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One Does Not Simply Create a Meme: Conditions for the Diffusion of Internet Memes

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Internet memes are particularly popular among young social Web users. Research into this phenomenon is booming. However, the success and diffusion factors of memes remain unclear. This interdisciplinary study delves deeper into the question of how and why memes spread through social media platforms. Based on Spitzberg's model of meme diffusion and Rogers' framework on the diffusion of innovations, this study integrates linguistic perspectives on image-based memes. Using a quantitative content analysis (n = 3,253), this study analyzes the reasons for the successful diffusion of the so-called Merkel Meme on Twitter. The results indicate success factors such as the participation of well-connected early adopter groups like journalists and media organizations in the early stage of the diffusion process as well as image editing.

Keywords: Internet memes, Merkel Meme, diffusion, Twitter, social media, content analysis

At the 2015 G7 summit in Germany, a photo of Angela Merkel and Barack Obama gained attention among social media users. The photo shows Obama sitting on a bench looking at Merkel, who faces him with wide open arms. The users not only spread it within a few hours via Twitter but also adapted it by including written language and creating photoshopped variants (see Figure 1). From this photo, the so-called Merkel Meme emerged.

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Figure 1. Adaptations of the Merkel Meme. (Sources: Twitter @DudeMinds, @SixtDE, @Stadtgespraech)

The concept of an Internet meme (Milner, 2016; Shifman, 2012, 2014) comprises relatively new and diffuse types of texts (motifs, phrases, pictures, and videos) that spread through social media. Their encompassing nature has resulted in the term being operationalized differently. Some studies focus on written text memes such as quotes (Shubeck & Huette, 2015), and others concentrate on moving images such as YouTube memes (Shifman, 2012; Xie, Natsev, Kender, Hill, & Smith, 2011). Overall, Internet memes are considered as part of a participatory digital culture (Shifman, 2014, p. 18; Wiggings & Bowers, 2015, p. 1886), often picking up political and pop cultural content (Shifman, 2014, p. 51).

Research on Internet memes has increased in the past years. However, there is little empirical work on the success and diffusion factors (e.g., Johann & Bülow, 2018; Schlaile, Knausberg, Mueller, & Zeman, 2018). Some studies aim at predicting the success of Internet memes rather than focusing on structural features of social media platforms. Only some pay attention to the characteristics of the meme itself. Shubeck and Huette (2015), for example, found that "linguistic features appear to be enough to predict meme transmission success without any information about social network structure" (p. 2182). Although the authors only examine the language structure, they neglect the characteristics of multimodal texts and the structural features of social media platforms. Generally, linguistic perspectives on Internet memes are rare (e.g., Dancygier & Vandelanotte, 2017; Grundlingh, 2018; Nissenbaum & Shifman, 2018).

Political Internet memes have emerged as a relevant subgenre in the broad "memesphere" (Shifman, 2014, p. 117). The attribute "political" means that the memes refer to societal interests, societal conflicts, political actors, their representative acts, or political decisions (Grittmann, 2007, pp. 312–313). Researchers have examined political Internet memes especially in the context of elections (e.g., Ross & Rivers, 2017; Wells, 2018), political activism (e.g., Bebić & Volarevic, 2018; Harlow, 2013), and social criticism (e.g., Cepeda, 2018; Mielczarek, 2018).

For the Merkel Meme, this study will focus on a political stock character macro (Shifman, 2014, p. 112). Its multimodal character is anchored in two components: the image and the language, which can be copied or varied (Dancygier & Vandelanotte, 2017, p. 573). Thus, the "normative debate" (Shifman, 2014, p. 120), to which a political Internet meme usually contributes, is dependent on its variants' multimodal

construction of meaning. The potential of being taken up and diffusing via social media opens numerous strategic possibilities for application, from political action and discourse (Ross & Rivers, 2017; Shifman, 2014, p. 120) to viral marketing and advertising (Csordás, Horváth, Mitev, & Markos-Kujbus, 2017).

This study seeks to contribute to the understanding of how political Internet memes such as the Merkel Meme are powerful forms of user participation in a modern digital culture. Specifically, this case study aims to uncover the success and diffusion factors and to isolate the attributes that make it susceptible for adaptation on the microblogging service Twitter.

First, the multimodal nature of Internet memes will be specified. Subsequently, these characteristics will be applied to the question of how the Merkel Meme spread through Twitter. As information diffusion is at the core of diffusion research, a conceptual analysis model will be developed with regard to Rogers' (1962/2003) diffusion factors innovation, communication channel, time, and social system. Specifically, Spitzberg's (2014) meme diffusion levels of the meme, the individuals, the time, and the social network will be addressed in this framework. The model will be applied in a quantitative content analysis of the tweets about the Merkel Meme. Based on the analysis results, the study finally discusses the implications of success factors such as participation from well-connected early adopter groups in the early stage of the diffusion process as well as content-related features.

Literature Review

Internet Memes as Image-Language-Texts

The concept of the "meme" goes back to the evolutionary biologist Richard Dawkins (1976) in his attempt to find a term for the cultural counterpart to genetic evolution. He explains memes as replicators that should be considered as information units that are transferred via symbols (Dawkins, 1976, p. 206). He also binds meme evolution to the conditions of variation, replication, and fitness. Good replicators are characterized by their longevity, fecundity, and copying fidelity (Dawkins, 1976, pp. 18–19). Dawkins' neo-Darwinian meme concept was frequently adopted and developed (Blackmore, 1999; Shifman, 2014). Since the Web 2.0 revolution, the term "meme" has also been used to describe ideas spreading across social media. This new application of the term must be distinguished from Dawkins' original concept. In accordance with Shifman (2014, p. 7), this study refers to these ideas as Internet memes.

The concept of Internet memes has also resulted in many heterogeneous definitions that emphasize single characteristics. Burgess (2008) defines an Internet meme as "a faddish joke or practice (like a humorous way of captioning cat pictures) that becomes widely imitated" (p. 1) and largely neglects the evolutionary nature of diffusion logic. Davison's (2012) attempt to capture the concept as "a piece of culture, typically a joke, which gains influence through online transmission" (p. 122) remains similarly superficial. Shifman (2014) gave the most comprehensive overview of Internet meme research, recommending an application-oriented definition while also neglecting the aspect of humor and flouting neo-Darwinian logic:

> I define an Internet meme as: (a) a group of digital items sharing common characteristics of content, form, and/or stance, which (b) were created with awareness of each other, and (c) were circulated, imitated, and/or transformed via the Internet by many users. (Shifman, 2014, p. 41)

To empirically research the phenomenon, Shifman's (2014) expression "group of digital items" (p. 41) has to be clarified. A broad conception of text as defined in media semiotics can be applied: This includes principally any form of language (manifested as [written] language or spoken [talk-]in-interaction), pictures, gestures, and facework and other semiotic signs (Van Dijk, 2008, p. 116). Texts are principally all emblematic vocalizations and their communicative function and performance, regardless of their medial provenance. The most important criterion to define a text in media semiotics as well as in linguistics is coherence. The term coherence refers to semantic relations among single units of a text. Therefore, coherence is traditionally seen as a text-inherent property that can be disclosed by analyzing the language structure (De Beaugrande & Dressler, 1996). In the case of multimodal texts, however, the interplay of the language and the elements of the image has to be taken into account. Bear in mind that a minimum of coherence is a necessary precondition for every text, even if the text wants to break with the expectations of the recipients. Humor or irony might play with the incongruity between what is anticipated and what actually occurs on the text surface. In such cases, it is the challenge of the recipient to (re-)construct the underlying coherence. Thus, this study applies a process-oriented view on coherence. It is not only a text-inherent property, but also a cognitive operation of selecting and categorizing information (Fetzer, 2012, p. 448). In this view, textual coherence is something that is construed actively in text or discourse processing, based on the language and the image in a multimodal context. However, the sociocultural environment, genre, and other resources also contribute to the construction of coherence (Fetzer, 2012). In the memesphere, the recipients are used to humorous meme adaptations that violate their conventional expectations.

Osterroth (2015, p. 33) notices the semiotic character of memes in his definition. Internet memes are language-image-texts. The development of meaning can be achieved through collective (often hyperbolic) semiosis. Internet memes therefore consist of images of pop culture, politics, or everyday life, which are often but not necessarily recontextualized by the users. These language-image-texts usually follow a prototypical composition: the basis is the image, which is mostly recontextualized by language (Osterroth, 2015). The present study also refers to this widespread meme type.

Generally, language and images are the most important symbol systems in the social and cultural lived-in world. Memes ideally combine image-based and linguistic communication. Because of the specific requirements of the Internet, however, visual communication has become even more important. In contrast to Osterroth (2015), this study speaks about image-based Internet memes, because the image is the dominant value in multimodal constitutions of meaning (Johann & Bülow, 2018). It has to be emphasized that this kind of meme type can be understood as a multimodal artifact. It is only through the collective use that the artifact becomes an Internet meme (Osterroth, 2015, p. 33).

The Diffusion of Internet Memes

In contrast to genes, memes can be replicated through imitation alone (Dawkins, 1976, p. 208). Hence, the Internet influences the replication of a message, as a loss-free transmission (copying fidelity) of information is possible through digital channels. Online communication benefits exponential diffusion (fecundity), regardless of place and time. In addition, the message is saved (longevity) through the storage function of the Internet.

Regarding this process, the similarity to the concept of virality becomes evident (Shifman, 2014, p. 55). However, memes fundamentally differ from viral contents regarding the adaptation process. Whereas viral diffusion is based on the numerous spreading of one single version, a memetic phenomenon is constituted by the diffusion of various adaptations (Shifman, 2014, p. 56). In the case of the Merkel Meme, the photo of Angela Merkel and Barack Obama is a picture replicated by the users that initiated the meme on Twitter. As image-based Internet memes (in the form of stock character macros) can be characterized by a constant image and the variation of language (Osterroth, 2015, p. 34; Shifman, 2014, p. 63), it is assumed that meme diffusion is rooted in both virality and memetics.

Overall, viral and memetic diffusion processes are highly complex and depend on many different interacting factors. A well-established theory in both contexts is Rogers' (1962/2003) theory of the diffusion of innovations. Diffusion research sheds light on the question of how innovations spread in a social system. Internet memes can be conceptualized as innovative practices of digital culture (Burgess, 2007, p. 29; Shifman, 2014, p. 99). Their variation and replication are "typically a form of innovation diffusion" (Spitzberg, 2014, p. 316). The concept of diffusion is the process "by which an innovation is communicated through certain channels over time among the members of a social system" (Rogers, 2003, p. 5). Although the theory's limitations are characterized as controversial (e.g., MacVaugh & Schiavone, 2010), diffusion research still lacks a holistic framework to explain the diffusion of Internet memes. Spitzberg (2014) proposes a multilevel model of meme diffusion (M^3D), which "elaborates six major nested levels of variables likely to influence or reflect meme diffusion" (Spitzberg, 2014, p. 317). Considering the complexity of the model, however, Spitzberg (2014) admits that the M^3D framework is to "expansive to be tested completely in any one study" (p. 327). Therefore, only a few studies use this framework to examine meme diffusion on Twitter, looking at different levels of diffusion (e.g., Kim, Feng, Wang, Spitzberg, & Tsou, 2017; Sharag-Eldin, Ye, & Spitzberg, 2018; Ye, Sharag-Eldin, & Spitzberg, 2018). This study follows a similarly exploratory approach primarily focusing on the meme level, the individual level, and the social network level (Spitzberg, 2014, p. 318) to gain further insights into memetic diffusion processes.

Meme Level

Internet meme diffusion can be understood as innovation practice (Benaim, 2018). Rogers (2003) defines innovation as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (p. 10). It is assumed that a high complexity of an innovation reduces its susceptibility for being taken up (Rogers, 2003, p. 17). Complexity in memes can refer to the content as well as the complexity of the technology through which it is created, transferred, or displayed. This study particularly sheds light on the length of the language used in the meme adaptations as well as the degree to which the image has been

edited. Shubeck and Huette (2015, p. 2184) differ in their study between psycholinguistic factors as working memory and orthographical features as word length. However, complexity is also affected by the coherence between the meme's language and image. A high coherence between the language and the image helps the recipients to process information, where at the same time incongruity is at work to evoke humor.

In addition, the compatibility of innovations is responsible for their diffusion potential (Rogers, 2003, p. 15; Spitzberg, 2014, p. 318). Compatibility refers to the relationship of an innovation with existing values and attitudes, introduced ideas, or the needs of the person taking on a concept (Fliegel & Kivlin, 1966, p. 246). Virality research has indicated that people tend to forward humorous and emotionally charged content (e.g., Berger, 2011; Berger & Milkman, 2012; Kim, 2015; Porter & Golan, 2006; Stieglitz & Dang-Xuan, 2013). As Internet memes often refer to pop culture or political topics (Shifman, 2014, p. 51), it is assumed that intertextual references that are compatible with the recipients' own feelings and evoking humor foster meme diffusion. The same might apply for political references. The first research question therefore focuses on the meme level (Spitzberg, 2014, pp. 321–323):

RQ1: Which meme-related indicators influence the diffusion of the Merkel Meme adaptations?

Individual Level

Following Spitzberg (2014, p. 319), meme diffusion depends on the characteristics of the individual users in the diffusion process. Rogers (2003) subsumes these characteristics under the factor communication channel. He postulates that diffusion is realized between "an individual or other unit of adoption that has knowledge of the innovation or experience with using it [and] another individual or other unit that does not yet have experience with the innovation" (p. 18). Crucial variables in predicting meme diffusion are, for example, the users' networking, source credibility, and the role of influential network members (Spitzberg, 2014, pp. 319–320). The process of forwarding itself is rooted in individual motivations such as self-presentation (Ho & Dempsey, 2010) or extroversion (Chiu, Hsieh, Kao, & Lee, 2007). Research indeed has shown that there is a strong connection between the extroversion of social media users and their network strength (Chen, 2014). Based on these considerations, the second research question addresses the individual level and the characteristics of the communication channel (Spitzberg, 2014, pp. 321–323):

RQ2: Which characteristics on the individual level influence the diffusion of the Merkel Meme adaptations?

Temporal Level

Information diffusion highly depends on temporal factors at the stage of the diffusion process. Regarding this, Spitzberg (2014) admits that his meme diffusion model remains "clearly underdeveloped" (p. 329). This study therefore draws on Rogers' (2003) assumptions toward the diffusion factor time. At the micro level, focus is on the decision-making process of an individual during the adoption of an innovation. At the macro level, a total of five types of users should be distinguished (Rogers, 2003, pp. 247–264): innovators, early adopters, early majority, later majority, and laggards, each of whom significantly differ in total number and characteristics. The responsible types for the successful diffusion process are innovators, early adopters, and early majority. These types are opinion leaders at the early stage of the diffusion

process. Whether they foster the spread of information such as memes has been a controversial topic in diffusion research (Spitzberg, 2014, pp. 321–323). On the one hand, theoretical and empirical research on information diffusion has shown that well-connected influencers are crucial for achieving popularity (e.g., Gladwell, 2002; Luarn, Yang, & Chiu, 2014). On the other hand, opinion prevails that popularity depends on factors such as homophily or receptiveness (e.g., Harrigan, Achananuparp, & Lim, 2012; Watts, 2007). Finally, the third research question explores the role of the adopter groups in the diffusion process:

RQ3: How do the different adopter groups influence the diffusion of the Merkel Meme adaptations?

Social Network Level

Meme diffusion further relies on the degree to which the social network is uniquely receptive to the meme. According to Rogers (2003, pp. 23–31), the social system and innovation diffusion are in a reciprocal relationship and influence each other. Spitzberg (2014) postulates that memes are likely to cascade through a social system "when a certain proportion of their social network has done so" (p. 323). The technical architecture of Twitter with its memetic functions (hashtags, retweets, favorites etc.; Moskopp & Heller, 2013, pp. 131–136) not only supports this process but also increases a meme's "cultural salience" (Leavitt, 2014, p. 139) among individual interconnected users in a social system. Meme diffusion on Twitter therefore can be explained as a result of both social behavior and technical features (Leavitt, 2014, p. 137). Thus, the following three research questions are relevant with special regard to the social network level (Spitzberg, 2014, pp. 321–323):

RQ4.1: How do the users' roles differ in each adopter group?

RQ4.2: How networked are the different users?

RQ4.3: How do the adopter groups' meme adaptations differ in diffusion?

Conceptual Analysis Model

To empirically analyze Internet meme diffusion the theoretical assumptions can be transposed into a conceptual analysis model (see Figure 2) using the meme level, the individual level, the temporal level, and the network level as independent variables. On Twitter, the number of retweets and favorites[1] can be used as platform-specific indicators for a message's diffusion among the individual users (Moskopp & Heller, 2013, pp. 131–136). They are used as dependent variable in the conceptual analysis model.

[1] Besides retweets, favorites (also called likes) are a specific function on Twitter for users to interact with tweets. Although the designation is positively connoted, it does not provide information about the users' concrete attitudes toward the specific contents. For this reason, favorites are understood in this study as specific modes of interaction contributing to a meme's diffusion on Twitter by contributing to its position in the users' Twitter timeline.

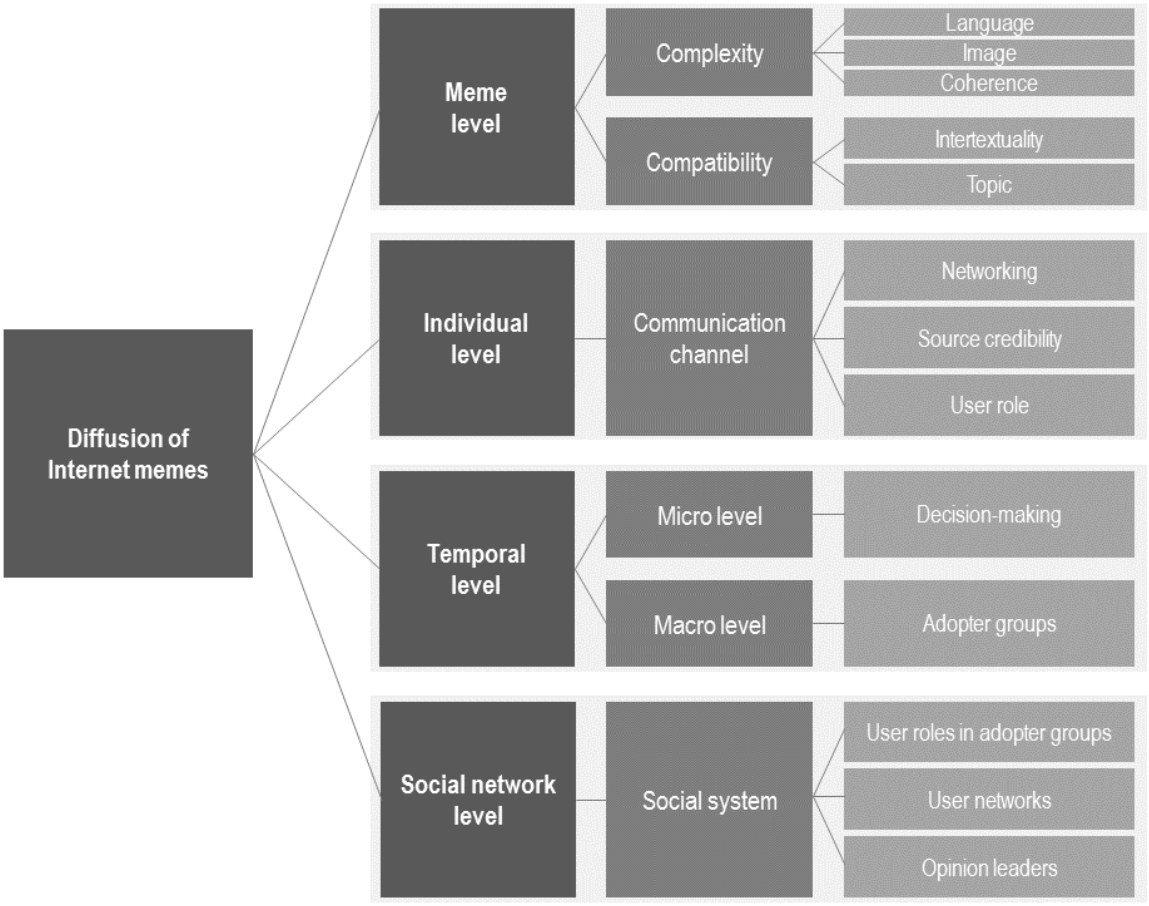

Figure 2. Conceptual analysis model for the diffusion of the Merkel Meme (Source: Own model based on Spitzberg, 2014; Rogers, 2003).

Method

Sample and Units of Analysis

This study examines the diffusion of the Merkel Meme on Twitter. The platform's public application programming interface (API) allowed to retrieve a complete data set of tweets containing the hashtag #MerkelMeme (N = 4,475), including several formal metadata such as information about the user, time of the tweet, number of favorites, and number of retweets. The investigation period started on June 8, 2015, when the first meme adaptation was tweeted, and ended on June 30, 2015. Afterward, there was hardly any further resonance to this topic on Twitter.

To answer the research questions, a quantitative content analysis of the complete data set was conducted. Only tweets containing a meme adaptation were included (n = 3,253). The analysis followed a

multilevel approach where the user, tweet, and meme adaptations were individual units of analysis. Two trained coders were responsible for executing the coding. Specific training and more precise coding instructions were applied after a pretest with unique meme adaptations (n = 40) to ensure intercoder reliability. Thus, satisfactory coding quality in the final data set of the main analysis for the formal (e.g., number of characters, number of retweets) as well as the latent variables (e.g., topic, user role) could be achieved (Krippendorf's α = .86–1).

Measures

The code book for the content analysis and the categories' operationalization is based on Spitzberg's (2014) and Rogers' (2003) frameworks adapted for the diffusion of Internet memes. The meme level is the first pillar of this analysis. Leaning on the dimensions of complexity, compatibility, and coherence, each meme's image-language-structure was analyzed.

Memes can vary on two levels. On the language level, complexity was measured by the number of characters, words, and sentences. Besides, sentence structure complexity was operationalized by basic linguistic indicators, which are typical for the German language (Liedtke, 2016): the word order in the sentences (independent, dependent) and the position of the finite verb (verb first, verb second, verb last).

On the image level, complexity was evaluated with recourse to concepts originating in pictorial science. It was coded whether the original picture contained technical (e.g., by cropping), content-related modifications (e.g., by erasing or adding parts of the picture), or was used in a photoshopped variant (Greer & Gosen, 2002; Huang, 2001).

The coherence between language and image was assessed by the sentence type (e.g., declarative, interrogative, exclamatory sentence). Meme creators might use exclamatory sentences to construct coherence by emphasizing Angela Merkel's posture, gesture, and facial expression. Coherence can also be achieved by imitating the image's dialogic scenery on a language level. Thus, the linguistic scenery (dialogue, monologue) and the active speakers (Merkel, Obama, offstage) were coded.

Memes are likely to evoke humor and to be compatible with the recipients' values and attitudes in their references (Segev, Nissenbaum, Stolero, & Shifman, 2015; Shifman, 2014). It was coded whether an intertextual reference was apparent. Furthermore, a main thematic category (politics, sex, culture, advertisement, sports, metacommunication, other) was assigned to each meme adaptation. The categories were inductively derived.

Twitter is a communication channel that favors the diffusion of memes through communication among individual users. The extent of networking for each user was operationalized by their number of followers, followings, and list entries.[2] Moreover, the user profiles' source credibility was examined (Yilmaz & Quintero Johnson, 2016). It was coded whether the users gave their real name or used a pseudonym on

[2] Lists are curated groups of Twitter accounts. Users can create their own lists or subscribe to lists created by other users.

Twitter. In addition, each user was assigned a specific user role (private user, politician/political party, journalist/media company, expert, brand) that was inductively developed and based on indicators taken from his or her (or their) Twitter profile page.

Concerning the temporal level, Rogers (2003) differentiates two levels: micro and macro. On the micro level, the individual spreading of an innovation is established in the innovation-decision process. This was measured by the time that the user tweeted or retweeted a meme. On the macro level, the users' relative adaptation rate (shares of tweets and retweets) over time was considered. Thus, each user was assigned an adopter group that followed Rogers' (2003) classification of innovators (2.5%), early adopters (13.5%), early majority (34%), late majority (34%), and laggards (16%). The allocation of a group depended on the adaptations' tweet timing on the micro level.

On the social network level, the distribution of the user roles in the different adopter groups was examined as well as the networking and the diffusion index of the different user roles. The dependent variable—meme diffusion—was measured by Twitter's memetic functions favorites and retweets (Moskopp & Heller, 2013). Greater weight was attributed to retweets as being a direct form of replicating a tweet containing a meme adaptation, while favorites indirectly contribute to a tweet's ranking in the Twitter timeline. The diffusion index is calculated by the sum of both the number of favorites and the number of retweets. The latter are counted twice.

Results

The majority (n = 3,253) of the tweets contained a unique meme adaptation. Almost one quarter (n = 785) were initial tweets with unique meme adaptations, whereas the rest (n = 2,468) were retweets. To answer the research questions, the analysis focused on tweets with unique meme adaptations. Multiple regression analysis was used to test if any one indicator of the diffusion categories significantly predicted the meme's diffusion. The results indicate various predictors affecting meme diffusion, R^2 = .25, F(32, 561) = 5.74, p < .001 (see Table 1).

Table 1. Results of Multiple Regression Analysis in Predicting Meme Diffusion.

Variable[a]	*B*	*SE B*	β	*p*
Meme level				
Technical editing	−5.31	2.36	−.09	.03
Photomontage	15.70	3.16	.21	.00
Exclamatory sentence	6.24	2.85	.12	.03
Dialogue	−12.89	4.75	−.16	.01
Individual level				
Number of followers	0.00	0.00	.16	.00
Number of list entries	0.04	0.02	.12	.03
Real name	4.55	1.98	.09	.02
Temporal level				
Innovator	25.45	4.32	.24	.00
Early adopter	11.40	2.62	.19	.00
Early majority	4.38	2.17	.09	.04
Total R^2	.25***			
n[b]	594			

Note. ***$p < .001$.
[a] Only significant variables are reported.
[b] After list-wise deletion of cases with missing values.

Meme Level

The first research question (RQ1) asked for meme-related influences on the diffusion of Merkel Meme adaptations. The information diffusion in social systems is more likely when its complexity is reduced. The structural complexity of image-based memes can be influenced by the language and image complexity, and the coherence between the language and image.

The data analysis indicates that language complexity has no significant effect on meme diffusion. The analysis of image complexity led to different results. Generally, meme adaptations with technical changes received slightly more favorites and retweets than adaptations without such modifications. The numbers of favorites and retweets were added up to a diffusion index value. Adaptations with technical changes reached an index value of $M = 12.58$ ($SD = 48.46$), whereas adaptations without technical changes achieved $M = 11.98$ ($SD = 35.90$) favorites and retweets. However, these differences are not significant, $t(783) = .14$, $p = .89$. In contrast, there are significant differences in content-related variations, $t(315) = 3.37$, $p < .01$. Edited adaptations received a higher diffusion index value (i.e., received more favorites and retweets; $M = 13.21$, $SD = 48.38$) than adaptations without content-related variation ($M = 5.06$, $SD = 13.66$). The highest scores were achieved for meme adaptations that contained photoshopped variants ($M = 32.71$, $SD = 89.78$). Adaptations without that most complex form of image variation received significantly less favorites and retweets ($M = 8.48$, $SD = 29.99$), $t(134) = 3.03$, $p < .01$. Concurrently, the application

of photoshopped variants had a positive effect on meme diffusion (β = .21, $p < .001$). Thus, the image in multimodal memes has stronger association with diffusion than their language parts.

It might be assumed that meme adaptations that create a coherent relationship between language and image are easier to understand and therefore receive more favorites and retweets. No major influence could be revealed regarding the different sentence types. One exception of this observation is that exclamation sentences emphasizing Merkel's body language predict diffusion (β = .12, $p = .03$). The presence of a dialogic scenery between Merkel and Obama on the image level can be reinforced by imitating the dialogue on the language level. Surprisingly, the results show that adding a dialogue on the language level decreases diffusion (β = −.16, $p = .01$). The question is therefore whether the interchange of speaker roles is too complex for users deconstructing memes. On the other hand, there were no significant effects in meme adaptations that used Merkel or Obama as single active speakers.

Memes that are compatible with user mind-sets might achieve more attention and therefore higher diffusion index values. Memes often refer to pop cultural content or political topics. However, the regression shows that neither intertextuality nor meme topics affect diffusion.

Individual Level

The second research question (RQ2) focused on the individual level and its influence on meme diffusion. On this level, the communication channel among the single interconnected users was of particular interest. It was expected that meme adaptations created by well-connected users might spread more successfully than adaptations from users who are less well connected on Twitter. Indeed, there are significant differences among these types of users. Both the number of followers (β = .16, $p < .01$) and the number of list entries (β = .12, $p = .03$) predict meme diffusion. The extent to which Twitter users are part of a communication network on the platform seems to be a crucial factor for the successful diffusion of Internet memes.

Another important factor is source credibility. The results indicate that meme adaptations tend to be forwarded when the users revealed their real names—in other words, when their source is identifiable and trustworthy (β = .09, $p = .02$). In contrast, the specific user role does not affect meme diffusion.

Temporal Level

The third research question (RQ3) dealt with the temporal level of meme diffusion. On the micro level, the diffusion can be illustrated as a cumulative adaptation rate that is based on the individual tweet timing (see Figure 3). The majority (94%) of the tweets was initiated within the first four days. Although the Merkel Meme rapidly attracted attention on Twitter within the first few hours on the first day of its publication (45%), the frequency continually decreased during the second (35%), third (11%), and fourth day (3%).

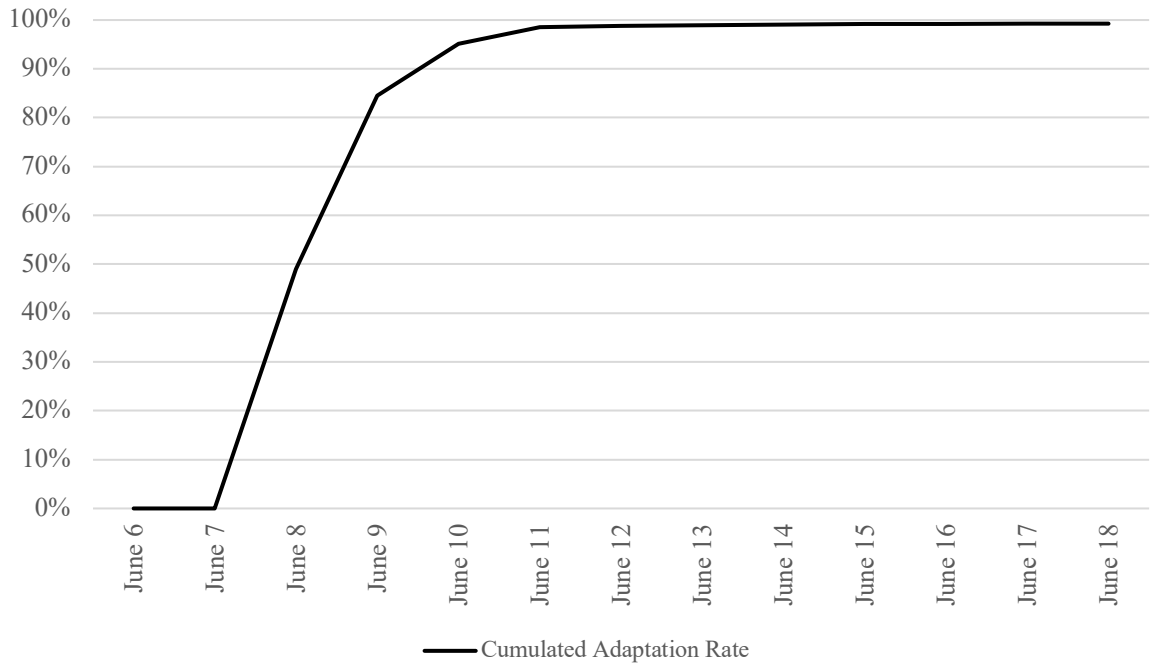

Figure 3. Cumulated adaptation rate of the Merkel Meme (Source: Own research).

On the macro level, the regression analysis confirms the theoretical assumption that information diffusion is largely influenced by early adopter groups in the early-stage diffusion process. Innovators (β = .24, $p < .001$), early adopters (β = .19, $p < .001$), and early majority (β = .09, $p = .04$) clearly contribute to meme diffusion. These early-stage adopter groups are considered as more proactive and willing to take risks concerning the diffusion of innovations. Therefore, they are more likely to develop and to spread their own meme adaptations, whereas later adopter groups tend instead to replicate the meme adaptations that have already been produced. The data indicate significant differences among adopter groups, $\chi^2(4, n = 3{,}253) = 85.11$, $p < .000$, Cramer's $V = .16$. Especially innovators, but also early adopters, produce a considerable share of their own meme adaptations compared with the other adopter groups. More than a quarter of the early majority group still tweet own meme adaptions, whereas later adopter groups largely concentrate on retweeting (see Table 2). Consequently, the early adopter group's role as opinion leaders and gatekeepers can be confirmed.

Table 2. Distribution of the Tweet Types Within the Adopter Groups.

	Tweeted meme adaptations		Retweeted meme adaptations	
	n	%	*n*	%
Innovators	39	48	43	52
Early adopters	154	35	285	65
Early majority	285	26	821	74
Later majority	228	21	878	79
Laggards	79	15	441	85

Note. $\chi^2(4, n = 3{,}253) = 85.11$, $p < .000$, Cramer's $V = .16$.

Social Network Level

On the social network level, it can be assumed that the meme spread through Twitter within a social network of interconnected users (RQ4). Figure 3 illustrates the typical diffusion in the form of an *S* curve with a steep slope indicating a rather quick diffusion process (Rogers, 2003, p. 23). To characterize the social network more precisely, the distribution of the different user roles within the adopter groups is investigated (RQ4.1). A considerable share of journalists or media companies were among the innovators and early adopters, $\chi^2(16, n = 3{,}089) = 104.45$, $p < .000$, Cramer's $V = .09$ (see Table 3). This is not surprising, as these groups have a genuine affinity for social media trends, such as Internet memes. Moreover, the photo emerged during the G7 summit as a part of a political news story. Looking at their networks (RQ4.2), they have significantly more followers ($M = 28{,}540.73$, $SD = 19{,}4302.27$) than private users ($M = 2{,}227.64$, $SD = 68{,}904.11$) who are represented in every adopter group, $F(4, 3041) = 6.97$, $p < .000$.

Table 3. User Roles Within the Adopter Groups.

	Private		Politics		Journalism		Expert		Brand	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
Innovators	42	53	0	0	33	41	3	4	2	3
Early adopters	299	72	7	2	89	21	12	3	10	2
Early majority	849	80	39	4	115	11	37	4	14	1
Later majority	815	78	21	2	124	12	61	6	20	1
Laggards	380	77	10	2	66	13	28	6	13	3

Note. $\chi^2(16, n = 3{,}089) = 104.45$, $p < .000$, Cramer's $V = .09$.

Consequently, successful meme diffusion can be assumed to depend strongly on the participation of well-connected user groups in the first stage of the diffusion process. However, the literature controversially discusses the importance of innovators and early adopters as opinion leaders (RQ4.3). In the case of the Merkel Meme, the adaptations of innovators ($M = 31.18$, $SD = 69.03$) and early adopters ($M = 23.41$, $SD = 80.46$) received significantly more favorites and retweets than those in the groups early majority ($M = 10.56$, $SD = 36.36$), later majority ($M = 6.36$, $SD = 18.21$), and laggards ($M = 6.38$, $SD = 14.72$), $F(4, 780) = 5.30$, $p < .000$. This result follows previous findings that a strong network increases the prospects for a meme's success.

Discussion

This study aimed to reveal the conditions for the successful diffusion of Internet memes. Based on the example of the Merkel Meme, a major challenge of this article was to examine whether Spitzberg's (2014) and Rogers' (2003) theoretical considerations on information diffusion can be applied to the diffusion of Internet memes. Even though in communication science—as in all language and communication-oriented scientific disciplines—there are fundamental concerns about the transfer of analogous theories to the digital playground, the analysis shows that an application is in principle quite reasonable.

Furthermore, this case study is a first empirical attempt to explore the diffusion of image-based Internet memes and to identify crucial diffusion factors based on a full census on Twitter. In the following, the key findings will be discussed against the backdrop of digital participation culture. Limitations and follow-up research will also be addressed.

Meme Level: Language and Image Properties

On the meme level (Spitzberg, 2014, pp. 317–319), among others, it was questioned whether intertextual references are factors that influence the diffusion of Internet memes (Berger & Milkman, 2012; Porter & Golan, 2006). The data indicate that intertextuality does not have a major effect. An explanation might be the genuine limitation of intertextual references by the rather narrow topic of a political Internet meme's language variation (here, G7 summit). Moreover, as pop culture is a wide and heterogeneous field, it is likely that the coders as well as the users simply did not recognize certain references. This issue can be described as "meme literacy" (Shifman, 2014, p. 100). Literacy is an important prerequisite for the question if a meme adaptation can prove itself among users with different levels of knowledge. It can be linked to the concept of a community of practice (CofP). Members of such CofPs actively develop their own ways of doing things (Eckert, 2005, p. 16) and are mainly characterized by their shared repertoire (Wenger, 1998, p. 125). Their communication strategies are highly dynamic and adaptable, particularly regarding the construction of common communicative knowledge.

Regarding the diffusion of Internet memes, the role of the CofPs should be given more attention in the context of the social network of the individual users. The conceptual overlap with the social network theory (Meyerhoff & Strycharz, 2013) makes it possible to understand micro- and meso-synchronization processes and to uncover in-group intertextuality. Here, an analytical approach to social networks could provide more insight into how communication is shaped and how memes are referenced on the particular communication channel (Spitzberg, 2014, pp. 321–323).

The complexity of an Internet meme is another factor based on Spitzberg's (2014) and Rogers' (2003) frameworks. It is assumed that a high complexity of innovations reduces its susceptibility for being taken up, this shedding light on language complexity (Shubeck & Huette, 2015, pp. 2184–2185). However, there was no relation between the diffusion of the Merkel Meme adaptations and the complexity and length of language structure. Complexity is a heterogeneous concept, in that what is longer is not necessarily more complex. It is, however, clear that longer language structures need more time to be read and a greater attention span. Nevertheless, there are more elaborate ways of measuring language complexity. The next

step should be to measure both the syntactic and the morphologic complexity that affect attitudes and the process of understanding.

These findings on meme complexity are in line with studies on language complexity in advertising. Bradley and Meeds (2002) found that advertising slogans that moderate linguistic complexity can be more cognitively engaging for readers. Consequently, experimental or observational data might be helpful to clarify the process of decoding language complexity in Internet memes.

Sentence type had an influence on meme diffusion. Exclamatory sentences might support the expressive communicative function of Internet memes. They often contain expressive language like directives, expressives, and commissives (Osterroth, 2015), addressing the recipients more directly and transporting emotions. Research on arousal and attention dynamics supports these findings, indicating that emotional content is likely to be shared (e.g., Berger, 2011; Berger & Milkman, 2012; Stieglitz & Dang-Xuan, 2013). Sentence type is perhaps the most important illocutionary force indicating devices in German language (Liedtke, 2016, pp. 55–57). Additionally, regarding the level of coherence between language and image elements in the case of the Merkel Meme, exclamatory sentences could support Angela Merkel's gesture and facial expression. However, the speech acts, which Obama and Merkel express, do not have to coincide with the speech acts intended by the meme adaptations' authors. That Merkel's expressive arm gesture is supported on the language level can be illustrated by the many adjectives of dimension as "*lang*" ("long") and "*groß*" ("big"), which the adaptations' authors used to construct Merkel's turn. Furthermore, these adjectives of dimensions are significant collocations of the intensifier "so," which was frequently (182 cases) realized in different spelling variants (e.g., "so," "sooo," or "SOOOO") to emphasize the expressive function (Bülow, Merten, & Johann, 2018).

Coherence can also be achieved by imitating dialogic scenery on a language level. Therefore, different language strategies were used: The dialogic structure, for example, is indicated by the frequent use of pronouns of the first ("*ich*," "I") and second person singular ("*du*," "you"). These pronouns could be identified as the most frequent words in the whole language corpus of Merkel Meme adaptations.

Surprisingly, imitating dialogue on the language level has a negative effect on the diffusion of Merkel Meme adaptations. It could be possible that the change in speaker roles is too complex for deconstructing memes. Furthermore, it was assumed that meme users are not accustomed to dialogical memes. Prototypical image-based Internet memes based on image macros usually do not encompass dialogic sceneries. Again, it seems a question of literacy at an individual level that predicts whether a meme adaptation is able to persist in the diffusion process.

At the level of image processing, the analysis revealed a relation between the extent of editing the original picture and diffusion. Photoshopped adaptations received better scores than meme adaptations without this complex variation. Generally, digital image editing is an inherent part of Internet humor (Shifman, 2014, p. 100). For memes, a later editing process can be assessed as an expression of creativity that creates variance honored by the users. Image editing therefore seems suitable relating to digital culture and the notion of digital literacy as a feature that creates status and affinity. This emphasized not only the

great effect photoshopped variants have on the diffusion of Merkel Meme adaptations but also the dominance of the image in the multimodal constitution of meaning.

In contrast to language complexity, image complexity predicts meme diffusion. This finding emphasizes the importance of visual content in Internet memes being able to overcome language boundaries (Shifman, 2014, p. 161). It can be concluded that Internet memes operate in a multimodal manner with a salient image. Meme complexity might therefore be determined not by the complexity of its formal components, such as the length of the language or image editing, but rather by the complexity of (de-)constructing meaning (Dancygier & Vandelanotte, 2017, p. 591). This aspect has been completely neglected, for example, in Shubeck and Huette's (2015) study on the influence of language complexity. Although no significant coherence effects were found between the image and the language level, research has yet to clarify interdependencies. Experimental eye-tracking studies could potentially uncover the way social media users are visually processing singular meme adaptations and clarify how they cope with the complexity of language, image, and the meaning.

Individual Level: Networked Adopters and Credible Users

On the individual level, the results about the communication channel indicate a positive correlation between the meme's diffusion and the network (number of followers, number of list entries) of a meme's originator. This finding is not surprising and is in line with experimental findings from virality research. Chiu et al. (2007), for example, in experiments on the forwarding behavior of Internet users, showed that known transmitters and extroverted multipliers are important for a topic's diffusion. De Bruyn and Lilien (2008) also demonstrated in their field experiment on the influence of transmitter characteristics in the diffusion process that binding strength and the affinity to the sender of a message count toward its diffusion. Thus, a further direction of meme research is the individual adopter with a focus on motivations, personality traits, and the role perception within the meme discourse.

Even if user roles have no significant influence on meme diffusion in this case study, users giving their real name does make a difference (Yilmaz & Quintero Johnson, 2016). This may be linked to the fact that journalists, media companies, and politicians all give their real names. Journalists and media organizations also make up a significant proportion of the innovator and early adopter groups. Other users can both trust and support the named source, which leads to the fact that the Merkel Meme adaptations published by these users received more favorites and retweets in an early stage of the diffusion process. Their genuine source credibility might be a success factor.

Temporal Level: Early Adoption

Significant effects were found for the temporal level. The activity of innovators, early adopters and early majority users predicted meme diffusion. These groups tended to create and spread their own meme adaptations, while users in the later majority and laggard group focused more on retweeting. When evaluating these findings, one must consider that the innovators and early adopters tend to be well-networked users who show a higher risk-bearing capacity. Indeed, the data support Rogers' (2003) and Spitzberg's (2014) theoretical assumptions and empirically confirm the importance of well-connected

influencers at the early stage of the diffusion process (Gladwell, 2002; Luarn et al., 2014). However, future meme research must further explore additional factors, such as social homophily or receptiveness (Harrigan et al., 2012; Watts, 2007), to contribute to the ongoing debate on individual diffusion factors and the tipping points of diffusional processes (Gladwell, 2002).

These findings, however, have to be reflected against the backdrop of the examined Internet meme. The Merkel Meme is a political Internet meme that was spread in the context of a major political event with an inherent news value for journalists and media companies. Even though their engagement on Twitter is then not surprising, it demonstrates the strong participatory power of Internet memes especially in political settings. Moreover, the significance of social bots in political debates on Twitter must be questioned. Research has shown that political discussions on Twitter are strongly affected by social bots appearing as individual, legitimate users (e.g., Martinez, Hughes, Walsh-Buhi, & Tsou, 2018). Future studies might clarify the role of social bots contributing to the diffusion of Internet memes on an individual level (Spitzberg, 2014, p. 319–321).

Conclusion

Meme diffusion is a highly complex process that is affected by numerous variables. Especially in the political context, Internet memes are able to serve as forms of collective action and discursive expression due to their persuasive and participatory potential (Shifman, 2014, pp. 122–123). Based on an empirical exploration, this study contributes to the growing body of research on the diffusion of Internet memes. In the case of the Merkel Meme, well-networked journalists and media organizations were identified as crucial innovators that foster memetic diffusion. Furthermore, the data highlighted early stage participation and image editing as important factors for successful Internet meme diffusion. Taken together, this case study emphasizes the potential of Internet memes for a digital participatory culture and mobilization.

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