Exploring the BTS Fandom Attributes and Different Factors Responsible For Cultural and Spending Behavior of Fans

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Introduction

The K-pop industry has grown at a rapid pace in the global music industry. According to Bloomberg Businessweek, K-pop international sales topped $4.7 billion in 2016, based on the statistics available from Korea Creative Content Agency **[Source 1]**. The 'BTS' (a K-pop boy band), also known as 'Behind The Scenes' or 'Bulletproof Boys', can be considered one of the most representative examples of K- pop's massive and notable success in the global music market, particularly in the mainstream music industry in the United States. They were #1 on the Billboard 200 Charts twice in 2018, and in both 2017 and 2018, they were awarded the Top Social Artist Award at the Billboard Music Awards, which honors the most influential artist on social media. In 2021, BTS finally topped the Billboard Hot 100 Charts with a catchy disco-vibed single "Dynamite." It is also worth noting that the music video for "Dynamite" posted on YouTube has the record for being the fastest video to reach 100 million views in the first 24 hours after its upload **(Figure 1, appendix)**.

According to an infographic created from Twitter data last year, BTS was the most tweeted musician in the United States, followed by Kanye West and Beyonce **(Figure 2, appendix)**. Additionally, BTS was also the 6th most tweeted person (group) in 2020 **(Figure 3, appendix)**. The massive success of K-pop is mainly due to the fans of K-pop artists, or fandoms, which are groups (or communities) of fans who support a particular artist (e.g., BTS). In general, a 'fandom' is a group of people who share a common interest, such as rooting for a sports team or a K-pop idol or watching a television drama. Such fandoms are typically made up of fans characterized by empathy and camaraderie with others who share a common interest. In this way, K-pop fandoms can contribute to their artists' success in a variety of ways, such as creating a voice that influences agency decisions by posting tweets on Twitter; starting a campaign to raise the rank of their favorite idol in record charts; voting for their artists in annual music awards. Not surprisingly, the BTS also has one of the biggest fandoms (called 'Army') in the world **(Figure 4, appendix)**.

Research Questions and Methods

This study aims to explore purchase behaviors of K-pop merchandise and factors that are affecting fandom-related purchases. Our research question seeks to answer the following questions:

1. Is it possible to identify features that predict one's likelihood of becoming a BTS fan (or Army)?
2. If this is the case, which factors account for their propensity to spend money on K-pop merchandise?

To answer our research questions, we have used exploratory data analysis, frequency analysis, and regression (both linear regression and logistic regression) analysis from three different analytic tools: Python (for the predictive analytics), Tableau (for the exploratory data analysis; refer to the figure 5 to 11 in the appendix), and SPSS (for the statistical analysis) were adopted to analyze patterns on how K-pop fans purchase merchandise. The data was collected from Figshare (Link), and a total of 240 responses were captured.

Results and Insights

General Findings

The respondents' have an average age of 18.2 years (Generation Z), and most are students (87.5%). They listen to K-pop for 4.3 hours per day and watch K-pop music videos for 1.95 hours per day on average. Most of the respondents are from the US, followed by the UK, European countries, and Canada. The large majority of them believe that K-pop is either gaining popularity (60%) or already is popular in their country (25%), and they find K-pop to be popular for a variety of reasons, including its "unique music style." BTS is by far their favorite group. Most fans like both male and female groups, followed by male-preference. Not many people like only female groups. Older fans (24 years old) reported that they are made fun of liking K-pop while younger fans (17 years old) reported that they made friends through K-pop. More than half of the respondents mentioned that listening to K-pop helped them reduce stress, anxiety, and depression.

In terms of total annual expenditures on K-pop merchandise, respondents spend $85 on average, with 38% of them spending below $50, 24% spending between $50 and $100, 20% spending zero dollars, 10% spending between $100 and $200 and 8% are oblivious of their total spending. The majority of the funds are spent on concert tickets. The number of years the respondents listened to K-pop is positively correlated with the amount of money they spend on merchandise, the number of hours spent listening to K-pop music, and their age. Additionally, the younger the k-pop fans are, the more time they spend listening to K-pop by watching videos on YouTube. The more K-pop YouTube videos they watch and the more K-pop they listen to, the more K-pop groups they like and the more money they spend purchasing K-pop merchandise.

Statistical Analysis

Binary Logistic Regression Findings

Binary logistic regression was performed to determine which characteristics are most likely to decide whether a person is a BTS fan **(Table 1, Appendix)**. Results show that different variables such as gender, social media platforms where fans watch/listen to K-pop, the motivation behind being a K-pop fan, and the positive effect of being a K-pop fan are statistically significant. Our model shows that if one has no particular gender preference for a K-pop group, they are 22.5 percent more likely to be a BTS fan. It is also observed that a fan who values music more than the gender composition of a K-pop group is 33.3 percent more likely to be a fan of BTS. Additionally, fans who use Reddit, Tumblr, and other social media platforms are 29.6 times more likely to be BTS fans. It is hypothesized that a wide variety of BTS memes available throughout these social media platforms have positively contributed to the fandom's affinity towards this particular K-pop group. Finally, a fan who has experienced the perk of making new friends through K-pop is 34.4 percent more likely to be a fan of BTS than those who have not. It is hypothesized that the lyrical messages from most BTS songs encourage listeners to love and embrace themselves irrespective of their identities. This empowering message is more likely to have BTS fans stick together cohesively from the same messages shared within this fandom.

Linear Regression Findings

Linear regression was performed to determine which attributes are more likely to be predictive of the amount of money spent on K-pop merchandise **(Table 2, Appendix)**. Our results show that 1) the number of years a fan has listened to K-pop music, 2) number of hours a fan usually listens to K-pop, 3) social media platforms where a fan usually consumes K-pop, and 4) a fan's likelihood of attending K-pop concerts to be statistically significant (p-values of less than 0.05).

Our model also shows that one year increase in one's exposure to K-pop music leads to $12.20 more dollars that they are likely to spend on merchandise. Conversely, one hour increase in one's exposure to K-pop music video leads to $11 more dollars that they are likely to spend on merchandise. Next, we saw that different news mediums have different magnitudes of impact on one's likelihood of merchandise goods' spending. From the coefficient, it is also interpretable that a fan exposed to K-pop in social media platforms aside from YouTube is more likely to spend more. It is hypothesized that only hard-core, die-hard fans who are overly obsessed with particular K-pop artists are more likely to go into less mainstream social media platforms (such as Tumblr and Reddit), and the level of interest indicated from this behavior is also highly correlated to one's likelihood to spend more on the merchandise good.

Lastly, a negative coefficient is observed for the variable indicating whether a fan is likely to attend a concert or not. It can be inferred that a fan who doesn't usually attend concerts is more likely to spend less on merchandise. To put it another way, a fan is more likely to spend more money on merchandise goods when they are also likely to attend a K-pop concert. The R Square of the linear regression model is 0.205; thus, approximately a quarter of the observed variation can be explained by the model's independent variables.

Appendix

[Source 1]https://www.bloomberg.com/news/articles/2017-08-22/the-4-7-billion-k-pop-industry-chases-its-michael-jackson-moment

## List of most-viewed online videos in the first 24 hours

Top videos

Film trailers are excluded here. Out of the top twenty most-viewed videos, three artists have more than one video listed: BTS has six entries, Blackpink has four, and Taylor Swift has two.

In September 2019, YouTube changed their policy on video view counts and excluded paid advertising views from future 24-hour statistics.

| Rank	Title[a]	Uploader / artist[b]	Platform	Views[c] (millions)	Release date	Ref(s)
1.	*Rings* Prank†	Paramount Pictures	Facebook	200.0	January 23, 2017	[1]
2.	"Dynamite"	BTS	YouTube	101.1	August 21, 2020	[2]
3.	"How You Like That"	Blackpink	YouTube	86.3	June 26, 2020	[3]
4.	"Ice Cream"	Blackpink and Selena Gomez	YouTube	79.0	August 28, 2020	[4]
5.	"Boy with Luv"	BTS (feat. Halsey)	YouTube	74.6	April 12, 2019	[5]
6.	"Life Goes On"	BTS	YouTube	71.6	November 20, 2020	[6]
7.	"Me!"	Taylor Swift (feat. Brendon Urie)	YouTube	65.2	April 26, 2019	[7]
8.	"Lovesick Girls"	Blackpink	YouTube	61.4	October 2, 2020	[8]
9.	"Kill This Love"	Blackpink	YouTube	56.7	April 5, 2019	[9]
10.	"Thank U, Next"	Ariana Grande	YouTube	55.4	November 30, 2018	[10]

(Figure 1) Source: https://en.wikipedia.org/wiki/List_of_most-viewed_online_videos_in_the_first_24_hours
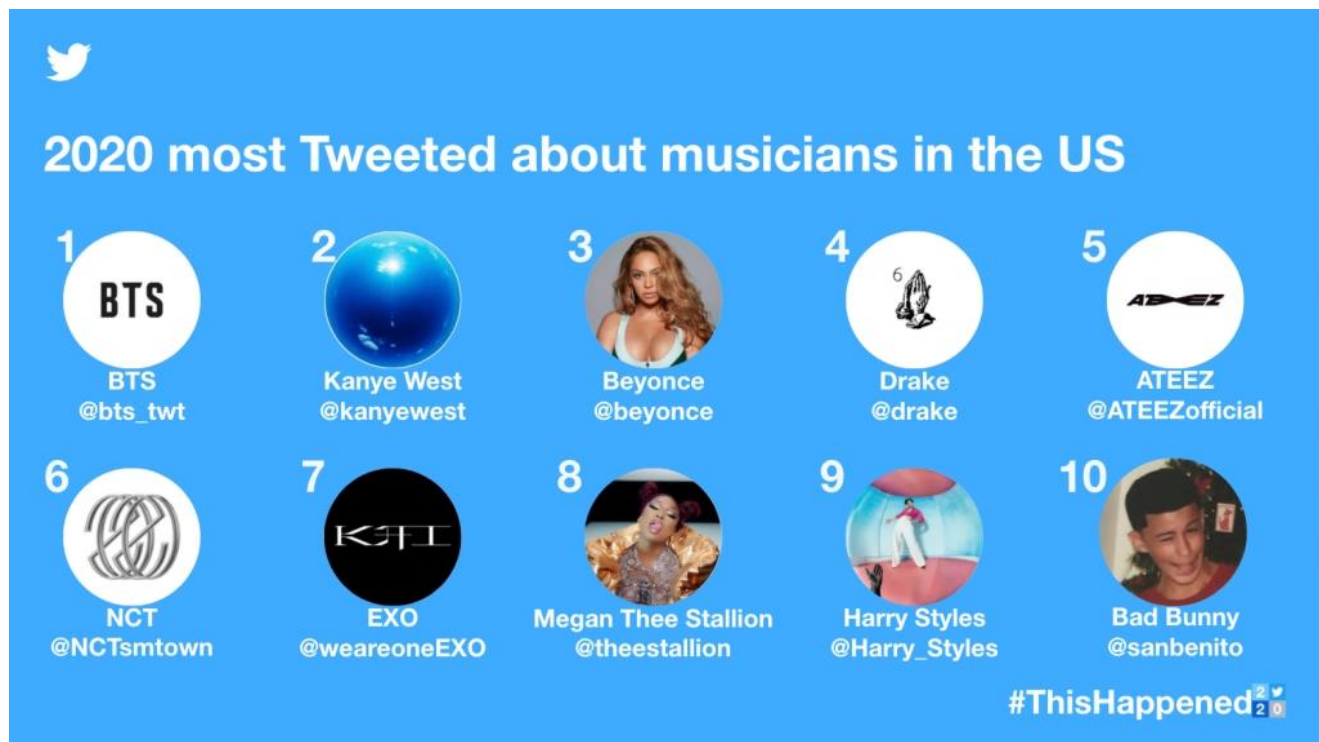
(Figure 2) Source: https://blog.twitter.com/en_us/topics/insights/2020/spending-2020-together-on-twitter.html
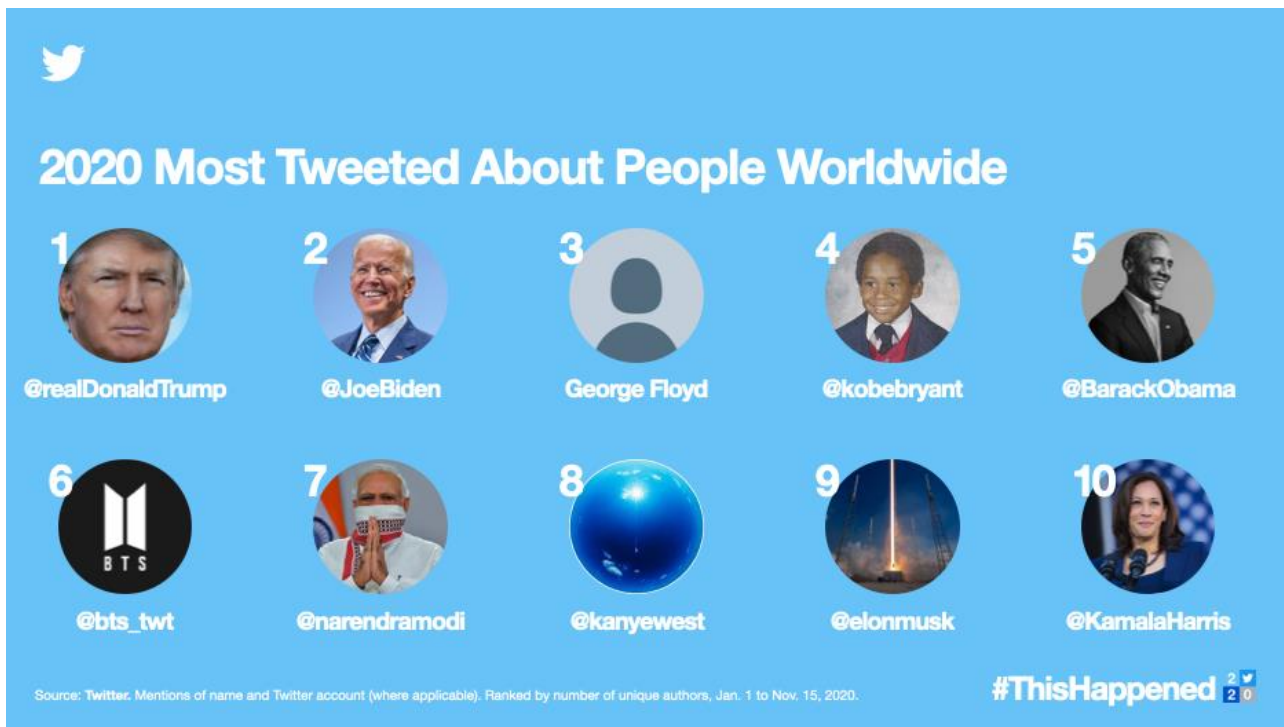
(Figure 3) Source: https://blog.twitter.com/en_us/topics/insights/2020/spending-2020-together-on-twitter.html

(Figure 4) Source: https://bit.ly/2OPzvRx
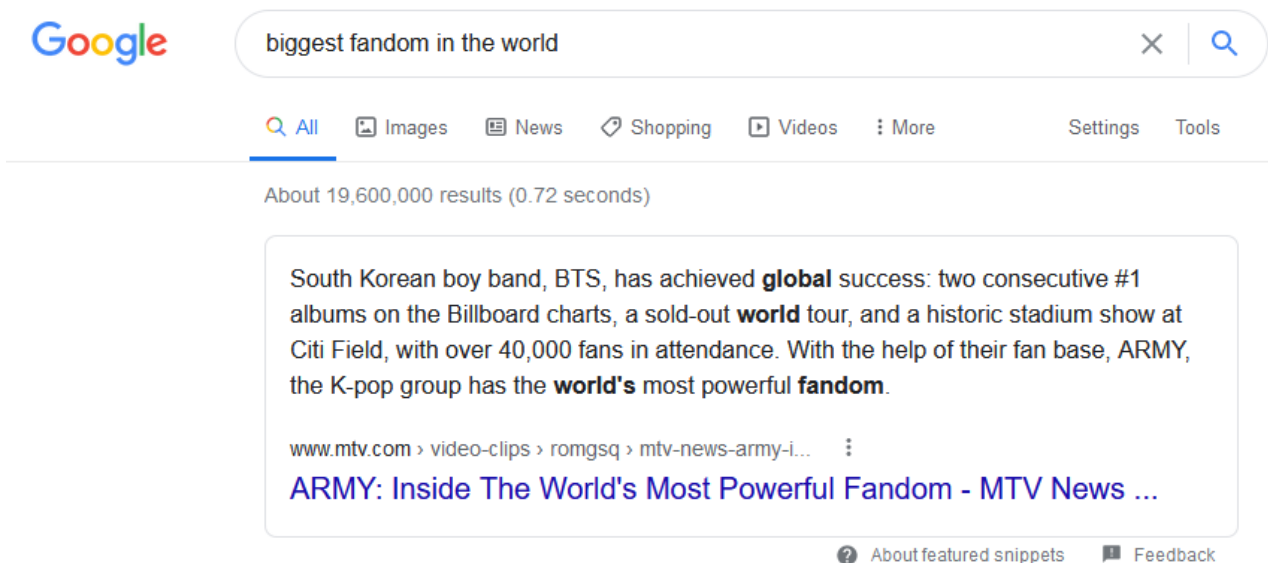
Binary Logistic Regression (SPSS) - Parameter Estimates (Table 1)

Parameter	B	Std. Error	Sig.	Exp(B)
(Intercept)	26.496	41747.03	0.999	3.215E+11
I prefer k-pop members regardless of its gender	-1.490	0.4740	0.002	0.225
I prefer female k-pop members	-4.406	1.3567	0.001	0.012
I have no preference - It's more about their music	-1.098	0.5555	0.048	0.333
I watch K-pop on Reddit, Tumblr	-1.216	0.5133	0.018	0.296
I watch K-pop on YouTube	0	-	-	1
I watch K-pop to learn music	-4.423	2.1032	0.035	0.012
I made friends from being a fan of K-pop	-1.068	0.3934	0.007	0.344

Linear Regression (SPSS) - Model Summary (Table 2)

R	R Square	Adjusted R Square	Std. Error of the Estimate
.453	.205	.136	109.874

Predictors:

- Which is your favorite K-Pop group?
- Is K-Pop popular in your country?
- Why do you like K-Pop?
- When did you start listening to K-Pop?
- Do you listen to K-Pop male groups more than girl group songs?
- How many hours do you spend listening to K-Pop?
- Do you watch K-Pop YouTube videos?
- If you do watch K-Pop music videos, how long do you spend watching them?
- Would you say that you are obsessed with K-Pop?
- What do you do to keep up with K-Pop news?
- Has K-Pop led you to pursue any of the following?

- Has consuming K-Pop taken away most of your time?
- Has consuming K-Pop affected your personal life in the following ways?
- Have you experienced any positive effects after consuming K-Pop?
- If you do spend money on K-Pop merchandise, where do you get money from?
- Do you attend K-Pop concerts?
- What is the craziest thing you have done in your pursuit and love for K-Pop?
- How old are you?
- Which country are you from?
- What is your profession?
- What is your gender?

Dependent variable:

- On an average, in one year, how much do you spend on K-Pop merchandise?

Coefficients:

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Year Listened	12.208	4.952	0.156	2.465	0.014
Daily Music Hours	11.044	3.515	0.200	3.142	0.002
News Mediums	25.848	9.939	0.167	2.601	0.010
Concert (Attend/Not Attend)	-30.917	8.276	-0.235	-3.543	<0.001

## Tableau Visualizations (Exploratory Data Analysis)
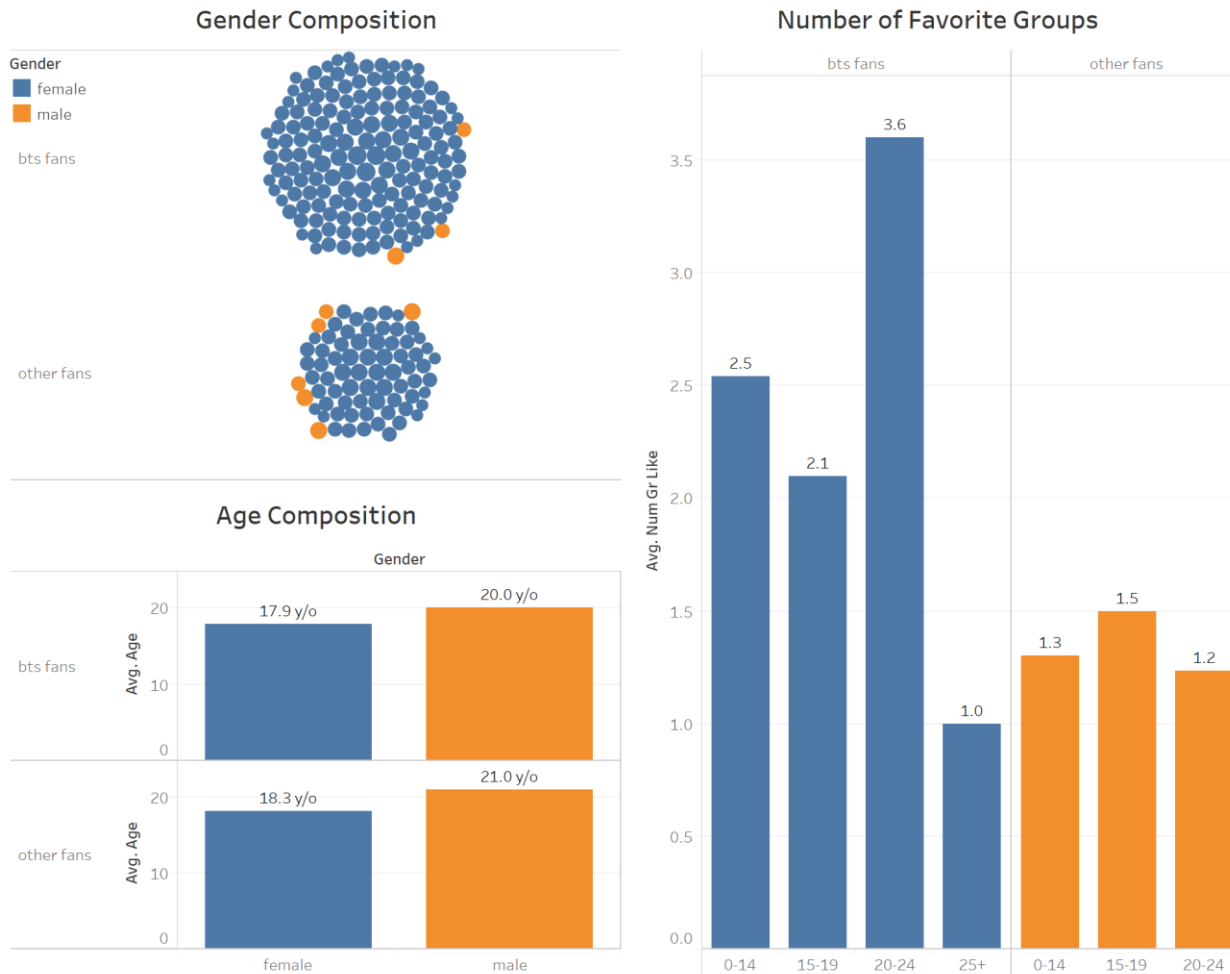
(Figure 5)

As you can infer from the *'Gender Composition'* chart, we can see that most of the participants in this survey are female and BTS fans.

The average age for female BTS fans is 17.9 years old, and that of male BTS fans is 20.0 years old. Conversely, the average age for a general female K-pop fan is 18.3 years old, and that of male K-pop fans is 21.0 years old.

For 0-14 years old female K-pop fans, the average number of groups they like is 2.5 and 1.3 for 0-14 years old male K-pop fans. Similar interpretations can be made for other age groups. It can be observed that 25+ years old female K-pop fans only like on average 1 group; while 20-24 female K-pop fans like on average 3.6 groups.
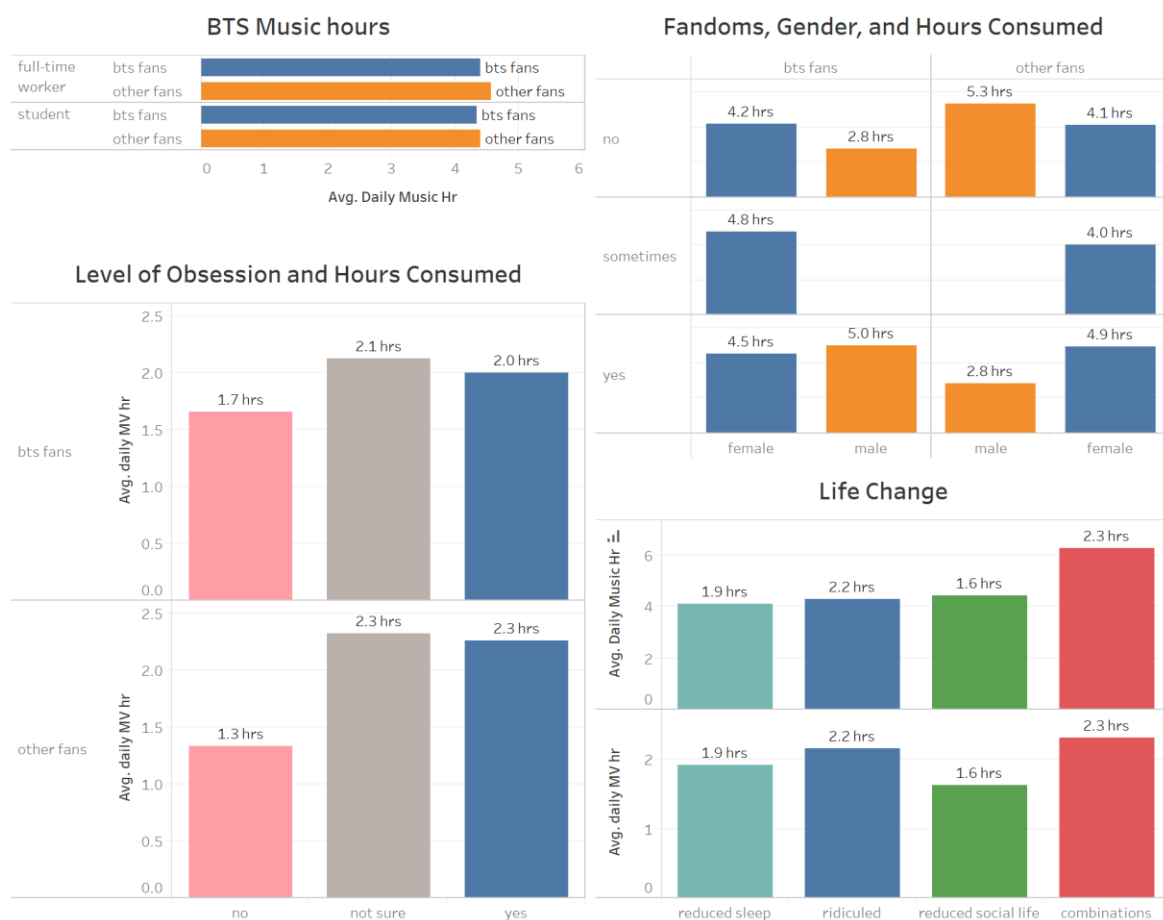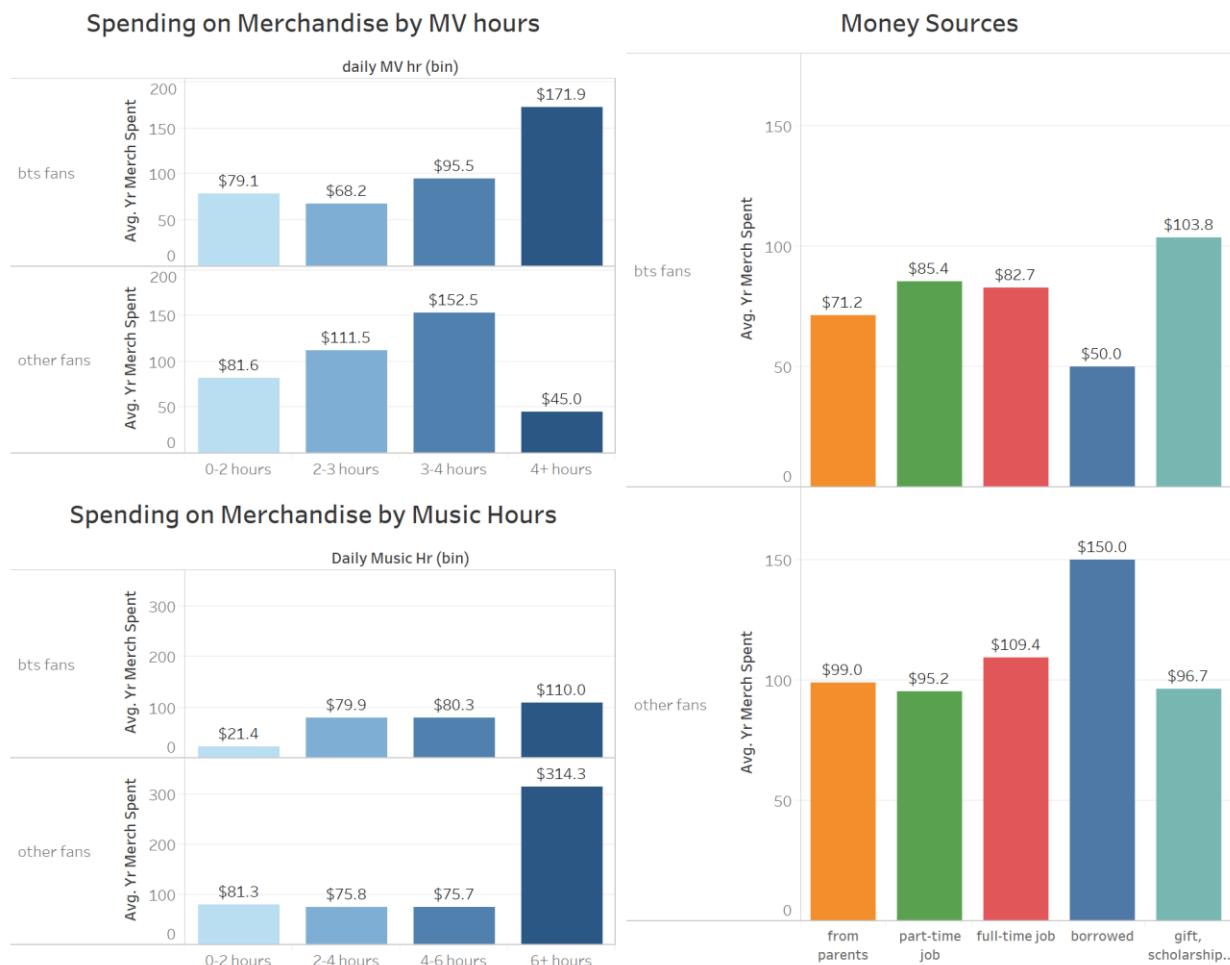
(Figure 6)

From the graph *'BTS Music hours'* above, we can observe no significant difference in fan's listening time to K-pop between full-time workers and students and between BTS fans or non-BTS fans. On average, most of them listen to their favorite K-pop artist for four hours a day.

From the graph *'Level of Obsession and Hours Consumed,'* we can see that people who have expressed that they aren't obsessed with K-pop on average watch more K-pop music videos than those who have said that they are either a fan or not a fan of K-pop.

On the graph *'Fandoms, Gender, and Hours Consumed'*, we have divided the participants by criteria indicating whether a fan thinks they consume a lot of time listening/watching K-pop content. It can be observed that BTS fans who believe that they are sometimes spending a lot of time-consuming content devote more time than others who think that they are either not spending a lot of time or spending a lot of time-consuming content. To put it another way, BTS fans are more likely to be oblivious to how much time they are mesmerized into consuming K-pop content from their favorite artist(s). On the other hand, it can be observed that general K-pop fans who have responded that they spend most of their day watching K-pop content spend the most time (4.9 hours) than other fandom and age groups.

Looking at the graph, *'Life Change,'* people who have responded that they have reduced sleep due to watching the K-pop content listened/watched 1.9 hours of content per day. Similar interpretations can be made for other columns.

(Figure 7)

Based on the graph, *'Spending on Merchandise by MV hours'* on the top left corner, we can see that BTS fans who watch more than 4 hours of music videos spent $171.9 on average for yearly merchandise; whereas, general K-pop fans who watch between 3 and 4 hours of music videos spent $152.5 on average for yearly merchandise.

In contrast, based on the *'Spending on Merchandise by Music Hours*,' we've found that general K-pop fans who listen (instead of watching) K-pop music are more likely to spend on merchandise goods each year compared to the BTS fans across the data.

When looking at the chart, *'Money Sources*,' we can observe that BTS fans mostly get their money to buy merchandise or another fan-related spending from gifts and scholarships. Still, general K-pop fans get their money primarily by borrowing from someone else they know.
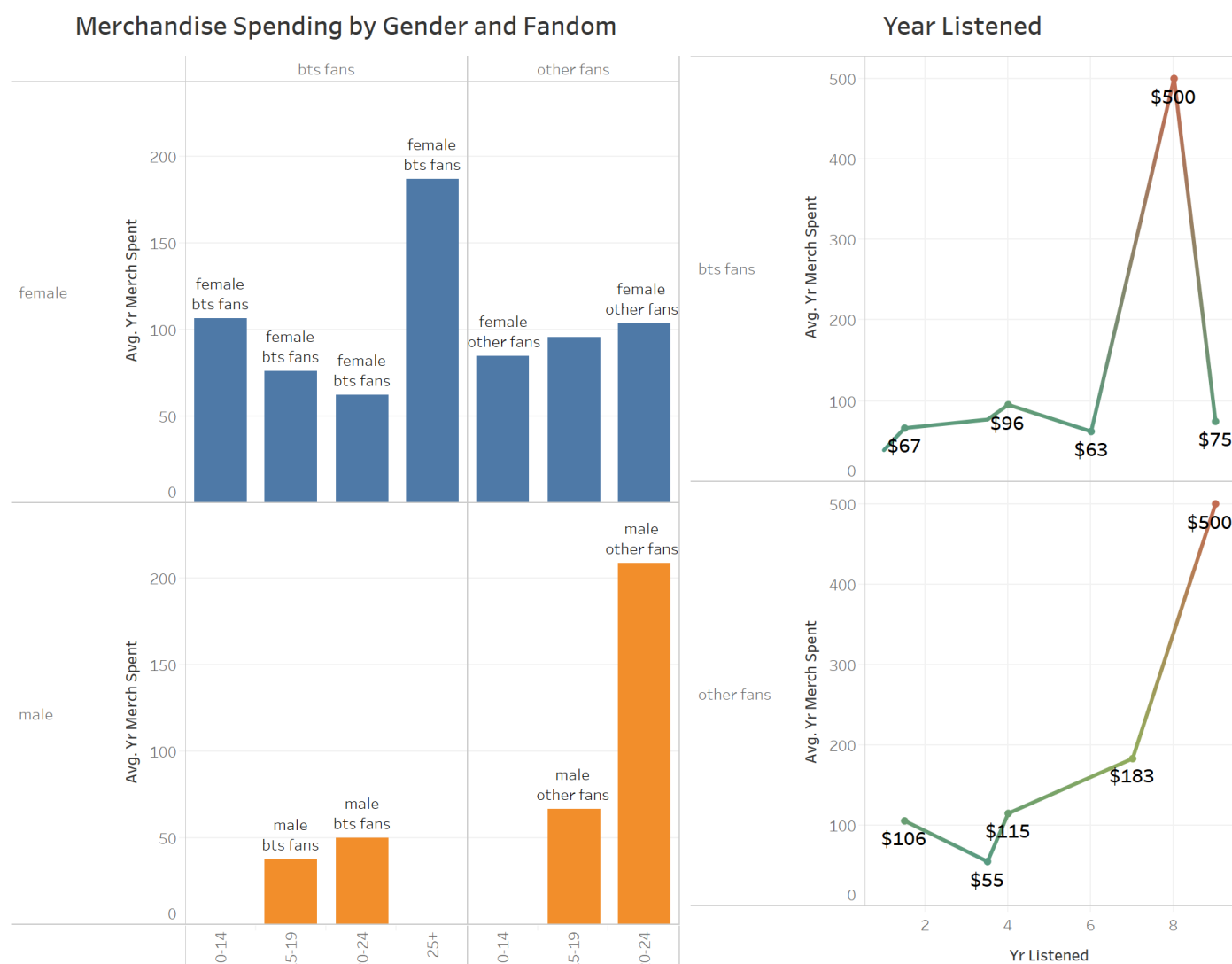
(Figure 8)

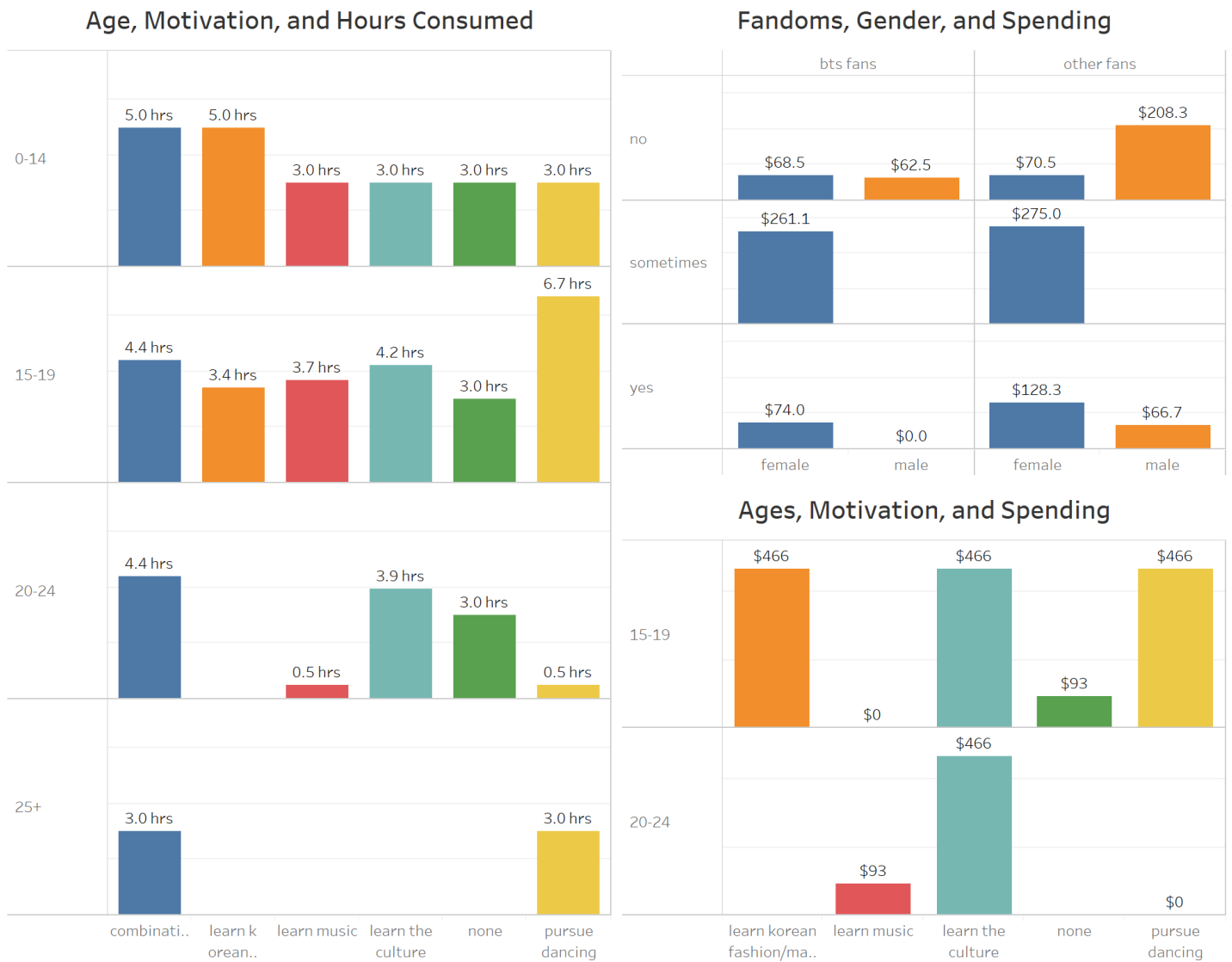From the graph *'Merchandise Spending by Gender and Fandom,'* we can see that female BTS fans aged more than 25 years old spend the most money buying merchandise, while female BTS fans aged between 20 and 24 years old pay the least on buying merchandise. For general K-pop fans, it can be observed that male K-pop fans aged between 20 and 24 years old spend the most money on the merchandise, but we cannot be conclusive on this finding given the small sample sizes of male populations.

From the graph *'Year Listened,'* we can see that BTS fans spend the most money on merchandise when they have been fans for eight years. Given that BTS was established in 2013, it can be inferred that fans who have been around since the beginning of this boyband are likely to spend the most money on merchandise. In contrast, general K-pops are likely to spend more money on merchandise in proportion to the number of years that they have listened to K-pop music in general.

Age, Motivation, and Hours Consumed

	combinati..	learn k orean..	learn music	learn the culture	none	pursue dancing
0-14	5.0 hrs	5.0 hrs	3.0 hrs	3.0 hrs	3.0 hrs	3.0 hrs
15-19	4.4 hrs	3.4 hrs	3.7 hrs	4.2 hrs	3.0 hrs	6.7 hrs
20-24	4.4 hrs		0.5 hrs	3.9 hrs	3.0 hrs	0.5 hrs
25+	3.0 hrs					3.0 hrs

Fandoms, Gender, and Spending

	bts fans		other fans	
	female	male	female	male
no	$68.5	$62.5	$70.5	$208.3
sometimes	$261.1		$275.0	
yes	$74.0	$0.0	$128.3	$66.7

Ages, Motivation, and Spending

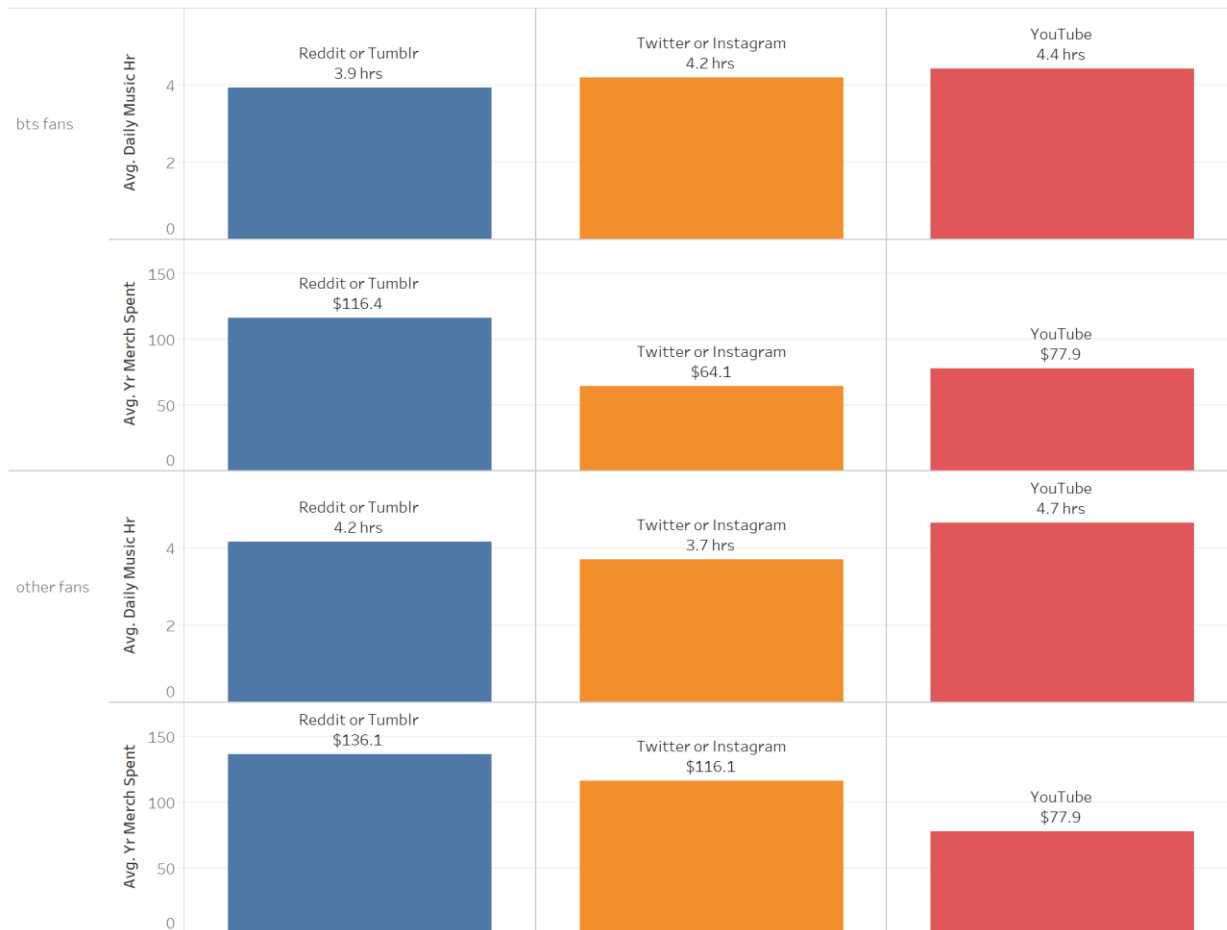|	learn korean fashion/ma..	learn music	learn the culture	none	pursue dancing
15-19	$466	$0	$466	$93	$466
20-24		$93	$466		$0

(Figure 9)

Teenagers between the ages of 15 and 19 who are pursuing dancing are the ones who spend the most time per day (6.7 hours) listening/watching K-pop music. They also spend around $466 per year on merchandise.

Effects and Spending

	made friends	No effect	reduced stress and made friends	reduced stress/anxiety/depression
0-14	$68.18	$333.33	$0.00	$86.84
15-19	$102.78	$122.92	$104.29	$60.44
20-24	$70.45	$150.00	$150.00	$81.94
25+				$186.67

Effects and Hours Consumed

	made friends	No effect	reduced stress and made friends	reduced stress/anxiety/depression
0-14	4.4 hrs	6.0 hrs	3.0 hrs	4.7 hrs
15-19	3.9 hrs	5.0 hrs	5.4 hrs	4.5 hrs
20-24	4.2 hrs	3.0 hrs	2.8 hrs	4.3 hrs
25+				3.0 hrs

(Figure 10)

From the *'Effects and Spending'* graph above, we can infer that the fans between the ages of 0 and 14 who believe that K-pop does not affect them spend more time watching and listening to K-pop music (6 hours per day) and spend more money than any other age group who has experienced any positive effects.

(Figure 11)

From the graph *'News Medium + Hrs & Spending*,' we can observe that even though both K-pop fans and BTS fans spend more time watching K-pop content on YouTube compared to other social media platforms, and fans who use Reddit or Tumblr are more likely to spend more money on merchandise. It can be hypothesized that this is due to the fact that both Reddit and Tumblr are social media platforms where die-hard fans are likely to spend more time and thus more monetary investment for the sake of achieving better connection to their respective artist.