

“I’M AT #OSHEAGA!”: LISTENING TO THE BACKCHANNEL OF A MUSIC FESTIVAL ON TWITTER

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ABSTRACT

It has become common practice for audience members to use social media to connect, share, and communicate with each other during events (e.g., sport events, elections, award ceremonies). But how is this backchannel used during a musical event and what does it say about how people engage with the music and the artists performing it? In this paper, we present the result of a study of a dataset composed of 31,140 tweets posted during and around the 10th edition of Osheaga, an important music festival held annually in Montreal. A combination of statistics and qualitative content analysis is used to examine the postings. This allows us to describe the content of these postings (i.e., topics, shared media), the type of message being shared (i.e., opinion, expression, information), and who the authors of these tweets are.

1. INTRODUCTION

Music tastes are for many an important dimension of their sense of self, particularly during adolescence and young adulthood. People often use their music tastes as a ‘social badge’ of their identity [1, 2], which tells others who they are or who they aspire to be. Disclosing our music preferences is therefore an exercise of taste and discrimination. This is certainly one of the reasons music recordings have not displaced live musical performances; attending a music show is one of the strongest ways of showing others our love of music and/or of a particular music artist [3]. It is also the occasion to buy T-shirts, posters, or other mementos to testify that we were there. Music tastes also play an important role in the construction of group identity. Concert going, as a social outing, is therefore also an opportunity to share an experience that could reinforce a friendship or a romantic relationship.

Social media have further amplified the role of music tastes in identity formation. By providing tools that allow their users to share their cultural preferences in various ways, users can now display their ‘social badge’ to a broader audience composed of friends, relatives, co-workers, acquaintances, or even unknown people. By doing so, they make a ‘taste statement’ that is used for ‘taste performance’, as an expression of prestige [4]. Further-

more, social media afford users a means of connecting with other concert-goers and potentially even with the performing music artists. It has become common for the organizers of important events to provide an official hashtag so that audience members can connect and participate in a shared conversation about the event. But how do people use these affordances?

Music appears to be a common topic on Twitter; the hashtag #nowplaying, used to indicate the music a user is currently listening to, was the 6th most popular hashtag from 26 March to 25 April 2017¹. Several musical events, from televised music award ceremonies and contests to music festivals now propose their own official hashtag. However, very few studies have examined the content of these tweets.

This study focuses on the use of Twitter during an important musical event, the 10th edition of Montreal’s Osheaga festival. Using both quantitative and qualitative methods, we analyzed 31,140 tweets with the aim of exploring the following research questions:

- RQ1. Who tweeted during the event and who were they speaking to?
- RQ2. What is the content of these messages (i.e., topic, media)?
- RQ3. Are these messages objective or subjective?
- RQ4. Which events, shows, or artists during the festival generated the most tweets?

Garnering more information about the content and the authors of these tweets could provide some insights into how people engage with music and what they have to say about it, about the artists performing it, and about the fans. Since our reception of music depends not only on the inherent characteristics of the music itself but also on its social and cultural context, it seems relevant to examine what type of information user-generated content related to music could provide and how it could help us better understand how music tastes are shaped. Moreover, according to surveys conducted by The Nielsen Company [5, 6], large music festivals have been gaining in popularity in Canada and in the United States. American music festival-goers were 98% more likely than the average American to discover new music on Spotify, the music streaming service, and nearly half of them shared photos and/or texted friends while attending a concert. This suggests that having a better understanding of the music con-



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¹Hashtagify: <http://hashtagify.me>

sumption and perception of this growing user group could be particularly relevant for the design of music recommender systems.

2. RELATED WORK

2.1 Twitter As a Backchannel

Social media provide a fertile ground for research. These online contexts offer a public or semi-public space where people can connect and share a conversation in real time. Therefore, despite the recency of these platforms, there are already numerous studies that have focused on the use of Twitter for various purposes, including its use for connecting with other audience members during major events. Researchers have looked at Twitter use during televised events [7-9]. Wohn and Na [8] examined the messages posted on Twitter during two televised events, a talent show and a political speech. They manually coded the postings into four categories: emotion, attention, information, and opinion. Their analysis revealed that the most popular category was Opinion, in which more than 30% of the postings were coded for both programs. Also using a qualitative approach to content analysis, Giglietto and Selva [7] looked at Twitter activity during a full season of a political talk show. Again, opinion expression was the most important tweet category: it accounted for 59% of the postings. Their study also revealed that Twitter could be useful in identifying the most engaging moments of such shows. Bruns and Stieglitz [9] employed statistical methods to examine the audience activity on Twitter, minute per minute, during the television broadcast of the British Royal Wedding. This allowed them to determine that there was a strong correlation between Twitter activity and key moments during the ceremony.

These studies suggest that, thanks to the affordances of Twitter and other social media platforms, the audience has taken a more active role. Twitter serves as a backchannel—or as a ‘second screen’ [7]—that complements the broadcasting media and allows the broadcasters to receive audience feedback in real time [10].

2.2 Music-Related Twitter Studies

In the same line of research, Highfield et al. [11] used a combination of quantitative and qualitative methods to examine Twitter activity during a major musical event that is broadcasted internationally: the Eurovision Song Contest. They found that broadcasters encouraged the use of Twitter, for example by promoting an official hashtag for the event and, in some cases, by selectively showing user tweets on screen. This indicates that there is a real interest from broadcasters and the organizers to receive live feedback from the audience and to facilitate audience engagement. Their study also showed the potential of Twitter for establishing and supporting fan communities.

A few studies have also been conducted within the MIR community. Hauger et al. [12] presented the ‘Million Musical Tweets Dataset’ (MMTD), a dataset composed of tweets collected using music-related hashtags. Since all tweets have geo-location data, the researchers used the dataset to geographically represent listening

preferences. The MMTD has been used other researchers. Moore et al. [13] employed probabilistic embedding methods to uncover geographic and cultural patterns in it, and Farrahi et al. [14] explored the potential of Twitter data for improving the collaborative filtering approaches used by music recommender systems. Zangerle et al. [15] presented another dataset, the ‘#nowplaying Music Dataset’. Kim et al. [16] used this dataset to examine the relationship between the Billboard rank and play counts extracted from Twitter postings. A strong correlation between the two was found. Finally, Iren et al. [17] released the ‘Top 2000 Dataset’ composed of tweets posted in connection with the Top 2000, a yearly event broadcasted on the radio in the Netherlands for which the public is invited to vote for the greatest 2000 songs of all times.

The interest the MIR community has already demonstrated for Twitter data is an indication of the potential it has in helping us better understand users’ music behaviour and music tastes, with the objective of improving music recommender systems.

3. OSHEAGA

Created in 2006 by Evenko, the Festival Musique et Arts Osheaga is one of the most important music festival in Canada. Held annually in Montreal during the summer, the festival hosts more than 100 music artists across three days each year. While it focused on local underground music artists in the beginning, Osheaga has been hosting international artists for several years now. The festival offers a varied programme that covers different music genres, including rap, indie, and electronic music. In addition to the concerts, the festival offers on-site activities as well as visual art installations. Gaining in popularity, Osheaga attracts visitors from all over the world each year, most of whom are between 20 and 25 years old. In 2016, 65% of the 135,000 festival-goers came from outside Quebec [18, 19].

4. METHODS

4.1 The Dataset

To examine how people used Twitter during and around the Osheaga music festival, we collected the tweets related to the 2015 edition of the festival, which was held from July 31 to August 2, 2015. Although the festival itself did not promote the use of any official hashtag on its website, the hashtag #Osheaga2015 was included in many postings made by the festival on Twitter. People also used the more generic #Osheaga hashtag. Therefore, from July 24, 2015 to August 13, 2015, we collected the tweets that contained at least one of these two hashtags, as well as tweets that contained the Twitter handle of the festival, @osheaga (i.e., the username of the official account of Osheaga on Twitter). The final dataset was composed of 31,140 tweets.

4.2 Data Analysis

A mixed-methods approach was used to analyse the data. With our research questions in mind, we calculated de-

scriptive statistics, to which we added the activity, visibility, and temporal metrics defined in [9].

To capture the richness of the postings, we employed a grounded theory approach to content analysis, which means that we let the categories emerge from the data, without imposing any preconceived model on it [20]. For this part, we focused on the tweets posted during the festival (from July 31 to August 2). We also limited our analysis to original tweets, which means that retweets were excluded. These will be analysed separately but, due to the limited length of this paper, this analysis is not included here. Since manual coding is time consuming, we chose to focus on a random sample stratified by date. More specifically, we randomly selected 5% of the postings published on each of the three days of the festival. In total, 712 postings were manually coded (see Table 1).

Posting date	No. of original tweets	No of postings analyzed
July 31	3,377	169
Aug. 01	4,778	239
Aug. 02	6,084	304
Total:	14,239	712

Table 1. Description of the dataset that was manually coded.

Qualitative content analysis is a multi-step and iterative process. The first step consisted in developing the codebook, which was done by coding 100 postings that were not included in the final sample [21]. In the next step, two researchers used the codebook to independently code the first 100 postings of the sample in order to test it. The analyses of the two coders were then compared and discussed. This led to a revised and final version of the codebook, which was composed of 66 categories. The coding of the first 100 postings was revised and the 612 remaining postings were coded. Coding each posting took time. For each posting, the coder accessed the user profile to determine what type of user it was (e.g., individual, broadcaster, promoter). If the tweet contained URLs, the coder had to follow them to see where they led. Moreover, the coder had to make sense of the content of the text. Multiple codes could be applied to one message.

5. RESULTS

5.1 Who Participates in the Conversation?

As mentioned before, Twitter affordances invite users to connect and converse with other people attending the concert, with people who could not or did not want to be there, and even with the performing artists. But in reality, who participates in this shared conversation?

Visibility. Our dataset was composed of 31,140 tweets. These tweets were posted by 12,294 distinct users, for an average of 2.5 tweets by user. However, a closer look shows an uneven distribution: a very small number of users accounted for a large proportion of the postings. More specifically, the top 1% of most active users accounted for 17.5% of the tweets, and the top 10%,

for 44.8%. Conversely, we find a long tail of users with little activity. Indeed, 7,202 (58.6%) of users had posted only one message during the festival.

Categories of users. The coding process for content analysis included accessing the Twitter account of the author of each message in order to categorize it (see Table 2). Individuals accounted for 74.2% of the postings. The next two most important categories were reporters, bloggers, TV/radio hosts, and photographers, who authored 10.8% of the tweets, and magazines, newspapers, blogs, and TV/radio stations, who posted 4.9% of the tweets. Different types of societies (e.g., restaurants, clothing companies) posted some tweets, usually for promotional purposes. The festival itself posted 2.5% of the messages of our sample.

Category of users	No. of tweets	% (n=712)
Individuals	530	74.4%
Reporters, bloggers, TV/radio hosts, and photographers	77	10.8%
Magazines, newspapers, blogs, and TV/radio stations	35	4.9%
Societies	23	3.2%
Osheaga	18	2.5%
Music artists (performing during the festival or not)	13	1.8%
Promoters	9	1.3%
Music producers and labels	7	1.0%
Total	712	100.0%

Table 2. Tweets by user category.

5.2 Who Are They Speaking To?

Mentions. In the language of Twitter, a mention is a reference to a user in a tweet using his or her Twitter handle (e.g., @osheaga). Of the 31,140 tweets in our dataset, 16,773 (53.9%) included at least one mention. There was a total of 25,746 mentions. Postings included between 0 and 9 mentions, for an average of 0.83 mention and a median of 1 mention per posting.

Mentions were used in different ways, sometimes for addressing a tweet to a specific user:

```
Hey @b### are you at #OSHEAGA2015 this weekend?
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to tag someone in a photo or in a posting:

```
#day1 @osheaga with my main girl @L#####  
#stayhydratedfolks #osheaga #ootd @ Parc  
Jean-Drapeau [followed by a link to a photo  
of the two friends]
```

or to tag the performing artists of the concerts they are attending:

```
#OSHEAGA2015 Day 3 Wrap-up @GaryClarkJr  
@Bobmosesmusic @SylvanEso @sanferminband  
@charli_xcx @TheWarOnDrugs @Hot_Chip @alt_J  
@theblackkeys
```

The number of mentions a user receives is an indication of his or her visibility. In our dataset, 3,023 distinct users received at least one mention. A few users received a

high number of mentions. With 6,360 mentions (24.7%), the Twitter account of the festival received the most mentions, which is not surprising considering that this was one of the criteria for collecting the tweets. If we put the festival mentions aside and examine the remaining 19,286 mentions, we notice that the top 1% of most mentioned users accounted for 32.7% of the tweets. They had received between 109 and 701 mentions each. Half of these top users were artists who performed during the festival (e.g., Kendrick Lamar, James Bay, Of Monsters and Men). Among these users were also online magazines and blogs (e.g., Sidewalk Hustle, Much), and music streaming services (e.g., Stingray Music, Spotify Canada). We also find two celebrities who attended the festival but had no official role to play in it: a local pop singer (i.e., Marie-Mai) and an international top model (i.e., Cara Delevingne) whose agency had posted several photos of her at the festival on Twitter.

Artists. But what role did the performing artists take in the conversation? Users regularly mentioned the names of the artists that were performing in their tweets. Among the postings that were manually coded, 231 or 32.4% contained a reference to a performing artist. However, the users did not always use the Twitter handle of the artist to do so. More precisely, they used the Twitter handle 40.7% of the time. This suggests that most of the time, the user was not expecting any reaction from the artist. But even when a Twitter handle was used, the user did not always explicitly address his/her message to the artist. Indeed, if some users talked directly to the artist, as in this message:

@MarinasDiamonds we loved your set at #OSHEAGA2015 and we would love to hug you and wish you well :) you're the best

most talked about the artist at the 3rd person, as in this message:

@flo_tweet has the most amazing voice. I'm in awe of this woman #OSHEAGA2015 [followed by a link to a photo]

Among the 123 singers and groups who performed during the festival, two had no Twitter account. According to our sample, a large majority (81 or 66.9%) of those who were Twitter users had not posted any tweets about Osheaga during the data collection period; they may have tweeted about the festival, but they did not use the hashtags or mentions we queried in the collection process. The remaining 40 artists (33.1%) had posted between 1 and 14 tweets each, for an average of 3.2 and a median of 2 postings per artist. In total, our dataset included 129 postings from performing artists. These tweets were all manually coded. Eighty-five (65.9%) of these messages were retweets. As we can expect, the original tweet often consisted of a positive review of the artist's performance. The tweets came mostly from blogs, radio/TV stations, newspapers, music services, reporters/bloggers, or the festival itself, but there were a few cases (12) where the artists retweeted a fan's posting.

Among the 44 postings that were not retweets were 13 thank you notes to the festival or the fans in general, such as:

That was one of our favourite shows this summer @osheaga Thank you! #OSHEAGA2015

Some (10) used Twitter to announce that they were performing at the festival or doing their sound check. One music group shared a photo of its set list for the concert. There were only three postings that showed a direct interaction between an artist and a fan. For example, a fan had asked a music group (using its Twitter handle) to play a specific song, a request to which the band drily replied:

Not gonna happen

In another case, the tweet was a personal thank you to a fan. And in the final case, the singer shared a fan's video showing a blooper from his show and commented on it:

Hahaha that was such a fail [followed by the link to the fan's tweet with the video]

This particular tweet was then retweeted 128 times by other users.

The low number of tweets that show a direct interaction between the artists and their fans should however be interpreted with caution: our dataset was composed of tweets containing two specific hashtags and one Twitter handle. It is possible that some artists replied to their fans without including those in their reply.

5.3 What Do They Tweet About?

Topics. The qualitative content analysis allowed us to closely look at the content of the messages that were posted on Twitter. The main topics are presented in Table 3. By far, the most common message was to announce that one was going to Osheaga. However, we must stress that many of these messages were not posted at the initiative of their author. The festival was encouraging festival-goers to register their bracelet online in order to win prizes and be able to take part in some activities on site. They could create a new account to sign up, or they could use Facebook or Twitter. Using Twitter apparently resulted in the application posting the following message on Twitter:

I'm at #Osheaga2015 Day 1 - powered by Samsung Galaxy S6

Some changed it slightly. It could apparently also be done on site since many added to the message a photo taken in a dedicated space. These messages accounted for 29.6% of the dataset and 31.1% of the sample used for content analysis. Although these messages may appear to be spam, the fact that many users added a photo and/or did not make the effort to create a new account for the festival suggest that perhaps they wanted to share these tweets. Moreover, these messages were part of the conversation about the festival on Twitter: people reacted to and commented on these tweets, and they certainly created a 'hype' on Twitter considering the volume. For this reason, we decided to keep them for the analysis.

Registering the bracelet online was not the only incentive for sharing that one was attending the festival. Many did that on their own initiative, oftentimes adding a photo of their bracelet:

Off to osheaga #Osheaga #OSH15 [followed by a link to a photo of the Osheaga bracelet]

A few users (25) also explicitly announced attending a concert:

I'm so excited today I'm gonna see two of my favorite artists live! @MarinasDiamonds and @twentyonepilots <3 #OSHEAGA2015

Questions, comments, and complaints were addressed to the festival, who would then reply to the users. Some people also shared personal experiences during the festival, like hurting themselves or stumbling upon a singer or musician:

Casually met the band of Florence & The Machine in the lobby of my hotel tonight #OSHEAGA2015

In 12 cases, people commented on or complained about other festival-goers, about their appearance or their behaviour, as in:

Festival etiquette breach number one. #osheaga #get #down #now @ parc jean drapeau [accompanied by a photo of a person sitting on someone else's shoulders]

all I see at #Osheaga is fake Kylie-Jenner-styled people

Other topics, such as fashion, food, weather, and even books were also occasionally discussed, sometimes in combination:

Tacos in the rain? Why not! #osheaga #tacos #festival #food [accompanied by a photo of the tacos]

Topics	No. of tweets	% (n=712)
Presence at festival	271	38.1%
Performing artists and their music	231	32.4%
Festival (e.g., schedule, logistic, transport)	50	7.0%
Promotion of work, products, or services	46	6.5%
Presence at concert	25	3.5%
Fashion	17	2.4%
Personal experience	17	2.4%
Other festival-goers' behaviour	12	1.7%
Food	11	1.5%
Weather	10	1.4%
On-site activities	8	1.1%

Table 3. Main topics discussed in tweets posted during the festival

As seen in Section 5.1, festival-goers were not the only ones to take part in the conversation. Various societies used Twitter to promote their work, products, or services. For instance, some on-site restaurants and shops used Twitter as an advertising venue:

We are at #Osheaga! Come and see us @C##### near the Scène des Arbres [accompanied by a photo of the food truck] (translated from French)

Some other retailers who were not on site, such as clothing companies, tailored their promotional message for the Osheaga festival-goers:

Dress it up or dress it down! This look is easy to take from day to night. #ootd #toms #friday #osheaga [accompanied by a photo of an outfit from the clothing company]

Reporters, bloggers, photographers, and radio and TV hosts promoted their work differently, some by directly sharing the link to the result of their work—be it an newspaper article, a blog post, or a photo—others by announcing that they were covering the festival, such as in the following tweet posted by a TV reporter:

#C##### backstage at #osheaga with #patrick-watson and string quartet #mommasontherun [accompanied by a photo of the members of the string quartet]

Media. Close to half (42.7%) of the 712 tweets that were manually coded contained or pointed to a non-textual resource (i.e., photo, video) (see Table 4). By far, the most often shared media type was the photo: 34% of the postings analyzed contained a photo taken by the author. Amongst the main categories of photos shared by users, whether their own or someone else's, were the following: photos of concert (36.4% of photos), selfies with others (26.3%), photos of festival site (12.3%), other festival-goers (7.2%), and selfies alone (5.5%). The vast majority of the videos shared were videos of a live performance taken during the festival.

Type of media shared	No. of tweets	% (n=712)
Personal photo	242	34.0%
Personal video	41	5.8%
Someone else's with photo	15	2.1%
Shares someone else's video	6	0.8%
Tweets with media in total:	304	42.7%

Table 4. Types of media shared in tweets posted during the festival

5.4 Are the Messages Objective or Subjective?

As mentioned in the introduction, research shows that people used their music tastes as a social badge that tells other people who they are, a phenomenon that has been exacerbated by social media who provide the sounding-box for such messages. Therefore, it seems reasonable to expect a large number of people using Twitter to express an opinion about the music they are listening to.

Of the 712 messages that were manually coded, 153 (21.5%) were explicit expression of an opinion, which is quite high considering the large proportion of tweets that were automatically generated when participants registered their bracelet online (see Section 5.3). Moreover, when people used Twitter to announce publically that they were attending a concert, although they were not explicitly expressing an opinion about the artist and his/her music, it seems very likely that for many, this was a form of implicit expression of their love for the artist. However, since it was impossible to know with certainty what the user had in mind while posting these tweets, they were not included in the Opinion Expression category.

In addition to expressing their opinion through their tweets, subjectivity also took the form of emotion expression. A small proportion of the tweets (45 or 6.3%) fell in that category. Most of the time, the emotion conveyed was excitement:

So excited to see @runjewels today at #Osheaga today, it's gonna be hype!

Mikey & brian of #Weezer. #VIP I feel like a 16 year old Asian girl #OSHEAGA [accompanied by a photo of self with friends]

Sometimes, the emotion was not named but it transpired from the interjections, the emojis, or the repetition of some letters in a word:

KENDRICKKKKKKKK #WEGONBEALRIGHT #OSHEAGA2015 [accompanied by a photo of Kendrick Lamar on stage]

@youngthegiant 50 mins untill you guys play!!! @youngthegiant #osheaga!

Sharing pure information, as in the tweet below, was not common.

New adult 'play' area complete with jumping castles and swings #osheaga2015 #cbcm1 [accompanied by a photo of the area]

More often, information and opinion or emotion were combined in one tweet:

The charming George Ezra is playing on the Mountain Stage 🤘🤘 #OSHEAGA2015 [accompanied by a photo of the singer on stage]

	No. of tweets	% (n=712)
Opinion expression (all)	153	21.5%
About concerts or artists	96	13.5%
About festival	37	5.2%
About on-site activities	3	0.4%
Other	17	2.4%
Emotion expression	45	6.3%
Subjective tweets in total:	207	29.1%

Table 5. Opinion and emotion expression in tweets posted during the festival

5.5 How Do the Festival Events Influence Twitter Activity?

To identify how the activity on Twitter relates to the festival events, we looked at the number of tweets per hour during the three days of the festival, from 7 AM to 11 PM. Figure 1 shows the distribution of the tweets per hour for these days.

The program started at 1 PM to finish at 11 PM. We notice a first peak on each day at 12 PM, which certainly corresponds to the time at which people would arrive on site. Two other peaks are noted on July 31, which coincide with the beginning of shows by headliners artists of the festival. The first peak occurred at 3 PM, the time at which the Run The Jewels show started, and the second occurred at 8 PM, the time at which the show of two important artists simultaneously started: FKA Twigs and Of Monsters and Men.

On August 2, two clear bursts of activity on Twitter are observed, one at 4 PM, during the Father John Misty show, and another at 6 PM. This last peak is harder to explain. It might be due to the fact that it corresponds with the end of the The War On Drugs show and the beginning of the Hot Chip's. The activity on Twitter is more stable on August 1st, which is surprising since this was the day the most awaited show—Kendrick Lamar's—was sched-

uled. This concert, which started at 9:20 PM, only triggered a modest burst. A closer look at the tweets posted during this show could help better explain why it did not led to more activity on Twitter.

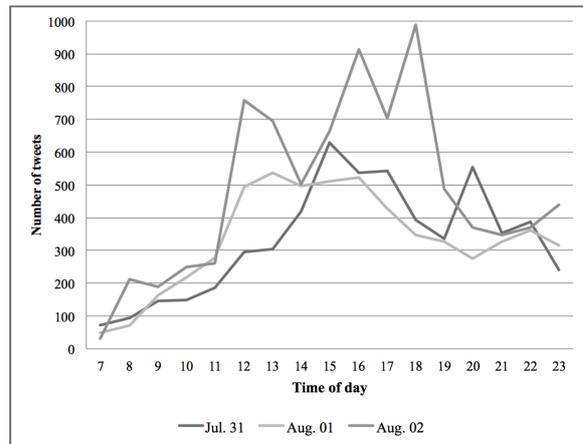


Figure 1. Number of tweets per hour during the festival

6. CONCLUSION

In this paper, we presented a study on the tweets posted during and around a major music festival, Osheaga 2015. A combination of quantitative and qualitative methods allowed us to better understand how Twitter was used by festival-goers, broadcasters, other societies, and performing artists. The analysis confirmed the results of previous studies, which revealed that Twitter [22] and other social media platforms [4] are used for taste performance or for what Papacharissi calls ‘performances of the self’. Indeed, the high proportion of opinion expression tweets and the even higher number of tweets users wrote to announce that they were going to the festival or attending a specific concert suggest a desire to perform in this semi-public space. The content analysis also indicated that some users wanted the music artists they loved to take part in the conversation. Many users included the Twitter handle of the artists they were talking about in their tweets; some even spoke directly to them, even though we found little evidence that such interactions were common. This echoes the work of Litt and Hargittai [23] on the ‘imagined audience’ of Twitter users. In addition to the personal, communal, and professional ties people envision as their audience when posting a tweet, some people imagine ‘phantasmal ties’, which represent the famous people they hope to reach with their tweets and with whom they have an ‘illusionary relationship’.

This study shows how rich the backchannel conversation of a music festival can be on Twitter. This conversation could provide interesting avenues for the refinement of music recommender systems. Since people use Twitter to express their opinion about music artists, this channel could be used to better understand the temporal dynamics of individuals’ music tastes. Also, since Twitter allows us to follow the music reception of festival-goers in real-time, music recommender systems could potentially use hashtags of musical events to retrieve tweets that could allow them to identify music trends in a specific location.

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