"This has been manipulated, man."

How the use of Twitter and 'social TV' contributed to the live experience

of the 2021 Formula 1 Abu Dhabi Grand Prix

By Becky Wells

Final Year Project

BA Digital Culture and Media

2nd May 2023

Word Count: 8,178

Acknowledgements

This project is dedicated to Lewis Hamilton, the deserved eight-time Formula 1 World Champion and undisputed GOAT of motorsport.

(... with additional thanks to my supervisor Dr. Scott Rogers. Thank you for your support throughout my degree, and for letting me shoe-horn the ambitious topic of cars into every assignment I could.)

Abstract

In December 2021, fans of Formula 1 witnessed and reacted to one of the most dramatic season finales in the sport's 70-year history at the Abu Dhabi Grand Prix. Controversy in the final lap saw a tough battle between title rivals Lewis Hamilton and Max Verstappen, with Verstappen eventually taking home the win. As the race finished, fans took to Twitter to express their views and join in the wider discussion on the outcome. Twitter's ability to provide seemingly live content and updates alongside the race helped develop and enhance the experience of liveness through the power of social TV. This project analysed nearly 20,000 tweets made on the day of the race to discover how the ability to share in collective discussion builds a community of like-minded fans and contributes to a live experience beyond just the original television broadcast. Additionally, this project focuses on single tweets posted without replies or retweets, to see if social TV and community engagement is still relevant when tweeting independently. The results found many fans turned to Twitter to express an opinion on one side of the fierce final-lap rivalry, using hashtags to include themselves as part of the main discourse, even without a desire for direct engagement. Further tweets made by key Formula 1 personnel, plus additional media including behind-the-scenes video and audio, also enhanced the experience for fans by providing more 'live' content than was available simply by watching the race on TV.

Contents

1 - INTRODUCTION

In December 2021, fans of Formula 1 witnessed and reacted to one of the most dramatic season finales in the sport's 70-year history (Morlidge, 2022). The two championship contenders, Mercedes-AMG driver Lewis Hamilton and Red Bull racer Max Verstappen, were separated to the title by just one point, meaning whoever crossed the line first at the Abu Dhabi Grand Prix would win the championship. The title decider promised a climactic end to the season, and, during a race that looked like an easy win for Hamilton (Bradley, 2021), a dramatic final lap caused controversy throughout the world of motorsport. A crash on the track caused a late Safety Car to be deployed, fundamentally neutralising the race and removing the gap built between the leading drivers (Codling, 2017). While it looked probable that the race would finish under these controlled conditions, meaning Hamilton would take home the championship win (Wood, 2021), the Federation Internationale de l'Automobile (FIA) Race Director Michael Masi made a confusing and contentious decision to restart the race, allowing Hamilton and second-place Verstappen to battle it out into the final lap of the season. In this unexpected final battle, Verstappen overtook Hamilton, winning the race and securing the 2021 Drivers' Championship title. A report into the incident by the FIA, released in March 2022, concluded that human error by Masi during this pivotal part of the race acted as a key factor in the loss of the championship for Hamilton (Netherton, 2022; FIA, 2022).

While this brief analysis highlights the basic technicalities that caused the dramatic race conclusion, much of the controversy of the finale was portrayed through the strong emotions of the fans of the sport. The contentious conditions under which the championship was decided caused an outcry from many fans, regardless of which team they were ultimately cheering for. The battle between the two drivers throughout the season had created strong alliances for both teams and, as in any form of sport, this rivalry added to the enjoyment and participation of the Formula 1 season as a fan (Havard & Hutchinson, 2017). Many of these

fans took to social media to comment on and contribute to the analysis happening in real-time alongside the live development of the race. This online and supposedly live aspect of fan interaction and community using social media is known as social TV, and in today's media, plays a pivotal part in the concept of and appreciation of liveness, especially within a live sporting environment (Smith et al., 2019).

This project looks at the function of Twitter and its ability to create and evolve the concept of social TV, as well as its impact on the experience of liveness during a live event, examining a large number of tweets made on the day of the Abu Dhabi Grand Prix. Specifically, it looks more so at what the individual fan contributes and gains from using Twitter to enhance their experience of live sport, and how a sense of community is created despite many users not actively replying or engaging with other members on the platform. Instead, this project examines tweets posted by individuals during the race that were made independently, with no direct reply or interaction taking place. This is to discover if social media can still contribute to the experience of liveness, even when not being primarily social whilst using it. A further hypothesis from this examination includes the idea that most fans using Twitter to discuss the race will have a bias towards one of the two key drivers; most commentary will weigh in favour of either Hamilton or Verstappen, with fans using the platform to express a view on this sporting rivalry specifically. Additionally, there will be tweets and input from key profiles, including the F1 drivers themselves, that will influence discussion, such as providing behind-the-scenes insights and information not seen on the television broadcast. This will highlight the importance of fan-to-athlete communication in the experience of live sports.

2 - LITERARY REVIEW

Technological contributions to liveness

The 2021 Formula 1 Abu Dhabi Grand Prix was a live sports event, with a select number of outlets broadcasting footage all over the world. While the main race footage is universal for every broadcaster, the live commentary and pre- and post-race coverage is constructed by each market, with native-language presenters and interviews taking place around the globe. This follows the typical conventions of the idea of liveness, with information being broadcast on TV in real-time, developing from the original live format of radio broadcasts (Auslander, 2008). A definition of live TV provided by Sørensen highlights: "the live broadcast of an event that is transmitted to viewers and users in real time as it unfolds" (2016, p.3). But, as technology has developed, the idea of liveness now refers to more than just the broadcast time, and instead places significance on how media value the idea of 'now' over later.

There are three main approaches to the discussion of liveness and how media present the idea of live. Van Es (2017) highlights the first as an ontological approach, whereby technology directly influences and contributes to the phenomenon of live. The second approach is how the user and the audience participate in the experience to develop the concept of live, understood phenomenologically, while the third looks at a rhetoric approach, and how the media industry itself helps build and construct liveness. Looking further at these concepts, the ontological approach was predominantly referenced in work on television, relating to the 'beaming lines' making the medium 'alive' (Zettl, 1978) and later, with reference to the electronic nature of the broadcast transmission (Heath & Skirrow, 1977). As a development to this theory, Scannell (2014) discusses that liveness is instead built from the interpretation of the events, and the human application of those ontological connections. He goes on to comment that the phenomenological aspect of liveness creates a sense of 'communicative entitlement', allowing users to create a shared experience of an event even

if they are witnessing it as an individual. This is the idea most relevant to the liveness of a sporting match or race, with the personal experience of the live event being what defines it as such; even if fans are not watching the race broadcast live, they may be following along with the discussions happening on Twitter, becoming a part of a real-time narrative, even without those traditional broadcasting capabilities.

Rhetoric analysis of the idea of live focuses on the media institutions' presentations. However, it is noted that these discussions overemphasise the power of such institutions in shaping the idea of liveness (Van Es, 2017). Instead, Dayan and Katz discuss how these live media events "do not just relay what would have gone on without them, but rearticulate the elements and sites of an existing ritual process into a fully mediated event whose form was unimaginable before electronic media" (1992, p.17). Despite the Formula 1 race being broadcast as 'live', the footage repeatedly shows replays of the action from the race and cuts away to additional video or radio commentary asynchronously. Similarly, each broadcast station or network can choose how to commentate on and edit the race content on their channel to enhance the experience per market; it is not entirely a central live feed that is controlling the live experience. For example, in the UK, the paid-for digital channel Sky Sports is the sole live broadcaster, and during the race, it can cut between different video streams, presenters and interviews alongside the standard race footage. This demonstrates that, despite the traditional parameters of a live broadcast, it is a combination of the technology, the media institution and the audience's contribution that ultimately constructs the experience of liveness. Couldry (2003, p.98) breaks this down further;

> *"Liveness is not a natural category but a constructed term. It could not have its broad impact if it rested on simple technological fact. Its significance rests on a whole chain of ideas, which are worth unpacking:*
>
> *1. that we gain access through liveness to something of broader significance, worth getting access to now, not later;*

2. that the 'we' who gain live access is not random, but a representative social group;
3. that the media (not some other social mechanism) is the privileged means for obtaining that access."

Moving away from television and looking at the development of liveness across new platforms, social media is now just as imperative at contributing to a real-time experience as the original broadcast. The technological developments and affordances of the microblogging site Twitter in particular align it with the ontological idea of liveness. One such way is its maintained focus on producing a chronological media feed. Since its creation in 2006, the affordances and software developments of the platform have offered users a number of ways to consume its content. Typically, a Twitter user would have a content feed curated with tweets only from accounts that they follow, intersected with posts made by another account that is 'retweeted' – i.e. reshared – onto someone else's profile (Ketzer et al., 2013). This is displayed in reverse chronological order, with the most recent tweets seen at the top of the page, following backwards to older tweets in a linear feed. However, over the years of its existence, technological developments have also seen the addition of an algorithmic feed and layout appear on the platform. This, instead, shares a mix of content from accounts that are actively followed, combined with popular or trending content, based on a personalised social algorithm (Huszár et al., 2021). Even now, other social media platforms such as Instagram and TikTok work predominantly with an algorithmic feed, to present content to users based on recommendations, previous views and likes, and trending or popular posts (Boyd et al., 2010). At the time of this project taking place, the latest platform updates mean Twitter is operating with a chronological media feed presented first, providing users with a "Following" filter that shows content that has been actively subscribed to, with the option to manually select a "For You" feed with a curation of content enhanced by your personal algorithm (Hutchinson, 2023). This means that for most users, the most recent – and therefore, the most real-time – content is provided at the top of the app or website, providing immediate access to the idea of live communication. In this sense, this most

closely relates it to the idea of live, providing an emphasis on real-time and immediate content produced and consumed as liveness is happening (Smith et al., 2019).

Contrary to that idea, however, is the awareness that tweets are in fact not live at all, even with the notion of 'live tweeting' during events (Anderson, 2018). While tweets during a timed event may superficially appear as live, they are instead being viewed by other users out of a real-time scenario, depending on when they access the app or website. As discussed by Weltevrede, Helmond and Gerlitz (2014), the Twitter feed instead offers an asynchronous experience of the live. While users may feel they are interacting with each other in a real-time scenario, for example sending replies or retweeting content, these interactions are not happening synchronously, such as how one would communicate on a telephone call.

A further ontological affordance of Twitter to help build the idea of liveness is the use of a hashtag (the # symbol). Bernard (2019) discusses how hashtags are a tool that sit between text and metadata, acting as a trigger to link tweets and conversations together. In the case of the Grand Prix, the most popular and relevant hashtag is simply '#F1'. This marker of a post's topic or audience (Efron, 2010) lets users find relevant posts on the platform, which allows fans to source and engage in relevant content around the sport. Not only does this help from an informative point of view, being able to find additional information or news about the race as quickly as possible, but it means users can quickly engage and connect with others talking about the same topic. This helps construct a sense of community built around the sport and the event (Bourdon, 2000), encouraging a shared experience afforded by social TV, which I discuss in more detail further on.

An additional note to make about Twitter's accompaniment to liveness is that although it is predominantly a text-based platform, the format of tweets allows for mixed media to be presented, including videos, photographs and animated gifs. During the race, this allowed content from the original television broadcast, such as video clips and screenshots from the

footage, plus additional behind-the-scenes content direct from Abu Dhabi, to be shared and processed in the public eye both during the live transmission and long after the original broadcast had ended. This means the experience involves much more than just the single television picture being transmitted, creating a multiplatform strategy of a broadcast experience across multiple outlets (Sørensen, 2016).

Finally, Twitter usage in general is worth a consideration in this project. Formula 1 is enjoyed globally, meaning the audience themselves will be diverse in their usage and behavioural habits of social media. The tweets looked at during this project are limited to English-language use only. As Lewis Hamilton is a British driver, it is likely a larger majority of his fans will also be British and English speakers and writers, meaning I could hypothesise I would find more positive commentary in his favour. Max Verstappen is a Dutch driver, meaning his fanbase will be more predominantly located in the Netherlands with Dutch-speaking interactions. Research by Stastia (2022; 2023) analysed the most popular social media platforms in both the Netherlands in Q3 2021, and the UK in Q3 2022, based on usage for between 16 to 64-year-olds. In the Netherlands, Twitter was the eighth most popular platform, with 25.5 percent of those asked saying they used the site or app. In the UK, however, Twitter was the fifth most popular social media platform, with 42.8 percent of those surveyed using it. Similarly, a study by Roele, Ward and Van Duijn (2020) analysed emoji usage on Twitter in both the UK and the Netherlands, analysing two million tweets from July 2017 written in their respective languages. Their results found emojis were included in 17.2 percent of English tweets and just 9.7 percent of Dutch tweets, noting that the Dutch used more emojis resembling facial expressions while the English used more varieties of hand gestures. This aligns with the idea of a global 'common ground of symbolism' connecting to emoji usage that varies across cultures (Danesi, 2017). The difference in usage of Twitter between the two locations and cultures may impact the type of content seen in the data obtained for this study.

Social contributions to liveness

The interaction that Twitter offers to the experience of Formula 1 forms the basis of the idea of social television or social TV, whereby social media is used alongside live television to create a shared broadcast experience in real time, contributing to the appreciation of the liveness of the event (Van Es, 2017). This follows the phenomenological approach to liveness, where the audience participates in the experience to build on the concept of live. Ji and Raney (2015) define social TV as: "a) the growing set of technologies that enable synchronous social interaction between television viewers at a distance and b) the use of those technologies during viewing" (p.223). Discussions around live tweeting and social TV identify connectedness and community as primary motivations for engagement (Smith et al., 2019), with the pairing of Twitter and TV allowing viewers to share their experiences in real-time, encouraging fans to watch the event at the original time of broadcast to join in with the social commentary taking place online (Van Es, 2017). Although the fans are all watching the same race, they may find a different – or, conversely, the same – experience of the real-time moment (Scannell, 2014). Additionally, Doughty et al. (2012) describe the act of 'second screen viewing', whereby a viewer engages with a mobile phone or computer alongside watching a television programme, as "sofalising", combining socialising whilst relaxing on the sofa. In this instance, a large number of like-minded users are engaging in discourse simultaneously, constructing an idea of community and shared communication even when fans are using the platform individually. This creates a shared sense of participation, and as Scannell (2014) defines, provides a 'communicative entitlement' that allows fans to claim ownership of the live experience. It is this element of social interaction and discussion that will be examined through this project, and how the input and usage of social TV helped shape the experience of that final Formula 1 lap.

These ideas work particularly well during the viewing of live sport. Twitter's ability to allow sharing of resources and dialogue specific to different communities and groups is what

makes it most relevant for sports engagement (Jenkins et al., 2013). To validate this further, Formula 1 even associates with its own subset or community on the platform, known as 'F1 Twitter' (Llamas Mayoral, 2022), the colloquial name given to fans who partake in the discussion and sharing of the hashtag #F1. 'F1 Twitter' is also known for engaging in commentary on the live races, sharing news, creating viral content, and even communicating directly with the drivers and key members of Formula 1 who also operate on the platform.

Looking further at this idea of a sporting community, Kassing and Sanderson (2010) discuss that "Twitter works well as a complementary medium for athletes and fans – one that can enhance the experience of sport" (p.124), as well as allowing users to feel a part of the sport more so than previously possible. Smith, Pegoraro and Cruikshank (2019) highlight a number of other benefits of using Twitter as an accompaniment to sports, including connecting more with athletes who are themselves engaged on the platform, with fans finding them to be more realistic and relatable (Frederick et al., 2012). Users also connected with athletes who they saw as a role model (Clavio & Kian, 2010), with the platform creating more long-term connections between fans, athletes and teams (Highfield et al., 2013). Focusing specifically on the enjoyment of live sports, the concept of liveness is also particularly important when developing the experience and construction of excitement and suspense during a race. Zillmann (1996) offers a definition of the suspense from sports as "acute, fearful apprehension about deplorable events that threaten liked protagonists" (p.208). Further additions to the feeling of suspense include momentum changes, existing ideas and feelings towards players and teams, and, most importantly when considering the idea of liveness, the unknown outcome of an event (Peterson & Raney, 2008).

This factor is clear in the experience of the Abu Dhabi Grand Prix, especially as the concluding laps were so unpredictable. The desire for interaction, reassurance and understanding of the race is what encouraged the feeling and need of community through social media. By following relevant content through the use of hashtags and trending topics,

the art of social TV also gives viewers access to more information and insight than previously possible. During the Formula 1 season, fans may have relied on tweets from people and accounts more knowledgeable of the live race, for example, racing teams themselves that tweeted live information and updates on drivers, pit stops or the situation of the race as a whole. Similarly, the official Formula 1 channel gave updates on what was happening, providing a clearer picture to fans enjoying the sport. This opportunity to receive additional information that was not included on the television broadcast helps provide a more enjoyable and in-depth viewing experience of the live event.

The majority of the theories discussed here focus on the community aspect of social TV in order to build a shared experience of liveness. However, this project aims to examine whether that community aspect is still achievable or even relevant when a user tweets for the purpose of personal thought and expression, rather than with a desire to actively engage in conversation. With this, I have only examined single tweets made on the platform that do not form a reply or a retweet of another user. Does social TV still offer the same community aspect even when a user is not being particularly sociable with it? The conclusion is to learn more about how this style of tweeting contributes to wider discussion and community, and how it helped develop the live experience of that controversial final of the 2021 Formula 1 season.

3 - METHODOLOGY

To examine how Twitter and social TV were used and experienced during the 2021 Formula 1 finale, I started by collecting as many tweets as possible from the moment of the race. This allowed me to look directly at the exact content that was being produced at the time of the race, portraying the live experience of the event. I also referred to articles and 'listicles' – news articles that are written in the style of a list or ranking, offering concise details or highlights about a topic (Sadri, 2019) – from the time of the event that highlighted important tweets and discussions that happened on Twitter. These articles tended to highlight famous people and accounts, or users that were contributing a bold or even controversial opinion to the narrative, thus drawing my attention to a possible new opinion or viewpoint to add to the discussion. For this project, I focused specifically on tweets made that were not replies or retweets and instead, were posted as an independent thought being shared from an individual. An additional benefit of this was that it made it easier to collate usable data, as I was simply looking for single, standalone content published onto the platform.

The easiest way to create a database of tweets from the event was to use a tool called data scraping. As Traynor (2021) explains, data scraping "involves automatically extracting and structuring [...] data from any site on the web. Specific code 'scrapes' whatever data you have requested for output and converts that into a usable format, like a spreadsheet, so that you can gather insights quickly." In this instance, I wanted to extract a large number of tweets from the day of the race into a spreadsheet database so I could view and analyse them in one easy medium. To source these tweets, I used a platform called PhantomBuster that set up an automated command to scroll through historical tweets within given parameters. I set up an Advanced Search on Twitter to primarily filter tweets that:

     I.   Were made on the day of the race, Sunday 12th December 2021
    II.   Were written in the English language

III.   Were not a 'reply' or a 'retweet'

IV.   Featured the hashtag #F1

V.   Did not contain a link or additional media

However, due to the sheer volume of tweets made during that time, this still produced an extreme amount of content to process via the data scraping tool. Because of this, I then restricted the search terms even further, applying a filter to only find tweets that featured either the keywords "Lewis", "Hamilton", or "Verstappen", using the rivalry of that climactic final moment as a focal point for research. For additional analysis, I also ran a data scrape to source tweets that include the additional keywords of, "FIA", "Masi" and a trending hashtag from the time, "#F1xed". The resulting data scrapes meant I was able to collate nearly 20,000 tweets covering the Abu Dhabi Grand Prix, to build a picture of how Twitter and social TV were used during that final race.

For this project, I started by giving a quantitative analysis of the data sourced. Firstly, I assessed the quantity of the tweets made both in the Lewis Hamilton and the Max Verstappen-sided results, in order to gain an idea of the popularity of the two rivals as a talking point for the Twitter community. This helped create an image of what the conversation was during the pivotal moments, providing insight into the purpose of the tweets being made. To enhance this understanding, I also looked at the word frequency of these sets of tweets as part of a discourse analysis, paying attention to implied sentiment and looking at whether the most popular words were positive and encouraging, or more negative and concerned, linking to Smith, Pegoraro and Cruikshank's (2019) discussion on the social and community bonding made through sporting rivalries. Further quantitative analysis looked at the development of hashtags after the conclusion of the race, to understand how this affordance of Twitter contributed to the expansion and development of ideas and discussion. Finally, I introduced an analysis of the tweets from more authoritative profiles, including the drivers themselves, to see how their input influenced the phenomenon of liveness and social TV

across Twitter, following Gantz and Lewis' discussion on athletes providing communication "beyond traditional parasocial interactions" (2014, p.765).

It is worth noting that the reference and inclusion of specific tweets has been limited to organisational and public figure accounts, in line with Williams, Burnap and Sloan's (2017) discussion on the ethical framework of Twitter data in social research. In their discussion, they found around 80 percent of their 564 respondents said they would "expect to be asked for their consent before their Twitter posts were published in academic outputs" (p.1156), with over 90 percent agreeing they would want to remain anonymous. Their research concluded that public figures, such as the celebrity drivers in Formula 1 intending on communicating to a mass audience, may be referenced in line with Twitter's terms of service and their mandated consent to share information with third parties. Given the large amount of data scraped for this research, individual consent requests were not a viable option as part of this project, so I have referenced specific content only from public brands and figures.

4 - FINDINGS AND DISCUSSION

Quantitative analysis

As discussed, the vast number of tweets made during the race posed a number of limitations on what I was able to look at for this project. Primarily, sourcing the data via the PhantomBuster data scraping tool presented me with issues with 'rate limiting' (TweetDeck, 2008), whereby the Twitter Application Programming Interface (API) placed a restriction on how much content I was able to collect during the searches. According to TweetTabs (2020), the API is "a software that acts like a middleman between two apps. Twitter's API allows the Twitter server to talk to different apps." In this instance, the API was restricting the data scraping automation tool loading older tweets via the search feed. This meant that, despite my parameters restricting the search already, Twitter was only allowing the data scraping tool to load around 5,000 tweets before the search reached its 'rate limit' and stopped finding new data. Because of this, I had to run a number of individual searches to try and source as much unique material within the limitations as possible, for example searching separately for the keywords of 'Lewis Hamilton' and 'Max Verstappen' alongside the recurring #F1 hashtag.

A further restriction is given by the technological allowances of Twitter itself. Due to the site's search options, a user can only search either by 'Top' tweets, which shows 100 tweets that its algorithm thinks are most relevant or popular for a subject "based on the popularity of a Tweet, the keywords it contains, and many other factors" (Twitter, n.d.), or 'Recent' tweets, which displays results in a reverse chronological order. Smith, Pegoraro and Cruikshank discuss that, during the experience of live sport, viewers "do not wait until the end of an event to determine their level of enjoyment; enjoyment is an emotion that can fluctuate, just as an emotion can change over the course of consuming other forms of entertainment" (2019, p.104). It is therefore unfortunate that due to the limitations of the data in this project,

I am unable to see exactly how the progression of feelings and emotions developed during the race. It would be expected that the quantity of tweets made during the deciding moments would peak significantly as fans were desperate to share their opinions and quickly engage in further discourse. Similarly, in my search, I gave Twitter the option to find tweets that referenced either 'Lewis' or 'Hamilton' individually. However, when I ran a similar search looking for either 'Max' or 'Verstappen', the word 'max' sourced too many erroneous tweets for my purpose due to the commonality of the word 'max' as an abbreviation of the word maximum. I therefore decided to exclude that as a search term by itself, and instead sourced tweets only with either 'Verstappen' or 'Max Verstappen' as a keyword phrase.

In a more expansive investigation with a more complete data set, I would be able to analyse every tweet made around a certain topic on that day in order to assess the quantity and popularity of a topic. Instead, I have provided educated assumptions based on the timescale of the tweets. To deduce which topic proved most popular on the day, I have looked at the timestamp of the 4,500th tweet in reverse chronological order, counting back from 23:59 on the day of the race, to deduce whether there were more or less posts made about that topic within that time frame.

Below is a breakdown for the searches, tweets and timestamps of the results;

Search terms	Number of tweets scraped	Timestamp of oldest tweet scraped	Timestamp of 4,500th tweet
#F1	4844	18:24:06	18:40:03
#F1 + 'Lewis' or 'Hamilton'	6641	13:40:06	14:38:37
#F1 + 'Verstappen'	4901	14:41:38	14:44:15

Figure 1: The total number of tweets scraped and the timestamp of the 4,500th tweet, in reverse chronological order, for the three data scrape search terms.

It is clear that searching broadly for all tweets made with #F1 would reveal the largest number of tweets, dictated by the 4,500th tweet being more recent in reverse chronological order. This demonstrates that for this project, there is restricted availability of data for analysis when looking at all tweets and commentary made about the race in general, so deductions and conclusions may be limited. Therefore, it is important to look at the two more refined searches featuring Hamilton and Verstappen-specific keywords. By looking at the time stamp of the 4,500th tweet, considering reverse chronological order, the fact the Verstappen-themed tweet was made closer to 23:59 than the Hamilton-themed comment shows there were more tweets made within that time frame, demonstrating that there was more being said in relation to the Dutch driver. From this early quantitative assessment, it would suggest that the narrative produced on Twitter during the Abu Dhabi Grand Prix was more focused around the role Verstappen played within that final lap.

Discourse analysis

With the help of further quantitative data, I then conducted a discourse analysis of the content of the tweets themselves to deduce an idea of sentiment from the users. I ran the tweet content from all three searches through a word frequency tool, to assess the most common phrases used when talking about one of the particular drivers. After removing the counts of main conjunctions, prepositions and determiners, such as 'the', 'and' or 'but', and disregarding the #F1 hashtag present in all searches, there are some interesting words and phrases that appear as popular within each search. Below is a list of the top 50 words used in each of the three main data scrapes:

#F1 tweets	#F1 + Lewis + Hamilton tweets	#F1 + Verstappen tweets
max: 7034	lewis: 3805	max: 3913
lewis: 5800	hamilton: 2802	#abudhabigp: 1492
hamilton: 3881	max: 2247	lewis: 1460
race: 3490	#abudhabigp: 2201	verstappen: 1408
verstappen: 2702	race: 1281	but: 1266
championship: 1681	verstappen: 974	race: 1125
fia: 1620	season: 924	season: 1019
win: 1526	lap: 695	hamilton: 738
lap: 1441	#hamilton: 629	all: 735
world: 1403	win: 614	championship: 671
champion: 1373	championship: 609	**champion: 641**
car: 1295	car: 581	world: 632
rules: 1277	#abudabhigp: 550	**win: 627**
today: 1244	fia: 538	fia: 564
mercedes: 1194	mercedes: 529	lap: 483
last: 1192	#f1finale: 513	#verstappen: 465
#f1finale: 1165	safety: 459	title: 437
title: 1152	**robbed: 449**	last: 426
masi: 1102	**end: 443**	f1: 400
safety: 1046	one: 442	**won: 396**
#hamilton: 1008	f1: 440	#f1finale: 392
year: 993	title: 436	car: 382
sport: 950	way: 433	end: 371
#abudhabigp: 947	**no: 419**	one: 368
won: 941	how: 402	today: 340
#verstappen: 925	cars: 399	masi: 340
decision: 798	can: 398	year: 336
over: 740	today: 396	**deserved: 336**
think: 740	world: 388	him: 336
deserved: 720	champion: 372	**rules: 331**
both: 720	#verstappen: 367	cars: 327
well: 718	won: 363	safety: 315
red: 710	now: 362	mercedes: 309
when: 690	year: 362	out: 296
#formulaone: 678	**should: 353**	well: 283
fans: 673	**rules: 349**	#hamilton: 277
driver: 667	**tyres: 300**	both: 262
time: 667	time: 294	red: 262
robbed: 649	masi: 288	should: 258
#fia: 638	both: 282	driver: 252
#formula1: 616	**decision: 282**	**first: 246**
first: 612	over: 278	done: 244
racing: 585	**deserved: 276**	think: 241
great: 582	well: 275	over: 238
bull: 578	see: 274	**congrats: 234**
stewards: 576	think: 274	sport: 232
right: 576	back: 272	next: 231
new: 566	after: 271	bull: 222
fan: 544	still: 258	**congratulations: 222**
michael: 542	sport: 254	**decision: 222**

While some of these phrases are obvious, including lexis relevant to racing such as *"season"*, *"cars"* and the team names *"Mercedes"* and *"Red Bull"*, there are more emotive and expressive words that stand out in each of the searches. In the broader #F1 search, the word "*rules*" was the 13th most-tweeted word, with "*decision*" as the 27th most-used and "*deserved*" as the 30th. This suggests that in the total output of people tweeting about Formula 1, one of the focuses of the commentary was questioning what had happened in that final lap, either offering their own input and views or simply seeking clarification on the result. Apart from "*win*" and "*won*", there are few strongly emotive words either in a celebratory or accusatory sense, showing that the consensus of all commentary at that time was more reflective and instead sharing thoughts and input on the race as a whole.

However, when looking specifically at tweets that feature Hamilton or Verstappen, the content begins to skew a little more positively or negatively in sentiment. In the Hamilton-specific tweets, the word "*robbed*" is the 18th most-used word, alongside "*end*" in 19th, "*decision*" in 41st and "*deserved*" in 43rd. This suggests that those people calling out Lewis were expressing a much more emotive and personal opinion on the event. On the other hand, Verstappen's tweets feature the word "*championship*" and "*champion*" as the 10th and 11th most-used respectively, alongside "*win*" in 13th and "*won*" in 20th. "*Congrats*" and "*congratulations*" also feature in the top 50 most common words in that search. This shows that those expressing a view on Verstappen were more actively engaging in the success of his win, using Twitter to express a positive emotion and happiness at their favourite driver winning such an important race. The common phrases used on either side of the rivalry suggest that viewers and fans of the race are using Twitter to express and share their emotions and their feelings.

Interestingly, references to the rival driver were still the third most used word. However, looking at these numbers more specifically shows the true divide between only commenting on Hamilton or only commenting on Verstappen; in the 4,900 tweets relevant to Verstappen, only 55 percent of them also make reference to Lewis or Hamilton. Comparatively, in the 6,641 tweets relevant to Hamilton, 58 percent of them commented on Verstappen. This suggests that even when discussing a particular team individually, there is still a desire to reference other rivals or competitors in a compare-and-contrast notion, which makes up a prominent part of sporting discussion. It is worth noting again that these tweets are all sourced in English-language only, so any references made to either driver in Verstappen's native language of Dutch would not be part of this analysis, potentially skewing the results here to those tweets made by fans in an English-speaking country.

Considering again that these tweets are all made independently and not as a reply, this demonstrates that even when not engaging in direct discussion, fans were still keen to share their opinion and project their thoughts onto the social media platform by their own will. Raney (2010) discusses the use of social media to enhance enjoyment and appreciation of people, specifically those within a relatable narrative such as a live sports event, stating enjoyment "is a product of a viewer's emotional affiliations with characters and the outcomes associated with those characters" (p.166). More specifically than just individual characters is the idea of the protagonist and antagonist (Zillman, 1996) adopting a positive and negative side of a rivalry, especially within a tense, live action sporting event such as the Grand Prix. The differentiation in expression between tweets for Hamilton versus tweets for Verstappen highlights the two sides of this rivalry, creating the user's own protagonist and antagonist depending on what team they are supporting. This concurs with Smith, Pegoraro and Cruikshank's (2019) discussion on rivalry being able to unite people;

> *"Winning a highly contested match against a powerful nation or rival, especially when it is an unexpected victory, can unite people, at least for a short period. Conversely,*

when the team suffers a defeat, people come together and bond by consoling each other." (p.99.)

Even in the case of these tweets, where fans are not directly communicating with one another to share excitement or commiseration, being able to witness such interactions can still offer support or encouragement during such an emotional event. These one-sided interactions show moments of expression during the live event and the desire for the user to put their ideas out for consumption, which ultimately contribute to the wider experience of the event and thus the construction of social TV. Smith et al. (2019) discuss how sporting enjoyment has been measured more so with users who only post their own thoughts rather than those seeking replies or retweets. The fact the data scrape still resulted in such a vast number of tweets despite ruling out replies and retweets demonstrates the desire for people to still share their thoughts and engage in the building of a community on social media.

It is interesting to look at how the community aspect of Twitter evolved over the course of the race and how its affordances developed the narrative as the event went on, even when just looking at these singular, non-reply tweets. One reference of this is the use of the newly invented hashtag '#F1xed', which appeared to be created during the race itself, with the first reference of it appearing after the live event had finished. A data scrape of tweets that included this hashtag, minus replies and retweets and in English-language only, showed that the hashtag was only mentioned twice on the day of the race, Sunday 12th December 2021. The table below shows how many tweets were made that featured the hashtag #F1xed in the week after the race.

Date	Number of tweets featuring #F1xed
Sunday 12th December	2
Monday 13th December	27
Tuesday 14th December	163
Wednesday 15th December	396
Thursday 16th December	464
Friday 17th December	78
Saturday 18th December	58
Sunday 19th December	68

Figure 3: The number of tweets featuring #F1xed sourced in a data scrape of non-replies or retweets in the English language.

The increase in frequency shows how the use of this hashtag promoted growing discussion around this specific topic; the hashtag likely would have shown up in Twitter's list of 'trending topics' – an affordance of the platform that uses algorithmic data to find popular keywords or hashtags in real time from the entire user population (Boyd et al., 2010) – encouraging users to discover new content and prompting fans to engage in this specific discourse. Fans can see the development of the event as it happens and follow the hashtag to understand more, helping shape viewpoints and opinions. This is suggested in the increasing frequency of the hashtag, where more users are wanting to join in with the topic and contribute to that narrative as the story develops. Looking further at the content of the tweets that contained #F1xed, other recurring hashtags include *"#JusticeForLewis", "#IStandWithLewis"* or *"#MasiOut"*, referring to Race Director Michael Masi. This links in with the rivalry between the two teams, showing that people are joining a community to express their views and opinions on the race, even on an independent basis. This group communication contributes to a style of mob mentality, enforcing the phenomenon of 'cancel culture' that is prominent across social media today (Saint-Louis, 2021), in this case, calling for Michael Masi to resign from his role. Fans are likely aware of the building momentum of #F1xed, and so are wanting to

tweet purposefully referencing the hashtag to draw even more attention to it both within Twitter and the wider sporting world. Whether for good or for bad, users and fans can unite across Twitter both during and after the live event in order to share in the experience of liveness, using hashtags to join in with wider discourse and share their thoughts in a participatory nature. This is evident even with the knowledge that all of these tweets are made independently and not as a direct reply.

Additional contributions to liveness

On top of the quantitative results available through my data scrape, it is also worth looking at insights gained from conducting a further discourse analysis on popular tweets and profiles during the event to see how their influential content contributed to the live experience. One particular tweet that gained momentum came from current F1 driver George Russell, who was racing in the Abu Dhabi Grand Prix himself, although retired early from the event. Russell publicly posted his views on the situation almost immediately after the race had ended, providing real-time updates from inside the event. The two tweets in question read:

Figure 4: Williams Formula 1 driver George Russell commenting on the results of the Abu Dhabi Grand Prix.

At the time of writing, these two tweets had gained a total of 324,400 'Likes' and 89,000 'Retweets', giving them huge reach and views across social media. Neither of these tweets contain any hashtags, but due to Russell's prominence as an athlete within the sport, he would have gained his own momentum independently. Gantz and Lewis (2014) discuss how "an increasing number of athletes have chosen to interact with their fans and followers, simultaneously bypassing the press and stepping beyond traditional parasocial interactions" (p.765), demonstrated by Russell in his very blunt and personal opinion. It is unlikely that, had he been in a more formal and controlled press-interview scenario, for example the post-race interviews where drivers are accompanied by representatives from their racing team, he would have chosen to or felt able to express such emotions to the press. Kassing and Sanderson (2010) summarise how this direct engagement between fans and athletes via social media contributes to the experience of the live sporting event;

"Athletes provided commentary and opinions, fostered interactivity, and cultivated insider perspectives for fans. These activities position Twitter as a powerful communication technology that affords a more social vs. parasocial relationship between athletes and fans." (p.113)

Developing this further, a tweet from Lewis Hamilton's driving team, Mercedes-AMG, also contributed to the discourse of the event more so than simply what was shown on television.

Figure 5: A tweet from the official account of Lewis Hamilton's driving team, Mercedes-AMG, at the conclusion of the race.

This account is the official, organisational account of the sporting team, providing an authoritative input to the discussion. Existing research has found that sporting organisations use their official Twitter accounts to help add value to their brand and strengthen the bond with the team by providing access to insider or additional information (Williams et al., 2014; O'Shea & Alonso, 2011). Although this tweet in particular is not providing any further information, the emotion portrayed here by the official account gives it a level of authority more recognised than from the individual athletes or drivers. While the Russell tweet above provides a personal input to the discussion, such a tweet from the official team account – that likely would be managed by a large number of staff and have a list of protocols they must adhere to when making a public post – demonstrates a commitment to the discussion more organically available than in a pre-social-media era. Similarly to Russell's tweet, by

using their own profile, the team can provide their thoughts or even a statement while bypassing external media (Price et al., 2013), in this case the official on-the-ground interviews. This means the team can quickly and directly communicate its intentions with fans, providing its point of view without question, rather than waiting to be given a platform to make a statement or risk having their words edited or not broadcast on the television at all.

Another key contribution from Twitter to the Abu Dhabi Grand Prix that was not available to record in the data scrape was the use of additional media, including screenshots from the race plus additional clips and behind-the-scenes videos that were sourced during the event. While the main television broadcast follows the central edit, the affordances of digital broadcast mean that additional streams of content are often available online, both on official Formula 1 channels and through third-party access, including the ability to listen to team radio messages sent during the race. Many fans used these additional resources to find audio that detailed possible coercion at the end of the race, as well as further insights and input from drivers and personnel on the ground. Edmondson (2021) wrote an article for the ESPN website collating a collection of clips of the team radio – i.e. the conversations happening between the drivers on the track and the teams in the garage – during the final lap of the race, revealing behind-the-scenes insight into the event more than ever before:

> *"Much of Hamilton's team radio messages were broadcast [...] but his most critical message, which came just a handful of corners from the end of the race once Verstappen was past Hamilton, was not broadcast. 'This has been manipulated, man,' Hamilton told his race engineer Peter Bonnington.*
>
> *"The team radio has since been clipped up by fans and has become something of a rallying call for those on social media hoping to see the matter investigated further."*

Some of this content was available to users on Twitter even before it was presented during the television broadcast, meaning fans were able to construct a wider and more detailed

picture of that final-lap controversy without the need of the official outlets. This content would have been published on Twitter with the sole purpose of sharing it as far as possible within the community, even if fans were not directly replying or connecting with the original posters. In a further analysis, it would be interesting to scrape this additional media to look even further at how the discourse and experience of the live event developed online alongside the consumption of this additional content.

6. CONCLUSION

This project looked directly at a large number of tweets made during and in the moments after the 2021 Abu Dhabi Grand Prix to analyse how fans of Formula 1 used Twitter and the concept of social TV during a live sporting event. Despite a technically limited data set, due to computation restrictions via Twitter itself, the results confirm that fans are actively using the platform to express their emotions and feelings in real-time (Smith et al., 2019). However, the fact all of the Tweets scraped were only one-sided comments and were not directly engaging in a reply or retweet shows that the desire to contribute to the discourse and be a part of the community is still a prominent part of the live experience, even when acting in a solo capacity. Even when there is no expectation to receive a direct response or engagement, fans are keen to share their feelings and be a part of a wider discussion. This agrees with existing studies into liveness, whereby it is the desire to be part of a wider event and community that is enough to feel a part of the fanbase, agreeing with Scannell's (2014) idea of communicative entitlement. This also concurs with ideas from Van Es (2017) about the opportunity to be part of a shared experience being an important aspect of liveness and social TV capabilities.

Considering live sports in particular, the analysis found many fans used their tweets to express a bias one way or another towards the key rivalry in the sport in order to contribute to the live experience; Smith, Pegoraro and Cruikshank (2019) found similar results in their analysis on Twitter and sports enjoyment specifically, highlighting that fans used social TV to share in excitement and disappointment, especially when dealing with team rivalry, suspense and unknown outcomes during live sports. Despite many of the fans watching the race by themselves or in a small group independently, the social TV element of Twitter allowed many to share their emotions, using common hashtags – or even, in the case of #F1xed, creating entirely new hashtags to use in their favour – to find other relevant content and joining the discourse in one way or another. Similarly, although this study did not

analyse the interactive element between fans and professional athletes and teams, looking at two of the key contributions from important members of the Formula 1 sport supports the idea that Twitter is used to build relationships and interactivity throughout live events (Kassing & Sanderson, 2010). The ability for official sporting outlets to communicate directly with fans without relying on external media to share their message (Price et al., 2013) shows the importance of social TV at dictating the narrative, both as a viewer and as a member of the sporting event itself.

Additionally, while the data scrapes available for this project did not allow me to take a detailed look into additional media such as photographs and videos, it is noted that the ability to share videos and audio clips through tweets gave viewers a broader experience of liveness than they would have found in just television broadcast alone. Extra team radio and additional video angles later revealed on social media provided more context and ultimately discussion on the race than would have been available through a television broadcast alone, as highlighted by ESPN's summary (2021).

There are several avenues of future research which could extend from this study into the use of Twitter as a form of social TV during live Formula 1 races. It would be interesting to look more directly at tweets made during the pivotal moment of the live race in order to track the fluctuation of keywords, sentiment, hashtags and responses, and learn how they develop as the live event goes on. This would likely require data scraping and collection to take place during the race itself to be able to accurately collate as many live tweets as possible. Finally, while this project focused on independent tweets with no replies or retweets, analysis into those direct interactions, both between regular fans or directly to the athletes themselves, would also help develop the understanding of the discourse during such an event, and would develop the understanding of the community aspect created by a live experience and the use of social TV.

References

Anderson, B. (2018). Winning Over Fans: How Sports Teams Use Live-Tweeting to Maximize Engagement. *Elon Journal of Undergraduate Research in Communications*, [online] 9(1). Available at: https://eloncdn.blob.core.windows.net/eu3/sites/153/2018/05/06_Anderson_Livetweeting.pdf

Auslander, P. (2008). *Liveness: Performance in a Mediatized Culture*. London: Routledge.

Bernard, A. (2019). *Theory of the Hashtag*. Cambridge: Polity Press.

Bourdon, J. (2000). Live Television Is Still Alive: On Television as an Unfulfilled Promise. *Media, Culture & Society*, 22(5), pp.531–556. doi:https://doi.org/10.1177/016344300022005001.

Boyd, D., Golder, S. and Lotan, G. (2010). Tweet, Tweet, Retweet: Conversational Aspects of Retweeting on Twitter. *2010 43rd Hawaii International Conference on System Sciences*. [online] doi:https://doi.org/10.1109/hicss.2010.412.

Bradley, C. (2021). *F1 Grand Prix Race Results: Verstappen Wins Abu Dhabi GP, Claims Title*. [online] www.autosport.com. Available at: https://www.autosport.com/f1/news/f1-grand-prix-race-results-verstappen-wins-abu-dhabi-gp-claims-title/6878130/.

Clavio, G. and Kian, T.M. (2010). Uses and Gratifications of a Retired Female Athlete's Twitter Followers. *International Journal of Sport Communication*, 3(4), pp.485–500. doi:https://doi.org/10.1123/ijsc.3.4.485.

Codling, S. (2017). *Speed Read F1: The Technology, Rules, History and Concepts Key to the Sport*. [online] Minneapolis: Motorbooks. Available at: https://www.google.co.uk/books/edition/Speed_Read_F1/VNA1DwAAQBAJ?hl=en&gbpv=0.

Couldry, N. (2003). *Media Rituals: A Critical Approach*. [online] London; New York: Routledge. Available at: https://ebookcentral.proquest.com/lib/bbk/reader.action?docID=237348.

Danesi, M. (2017). *The Semiotics of Emoji: The Rise of Visual Language in the Age of the Internet*. London; New York: Bloomsbury Academic, an Imprint of Bloomsbury Publishing Plc.

Dayan, D. and Katz, E. (1996). *Media Events: The Live Broadcasting of History*. Cambridge Massachusetts London Harvard University Press.

Doughty, M., Rowland, D. and Lawson, S. (2012). Who Is On Your Sofa? *Proceedings of the 10th European Conference on Interactive TV and Video*, pp.79–86. doi:https://doi.org/10.1145/2325616.2325635.

Edmondson, L. (2021). *Confusion and 'Manipulation': Unbroadcast Team Radio from the Final Laps in Abu Dhabi*. [online] ESPN.com. Available at: https://www.espn.co.uk/f1/story/_/id/32875204/confusion-manipulation-unbroadcast-team-radio-final-laps-abu-dhabi.

Efron, M. (2010). Hashtag Retrieval in a Microblogging Environment. *Proceeding of the 33rd International ACM SIGIR Conference on Research and Development in Information Retrieval - SIGIR '10*. doi:https://doi.org/10.1145/1835449.1835616.

FIA (2022). *2021 F1 Abu Dhabi Grand Prix - Report to the World Motor Sport Council - 19 March 2022*. [online] Federation Internationale de l'Automobile. Available at: https://www.fia.com/2021-f1-abu-dhabi-grand-prix-report-world-motor-sport-council-19-march-2022.

Formula 1 (2023). *About F1 | Formula One World Championship Limited*. [online] corp.formula1.com. Available at: https://corp.formula1.com/about-f1/.

Frederick, E.L., Lim, C.H., Clavio, G. and Walsh, P. (2012). Why We Follow: An Examination of Parasocial Interaction and Fan Motivations for Following Athlete Archetypes on Twitter. *International Journal of Sport Communication*, 5(4), pp.481–502. doi:https://doi.org/10.1123/ijsc.5.4.481.

Gantz, W. and Lewis, N. (2014). Sports on Traditional and Newer Digital Media. *Television & New Media*, [online] 15(8), pp.760–768. doi:https://doi.org/10.1177/1527476414529463.

Havard, C. T. & Hutchinson, M. (2017). Investigating Rivalry in Professional Sport. *International Journal of Sport Management,* 18, 422-440.

Heath, S. and Skirrow, G. (1977). Television: A World in Action. *Screen*, [online] 18(2), pp.7–60. doi:https://doi.org/10.1093/screen/18.2.7.

Highfield, T., Harrington, S. and Bruns, A. (2013). Twitter as a Technology for Audiencing and Fandom. *Information, Communication & Society*, 16(3), pp.315–339. doi:https://doi.org/10.1080/1369118x.2012.756053.

Huszár, F., Ktena, S.I., O'Brien, C., Belli, L., Schlaikjer, A. and Hardt, M. (2021). Algorithmic Amplification of Politics on Twitter. *Proceedings of the National Academy of Sciences*, [online] 119(1), p.e2025334119. doi:https://doi.org/10.1073/pnas.2025334119.

Hutchinson, A. (2023). *Twitter Launches Default 'Following' Feed Option on Web, with Mobile Coming Soon*. [online] Social Media Today. Available at: https://www.socialmediatoday.com/news/Twitter-Launches-Default-Following-Feed-Option/641119/.

Jenkins, H., Ford, S. and Green, J. (2013). *Spreadable Media: Creating Value and Meaning in a Networked Culture*. New York: New York University Press.

Ji, Q. and Raney, A.A. (2014). Morally Judging Entertainment: A Case Study of Live Tweeting During Downton Abbey. *Media Psychology*, 18(2), pp.221–242. doi:https://doi.org/10.1080/15213269.2014.956939.

Kassing, J.W. and Sanderson, J. (2010). Fan–Athlete Interaction and Twitter Tweeting Through the Giro: A Case Study. *International Journal of Sport Communication*, 3(1), pp.113–128. doi:https://doi.org/10.1123/ijsc.3.1.113.

Ketzer, C., Hünniger, J., Bredl, K. and Fleischer, J. (2013). Twitter and Social TV: Microblogging as a New Approach to Audience Research. *Audience Research Methodologies: Between Innovation and Consolidation*, [online] pp.196–211. Available at: https://www.researchgate.net/publication/327883755_Twitter_and_Social_TV_Microblogging_as_a_New_Approach_to_Audience_Research.

Llamas Mayoral, A. (2022). Female Fans in Formula 1: A Qualitative Study of Spanish Female Fans' Behaviours, Attitudes, and Motivations towards F1 and its Consumption through Twitter. *DiVA*, [online] Student Thesis. Available at: https://www.diva-portal.org/smash/get/diva2:1695999/FULLTEXT02.pdf.

Morlidge, M. (2022). *Max Verstappen vs Lewis Hamilton: One Year On, Relive Formula 1's Most Dramatic Title Decider in Abu Dhabi*. [online] Sky Sports. Available at: https://www.skysports.com/f1/news/12433/12748685/abu-dhabi-gp-as-lewis-hamilton-and-max-verstappen-return-relive-f1s-most-dramatic-decider.

Netherton, A. (2022). *FIA report: 'Human Error' to Blame for Formula 1's Abu Dhabi Controversy but Result Remains 'Valid'*. [online] Eurosport. Available at: https://www.eurosport.com/formula-1/bahrain-grand-prix/2022/fia-report-human-error-to-blame-for-formula-1-s-abu-dhabi-controversy-but-result-remain-valid_sto8851501/story.shtml.

O'Shea, M. and Alonso, A.D. (2011). Opportunity or Obstacle? A Preliminary Study of Professional Sport Organisations in the Age of Social Media. *International Journal of Sport Management and Marketing*, 10(3/4), p.196. doi:https://doi.org/10.1504/ijsmm.2011.044790.

Peterson, E.M. and Raney, A.A. (2008). Reconceptualizing and Reexamining Suspense as a Predictor of Mediated Sports Enjoyment. *Journal of Broadcasting & Electronic Media*, [online] 52(4), pp.544–562. doi:https://doi.org/10.1080/08838150802437263.

Price, J., Farrington, N. and Hall, L. (2013). Changing the Game? The Impact of Twitter on Relationships Between Football Clubs, Supporters and the Sports Media. *Soccer & Society*, 14(4), pp.446–461. doi:https://doi.org/10.1080/14660970.2013.810431.

Raney, A.A. (2010). Media Enjoyment as a Function of Affective Dispositions Toward and Moral Judgment of Characters. *Routledge eBooks*. doi:https://doi.org/10.4324/9780203885390.ch10.

Roele, M., Ward, J. and Van Duijn, M. (2020). Tweet with a Smile: The Selection and Use of Emoji on Twitter in the Netherlands and England. *First Monday*, [online] 25(4). doi:https://doi.org/10.5210/fm.v25i4.9373.

Sadri, S.R. (2019). Listicles and the Modern News Article: Comparing the Perceived Credibility of Listicles and Traditional Articles among Millennial Media Consumers. *Atlantic Journal of Communication*, [online] 27(2), pp.83–98. doi:https://doi.org/10.1080/15456870.2019.1574794.

Saint-Louis, H. (2021). *View of Understanding Cancel Culture: Normative and Unequal Sanctioning*. [online] firstmonday.org. Available at: https://firstmonday.org/ojs/index.php/fm/article/view/10891/10177.

Scannell, P. (2014). *Television and the Meaning of 'Live' : An Enquiry into Human Situation*. Cambridge: Polity Press.

Smith, L.R., Pegoraro, A. and Cruikshank, S.A. (2019). Tweet, Retweet, Favorite: The Impact of Twitter Use on Enjoyment and Sports Viewing. *Journal of Broadcasting & Electronic Media*, [online] 63(1), pp.94–110. doi:https://doi.org/10.1080/08838151.2019.1568805.

Sørensen, I.E. (2016). The Revival of Live TV: Liveness in a Multiplatform Context. *Media, Culture & Society*, 38(3), pp.381–399. doi:https://doi.org/10.1177/0163443715608260.

Statista (2022). *Netherlands Top Social Networks 2020*. [online] Statista. Available at: https://www.statista.com/statistics/1224092/leading-social-networks-netherlands/.

Statista (2023). *UK: Most Active Social Networks 2022*. [online] Statista. Available at: https://www.statista.com/statistics/284506/united-kingdom-social-network-penetration/.

Traynor, O. (2021). *PhantomBuster*. [online] phantombuster.com. Available at: https://phantombuster.com/blog/scraping/is-data-scraping-on-linkedin-legal-3WD1MKruD3J6YdLOQhG9On.

TweetDeck (2008). *What Does 'Rate Limit Exceeded' Mean?* [online] blog.twitter.com. Available at: https://blog.twitter.com/en_us/a/2008/what-does-rate-limit-exceeded-mean-updated.

TweetTabs (2020). *'Rate Limited' on Twitter Explained*. [online] Tweet Tabs. Available at: https://www.tweettabs.com/what-does-twitter-rate-limited-mean/.

Twitter (n.d.). *Search Result FAQs*. [online] help.twitter.com. Available at: https://help.twitter.com/en/using-twitter/top-search-results-faqs.

Van Es, K. (2017). Liveness Redux: On Media and Their Claim to Be Live. *Media, Culture & Society*, [online] 39(8), pp.1245–1256. doi:https://doi.org/10.1177/0163443717717633.

Weltevrede, E., Helmond, A. and Gerlitz, C. (2014). The Politics of Real-time: A Device Perspective on Social Media Platforms and Search Engines. *Theory, Culture & Society*, 31(6), pp.125–150. doi:https://doi.org/10.1177/0263276414537318.

Williams, J., Chinn, S.J. and Suleiman, J. (2014). The Value of Twitter for Sports Fans. *Journal of Direct, Data and Digital Marketing Practice*, 16(1), pp.36–50. doi:https://doi.org/10.1057/dddmp.2014.36.

Williams, M.L., Burnap, P. and Sloan, L. (2017). Towards an Ethical Framework for Publishing Twitter Data in Social Research: Taking into Account Users' Views, Online Context and Algorithmic Estimation. *Sociology*, [online] 51(6), pp.1149–1168. doi:https://doi.org/10.1177/0038038517708140.

Wood, I. (2021). *Analysis: The Four Minutes That Changed the Destiny of the 2021 World Championship*. [online] RaceFans. Available at: https://www.racefans.net/2021/12/14/analysis-the-four-minutes-that-changed-the-destiny-of-the-2021-world-championship/.

Zettl, H. (1978). The Rare Case of Television Aesthetics. *Journal of the University Film Association*, [online] 30(2), pp.3–8. Available at: https://www.jstor.org/stable/20687419.

Zhao, S., Zhong, L., Wickramasuriya, J. and Vasudevan, V. (2011). *Analyzing Twitter for Social TV: Sentiment Extraction for Sports*. [online] www.semanticscholar.org. Available at: https://ceur-ws.org/Vol-720/Zhao.pdf.

Zillmann, D. (1996). The Psychology of Suspense in Dramatic Expositions. *In P. Vorderer, H. J. Wulff, & M. Friedrichsen (Eds.), Suspense: Conceptualizations, Theoretical Analyses, and Empirical Explorations* (pp. 199–231). Mahwah, NJ: Erlbaum.