficult to quantify. Quantitative questionnaires allow for analysis across a larger population but are limited to the variables in question. Likewise, while experimental studies can isolate variables and even potentially imply causation, they might ignore other important variables. The experience sampling method mobilizes reporting to real-time daily life circumstances. In theory, this approach can yield more genuine reflections of reality; however, because the continuity of a natural situation is disrupted, the responses might be inherently biased. No matter the type of study, analysis of self-reported data assumes respondent honesty and accuracy whilst risking skew from inevitable biases, including errors of central

tendency, errors of leniency, and the halo effect. Needless to say, research is at the mercy of its sample.

Defining engagement. To assess overall music engagement level, some studies have used frequency and duration of intentional listening, and self-reported importance of music (Chin & Rickard, 2012; Saarikallio, 2012). Baltazar and colleagues (2019) referred to individuals that listened to music six or more times per week with an average of 2.75 hours per day as "highly engaged in music." Another approach has been binary categorization: active or passive. Fung and Gromko (2001) identified active listening as physically moving with the music and passive listening as lying back while listening. For greater scrutiny of music engagement definitions, studies have created scales to measure the various engagement styles.

Scales. Through analysis of the many dimensions of music engagement, research has yielded a variety of interpretations. The Uses of Music Inventory measures music use in terms of emotional regulation, rational/cognitive, and as background to other activities (Chamorro-Premuzic & Furnham, 2007). The Music-Empathizing-Systemizing Inventory measures individuals' musical engagement tendency toward empathizing or systemizing (Kreutz et al., 2008). The Music USE Questionnaire identifies the music engagement styles: cognitive and emotional regulation, engaged production, social connection, dance, and physical exercise (Chin & Rickard, 2012). The Music in Mood Regulation Scale measures mood regulation through music listening across subfactors: entertainment, revival, strong sensation, diversion, discharge, mental work, and solace (Saarikallio, 2012). The Barcelona Music Reward Questionnaire measures the music reward experience across dimensions: musical seeking, emotion evocation,

mood regulation, social reward, and sensory-motor (Mas-Herrero et al., 2013). Hollebeek and colleagues (2016) identified three music engagement experiences: social-identity, transportive, and affect-inducing experiences. The Music Engagement Questionnaire measures music in daily life, emotional listening experience, musical performativity, musical consumer behavior, responsive music listening, and musical preference, whilst supplementing this questionnaire with qualitative interviews (Vanstone et al., 2016). The Music Use and Background Questionnaire organizes engagement into four modules—musicianship, musical capacity, music preferences, and motivations for use—and assesses factors within these modules, including emotional sensitivity to music, listening sophistication, music memory and imagery, personal commitment to music, musical transcendence, emotion regulation, social, and musical identity and expression (Chin et al., 2018).

The sheer magnitude of engagement metrics that exist points to the complex nature of the relationship between music and the listener. As there are an abundance of musical choices available via the celestial jukebox, there are an abundance of listening styles that will inform and be further shaped by these choices in an everlasting spiral of influence. The integrity of music engagement is both individually unique and undergoing a mass revolution as new modes of use restructure the parameters of our listening habits. While previous research has examined the measure and meaning of music engagement, it has yet to analyze music engagement in relation to a wider array of contextual implications. These range from the activities during which listeners choose musical accompaniment to the mediums by which that music is selected. Herein lies the need for a comprehensive report that assesses the relationships between music engagement and context.

Methods

This study applied mixed-methods via in-depth interviews and a questionnaire. Data collection occurred in a sequential multiphase order in which qualitative interviews informed the design of a questionnaire containing quantitative rank and multiple-choice questions, as well as qualitative open-ended questions. Our methodological rationale behind implementing mixed methods was grounded in critical realism and interpretivism. The idiosyncratic complexity of any listening experience and the subjective translation of the senses yield unique realities for each listener to interpret. Levitin (2006) posited that one's ability to make sense of music is based on experience. Neural structures learn and modify themselves in accordance with every musical encounter. This behavioral understanding of music reception was iterated in Gasser's (2019) declaration that musical taste is constantly evolving. The nuance of any given listener's perspective is paramount to better understanding overall music listening themes.

Interviews

Eight participants were selected via heterogeneous purposive sampling. Selection represented listeners of varying demographics and musical tastes. Interviews were semistructured and consisted of eight questions (Appendix 1). Four questions gaged a participant's self-perception of cognitive, emotional, physical, and social engagement with music (Chin & Rickard, 2012). Four more questions were crafted to further assess individual listener nuance and contextual themes that might be related to the listening experience. The question "Where does your mind go when you listen to music?" was adopted from present research by Dr. Susan Rogers (personal communication, September 16, 2019). The remaining three questions were created to explore music curation (Hagen, 2015), music and memory (Chin et al., 2018),

and motivations for listening (Lonsdale & North, 2011). Responses were coded for key sentiments. Emergent themes included listening while driving, listening to streaming services, and using music for mood regulation.

Questionnaire

Based on interview sentiment and a review of prior literature, The ListenUp Questionnaire was designed to measure and relate independent contextual listener variables of Activity and Medium preferences with a dependent variable of music engagement. Additionally, an open-ended assessment of motivation was included for qualitative exploration of general listening intentions and themes.

Respondents. In total, 246 respondents completed the questionnaire. Mean age was 35 and negatively skewed with a standard deviation of 15.6. Median age was 28. Among respondents, 124 identified as male, 120 identified as female, and two identified as nonbinary. Respondents were recruited via text message, email, and social media outreach. Further recruitment by respondents across networks yielded snowball sample growth and a more random overall population.

Materials. The ListenUp Questionnaire consisted of 20 items (Appendix 2). The first three items assessed basic Demographics: age, gender, and zip code. The next four items comprised the Context Index. This was divided into two independent variable categories: Activity and Medium. For Activity, 12 activity options were provided, and respondents were asked to rank their top five music listening activity preferences. For Medium, 15 medium options

were provided, and respondents were asked to rank their top three music listening medium preferences. Activity options were selected on the basis of interviews and prior research (IFPI, 2019; Rentfrow & Gosling, 2003). Medium options were chosen on the basis of interviews and contemporary popularity (Watson, 2020; Wilson, 2020). An open-ended item followed each rank item, asking respondents why they picked their top choice.

The next 12 items composed the Personal Investment Index. This was structured to measure music engagement as a representation of various forms of value assigned to the music. Items were formulated around four value subscales of three items each: Attentional Investment, Emotional Investment, Financial Investment, and Time Investment. Attentional Investment examined focus on music/lyrics, artist/album/song title, and the listening activity. Emotional Investment examined the importance of music in life, identity, and capacity for musical impact. Financial Investment examined the amount of money spent to listen (dollars/month), willingness to pay, and preference for free. Time Investment examined the amount of time intentionally spent listening to music across frequency and duration (times per day; hours per day), and the importance of making time to listen. All 12 items were scored on a five-point Likert scale, or the relevant measurement as indicated in the parentheticals. Two items were reverse-worded. All 12 items were randomized.

The questionnaire's final item represented the Motivation Index. Respondents were asked "Overall, why do you listen to music?" This item was included for an additional qualitative assessment of music listening motivations, attitudes, and themes. Such analyses helped further contextualize our findings and revealed implications for future studies.

Procedure

The questionnaire was made available online throughout October 2020 via Qualtrics (www.qualtrics.com). All data were codified and analyzed in Microsoft Excel and RStudio. A factor analysis yielded the latent outcome variable of Music Devotion. Context preference consolidation yielded five Activity groups, five Medium groups, and three Function groups.

Music Devotion factor. To quantify music engagement, Likert responses were coded into 1–5 numeric representations of "Strongly Disagree" = 1 to "Strongly Agree" = 5 (opposite scoring for reverse-worded items). The same pattern was applied to Financial and Time items that were scored across five increments of "$0" to "More than $15" (price paid for recorded music per month), "None" to "4 or more times" (number of times listened to music in a day), and "None" to "More than 3 hours" (number of hours listened to music in a day). We computed means across all Investment items as well as per subscale. We then reviewed inter-item correlations and scale reliability. Pearson and Spearman correlation methods were supported. Bartlett's Test of Sphericity and Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy were performed prior to factor analysis. We ran varimax, oblimin, and promax rotations and extracted a six-item factor from the promax rotation that we deemed Music Devotion. We created factor scores per respondent by multiplying each item score by its factor loading, summing these products, and dividing the sum by the number of items.

Activity, Medium, and Function groups. To define context categories, we computed rank sums for each Activity and Medium preference option. These were calculated by reversing ranks into points (e.g., 1's became 5's, 2's became 4's, etc.) and summing all points per

preference option. Only Activity ranks within top five and Medium ranks within top three were included in rank sums. Five Activity groups were designated on the basis of highest overall rank sum, and respondents were sorted into their highest-ranked group. Five Medium groups were designated, and respondents were sorted on the basis of highest-ranked medium and open-ended sentiment (Appendix 3). We created an additional binning of respondents based on Medium open-ended themes. We created a table to tally all keywords and sorted keywords into three Function groups. If a respondent cited multiple themes, we sorted them on the basis of whichever had the most keywords. If keyword counts were equal across multiple themes, we sorted on the basis of the first theme mentioned.

Results

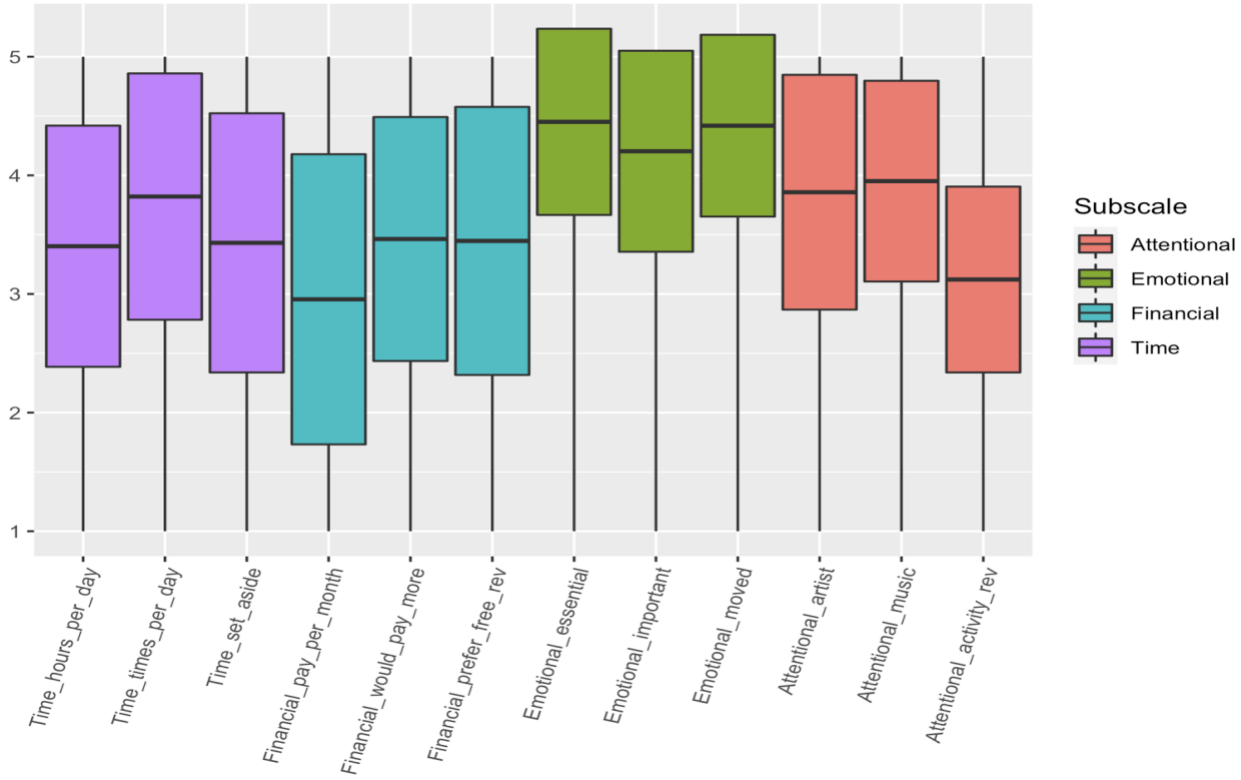
Analyses were conducted over several stages. First, we examined subscale and item correlations within the Personal Investment Index. We conducted a factor analysis with significant Investment item correlations and extracted the dominant factor, the latent outcome variable of Music Devotion. Next, we explored aggregate trends across our context variable preference groups for Activity and Medium and conducted a descriptive analysis of mean Music Devotion scores per Activity, Medium, and Function groups. We then performed an inferential analysis to explore generalizability. We scaled factor scores to a standard normal distribution of mean 0 and unit variance. A Shapiro-Wilk test of normality yielded a significant p-value for every group, indicating that the data were not normally distributed and parametric analysis of variance (ANOVA) was not possible. Thus, we pivoted to a non-parametric analysis. Kruskal-Wallis tests and follow-up Dunn's tests indicated significant group pairs among Medium and Function group medians. Finally, we explored emergent themes within the Motivation Index.

Music Devotion Summary

The overall highest-rated item was "Music is an essential part of my life" (*M* = 4.45; Figure 1). This item belonged to the highest-rated subscale: Emotional Investment (*M* = 4.36). The overall lowest-rated item was "How much do you pay to listen to recorded music in a month?" (*M* = 2.96). This item belonged to the lowest-rated subscale: Financial Investment (*M* = 3.29). Inter-item correlations were mostly moderate (Figure 2). Reliability Cronbach's alpha values were as follows: Attentional Investment – 0.58, Emotional Investment – 0.78, Financial Investment – 0.71, and Time Investment – 0.73. Cronbach alpha values were acceptable for all scales except the Attention scale.

Figure 1

Item response distributions grouped by scale



Note. Each item represents its mean, plus or minus one standard deviation, and its min/max response.

Figure 2

Item correlation matrix

	T1	T2	T3	F1	F2	F3	E1	E2	E3	A1	A2	A3
T1												
T2	0.68****											
T3	0.34****	0.39****										
F1	0.20**	0.26****	0.18**									
F2	0.25****	0.32****	0.34****	0.38****								
F3	0.11	0.23***	0.14*	0.57****	0.39****							
E1	0.47****	0.52****	0.47****	0.30****	0.46****	0.23***						
E2	0.31****	0.34****	0.36****	0.19**	0.41****	0.21***	0.66****					
E3	0.25****	0.29****	0.35****	0.21***	0.28****	0.10	0.56****	0.44****				
A1	0.07	0.11	0.19**	0.14*	0.21***	0.06	0.31****	0.44****	0.22***			
A2	0.17**	0.19**	0.37****	0.11	0.37****	0.13*	0.34****	0.42****	0.34****	0.42****		
A3	-0.02	-0.05	0.20**	0.10	0.18**	0.13*	0.14*	0.24***	0.19**	0.19**	0.35****	

Note. Notations for significant correlations were represented as: p < .0001: ****, p < .001: ***, p < .01: **, p < .05: *, where p denotes an alpha tolerance, or false positive, threshold; correlations with associated p-values below these thresholds are said to be significant at the nearest tolerance level greater than their values. We infer that such correlations are not explained by random sampling error. The upper triangle of the correlation matrix was removed in order to eliminate redundancy, and correlation values were truncated to two decimal places.

Factor analysis. Proceeding to remove the two Attention items that did not hold significant inter-item correlations, Bartlett's test was significant, and KMO = 0.81. Promax rotation extracted three factors (Table 1). Of these, the first consisted of six items that explained 43% of the total variance. Inter-factor correlations did not exceed 0.59.

Table 1

Factors and item loadings

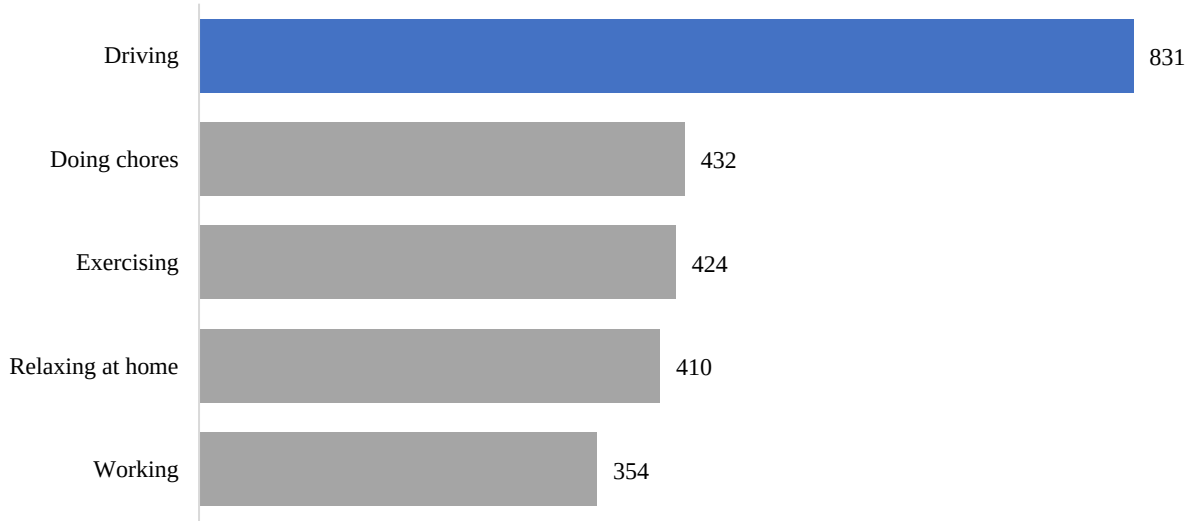
Item	ML1	ML3	ML2
Hours/day		0.846	
Times/day		0.837	
Regularly set aside time to listen to music	0.431		
Pay/month			0.684
Willingness to pay	0.398		0.352
Prefer to listen to music for free (reverse scored)			0.892
Music is an essential part of my life	0.735		
The music I like is an important part of me	0.802		
I am often moved by music	0.669		
Pay attention to the music and/or lyrics	0.578		

Activity Summary

Driving was the highest-preferred listening activity, with a rank sum of 831 (Figure 3). The next highest rank sums were doing chores (432), exercising (424), relaxing at home (410), and working (354). All rank sums below this mark significantly dropped; socializing was next at 264. Of the total sample, 188 respondents ranked their first activity preference among the top five highest rank sum categories, and 58 respondents were sorted on the basis of second–fifth rank. Two respondents could not be sorted, as all five of their top ranked activities were separate from the top five overall. This binning led to total Activity group sample sizes as follows: driving: 119, relaxing at home: 36, working: 32, exercising: 29, and doing chores: 28.

Figure 3

Top Activities by rank sums



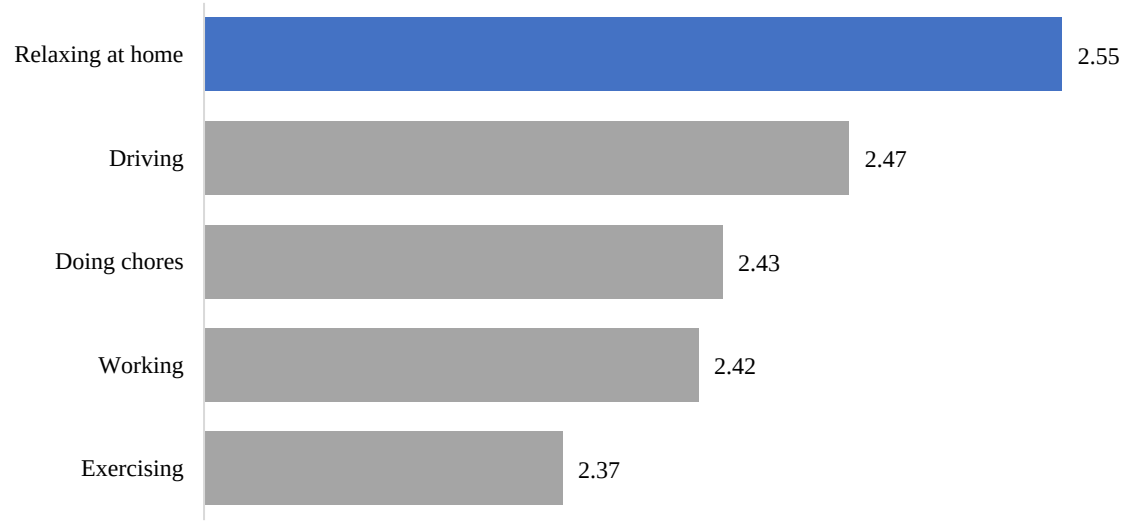
Activity qualitative. Examples of responses from the top five most popular activities were as follows. Driving: “Because it makes life into a music video as you drive.” Doing chores: “It brings fun, love, and light into a rather mundane activity. I clean and cleanse my space often and music is the best way to shake up the energy in a space and within yourself.” Exercising:

"I'm not always actively listening but when I need motivation/a boost I can rely on fast lyrics or upbeat instrumentals to get me back on track. BPM [is] also helpful for rhythm when running." Relaxing at home: "Relaxing with music helps me best 'escape' from the noise of everyday life. Music gives me the chance to feel deeper emotions and mental states that busyness does not." Working: "As an artist I need to get into a good flow and mindset to create. Music helps exponentially and allows me to work for long periods of time uninterrupted."

Activity devotion. Relaxing at home corresponded with the highest overall Music Devotion mean (M = 2.55; Figure 4). Driving came in second place (M = 2.47), followed by doing chores (M = 2.43), working (M = 2.42), and exercising (M = 2.37). Kruskal-Wallis test was insignificant, suggesting group differences only existed at the sample level.

Figure 4

Music Devotion mean per Activity group

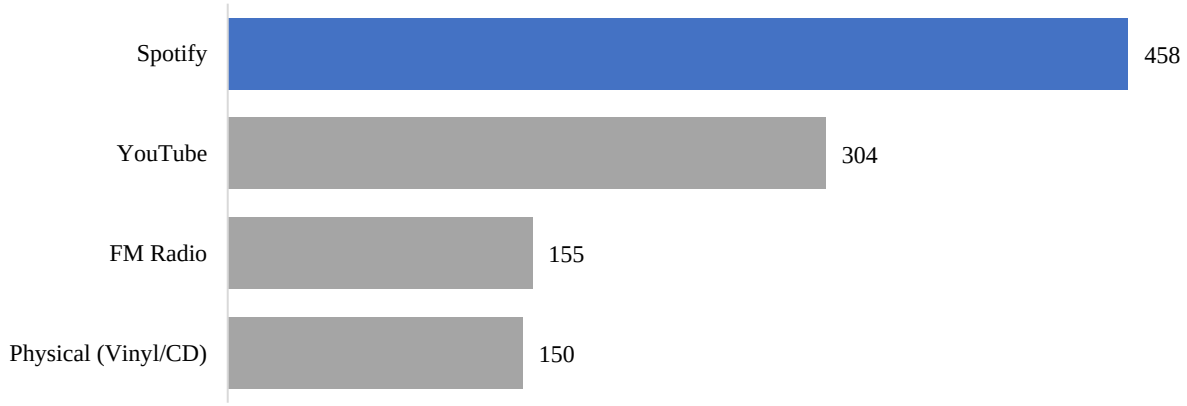


Medium Summary

Spotify was the highest-preferred listening medium, with a rank sum of 458 (Figure 5). The next highest rank sums were YouTube (304), FM radio (155), and physical—vinyl/CD (150). All rank sums below this mark dropped, with Apple Music next at 78. Three categories—Deezer, TuneIn, and Qobuz—were removed from analysis, as they received no top-three rankings. MP3/digital was added; 20 respondents cited it upon ranking "Other." All Medium options were combined into five groups on the basis of medium type and/or open-ended sentiment. Groups and preference counts were as follows: convenience stream: 83, curated stream: 72, radio: 34, user upload: 29, and own: 28.

Figure 5

Top Medium rank sums



Medium qualitative. Open-ended responses indicated multiple medium use functions or even multiple medium preferences: "Spotify for convenience. Vinyl for a true listening experience. YouTube for the archive." Examples of responses for the top four most popular mediums were as follows: Spotify: "I pay for Spotify. I get a wide variety of all types of music which suits me and my ever changing tastes really well. I also can build my own playlists. I can

pick and choose what I like". YouTube: "I love having the ability to listen to live shows and recordings. The live recordings of bands I like are [almost] always more energizing than the recorded track." FM radio: "I love classical music and I enjoy learning more about it through the djs." Physical (vinyl): "The sound quality is special, and the ritual of selecting an album and putting it on feeds into the relaxation and escape quality of listening to music for me."

Medium devotion. The own group corresponded with the overall highest Music Devotion score (*M* = 2.52; Figure 6). Curated stream came in second place (*M* = 2.51), followed by user upload (*M* = 2.50), convenience stream (*M* = 2.48), and radio (*M* = 2.22). A Kruskal-Wallis test yielded a p-value less than 0.05 (p = 0.01718), suggesting significant group median differences. A follow-up Dunn's test, with a Bonferroni correction of familywise error rates, yielded significant curated stream/radio and user upload/radio pair differences with adjusted p-values of less than 0.05 (p = 0.01704 and 0.04851 respectively; Table 2).

Figure 6

Music Devotion mean per Medium group

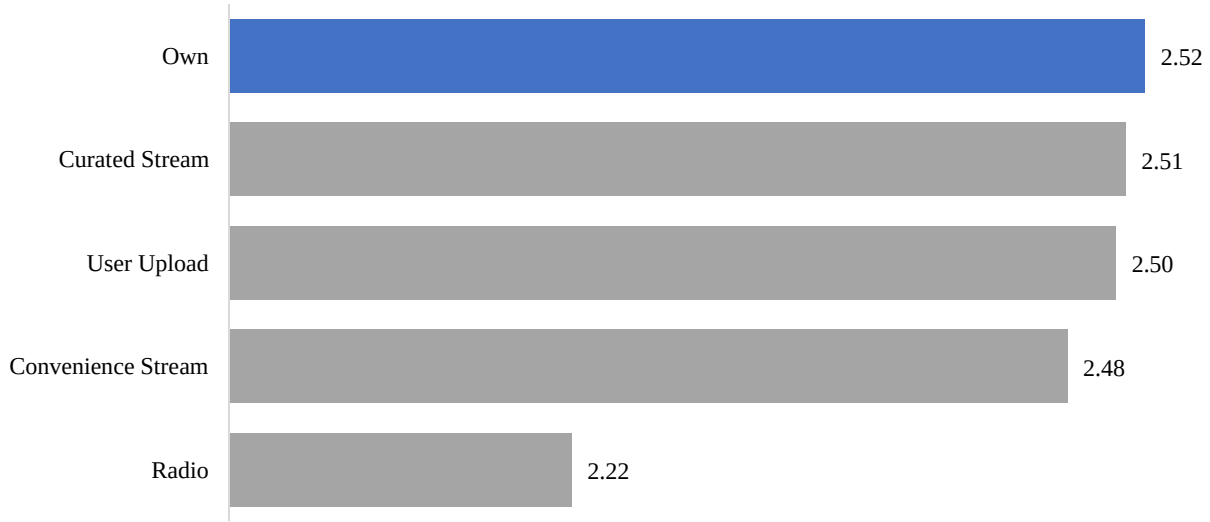


Table 2

Dunn's test comparison for Medium groups

Comparison	Adjusted p-value
Curated Stream - Own	1.00000000
Curated Stream - Radio	0.01703627*
Own - Radio	0.10631812
Curated Stream – Convenience Stream	1.00000000
Own – Convenience Stream	1.00000000
Radio – Convenience Stream	0.08083684
Curated Stream - User Upload	1.00000000
Own - User Upload	1.00000000
Radio - User Upload	0.04851191*
Convenience Stream - User Upload	1.00000000

Note. Notations for significant pairs are represented as: *

Function Summary

Medium grouping and text sentiment yielded three Function groups. Overall, 99 responses were classified as convenience, 77 as curate, and 63 as catalog. Seven responses were either blank or didn't lend to a justifiable categorization.

Function qualitative. An example of an open-ended response for each Function group is as follows: Catalog: "It's where all the music is." Curate: "Spotify just gets me, ya know. Always making playlists for me and recommending me music. Very romantic for a music streaming service, if you ask me." Convenience: "It is simple and easy to use and automatically on my phone."

Function devotion. Catalog and curate were tied for highest Music Devotion (*M* = 2.55), followed by convenience (*M* = 2.32; Figure 7). A Kruskal-Wallis test yielded a p-value less than 0.01 (p = 0.0002847), suggesting significant group median differences. A follow-up Dunn's test, with a Bonferroni correction of familywise error rates, yielded significant catalog/convenience and curate/convenience pair differences with adjusted p-values of less than 0.01 (p = 0.00090 and 0.00051, respectively; Table 3)

Figure 7

Music Devotion mean per Function group

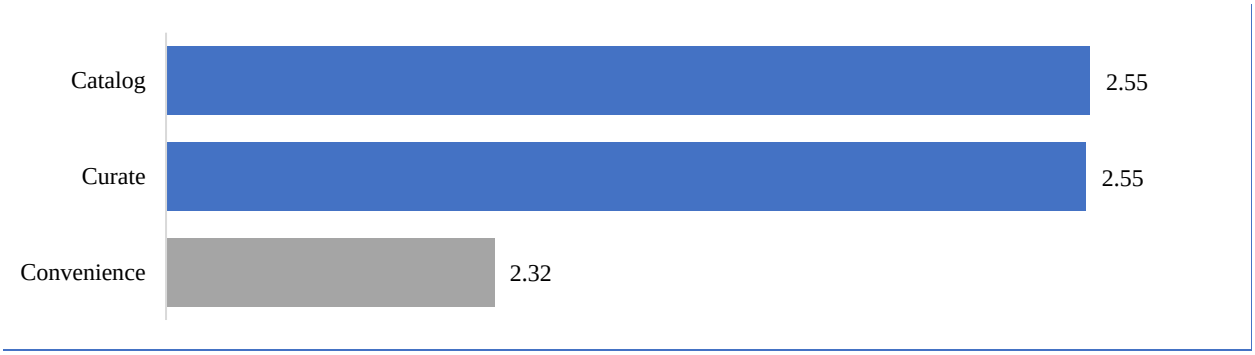


Table 3

Dunn's test comparison per Function group

Comparison	Adjusted p-value
Catalog - Convenience	0.0009048884*
Catalog - Curate	0.9683086052
Convenience - Curate	0.0005115101*

Note. Notations for significant pairs are represented as: *

Discussion

Every music listener represents a unique star of perception within the cosmos of consciousness. Styles and depths of music engagement, listening contexts, and motivations for listening amalgamate as constellations of listening themes. Research is the telescope through which these themes are examined. While prior studies have analyzed listener radiance on the star and constellation level, this study attempted to map the galaxy within which these constellations coalesce. We explored the intersection of music engagement and context to further understand how digitization is shaping the listener experience. Additionally, through a qualitative analysis we evaluated listening motivation themes.

Intangible Engagement

We conceptualized music engagement as Music Devotion. Twelve Investment items demonstrated mostly moderate correlations, with the exception of two of the Attention Investment subscale items, which carried low correlations and were thus excluded from further factor analysis. Bartlett's test indicated significant correlations between item pairs, and KMO suggested that a high proportion of variance could be explained by underlying factors. Promax rotation suggested three such factors that each represented different dimensions. Of these three, the first composite factor was the most explanatory. It represented the six highest-loading Investment items with differing weights. These items reflected specific components of each of our original four subscales.

Regarding Attentional Investment, the factor embodied focus on the music and/or lyrics but not explicitly on the artist/song/album title or the concurrent activity. This implies that within the factor, the intrinsic music quality reigns supreme over its extrinsic delivery. In terms of

Financial Investment, the factor represented willingness to pay for music but not the actual monthly payment or preference for free. This connotes theoretical value—perhaps a more expressive indicator of devotion than dollars. Likewise, for Time Investment, the factor captured the importance of setting aside listening time but not the actual amount of time spent listening. An hour or session of listening might represent entirely different thresholds of devotion for different listeners, whereas the importance of making time for listening conveys a generalizable value for the music. Among Emotional Investment, the factor encompassed all three of the subscale's items: music's importance to life, identity, and ability to move oneself. The common denominator across these three items matches that of the other three Music Devotion items: a conceptual, genuine value placed on music rather than a tangible, arbitrary expression of value. Thus, we considered the factor a representation of respondents' intangible music engagement. Recalling Styvén (2007), digitization makes musical product increasingly intangible. The Music Devotion factor reflects listener engagement in the digital age.

The "Drive" to Listen

As music engagement grows intangible, what drives people to listen? Our findings indicated that driving was the most popular listening activity. This reflects sentiment from the study's initial interviews, Rentfrow and Gosling (2003), and the Digital Media Association's findings that in 2019, significantly more U.S. consumers listened to music in the car than the proportion who listened at home on speakers or regularly on a phone (DiMA, 2020). Driving's popularity as a listening activity might relate to its ability to promote mental regulation. Cognitive involvement while driving can become automated, allowing the mind to concurrently

process more information (Csikszentmihalyi, 1990). An overview of open-ended Activity responses presented a common tendency toward using music as a means of self-regulation.

Driving had the second highest Music Devotion mean score after relaxing at home. Though both situations can provide intimate environments that are conducive to focus, at-home listening can be done without an alternate purpose. Driving has the natural purpose of reaching a destination, though through music, the destination can become the journey. As one respondent put it: “Music while driving gives me a greater sense of my surroundings and appreciation of ‘getting there’ wherever that may be.”

Downstream on the Upswing

Just as the activities during which individuals listen to music might influence and/or be influenced by listening purpose, the same—and maybe more—can be said of mediums. Streaming in the U.S. made up 72% of total U.S. recorded music industry revenue in 2018 and 77.4% in 2019, and it is expected to account for 90% by 2026 (DiMA, 2020). Thus, it was no surprise when our study found Spotify as the overall most popular listening medium. What makes streaming so popular?

Convenience, catalog, and curation. Medium open-ended responses consistently highlighted themes of convenience, catalog, and curation. Convenience represented ease of use, affordability, and mobility. Catalog encapsulated breadth of scope, obscure content, and audio quality. Curation emphasized personal playlists, algorithmic recommendations, or desire for a specific song order. We operationalized these themes as Medium use Functions. The ascending

hierarchy of Medium groups by Music Devotion mean reflected a shift in tendency toward a given Function.

The lowest Music Devotion means per Medium and Function were radio and convenience. Sentiment for radio preference was generally based on convenience. The next lowest Medium group was convenience stream. This group's sentiment reflected either convenience or catalog. The next group up was user upload, which was primarily characterized by catalog. The second to highest group was curated stream, which heavily referred to curation. Finally, the own group had the highest devotion score and was mainly characterized by catalog or curation via song order.

Though convenience stream, user upload, curated stream, and own groups had significantly close devotion scores, they all had scores much higher than radio. Moreover, after a significant Kruskal-Wallis test, a follow-up Dunn's test indicated that curated stream and user upload devotion median values were significantly greater when independently compared with the radio group. This suggested that the differences between these groups wasn't due to random sampling error but to population differences. The own group wasn't indicated in a significant pair; this could be due to an overlap in minimum and maximum values across the own and radio group distributions.

Music Devotion was markedly higher for the catalog and curation groups than for the convenience group. Additionally, a Kruskal-Wallis test and follow-up Dunn's test suggested significant differences between catalog/convenience and curate/convenience. Moreover, our findings did not indicate a difference between catalog and curation, implying that these two functions represented a similar tier of overall Music Devotion. The catalog itself and the way by which it is navigated can inspire devotion beyond convenience. Smaller significant p-values for

Function pairs, when compared to Medium pairs, increases our confidence behind Function pair population differences. Therefore, we infer that devotion median differences between Medium groups may be mediated by the Functions through which the Mediums are used.

We return to the question of what makes streaming so popular. Spotify reported that personalized editorial playlists increased the number of artists featured on users' playlists by 30% and the number of songs that listeners discover by 35% (DiMA, 2020). This demonstrates catalog and curation working ever so conveniently.

Caster of Ceremonies

Music curation has been a ceremony through the years, with the torch traveling through the hands of record labels, disc jockeys, individuals, and streaming services. As the catalog of available music grows, so do the curatorial possibilities. The role of gatekeeper can now wear more faces than ever before with streaming services and individuals both seizing control of the curatorial odyssey.

Gatekeeper. The plentitude of music today can seem propitious or overwhelming for listeners. While record labels have traditionally served as content gatekeepers and tastemakers (Barr, 2013), curators might serve as modern gatekeepers to help filter through this information (Barna, 2017). Whether it be through an individual (Hagen, 2015), a professional DJ (Barna, 2017), or a streaming service editorial team (Maasø, 2018), the act of curating content allows users to organize and process the information in a coherent manner.

The organization and processing of information travels both ways in the music exchange. As listeners extract musical information from the service, the service extracts information from

the listener, documenting what musical choices are made. The end goal is to create a more-informed personalized experience. As music services compete for control of the celestial jukebox (Barr, 2013), they employ customer relations management to maximize profit (Burkart & McCourt, 2004). By profiling and segmenting users, services are better equipped to delineate content that's congruent with a user's mood and personal preference. It is by this process that streaming services are becoming the new gatekeepers of music curation and shifting the paradigm of music listening. Is this new paradigm based on genuine appeal to a more fulfilling musical experience? Or is it an attempt to capitalize on the less engaged functions of music listening in an increasingly distracted daily life?

Service curator. Revisiting this notion of "sonic wallpaper" (North et al., 2004), Pelly (2017) claimed that Spotify's algorithms manipulate mood and that the service's "chill" playlists attempt to turn music into "emotional wallpaper." Moreover, user analytics attempt to quantify tastes and rely on algorithms to steer distracted listeners to playlists that inspire lean-back listening, satisfying activity accompaniment and mood regulation at the expense of focus on the artist or album. Hagen (2015) found a similarly passive attitude with some music streamers who used the services' radio in order to avoid making active listening choices.

Abundance can resemble an enigmatic phantom, threatening one's sense of control with the burden of unlimited choice. Here lies the streaming services' opportunity. Editorial playlists and algorithm-based curation do the work for the listener. Recommendation systems have seen rapid growth in recent years, with programming designed to direct listeners to artists and songs with similar sonic features. And yet, personalization systems can't be truly predictive, only descriptive, reporting correlations rather than explanations (Burkart & McCourt, 2004).

Algorithmic guesses at music preference might not always be accurate (Hagen, 2015). Alas, these algorithms have only scratched the surface of their potential. Neuman and colleagues (2016) suggest that recommendation programs could be improved by predicting musical preferences on the basis of user personality type. Additionally, Liebman and colleagues (2019) hold that song sequence can affect listening preferences. In fact, they found that an algorithm designed to produce ideal long-term song sequence within a playlist demonstrated higher listener reward than random song selection or a song selection that immediately played the most enjoyable song next. Moreover, adapting the curatorial model from immediate reward to strategic sequential calculation might yield the optimum listening experience.

By strategically ordering songs in a playlist, a recommendation service more closely reflects artistic choices made by musicians who intentionally delineate track order on an album. However, many albums are designed to tell stories within themselves, with the song order reflecting the narrative. Algorithmically curated playlists, on the other hand, are designed to optimize personalized satisfaction. Is this customized continuity or emotional exploitation? The answer depends on how successful the algorithms become, and what individuals seek in their listening experience. By learning listening habits and assuming curatorial responsibility, recommendation programs have the potential to replace individual choice.

Individual curator. While views such as Pelly's (2017) see streaming as a takeover of music's integrity, there is, in fact, an alternate view. History is built on top of itself, and the essence of a streaming service adopts qualities from the fleeting physical realm. Some listeners engage with music through collection. In interviews with 67 self-proclaimed record collectors, Shuker (2004) discerned that the collection process is passionate, enforces social identity, is

often driven by love of the music, and can provide a temporary sense of escapism. In the "use" era of celestial music, the art of collecting has found a new way to thrive. Collectivist impulses and personal tendencies might be satisfied through interfaces' customizability (Burkart & McCourt, 2004). Playlist creation is a form of collection that transforms the meaning of the musical product through the context of its use. With the endless abundance of a streaming service's catalog, personally curated playlists can create a sense of ownership within the access model, allowing one to seize control of the content and, hence, control of the self (Hagen, 2015). Curation can be a creative outlet, individual expression, or a way to document a personal timeline through music (Barna, 2017). In this way, playlists might allow users to increase their emotional engagement with the music through more personalized use of the content.

The fact that preference for curated streaming yielded a comparable devotion score to the own group suggests that access models of consumption don't necessarily hinder music engagement. While access to convenience can enable listeners to hear music with less effort, the curatorial capabilities of services have the potential to engage listeners in new ways. As a respondent put it, streaming services are "structured to encourage finding music you've never heard before—structured to encourage musical exploration."

Minding Motivation

With the listening experience characterized by listener choice or lack thereof, we independently assessed general listening motivations to gage emergent themes for future research. The open-ended question "Overall, why do you listen to music?" gave respondents a moment to reflect on their personal relationship with music. Responses covered a wide array of themes, including music as an integral component of life, leisure, emotion, identity, and

appreciation (Appendix 4). Many responses encapsulated multiple themes. As a facet of life, respondents cited music's ability to evoke memory, inspire connection with others, enhance experiences, or escape the everyday. Leisure listening included music for relaxation, background sound, or supplement to activities. One of the most frequently mentioned themes was emotional music use such as mood regulation, understanding emotions, and catharsis. Identity listening referenced music for personal growth, self-regulation, and memory association. Finally, a common motivation was appreciation for music's intrinsic qualities, including analytical interpretations of music and a love of the art form. These themes represent some of the various colors to the vivid mural of music listening motivations. Through them we may explore a framework for future research.

Limitations

This study aimed for comprehensiveness and thoroughness. Alas, it was not completed without limitations. Perhaps the greatest of these was the sample. While snowball sampling helped with diversification, initial outreach was to our immediate network, which included a large proportion of musicians. Vanstone and colleagues (2016) noted that people with more musical training demonstrate a higher degree of music engagement in their daily lives. Thus, our findings might be inherently skewed toward an overall more musically engaged sample than the general population. These findings would be better verified if tested across a broader and more random sample. While a larger sample would benefit this study, a smaller set of activity and medium preference options would have also been ideal. Our context variables required considerable consolidation, which increased risk of researcher bias and misinterpretation. Future research might investigate listening activities and medium with fewer total preference options.

Concentrating categories would expedite organization and could help yield a more normalized distribution. Unfortunately, our data were not normally distributed, thus hindering us from performing desired analyses, e.g., ANOVAs.

Future Directions

This study was largely exploratory, as was reflected in the nature of its mixed-methods approach. Factor analysis, context group consolidation, and sentiment analysis led us to the variables that would become the defining pieces of this study. Future research might begin where we left off: with a determined latent outcome variable of the Music Devotion factor, five consolidated Activity and Medium preference groups, and three Medium use Function groups. Further examination could seek more nuanced segmentation of specific groups. One example could be to assess if catalog-inspired listeners prefer familiar or new content. Does higher Music Devotion associate with increased discovery? Another example could be to categorize all curated streamers across preference for personal curation or algorithmic curation. Does higher Music Devotion associate with the curation by the individual or the service? Such findings could be useful to services, labels, artists, and listeners. Streaming services could expand on this research to better understand listener psychographics. By identifying preferred listening activities and functions of medium use, services could tailor their interfaces to better meet consumer needs. Moreover, a quantifiable engagement measure such as Music Devotion might help to assess customer value. This could be used to delineate a variety of streaming price tiers, resulting in more revenue for services, labels, publishers, and artists, and more content for listeners.

While this study scratched the surface of understanding music engagement and context, a variety of variables remained unturned. An alternate approach might have considered one of the

other two factors that our factor analysis revealed. These respectively represented actual listening time and financial commitment to music. While we assessed engagement in a conceptual and intangible sense, these other factors express engagement as a tangible facet of reality—through either time or money. A more comprehensive report should examine music engagement across spectrums of intangibility and tangibility. On the context side, we reviewed activities, mediums, and motivations for listening. Additional contextual variables that future research might consider include genre, personality type, and the type of device or speaker that a listener uses. Clearly, the road ahead is ripe with possibilities.

Conclusion

The ListenUp Questionnaire explored the intersection of music engagement and context. Through a factor analysis we extracted the Music Devotion factor. This single composite score represented conceptual elements of attentional, emotional, financial, and time value that an individual placed on music. Through a qualitative analysis, we identified three primary medium use functions: catalog, curate, and convenience. As we assessed Music Devotion's relationship with various listening activities and mediums, our most significant finding was that a higher devotion associated with medium use functions of catalog and curate but not convenience. Catalog and curate represented equal devotion scores, indicating that the type of medium isn't as important to engagement as the function of its use. We use this finding as evidence to suggest that streaming services provide potential to enhance or hinder music engagement, depending on the function of their use. As the Beatles sing in "The End": "And in the end, the love you take, is equal to the love you make."

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Appendix 1

Interview Questions

When are you the most focused on music?
When do you feel the most personally connected to music?
When are you the most physically engaged with music?
When do you feel the most connected to others through music?
Where does you mind go when you listen to music?
Describe your favorite memory with music.
What criteria do you use for selecting what music to listen to/discovering new music?
What motivates you to listen to music?

Appendix 2

ListenUp Questionnaire

Demographics
Age
Gender
Zip Code

Context Index

Activity
Rank up to five activities that you normally participate in while intentionally listening to music. Intentionally listening: you choose to listen, rather than unintentionally overhearing music. (1 = most frequent, 2 = second most frequent, etc.)

(Dancing, Doing chores, Driving, Exercising, Getting ready, Going to sleep, Relaxing at home, Socializing, Studying, Waking up, Walking, Working, Other)

For your top-rated activity, why does it pair well with music for you?

Medium
Rank up to three mediums that you use to listen to music. (1 = primary medium, 2 = secondary medium, etc.)

(Amazon Music, Apple Music, CD, Deezer, FM radio, iHeartRadio, Pandora, Qobuz, SiriusXM, SoundCloud, Spotify, TIDAL, TuneIn, YouTube, Vinyl, Other)

For your top-rated medium, what about it appeals to you?

Personal Investment Index[1]

Attentional Investment
When listening to music I enjoy, it is important for me to know the name of the artist, song, or album
When I listen to music, I pay more attention to the concurrent activity than the song (reverse-scored)
When I listen to music, it is important for me to pay attention to the music and/or lyrics

Emotional Investment
Listening to music is an essential part of my life
The music I like is an important part of who I am
I am often moved by music

Financial Investment

[1] Five-point Likert scale (Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree) unless noted otherwise.

On average, how much do you pay to listen to recorded music in a month? (not including tax; per person value, e.g., if family plan, divide total cost by number of members on plan); ($0, $0.01 to $5, $5.01 to $10, $10.01 to $15, More than $15)

If music became more expensive, I would spend more to listen as much as I do today

I prefer to listen to music for free, even if it means lower audio quality and/or increased advertisements (reverse-scored)

Time Investment

On average, how much time do you intentionally listen to music in a day? (None, 0+ to 1 hour, 1+ to 2 hours, 2+ to 3 hours, More than 3 hours)

On average, how many different times do you intentionally listen to music in a day? (None, 1 time, 2 times, 3 times, 4 or more times)

I regularly set aside time to listen to music

Motivation Index

Overall, why do you listen to music?

Appendix 3

Medium Group Consolidation

Curated stream
- Spotify*
- Pandora*

Convenience stream
- Spotify*
- Apple Music
- Amazon Music
- TIDAL

Radio
- FM radio
- SiriusXM
- Pandora

User Upload
- YouTube**
- SoundCloud**

Own
- Vinyl***
- CD
- MP3/Digital

*Further sorted on the basis of respondents' open-ended responses. Streamers who referenced curation, e.g., playlists, algorithms, etc., were sorted into the curated stream group, while streamers who referenced convenience, e.g., affordability, mobility, ease of use, etc., were sorted into the convenience stream group. If both themes were mentioned, responses were sorted on the basis of higher keyword count per theme. If keyword counts per theme were equal, responses were sorted on the basis of the first theme mentioned.

**While we originally didn't expect to combine YouTube and SoundCloud into the same group, both tended to reference the catalog theme (particularly obscure content) as the reason for choosing this medium. Thus, text sentiment justified the classification. Two additional responses with "Other" as the first ranked option were sorted into the user upload group on the basis of open-ended responses.

***On the basis of open-ended responses, a few respondents who listed a streaming service as their primary medium but vinyl as their secondary or tertiary medium were sorted into the own group, owing to the fact that they expressed a preference for vinyl when possible (whilst tending to stream more often on the go).

Appendix 4

Motivation Index

Life.

"Music is essential for me in this life. I have been driven by it for as early as I can remember. Those moments when we hear music that resonates in us, those are the moments that connect us and remind us of that universal connectedness. Sub Ek. And by the time we recognize the sound in our ears, it is already inside of us as if it had been all along."

"[Music] can be relaxing. It can make a mundane activity more enjoyable. It is a good background for social activities. It can take me on an emotional adventure. And it can sometimes be a spiritual experience. The music and lyrics can sometimes give me insights into myself and others."

"[Music] enriches my life. It takes me to a different place. It provides a freedom and inspires me. I think listening to music while driving is as close to flying as I'll ever come. (I don't mean flying in an airplane; I mean soaring!)"

Leisure.

"To relax or background music while doing tasks."

"To feel good and relax. Sets the mood for the activity I'm doing."

"Makes me relaxed, happy. Nice distraction or background noise if I'm doing other activities. Helps me during workouts."

Emotion.

"[Music] helps me tap into my emotions so that I can fully experience whether I'm happy, or in pain etc. It enhances my feelings so that I can feel them on a deeper level than just sitting in silence or doing something else. It especially helps when I really pay attention to the music."

"Art decorates space and music decorates time. It is connected to emotion. I listen to music to feel or enhance different emotions. It relaxes me and helps me concentrate."

"I listen to music to express myself on how I am feeling that day. When I begin to sketch and draw, depending on what I'm working on, I listen to songs that bring up strong emotions to better my artwork. When I am dealing with negative emotions, I listen to music that expresses how I feel and find solutions within the lyrics. Even when I am upbeat, I listen to music that makes me happy to continue

on the metaphoric high that I am on. Without music, the world would just be dull and boring."

Identity.

"Listening to music is a big part of my self-identity and sense of express/understanding the world. I also consider finding/experiencing new music to be part of my personal growth."

"It gives me strength. It provides a medium for me to vicariously express feelings and emotions that I normally suppress. It's the expression of those feelings that I can't ever put into words. Sometimes it brings me to my knees. Sometimes it's the force that helps me overcome the biggest obstacles in my life. It can calm me. It can get me pumped up. It can be anything I need it to be, and it never lets me down. It's an unimaginably powerful force that fuels my soul. It's a part of me."

"I enjoy listening to music because it makes me feel less lonely. I enjoy connecting with artists on some level with the stories they share. Music can also be an escape for me, as well as a shared connection with people, especially with my family. I think my identity is shaped by music—certain songs and artists represent stages/events of my life. My most cherished memories of both events and people involve music."

Appreciation.

"It's challenging and stimulating for me to dissect the "anatomy" of a song (key, notes, various instruments parts, etc.). I also enjoying finding new songs to play and figuring out what elements of a song appeal to me."

"Mental stimulation by the rhythmic elements, and emotional release with the melodic and aesthetic choices."

"I think that music is the most powerful of the fine arts. Without any visual aid to perhaps recall or mimic something actual in your life music can cause feelings within a person such that they have no life experience to justify. I listen for its emotional leverage but also because it's like an auditory math problem for my mind, and it's inherent rhythmic intertwining with the physiological rhythm of my body and the beat of existence."