Hi Spotify UX Team,

We are a group of senior undergraduate students at the University of Washington studying Human Computer Interaction and we conducted a formal usability test on Spotify mobile using the usability tool, LookBack. Attached is a compilation of our usability test methods, results, major findings, and recommended design changes that are illustrated in a series of mockup images as well as an interactive prototype.

We would love to get in contact with your team to discuss the research we performed and our design recommendations based off our findings.

Best,

Torin Blankensmith, Rashmi Srinivas, and Hailey Yu

HCDE 417 Group 8
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USABILITY TESTING REPORT
SPOTIFY MOBILE USABILITY TEST

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Executive Summary

This report is a summary of our research and design outcomes throughout a 10 week usability testing project, exploring the following design question for Spotify Mobile:

> *"Does the current content organization and navigation scheme of Spotify Mobile allow the users to access new music easily and efficiently?"*

Through a User-Centered Design approach, we developed a full usability study test kit based off of results from an initial heuristic evaluation. We conducted 7 usability study sessions with 7 participants, who had used Spotify Mobile and listen to music 2-5 hours on mobile devices per day. Each usability testing session contained a pre-test Q&A session, 6 tasks with 6 corresponding post-task surveys, and a post-test Q&A session. The 6 tasks were designed to cover social, music discovery, and playlist features on the premium version of Spotify Mobile App on an iOS device.

We compiled all the qualitative and quantitative data into a single Google Docs, categorized by tasks, and grouped the data into 4 themes through an affinity diagram approach:

> 1) Unclear Terminology, 2) Confusing Navigation, 3) Struggles to Find Personalized New Music, and 4) The Gap between Expectations and Reality.

Below are the two major findings that derived from the 4 themes as well as our redesign recommendations accordingly:

Major Finding 1: Users can't easily access their friends' playlists and share content as the social feature in Spotify.

> Redesign Recommendations:
>
> - Create a new section for "Social News Feed" including friends' activities on Spotify as a social feature to discover new music
> - Change the navigation style from hamburger menu to always-on-screen tab bar, and include "Social News Feed" section in the navigation as a main option

Major Finding 2: personalized new music can be difficult and overwhelming as a discovery feature in Spotify.

> Redesign Recommendations:
>
> - Display personalized new music on top of "Explore" page, a page designated for recommended music
> - Change the navigation style from hamburger menu to always-on-screen tab bar, and include "Explore" section in the navigation as a main option

Implementing these redesign recommendations will help Spotify generate a more user-friendly

mobile App on IOS devices, and accomplish Spotify's mission of "[helping] people listen to whatever music they want, whenever they want, wherever they want."

Introduction

Spotify is a music streaming service that allows users to search for any artist, song, album, or genre and create and share playlists. Spotify's additional features include radio, and extensive browse section, and a social aspect where the user can find friends by linking their Facebook profile to their account. Spotify is available on both desktop and mobile devices. Our usability study focuses on Spotify Mobile and the associated features.

Spotify is well known for making music available to their customers via their "freemium" model wherein users can choose to access a free version of Spotify with limited features or pay a monthly fee for Premium which allows for offline access and the ability to choose songs on the mobile app. Spotify's mission is to make "the right music...always at your fingertips", or in other words, Spotify strives to make their user experience customized to what the user is looking for.

Our team set out to test how well Spotify executes this mission through their mobile app on an iOS device. We asked ourselves, does the current content organization and navigation scheme of Spotify Mobile allow the users to access new music easily and effectively? Our testing team consists of three members (Torin Blankensmith, Hailey Yu, and Rashmi Srinivas) who all took part in designing, running, and evaluating the usability tests.

In this document you will find our usability test methods, analyzed data, summary of results, major findings, design recommendations, and artifacts from our testing. Throughout these sections, we use key terms to describe different parts of the app. For example, "navigation menu" refers to the left hand side drawer menu in the Spotify app. (any other unique terms?)

Methods

Heuristic Evaluation

To determine what areas of Spotify mobile our team should focus on, we created a heuristic evaluation. the heuristic evaluation was broken up into larger categories including Navigation menu overall, Search, Browse, Radio, Your Music, Customization, and Error messages. These categories contained evaluation questions such as "are the user's past keywords saved? Do the icons relate to the labels in the sub navigation?" and so on. Our entire Heuristic Evaluation can be found in the Appendix.

Each team member explored the app and answered the evaluation questions with a "yes" or "no" as applicable. After compiling all three evaluation forms, we found that the areas that were least

effective in terms of functionality and clarity included finding music through the Browse page, consistency between terminologies, and using the hamburger icon to navigate and explore the app.

Refining Research Questions

With the information from the Heuristic Evaluations, we then brainstormed a list of possible research questions which would reflect how we design our usability test later on. An example of our list of questions is below:

- How easily can users create a radio station?

- Can users distinguish between creating a radio station and creating a playlist?

- How easily can users create a playlist?

- How easily can users add songs to a playlist and share the playlist with a friend?

- How many clicks on average does it take the user to access their recommended songs?

- Can users locate and play a song they saved in their playlist?

- Do users expect instant access to recommended music on the frontpage of Browse?

- Do the icons used in the user interface of Spotify Free mobile App help users to better implicate the according functions of the terms?

- Do Spotify users use the social features?

- What the social features of a music player would bring to users beyond music accessibility?

- How often do users refer to the navigation menu to accomplish certain task when there are alternative paths?

These questions started off as too specific and task-related, however we focused on what all of the questions had in common. An overarching theme throughout these questions centered around the user's ability to find new music through various methods including Browse, Radio, and social features. Going back to Spotify's mission to make music as a whole accessible to their users - we decided to focus our usability study on tasks that show us how users find, share, and music and playlists, and how users customize their content. With this area of focus, we were able to evaluate where the Spotify mobile app could be improved to make these core processes easier for their users.

Participants & Screening Questions

For the study, we recruited a total of seven participants. Four participants are female, three are male, and all participants are college students at the University of Washington between the ages of 18-25 years old. All of the participants chosen met our pre-screening requirements and listen to Spotify on their mobile devices an average of 2-4 hours per day. Six participants use an iPhone and one participant uses an Android device.

Our target audience for Spotify Mobile are college-aged students who are familiar with the app, but do not necessarily know about every feature Spotify mobile has to offer. Due in part to our screening questionnaire and environment, all of our study participants matched the criteria to be the target audience.

Pre-Test Questionnaire

Before starting the task walkthroughs, we asked each participant to answer a few questions to get an idea of their experience with Spotify mobile. Questions asked included how the participant would rate the ease of use of Spotify mobile on a Likert scale of 1-10, 10 being the most difficult; what is the participant's favorite features on Spotify; what are the other music streaming services the participant uses, if any; and in what situations does the participant use Spotify mobile.

The pre-test questionnaire took an average of 4 minutes to complete per participant.

Task Design & Scenarios

Since we wanted to measure the ease and efficiency of Spotify's mobile features, we broke up the usability test into six tasks - each testing out a different action that a user might do to discover new music through Spotify recommendations, radio, and social circles/friends. Some tasks contained subtasks that further tested out the same feature, or otherwise was an action that would naturally follow in the task order. Follow up questions were asked depending on the actions of the participant during the task.

For each task we started by providing the participant with an applicable scenario to provide context and observe the participant's natural response. From our screening questionnaire, we were able to determine that most users use Spotify mobile when they are walking to/from a destination, working out, or at a social event without access to their laptops or tablets.

Task 1

Scenario: You are taking a bus home and you want to listen to something new that's not in your playlist.

Task: Find a recommended playlist by Spotify that you are interested in and play a song in the playlist

Task 2

Scenario: You really enjoy listening to a specific artist and you want to listen to a similar artist. Please go back to the Navigation page and…

Task: Discover a similar artist and play a song
Follow up question: What content do you expect to be under each of these subheadings? ("suggested for you based on…" and "because you listened to…")

Sub Task: Now follow the suggested artist

Follow up question: What type of content would you expect to be notified about

Task 3

Scenario: You have a favorite artist that you listen to when you go on a run. This time, you want to listen to a radio station with songs from that artist. Please start at the Navigation page and

Task: Start a radio station on an artist that you have recently played

Task 4

Scenario: You want to rearrange the order of the songs in one of your playlists for a party at your house tonight. Please start at the Navigation page, open a playlist and

Task: Change the order of the first and second song.

Sub Task 1: You really like the first song in the playlist, go ahead and save it

Sub Task 2: Navigate to where the location of the saved song.

Task 5

Scenario: One of your friends has had good music suggestions and you want to take your friendship to the next level on Spotify

Task: Starting from the Navigation page, follow a friend on Spotify.

Follow up question: Now that you are following a friend, what type of content would you expect to be notified about?

Sub Task: Play a public playlist from your friend's Spotify music collection

Task 6

Scenario: You are having a party tonight and want to create a new playlist.

Task: Please start at the navigation page and create a new playlist and include a song of your choice.

Sub Task: Your friend is co-hosting this party with you and you would like to share this playlist with him/her.

Post-Task Questionnaire

Outside of sub-tasks and follow up questions, each task was followed by a general post-task questionnaire. Questions included whether or not the participant completes the task, the time it took to complete the task, and on average if it took the participant more, less, or average time to complete than they expected.

Each post-task questionnaire took an average of 1 minute to complete.

Post-Test Questionnaire

The purpose of the post-test questionnaire was to debrief the entire test with the participant and give the participant time to talk through any particular task or challenge. The questions included how the participant rates the ease of use of Spotify mobile on a Likert scale of 1-10, 10 being the most difficult; what tasks the participant enjoyed/did not like, if any; what the participant likes/dislikes about Spotify's mobile app; and if there were any new features discovered through the usability test.

On average, the post-test questionnaire took 5 minutes to complete for each participant.

Test Environment

Our usability tests were held at the Allen Research Commons at the University of Washington. The Allen Research Commons is an open space on the bottom floor of a library containing multiple tables, booths, and group work areas. This environment was chosen for usability testing because it is an area where students often work in groups, therefore the noise level is comfortable for people to talk at a normal volume. We wanted our participants to be able to talk

freely and openly during testing without worrying about being too loud in a library setting.

Researcher Roles & Data Collection

For each usability test, we had one moderator, one quantitative notetaker, and one qualitative notetaker.

Prior to running the usability tests, we had set up a Google Form containing the pre-test questionnaire, 6 post-task questionnaires, and the post-test questionnaire. The quantitative note-taker filled out one Google Form for each participant.

We also used a usability tool called Lookback on the testing device. Lookback recorded a screen-captured video of the user going through the screens for each task. After uploading the video for each participant, Lookback automatically marked timestamps for when the user switched screens. This allowed us to collect quantitative data on the time it took the participants to complete each task.

Qualitative notes were collected via the think-aloud protocol conducted on each participant. The qualitative notetaker listen and typed up everything the participant said out loud and also watched the testing device marking down the interactions.

Data Analysis

Data Compiling

We compiled our qualitative and quantitative raw data into a single Google Doc, attached in Appendix, which is organized by tasks. The quantitative data includes the timing for task completion, variability for task timing, likert scale in pre-test and post-test questionnaires, and task completion evaluation in post-task questionnaires.

Affinity Diagram

We started our data analysis with reading through the compiled data file. Dividing the file into 3 portions, each team member read through the data and jotted down information discovered onto sticky notes. We ended up with putting all the sticky notes randomly on the wall, and grouping them into different themes: unclear terminology, confusing navigation, the differences between participants' expectation and reality, struggles to find personalized new music and struggles to find recommended artists.

Analysis Approach

Based off the themes we summarized through affinity diagraming, we went through the compiled raw data again, attaching evidences corresponding to each theme, both qualitatively and quantitatively.

Result Summary
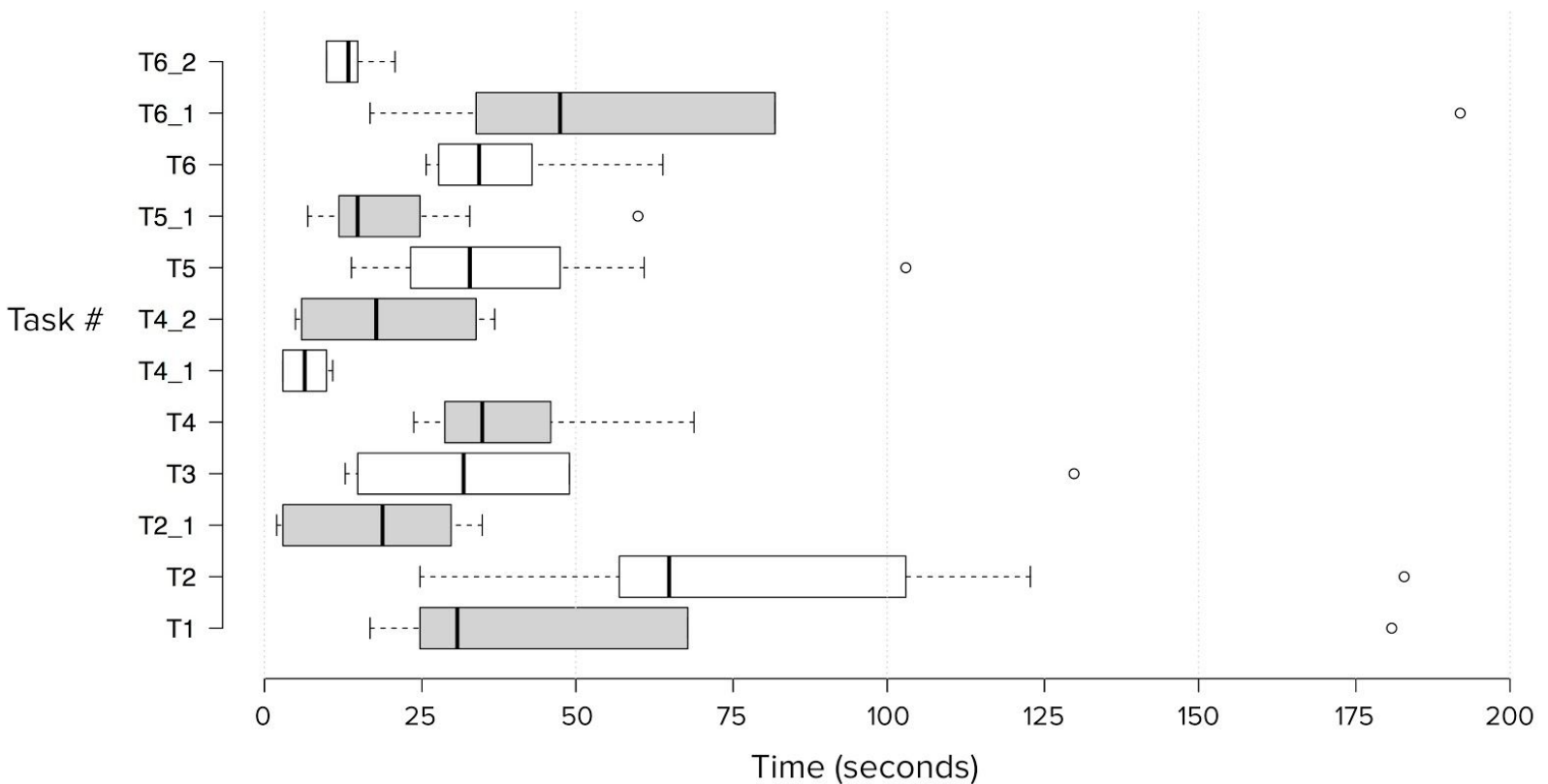
1. Unclear Terminology

The Spotify mobile App contains terminologies that are unclear in accordance with the outcomes of those actions.

- "Save" a Song:
  - Participants struggled determining if this action would save the song locally to the phone, or to a playlist.

- ○ 4 out of 7 participants were unsure where the saved songs were stored when asked a follow up question about saved song location

- ● "Share" a Playlist vs. "Make Collaborative" a Playlist:

  - ○ Participants were unsure about the differences between "share" and "make collaborative."

  - ○ Participants were unsure about the what will be brought to them if they make a playlist collaborative.

  - ○ 5 out of 7 participants questioned the corresponding results of these two options

- ● Music Recommendation Titles:

  - ○ There are several sections under Spotify's recommended music labeled with different titles, and some of the titles seemed to be repetitive and overlapping.

  - ○ Participants were asked to describe what contents they would expect to see under "Because You listened to…" and "Suggested for You based on…,"

  - ○ 6 out of 7 didn't provide us confirm explanations about the differences between those two titles

2. Confusing Navigation

The information flow under navigation menu makes some features hidden and hard to find.

- ● Overuse/isolated use of Search Bar

  - ○ Search is used the most when a user is not sure where or how to find a friend, artist, song, or playlist.

  - ○ Search bar was used to look for features that were present elsewhere on the app (ex. Personal profile, recommended songs)

- ● Hidden "Saved" Songs:

  - ○ Depending on how the user interpreted the "save" function, users were unaware that saved songs were included under the "Songs" section in "My Library"

  - ○ 4 out of 7 participants took multiple tries to find where saved songs were located in the app

3. User's Expectations of Features vs. Reality

Expected Notifications from Friends

- After following a friend on spotify, participants expected to either be notified about, or be provided with a way of viewing new playlists and songs that their friend added to spotify.

  - 7 out of 7 participants expected Following a Friend on Spotify to bring them notifications of friends' activities, such as new playlists they created, artists they followed, songs they liked and etc. However, none of those expected social notifications are in the current version of Spotify Mobile.

Expected Notifications from Artists

- After following an artist on spotify, participants expected to either be notified about, or be provided with a way of viewing the artist's new song release, albums and potentially concerts that are nearby.

  - 7 out of 7 participants expected following an Artist on Spotify to bring them notifications of artists' activities, such as new release, playlists created, concerts schedule and etc.

Expected to Find Recommended Music on Browse or Home Page

- Users expected recommended playlists and songs to be in the browse page and the home page instead of inside the subcategory of Discover

  - 5 out of 7 participants didn't find top recommended music in Discover without hints from the moderator

4. Struggles to Find Personalized New Music

Random Titles for Personalized New Music

- Once the users found the Discover page, many of them expressed that there is a large quantity of recommended music, but they were not sure what the differences were between similar recommendations

  - 3 out 7 participants went for "Just for You" section on top of the Home page than "Top Recommendations for You" in Discover when asked to play a recommended playlist by Spotify

Findings

Social Feature

Notifications

After asking the participants what they expect to happen after following a friend or an artist, 100% of participants expected to be notified about an artist's new releases. 3 out of 7 participants expected to notified when an artist is playing a concert near by. 2 participants expected to be notified when an artist's song or album is trending, or hits the top charts.

The participants then found that there were no notifications about any of the above unless a post is created or sent directly to another user. While 2 out of 7 participants did mention they prefer not to receive many notifications, most participants expressed interest in knowing what their friends were listening to within the Spotify app versus juts through the Facebook integration.

Hidden location of Friend's Profiles

When asked to follow a friend on Spotify, 3 out of 7 participants started off by searching for a specific friend in the search bar. Once 2 out of 7 participants were prompted to try another way to follow a friend, it took an average of 4 clicks to access a friend's profile from the navigation menu. Most of the participants went through each item in the navigation menu before reaching their personal profile to access their friends list.

Terminology

When asked to first share a playlist, then make the playlist open to friends to add to, our participants were confused with the terminology presented in the edit menu. Spotify has two actions: Share Playlist and Make Playlist Collaborative. Share is meant to have multiple functions including sharing the playlist on social media as well as opening up the playlist for a friend to add to it once it becomes collaborative. Making a playlist collaborative allows the user to then share the playlist with a friend to add to it. These two actions caused confusion for the participants and 6 out of 7 struggled with adding a friend to a playlist. In a follow up question the participant that did not struggle had performed this action before, while another said that they couldn't "figure out how to add someone to the playlist".

Finding Personalized New Music Can be Difficult and Overwhelming.

Another major finding that we revealed is that finding personalized new music can be difficult and overwhelming, which contradicts Spotify's mission, "…the right music is always at your fingertips." By personalized new music, we are referring to recommended music suggested by Spotify based on users' personal music preferences, which could be new releases from artists that users followed, playlist containing songs in the same genre with the ones in users' library and etc.

Hidden Location of Discover

Spotify has a specific section called Browse, as shown in **Figure 1**, as a main option under the navigation menu. However, the quickly accessible music on the Browse page are not unique music recommendations for different users; most of the contents are either general new released music or music in trend. In fact, Spotify does have a section called Discover for personalized new music for different users; unfortunately, it has been placed in a spot, which seems not to be designed for quick access, as shown in **Figure 2**, in the current version of Spotify.
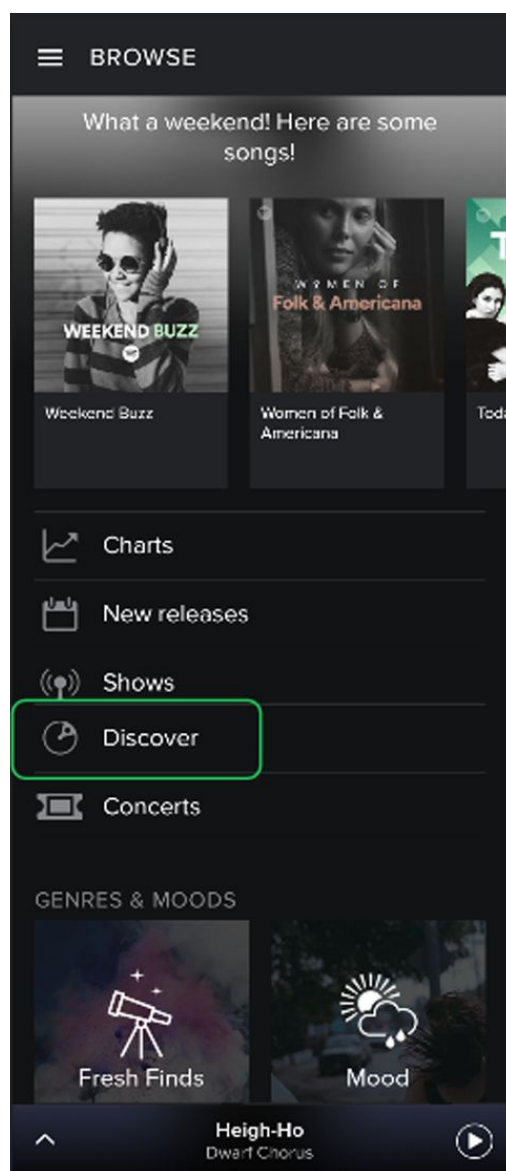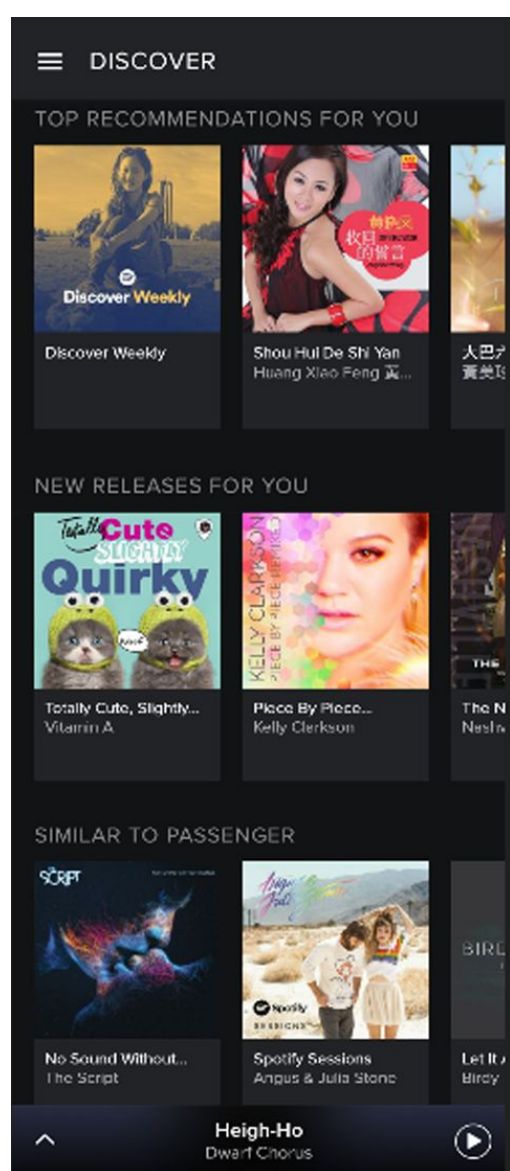
Figure 1

Figure 2

We also asked our participants to play a recommended playlist by Spotify, hoping to see where they would expect to find recommended music. As a result, 3 out of 7 participants reached the "Just for You" section on top of the Home page, which owns the same new music from Browse page in a slightly different layout F. In addition, 2 out of 7 participants took minutes to explore tabs on the navigation menu, searching for the keyword "recommended/recommendation" on top of the hidden discover menu.

Vague Titles for Music Recommendation Categories

We also uncovered that some titles for recommended music categories in Discover need more clarifications on the differences of the contents under those titles. For example, Spotify labeled recommended music based off artists that users listened with "Because You Listened to…" and "Suggested for You Based on…," as shown **in Figure 3**, and we asked our participants for their opinions on the differences between the contents under each of the two titles. We found that 6 out of 7 participants didn't give us a confident explanation, with 4 out those 6 guessing that wording could be the only difference.
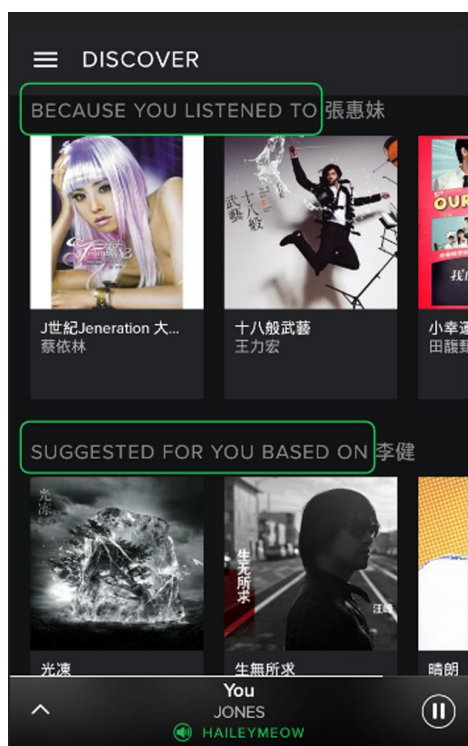

Figure 3

Redesign Recommendations

First, we recommend changing the navigation style from the hamburger menu to a tab bar. The navigation style dominates the Information Flow/Organization in Spotify Mobile, so it is important that it is easy to use and takes up less space than necessary. We found that users revisited the hamburger menu and selected the same page multiple times because the menu was always hidden. Users could not remember what was in the navigation menu so they overused it. A Tab bar would show the user that all of the content that they want is right there on the screen.

Second, we suggest making the "Discover" content the first page seen when searching for music instead of the current Browse page. "Discover" is more relevant content to the user versus the current Browse page and it reduces number of taps t takes to get to relevant content.

Lastly, we would want to create a new page just for a "Social News Feed" where users can see information about people they are following without relying on notifications. A Social News Feed also provides a new way of finding music - an action that is very important to Spotify and Spotify's users.
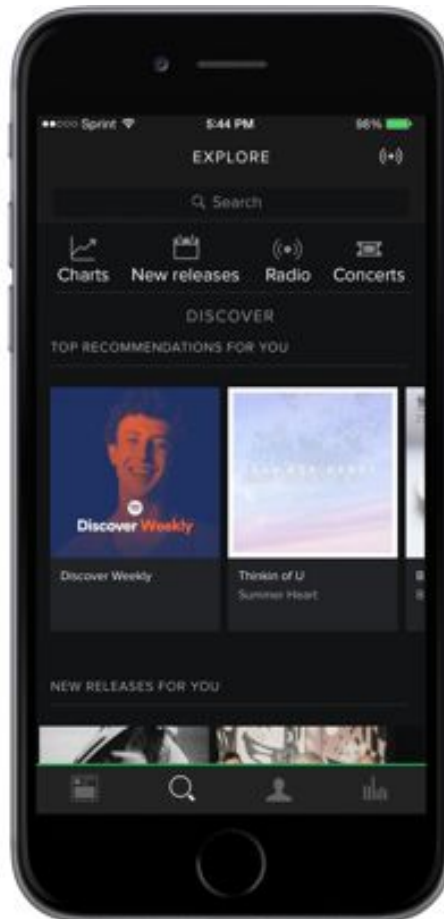
Redesign Showcase

Interactive Mockup available at: https://invis.io/AN6I0FXSZ
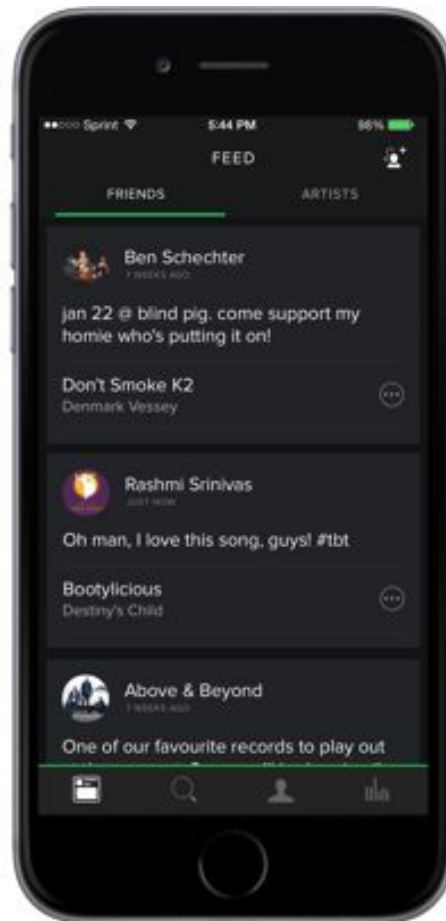
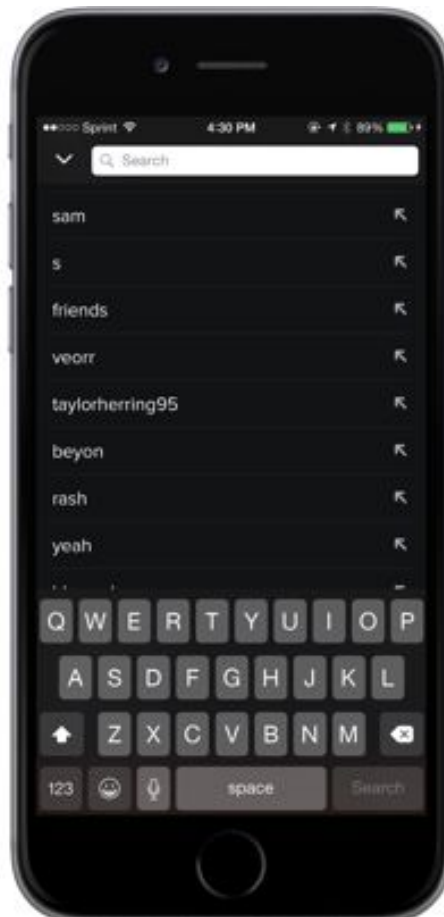Browse friends' and artists' posts.

See what your friends and favorite artists are listening to.

Search for anything.

Explore all of Spotify's suggestions in one place.

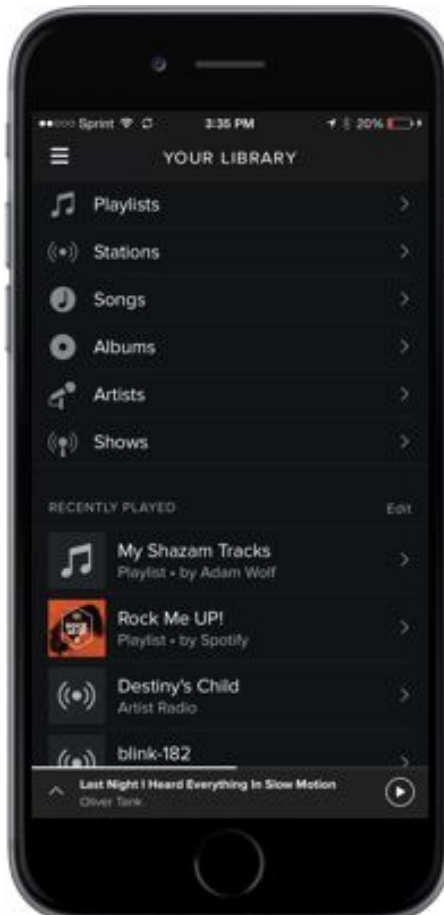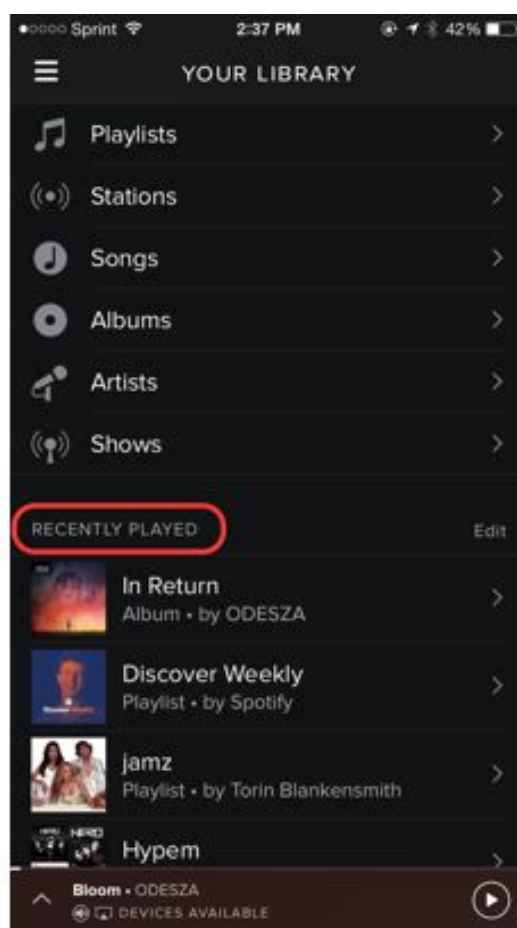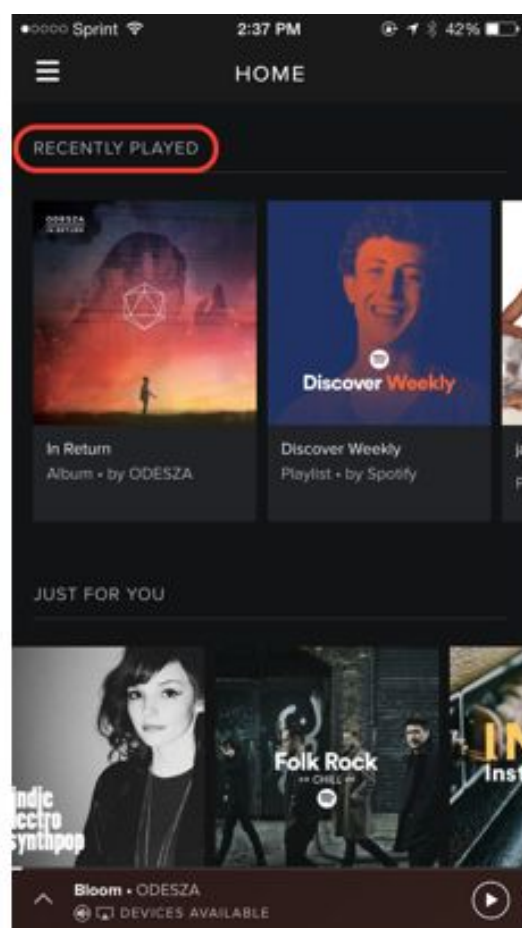Past searches are still quickly available.

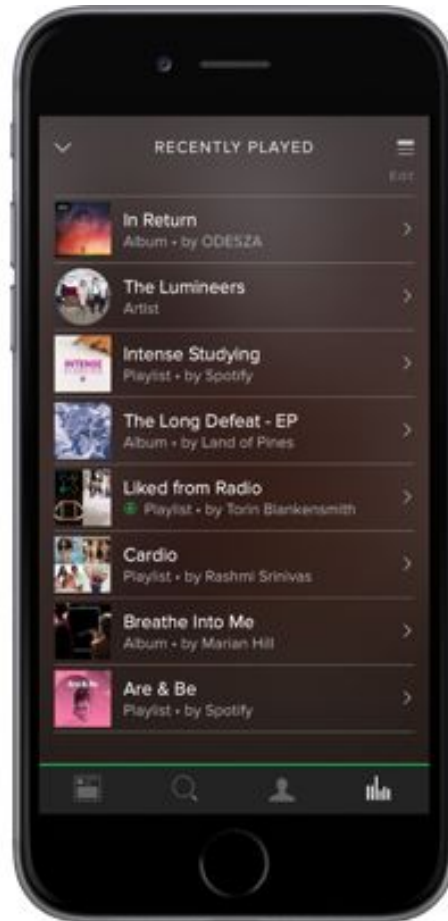All of your favorites music in one place.

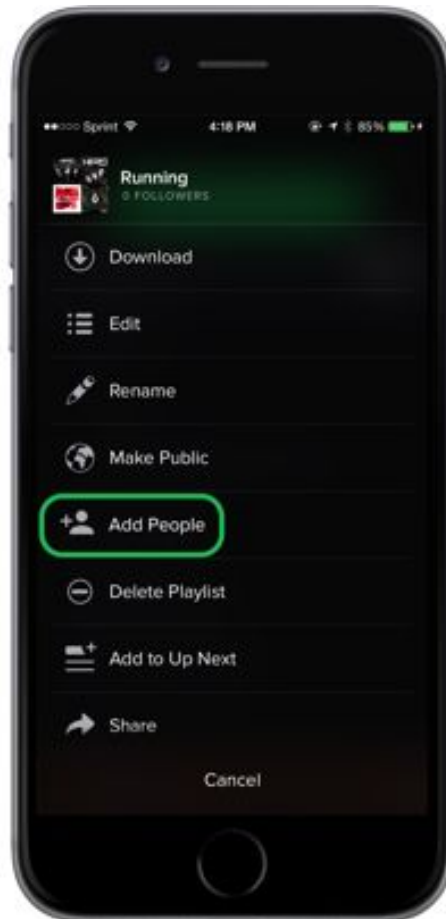Playlists are 1 tap away.

Less white space, more content.

Remove redundant content.

Recently played content where you need it the most.

Browse your history even when you're not listening to a song.

Simplified playlist collaboration.
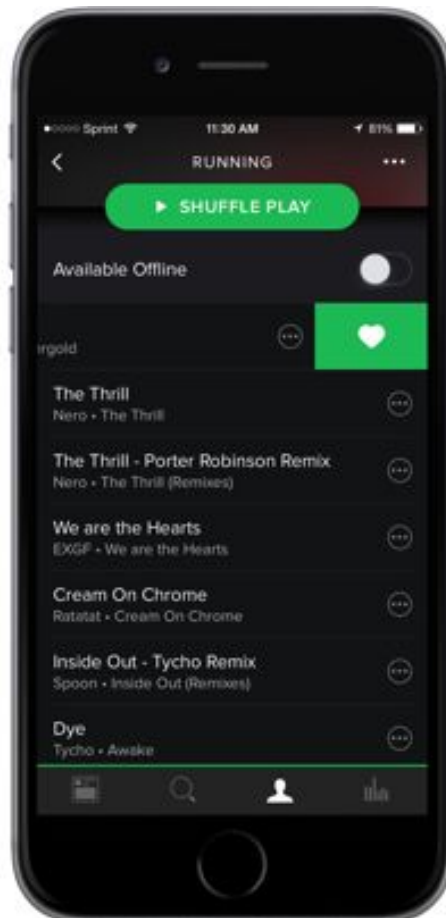
Favorite means favorite.

No more: "is it saved offline, or to a playlist?"

Appendix

Heuristic Evaluation

Summarized Group Results (each point refers to one vote)

Category by section	Yes	No
Navigation Menu - Navigation Language		
Is the meaning of the word used and the associated action in accordance?	2	1
Do the navigation menu words and associated icons convey the same meaning?	1	2
Are the menu items presented on the Free version same as on the Premium version?	0.5	2.5
Search		
Are the user's past search keywords saved?	3	
When does search provide you the right results?	1	2
Are the results organized in an order similar to your search? eg. Artist first when searching for an artist.	2.5	0.5
Browse		
Can the user access a recommended song on the main browse page?		3
Is the meaning of the word used and the associated action in accordance (chart, new releases, discover, concerts)?	1	2
Do the sub navigation menu words and associated icons convey the same meaning?	1	2

Radio		
Does the search function supply correct results when the keyword is misspelled by 1-3 letters?	1	2
Can the user view his/her recently played music?	3	
Does the type of radio play music that is expected? eg. Artist radio plays songs by that artist, song radio plays related songs?	3	
Can the user find recommended radio?	2	1
Your Music		
Is it easy to access recommended songs?		3
Can you see all your saved playlists, radio, songs, albums & artist in collection?	3	
Are album titles listed alphabetically by album title?	3	
Customization		
Are radio options custom to the user?	1	
Can the user find how to follow artists?	1	
Can the user find how to following friends?	1	
Can the user easily reorganize songs and playlists?		1
Can the user easily add a song on the fly?		1
When the user is listening to a song, can the user add it to a new/existing playlist?	1	
Errors		

Is there verification when deleting content?		3
Is there a message that alerts the user when there is no connection?	3	

Usability Test Kit

Screening questions

1. How many hours/day on average do you listen to music on your mobile device?
   a. _____ hours/day
   Moderate user is defined as someone who listens to music on their mobile device for 2-3 hours

2. Have you used Spotify Mobile before?
   a. Yes
   b. No
3. Have you used any other music streaming services before? If so, name the services you use.
   a. No
   b. Yes. _____

Consent form

I agree to participate in the study conducted by Torin Blankensmith, Rashmi Srinivas, Hailey Yu.

I understand that participation in this usability study is voluntary and I agree to immediately raise any concerns or areas of discomfort during the session with the study administrator.

Please sign below to indicate that you have read and you understand the information on this form and that any questions you might have about the session have been answered.

Date: 2/22/2016

Please print your name: _____

Please sign your name: _____

Thank you!

We appreciate your participation.
Feel free to contact us if you have further question.
Hailey: xc1994@uw.edu
Torin: torin.blankensmith@gmail.com
Rashmi: srinir@uw.edu

Facilitation Script

Initial moderator script

Hi, _____. My name is _____, and I'm going to be moderating you through this session today. Before we begin, I have some information for you, and I'm going to read it to make sure that I cover everything. You probably already have a good idea of why we asked you here, but let me go over it again briefly. We're asking people to test specific features in Spotify Mobile to ensure that they work as intended. The session should take less than half an hour.

The first thing I want to make clear right away is that we're testing the application, not you. You can't do anything wrong here, don't worry about making mistakes. As you use the app, I'm going to ask you as much as possible to try to think out loud: to say what you're looking at, what you're trying to do, and what you're thinking. This will be a big help to us. Also, please don't worry that you're going to hurt our feelings, we did not design the app. We're doing this to improve Spotify Mobile, so we need to hear your honest reactions.

Pretest Questionnaire

1. On a scale from 1-10, 10 being the most difficult, how would you rank the ease of use of Spotify mobile based on your prior experience?
    a. #1-10
2. In what situations do you listen to music on your mobile device?
    a. _____

3. What other music streaming apps / services do you use?
    a. _____
4. Think of _____ streaming service that you use. What similar features/functionality do you use on spotify and _____ service.
    a. (if they need help) Creating playlists, Sharing music with friends, Radio, Browse
5. What unique features do you use on spotify?

Task Walkthrough Script

*Order of the tasks (1, 2, 3, 4...etc.) will vary between participants

Please begin by opening up the side menu. We will refer to this screen as the Navigation page from now on. You will be returning to this screen after completing each of the tasks.

You are taking a bus home and you want to listen to something new that's not in your playlist. Starting at the Navigation page, please.

1. Find a recommended playlist by Spotify that you are interested in and play a song in the

    playlist

You really enjoy listening to _____ artist and you want to listen to a similar artist. Please go back to

the Navigation page and

2. Discover a similar artist and play a song

    i. What content do you expect to be under each of these subheadings?

        ("suggested for you based on..." and "because you listened to...")

    b. Now follow the suggested artist

    i. what type of content would you expect to be notified about

You have a favorite artist that you listen to when you go on a run. This time, you want to listen to

a radio station with songs from that artist. Please start at the Navigation page and

3. Start a radio station on an artist that you have recently played

You want to rearrange the order of the songs in one of your playlists for a party at your house tonight. Please start at the Navigation page, open a playlist and

4. change the order of the first and second song.

    a. You really like the first song in the playlist, go ahead and save it

    b. Navigate to where the location of the saved song.

One of your friends has had good music suggestions and you want to take your friendship to the next level on Spotify

Starting from the Navigation page:

5. Follow a friend on Spotify.

    i. Now that you are following a friend, what type of content would you expect to be notified about?

    b. Play a public playlist from your friend's Spotify music collection

You are having a party tonight and want to create a new playlist. Please start at the navigation page and

6. create a new playlist and include a song of your choice.

    a. Your friend is co-hosting this party with you and you would like to share this playlist with him/her.

Successful Completion Criteria

We would consider the task successfully completed if participants achieved the desired outcome for each task based on binary success (the task was either completed, or not). Should the participant directly ask the moderator for help, the task would be counted as not complete. We

will not have time limits for each task, but we will take the number of mistakes into account as another quantitative index. Errors are defined as any actions that deviates from the target end page specified in the task. For example, if the participant taps the back button, or an incorrect menu item, both of those actions would count as errors.

Post-task questionnaire

1. Compared to another music streaming services you use, how would you rank the amount of time that it took to complete this task?
   a. Less
   b. Average
   c. More
2. Did this task take you less than, average, or more time to complete than expected?
   a. Less
   b. Average
   c. More

Post-test questionnaire

1. What do you like about Spotify mobile?
   a. _____
2. What do you not like about Spotify mobile?
   a. _____
3. Were there any new features you discovered through this test?
   a. No.
   b. Yes. _____
4. What tasks did you enjoy the most, if any?
   a. _____
5. On a scale from 1-10, 10 being the most difficult, how would you rank the ease of use of Spotify mobile based on your prior experience?
   a. #1-10
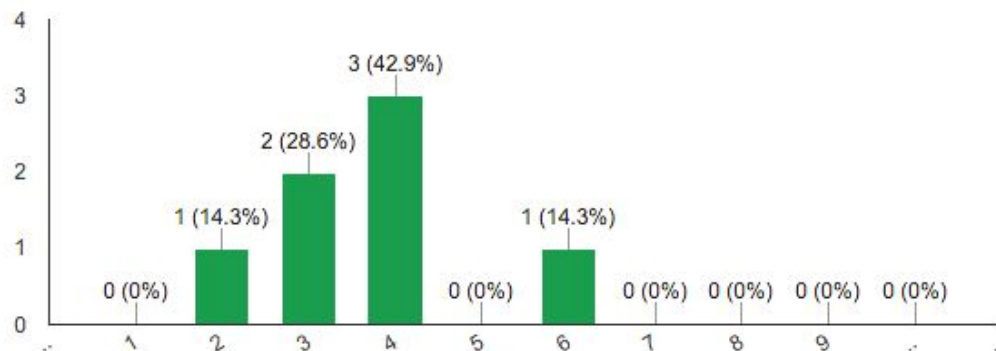6. Is there anything on our end that we could have improved?

Task Analysis

Pre-test / Post-test Ease of Use Comparison

Pre-tests

1. On a scale from 1-10, 10 being the most difficult, how would you rank the ease of use of Spotify mobile based on your prior experience?
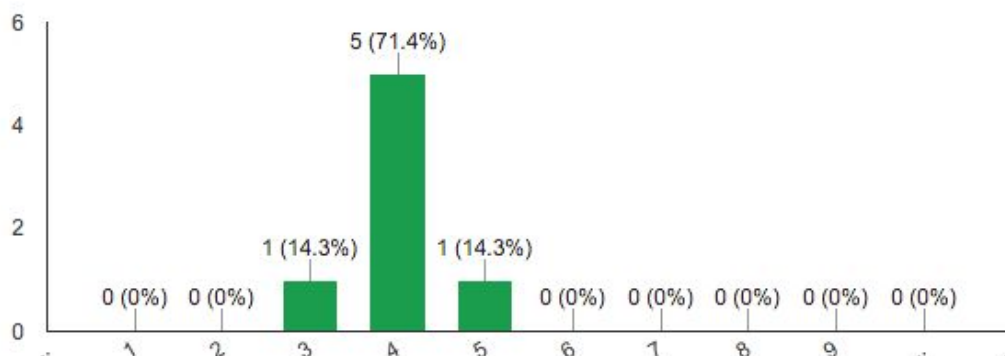(7 responses)

Post-test:

1. On a scale from 1-10, 10 being the most difficult, how would you rank the ease of use of Spotify mobile based on your prior experience?
(7 responses)

	Other Music Streaming/Apps	When Listen to music	Spotify's Unique Features
P1	Soundcloud	Studying, Walking to class, Biking to school	Music offline
P2	Apple Music, Pandora, Spotify Desktop	Studying, Commuting to school, Dance Practice, Party, In the Car	Follow friends and artists, Reorder playlists
P3	Soundcloud, Itunes	Walking to class, Studying	Music offline
P4	Pandora, Soundcloud, Youtube	Walking to class, Studying, Web Browsing	Music offline, Find mainstream artists
P5	Pandora, GrooveShark, Soundcloud	Walking to class, Lab, Studying	No ads in Spotify Premium
P6	Soundcloud, Pandora	Walking to class, Studying	More accessible to music collection
P7	NetEase, YoutubeRed	Commuting to school, Commuting to home Studying	N/A

Timing Analysis
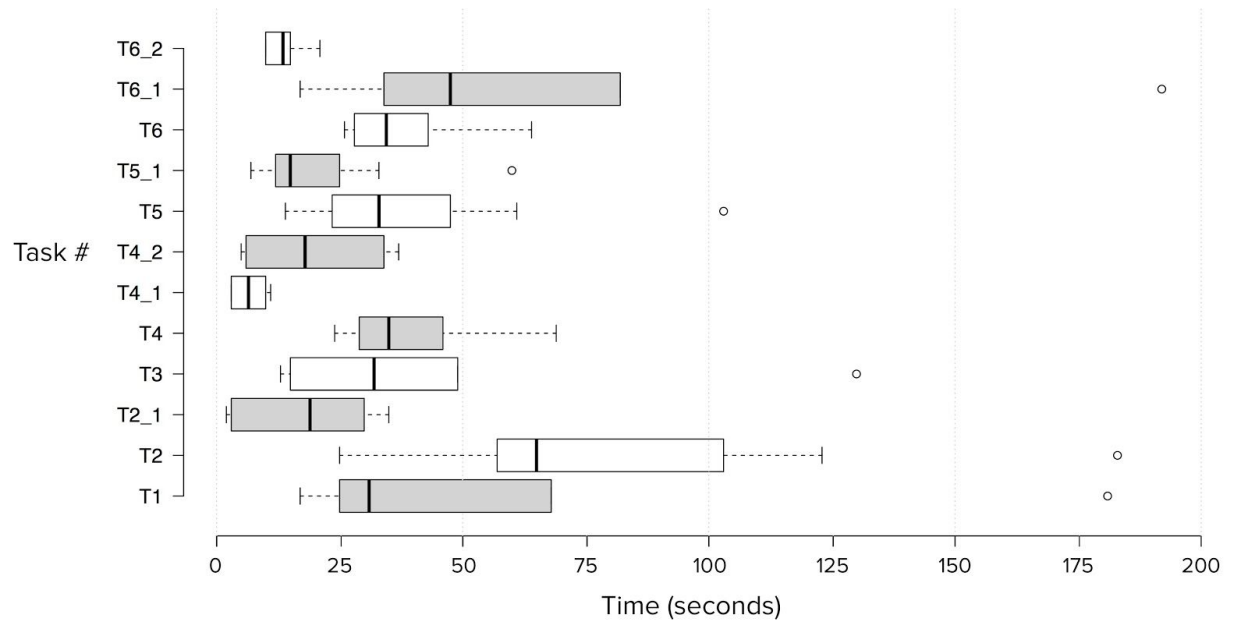
Key

T1:   Finding a recommended playlist
T2:   Discover new artists
T2_1: Follow an artist
T3:   New radio station from a recently played artist
T4:   Switch the first and second song in a playlist
T4_1: Save the first song in the playlist
T4_2: Navigate to the location of the saved song
T5:   Follow a friend on spotify
T5_1: Play a public playlist from friend
T6:   Create a new playlist add a song
T6_1: Share the new playlist with a friend
T6_2: Allow the people who received the shared playlist to add songs

	T1	T2	T2_1	T3	T4	T4_1	T4_2	T5	T5_1	T6	T6_1	T6_2

Upper whisker	68	123	35	49	69	11	37	61	33	64	82	21
3rd quartile	68	103	30	49	46	10	34	47.5	25	43	82	15
Median	31	65	19	32	35	6.5	18	33	15	34.5	47.5	13.5
1st quartile	25	57	3	15	29	3	6	23.5	12	28	34	10
Lower whisker	17	25	2	13	24	3	5	14	7	26	17	10
Nr. of data points	6	7	5	6	5	6	6	7	7	6	6	6

Task 1: Recommended Playlist

Find a recommended playlist by Spotify that you are interested in and play a song in the playlist

Timing (in seconds)

Part I: Find a recommended playlist by Spotify that you are interested in and play a song in the playlist

Participant & Group(expert, novice)	Time to Complete	Completed Successfully	# of Times with Prompt	# of Times Requiring Assistance
P1: Novice Android User	68	Yes	0	0
P2	Data Lost	Yes	1	0
P3	17	Yes	0	0
P4	25	Yes	1	0
P5	181	No	2	1
P6	35	Yes	1	0
P7	27	Yes (UEW)	1	0

UEW: Unexpected Way

Mean: 58.83
Median: 31
Range: 164
Standard Deviation:62.43

85.71% Completed Successfully
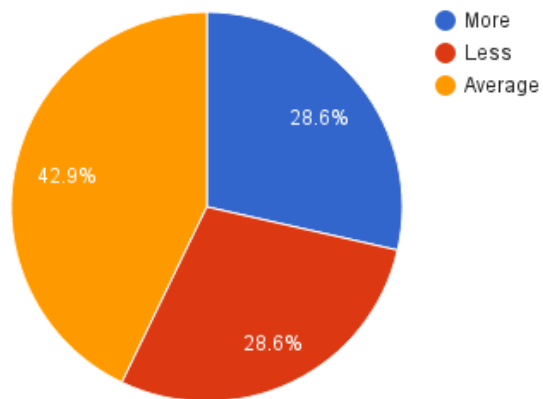28.57% Completed Successfully without Prompt

Coded Actions + Quotes

| Participant & Group (novice, expert)	Actions + Quotes
P1	● Just for you and Featured Items at the top of bowse ● Soundcloud has its own recommended section
P2	● Browse -> Your music -> browse -> discover ● "I don't know if those are specific to me. Are there other ways to get to recommendations?"
P3	● Browse -> discover directly
P4	● First thought of discover weekly ● Browse -> mood ->discover weekly
P5	● Your Library -> Home -> Your Library -> Radio -> Profile -> Nothing on the first pages saying recommended for you" ● After prompting mentioned Discover Weekly
P6	● Accidentally allowed the user pass by go to Home -> Just For you ● Easy to find because it was quick to scroll down on home to find
P7	● Accidentally allowed the user pass by go to Home -> Just For you ● Straightforward - home page has recommended songs on the first page

Post Task

P2: There are multiple places to find the same thing and never used discover normally. There is overlapping content and mentioned liking pandora more "Pandora is different, which is straightforward"

Task 1: Time Compared with Another Music App

- ● More
- ● Less
- ● Average

28.6%
42.9%
28.6%

Task 1: Time compared with Time Expected

- ● More
- ● Less
- ● Average

14.3%
42.9%
42.9%
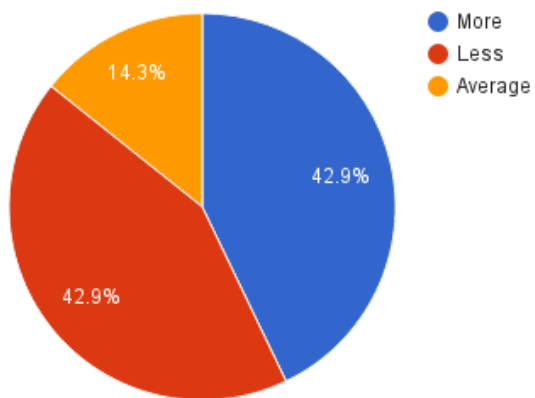
Task 2: Discover New Artists & Follow Artist

Discover a similar artist and play a song

Timing (in seconds)

Participant & Group(expert, novice)	Time to Complete	Completed Successfully	# of Times with Prompt	# of Times Requiring Assistance/
P1	52	Yes	2	0
P2	183	No	2	1
P3	62	Yes	3	0
P4	83	Yes	1	0
P5	25	Yes	1	0
P6	65	Yes	1	0
P7	123	No	2	2

Mean: 84.71
Median: 65
Range: 158
Standard Deviation: 52.71

71.43% Completed Successfully
0% Completed Successfully without Prompt

Coded Actions + Quotes

Participant & Group (novice, expert)	Actions + Quotes
P1	● Search -> Artist -> related artists ● Browse -> Genres, Prompted to "Discover an artist"

	● "Based on what to listen to directs you to an, which doesn't make sense" Would expect to to be taken to the artist, or a song. ● Content is not focused around the user
P2	● Browse -> "
P3	● Your Library -> Artist -> Related Artist. Prompted -> Aritst -> Radio ● Finding related artists should be through home or playlists where artists she likes are already included.
P4	● Your Library -> Recently Played -> Artist -> related artists -> Discover Weekly -> Just for you ● "Could Be kind of cool if you can pick from a list, and then have a discover page made for it"
P5	● Search -> Artist -> Related Artists
P6	● Home -> Just for you -> Browse -> Discover ● "Wouldn't I just go to just for you…?"
P7	● "I don't know where to find a similar artist" ● Expected it to be in My Library ● Needed prompting to "discover" songs

SubTask: Difference Between Because you Listened to & Based On

Coded Actions + Quotes

Participant & Group (novice, expert)	Actions + Quotes
P1	● NA
P2	● Didn't think there was a difference in the content between suggested for you based on and because you listened to
P3	● Similar to: something you might like because ● Mainly rephrased the the same content
P4	● Similar: same genre, sound / fell ● Because you listened / suggested: same sound, or different album on same artist

	● Suggested for you: related songs
P5	● "I have no idea what the difference is between them" ● Similar to: similar to pandora which is based on genre ● Because you listened: based off of recently played artists
P6	● Headings based on different artists ● Similar: Same as Because You Listened to
P7	● No Difference ● Title is not important for me; top recommendations are more important

SubTask: Follow Artist & Expectations

Timing (in second)

Participant & Group(expert, novice)	Time to Complete	Completed Successfully	# of Times with Prompt	# of Times Requiring Assistance
P1	35	Yes	1	0
P2	3	Yes	0	0
P3	Data Lost	Yes	0	0
P4	Data Lost	Data Lost	Data Lost	Data Lost
P5	2	Yes	0	0
P6	19	Yes	0	0
P7	30	Yes	0	0

Mean: 17.8
Median: 19
Range: 33
Standard Deviation: 15.12

85.71% Completed Successfully
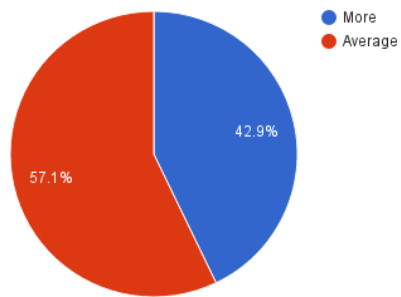
71.43% Completed Successfully without Prompt

Coded Actions + Quotes

Participant & Group (novice, expert)	Actions + Quotes
P1	● New songs, concerts near by
P2	● New releases, and popular artists ● Struggled to follow an artist instead of saving the album. Required swiping on the album header, clicking on the artist and then following the artist.
P3	● New songs, and albums: Expects to find similar artists through browse
P4	● Easily followed artist ● New releases and concerts near by
P5	● New releases
P6	● New releases
P7	● New releases, when a song hits the top charts and concerts near by ● hould let me find them easily…to track the artist instead of searching for them

Post Task

Task 2: Time Compared with Another Music App

Task 2: Time compared with Time Expected
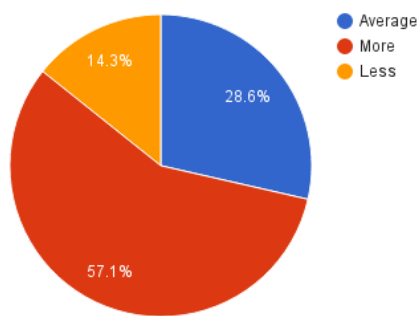
Task 3: New Radio From Recently Played Artist

Timing (in seconds)

Participant & Group(expert, novice)	Time to Complete	Completed Successfully	# of Times with Prompt	# of Times Requiring Assistance
P1: Novice Android User	15	Yes	2	0
P2	Data Lost	Yes	1	0
P3	30	Yes (UEW)	1	0

P4	13	Yes	1	0
P5	49	No	2	1
P6	130	No	2	2
P7	34	Yes	0	0

UEW: Unexpected Way

Mean: 48.2
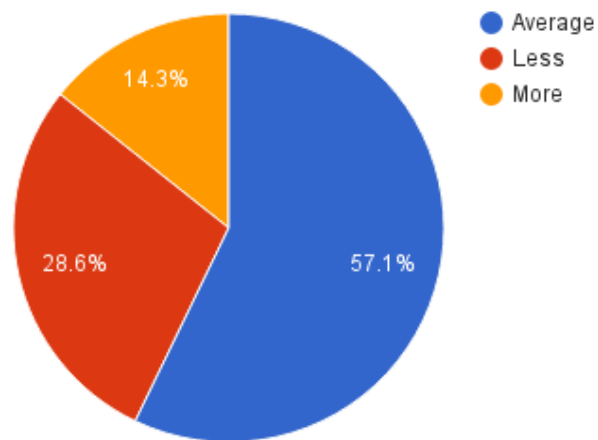Median: 34
Range: 117
Standard Deviation: 48.05

71.43% Completed Successfully
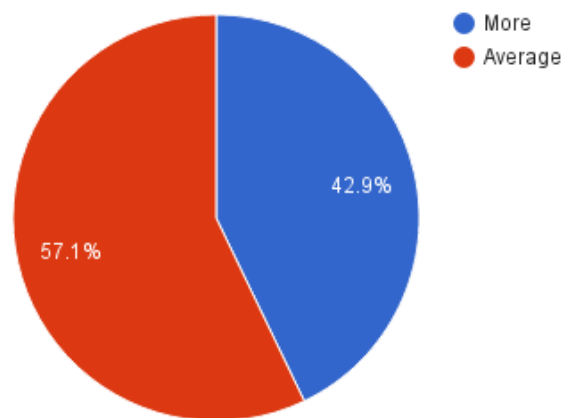14.29% Completed Successfully without Prompt

Coded Actions + Quotes

Participant & Group (novice, expert)	Actions + Quotes
P1	● Your Library -> Home -> Recently Played -> ... -> Radio
P2	● Radio -> search Name -> Recently Listened to stations. Prompting -> Your Library -> recently played -> ... -> radio ● Would be helpful if they had a history tab on navigation instead of going to your library
P3	● Your Library -> Recently Played -> Song -> ... -> Radio
P4	● Search -> artist. Prompted -> your library -> recently Played -> Song -> ... -> Radio
P5	● Radio -> existing radio station. Prompted -> Your library -> recently played -> song -> ... -> radio
P6	● Radio -> prompted -> browse -> recently played -> radio
P7	● Your library -> recently played -> song -> ... -> radio

Task 3: Time Compared with Another Music App

- Average
- Less
- More

14.3%
28.6%
57.1%

Task 3: Time compared with Time Expected

- More
- Average

42.9%
57.1%

Task 4: Switch the First and Second Song in a Playlist

Timing(in seconds)

Participant & Group(expert, novice)	Time to Complete	Completed Successfully	# of Times with Prompt	# of Times Requiring Assistance
P1: Novice Android User	35	Yes	0	0
P2	Data Lost	Yes	0	0
P3	24	Yes	0	0
P4	29	Yes	0	0
P5	Data Lost	Yes	0	0
P6	46	Yes	0	0
P7	69	Yes	0	0

Mean: 40.6
Median: 35
Range: 45
Standard Deviation: 17.87

100% Completed Successfully
100% Completed Successfully without Prompt

Coded Actions + Quotes

Participant & Group (novice, expert)	Actions + Quotes
P1	● Successful
P2	● successful

P3	● Edit button was easy to find, all action items are in intuitive places
P4	● First instinct was to hold down song to change the order
P5	● Successful
P6	● Discover weekly couldn't be edited -> navigated to another playlist
P7	● Successful ● Initially had trouble finding a playlist that would allow editing ● Discovered that not all playlists can be edited (e.g. Discover Weekly)

SubTask: Save first Song

Timing(in seconds)

Participant & Group(expert, novice)	Time to Complete	Completed Successfully	# of Times with Prompt	# of Times Requiring Assistance
P1	10	Yes	0	0
P2	Data Lost	Yes	0	0
P3	4	Yes	0	0
P4	3	Yes	0	0
P5	11	Yes	0	0
P6	3	Yes	0	0
P7	9	Yes	1	0

Mean: 6.67
Median: 6.5
Range: 8

Standard Deviation: 3.72

100% Completed Successfully
85.71% Completed Successfully without Prompt

Coded Actions + Quotes

Participant & Group (novice, expert)	Actions + Quotes
P1	● Swipe Gesture
P2	● Your music -> playlist -> song -> ... -> Save
P3	● ... ->save
P4	● Saved easily
P5	● Saved easily
P6	● Saved easily
P7	● "to me, save means download" ● "I still don't know what save is for?"

SubTask: Navigate to the Saved Song

Timing(in seconds)

Participant & Group(expert, novice)	Time to Complete	Completed Successfully	# of Times with Prompt	# of Times Requiring Assistance
P1	8	Yes	0	0
P2	Data Lost	Yes	0	0
P3	5	Yes	0	0
P4	37 (UEW)	Yes	1	0
P5	34	Yes	0	0

P6	6	Yes	0	0
P7	28	Yes	0	0

UEW: Unexpected Way

Mean: 16.2
Median: 8
Range: 29
Standard Deviation: 13.72
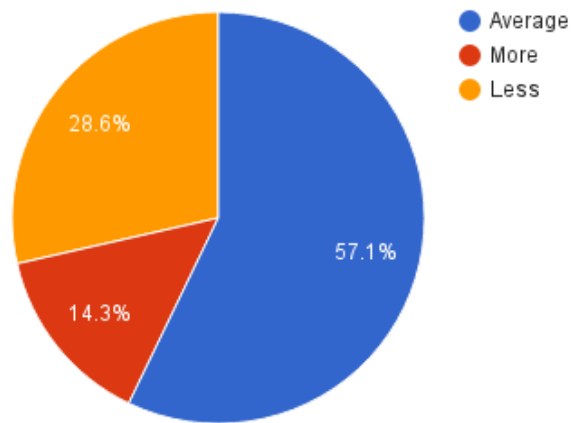
100% Completed Successfully
85.71% Completed Successfully with Prompt

| Participant & Group (novice, expert)	Actions + Quotes
P1	● Successful
P2	● "No clue" tried different tabs "Somewhere in my library"
P3	● Found easily
P4	● Album. Prompted -> Artist -> song :(unfortunately moved on to next task without completion)
P5	● Thought song would be saved in library, and then went to Songs
P6	● I was sort of expecting a separate "Saved songs" not just songs in general so I was surprised that it was there…like a favorites or something like that
P7	● Successful, but thought save meant download at first

Post Task

Task 4: Time Compared with Another Music App

Task 4: Time compared with Time Expected
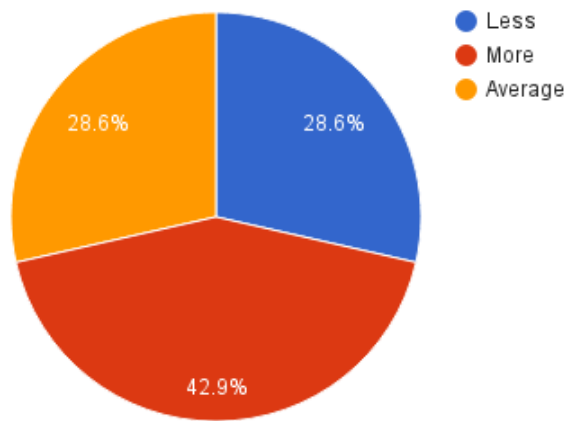
Task 5: Follow a Friend on Spotify

Timing (in seconds)

Participant & Group(expert, novice)	Time to Complete	Completed Successfully	# of Times with Prompt	# of Times Requiring Assistance
P1: Novice Android User	17	Yes	0	0
P2	33	Yes	1	0
P3	30	Yes	0	0
P4	14	Yes	0	0
P5	61	Yes	0	0
P6	103	No	2	1
P7	34	Yes	0	0

Mean: 41.71
Median: 33
Range: 89
Standard Deviation: 31.04

85.71% Completed Successfully
71.43% Completed Successfully without Prompt

Coded Actions + Quotes

Participant & Group (novice, expert)	Actions + Quotes
P1	● Successful
P2	● Took a while to find the friend (thought she could search for friends and music through same search bar)
P3	● Getting to the account in the first place was difficult
P4	● Ideally you should be able to choose if you want notifications and by who…like a feed
P5	● Not intuitive where to find friends list

P6	● "I don't think I'm looking in the right place"
P7	● Successful

SubTask: Expectations of Content / Notifications When Following a Friend

Coded Actions + Quotes

Participant & Group (novice, expert)	Actions + Quotes
P1	● NA
P2	● New uploaded playlists / songs ● Friend's recently played songs ● Doesn't like notifications
P3	● New playlists ● Friend's recently played songs
P4	● New playlist ● Songs a friend shares ● Should be able to choose if you want notifications and by who.. Like a feed
P5	● Songs a friend is listening to
P6	● Songs that friend likes ● Songs a friend shares...that they particularly want to put out there
P7	● recently plays a song ● share or post something on social media

SubTask: Play a Public Playlist from Friend

Timing (in seconds)

Participant & Group(expert, novice)	Time to Complete	Completed Successfully	# of Times with Prompt	# of Times Requiring Assistance

P1	7	Yes	0	0
P2	11	Yes	0	0
P3	60	Yes	0	0
P4	17	Yes	0	0
P5	15	Yes	0	0
P6	33	Yes	1	0
P7	13	Yes	0	0

Mean: 20.05
Median: 14
Range: 53
Standard Deviation: 19.65

100% Completed Successfully
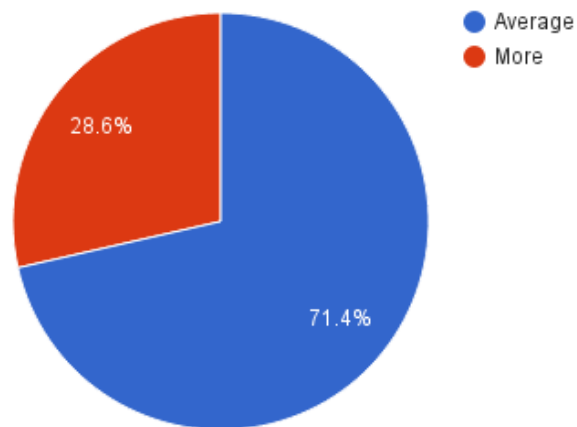85.71% Completed Successfully without Prompt

Coded Actions + Quotes

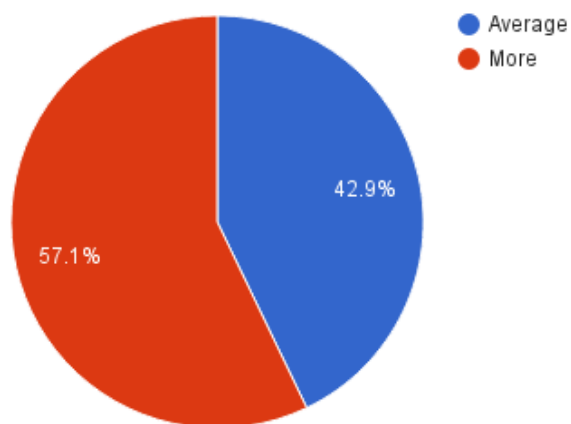| Participant & Group (novice, expert)	Actions + Quotes
P1	● successful
P2	● successful
P3	● successful
P4	● successful
P5	● successful
P6	● successful

P7	● Successful

Post Task

Task 5: Time Compared with Another Music App

Task 5: Time compared with Time Expected

Task 6 : Create a New Playlist Add a Song

Create a New Playlist and Add a Song

Timing (in seconds)

Participant & Group(expert, novice)	Time to Complete	Completed Successfully	# of Times with Prompt	# of Times Requiring Assistance
P1: Novice Android User	28	Yes	0	0
P2	Data Lost	Yes	0	0
P3	64	Yes	0	0
P4	31	Yes	0	0
P5	43	Yes	0	0
P6	38	Yes	0	0
P7: Novice Android User	26	Yes	1	0

Mean: 38.33
Median: 34.5
Range: 38
Standard Deviation: 14.09

100% Completed Successfully
85.71% Completed Successfully without Prompt

Coded Actions + Quotes

Participant & Group (novice, expert)	Actions + Quotes

P1	● Successful
P2	● Successful ● "annoying because there isn't a create a playlist option directly on the playlist page"
P3	● Successful
P4	● Successful
P5	● Successful
P6	● Successful
P7	● Successful

SubTask: Share this playlist with a Friend

Timing (in seconds)

Participant & Group(expert, novice)	Time to Complete	Completed Successfully	# of Times with Prompt	# of Times Requiring Assistance
P1	39	Yes	1	0
P2	Data Lost	Yes	1	0
P3	82	Yes	2	0
P4	192	No	1	1
P5	17	Yes	0	0
P6	34	Yes	1	0
P7	56	Yes	0	0

Mean: 70
Median: 47.5
Range: 175
Standard Deviation: 58.15

85.71% Completed Successfully
28.57% Completed Successfully without Prompt

Coded Actions + Quotes

Participant & Group (novice, expert)	Actions + Quotes
P1	● Created a general "collaborative" playlist but got confused
P2	● No data
P3	● Make collaborative "sounded promising" then backtracked ● Asked if she had to specifically share it with someone ● Confused about share versus collaborative ● Couldn't easily access where to add friend to playlist (add vs. share)
P4	● Can make it collaborative but don't know if they can add a specific person to it ● After prompted, still struggled to share playlist with one other person ● "Can't figure out how to add someone to the playlist" ● After prompted and told to "share", finally figured out how to share with a friend ● There is a make collaborative button but no follow up…not sure if share even makes playlist collaborative or just shares content with friend
P5	● Made playlist collaborative ● Used "send to" to share playlist ● Had previously used this share feature before
P6	● "Make collaborative…I don't know what that means"
P7	● When asked to share, questioned the difference between "send" and "post"

SubTask: Allow Your Friends to Add Songs to the Playlist

Timing (in seconds)

Participant & Group(expert, novice)	Time to Complete	Completed Successfully	# of Times with Prompt	# of Times Requiring Assistance
P1	15	Yes	1	0
P2	Data Lost	Yes	1	0
P3	21	Yes	0	0
P4	14	Yes	0	0
P5	10	Yes	0	0
P6	13	Yes	1	0
P7	10	Yes	1	0

Mean: 13.83
Median: 13.5
Range: 11
Standard Deviation: 4.07

100% Completed Successfully
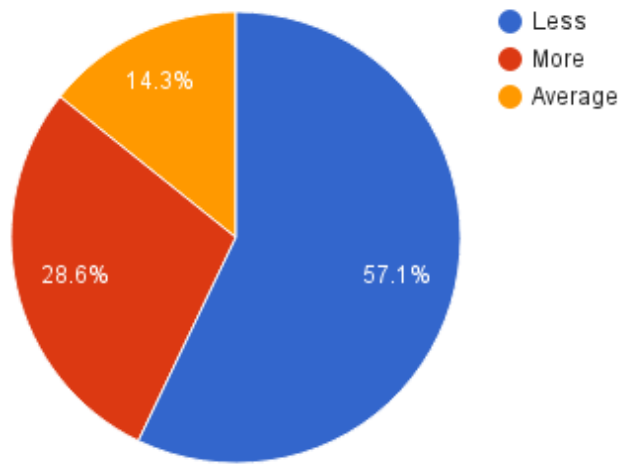42.86% Completed Successfully without Prompt

Coded Actions + Quotes

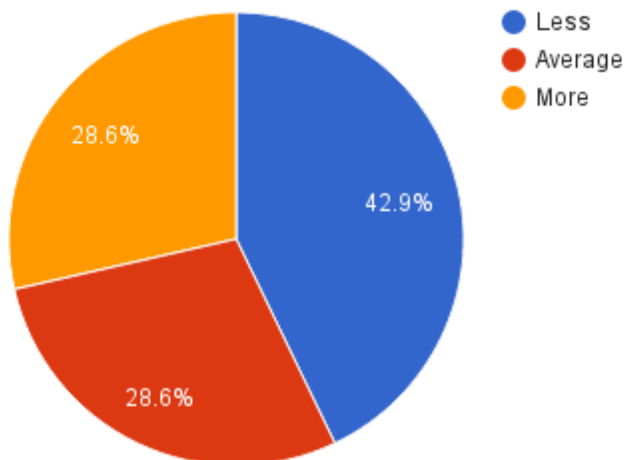| Participant & Group (novice, expert)	Actions + Quotes
P1	● Created a general "collaborative" playlist but got confused
P2	● No data
P3	● Make collaborative "sounded promising" then backtracked ● Asked if she had to specifically share it with someone

	● Confused about share versus collaborative ● Couldn't easily access where to add friend to playlist (add vs. share)
P4	● Confusion with previous sub-task
P5	● Confusion with previous sub-task
P6	● Confusion with previous sub-task
P7	● Found make collaborative easily

Post Task

Task 6: Time Compared with Another Music App

Legend:
- Less
- More
- Average

57.1% — 28.6% — 14.3%

Task 6: Time compared with Time Expected

Legend:
- Less
- Average
- More

42.9% — 28.6% — 28.6%

Post Test

	Like about Spotify	Not Like about Spotify
P1	Music Offline, Customize Playlists	Hard to find recommended music
P2	Customize Playlists	Navigation menu needs more subcategories
P3	Straightforward navigation	Share songs played on FB by default
P4	Link to FB to follow friends	Share a playlist vs. Make collaborate
P5	Music offline for transit	Radio
P6	N/A	Hard to follow friends
P7	N/A	Hard to find recommend music