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# Dimensions of Fake News

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# A short history of fake news

- current concepts of fake news and social media are intertwined
- term “fake news”: blurred understanding, different interpretations [1]
- examples of different definitions:
  - *fabricated news in satirical contributions [2]*
  - *fake news must be completely false [3]*
  - *only fake news if intended deception has succeeded [4]*

We propose the following definition:

**“Fake news” refers to the deliberate dissemination of erroneous information with the intent to deceive**

- Aim of this work: to provide a uniform view and to deliver a basic systematization of all dimensions of fake news and its prevalence in modern media

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# A short history of fake news

- Throughout human history fake news exists e.g. 17th century french “canards”, Great Moon Hoax 1835 [5, 6]
- Invention of printing press and spreading of literacy: Knowledge and Information became valuable
- Information as commodity → Monetization [5]

## Social media and fake news

- instant and global distribution
- different actors with different intents
- information overload
- possible to target an audience specifically & manipulate cognitive biases [7, 8]

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# The Dimensions of fake news - Method

- Dimensions of fake news: direct effects or work in conjunction  
→ effects can be used intentional **and/or** unintentional produced by handling of fake news or recipient's environment
- a broad literature search via Google Scholar using the search terms: "**fake news**" and "**fake news effects**"
- review of 500 articles regarding fake news **and** its effects on people
- result: 28 different effects or mechanisms of action could be identified → snowball and depth-first search for each effects

# The Dimensions of fake news

Dimension	Explanation
Astroturfing	Astroturfing is an attempt to convey an incorrect impression of public opinion, e.g. by feigning that a large majority of people is in favor of a certain decision. In contrast to a 'grassroots movement', however, the population is not actually behind it, but it is organized by a covert initiator [9, 10]. Even though it is not a new phenomenon [11], astroturfing can spread more effectively by means of the Internet [12, 13].
Availability Cascade	Individuals tend to adopt the views of others when those views gain popularity in their social environment [14]. Informational cascades and reputational cascades can make this possible through different motivations and may occur together [15].
Availability heuristic	The probability of events is measured by how available a similar event is in memory. So recent or frequent reporting of certain events ensures that they are considered more likely [16]. This also applies if these reports are purely thought-provoking [17].
Backfire effect	It was found that subjects believed even more strongly in the original, incorrect information after it had been corrected [18]. It is assumed that this effect only occurs in specific situations, since it could not be proven with another experimental setup [19]. If judgements are formed immediately during reception, backfire effects can be reduced [20]. Research suggests that emotions may be relevant in this process [21]. Additional research is needed [22]. This can also be called "Boomerang effect" [23].

Dimension	Explanation
Bandwagon effect	This refers to the assumption that if other people perceive something as good, it will also be judged good by oneself [24]. Own opinions are formed on the basis of other people's opinions. This phenomenon has also been observed in online reviews, for example [25].
Clickbait	Information gaps created by news titles arouse the potential reader's curiosity for the rest of the article. Often a forward reference is used, which refers to further information in the article [26]. This may increase the readership of an article but does not necessarily have further negative effects [27].
Confirmation bias	People unconsciously prefer information that coincides with their own opinion. If it does, they consider it more credible [28]. It is suspected that this contributes to the emergence of echo chambers and filter bubbles [29].
Conservatism bias	This refers to the tendency of individuals to inadequately adjust their attitudes when confronted with new information [30,31]. Thus, if a person already believes in fake news, their beliefs are difficult to correct.

Dimension	Explanation
Continued influence effect	Even the negation and correction of incorrect original information usually cannot completely reverse its effect. It continues to influence the recipient [32], even when warnings are given [33]. This effect is weakened if instead of a simple correction a suitable alternative explanation for a scenario is offered [34]. Partly this may be because recipients do not accept a correction [35]. This is also called "belief perseverance" [36].
Echo chamber effect	If users mainly interact with other users or institutions that have a similar opinion to their own, an echo chamber is created. The users thus reinforce each other's opinions [37]. The confirmation bias works in a similar way. Often, however, users are not completely isolated, but continue to be confronted with opposing content, especially online [38]. Thus, their effect may not be as strong as initially perceived.
Emotional memory enhancement	Emotionally charged information is better retained than neutral information [39]. Suggestion has an even stronger effect than pure emotionality [40].
Filter bubble	This term refers to information bubbles that are created in social media in particular and in which algorithms select or pre-filter content that is then displayed to the user. This content often corresponds to existing interests. Users are often unaware of the filter bubble [41]. Thus, no contrary opinions are displayed that could invalidate fake news. They have a similar effect to echo chambers. It is still debated whether filter bubbles exist and are problematic as some evidence points against it [42, 43].



Dimension	Explanation
Framing effect	Small changes in context or in the way information is conveyed can lead to a major change in decision-making behavior [44]. Emotions may be an important aspect of this [45]. The effect of framing can be reduced through warnings [46].
Google effect	People tend not to remember information in itself, but instead where it can be found when needed [47]. Thus, insufficient background knowledge of a person might not be enough to counter fake news.
Hostile media effect	Biased subjects feel disadvantaged by media coverage even if a large proportion of recipients perceive it as appropriate [48]. The disadvantage is perceived to be unfavourable of one's own opinion. This may reduce belief in the correction of fake news by major news outlets.
Illusory truth effect	Statements that are heard several times are attributed a higher truth value than statements that are heard for the first time [49]. This means that repetition increases the probability that a statement will be considered true. This is true even if the plausibility of the statement is low [50] or in the case of warnings against it [51]. This effect is also referred to as the "validity effect" [52].
Implied truth effect	If other news is recognized or labeled as fake news, but one is not, it is more likely to be considered true [53]. However, this effect may be small [54].

Dimension	Explanation
Informational cascade	People who lack complete information on a subject may rely on the perceived beliefs of others [55, 56]. A decision is made based on the decisions of others, even ignoring personal knowledge, expecting the crowd to be right. This is called an “informational cascade” or “information cascade”. This way, fake news can be propagated through a network. The strength of ties of a person to the other people in their group may influence their decision-making behavior [57]. Self-corrections by further cascades are possible [58].
Misdirecting	Misdirecting is employed when contextual hashtags are used in social media, but a completely different topic is being reported on [59]. To do this en masse, social bots can be used. This distracts from the actual topic and actual information is lost in the amount of news [60]. In another study, this could not be detected [61].
Misinformation effect	Untruthful reporting following an event damages the correct memory of that event [62]. Later corrections may be able to reduce that effect [63].
Negativity bias	People have a tendency to give more weight to negative information than to positive information [64, 65].
Primacy effect & Recency effect	Information that a recipient takes in first has a stronger impact on them than the information that follows (primacy effect). Likewise, the information received last remains in the memory longer (recency effect) [66]. The primacy effect may be stronger than the recency effect [67].

Dimension	Explanation
Reputational cascade	Like with the informational cascade, people base their decisions on the decisions of their peers. However, here they do so regardless of their thoughts because they are motivated to earn social approval and avoid disapproval [15, 68]. Because of the perceived social pressure, this cascade may be more resilient than informational cascades [69].
Reputation heuristic	Instead of checking the content of a source's information, the source itself is checked for credibility. If the source has a good reputation or is considered credible, the information is more likely to be believed [33, 70]. If fake news creators succeed in imitating a credible source, their credibility increases.
Rumor refutation	Rumors that are incorrect take longer to be resolved on social media than true rumors. Unverified rumors are often shared earlier and reach a larger user base than resolved rumors [71].
Smoke screening	Smoke screening works like misdirecting with the difference that at least similar content to a hashtag is posted [59].
Tainted truth effect	Warnings of false information issued erroneously in relation to truthful content can damage the credibility of the truthful information [72, 73].
Third person effect	People tend to believe that mass media influence other people more strongly than they influence themselves [74]. As a result, the influence of fake news on oneself can be underestimated.

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# Conclusion

- The susceptibility to fake news can be influenced by a range of factors, such as age, culture, media use,...
- Therefore, fake news and its impact should be considered within the cultural, social and political contexts
- In this work, the basis for the understanding of various phenomena in the field of fake news was laid, in order to ensure a holistic view of the topic
- A closer look at the recipients of fake news and their circumstances offers research potential for the future



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Thank you for your attention!



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