

TUNES TOGETHER: PERCEPTION AND EXPERIENCE OF COLLABORATIVE PLAYLISTS

So Yeon Park¹ Audrey Laplante² Jin Ha Lee³ Blair Kaneshiro¹

¹Center for Computer Research in Music and Acoustics, Stanford University, USA

²École de bibliothéconomie et des sciences de l'information, Université de Montréal, Canada

³Information School, University of Washington, USA

{syjpark, blairbo}@stanford.edu

ABSTRACT

Music is well established as a means of social connection. In the age of streaming platforms, personalized playlists and recommendations are popular topics in music information retrieval. We bring the focus of music enjoyment back to social connection and examine how technologies can enhance interpersonal relationships, specifically through the context of the collaborative playlist (CP). We conducted an exploratory study of CP users and non-users ($N = 65$) and examined speculative and experienced purposes and outcomes of CPs, as well as general perspectives on music and social connectedness. We derived a CP Framework with three purposes—Practical, Cognitive, and Social—and two connotations—Utility and Orientation. Both users and non-users shared similar perspectives on music-related activities and CP user outcomes. Projected and actual CP purposes differed between groups, however, as did perception of music's role in connectedness in recent years. These results highlight the importance of music-based social interactions for both groups.

1. INTRODUCTION

Music has traditionally prompted social cohesion through mutually engaging properties such as cooperation and group empathy [26]. The importance of music's social implications is underscored by research on social interactions in online music sharing [8], in specific social contexts [2, 12, 13, 33], and in prototype designs [32, 34]. Social aspects are even highlighted in research with broader scopes. In exploring music information needs and behaviors through a large-scale user survey, researchers find “there is a strong social component to people's experience of and interaction with music” [39]. Such studies underpin the importance of technology's mediation in music. Yet, there is a relative dearth of research in current collaborative technologies for our most intimate and social experiences in music. Moreover, music's socially engaging traits

are increasingly jeopardized by technologies that propagate individualized music consumption [17, 22].

Collaborative playlists (CPs), made possible through access-based consumption (i.e., streaming), are increasingly gaining traction [3]. For one, Spotify has allowed users to co-create and co-modify a playlist since 2008 [19]. Despite the importance of music's social qualities and increasing popularity of music co-consumption platforms, there is little research looking explicitly at today's phenomenon of collaborative playlisting. In contrast to related topics on recommendation systems and personal playlists, we lack an understanding of how CPs are used and enjoyed. Therefore, we can neither evaluate nor improve current systems in terms of meeting user needs and desires. Given these social benefits, and the fact that 86% of individuals in large music markets are purported to consume music via streaming platforms [24], characterizing the current state of how users feel about and interact with collaborative music platforms in an effort to bring “social” back into music is certainly a relevant topic in MIR research.

To address these needs, we explored the perception and experience of CP engagement by building upon prior work that identified behaviors and sentiments related to CPs [36]. We analyzed responses to selected questions from a larger survey to address the following research questions:

- RQ1: What are the distinct purposes and outcomes of CPs?
- RQ2: How do purposes and outcomes differ from those non-users predict CP usage would engender?
- RQ3: How do music perceptions, values, and habits differ between CP users and non-users?

Ultimately, an understanding of designing HCI through music co-consumption with better characterization of collaborative behaviors and needs from a user-centered perspective can help build HCI principles that can influence the landscape of human collaborations.

2. RELATED WORK

In the past, music listening was almost inevitably a social activity, through jukeboxes, radio, or the family record player in the living room. Only when music playback devices became more affordable and portable did music listening become an activity that could be enjoyed individually [17, 18, 22]. But these new practices did not displace



social practices around music. Research shows that music is still enjoyed socially (i.e., used as a social agent) to reinforce existing relationships and establish new ones [15,22]. Music preferences, especially during adolescence, play an important role in identity formation individually but also as a group of friends [18]; they convey information about a person's or group's values and beliefs. Music social practices are not limited to listening with others. They also include talking about music with friends and introducing them to new music [7]. When music collections were essentially or at least primarily physical, people shared music and prepared compilations with or for their friends [7], and mostly shopped for albums in music stores with others rather than alone [14]. Now that music has migrated online, have these social practices migrated too? Have music streaming services' collaborative and sharing features given rise to new social practices?

The advent of peer-to-peer (P2P) file sharing services (e.g., Napster, Gnutella) marked a turning point in music distribution and consumption. Researchers examined the social practices of users in these "online communities". Although these services offered ways for users to connect (e.g., chatrooms), few users "actively [sought] out chat or information sharing" [16]; interactions between users were "relatively infrequent"; and ties between them were mostly weak [37]. Brown and Sellen [7], who compared music sharing online and offline, concluded that when music was shared online, the social component of the activity was "stripped away". A study on iTunes sharing revealed that design decisions—such as partial user identification, and using a subnet ecosystem rather than P2P or in-person—impacted how social aspects of music sharing were supported [42].

More recently, music streaming services have enabled ubiquitous access-based consumption [3], and consequently have fueled research focused on selection, discovery, and listening through personal music collections [11, 20, 27, 39]. Streaming services have also provided many new affordances for supporting social music practices, one being the possibility of creating CPs. Even works on general music enjoyment and practices highlight "the growing need for tools to support collaborative music seeking, listening, and sharing" [29]. As such, works on creating social music technologies have been particularly numerous. Prototypes that aim to heighten the "extensive social functions" that music serves have been developed in the form of physical devices [32, 35] and digital platforms [5, 23, 25, 30, 31, 34]. Other works consider music recommendation based on group preferences [6, 9, 10] or integrate the collaborative functionality with other social components, such as interpersonal conversations [4], conflict management [41], and synchronous enjoyment [40]. These studies provide insights into the various aspects tackled or addressed in designing CP products. However, to the best of our knowledge, there have been no user studies on collaborative playlists or literature that considers long-term usage and outcomes relating to commercially available CP platforms. Therefore, we know very little about how CPs are used and perceived.

3. METHODS

3.1 Survey Design

Building upon past work [36], we designed a survey comparing CP users and non-users. We defined a CP as "a list of songs that multiple users have created using a digital platform"; CPs are distinguished from personal playlists in that they are also modified by other users. Our survey comprised open-ended and multiple-choice questions on perceived or experienced CP motivations, purposes, and outcomes; changes in behavior resulting from CP engagement; characteristics of users' favorite CPs; and impacts of CPs and music on social connectedness. We recruited participants through an introductory university music class, online music communities (e.g., Music group on Reddit), and social media (e.g., Twitter, Facebook). Anyone 18 years or older and fluent in English was eligible to participate. We provided no compensation for participating. Ethics approval was obtained from the Institutional Review Board of Stanford University.

3.2 Analyses

We focused on a subset of questions regarding CP purposes and outcomes, as well as music-related activities and music's role in social connectedness (questions are listed in Table 1). A three-step approach was used to analyze free-text responses (Q1). First, we decomposed each response into individual ideas and used affinity diagrams to group ideas in a data-driven fashion. We then categorized and labeled each of the groupings that emerged. Finally, the original responses were re-coded based on the identified groupings, and we computed counts and percentages of CP user and non-user responses that fell into each grouping. Quoted responses reference participants as "U" for users and "N" for non-users, followed by anonymized numbers.

Statistical analyses and data visualizations were conducted in R [38]. Differences between CP users' and non-users' word counts (Q1) and ordinal responses (Q2–Q4) were assessed using two-tailed Wilcoxon rank-sum tests. For Q2–Q4, each question comprised multiple responses (Table 1), so these p-values were corrected for multiple comparisons, on a per-question basis, using False Discovery Rate (FDR). We report significant ($p < 0.05$) and marginally significant ($0.05 \leq p < 0.10$) results, and FDR-corrected p-values.

4. RESULTS

We collected complete responses from 65 participants; 58% ($N = 38$) were CP users. Of users 42% were female ($N = 16$), and of non-users 41% were female. Participants ranged in age from 18–64 years (median 21 years); 89% ($N = 58$) resided in North America, with remaining participants from Europe ($N = 4$), Asia ($N = 2$), and South America ($N = 1$); and 86% ($N = 56$) were students. All CP users used Spotify to engage in CP activities, and Spotify was dominant among this group for other music consumption activities. Non-users were more varied in their choice of platforms (e.g., Apple Music, Pandora).

	Topic	Question	Response	Respondents
Q1	Purposes	What purpose(s) does/might a collaborative playlist serve for you?	Free-text	Users, interested non-users
Q2	Outcomes	Collaborative playlist(s) have/could... (10 statements, e.g., Diversify music library, Require less effort to enjoy music, Influence music taste positively).	Ordinal	Users, all non-users
Q3	Social connection through music	Please select the option that best represents your opinion on the following statements over the past 5 years: (4 statements, e.g., Personally, connecting with others through music has declined).	Ordinal	Users, all non-users
Q4	Importance of music activities with others	How important are these activities to your social relationships? (6 statements, e.g., Listening to recorded music with others, Sharing music with others).	Ordinal	Users, all non-users

Table 1. Survey topics, questions, response types, and respondents.

4.1 Purposes (Q1)

In answering RQ1 and RQ2, we unpacked free-text responses on CP purposes from all users as well as non-users who expressed interest in joining and/or initiating a CP (total $N = 55$).¹ Five main categories emerged from the affinity diagramming analysis (Figure 1): Three categories relating to purpose (Practical, Cognitive, and Social) and two relating to connotation (Utility and Orientation). Every response could be classified under at least one category, and many responses implicated multiple categories (i.e., category membership was not mutually exclusive). The subcategories emerged from our set of responses but are not exhaustive, and therefore may be expanded further.

Responses categorized as **Practical** implicated both the playlist object itself (the *artifact*) and the experience of playlist creation (the *process*). Users cited specific events (e.g., “party” (U21), “road trip” (U3)) or themes (e.g., “workout” (U16), “Christmas music” (U17)) as CP purposes; one non-user response (“serve as an outlet for entertainment” (N8)) suggested CP creation could itself be intrinsically enjoyable. **Cognitive** responses involved learning and discovery, both about music and about others, and thus centered around the user *receiving* information. Here, music discovery responses ranged from broad statements (e.g., “discover new music” (various)) to discovery specifically within or outside of established tastes (e.g., “get exposed to new music within my general musical interest” (N29) versus “finding interesting new music, particularly in genres I’m less familiar with” (U36)). Learning and discovery about others tended to focus on either listening habits or musical preferences of family and friends. **Social** responses reflected purposes directed *outward* from users. Responses around *sharing* ranged from very general (e.g., “share my music” (various)) to sharing with specific others (e.g., “sharing music with friends” (U1), “share music with a significant other” (U45)), and to sharing based on others’ preferences (e.g., “allocate all of the songs that we think each other would like to listen to” (U24)). Other Social responses mentioned *bonding* (e.g., “I use it to bond

with friends, especially friends who live far away” (U12), “connect to another person through song” (U40)).

In **Utility** responses, CPs are described as a means of reducing *effort* and increasing *efficiency* (e.g., “I don’t have to do as much work to create a playlist” (N15), “creator wants help creating the playlist in a shorter deadline” (U19)). **Orientation** refers to delivery of benefits to the *self* or *others* (e.g., “allows me to receive music recommendations” (U31) serves the self, while “a place to allocate all of the songs that we think each other would like to listen to” (U24) connotes benefits to others).

Counts and percentages of responses from each participant group in categories are summarized in Table 2. While a single response could be classified under multiple purposes, the reported percentages still suggest insights into which categories were emphasized by users versus non-users. For example, more CP users tended to report Practical and Social purposes, while a greater percentage of non-users reported Cognitive purposes, as well as Utility and Orientation connotations.

While responses from CP users did not contain significantly more words than those of non-users ($p = 0.25$), they tended to be more diverse. One manifestation of this is in the variety of responses. For example, non-users’ statements relating to social events all involved parties, while users also mentioned holidays, road trips, workouts, and dorm events. Users also highlighted ways in which CPs serve other eventual goals (i.e., an intermediary purpose), for example a CP created in preparation for a concert or

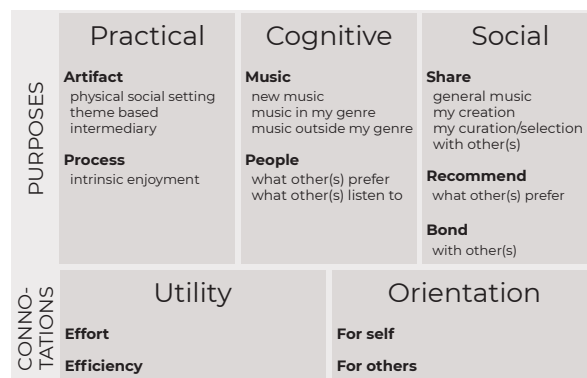


Figure 1. CP Framework: Purposes and Connotations.

¹ Non-user interest was assessed in a previous question. For Q1 we did not request responses from non-users ($N = 10$) who expressed no desire to participate in CPs for personal and/or logistical reasons.

	CP user	CP non-user	Total
Purposes			
Practical	25 (66%)	5 (29%)	30 (55%)
Cognitive	12 (32%)	11 (65%)	23 (42%)
Social	25 (66%)	6 (35%)	31 (56%)
Connotations			
Utility	6 (16%)	4 (24%)	10 (18%)
Orientation	23 (61%)	14 (82%)	37 (67%)

Table 2. Counts and percentages of user and non-user responses that reference CP purposes and connotations (Q1).

to centralize candidate repertoire for an a cappella group. CP users were also more descriptive and provided more specific use cases (e.g., “we have a playlist called ‘Sharing Sundays’ that we update weekly with a new song that we’ve been enjoying that week and then send the group a little message explaining why we chose that song” (U22)). Finally, the most nuanced responses spanning multiple purposes and connotations came from users:

- “A way to share songs and music tastes [Social]—both for the satisfaction of having others enjoy the same music I listen to [Orientation], and to find cool new music my friends share with me that I hadn’t heard before [Cognitive]” (U7).
- “I use it to share music and to create larger playlists for team workouts or get-togethers with friends [Practical, Utility]. Oftentimes the playlist is for an upcoming event and whoever creates the playlist wants input from attending people in order to make the music maximally inclusive [Practical, Social]. Sometimes the playlist needs to be a few hours long and the creator wants help creating the playlist in a shorter deadline [Utility]” (U19).
- “Allows friends/ family to put songs on a playlist for everyone to enjoy and listen to [Practical, Orientation] and allows for others to share their music in a closed space with selective people [Social]. Also somewhat acts [as] a bonding experience and allows for people to bond over a mutual interest of music [Social]” (U30).

Furthermore, the frequency of updates could be inferred from the practical function the CP served: CPs for physical social settings and intermediary functions were usually created for one-off scenarios, whereas theme-based function connoted updates throughout the CP usage.

4.2 Outcomes (Q2)

Participant responses on actual (users) or speculative (non-users) CP outcomes were also considered for RQ1 and RQ2. Visualized results of medians and quartiles (Figure 2A) show that responses ranged from slight disagreement to slight agreement for decrease in time and effort to enjoy and manage music, whereas responses tended more toward agreement for “Diversify music library”, “Increase ways of music discovery”, and “Positively influence music taste”. Median calculations across all participant responses show “Somewhat agree” as the dominant answer for most

categories except decrease in time and effort to enjoy and manage music as well as “More open to new experiences”, for which medians were “Neutral”. As the plots suggest, responses between groups for “Decrease time and effort to manage music” (users > non-users), “Increase ways of music discovery” (non-users > users), and “Make listening to music more enjoyable” (users > non-users) differed significantly when calculated independently, but were not significant after FDR correction.

4.3 Social Connection Through Music (Q3)

For RQ3, we found that users and non-users differed in their perception of music’s social role (i.e., connecting with others), personally and in general (Figure 2B). Most participants disagreed that connections through music have declined, and agreed that music fosters connection. Users disagreed more strongly than non-users that personal connections through music have declined ($p = 0.03$). As marginally significant findings, users were more likely than non-users to report that music helps them to personally connect with others ($p = 0.05$); and non-users were more likely than users to report that in general, connecting with others through music has declined ($p = 0.08$).

4.4 Importance of Music Activities with Others (Q4)

Also related to addressing RQ3, participants rated the importance of musical activities to their social relationships (Figure 2C). With the exception of “Perform or create music”, most responses fell between “Neither” (neutral) and “Very important”. Inspection of the plot suggests distributional differences between users and non-users regarding discussing music, experiencing musical events, listening to recorded music, and sharing music with others. Quantitatively, differences between groups were marginally significant for “Listen to recorded music with others” ($p = 0.05$) and “Share music with others” ($p = 0.09$), with users reporting higher importance.

5. DISCUSSION

In this study, we analyzed survey responses from CP users and non-users. Analysis of free-text responses on speculative and actual CP purposes revealed three purposes (Practical, Cognitive, and Social) and two connotations (Utility and Orientation). Analyses of responses on CP usage outcomes, perspectives on social connection through music, and importance of music activities with others revealed similarities and differences between groups.

5.1 Similarities Between Users and Non-Users

Taking a holistic view across questions, we see similarities across participant groups. For example, both users and non-users were represented in each category of purposes and connotations identified from text responses to Q1 (Table 2); likewise, for Q2–Q4, overall patterns of responses were comparable across groups (Figure 2). These similarities could be attributed to non-users’ awareness—of benefits and probable outcomes from CP usage—which

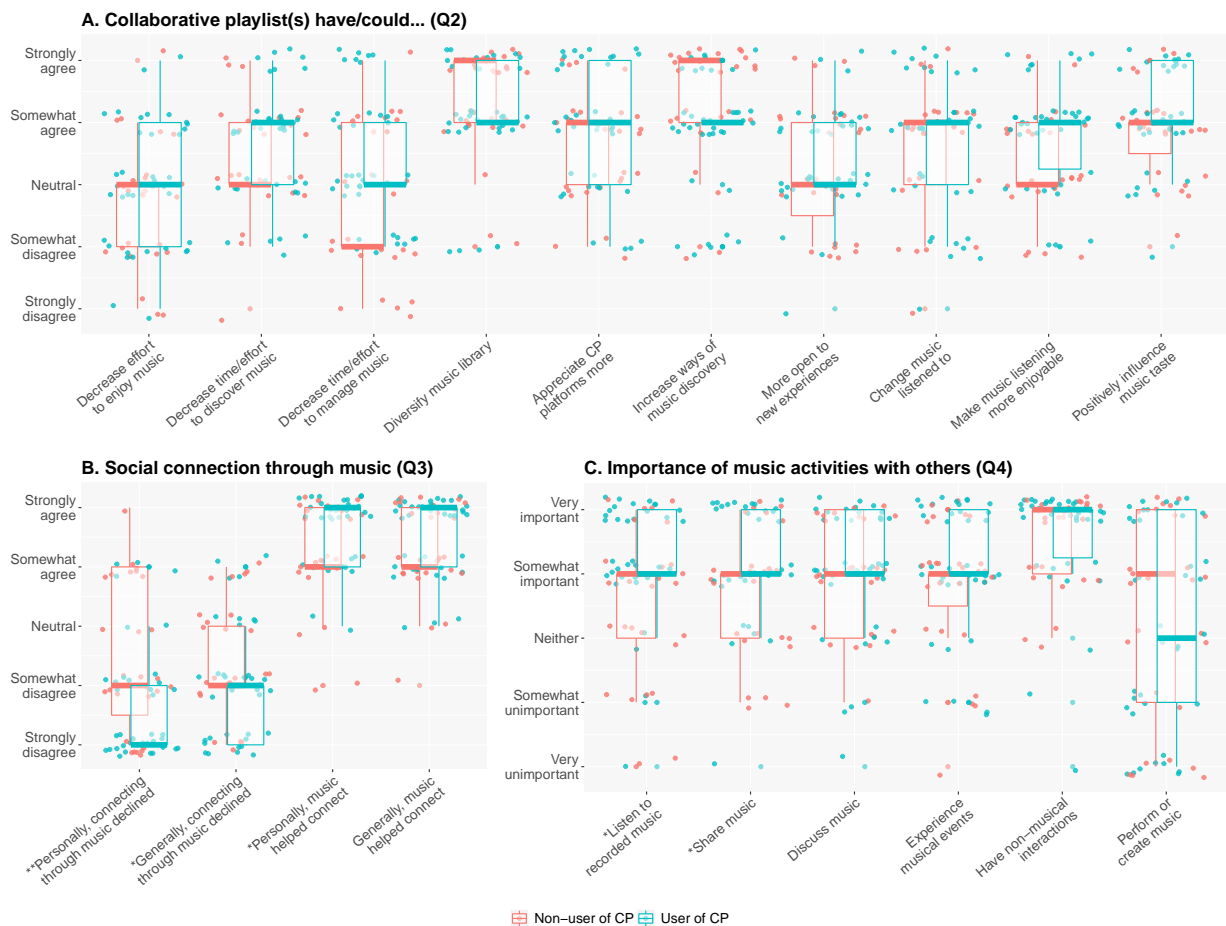


Figure 2. Boxplots of results for Q2–Q4: (A) Speculative and actual outcomes of CP usage (B) Social connection through music over the past 5 years (C) Importance of activities with others to social relationships ($*0.05 \leq p < 0.10$, $**p < 0.05$).

enabled them to be relatively accurate in their perceptions. While there were extreme responses outside the quartiles, most responses on music’s social benefits were favorable. As observed in previous studies, we surmise that this was due in part to self-selection of survey participants [20] and recruitment through music-related channels [39].

5.2 Diverging Perspectives on Discovery

We also observed high-level differences between groups. Open-ended responses (Q1) show that a greater percentage of non-users’ responses implicated Cognitive purposes (discovery, information seeking). Moreover, discovery was marginally more agreed-upon as a speculated purpose in Q2 by non-users than as an actual purpose by users. We propose several possible interpretations for these findings. One is that non-users might naturally translate discovery benefits offered in music personalization to the social playlist setting, whereas Practical and especially Social purposes are more specific to social music curation. Or, in actual CP usage, discovery is not as easy or actualized as speculated (e.g., if collaboration caters to shared tastes of a group [6, 9]), resulting in lower-than-expected outcomes for music discovery. Another possibility is that lower discovery outcomes for users stem from their CP purposes lying more in Practical and/or Social realms; hence users do not see a marked difference in their ways of discovery.

Finally, users may perceive CP purposes or outcomes relative to one another; if Practical or Social purposes turn out to be most rewarding, they may serve as more dominant reasons for engaging in CPs and were thus reported more by users. Regardless of users’ lower response to “Increase ways of music discovery”, they still report that CPs have diversified and positively influenced their music taste. Therefore, while discovery may not be the prominent purpose for CPs, it is still an outcome.

5.3 Distinct Social Purposes

Compared to non-users, a higher percentage of CP users mentioned Social purposes (Q1). CP users also reported more personal connection through music (Q3) and higher quartiles for importance of music-related social activities (Q4). This might be due to reasons mentioned in §5.2, whereby non-users focus more on Cognitive purposes and users find Social outcomes of CPs more rewarding.

While we cannot attribute causality with certainty, we see that the Social purpose relates to valuing and experiencing connections with others, thereby distinguishing users from non-users. As anticipated, this is the biggest factor distinguishing CPs from personal playlists. This aspect has been reported in previous studies on social music curation, for example on bonding over shared music tastes [31, 34] or in creation and consumption of collabora-

tively curated playlists [8, 35]. Detailed comparisons with personal playlists are provided in §5.4.

Last but not least, the median “Somewhat agree” signal for “Appreciate CP platforms more” corroborates the statement made in prior work that “there is a strong social component to people’s experience of and interaction with music, and music services that successfully incorporate such social features are well received” and lead to greater appreciation [29]. Perhaps CP platforms seeking to attract new users could highlight these attributes that were less reported by non-users.

		PURPOSES		
		Practical	Cognitive	Social
CONNOTATIONS	Utility	“A big event, such as a high school dance where the person on aux doesn’t have to stress because everyone put songs in” (U11)	“I could listen to music my friends/family like without having to search for it myself” (U13)	“When me and my friend like the same kind of music but we don’t know too many songs in that genre, we can do it together” (U18)
	Orientation	“We could use our collaborative playlists when we hang out as a group or have a party...I could also enjoy it for my personal leisure” (N9)	“I might get exposed to new music within my general musical interest” (U29)	“Share music with my friends I think they would like or help create a playlist for an occasion together” (U42)

Figure 3. Collaborative Playlist Framework populated with example responses from participants.

5.4 CP Framework and Applications

Our purposes and connotations culminate in a Collaborative Playlist Framework (shown in Figure 3 with participant quotes). The framework co-articulates holistically one’s reasons for engaging in CPs. The CP Framework can be applied to all responses in our study, and is also applicable to participant quotes from existing literature on social music. For example, “It would be very handy if you could ask the participants of your party to create the playlist to the party together” [31] expresses Practical purposes of CPs and Utility connotations of convenience.

We find the CP Framework to also be applicable to personal playlists, with Practical and Cognitive purposes and Orientation toward self being dominant. For example, a user from past literature described adding songs identified through Shazam to their Spotify playlist automatically [11], pointing to the discovery purpose. These songs then went into a “maybe playlist” from which the songs, depending on enjoyment, were moved into the “sometimes playlist”, “officially [added] to my music collection”, or deleted. These point to Practical purposes of personal playlists, also apparent in others’ work [21].

We also observed similarities of Practical purposes between personal playlists and CPs. As discussed in §4 the similar contexts emerge from investigation on personal playlists, and in doing so reflect similar levels of detail as in the CP context [21]. Furthermore, we find that the update frequency implied from the playlist (artifact) type is consistent between personal and social playlists [1, 20, 21].

Just as one can have many reasons for engaging in an activity, CPs can be created with multiple purposes and connotations. These can evolve within and across the dimensions we have articulated, and can also facilitate one

another. For example, suppose a group of friends decides to share the effort of creating a CP to play at a party [Utility, Practical]. The act of creating the CP provides an opportunity for social bonding [Social]. Collective consumption of the playlist at the party enables sharing and discovery [Social, Cognitive], ultimately bringing about further bonding [Social]. Facilitation can also occur within-category. While CPs may be created to fulfill a particular function for an event [Practical-artifact], the process itself of selecting music for a CP can be an intrinsically enjoyable activity [Practical-process], a phenomenon that has been reported in previous research [28, 34]. At times, sharing and suggesting music [Social-share/recommend] can in fact bring about the separate purpose of bonding [Social-bond]. We also already have hints of “with whom” participants (expect to) engage in CPs. Some create CPs with these personal connections in mind, while others might create CPs based on or in search of shared musical tastes [31]. Text responses indicate that such ensuing purposes, however, are not always sought by participants.

We acknowledge some shortcomings in the present work. A larger sample size could improve interpretability of results and also provide further insights into CP usage. In addition, by grouping responses based solely on CP usage, we may be overlooking valuable insights relating to other demographic factors; a larger sample size will help here as well. Finally, there are many other facets (e.g., ownership, group dynamics) through which this topic can be approached, and we are continuing our work through identification of CP usage patterns.

6. CONCLUSION AND FUTURE WORK

Our findings indicate that CPs have distinct purposes and outcomes (RQ1); non-users’ speculation of CP usage outcomes do not differ greatly from actual user outcomes (RQ2); and differences in music perceptions, values, and habits exist between the groups (RQ3). These discoveries have direct implications for CPs, which are increasingly integrated into music consumption platforms. They are indicative of why users engage with CPs and what they gain from doing so. Consumption platforms may choose to heighten or make more conspicuous the features from which users derive the greatest benefits and be informed of other music-related activities to be integrated.

We continue to collect data and unpack the larger survey results to identify platform usage patterns of users and non-users. For CP users specifically, we analyze their survey responses and conduct semi-structured interviews to gain a nuanced understanding of their personal experiences and interactions with CPs. Our findings were predominantly based upon users in North America; we envision carrying out this study in other countries as well to examine cross-cultural perspectives. We will also be able to verify the validity of our CP Framework in other contexts and across time. Finally, informed by our findings, we aim to derive design implications for the kind of collaborative interfaces that users desire.

7. ACKNOWLEDGMENTS

We thank Jonathan Berger, Stanford’s Music Engagement Research Initiative, and Stanford’s Center for Design Research for helpful feedback and contributions.

8. REFERENCES

- [1] C. Anbuhl. *Social and cultural practices around using the music streaming provider Spotify—A qualitative study exploring how German Millennials use Spotify*. PhD thesis, Malmö universitet/Kultur och samhälle, 2018.
- [2] F. Axelsson and M. Östergren. SoundPryer: Joint music listening on the road. In *Adjunct Proceedings*, page 39, 2002.
- [3] F. Bardhi and G. M. Eckhardt. Access-based consumption: The case of car sharing. *Journal of Consumer Research*, 39(4):881–898, 2012.
- [4] J. S. Bauer, A. L. Jelleneck, and J. A. Kientz. Reflektor: An exploration of collaborative music playlist creation for social context. In *Proceedings of the 2018 ACM Conference on Supporting Groupwork*, pages 27–38, 2018.
- [5] S. Baumann, B. Jung, A. Bassoli, and M. Wisniowski. BluetunA: Let your neighbour know what music you like. In *CHI’07 Extended Abstracts on Human Factors in Computing Systems*, pages 1941–1946, 2007.
- [6] F. Beierle, K. Grunert, S. Göndör, and A. Küpper. Privacy-aware social music playlist generation. In *2016 IEEE International Conference on Communications (ICC)*, pages 1–7, 2016.
- [7] B. Brown and A. Sellen. Sharing and listening to music. In *Consuming Music Together*, pages 37–56. Springer, 2006.
- [8] B. Brown, A. J. Sellen, and E. Geelhoed. Music sharing as a computer supported collaborative application. In *Proceedings of the Seventh Conference on European Conference on Computer Supported Cooperative Work*, pages 179–198, 2001.
- [9] D. L. Chao, J. Balthrop, and S. Forrest. Adaptive Radio: Achieving consensus using negative preferences. In *Proceedings of the 2005 International ACM SIGGROUP Conference on Supporting Group Work*, pages 120–123, 2005.
- [10] A. Crossen, J. Budzik, and K. J. Hammond. Flytrap: Intelligent group music recommendation. In *Proceedings of the 7th International Conference on Intelligent User Interfaces*, pages 184–185, 2002.
- [11] S. J. Cunningham, D. Bainbridge, and A. Bainbridge. Exploring personal music collection behavior. In *International Conference on Asian Digital Libraries*, pages 295–306, 2017.
- [12] S. J. Cunningham and D. M. Nichols. Exploring social music behaviour: An investigation of music selection at parties. In *ISMIR*, pages 747–752, 2009.
- [13] S. J. Cunningham, D. M. Nichols, D. Bainbridge, and H. Ali. Social music in cars. In *ISMIR*, pages 457–462, 2014.
- [14] S. J. Cunningham, N. Reeves, and M. Britland. An ethnographic study of music information seeking: Implications for the design of a music digital library. In *Proceedings of the 3rd ACM/IEEE-CS Joint Conference on Digital Libraries*, pages 5–16, 2003.
- [15] T. DeNora. *Music in everyday life*. Cambridge University Press, 2000.
- [16] S. Ebare. Digital music and subculture: Sharing files, sharing styles. *First Monday*, 9(2), 2004.
- [17] J. Frank. *Futurehit.DNA: How the digital revolution is changing Top 10 songs*. Futurehit, Inc., 2009.
- [18] S. Frith. *Performing rites: On the value of popular music*. Harvard University Press, 1998.
- [19] K. Gilmour. Collaborate on playlists with spotify’s collaboration feature. <https://www.dummies.com/social-media/spotify/collaborate-on-playlists-with-spotifys-collaboration-feature/>, retrieved April 8, 2019.
- [20] A. N. Hagen. The playlist experience: Personal playlists in music streaming services. *Popular Music and Society*, 38(5):625–645, 2015.
- [21] A. N. Hagen and M. Lüders. Social streaming? Navigating music as personal and social. *Convergence*, 23(6):643–659, 2017.
- [22] D. J. Hargreaves and A. C. North. The functions of music in everyday life: Redefining the social in music psychology. *Psychology of Music*, 27(1):71–83, 1999.
- [23] J. Haupt. Last.fm: People-powered online radio. *Music Reference Services Quarterly*, 12(1-2):23–24, 2009.
- [24] IFPI. Music consumer insight report. 2018. <https://www.ifpi.org/downloads/Music-Consumer-Insight-Report-2018.pdf>, retrieved April 8, 2019.
- [25] D. S. Kirk, A. Durrant, G. Wood, T. W. Leong, and P. Wright. Understanding the sociality of experience in mobile music listening with Pocketsong. In *Proceedings of the 2016 ACM Conference on Designing Interactive Systems*, pages 50–61, 2016.
- [26] S. Koelsch. From social contact to social cohesion—the 7 Cs. *Music and Medicine*, 2013.
- [27] A. E. Krause, A. C. North, and L. Y. Hewitt. Music-listening in everyday life: Devices and choice. *Psychology of Music*, 43(2):155–170, 2015.

- [28] A. Laplante and J. S. Downie. The utilitarian and hedonic outcomes of music information-seeking in everyday life. *Library & Information Science Research*, 33(3):202–210, 2011.
- [29] J. H. Lee, H. Cho, and Y. S. Kim. Users’ music information needs and behaviors: Design implications for music information retrieval systems. *Journal of the Association for Information Science and Technology*, 67(6):1301–1330, 2016.
- [30] A. Lehtiniemi and J. Ojala. Evaluating MoodPic—a concept for collaborative mood music playlist creation. In *2013 17th International Conference on Information Visualisation*, pages 86–95, 2013.
- [31] A. Lehtiniemi, J. Ojala, and K. Väänänen. Socially augmented music discovery with collaborative playlists and mood pictures. *Interacting with Computers*, 29(3):416–437, 2017.
- [32] E. Lenz, S. Diefenbach, M. Hassenzahl, and S. Lienhard. Mo. Shared music, shared moment. In *Proceedings of the 7th Nordic Conference on Human-Computer Interaction: Making Sense Through Design*, pages 736–741, 2012.
- [33] T. W. Leong and P. C. Wright. Revisiting social practices surrounding music. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pages 951–960, 2013.
- [34] K. T. Liu and R. A. Reimer. Social Playlist: Enabling touch points and enriching ongoing relationships through collaborative mobile music listening. In *Proceedings of the 10th International Conference on Human Computer Interaction with Mobile Devices and Services*, pages 403–406, 2008.
- [35] K. O’Hara, M. Lipson, M. Jansen, A. Unger, H. Jeffries, and P. Macer. Jukola: Democratic music choice in a public space. In *Proceedings of the 5th Conference on Designing Interactive Systems: Processes, Practices, Methods, and Techniques*, pages 145–154, 2004.
- [36] S. Y. Park and B. Kaneshiro. An analysis of user behavior in co-curation of music through collaborative playlists. In *Extended Abstracts for the Late-Breaking Demo Session of ISMIR*, 2017.
- [37] K. Poblocki. The Napster network community. *First Monday*, 6(11), 2001.
- [38] R Core Team. *R: A Language and Environment for Statistical Computing*. R Foundation for Statistical Computing, Vienna, Austria, 2018.
- [39] L. Spinelli, J. Lau, L. Pritchard, and J. H. Lee. Influences on the social practices surrounding commercial music services: A model for rich interactions. In *ISMIR*, 2018.
- [40] M. Stewart, J. Tibau, D. Tatar, and S. Harrison. Co-designing for co-listening: Conceptualizing young people’s social and music-listening practices. In *International Conference on Social Computing and Social Media*, pages 355–374, 2018.
- [41] F. Vieira and N. Andrade. Evaluating conflict management mechanisms for online social jukeboxes. In *ISMIR*, pages 190–196, 2015.
- [42] A. Volda, R. E. Grinter, N. Ducheneaut, W. K. Edwards, and M. W. Newman. Listening in: Practices surrounding iTunes music sharing. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pages 191–200, 2005.