

Spending Time in the Network: Celebrity Relationships on Twitter

Paul Ziek

Department of Media, Communications and Visual Arts, Pace University, Pleasantville, NY, 10570
pziek@pace.edu, (914) 773-3672, @peziek

There have been very few studies on the time celebrities spend building and maintaining relationships with other celebrities. To fill the gap in the literature, the current study investigates how celebrities are connected through Twitter. A seed list of celebrities was developed from the attendees of the 2019 Annual Camp Google. After a Twitter crawl, a total matrix of 136 celebrities was created and UCINET was used to measure density, centrality and factions within the network. The results show that a loose emergent network exists among celebrities. However, although the links are

tenuous, several leaders do emerge within the network. There are multiple take-aways relative to the current study including the notion that celebrities are continually forging and terminating relationships, the idea that there is obviously an interpersonal network among celebrities which is hidden from public view and further support for the notion that there is a complicated and loose industry revolving around celebrity.

Keywords: celebrity, networks, Twitter

Celebrities hold a very interesting position in society. With every passing day, the public scours the Internet, social media and traditional news sources for information on celebrities. Information dredged up becomes fodder for criticism and praise. Leonardo DiCaprio's relationship with World Wildlife Fund, Prince Harry's speeches on sustainability, Vanessa Hudgens' arrest for carving her name on a rock in a federally protected forest and Kim Kardashian posting Instagram photos wearing a "M.I.L.\$." tee-shirt are all examples where celebrities drew both admiration and disapproval. According to Rojek (2001), celebrity is the attribution of glamour and status given to an individual and it can be done in several ways: ascribed celebrity is derived from lineage; achieved celebrity results from perceived accomplishments; and attributed celebrity, which is the outcome of the concentrated representation of an individual by cultural intermediaries. No matter the type, celebrity is contingent on a process where

some people are carefully chosen over others. It is precisely the process, and the ancillary impact of selection, that drives academics to investigate celebrity.

The process of selection contains the same two qualities for every individual: celebrities use media as a mechanism for delivering messaging and developing interactions with the public; and celebrities build relationships with other celebrities that consequently enhance recognition and prominence (Currid-Halkett, 2010). To this point, there has been ample research on the role of media but there have been very few studies on the time celebrities spend building and maintaining relationships with other celebrities. The primary reason for the disparity is that media are more visible than relationships. Mediated communication is publicly generated and ingested and thus accessible and observable. Even Boorstin (1962) alludes to the visible nature of media by describing how the “graphic revolution” has significantly changed our thinking about an individual’s well-knownness. From this perspective, studying celebrity is very manageable - specify the level of understanding, survey and analyze the appropriate material. Since relationships are based on social patterns, they are often not directly observable. Consequently, there are gaps in the research relative to celebrity affiliation and association. The current study attempts to fill-in some of these missing elements by focusing on how celebrities are joined together through Twitter. The benefit of the study is that it unearths what is typically an implicit aspect of celebrity – their interpersonal relationships or in the least “whom socializes with whom” (Newman, 2018, p. 5).

LITERATURE REVIEW

Celebrity and Media

Marshall (1997) explains that celebrity is a bottom-up form of democracy. An individual’s worth and value as a celebrity is defined through the way symbolic messaging and cultural representations are adopted or rejected. The key method of accessing the public on a mass scale is the use of media such as newspapers, television, film, social media, the Web and celestoids (Rojek, 2015). Whether media are directly controlled by the celebrity or by external constituents, they stimulate the public to act by setting out topics of concern (see ‘agenda setting theory,’ McCombs & Shaw, 1972). The ultimate importance of media lies in the fact that it enables communication that is “directed not toward the

extension of messages in space but toward the maintenance of society in time” (Carey 1989, p. 18). In other words, communication through media creates social reality and thus the opportunity for individuals to build and maintain celebrity.

There is ample research on the portrayal and reception of celebrity relative to media. The research comes from two main perspectives. The first perspective describes the way that celebrities are covered through what Rojeck (2001) describes as the “phenomenon of mass-circulation newspapers, TV, radio and film” (p. 16). Research on traditional media stretches the gamut and includes a variety of examples such as: Orson Wells’ radio programs featuring celebrity interviews (Hilmes, 1997); Walter Winchell’s revolutionary newspaper column on star romances (Turner, 2013); and of course, the inception and popularity of *People* magazine (Lilti, 2017). Above all others, the plight of modern celebrity owes much of its roots to television. For example, the value of the celebrity chat show, such as those hosted by Mike Wallace, Jonny Carson, Phil Donahue and Oprah Winfrey changed the landscape of celebrity. They provided a visualization of celebrity and thus paved the way for programming that was designed solely to create and sustain celebrity (Timberg & Erler, 2010). The overwhelming success of seeing famous guests highlight their personalities through congenial, playful and sometimes contentious encounters made way for a new genre of television, reality television. Reality television, especially those based on surveillance such as *Big Brother*, *Keeping up with the Kardashians* and *Flavor of Love*, allowed millions of people to choose a new form of celebrity (Andrejevic, 2004) – those that captured public fascination and not necessarily through fame or talent.

Recently there has been a turn to studying the role of new media in creating and maintaining celebrity. This second research track focuses on a host of social media from YouTube to Instagram to Twitter. Social media is very different from traditional media because any individual can truly prosper as a celebrity (Marshall, 2010). Social media rewards flexibility, entrepreneurialism and risk-taking in a way that attention and visibility are individualized (Marwick, 2013). In addition, there is a self-fulfilling nature to social media: the ease of transmitting image, coupled with the rise of eccentricity, has made way for more attempts, and consequently more success, at celebrity (Khamis, Ang & Welling, 2017). Although much of the research in this area focuses on self-presentation

and branding through symbolism there is a broader explanation of why social media is important to building and maintaining celebrity.

Taking a cue from media ecology, which is the study of how media play a leading role in human affairs (Strate, 2004), mediated interaction boils down to two important elements relative to celebrity. First, media enable certain sorts of communication, feeling and value (i.e., Postman, 1970) that generate a background of commitments, roles and expectations that influence how interactions play-out. In essence, social media are environments where celebrities build parasocial interactions with fans. The result is not just selection but also a strong bond between the public and celebrity (Rihl & Wegener, 2019). Second, media are extensions of human beings (McLuhan, 1964). This means there is an individual or organization behind every Tweet, post or message which makes social media an instrumental aspect of interaction. For example, Dave Grohl spent part of the pandemic in a virtual drum challenge with a 10-year-old. The competition was not only an instance of interaction between the celebrity and a member of the public but views on YouTube and Twitter also served to push his fame and celebrity further.

Given the two qualities of selection, the literature centered on media is extensive. What is missing is a more robust understanding of the relationships that occur between celebrities and how these relationships further enhance recognition and prominence. As Fowles (1992) argues, in all actuality there are patterns of relationships between prototypical individuals that make-up a culturally significant village of celebrities. Fowles describes this village as an American phenomenon for which little research has been done.

Celebrity and Relationships

Unlike media and communication, the research on celebrity relationships is quite small. The reason is simple: relationships are typically part of the invisible aspects of human behavior. How celebrities are connected is often something that occurs outside of the public view. The research that does exist shows the symbolic significance of celebrity relationships especially as individuals actively collect and configure the resources necessary to achieve fame. Boorstin (1962) first pointed out the consequence of reciprocal interactions when he stated that “celebrities live off each other” in a kind of symbiosis (p. 65). He further explains that “celebrities intensify their celebrity images simply by becoming widely known for relations among themselves” (Boorstin, 1962, p. 65). There is

no coincidence that Boostin's points were made during the hay-day of "The Rat Pack", also known as "the Summit", which consisted of Frank Sinatra, Dean Martin, Sammy Davis, Jr., Joey Bishop and Peter Lawford. To this day, they are the quintessential example of the benefits bestowed upon individuals that engage in collaborative relationships with other celebrities. "The Rat Pack" presented a highly stylized, hypermasculine image that was set by Sinatra (McNally, 2014) which signified a guilt-free escapism from Cold War anxiety (Rojek, 2004). As Levy (1999) explains, not just anyone was involved; instead, Sinatra handpicked the group, "giving them the gold tap on the shoulder and bringing them in" (p. 8). More importantly though, this tap bestowed benefits well beyond the talent of the members – well beyond participation in movies and concerts – it conferred money, power and interest, the latter being the most crucial aspect of celebrity. "The Rat Pack" became part of American lore with books, articles, documentaries and films dedicated to mapping its initiation, intensification, and eventual deterioration. Moreover, it piqued the interest researchers whereby they began to study a variety of celebrity relationships.

Most of the interest in this area has been on dyads, or the relationship between two individuals. The range in dyads stretch friendships such as Ella Fitzgerald and Marilyn Monroe, John Lennon and Paul McCartney, Ian McKellen and Patrick Stewart (Castle & Spring, 2017) to the celebrity power couple. Celebrity power couples, such as Brangelina, Kimye, John and Chrissy and the Beckhmas, are especially interesting because it is here that relationships not only become visible, but the visibility enhance the everyday circulation of celebrity image (Cobb & Ewen, 2015). They are examples of supportive climates relative to celebrity, meaning that participating individuals are coordinating action through bonding. The fame and influence of each partner reinforces, enhances and supports that of the other so that they are bigger in tandem than alone (Sánchez, 2019). In either case though, be it the friendship or the power couple, the upshot is that celebrity does not have to be an individual pursuit, people can collaborate to stir fans and stimulate emotional responses (Hu, Zhao, Liu, Li, & Kong, 2020).

Within the research on celebrity relationships, there is a small subset that stretches beyond the dyad. As stated earlier, this area began with "The Rat Pack" and has grown to encompass celebrity families and to a lesser degree networks of celebrities. Obviously,

Kardashian-Jenner is the preeminent example of the celebrity family and consequently have been at the center of numerous studies. Research on the Kardashian-Jenners includes the production of media content via television and social media (Asseraf, 2018), their enormous involvement in product placement (Myers, 2017) and the impact the family has had on gender and sexuality (Brady, 2016). The most important element of the research is that it highlights how lineages join-together so that individual members can take advantage of the brand (McClain, 2013). It is interesting to note that even though research on celebrity families has not found its footing yet there is still ample material to analyze as they exist in all sectors of life. The Kennedy, Bush, Clinton, Brown and Romney families are just a few examples of celebrity families that emerged from the realm of politics. As strange as this may sound – comparing a political dynasty to the Kardashian-Jenner family is not so farfetched. Attaining status large enough to create a generational empire like the Kardashian-Jenner family, approximately \$2 Billion (Friedman & Gonzales, 2019), is not as different as the status needed to win multiple major elections (Ziek, 2019).

Finally, and more recently, research has turned to relationships on a grand scale by investigating how networks are built and sustained. Networks are special circumstances that provide celebrities with access to wide sweeping social capital which makes possible the “achievement of certain ends that in its absence would not be possible” (Coleman, 1988, p. 59). For example, Ravid and Currid-Halkett (2013) used photographs from Getty Images to analyze how celebrities in the mid-2000s grouped and how these groupings impacted their careers. They found that celebrities formed small world networks with the cumulative advantage of the rich-gets-richer. Ravid and Currid-Halkett started a fruitful discussion and certainly more work needs to be done in this area. In fact, Düring (2014) contends that leading personalities hold certain positions with social networks but there is little research that investigates the claim. Therefore, the current study asks the following research question:

RQ: What is the structure of the celebrity network?

Since celebrity relationships are the often invisible, or inaccessible as Ravid & Currid-Halkett describe, the current study will look to social media, in particularly Twitter, as a way to foreground the hidden. As Newman (2018) explains, online data

allows researchers to collect information that was either previously unavailable or limited because it had to be amassed by hand. In this sense, Twitter provides partial ‘backstage’ access to the candid interactions between celebrities (Marwick & Boyd, 2011). Although the study relies on public communication it will still unearth the complex interconnected and interdependent social unit of celebrities. In addition, by engaging in a reflective process of inversion through Twitter, the study will access the relevant patterns of celebrity interactions and the way that these interactions help create the celebrity symbiosis (Boorstin, 1962).

METHODS

Given the vast number of celebrities, the first step was to generate a seed list. The seed list for the current study was created from two popular press articles, both of which detailed a portion of the attendees at Google’s annual top-secret celebrity retreat (i.e., Baston, 2019; Dobson, 2019). The retreat, sometimes called Camp Google, is where the world’s “most influential celebrities and business moguls” assemble to discuss issues like education, human longevity and sustainability (Dobson, 2019). Table 1 lists the celebrities that comprised the seed list.

In March 2020, the Twitter account for each individual (not fan club, business or associated account) was crawled for a list of users the celebrity was following who in return had over 1M followers. In other words, Priyanka Chopra, not Priyanka Chopra FC, was following 538 individuals, 85 of which had over 1M followers. This process was duplicated for each individual and resulted in a total of 618 individuals. The choice to use following as opposed to followers was because Twitter considers this designation a “friend”, which in social media parlance signifies a relationship. In addition, since this designation must be chosen by the account holder, following is a more selective and exclusive list than simply a user that receives Tweets.

Table 1

Initial Celebrity Seed List		
Celebrity	Followers	Following
Andrea Bocelli	291K	36
Barry Diller	No Social Media	
Bradley Cooper	No Social Media	
Brian Grazer	51K	359
Daniel Ek	139.6K	596
David Geffen	Inactive Account	
Diane Von Furstenberg	1M	912
Eric Schmidt	2.2M	209
Even Spiegel	67K	37
Gayle King	1M	110
George Lucas	No Social Media	
Graeme Hart	No Social Media	
Harry Styles	34M	1928
Joshua Kushner	28K	142
Karlie Kloss	5.7M	542
Katy Perry	108M	224
Kevin Durant	18.2M	1419
Lapo Elkman	70K	27
Larry Page	No Social Media	
Mark Zuckerberg	466K	789
Orlando Bloom	Inactive Account	
Pharrell Williams	10.8M	1070
Priyanka Chopra	26M	538
Reed Hastings	66.1K	128
Rihanna	97.1M	1045
Sergey Brin	No Social Media	
Stella McCartney	1M	589
Sundar Pichai	2.8M	349

To assure that the study encompassed the connection of renowned and prominent individuals, the list went through several iterations. After an initial pass for celebrities with 1M followers, a second pass included 5M followers and a final pass was completed to capture the uber-celebrity, those with over 10M followers. There were three specific reasons for settling on 10M followers. First, revising the list to 10M followers helped get close to Fowles’ (1992) notion that celebrity is dominated by a “Star Village” of

approximately 100 or so individuals. Second, 10M followers quantifies public choice (Patro, Bhaskaran & Mukherjee, 2018) – this level of followers supports the idea that individuals are in large part selected by the public and that celebrity relationships are an aspect of selection (Marshall, 1997; Rojek, 2001). Finally, 10M followers is a plateau that is difficult to dilute. Typically done through the use of bots or “Sybils” (Grabowicz, Babaei, Kulshrestha & Weber, 2016), individuals can boost their likes, comments and followers through underground fraudulent accounts. However, this faux follower supply chain is closely watched, and social media companies are under scrutiny to aggressively weed out the practice. Table 2 includes the 136 celebrities that acted as the final group for a Twitter crawl.

A matrix was created out of either the presence or absence of a follow. Not every celebrity relationship is mutual and the network does not measure the quality of relationships. For example, Adele was not following anyone, but 31 celebrities were following Adele. In addition, Kendall Jenner, Khloe Kardashian, Kim Kardashian West, Kourtney Kardashian and Kylie Jenner are siblings and have more than a cursive quality to their relationship however in the matrix they are all coded as simply being connected.

Table 2

Celebrity List with 10M Followers

Celebrity	Celebrity	Celebrity
50Cent	James Corden	Pharrell Williams
A.R. Rahman	Jennifer Lopez	Pink
Aamir Khan	Jim Carrey	Pitbull
Adele	Jimmy Fallon	Pope Francis
Agnez Mo	Jimmy Kimmel	Priyanka Chopra
Alia Bhatt	John Legend	Rachel Maddow
Alicia Keys	Justin Bieber	Rania Al Abdullah
Anupam Kher	Justin Timberlake	Ranveer Singh
Ariana Grande	Karan Johar	Richard Branson
Ashton Kutcher	Katy Perry	Ricky Martin
Aziz Ansari	Kelly Clarkson	Rihanna
Barack Obama	Kendall Jenner	Rio Ferdinand
Bernie Sanders	Kendrick Lamar	Riteish Deshmukh
Beyonce	Kevin Durant	Robert Downey Jr
Big Sean	Kevin Hart	Russell Brand
Bill Clinton	Khloe Kardashian	Ryan Reynolds

Bill Gates	Kim Kardashian West	Ryan Seacrest
Bill Maher	Kourtney Kardashian	Sachin Tendulkar
Blake Shelton	Kylie Jenner	Sarah Silverman
Britney Spears	Lady Gaga	Selena Gomez
Bruno Mars	Lana Del Rey	Serena Williams
Calvin Harris	LeBron James	Seth MacFarlane
Camila Cabello	Leonardo DiCaprio	Shah Rukh Khan
Charlie Sheen	Liam Payne	Shahid Kapoor
Chris Brown	Lil Wayne	Shakira
Chrissy Teigen	Louis Tomlinson	Shaq
Christina Aguilera	Ludacris	Simon Cowell
Ciara	Luke Hemmings	Snoop Dogg
Conan O'Brien	Mariah Carey	Sonam K Ahuja
Cristiano Ronaldo	Marshall Mathers	Stephen Colbert
Dalai Lama	Meek Mill	Stephen Curry
Deepika Padukone	Melania Trump	Taylor Swift
Demi Lovato	Michael Clifford	The Weekend
Diddy	Michelle Obama	Tim Cook
Donald Trump	Miley Ray Cyrus	Tom Hanks
Drake	Mindy Kaling	Trevor Noah
Dwayne Johnson	Neil deGrasse Tyson	Trey Songz
Ed Sheeran	Neil Patrick Harris	Tyra Banks
Ellen DeGeneres	Neymar Jr.	Victoria Beckham
Elon Musk	Niall Horan	Victoria Justice
Emma Watson	Nick Jonas	will.i.am
Farhan Akhtar	Nicki Minaj	Wiz Khalifa
Harry Styles	Oprah	Zac Efron
Hillary Clinton	Parineeti Chopra	Zendaya
Hrithik Roshan	Paris Hilton	
J. Cole	Paulo Coelho	

RESULTS

Among the measurements used to determine network position, the most popular is density and centrality (Doerfel & Barnett, 2003). Density measures the level of linkages among points in a network or “the ratio of actual to potential contacts in a network” (Monge & Eisenberg, 1987, p. 317). The density of the network is 17%, which signifies a loose network of actors. There are a variety of reasons that can explain the limited linkages. Even at the celebrity level, there is a tentativeness. Since celebrity is based in

large part on collective public fascination, celebrity is built and maintained. This means that individuals can easily move in and out of the highest levels of celebrity, which will subsequently impact their standing with other celebrities. To this end, the celebrity Twitter network seen here can best be described as an emergent network, which as Monge and Eisenberg (1987) explains is when actors “are continually in the process of forging, maintaining, and terminating their various communication linkages” (p. 334). Celebrity networks are not formally built, they are emergent social structures. Instead of creating a mandated assembly to their relationships, celebrities generate a rather complex and intricate order out of randomness (i.e., Monge, Contractor, Peter, Contractor & Noshir, 2003). The little organization that exists can best be described as diachronic emergence, which refers to a system that generates properties over time that did not exist at any prior points (i.e., Monge, Contractor, Peter, Contractor & Noshir, 2003). The vast difference in the types of celebrities in the network supports this claim. Celebrities that come from very different industries (e.g., Ashton Kutcher & Bill Gates) or are separated by decades in age (e.g., Zendaya and Oprah) are linked in the same network.

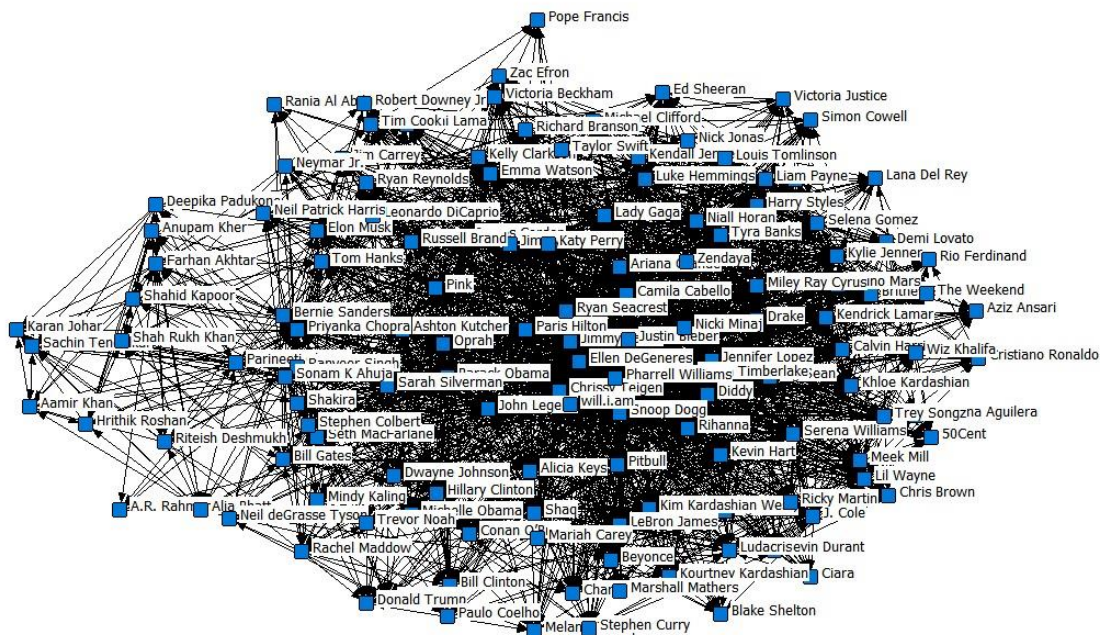


Figure 1: Celebrity Network. The visualization illustrates the position of celebrities in the network as well as the connections among celebrities.

Centrality refers to the extent to which actors are linked to one another (Doerfel & Barnett, 1999) and includes 3 metrics: degree, betweenness and closeness. On a macro level centrality shows the specific roles actors play in the network. With directional data, Hanneman and Riddle (2011) explain that it is important to distinguish between in-degree and out-degree centrality. The purpose is that studies can then differentiate between the types of actors that exists with a network. For example, Wasserman and Faust (1994) argue that there are 4 variety of actors: isolates, i.e., actors with neither indegree nor outdegree measurements; transmitters, i.e., actors with only outdegree measurements; receivers, i.e., actors with only indegree measurements; and carriers or ordinary points, i.e., actors with both indegree and outdegree.

Any description of the Twitter network must begin with the isolates, or celebrities not involved at all. There are three varieties relative to the current study. First are Camp Googlers such as Bradley Cooper, George Lucas, Larry Page and Sergey Brin that are certainly A-list celebrities but do not have social media accounts and thus cannot be included in the network. Second, there are Camp Googlers that do not have over 1M followers and did not qualify for the first iteration of the network. For example, some of the seed individuals who are undoubtedly famous and prominent that do not have 1M followers include Andrea Bocelli or Mark Zuckerberg. Finally, there are A-list celebrities, or at least individuals with high name recognition, that neither attended Camp Google nor have 1M followers such as Charlize Theron, Celine Dion, Michael Dell, Sheryl Crow and Gloria Steinem. Like the second variety, their limited number of followers did not enable them to qualify for the first, and obviously any, iteration of the network.

Given that the network includes 136 celebrities, the current paper will focus on the individuals with the top outdegree measurements. Table 3 lists the top 10 celebrities with the most outward connections. Since outdegree is calculated based on the total number of connections emanating from the individual, it is typically thought of as a measurement of transmission. For the current celebrity Twitter network, Jimmy Fallon, Ellen DeGeneres and Justin Bieber have far and above the highest outdegree measurements. Even within the top 10, the difference between these three celebrities and the remaining celebrities is substantial. In this network, Jimmy Fallon, Ellen DeGeneres and Justin Bieber can best be described as transmitters. As Wasserman and Faust (1994) explain, transmitters are

typically actors at the top of a long chain of information, i.e., those that are more focal to how information is broadcasted throughout the network. The take-away is that celebrities with high outdegree measurements are more actively creating Twitter-based interactions than others in the network, which consequently enables them to send higher levels of information.

Table 3

Centrality Measurements	
Celebrity	Outdegree
Jimmy Fallon	108.00
Ellen DeGeneres	105.00
Justin Bieber	92.00
Snoop Dogg	75.00
Chrissy Teigen	70.00
Camila Cabello	67.00
Ryan Seacrest	66.00
Ariana Grande	56.00
Diddy	56.00
John Legend	55.00

Table 4 lists the top 10 celebrities with the highest indegree centrality. Indegree centrality describes the lines pointed at celebrities meaning they are they recipients of interest. According to Hanneman and Riddle (2011), if an actor receives many ties, they are often said to be prominent or to have high prestige. Barack Obama had the highest indegree within the celebrity Twitter network and therefore it can be argued the highest stature when it comes to interest within the network. Barack Obama above all others, is the celebrity that other celebrities most want to hear from. What is interesting is that Ellen DeGeneres and Jimmy Fallon are right behind Barack Obama in terms of indegree scores. Indeed, as seen in Visualization 1, Jimmy Fallon and Ellen DeGeneres occupy the direct center of the network. If this is combined with their high outdegree, Ellen DeGeneres and Jimmy Fallon not only broadcast the most amount within the network, but their messages are also assigned a special measure of significance.

Table 4

Centrality Measurements

Celebrity	Indegree
Barack Obama	66.000
Ellen DeGeneres	60.000
Jimmy Fallon	52.000
Rihanna	52.000
Oprah	46.000
Ryan Seacrest	44.000
Nicki Minaj	42.000
Katy Perry	39.000
Chrissy Teigen	37.000
Kevin Hart & Lady Gaga	38.000

Even though celebrity networks do not have a formal structure, it seems leaders still surface. In fact, in virtual environments, a particular type of leader evolves – the emergent leader. Emergent virtual leaders are not assigned but chosen by members of the network (Charlier, Stewart, Greco & Reeves, 2016) because of their influence and contributions (Yoo & Alavi, 2004). There should be no surprise that talk show hosts are emergent virtual leaders. Talk show hosts are the arbiters of an extra textual dimension that is necessary for celebrity. The talk show host controls an important promotional activity, the opportunity for individuals to engage in a synthetic television chat that is devised to ultimately create public interest (Ziek, 2016). Talk show hosts are also effective at three vital virtual leadership competencies: asking questions, creative abilities and vision setting (Ziek & Smulowitz, 2014). When these competencies are coupled with their ability to create a feeling of intimacy with both their guests and the audience (Haag, 1993), talk show hosts are able to amass an interested following from both the public and other celebrities.

Beyond the centrality of individuals, network subgroupings can be discovered through a technique known as the factions routine. It is a top-down approach (Hanneman & Riddle, 2005) for identifying any substructures within a larger network based on information about linking behavior. It is a discretionary routine that generates the maximum within-group densities and minimum between group densities among potential subgroupings of actors (Ansell, Reckhow, & Kelly, 2009). After several iterations of the factions routine, four factions of celebrities were identified within the celebrity Twitter

network. UCINET uses a “goodness-of-fit” algorithm to determine the optimal arrangement of actors and measures how well the data fits an ideal type (Everton, 2012). The final proportion for the celebrity Twitter network was 75%. Table 5 shows the four factions that exists within the celebrity Twitter network.

Table 5 Celebrity Factions

Faction 1	Faction 2	Faction 3	Faction 4
50Cent	Alicia Keys	A.R. Rahman	Adele
Agnez Mo	Ashton Kutcher	Aamir Khan	Ariana Grande
Aziz Ansari	Barack Obama	Alia Bhatt	Britney Spears
Beyonce	Bernie Sanders	Anupam Ker	Calvin Harris
Big Sean	Bill Clinton	Blake Shelton	Camila Cabello
Bruno Mars	Bill Gates	Dalai Lama	Christian Aguilera
Charlie Sheen	Bill Maher	Deepika Padukone	Demi Lovato
Chris Brown	Chrissy Teigen	Donald Trump	Ed Sheeran
Ciara	Conan Obrien	Farhan Akhtar	Ellen DeGeneres
Cristiano Ronaldo	Dwayne Johnson	Hrithik Roshan	Harry Styles
Diddy	Elon Musk	Jim Carrey	Jennifer Lopez
Drake	Emma Watson	Karan Johar	Jimmy Fallon
J. Cole	Hillary Clinton	Leonardo DiCaprio	Justin Bieber
Justin Timberlake	James Corden	Emimem	Katy Perry
Kendrick Lamar	Jimmy Kimmel	Melanie Trump	Kendall Jenner
Kevin Durant	John Legend	Neymar Jr.	Khloe Kardashian
Kevin Hart	Kelly Clarkson	Parineeti Chopra	Kim Kardashian West
LeBron James	Michelle Obama	Pope Francis	Kourtney Kardashian
Lil Wayne	Mindy Kaling	Priyanka Chopra	Kylie Jenner
Ludacris	Neil deGrasse Tyson	Rania Al Abdullah	Lady Gaga
Mariah Carey	Neil Patrick Harris	Ranveer Singh	Lana Del Rey
Meek Mill	Oprah	Riteish Deshmukh	Liam Payne
Pharrell	Paulo Coelho	Robert Downey Jr.	Louis Tomlinson
Rihanna	Pink	Sachin Tendulkar	Luke Hemmings
Stephen Curry	Rachel Maddow	Shah Rukh Khan	Michael Clifford
The Weekend	Richard Branson	Shahid Kapoor	Miley Cyrus
Trey Songz	Russell Brand	Shakira	Niall Horan
Wiz Khalifa	Ryan Reynolds	Sonam K Ahuja	Nick Jonas
Zendaya	Seth MacFarlane	Zac Efron	Nicki Minaj
	Sarah Silverman		Paris Hilton
	Stephen Colbert		Pitbull
	Tim Cook		Ricky Martin
	Tom Hanks		Ryan Seacrest
	Trevor Noah		Selena Gomez
			Simon Cowell
			Taylor Swift
			Tyra Banks
			Victoria Beckham
			Victoria Justice
			will.i.am

The analysis of the factions routine provides an opportunity to identify dense regions with the larger network (Moody, 2001). The data reveals another dimension that crosscuts the vertical arrays relative to the mesostructure. Factions are not entirely homogenous cliques but include celebrities that have similar interests. Faction 1 is dominated by contemporary musicians; Faction 2 are celebrities primarily focused on politics; Faction 3 is heavily centered on international celebrity, particularly those from Bollywood; and Faction 4 is built around celebrities propelled through widespread fame. Of all the factions, faction 3 is noteworthy because Priyanka Chopra was the only seed celebrity from Bollywood, which means she fills a structural hole (Burt, 1992). Priyanka Chopra is also married to Nick Jonas, making them a celebrity power couple which draws together the literatures of dyads and networks. In addition, Faction 4 also needs mentioning because it is the largest and consists of celebrities with vastly different reasons for public fascination. Whereas the faction seems random, it exists is because these celebrities are mostly propelled by mainstream mass media and cultural intermediaries. Factions are indicative of certain forms of activity that go beyond the simple explanation that individuals with prominent profiles group together on Twitter. These cliques of celebrities are emblematic of what Tomochi (2010) describes as nested small-world networks, which are partial, localized groupings that are still connected to a global network. In short, the existence of factions shows that there are communities of celebrities that are more densely connected yet at the same time remain part of the overall network (i.e., Porter, Onnela & Mucha, 2009). Interestingly, the nested small-world networks seen in the current study are similar to the circumstances that surrounded “The Rat Pack” and mid-2000s Getty web.

The data relative to both centrality and factions supports Currid-Halkett’s (2010) argument that there is a complicated structure to celebrity that can be loosely described as an industry. Although not an industry in the traditional sense, celebrity encompasses 5 tiers of activity: celebrities and aspiring stars; people that work directly building celebrity (i.e., communication teams and publicists); support individuals (lawyers, couriers, chauffeurs and various attendants); “preppers” (hair, make-up and stylists); and the media. Looking back at the seed list, Daniel Ek (co-founder of Spotify), Evan Spiegel (co-founder of Snapchat) and Reed Hastings (co-founder of Netflix) are just a few of the Camp

Google attendees that are not A-list celebrities. The contention here is not that they are support individuals or “preppers” but their involvement in the network is still helping other individuals build and maintain celebrity. Consorting with billionaire business moguls provides A-list celebrities with social capital. In this instance, there is an immeasurable transitive status where Katy Perry and Harry Styles are bestowed a more wide-spread prominence beyond their primary medium of film or radio. The public now sees them consulting with individuals that have the means to dedicate enormous financial capital, technological and human resources toward solving issues with education, longevity and sustainability.

DISCUSSION

The fact that celebrities are continually forging and terminating relationships points to the existence of multiple types of networks and multiple forms of communication that support these networks. The mere notion that there is little to no connection between many of the Camp Google attendees means that there must be multiple networks at play. Celebrities, like all other individuals, build and maintain networks for different reasons. According to Cross, Parker, Prusak and Borgatti (2001), individuals’ network for knowledge, access, engagement and safety and Krackhardt and Hanson (1993) add that individuals link for advice as well as trust. Moreover, celebrities, like ordinary individuals, facilitate networking through infrastructures for communication, which are repertoire of materials that act as a tacit framework for the preferred forms of communicative (Aakhus & Ziek, 2009). One of the elements of an infrastructure for communication are the instruments, i.e., the communicative delivery systems that enable celebrities to interact. While this study uses Twitter, celebrities are certainly connected through other forms of social media such as Facebook, Instagram and Snapchat, to name a few.

Clearly, traditional, interpersonal instruments, which are hidden from public view, are also used to establish the network. This interpersonal connection is either maintained via direct communication or through intermediaries. This inference is supported by Ravid and Currid-Halkett’s (2013) argument that no matter the size, celebrities can reach each other at any time through only a few methodological steps. Beyond just making a case that there is an interpersonal network supporting celebrity interaction, what is presupposed is

that there is a qualitative difference between traditional networks and social media networks. In other words, the interpersonal network is stronger than the digital one – how else can you explain Camp Google or Leonardo DiCaprio and Bradley Cooper at dinner together in Los Angeles. There is certainly some research that backs this up, but more needs to be done. Researchers agree that social media networks are shaped by the characteristics of the platform (Kane et al., 2014). That is, there are performance differences within social media networks that do not always exist in traditional networks. Therefore, not only is there a need for research that attempts to unearth the ways that celebrities are connected via traditional instruments but also the structure of celebrity networks on other social media platforms.

As with all studies, this one is not without limitations. The major limitation of the current study relates how the network is constructed. The current study creates the network out of large-scale social media data and thus infers interpersonal connections between the celebrities (De Choudhury et al., 2010). The limitation is mitigated by the idea that the study is exploratory and meant to be creative and flexible (i.e., Treadwell, 2014). The second limitation is the fact that the network is based on a specific seed list. This means that certain celebrities that have above 10M followers, such as Tom Holland or Tom Cruise, are not included in the network. This limitation is balanced by the idea that celebrity networks are emergent and thus ties are constantly created and discontinued. Consequently, the study does well to capture the basic structure of a celebrity network of which vacillations are natural.

References

- Aakhus, M., & Ziek, P. (2009). *The role of instruments for communicating corporate social responsibility*. Paper presented at the annual meeting of the National Communication Association, Chicago, IL.
- Andrejevic, M. (2004). *Reality TV: The work of being watched*. New York, NY: Rowman & Littlefield Publishers.
- Ansell, C., Reckhow, S. & Kelly, A. (2009). How to Reform a Reform Coalition: Outreach, Agenda Expansion, and Brokerage in Urban School Reform. *Policy Studies Journal*, 37(4), 717-743.
- Asseraf, A. (2018). Fast media, slow media: losing time with the Kardashians. *Critical Quarterly*, 60(4), 35-45.
- Boorstin, D. J. 1975. *The image: A guide to pseudo-events in America*. New York: Vintage Books.
- Brady, A. (2016). Keeping away from the Kardashians: Celebrity worth and the re-masculinising of Caitlyn Jenner. *Celebrity Studies*, 7(1), 115-118.
- Burt, R. S. (1992). "The social structure of competition. In *Structural holes*. Cambridge, MA: Harvard University Press", in Cross, R., Parker, A. and Sasson, L. (Eds.), *Networks in the Knowledge Economy*, Oxford University Press, London, pp. 13-56.
- Carey, J. W. (1989). *Communication as Culture. Essays On Media and Society*, In D. Thornburn (Ed.) *Media and Popular Culture. A Series of Critical Books*. New York: Routledge.
- Castle, J. & Spring, B. (2017). *Famous Friends*. New York, NY: Scholastic Incorporated.
- Charlier, S. D., Stewart, G. L., Greco, L. M., & Reeves, C. J. (2016). Emergent leadership in virtual teams: A multilevel investigation of individual communication and team dispersion antecedents. *The Leadership Quarterly*, 27(5), 745-764.
- Cobb, S., & Ewen, N. (Eds.). (2015). *First comes love: power couples, celebrity kinship and cultural politics*. New York, NY: Bloomsbury Publishing USA.
- Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, 94, S95-S120.
- Cross, R., Parker, A., Prusak, L., & Borgatti, S. P. (2001). Knowing what we know: Supporting knowledge creation and sharing in social networks. *Organizational Dynamics*, 30(2), 100-120.
- Currid-Halkett, E. 2010. *Starstruck: The business of celebrity*. New York: Faber and Faber.
- Currid-Halkett, E., & Ravid, G. (2012). 'Stars' and the connectivity of cultural industry world cities: an empirical social network analysis of human capital mobility and its implications for economic development. *Environment and Planning*, 44(11), 2646-2663.
- De Choudhury, M., Mason, W. A., Hofman, J. M., & Watts, D. J. (2010, April). Inferring relevant social networks from interpersonal communication. In *Proceedings of the 19th international conference on World wide web*, pp. 301-310.
- Dobson, J. (2019). Billionaire Summer Camp: The Rich And Famous Flock To Sicily For The 7th Annual Google Retreat. *Forbes*. Retrieved from <https://www.forbes.com/sites/jimdobson/2019/07/30/billionaire-summer-camp-the-rich-and-famous-flock-to-sicily-for-the-7th-annual-google-retreat/?sh=7d298a28387d>

- Doerfel, M.L., & Barnett, G.A. (1999). A comparison of the semantic and affiliation networks of the International Communication Association. *Human Communication Research*, 25, 589–603.
- Düring M. (2015) Can Network Analysis Reveal Importance? Degree Centrality and Leaders in the EU Integration Process. In L. Aiello and D. McFarland's (Eds.) *Social Informatics. SocInfo 2014*. Lecture Notes in Computer Science, 8852. Springer, Cham.
- Everton, S. F. (2012). *Disrupting dark networks* (No. 34). Cambridge, MA: Cambridge University Press.
- Fowles, J. (1992). *Starstruck: Celebrity performers and the American public*. Washington, DC: Smithsonian Institute.
- Friedman, M., & Gonzales, E. (2019, March). Here's How Much Every Member of the Kardashian-Jenner Family is Worth. Harper's Bazaar. Retrieved from <https://www.harpersbazaar.com/celebrity/latest/a22117965/kardashian-family-network/>
- Grabowicz, P. A., Babaei, M., Kulshrestha, J., & Weber, I. W. (2016). The road to popularity: The dilution of growing audience on twitter. *arXiv preprint arXiv:1603.04423*.
- Haag, L. L. (1993). Oprah Winfrey: The construction of intimacy in the talk show setting. *The journal of popular culture*, 26(4), 115-122.
- Hanneman, R.A., & Riddle, M. (2011). Concepts and Measures for Basic Network Analysis. In J. Scott & P.J. Carrington's (Eds) *The SAGE handbook of social network analysis*, pp. 340-369. SAGE publications.
- Hilmes, M. (1997). *Radio voices: American broadcasting, 1922-1952*. Minneapolis, MN: U of Minnesota Press.
- Hu, M., Zhao, Y., Liu, Z., Li, Z., & Kong, X. (2020). Just my imagination: The influence of celebrities' romantic relationship announcements on romance fans and friendship fans. *Psychology of Popular Media*. Advance online publication. Retrieved from <https://doi.org/10.1037/ppm0000324>
- Kane, G. C., Alavi, M., Labianca, G., & Borgatti, S. P. (2014). What's different about social media networks? A framework and research agenda. *MIS quarterly*, 38(1), 275-304.
- Khamis, S., Ang, L., & Welling, R. (2017). Self-branding, 'micro-celebrity' and the rise of Social Media Influencers. *Celebrity studies*, 8(2), 191-208.
- Krackhardt, D., & Hanson, J. R. (1993). Informal networks. *Harvard business review*, 71(4), 104-111.
- Levy, S. (1999). *Rat Pack confidential: Frank, Dean, Sammy, Peter, Joey and the last great show biz party*. New York, NY: Broadway Books.
- Lilti, A. (2017). *The invention of celebrity*. New York, NY: John Wiley & Sons.
- Marshall, P. D. 1997. *Celebrity and power: Fame in contemporary culture*. Minneapolis, MN: University of Minnesota Press.
- Marshall, P. D. 2010. The promotion and presentation of the self: celebrity as marker of presentational media. *Celebrity studies*, 1(1), 35-48.
- Marwick, A. E. (2013). *Status update: Celebrity, publicity, and branding in the social media age*. New Haven, CT: Yale University Press.
- Marwick, A. E., & Boyd, D. (2011). I tweet honestly, I tweet passionately: Twitter users, context collapse, and the imagined audience. *New media & society*, 13(1), 114-133.

- McClain, A. S. (2013). *Keeping up the Kardashian brand: celebrity, materialism, and sexuality*. New York, NY: Lexington Books.
- McCombs, M. E., & Shaw, D. L. (1972). The agenda-setting function of mass media. *Public opinion quarterly*, 36(2), 176-187.
- McLuhan, Marshall. (1964) *Understanding Media: The Extensions of Man*. New York, NY: McGraw Hill.
- McNally, K. (2015). *When Frankie Went to Hollywood: Frank Sinatra and American Male Identity*. Champaign, IL: University of Illinois Press.
- Monge, P. R., & Eisenberg, E. M. (1987). Emergent communication networks. In F. M. Jablin, L. L. Putnam, K. H. Roberts, & L. W. Porter, (Eds.), *Handbook of organizational communication* (pp. 304–342). Newbury Park, CA: Sage.
- Monge, P. R., Contractor, N. S., Peter, R., Contractor, P. S., & Noshir, S. (2003). *Theories of communication networks*. Oxford, UK: Oxford University Press, USA.
- Moody, J. (2001). Peer influence groups: identifying dense clusters in large networks. *Social networks*, 23(4), 261-283.
- Meyers, C. B. (2017). Social media influencers: A lesson plan for teaching digital advertising media literacy. *Advertising & Society Quarterly*, 18(2).
- Newman, M. (2018). *Networks*. Oxford, UK: Oxford University Press.
- Patro, J., Bhaskaran, R., & Mukherjee, A. (2018). What Propels Celebrity Follower Counts? Language Use or Social Connectivity. *arXiv preprint arXiv:1811.07169*.
- Porter, M. A., Onnela, J. P., & Mucha, P. J. (2009). Communities in networks. *Notices of the AMS*, 56(9), 1082-1097.
- Postman, N. (1970). The reformed English curriculum. In A. C. Eurich (Ed.), *High school 1980: The shape of the future in American secondary education*, pp.160–168. New York, New York: Pitman Press.
- Rihl, A., & Wegener, C. (2019). YouTube celebrities and parasocial interaction: Using feedback channels in mediatized relationships. *Convergence*, 25(3), 554-566.
- Rojek, C. (2001) *Celebrity*. London, UK: Reaktion Books.
- Rojek, C. (2004). *Frank Sinatra*. Cambridge, UK: Polity.
- Rojek, C. (2015). Celebrity. *The Wiley Blackwell Encyclopedia of Consumption and Consumer Studies*, 1-3.
- Sánchez, A. B. (Ed.). (2019). *Power Couples in Antiquity: Transversal Perspectives*. New York, NY: Routledge.
- Strate, L. (2004). Media ecology. *Communication Research Trends*, 23(2), 1-48.
- Timberg, B. M., & Erler, R. J. (2010). *Television talk: A history of the TV talk show*. Austin, TX: University of Texas Press.
- Tomochi, M. (2010). A model of a nested small-world network. *Sociological Theory and Methods*, 25(1), 19-29.
- Treadwell, D. (2014). *Introduction to Communication Research. Paths of Inquiry* (2nd Ed.). Thousand Oaks, CA: Sage Publications.
- Turner, G. (2010). Approaching celebrity studies. *Celebrity studies*, 1(1), 11-20.
- Turner, G. (2014). Is celebrity news, news?. *Journalism*, 15(2), 144-152.
- Wasserman, S., & Faust, K. (1994). *Social network analysis: Methods and applications* (Vol. 8). Cambridge, MA: Cambridge University Press.
- Yoo, Y., & Alavi, M. (2004). Emergent leadership in virtual teams: what do emergent leaders do?. *Information and organization*, 14(1), 27-58.

- Ziek, P. (2016). Cultivating Celebrity through Public Relations. *Celebrity Studies*, 7(1), 122-124.
- Ziek, P. (2019, May). *The Cuomo Family: A dynasty build on more than politics*. <https://agoracenter.wordpress.com/2019/05/15/the-cuomo-family-used-more-than-politics-to-build-its-dynasty/>
- Ziek, P., & Smulowitz, S. (2014). The Impact of Emergent Virtual Leadership Competencies on Team Effectiveness. *Leadership and Organizational Development Journal*, 35(2), 106-120.

Online Connections

To follow this author in social media: @peziek