

FULL PAPER

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Richtigstellungen gegen Gerüchte?**

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Nothing's gonna change my world – Or do journalistic clarifications help against rumors?

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Abstract: In the current digitalized media landscape, communicators and recipients are struggling to produce and identify reliable information in order to cope with rumors, misconceptions, and fake news. In the face of this, the popularity and relevance of fact-checking services have increased in recent years. Nevertheless, not much is known about the effectiveness of these journalistic entities. This study proposes a theoretical framework that systemizes possible influencing factors. An online survey of 607 German media users was conducted, measuring the effectiveness of several clarifications in adjusting recipients' misperceptions about six current controversial issues in Germany. The results indicate that journalistic clarifications are in fact capable of causing an adjustment process. Regression analyses show that, contrary to expectations, the users' attitudes that go against the message of the clarification had only a small effect on the adjustment process. Media reliance had positive effects on only one issue, as well, and cognitive mobilization on two issues. A positive evaluation of the quality of the clarification showed effects in four cases, but not always as expected. Evaluations of the credibility of the communicator delivered no effects.

Keywords: misconceptions, clarifications, cognitive mobilization, quality, credibility, fact-checking services

Zusammenfassung: In der heutigen digitalisierten Medienwelt ist es sowohl für Kommunikatoren als auch für Rezipienten schwierig, die Verlässlichkeit von Informationen zu beurteilen sowie Gerüchte und Falschmeldungen zu identifizieren. Vor diesem Hintergrund hat die journalistische Faktenprüfung in den letzten Jahren an Relevanz gewonnen und zahlreiche Redaktionen, die sich auf diese Aufgabe spezialisierten haben, wurden eingerichtet. Bislang ist aber wenig darüber bekannt, wie erfolgreich deren Arbeit ist und unter welchen Bedingungen es gelingt, durch Falschmeldungen hervorgerufene Fehlvorstellungen der Rezipienten zu korrigieren. In dem vorliegenden Beitrag wurde daher ein Modell entwickelt, das die möglichen Einflussfaktoren systematisiert. Es wurde eine Online-Umfrage unter 607 deutschen Mediennutzern durchgeführt, in der die Wirksamkeit einer Reihe von Richtigstellungen gemessen wurde. Die Ergebnisse zeigen, dass journalistische Richtigstellungen tatsächlich die Korrektur falscher Vorstellungen bewirken können. Anders als erwartet, haben aber weder eine dissonante Einstellung der Rezipienten zur Botschaft der Richtigstellung noch die Glaubwürdigkeit des Kommunikators oder die habitualisierte Nutzung der Informationsquelle einen nennenswerten Effekt auf die Wirksamkeit der Richtigstel-

lungen. Hingegen erweisen sich die kognitive Mobilisierung der Rezipienten und vor allem die wahrgenommene Qualität der Richtigstellungen als Faktoren, die die Wirksamkeit der Richtigstellungen tendenziell begünstigten.

Schlagwörter: Falschwahrnehmung, Richtigstellung, kognitive Mobilisierung, Qualität, Glaubwürdigkeit, Faktenprüfung

1. Introduction

The media are responsible for providing reliable information and unbiased analysis to prepare citizens for participation in the democratic process. However, in recent decades it has become increasingly difficult for them to fulfill this role properly. Competition, cost, and time pressure in newsrooms sometimes call the quality of established media into question. Even recognized journalistic sources are susceptible to spreading unverified stories and rumors occasionally, threatening their credibility (Flanagin & Metzger, 2000; Voigt, 2016). Consequently, negative perceptions of media quality, besides damaging the image of media entities, can have a negative effect on political trust and participation, and in this way, threaten democracy (Vogel et al., 2015; Voigt, 2016; Wolling, 2003).

In this scenario, the increasing significance of online platforms, especially social media, as sources of news and information plays a role. Social media provide an abundant plurality of new information sources with a huge potential to affect political deliberation. On the other hand, the universal accessibility and production of online content does not always have favorable outcomes in terms of sound political information, participation and deliberation; it also poses threats for democracy because of low or absent quality standards of the distributed information (Flanagin & Metzger, 2008; Vogel et al., 2015; Voigt, 2016). Content posted on online platforms and circulating on social media often originates from unknown or unprofessional sources. Consequently, a considerable proportion of online information tends to be questionable, flawed, digitally manipulated or even used for propaganda (Metzger, Flanagin, Eyal, Lemus & McCann, 2003; Schweiger, 2000; Vogel et al., 2015; Voigt, 2016).

Therefore, there is an increasing need for the provision of reliable information that can clarify rumors and fake news, filling the gap of missing gatekeepers. This can help users evaluate media content properly, form independent and knowledge-based opinions, and correct possible misconceptions. In response to this, several fact-checking and verification services have been established in many countries by news organizations and non-governmental groups.

Based on this, the present study aims to investigate users' acceptance of corrective content provided by fact-checking services offered by German public broadcasting services, and the associations of these clarifications and media identities with credibility and quality evaluations, among other factors. To do so, a survey based on a sample of 607 German residents was conducted, in which participants were exposed to statements about six current controversial issues as well as to corrective information provided by fact-checking services from German public broadcasting services.

2. State of research on fact-checking services and debunking

The main purpose of fact-checking and verification services is “systematically evaluating the veracity and correctness of public statements” (Garret, Nysbet, & Lynch, 2013, p. 2), frequently providing clarifications and corrective material to counteract rumors and fake news. Such clarifications might adjust recipients’ perceptions of issues, i.e., correct their misperceptions about specific topics or events. In this case, fact checking functions with the purpose of debunking, which is defined by Chan, Jones, Jamieson and Albarracín as “presenting a corrective message that establishes that the prior message was misinformation” (2017, p. 532). Hameleers and van der Meer (2019) detected in their study that fact checking with debunking purposes had the potential to discredit misinformation in a politically polarized context and to outweigh recipients’ partisan biases. However, fact checking does not always mean debunking since the services might also verify published statements as (partly) correct and confirm their legitimacy.

Previous research on fact checking has investigated users’ perceptions of such services (Brandtzaeg & Følstad, 2017; Brandtzaeg, Følstad & Chaparro Domínguez, 2018), analyzed their content and methods (e.g., Haigh, Haigh, & Kozak, 2018; Vizoso & Vásquez-Herrero, 2019), and explored factors associated with individuals’ responses to corrective information. Concerning these influencing factors, Lewandowsky, Ecker, Seifert, Schwarz and Cook (2012) argued that recipients’ personal ideology, political worldview, and level of skepticism toward particular issues could reduce the effectiveness of debunking information. In line with these arguments, studies suggest that the predisposition individuals have toward an issue affects their response to corrective material (Garret et al., 2013; Jarman, 2016; Nyhan & Reifler, 2010; Walter & Tukachinsky, 2019).

Two experimental studies conducted in the USA (Jarman, 2016; Nyhan & Reifler, 2010) investigated the acceptance of corrective information by measuring participants’ acceptance of statements about controversial issues, offering corrective or rebuttal information, and finally measuring the acceptance of the statements again. Their findings show that the provided corrections did not reduce the misconceptions of individuals very committed to a dissonant ideology, and in some cases even made the misconception stronger. In particular, in the experiment conducted by Jarman (2016), it was noticeable that participants exposed to corrections indicating that a rumor was half-true tended to strengthen their misconceptions. In Germany, Peter and Koch (2017) found in an experiment that it might be risky to repeat false statements in a clarification, because people sometimes just remember the information but forget that it is false. This erroneous remembering can lead to a backfire effect, i.e., wrong beliefs are reinforced instead of being diminished.

However, Walter & Tukachinsky (2019) verified in their meta-analysis that when a recipient’s worldview is consonant with the message received, the acceptance of corrective information is supported. In contrast, Pennycook and Rand (2018) found out that partisan bias is not predictive of whether participants give credit to inaccurate news headlines. The determining factor in their research was rather the willingness to analyze information critically.

Recipients' media habits also have the potential to affect their acceptance of corrective information. For instance, the experiment conducted by Garret et al. (2013) showed that a false statement about a controversial issue in the USA had higher acceptance among participants that watched a specific TV channel. In addition, the credibility attributed to the source of correction can play a role, as demonstrated in the study by Margolin, Hannak, and Weber (2018). Their analysis of tweets with corrective information referring to fact-checking services indicated that individuals are more willing to correct their misconceptions if they share a common network with the providers of corrections, and if they are following each other. Apparently, the information provided by persons who share the same network is perceived as more reliable than information from external sources. According to Berinsky (2015), the credibility attributed to a source can even surpass the effect of participants' political predilections in debunking.

Research has also indicated that the attributes of the corrective material, e.g., the format in which information is provided, might influence recipients' acceptance of clarifications. Among the attributes that supported participants to adjust their misconceptions were detailed narratives that provide new information (Chan et al., 2017; Lewandowsky et al., 2012; Swire, Ecker & Lewandowsky, 2017), and repetition of information, such as explicit reminders of the misperception (Ecker, Hogan & Lewandowsky, 2017) and repetition of the correction (Lewandowsky et al., 2012).

Notably, almost all the mentioned studies were conducted in the USA, i.e., in a specific media and political scenario, referring to controversial issues particular to the country. Other studies investigated the debunking of false claims in the context of science journalism. In contrast, this study investigates for the first time the effectiveness of fact-checking services related to controversial political and public issues in the German context. To the best of our knowledge, no similar studies have been conducted until now. Accordingly, the present study makes a contribution by analyzing the phenomenon in a different political and social scenario.

3. A framework for the analysis of fact-checking services' effectiveness

The existing literature does not provide a consistent theoretical framework for the analysis of the effectiveness of fact-checking services. For the development of such a framework that systemizes influencing factors, it is necessary to recall the purpose and the communication strategy of fact-checking services.

The central aim of these services is providing high quality information on controversial topics to counteract misperceptions and help people develop factual understandings of reality (Vlachos & Riedel, 2014). Thus, fact-checking services apply a communication strategy that focuses on the formation of accurate beliefs and not on persuasion. It is not about influencing attitudes, but rather enabling people to evolve correct beliefs about reality through verified information. This distinction follows the conceptualization of Fishbein and Ajzen (1975, p.12), who postulated that "attitude refers to a person's favorable or unfavorable evaluation of an object," while "beliefs represent the information he has about the object."

For the adjustment of beliefs to occur via fact-checking services, it is necessary that recipients undergo information processing. The elaboration likelihood model

(ELM) proposed by Petty and Cacioppo (1986) distinguishes two routes of information processing. The first is a central route, on which people elaborate the information thoroughly, and the second is peripheral, on which recipients rely more on contextual cues than on the arguments and their quality. The central route includes changes in the “cognitive structure,” a concept similar to beliefs, while on the peripheral route, attitude changes can occur without any changes in the belief system. Since fact checking aims to establish accurate beliefs, only the central route is relevant here.

The central route of information processing requires motivation and ability on the part of the recipients to elaborate the information, while the outcome efficiency depends on the quality of the information (Petty & Cacioppo, 1984). Therefore, the cognitive mobilization of the recipients (Dalton, 1984) and the perceived quality of the provided information should be considered as influencing factors. Both factors are expected to foster an elaborated evaluation of the provided information.

The concept of cognitive mobilization was introduced by Dalton (1984) to explain dealignment from political parties in the context of election studies. He argued that, as a result of higher levels of education, a qualitative change in the political sophistication had occurred, enabling people to make their own political decisions based on the information provided by the mass media. Cognitive mobilization is continuously operationalized by an index combining political interest and education level (Donovan, 2017). It seems plausible to assume that cognitively mobilized people are more willing and capable to elaborate the clarifications thoroughly and appropriately.

The concept of media quality refers to the evaluation of *media content* from the recipients' perspective (Voigt, 2016). It is associated with several related concepts, e.g., credibility (Flanagin & Metzger, 2007; Gunther, 1992; Wolling, 2003), trust in media (Tsfati 2010; Vogel et al., 2015), and media skepticism (Carr-Barnidge, Lee, & Tsang, 2014). All these concepts have a long history in research, but their boundaries are far from being clear. For the sake of conceptual clarity, the term “quality” is used throughout this paper to refer to the evaluation of media content.

In the context of audience research, quality is mostly defined as a subjective appraisal that depends on the user's expectations toward the media content and, therefore, focuses on the perspective of the individual and the audience. It can be understood as a relational value judgment of individuals based on the perception of the existence or lack of features, attributes and stylistic properties inherent to media communication (Wolling, 2002, 2009). To recipients, media quality plays an essential role in the selection and subsequent usage of media sources (Tsfati, 2010; Vogel et al., 2015). Research has consistently demonstrated that the willingness to consider and to accept arguments provided by the media depends on the quality ascribed to the media content (Jungnickel, 2011; Wirth, 1999). Thus, it is assumed that the effectiveness of fact-checking services depends on how recipients perceive the quality of the corrective information provided.

Besides the media content, the absence of trust or credibility in a *media source* can influence the processing of the message (Schweiger, 2000) and eventually

compromise the persuasiveness of its content (Mugny Tafani, Falomir-Pichastor & Layat, 2000). It seems plausible that these findings will hold true for journalistic clarifications. In the context of ELM, source credibility was originally assumed to influence the elaboration exclusively on the peripheral route, but when people elaborate the information thoroughly, it was found to have an impact also on the central route (Kitchen, Kerr, Schultz, McColl & Pals, 2014). Therefore, it is reasonable and supported by research (Berinsky, 2015) to assume that the source credibility of fact-checking services affects the effectiveness of the clarifications even when elaborated processing takes place.

But not all media selection is based on cognitive evaluations of the quality of the content or the credibility of the communicators. Much media use is highly based on habits and routines (Larose, 2010). Such media use makes people accustomed to the prevalent forms of presentation, argumentation and issue-selection of their preferred media. Familiarity with a specific source and its properties, in turn, increases positive evaluation of the content (Margolin et al., 2018; Swire et al., 2017). Therefore, it seems plausible that people who rely especially on social media – which are frequently the source of incorrect information (Flanagin & Metzger, 2008) – might be less willing to accept the clarifications, while people who rely on public broadcasting might be more open to accepting the messages from the fact-checking services.

Concerning individuals' attitudes, the literature review indicated that individuals' political orientation and predisposition are important influencing factors on their response to corrective information. These findings highlight the role of attitudes in the elaboration process. When attitudes are considered, consistency theories come into play, especially the theory of cognitive dissonance, which claims that people avoid dissonant information (Festinger, 1957; Zillich, 2019). In this case, the driving factor of information processing is the desire to keep the individual attitudinal system stable. But as research has repeatedly shown (Donsbach, 1991), consistency is not always the dominant factor. Especially when the provided information has a high utility for the recipients, they are more open to consider and elaborate dissonant messages (Canon, 1964). Therefore, it can be assumed that on personally relevant topics, people are basically interested in developing a proper belief even when their attitudes are challenged. Accordingly, they are more open to information that contradicts those attitudes.

In summary, the components of the framework adopted in this study consist of three groups of factors that might influence the information processing. Firstly, there are factors that hinder a sound processing of information, such as contradicting ideology and attitudes. Secondly, there are factors that support an elaborated evaluation, namely quality and cognitive mobilization. Finally, there are factors that are somewhat ambivalent, like the credibility of media organizations. The perceived credibility of media works like a landmark that helps people position themselves in a complicated world. Relying on credibility is frequently a necessary shortcut in the process of selection, perception, and decision-making. If the selection and assessment of media sources is already based on a critical evaluation process, the reliance on credibility might support the development of accurate beliefs about reality. If not, credibility might provoke the opposite result.

4. RQs and hypotheses

As this study aims to investigate the effectiveness of fact-checking services for the first time in the German context, it is of interest whether this form of media content is capable of generating changes in the mindset of its target audience. Thus, the first research question is:

RQ1: Can journalistic clarifications of rumors successfully help readers to adjust their misconceptions?

In addition, it is of interest to understand what affects this process, as the following research question specifies:

RQ 2: How can the adjustment of misconceptions by journalistic clarifications be explained?

Based on the reviewed research and the introduced theoretical framework, seven hypotheses specify factors that might influence the efficiency of the process (Figure 1).

Findings from the USA show that the attitudes of the recipients might influence the effectiveness of the clarifications. These results are in line with the assumptions of the theory of cognitive dissonance (Festinger, 1957) and the phases of selection (Donsbach, 1991), which indicates that selective perception and selective processing are further steps in the selection process that might influence the interpretation and acceptance of the messages. It is assumed that clarifications that are in conflict with the political ideology or the issue-specific attitudes of a recipient will be rejected and will not be able to adjust a recipient's misconception (Hameleers & van der Meer, 2019; Jarman, 2016; Lewandowsky et al., 2012; Nyhan & Reifler, 2010; Walter & Tukachinsky, 2019). Therefore, the first two hypotheses are:

H1: The more the political ideology of a recipient deviates from the message of a clarification, the lower the probability that an adjustment of the misconception will take place.

H2: The more the issue-related attitudes of a recipient deviate from the message of a clarification, the lower the probability that an adjustment of the misconception will take place.

Lack of source credibility was found to be a weakening factor of influence for media content. Therefore, we assume that a high degree of source credibility acts as a reinforcement for the recipient's change of conviction, while low credibility might counteract the persuasive power of the clarification (Berinsky, 2015).

H3: The higher the perceived credibility of the source of the clarification, the higher the probability that an adjustment of the misconception will take place.

Furthermore, it is considered that the susceptibility to encountering faulty and biased media content depends on media habits. As the probability of coming into contact with unreliable media content is higher for social media users, these users might get accustomed to such kinds of biased news and be less aware of possible misperceptions (Lewandowsky et al., 2012; Urban & Schweiger, 2014). For the users of journalistic quality media this probability is lower, and therefore they

might be more critical about distorted content. Moreover, research has showed that social network users are more willing to accept corrections from people they share a community with (Margolin et al., 2018). Thus, for social network users, clarifications from outside the network, such as from public broadcasting services, will probably evoke a higher reluctance toward changing a misconception, as declared in the following hypotheses:

H4: The higher the reliance on public broadcasting services for information purposes, the higher the probability that an adjustment of the misconception will take place.

H5: The higher the reliance on social media for information purposes, the lower the probability that an adjustment of the misconception will take place.

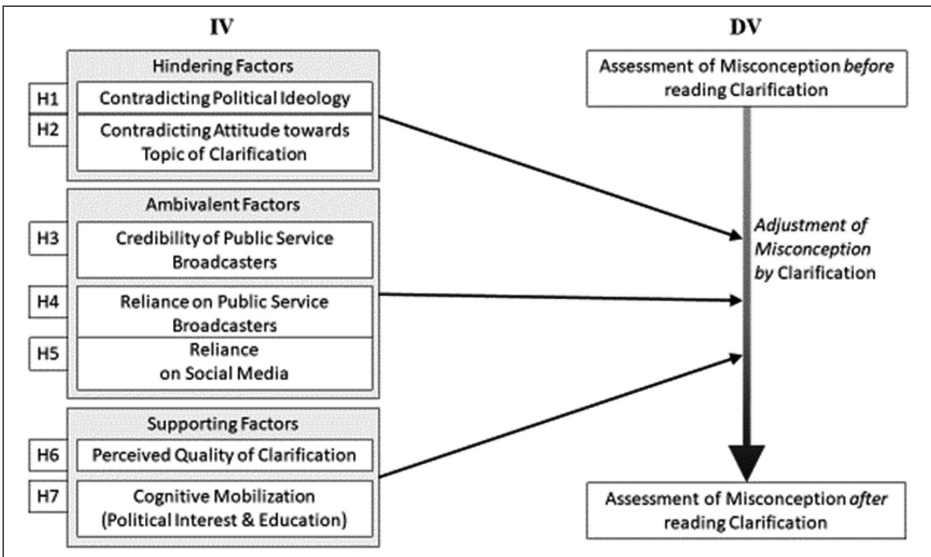
Research indicates that attributes of the corrective material might influence the process of adjustment of misperceptions (Chan et al., 2017; Ecker et al., 2017; Lewandowsky et al., 2012; Swire et al., 2017), and point out a connection between the perception of quality of media content and its effect (Wirth, 1999). Therefore, it is hypothesized:

H6: The higher the perceived quality of the clarification, the higher the probability that an adjustment of the misconception will take place.

Additionally, it is expected that cognitive mobilization will have a positive effect on the efficacy of the clarifications, because cognitive mobilization is an indicator of the users' capability of evaluating the clarification appropriately.

H7: The higher the cognitive mobilization, the higher the probability that an adjustment of the misconception will take place.

Figure 1. Research model.



5. Methods

In order to answer the formulated research questions and to test the hypotheses, a quantitative and standardized online survey with closed questions was adopted to gather the required data. The online questionnaire was conducted in a single session and was combined with the presentation of a stimulus article.¹

The survey was conducted through an online access panel by the professional survey institute Respondi, which is located in Germany and certified according to Global ISO 26362. As Respondi applies a quota-sampling method to select the participants, the obtained sample is representative of the online German-speaking population older than 18 years, in terms of age, gender, and education. The data was collected between the 15th and the 21st of March 2019.

5.1 Sample

This study sample consists of 607 respondents (49.6% female) between 18 and 69 years old ($M = 46.07$, $SD = 14.07$). 81 percent of the participants have their primary residence in the western part of Germany, 60 percent completed maximum lower secondary school, 20 percent completed upper secondary school, and 19 percent have a higher education degree. The average monthly net household income is 2,500 EUR ($SD = 1,460$).

5.2 Questionnaire

The questionnaire consisted of three parts. In the first section, the participants evaluated twelve statements and thereby provided disclosure of their attitudes toward six topics discussed in the clarifications. Additionally, in the first part of the survey, the political ideology, media reliance, and perceived communicator credibility of the participants were measured. At the end of the first part, participants made an initial assessment concerning the truth of six statements. Based on these assessments, it was possible to identify on which statements an individual was undecided or showed a misconception. Afterwards, a clarification related to one of these statements was randomly selected and presented to the participants in the second part of the questionnaire. Thus, the recipients only received clarifications related to statements on which they were undecided or had a misconception. In order to guarantee that participants read the clarification with the necessary diligence, the clarification article was displayed for a minimum of 60 seconds. In the third part of the questionnaire, the participants expressed their evaluation of the perceived article in terms of quality. Finally, the subjects gave a second assessment of the statement associated with the received clarification, and were reminded of how they had evaluated the statement before. This strategy was applied to support them in intentionally changing their assessment staying with their initial estimation.

1 The complete questionnaire is available online at <https://doi.org/10.22032/dbt.39350>.

5.2.1 Clarifications

The six clarifications were chosen from articles published online by the journalistic entities “BR Verifikation” and “ARD Faktenfinder.” Video-based or mixed content as well as articles from before the year 2018 were not considered. The remaining text-based articles were evaluated in regard to their topicality and relevance to ensure that the final selection of topics was diverse and consisted of political, social, and news matters. The articles were carefully shortened to a length of about one page (391–451 words) to avoid distortions by text length and minimize dropout rate. Eventually, the process concluded in a selection of six clarifications (Table 1).

The articles were similar in intonation and structure, such as introductions, subheadings and conclusions. After this selection process, the topic or rumor addressed in the respective clarification was summarized into one expressive and comprehensible statement, which the participants evaluated in regard to its conviction before and after reading the article. In order to avoid a response bias, two of the six statements were in fact correct, while the others were predominantly wrong. None of the statements was completely wrong. Since rumors are frequently neither entirely false nor true, this strategy reflects reality more appropriately. The second column of Table 1 presents the six statements that participants needed to judge. The third column displays a short summary of the content of the clarification and the fourth column summarizes the arguments and categorizes the statements with respect to their accuracy.

5.2.2 The dependent variable: Adjustment of misperception

As explained before, the participants were asked to evaluate the presented six statements in regard to their accuracy. This evaluation was measured by a five-tier scale, ranging from “completely true” to “completely false.” Afterwards, the subjects were randomly allocated a clarification of one of the statements that they had assessed wrongly or on which they were undecided. After being confronted with the clarification, the participants were asked to evaluate the accuracy of the statement again, considering the information obtained from the clarification. For this second evaluation, the same scale was employed as for the first. Based on these two measurements a change score was calculated, which indicated if and how the recipient had adjusted their evaluation of accuracy. The change score ranged from -2 (i.e., change occurred in the opposite direction to the clarification) to +4 (change occurred in line with the clarification), with 0 representing no change. This scale was obtained due to the selection process concerning the allocation of the corrective material: If recipients evaluated the accuracy of the presented controversial statements correctly from the beginning (scale values 1 and 2), these participants were not selected to be confronted with the respective clarifications aiming to adjust the recipients’ beliefs. Therefore, the negative change scores -3 and -4 are not part of the scale. The descriptive statistics of change score by topic are presented in Table 4 (see Mean change / SD).

Table 1. The controversial statements with a brief summary of the respective clarifications presented in the questionnaire.

Issue	Statement	Main arguments of clarification	Accuracy of statement and reasoning
Regional labels	<i>"The label 'regional' does not guarantee that products really originate from the region."</i>	Local products are not necessarily healthy. Wellbeing of animals and employees is not guaranteed. Label "regional" is not defined or protected.	True: not only the origin but also the ecological quality of regional products was challenged
Recycling quota	<i>"Germany's recycling rate is lower than officially claimed, because actually the allegedly recycled plastic waste is often burned or exported and only partially utilized abroad."</i>	Every piece of waste entering a recycling plant is registered as recycled no matter what happens afterwards. Half of the supposed recycled plastic waste is being burned. Huge parts of the waste are downcycled and not recycled. Supposed recycled plastic waste has been exported to China for decades.	True: claim is backed up with evidence from different sources
Violence against rescue workers	<i>"The number of attacks on emergency workers, i.e., rescue workers, paramedics and fire-fighters, has increased significantly in recent years."</i>	The existing data are incomprehensive. Some studies show a small increase, others do not. Findings depend on the applied indicators. While the number of incidents has risen in recent years, the population has also grown. The rise could be related to a higher awareness.	Mostly false: the problem exists, but there is a lack of evidence of any significant increase
Freeway security	<i>"Although there is no speed limit on the German freeways, they are the safest in the world."</i>	The number of deaths in relation to vehicle mileage or route network is higher in Germany than in countries with speed limits on freeways. The decrease in number of fatalities on freeways is lower than the decrease on streets with speed limitation. The number of serious injuries has increased, and speeding is one of the main causes.	Mostly false: German freeways are safe but not the safest in the world
Turkish influence	<i>"The Turkish president is increasingly exerting influence on the work of the Turkish-Islamic mosque association Ditib in Germany."</i>	Ditib's imams are trained in Turkey and are employees of the Turkish government. Recep Erdogan is authorized to give them political instructions, but there is no evidence that he has done so in the past. The sermons are written in Cologne and are free of political messages.	Mostly false: the president has the power to influence but there is no evidence that he exercises this influence
Air pollution in subways	<i>"The health risk of fine dust pollution in the subway is significantly higher than in city streets, because there is little air exchange in the tunnels."</i>	High levels of fine dust pollution in the subway stations are confirmed, but no health risks for passengers are expected because of the short stay. Several further factors play a role, such as the composition and origin of the particles.	Mostly false: the pollution is really high, but as people do not stay in the subway for a long time, the health risk is low

Note. #Scale of the item was reversed before building the composite scale; *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

5.2.3 Political ideology

The general political ideology of the participants was measured by asking them how they position themselves politically on a scale from 1 = “far left” to 7 = “far right” ($M = 3.83$, $SD = 1.16$). For the testing of H1, we postulated that participants from the political right are reluctant to accept the clarifications that challenge the beliefs concerning the “Turkish influence”, “violence against rescue workers”, and “freeway security”, because critical views on Islam, security concerns and regulation of traffic are topics very present in the conservatives’ agenda. Participants from the political left are expected to reject the clarifications that challenge beliefs concerning the “regional labels”, “air pollution in subways”, and “recycling quota”, because people of the political left tend to have positive views on environmental issues, public transport and the importance of healthy food.

5.2.4 Issue-related attitudes

To test H2, the subjects’ attitudes in regard to the six topics of the clarifications were measured with the help of two statements each. Therefore, items were extracted from established item groups, mainly from the Compilation of Items and Scales of the Social Sciences (ZIS Gesis, 2019). The items were adjusted slightly where necessary, resulting in a group with 12 statements (Table 2).

The participants were asked to express their level of agreement with the statements on a scale ranging from 1 = “agree completely” to 5 = “reject completely”, with the additional possibility of answering “don’t know”. The two items of each topic were averaged to generate a composite scale of attitudes related to the respective issue. Before building the composite scales, the scales of some items were reversed, as specified in Table 2. Since only two items were asked per topic, scale reliability could not be verified. Instead, correlations were calculated between the items to examine whether they are positively correlated.

5.2.5 Credibility of communicators

The credibility attributed to the communicators of the clarifications was measured with four items, including the propositions that public broadcasting services ...*deliver true information*; ...*deliver trustworthy information*; ...*illuminate all sides and perspectives of a topic equally*, and ...*are media you can rely on* (Carr et al., 2014; Gunther, 1992; Wolling, 2002, 2009). The participants were asked to express their level of agreement with the statements on a scale ranging from 1 = “agree completely” to 5 = “reject completely”. The items were averaged to build a composite scale (Cronbach’s $\alpha = 0.95$), in which higher values reflected higher credibility ($M = 3.40$, $SD = 1.01$).

5.2.6 Media reliance

Participants were asked how important they personally consider *public service broadcasting*, ($M = 3.67$, $SD = 1.27$) and (*shared*) *content on social media networks* ($M = 2.31$, $SD = 1.16$) to be as sources for socially relevant information

and news. Possible answers ranged from 1 = “especially important” to 5 = “unimportant”. For the analysis, this scale was reversed, so that higher values represent higher reliance on the respective media.

Table 2. Items that measured attitudes related to the topics of clarification and descriptive statistics of the respective scales.

Topic of attitude	Items	Mean	SD	Pearson's r
Regional labels	(1) Whenever possible, people should not buy products that are energy-intensive or come from far away. (2) Goods produced in my region are not more trustworthy than the imported ones. #	2.52	0.89	0.27***
Recycling quota	(1) The recycling system in Germany brings more expenditures than benefits. # (2) It should be ruled by law that environmental protection has priority over private economic interests.	2.61	0.84	0.09*
Violence against rescue workers	(1) You can never be too careful when dealing with people. (2) The police should be allowed to use violence against criminals.	2.46	0.94	0.31***
Freeway security	(1) Driving by car feels safe. (2) Drivers who exceed the speed limit are a big safety problem. #	3.19	0.77	0.15***
Turkish influence	(1) The German culture must be protected from foreign influences. (2) Islam fits in the German society. #	2.63	1.17	0.60***
Air pollution in subways	(1) I feel my health is threatened by the increasing air pollution. # (2) When I walk down a congested street, I have the impression that I can barely breathe, because of the gas emissions of cars. #	2.89	1.05	0.61***

Note. #Scale of the item was reversed before building the composite scale; *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

5.2.7 Quality of content

The list of indicators that measure how participants evaluated the quality of the clarifications consists of 20 attributes. These statements address various aspects and characteristics of the stimulus material, based on the five categories proposed by Fahr (2001), namely objectivity, analytical quality, diversity, formal quality, and relevance. Table 3 describes each dimension and the indicators included to measure each of them.

The indicators were extracted from relevant research literature (Arnold, 2015; Brandtzaeg et al., 2018; Emmer et al., 2011; Fahr, 2001; Gunther, 1992; Metzger et al., 2003; Palmgreen et al., 1980; Schweiger, 2000; Voigt, 2016; Wolling, 2002, 2003; Wirth, 1999). Subjects were asked to specify their agreement or disagreement with the statements on a scale from 1 = “agree completely” to 5 = “reject completely”.

The 20 quality items were inspected via factor analysis. The results did not confirm the five dimensions. Instead, they showed a solution with two factors,

with one factor presenting an eigenvalue only slightly above one. Therefore, one single scale representing quality was built. The 20 items were averaged, resulting in a composite scale, in which higher values correspond to higher perceived quality (Cronbach's $\alpha = 0.95$, $M = 3.67$, $SD = 0.67$).

5.2.8 Cognitive mobilization

Cognitive mobilization was measured by two indicators. The first is interest in politics, which was measured with one item with a scale from 1 = “not interested at all” to 5 = “strongly interested”. The second indicator is education, measured with a scale from 1 = “school unfinished” to 5 = “university degree”. As proposed in the literature (Donovan, 2017), the two items were averaged, resulting in a composite scale, in which a higher score represents higher cognitive mobilization ($r = 0.11$, $p < 0.001$; $M = 3.31$, $SD = 0.83$).

Table 3. Measured quality dimensions and their respective items.

Dimension	Item <i>The clarification...</i>
Objectivity	<i>...was credible</i>
Including indicators that were also used in previous research to measure the concept of credibility (Metzger et al., 2003; Wirth, 1999)	<i>...was trustworthy</i> <i>...reported in an unprejudiced way</i> <i>...was fair and balanced</i> <i>...reported objectively</i>
Analytical quality	<i>...provided evidence for the allegations</i>
Indicating the skill of the authors of the clarification to produce sound articles, which enable the recipient to analyze the issue effectively	<i>...presented context and background information</i> <i>...was coherent and consistent</i> <i>...was critical and questioned things</i>
Diversity	<i>...contained sufficiently accurate quantities and time and number information</i>
Indicating any kind of pluralism	<i>...named all occurring persons and sources clearly</i> <i>...let different people, actors and other sources have their say</i>
Formal quality	<i>...gave the impression of being well and thoroughly researched</i>
Referring to style aspects and to a proper relation between the content, the clarification and the reality	<i>...went into detail sufficiently</i> <i>...mentioned all arguments concisely</i> <i>...was simple, clear and understandable in terms of vocabulary and language</i>
Relevance	<i>...is relevant to society</i>
Relating to general and purpose-oriented importance	<i>...is important to me personally</i> <i>...helped me to form an opinion</i> <i>...was useful</i>

Furthermore, participants' demographic characteristics were measured and used as control variables, namely age, gender, and net income of the household.

6. Findings

To answer the first research question about the effectiveness of journalistic clarifications in adjusting participants' misconceptions, t-tests for dependent samples were conducted, comparing participants' assessments of the controversial statements before and

after reading the corresponding clarification. In five of the six cases, the average assessment increased (see mean change in Table 4). This indicates that the recipients adjusted their evaluation of the statements in line with the argumentation of the clarifications.

The clarification about “air pollution in subways” was the only case in which participants changed their mind in the opposite direction to that expected. This result is also visible in the lower part of Table 4, which shows that the majority of participants who read the corrective article about air pollution in subways changed their assessment in the inverse direction to that intended in the clarification. For the other five topics, it was the other way around. A considerable majority changed their assessment in the intended direction. In three of the six cases, more than half of the participants revised their position in line with the arguments presented in the clarifications. Only among participants who read the clarification concerning Turkish influence was the picture less clear. In summary, the results show that most clarifications were able to adjust the participants' misconceptions.

Research question 2 asks for possible factors associated with the adjustment process of recipients' assessments of the controversial statements. Table 5 displays Pearson correlations between the hypothesized factors and the change scores by topic. The hypotheses related to RQ2 were tested by means of linear regression analysis (Table 6).

Table 4. Effects of clarifications (t-test and percentages of change).

Topic	Regional label	Recycling quota	Violence against rescue workers	Freeway security	Turkish influence	Air pollution in subways
<i>n</i>	88	73	116	102	115	113
Before reading clarification Mean (<i>SD</i>) ¹⁾	2.60 (0.63)	2.73 (0.53)	1.54 (0.69)	2.44 (0.68)	1.95 (0.80)	2.52 (0.63)
After reading clarification Mean (<i>SD</i>) ²⁾	3.65 (0.84)	3.58 (0.78)	2.29 (1.24)	2.97 (0.98)	2.22 (0.92)	2.13 (0.85)
Mean change (<i>SD</i>) ³⁾	1.05 (0.95)	0.85 (0.81)	0.75 (1.24)	0.53 (0.99)	0.27 (0.93)	- 0.39 (0.97)
T-Value, sig. ⁴⁾	10.37***	8.95***	6.53***	5.39***	3.11**	4.28***
Inconsistent change ⁵⁾	1.14 %	1.37 %	9.48 %	12.84 %	16.52 %	45.13 %
No change ⁶⁾	29.55 %	36.99 %	39.66 %	38.24 %	47.83 %	41.59 %
Consistent change ⁷⁾	69.41 %	61.64 %	50.96 %	49.02 %	35.76 %	13.36 %

1) Mean values & standard deviation of initial assessment, before reading clarification. Scale: 1 = evaluation is completely inaccurate, 5 = evaluation is completely accurate.

2) Mean values & standard deviation of second assessment, after reading clarification. Scale: 1 = evaluation is completely inaccurate, 5 = evaluation is completely accurate.

3) Calculated change: (mean before – mean after) & standard deviation of change score

4) T-test for dependent samples, Significance: *** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$

5) Percentage of participants with an inconsistent change of assessment after reading clarification

6) Percentage of participants with no change of assessment after reading clarification

7) Percentage of participants with a consistent change of assessment after reading clarification

Table 5 shows that all the hypothesized predictors, except reliance on social media, are significantly correlated with the change score of at least one of the topics. But the table also reveals that frequently the assumed relationships cannot be observed. No significant correlations were found with the control variables age, gender and income.

Table 5. Factors associated with the effectiveness of the clarifications (Pearson correlations).

Topic	Regional label	Recycling quota	Violence against rescue workers	Freeway security	Turkish influence	Air pollution in subways
Issue-related attitude index	-0.15	-0.16	0.19*	0.04	0.27**	-0.09
Political ideology	0.04	-0.02	-0.17*	0.00	-0.20*	-0.08
Credibility of public broadcasting services	0.24*	0.22*	0.16*	-0.09	-0.04	-0.12
Reliance on public broadcasting services	0.08	0.24*	0.22*	-0.11	0.08	-0.14
Reliance on social media	-0.12	-0.02	-0.04	-0.09	-0.08	0.10
Quality index	0.38***	0.61***	0.10	-0.22*	0.09	-0.21*
Cognitive mobilization	-0.02	-0.17	0.07	0.25*	0.25*	0.03
Age	0.08	0.02	-0.03	0.01	-0.13	0.05
Gender	0.01	0.15	0.05	0.05	-0.18	-0.01
Income	0.06	0.04	-0.14	-0.07	0.06	0.01

Note. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Regression analyses were conducted with the change scores as outcome variables to control for the mutual influence of the various predictors. Non-significant variables were excluded stepwise from the regression. Table 6 presents the final models including only the significant standardized coefficients of the predictor variables.

The findings demonstrate that in almost all models, only the factors assumed to support the information processing, i.e., perceived quality and cognitive mobilization, show significant results. Notably, the perceived level of quality of the clarifications is a significant factor in four of the six models. The associations are positive and fairly strong with the perception adjustment regarding regional labels and recycling quota, supporting H6. Conversely, with the topics freeway security and air pollution in subways, the associations are negative. In these cases, participants that attributed higher quality to the clarifications tended to change their assessment of the respective statement in the opposite direction to that expected in H6.

Cognitive mobilization shows positive associations with the perception adjustment about the topics freeway security and Turkish influence. Thus, these two models support H7. Attitudes toward the topic play a role only in the case of the assumed Turkish influence on mosques in Germany. Thus, H2 is supported only in relation to this topic. Also, the habitual reliance on specific media supports H4 in only one topic: the clarification about violence against rescue workers is more effective for people relying on public broadcasting.

Political ideology, perceived credibility of the source of the clarification, and reliance on social media do not exhibit significant associations with the perception adjustment regarding any of the topics. Therefore, H1, H3 and H5 are not supported in these analyses.

Table 6. Factors associated with the effectiveness of the clarifications (Regression analysis).

Topic	Regional label	Recycling quota	Violence against rescue workers	Freeway security	Turkish influence	Air pollution in subways
R ²	0.14	0.38	0.05	0.11	0.11	0.05
Issue-related attitude index					0.23*	
Reliance on public broadcasting services			0.22*			
Quality index	0.38***	0.61***		-0.22*		-0.21*
Cognitive mobilization				0.25*	0.20*	

Note. Standardized coefficients are displayed. Final models include only significant effects. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

7. Discussion

The first research question asked whether journalistic clarifications are able to help the recipients adjust their judgment about a certain topic. The results of the study show that participants adjusted their assessment of controversial statements in five out of six topics after being confronted with the associated clarification. Therefore, it is appropriate to affirm that clarifications are indeed capable of causing a change in the mindset and views of media recipients. However, these changes are dependent on the context of the topic. As demonstrated in Table 4, the values of the changes in belief vary between the different issues. While the change for the topic “regional labels” improved by over one scale point, the weakest positive change, with not even a third of a point, occurred for the topic “Turkish influence”. For “air pollution in subways”, the change was in the opposite direction to that expected. Interestingly, the two most effective belief adjustments took place for the topics whose controversial statements were attested as being true by the clarifications. Thus, clarifications seem to be especially suc-

cessful if they confirm a correct statement that was misperceived as false. On the other hand, if people believe an incorrect statement, the clarifications are less effective. This indicates that fact-checking services should highlight correct facts, at most providing a reminder of the misperception but without concentrating attention on the wrong information (Ecker et al., 2017).

The weak adjustment for “Turkish influence” might be explained by the high degree of controversy and political charge of the topic in Germany. After controlling for other variables, this topic remained the only one in which issue-related attitudes had an effect on the adjustment of the misperception. Additionally, after further inspection, it is worth noting that the clarification in regard to “air pollution in subways” was more ambiguous than probably intended by the journalists. While the clarification confirms a high pollution in subway stations, it states the “short stay” of passengers in the station as the central argument against a risk for health, thus clarifying the statement as half true. This might be perceived as not very convincing, and consequently fail to adjust participants’ belief in line with the clarification. These findings are in line with results from Jarman (2016), who observed that clarifications that present a rumor as half true might even reinforce misperceptions. These insights demonstrate a need for further research that considers the topic, the content, and the situational context of the clarifications to a higher degree. However, the first research question can be answered with an almost exclusive yes.

The second research question concerning the potential influencing factors was inspected with a number of hypotheses. H1 stated that a political ideology that conflicts with the claims of the clarification acts as an impeding factor for the adjustment. Although results of bivariate correlations were in line with this assumption in the topics “violence against rescue workers” and “Turkish influence”, no effects were detected in the regression analyses. Thus, H1 did not find substantial support.

H2 looks at the issue-related attitudes and states that a corresponding attitude reinforces the adjustment process. Similarly to H1, small significant effects were found in the bivariate correlations in the topics “violence against rescue workers” and “Turkish influence”. Nevertheless, after controlling for the other potential influencing factors in the regression analyses, a significant influence of attitudes was observed only in the issue “Turkish influence”. Thus, from the dimensions of the framework that were established as hindering factors – political ideology and issue-related attitudes – only attitudes acted as an obstacle to clarifying politically controversial topics in a single case. This finding might be related to the fact that topics related not only to “Turkish influence” directly, but also to the cultural, political and social impacts of Islam in Germany have been long disputed in the political realm and received a lot of media attention. Thus, it is possible that “Turkish influence” was a more sensitive topic for respondents than the other selected issues in this study. For this reason, attitudes might have played an especially significant role.

The third hypothesis suggested a positive relation between the credibility of the communicators providing the clarifications and their effectiveness. Correlations supporting this influence were observed in three of the six topics, although only on a low level. In the regression models, these small effects disappeared. This suggests that the recipients’ attitudes towards the entity behind the clarifications do not play a vital role

in the process of belief adjustment. It is possible that media users focus on the perceived information itself when dealing with clarifications, rather than the sender. Also, since clarifications are a relatively new product of public broadcasting services, recipients are possibly not yet fully aware of the relevance of these journalistic entities in counteracting fake news. However, with these findings, H3 could not be verified.

H4 and H5 stated that a reliance on certain media channels acts as an influencing force on the adjustment process. A high reliance on social media for information purposes did not exert a significant effect, thus rejecting H5. Since content on social networks can originate from various sources, ranging from the official channels of journalistic news desks through to interest groups, propaganda emitters, and unqualified individuals, the quality and reliability of content in these networks can vary heavily. Content on social media networks is possibly too diverse in regard to quality and reliability to act as an expressive factor associated with recipients' openness to accept the claims of the clarification. Future research should measure the specific sources of information on social media upon which people rely.

On the other hand, a high reliance on public broadcasting services showed two significant correlations. But in the regression analysis, reliance on public broadcasting improved the adjustment process in only one of the six topics. However, this result is in line with the assumption that a high reliance on the fact-oriented and knowledge-based content of public broadcasting services supports an adjustment process caused by the journalistic clarifications originating from these communicators. To inspect this aspect further, future research with a more diverse stimulus material including also clarifications from other sources would be appropriate. In conclusion, while H5 is rejected, H4 cannot be rejected completely.

H6 hypothesized that a high perceived quality of clarification supports the adjustment process. The results show that the perceived quality of the clarifications played a significant role in four of the six topics. This effect could be defined as positive and highly significant for the topics "regional labels" and "recycling quota", the two affirmative clarifications. In contrast, the overall quality exerted a negative influence on the adjustment process for the topics "freeway security" and "air pollution in subways". For the interpretation of the findings concerning "air pollution in subways", it must be considered that those who changed their mind in the other direction to that expected, evaluated the article as of higher quality. Thus, the perception of high quality encouraged the adjustment also in this case. Furthermore, the results suggest that the content quality is of particular importance for clarifications that verify the discussed statement as true rather than for articles that expose a claim as false. In conclusion, content quality was found to be a somewhat inconsistent factor for the effectiveness of journalistic clarifications. But when quality does play a role, it is by far the strongest factor. Therefore, it is clear that H6 needs further inspection.

The final hypothesis, H7, stated that a high degree of cognitive mobilization leads to an improved adjustment of belief. The findings in Table 6 support this assumption for "freeway security" and "Turkish influence", two politically-charged topics. Therefore, a high degree of political interest and high education could be categorized as reinforcing factors for predominantly political topics, even when the mediated claims stand in contrast with the recipient's beliefs. H7 can be declared as partly verified, since weak but significant relationships were detected.

Within the category of variables that were defined as supporting factors, not all significant relationships were found to be positive or enforcing. This indicates that the uniqueness of the topics of the misconceptions and clarifications plays a fundamental role for every aspect involved. The existence of universally reinforcing variables cannot be presumed.

7.1 Conclusion

Our findings show that the clarifications were successful in most cases. The hindering factors were less influential than expected, while the supporting factors showed a higher relevance, but no consistent effects across the different topics. Therefore, it is necessary to investigate further the circumstances under which the hindering and supporting factors become relevant.

7.2 Limitations and future research

The study employed real clarifications published in fact-checking services of German public broadcasting services. While this endorses the external validity of the findings, it also poses limitations. For instance, specific aspects of the format and content of the clarifications were not manipulated, as in previous studies (Garrett et al., 2013; Jarman, 2016; Nyhan & Reifler, 2010; Young, Jamieson, Poulsen, & Goldring, 2018). Consequently, the analysis did not include how these factors could be associated with changes in participants' assessments of controversial statements.

Furthermore, the fact that the clarifications were quite standard in terms of format and strategy of correction might have reflected on the quality measures. There were no big differences in respondents' evaluations of the quality of the different clarifications. Besides, the analysis was unable to identify consistent dimensions among our quality indicators. A purposive manipulation of quality factors has the potential to deliver more differentiated results in future research.

Even though the study adopted real clarifications, it was distanced from real situations by leading participants to read the clarifications that challenged their initial assessments of the controversial statements. According to research on selective exposure, people frequently avoid information that might challenge their attitudes. To get an idea of how probable it would be that people read the clarification in real life, participants were asked if they would have read the article had they seen it in another context. 52 percent of the respondents stated they would have read the clarification completely or almost completely, while 24 percent indicated they would have read at least half of the text. Furthermore, this statement was totally unrelated to the change scores. The adjustment of the perception was neither higher nor lower for people without intrinsic motivation to read the articles. This supports the external validity of the findings, but also suggests that clarifications of one page might be too long.

Finally, the study selected clarifications on a variety of controversial issues. The attitudes toward each issue were measured with only two items, which is likely to be insufficient to capture the complexity of the construct. Future studies might

concentrate on fewer issues to be able to measure attitudes toward the different topics in more depth. Moreover, future research might consider contextual aspects of the clarifications, such as the incidence of the topic in the media as well as in political debate. This might help interpret variations in the acceptance of clarifications regarding different topics.

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