

Data-Based Strategic Communication as a Mediator of Trust: Recipients' Perception of an NPO's Automated Posts



Natascha Löffler, Ulrike Röttger, and Christian Wiencierz

Abstract Strategic communication is undergoing a digital change. Organizations use large amounts of data to automate their strategic communication with the public and relevant stakeholders, i.e. bots take over the task such as creating and distributing content. In particular this raises the question of how individuals evaluate the use of automated posts in social networks and what effects this has on the perceived trustworthiness of the organization—one of the most important resources, especially for non-profit organizations. This experimental study provides empirical insights into this research gap. Our results indicate that the transparent labeling of a post as automated, combined with prior training on the usage of automation in strategic communication, has no effect on the perceived trustworthiness. Based on these results, we conclude with both scientific and practical implications.

Keywords Automated communication · Strategic communication · Trust · Transparency · Credibility

1 Introduction

Digitization and increasing datafication are significantly changing strategic communication, meaning that companies and other political actors such as political parties and non-profit organizations (NPOs) must face up to this digital transformation (Borucki 2019). This also has far-reaching consequences for the organizations themselves: Technologies such as algorithms, big data, and artificial intelligence are increasingly finding their way into strategic communication, although this has

N. Löffler (✉) · U. Röttger

Department of Communication, University of Münster, Münster, Germany

e-mail: natascha.loeffler@uni-muenster.de; ulrike.roettger@uni-muenster.de

C. Wiencierz

REACH - EUREGIO Start-Up Center, Münster, Germany

e-mail: christian.wiencierz@uni-muenster.de

not been extensively researched, especially in communication science (Guzman and Lewis 2019). For example, big data analyses influence how decisions are made within the organization with regard to further communication measures (Wiencierz and Röttger 2019). However, the above-mentioned technologies are not only implemented at the level of strategic decision-making, but they can also be used for (partially) automated content creation and distribution to specific target groups (Galloway and Swiatek 2018).

Strategic communication generally has the function of a trust intermediary between organizations and their stakeholders and has the overarching goal of increasing the legitimacy of organizations (Röttger 2018). The present contribution adopts Mayer et al.'s (1995) understanding of trust (p. 712): "Trust is the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, regardless of the ability to monitor or control that other party." For organizations in general and NPOs in particular, the trust of their stakeholders represents a valuable intangible resource (Wiencierz and Röttger 2016). Trust promotes lasting and loyal relationships with stakeholders, the acceptance of their actions, the willingness to support the organization materially or immaterially, and also the likelihood that the organization will be recommended. In general, an NPO's scope for action is enormously expanded by trust, since trustors, such as members or donors, are more willing to accept the uncertainties surrounding the NPO's future actions (Bentele 1994; Hoffmann 2011). At the same time, trust is critical for NPOs because it is difficult to assess their trustworthiness due to the limited and often impersonal contact opportunities for stakeholders: "Adversely for NPOs, this type of organization possesses certain characteristics that impede their ability to gain support. As NPOs essentially are service providers producing 'trust goods', attributes and quality of the NPO and its work cannot easily be assessed. Because the contact between the organization and its donors is often limited, it is difficult for the latter to check on the output of the NPO" (Schultz et al. 2019, p. 159).

This chapter examines the question of whether the use of data-based technologies in strategic communication—and here the use of automated communication—changes the perceived trustworthiness of an organization. From an ethical perspective, it is relevant to ensure the visibility and transparency of automated communication as a data-based technology, since communication between an organization and the public changes significantly once content comes from bots instead of people (Deutscher Rat für Public Relations 2016; Galloway and Swiatek 2018). Automated communication could be detrimental to trust given that direct human–human interaction is lost when data is used to a large extent. There are hardly any empirical findings on whether people perceive that they are communicating with bots when this is transparently marked, nor are there many findings on the extent to which they evaluate communication with bots positively or negatively and the consequences this has for the perceived trustworthiness of the NPO. This study therefore focuses on the perception of the (non-)labeling of automated strategic communication and its effects on the trustworthiness of an NPO and donation patterns as a trusting

behavior. This will be empirically investigated using the automated communication of a non-profit organization as an example of data-based communication.

In the following, we first outline the possibilities of data-based strategic communication along with the opportunities and risks that are associated with the use of automated communication for organizations in particular. We then consider to what extent automated communication could influence the trustworthiness of a non-profit organization, and the extent to which this additionally depends on the perceived credibility of the automated content and the perceived transparency of the contribution. This is empirically tested in an experimental study, then the results are outlined and discussed with a special focus on the implications for organizations' strategic communication.

2 Data-based Strategic Communication

Digitization is creating more and more new networks of relationships and interactions. The way in which people communicate in networks via organizations and their products and services is changing. People are increasingly networking with each other; likewise, people are networking with things (e.g., intelligent voice assistants such as Amazon Alexa or Google Home) and things with each other (e.g., objects of daily use in a smart home). This networking generates large amounts of data, i.e. Big Data, which can be used by organizations for automated strategic communication, for example.

Understanding the new framework conditions for strategic communication, as well as the new possibilities for addressing stakeholders automatically, necessitates a discussion of the Big Data phenomenon (Weiner and Kochhar 2016). Automated communication is based on the methods and technologies of Big Data. However, it is difficult to define this term because Big Data is a relational concept (Gandomi and Haider 2015; for an overview of different definitions of Big Data, see Scholz 2017, pp. 12–20). In this paper, Big Data is understood to be large information sets characterized by high volume, high velocity, high variety, and high veracity. They are generated using innovative computer and digital storage systems in such a way that they become manageable and usable for individuals and organizations (Stieglitz and Wiencierz 2019; Wiencierz and Röttger 2017). Big Data is also often described by the characteristic of added value in order to emphasize that these large data sets contain valuable information for the organization, which must be extracted with appropriate technologies (Dijcks 2012; Scholz 2017). With the proprietary, innovative storage and analysis technologies required for the application of these large data sets, the computationally intensive generation, storage, management, and analysis of large amounts of data from any data sources with different formats, structures, and semantics is possible almost in real time (Gandomi and Haider 2015). Just like the innovative storage and analysis systems, Big Data is different in every organization and industry; since increasingly larger data volumes can be generated and analyzed

faster and more easily due to the successive development of data management and data analysis systems, Big Data is a dynamic term.

Data-driven communication and statistical thinking have thus found their way into the strategic communication of political organizations (Pentzold and Fölsche 2019), probably adapted from economics: “The supply of quantitatively oriented political operatives and campaign data analysts has increased as predictive analytics has gained footholds in other sectors of the economy like banking, consulting, marketing and e-commerce” (Nickerson and Rogers 2014, p. 53). It is not a new insight within strategic communication that precisely fitting data and information about individuals is of essential value, since new patterns can be discovered and social processes can be made more comprehensible. The expectation of Big Data is that campaigns and the associated strategic communication are “more plannable, controllable and ultimately more successful [*translated by the authors*]” (Pentzold and Fölsche 2019, p. 6) as well as more predictable. Data can also be used to address specific target groups, for example, in microtargeting: here, individuals are shown certain content tailored to them, while other individuals are either given different content or no content at all from the organization.

These technological developments and the increasing datafication are currently changing the field of strategic communication significantly. We see strategic communication as a generic term for any kind of intentional, purposeful, persuasive, public use of communication by an organization, group or individual to fulfill its mission in the form of marketing communication and public relations (external communication), and internal communication (Hallahan et al. 2007). The increased use of data is intended to support strategic communication in achieving its goals as efficiently and measurably as possible. In the following, the term “data-based strategic communication” refers to the use of technologies such as algorithms, artificial intelligence or Big Data; these are used in an application-oriented manner, e.g. in the form of automated communication.

For automated communication, Big Data can be linked with methods of artificial intelligence. Artificial intelligence can be defined as a system’s ability to correctly interpret external data, learn from this data and use it to achieve certain goals and tasks through flexible adaptation (Kaplan and Haenlein 2019; Stieglitz and Wiencierz 2019). At this point in time, the automation of strategic communication has hardly been researched. Thus far, the field of communication science has only made initial findings on the use and effects of individual automated applications such as social bots, chat bots or robot reporters in journalism. These are outlined below:

2.1 Social Bots

So-called social bots are subject to critical discussion, especially in connection with democratic elections, such as the US presidential election in 2016, and referendums, such as the vote on Britain’s withdrawal from the European Union (Ross et al. 2019). Social bots are automated social media accounts that are indistinguishable from

“normal” human user accounts at first glance. According to critics, organizations can use these bots to manipulate public opinion in advance of political events. For this purpose, several social bot accounts are combined into networks. This allows the bots to act simultaneously and distribute the same content. This mass distribution of opinion-like news suggests a broad consensus regarding certain opinions. Human users of social networks can be influenced by this because they can perceive this suggested opinion as the majority opinion. Although the extent to which social bot networks influence political events is discussed controversial (for elections in Germany see, i.e., Brachten et al. 2017; Neudert et al. 2017; Keller and Klinger 2019), results of a simulation study indicate that even a relatively small proportion of four percent of bots can influence the climate of opinion on a social network in their favor (Ross et al. 2019). While the technology of social bots is neutral in itself, social bots are perceived as highly manipulative in a political context and are therefore regarded critically among the public and in science. This is also due to the fact that they are almost never labeled as social bots (Ferrara et al. 2016). They logically become a problem when they communicate with people in an illegitimate manner and people are unable to recognize them as social bots (Deutscher Rat für Public Relations 2016).

2.2 Chat Bots

Chat bots represent further potential for automated strategic communication. Chat bots on the organization's website, as an app or integrated into existing messenger services can adapt requests without much delay and prepare them for employees and other stakeholders (Öksüz et al. 2016). In this way, requests can be categorized thematically and employees are shown possible solutions for their questions. Although chat bots have been used more by companies to date, they have already found their way into the strategic communication of political organizations. Examples of this include the German CSU party's chat bot Leo in the 2017 federal elections, which informed potential voters about the contents of the party program, the Federal Agency for Civic Education chat bot, which reports daily on historical or current political events, and the German Bundestag's eagle, which answers questions about the political operations of the Bundestag. From these examples, we can identify the potential and risk that chat bots bring to strategic communication: Due to anthropomorphism, direct contact can be established with specific target groups and information can be conveyed; in addition, chat bots are distinguished by their ease of use. They are constantly available and, depending on their technical sophistication, fast and efficient in their responses, thus ensuring a constant response level (Brandtzæg and Følstad 2017; Lommatzsch 2018)—the desire which is particularly reflected in communication with organizations (Brandtzæg and Følstad 2017). In addition, chat bots can also serve social and relational purposes, as the novelty of their use allows humans to discover their possibilities and the artificial intelligence integrated into the chat bot makes it well suited for emotional interaction with

people, even on sensitive topics such as political and social content (Brandtzæg and Følstad 2017; Xu et al. 2017). This results in a certain expectation surrounding chat bots at the organizational level: besides technical performance (speed, efficiency and reliability, i.e. appropriate use), chat bots should act intelligently, accurately, and predictably, be easy to use and create a sense of understanding and mediation for the user (Zamora 2017). The performance of a chat bot and thus the perception of its users hinges on its technical sophistication, especially in the field of artificial intelligence and machine learning. In case of complex questions, interpretation problems can occur on the part of the chat bot and these cannot be adequately clarified; it is therefore essential that human–human interaction is always possible regardless of chat bots’ usage on behalf of the organization (Følstad et al. 2018; Valtolina et al. 2018). Bots thus represent an interface between the organization and individuals (Gentsch 2019).

In this context, however, it remains to be investigated to what extent users accept this exchange with chat bots (Mirbabaie et al. 2019). First results indicate that although users do not have a problem in principle with making requests to such bots, this acceptance depends on the topic of the requests (Brandtzæg and Følstad 2017). Another issue yet to be clarified is the ethical question of the extent to which organizations should disclose the use of such bots in future if they have advanced to the point where the artificial intelligence can no longer be recognized. There is still an urgent need for research on this question, especially because there is a general skepticism among the population about the mass use of personal data, especially in the EU (Vodafone Institute 2016).

2.3 Bots for Automated Text Generation

So-called robot reporters are also a subject of discussion and research in communication science. Bots in journalism can automatically write large amounts of articles. So far, they have been used primarily for data-based topics such as financial reports and sports results (Waddell 2018). Robot reporters are able to take over content and technical tasks that are too monotonous for journalists themselves (Waddell 2018). Automated content creation and sharing can thus save costs and resources for editorial offices and organizations (Edwards et al. 2014; Stieglitz et al. 2018). The automation potentials of robot reporters are similar to the possibilities that arise from automated strategic communication. “Automation [...] is another key challenge for strategic communication. It is closely linked to the availability of data streams. Here the focus is on using them to feed algorithms for creating and delivering content, and not only for analytics or decision-making,” state Wiesenberger et al. (2017, p. 95), thus highlighting the increasing importance of automated communication.

These three examples show the versatile uses of automation in strategic communication. However, this brings with it a difficulty in defining the term bot, as Lebeuf et al. (2019) show:

The use of the term bot varies from describing simple scripts that automate a task in the background, to complex applications that interact with one or more humans and autonomously adapt to activities that people and other systems do, and even all the way to software applications that use AI and natural language processing (NLP) to mimic human behaviour and intelligence (Lebeuf et al. 2019, p. 1).

This problem results mainly from the fact that similar technological phenomena are named in the same way, while the disciplines also name their applications differently depending on their focus, be it automated tasks, autonomous behavior, automated recommendation algorithms or even the communication performance of bots (Lebeuf et al. 2019). In simple technical terms, a bot can be defined as “[...] computer scripts that act autonomously based on platform data” (Shorey and Howard 2016, p. 5033).

Due to advances in strong artificial intelligence, *machine* and *deep learning*, and *natural language processing*, bots are increasingly able to adequately imitate human language (Gentsch 2019; Veel 2018; Wrigley 2019). Bots as conversation-based technologies (Seeger et al. 2017) are referred to in the following as automated communication. In the classical sense, automation means “execution by a machine agent of a function that was previously carried out by a human” (Parasuraman and Riley 1997, p. 231). However, automated communication in the form of bots with integrated AI systems are only as intelligent as the underlying data set allows (Gentsch 2019). The data from the data set is transformed into content using *natural language generation* and *natural language processing*: “NLG systems are computer software systems that generate texts in a human language from non-linguistic input data, using techniques from computational linguistics and AI” (Veel 2018, p. 3).

3 Effects of Automated Communication on Trustworthiness

As initially mentioned, the trust of their stakeholders is an essential prerequisite for an organization's ability to act and expand their scope of action: trust promotes the willingness to enter into exchange relationships with an organization or to support it. Ultimately, trust relieves the pressure of continuous public observation: organizations that are trusted are not subject to such constant or intensive scrutiny by stakeholders or the public. In the face of increasingly volatile, uncertain, complex and ambiguous organizational environments, trust plays a central role in shaping and stabilizing environmental relations and is an essential basis for the long-term success of organizations in modern societies.

Strategic communication plays a significant intermediary role in building trust in an organization (Röttger 2019): whether and to what extent trust is created can be influenced by the communicative self-presentation of the trustee, i.e. the organization (see also Blöbaum in this volume). (Strategic) communication and trust influence each other: trust is created significantly in communication processes and trust simultaneously promotes successful communication between the organization and

its stakeholders. Despite the many differences in the existing understanding of trust, some central characteristics can be identified that are largely consensual (e.g., Blöbaum 2016; Kohring 2004; Luhmann 2014; Mayer et al. 1995; Möllering 2006; Möllering and Sydow 2005; Ripperger 2003):

- Trust is created between a trusting party (trustor) and a trusted party (trustee) with regard to a situation, an object, a service, a problem, etc.
- Trust is associated with a trusting intention or behavior, which makes the trustor vulnerable to the trustee.
- Trust is directed towards the future and is associated with risk. Whether trust is justified or not only becomes apparent after the trusting behavior.

The decision to trust is based on an evaluation of the perceived trustworthiness of the trustee and the perceived risk and is influenced by the general trust propensity of the trustor. According to Mayer et al. (1995), perceived trustworthiness is based on three factors: ability, benevolence, and integrity. Perceived trustworthiness is the future-oriented assessment of the extent to which, for example, an NPO can and will act as a trusted party in the interest of the stakeholder.

When using automated communication, the question arises as to whether the perceived trustworthiness of the organization, here conceptualized as a trustee, is influenced by this. When implementing and using automated strategic communication on the organizational side, there is uncertainty and the risk of not having any knowledge of how this is perceived by individuals and relevant stakeholders as trustors—particularly regarding the question of whether automated strategic communication can act as a trust intermediary at all. Due to the lack of research on automated strategic communication (as far as the authors are aware), we will first look at research on data journalism as part of communication science. In this field, it is especially the constructs credibility and transparency of automated news that are both theoretically discussed and empirically examined (e.g., Coddington 2015; Diakopoulus and Koliska 2017; Montal and Reich 2017). It is apparent that many editorial offices attach great importance to overarching transparency with regard to automated content: “[...] informing the readers at the item level about the special characteristics of automated stories, their data sources, the algorithm’s methodology, etc.” (Montal and Reich 2017, p. 841). Nevertheless, there are major differences between different editorial offices regarding the question of who is identified as the actual author, e.g. the software producer, the editorial office or the algorithm itself (Montal and Reich 2017). In strategic communication, too, transparency is evaluated as “essential to the trust stakeholders place in organizations” (Schnackenberg and Tomlinson 2016, p. 1784). Especially in strategic communications, transparency is often associated with positive outcomes such as accountability, credibility, and trust (Holland et al. 2018). Transparency in strategic communication can be measured by three dimensions of information quality: *Clarity* means that individuals have the opportunity to understand the information provided by the organization. *Disclosure* means that all relevant information is made publicly available by the organization. The third dimension *accuracy* refers to the validity and truthfulness of the information (Holland et al. 2018; Schnackenberg and Tomlinson 2016). In empirical studies,

there are ambivalent results concerning the relationship between transparency and trustworthiness: on the one hand, the perceived degree of transparency leads, for example, to a more positive attitude towards an organization (Holland et al. 2018) and also influences the perceived trustworthiness of an organization (Rawlins 2008), although this effect is marginal or insignificant in other studies (e.g., Pirson and Malhotra 2011). Instead of assessing transparency at the theoretical level as a dimension of trustworthiness, it rather represents an antecedent and must therefore be recorded as a separate theoretical construct (Schnackenberg and Tomlinson 2016). With regard to automated communication, the German Council for Public Relations (Deutscher Rat für Public Relations 2016) calls for it to be transparently labeled as such. Based on the ethical norm of labeling automated communication, the need for transparency in strategic communication and an organization's trustworthiness, the aim of this study is to examine the extent to which transparent labeling has an impact on the trustworthiness of an organization.

Editorial offices also hope that a transparent labeling of automated news will increase the credibility of the content (Diakopoulus and Koliska 2017; Montal and Reich 2017). A study by Haim and Graefe (2017) shows that individuals expect more credibility from automated journalistic content than that written by humans, and they perceive the former as more credible provided they have a direct comparison between the two texts. A study by Wu (2019) comes to similar results: Automated news is perceived by individuals as more credible than human-written news. Moreover, the medium credibility is rated higher for automated news than for human-written news (Wu 2019). Waddell (2019) also partially confirms these results: Automated news (compared to human authors) indirectly have a positive effect on the credibility of an article with the perceived bias as a mediator. In contrast, the credibility of an automated article decreases when the anthropomorphism of the source is considered as a mediator (Waddell 2019). Waddell therefore concludes that "[...] the present study advanced the hypothesis that news perceived to be written by machine and human sources in tandem would elicit more favourable credibility outcomes than a human or machine source in isolation" (Waddell 2019, p. 95).

On a theoretical level, the perceived credibility of automated communication can be conceptualized as another antecedent of trustworthiness (Engelke et al. 2019). Credibility per se is not a characteristic of the communicator, but rather an attribution of the recipient to the statements of an organization (Bentele and Seidenglanz 2015; Kohring 2004)—and thus also an attribution with regard to automated communication. Credibility is therefore understood as "an individual's judgment of the veracity of the content of communication" (Appelman and Sundar 2016, p. 63). It is theoretically assumed that uncertainty about the accuracy of information affects both the decisions and actions of the recipient and the perceived trustworthiness.

Derived from the relevance of transparency, credibility, and trustworthiness for NPOs, the following study focuses on the research question of whether the use and labeling of automated strategic communication as trust mediators have an impact on these constructs. Given that no empirical findings in precisely this area of the automation of strategic communication are available to date (according to the

authors), no hypotheses about the connection between automation and its effects will be made, but rather these will be exploratively tested in a research question:

RQ1. Are there differences in the perceived transparency, credibility and trustworthiness of an NPO's post when it is labeled as automated and/or prior training about this automation has taken place?

The present study focuses empirically on the existing or non-existing labeling of automated strategic communication and examines to what extent the different (non-) labeling of automation impacts the trustworthiness of the non-profit organization.

RQ2. To what extent does labeling a post as automated or not automated influence the perceived trustworthiness of the organization?

Based on the empirical results from data journalism and the theoretical foundation that transparency and credibility in particular are essential goals of strategic communication, the following hypothesis also emerges:

H1. The more transparent and credible an NPO's post is perceived, the higher is the perceived trustworthiness of the organization.

In trust research, there is a critical discussion of whether trust is a psychological state (Lewicki et al. 2006; Mayer et al. 1995), which is merely expressed in the willingness to make oneself vulnerable to a trustee in risky situations (including Dietz and den Hartog 2006; Sztompka 2006; Das and Teng 2004). With this view of trust as a psychological state, a trusting behavior does not necessarily have to occur. This means that although the trustor perceives a risk when trusting a trustee, this risk is not concretized or made tangible in an action (Wiencierz 2017). According to this understanding, the actual trusting behavior lies outside the process of trust. However, Dietz and den Hartog (2006, p. 559) emphasize that the trust process is only finalized by a concrete action: "For A to demonstrate unequivocally her/his trust in B, (s)he must follow through on this decision by engaging in any of the trust-informed risk-taking behaviours [...]" This view of trust as a behavior-related intention is also followed in this study, in that the trustor links his or her actions with those of trustee (Kohring 2004). In relation to NPOs, therefore, the willingness to donate to the organization is implemented as a behavior-related intention. Therefore, H2 postulates:

H2. The more transparent, credible and trustworthy the organization and its automated strategic communication is perceived, the greater the willingness to donate to the organization.

Analogous to RQ2, the question arises as to whether the (non-)labeling of automated strategic communication has an influence on the willingness to donate as a trusting behavior.

RQ3. To what extent does labeling a post as automated or not automated influence the willingness to donate to the organization?

4 Method

4.1 Stimuli

The research question and hypotheses were investigated in an online experiment in March 2019 in a 2 (training vs. no training) \times 2 (automated post vs. non-automated post) design.¹ In the training condition, a group was informed that due to advances in artificial intelligence, computer systems create and share content for social networks; this represents an education about the use of automated communication. The second group had no such training. In the second condition of *automated post vs. not automated post*, two of the four (experimental) groups were shown a Facebook post from the organization UNICEF, marked as “This text was created automatically.” The third experimental group as well as the control group saw the same Facebook post, but without the automation label. This resulted in four groups:

1. training and automated post,
2. training and non-automated post,
3. no training and automated post,
4. no training and non-automated post (control group).

4.2 Measures

All items were measured via five-point Likert scales (1 = “strongly disagree” and 5 = “strongly agree”).

Trustworthiness The scale for measuring perceived trustworthiness was adapted from Mayer et al. (1995) and Mayer and Davis (1999) and applied to NPOs. Ten items were combined into a reliable scale with Cronbach's Alpha $\alpha = 0.948$ ($M = 3.54$, $SD = 0.820$).

Credibility The credibility of the NPO's post was assessed using the items from Appelman and Sundar (2016). Thirteen items were combined into a reliable scale with Cronbach's Alpha $\alpha = 0.948$ ($M = 3.55$, $SD = 0.784$).

Trusting Intention The behavioral intention to support the NPO was described with the items “I can imagine donating money to UNICEF to support children worldwide” and “I can imagine asking others to support UNICEF as well”. Both items were turned into a reliable scale with Cronbach's Alpha $\alpha = 0.872$ ($M = 2.99$, $SD = 1.177$).

¹The opinion research institute *mindline* was commissioned for the study and was funded by the Research Training Group “Trust and Communication in a Digitized World”, grant number 1712/2, of the German Research Foundation (DFG).

Transparency Based on Rawlins (2008), the perceived transparency was related to the NPO's post. Using a five-point Likert scale, respondents evaluated how transparent they perceived the post to be (1 = "not transparent at all", 5 = "very transparent") ($M = 3.22$, $SD = 1.034$).

Control Variables As control variables, the prior attitude towards UNICEF was transformed into a reliable scale with Cronbach's Alpha $\alpha = 0.776$ ("UNICEF has a good reputation," 1 = "strongly disagree," and "5 = "strongly agree," as well as "My personal impression of UNICEF is..." 1 = "very negative," 5 = "very positive") ($M = 3.86$, $SD = 0.816$). In addition, previous knowledge about UNICEF was surveyed with one item ("How well do you know UNICEF as an organization and its activities?") ($M = 3.09$, $SD = 1.05$). Other control variables were the general propensity to trust according to Lucassen (2013) with a Cronbach's Alpha $\alpha = 0.820$ ($M = 3.12$, $SD = 0.712$) and socio-demographic data.

4.3 Manipulation Check and Sample

Only 41.5% of the $N = 1031$ participants were able to answer the manipulation check at all. Of these 428 participants, 265 answered the check correctly, whereby the chi-square test was highly significant with $\chi^2(3) = 27.743$, $p = 0.000$, $n = 428$. All participants who did not answer the manipulation check correctly were excluded from the analysis. Hence, all calculations are based on $n = 265$. The manipulation check will be discussed afterwards. The participants' ages vary from 16 to 64 years old ($M = 37.7$) and 60.4% are male.

5 Results

The research question examines whether there are differences in the perceived transparency and credibility of the post and the trustworthiness of the organization when participants received training on automation and/or the post is labeled as automated. For this purpose, ANOVAS were conducted. Neither the perceived transparency of the post ($F(3247) = 0.531$, $p = 0.661$) nor the perceived trustworthiness of the NPO ($F(3255) = 0.805$, $p = 0.492$) showed significant differences between the experimental groups. However, significant differences can be found in the perceived credibility of the post, albeit with less explained variance ($F(3255) = 3052$, $p = 0.029$, $\eta^2 = 0.035$; effect strength according to Cohen $f = 0.18$) (Table 1). The post-hoc test with Bonferroni correction shows that group 2 (with training and without the post labeled as automated) perceives the post as less credible than group 3 (without training but with the post marked as automated) (Table 2).

H1 examines the effects of the post's perceived transparency and credibility on the perceived trustworthiness of the organization, also considering the experimental

Table 1 ANOVA: Transparency, credibility and trustworthiness

		Sum of squares	df	Mean square	<i>F</i>	Sig.	Partial Eta square
Transparency	Between groups	1.715	3	0.572	0.531	0.661	0.006
	Within groups	265.790	247	1.076			
	Total	267.506	250				
Credibility	Between groups	5.503	3	1.834	3.052	0.029	0.035
	Within groups	153.238	255	0.601			
	Total	158.741	258				
Trustworthiness	Between groups	1.629	3	0.543	0.805	0.492	0.009
	Within groups	172.053	255	0.675			
	Total	173.683	258				

Table 2 Post-hoc test Bonferroni [excerpt]

Treatment	Treatment	Mean difference	Std. error	Sig.
Training/not automated	Training/automated	−0.2349	0.13453	0.492
	No training/automated	−0.4214	0.14118	0.019
	No training /not automated	−0.2539	0.13453	0.362

groups. The model as a whole is highly significant with $p = 0.000$ and explains a large part of the variance with $R^2 = 0.580$. Credibility is a strong predictor for perceived trustworthiness ($\beta = 0.329^{***}$), controlled by the general propensity to trust ($\beta = 0.154^{***}$). However, the prior attitude towards UNICEF as a further control variable ($\beta = 0.474^{***}$) exceeds credibility as the strongest predictor. Contrary to the theoretical assumption, however, transparency has no significant influence on perceived trustworthiness. The effects of the experimental group on perceived trustworthiness (RQ2) are also not significant (Table 3).

H2 postulates the willingness to support the organization in the form of donations as a behavioral trusting intention. The regression model as a whole is highly significant with $p = 0.000$ and explains a large part of the variance with $R^2 = 0.512$. Both perceived credibility ($\beta = 0.134^*$) and trustworthiness ($\beta = 0.427^{***}$) are—as assumed—significant predictors of willingness to donate, whereby this effect is controlled by the general propensity to trust ($\beta = 0.156^{**}$) and prior knowledge of UNICEF ($\beta = 0.197^{***}$). Perceived transparency, on the other hand, has no significant influence on willingness to donate. Contrary to the results from H1, the experimental group training/automated compared to the control group no training/not automated has a positive effect on willingness to donate ($\beta = 0.113^*$) (RQ3) (Table 4).

Table 3 Multiple regression with the dependent variable trustworthiness

	<i>B</i>	Std. error	β	<i>t</i>	Sig.
(Constant)	−0.220	0.249		−0.885	0.377
Trust propensity	0.178	0.053	0.154	3.360	0.001
Prior knowledge UNICEF	0.037	0.035	0.047	1.079	0.282
Prior attitude UNICEF	0.470	0.048	0.474	9.697	0.000
Transparency	0.019	0.039	0.025	0.498	0.619
Credibility	0.339	0.055	0.329	6.160	0.000
Training/automated	0.016	0.095	0.009	0.168	0.867
Training/not automated	−0.003	0.099	−0.001	−0.026	0.979
No training/automated	0.019	0.099	0.010	0.190	0.849
Gender	0.058	0.072	0.035	0.805	0.421
Age	0.000	0.003	0.005	0.116	0.908

$R^2 = 0.580 \mid F(10,230) = 34.149, p = 0.000$

$n = 240$

Table 4 Multiple regression with the dependent variable willingness to donate

	<i>B</i>	Std. error	β	<i>t</i>	Sig.
(Constant)	−1.917	0.388		−4.9428	0.000
Trust propensity	0.256	0.085	0.156	3.024	0.003
Prior knowledge UNICEF	0.224	0.054	0.197	4.124	0.000
Prior attitude UNICEF	0.153	0.090	0.108	1.698	0.091
Transparency	−0.033	0.061	−0.030	−0.542	0.588
Credibility	0.196	0.093	0.134	2.098	0.037
Trustworthiness	0.608	0.103	0.427	5.917	0.000
Training/automated	0.295	0.149	0.113	1.983	0.049
Training/not automated	0.156	0.159	−0.056	0.975	0.330
No training/automated	0.074	0.154	0.027	0.479	0.632
Gender	−0.024	0.114	−0.010	−0.209	0.834
Age	−0.001	0.004	−0.011	−0.235	0.815

$R^2 = 0.512 \mid F(11,222) = 23,184, p = 0.000$

$n = 233$

6 Discussion and Implications

The starting point of this study was the research question whether the use of automated communication has an influence on the perceived trustworthiness of NPOs. With regard to the results, it is initially apparent that only a small percentage of the respondents perceive automated communication at all. This is accompanied by the sleeper effect, which is also reflected in comparable studies on robot reporters (e.g. Waddell 2019). The source, i.e. the label “automated”, is often not properly remembered in both comparable studies and the study presented in this chapter. With regard to RQ1, there are no differences in terms of perceived transparency and trustworthiness when the post of an NPO is labeled as automated and/or prior

training on this automation has taken place. However, a significant, albeit small, effect could be found in terms of the perceived credibility of the post; this goes hand in hand with the first results of studies about robot reporters in which automated communication is partly considered more credible by the recipients (Haim and Graefe 2017; Wu 2019). One possible explanation for this is that algorithms and artificial intelligence are attributed less bias and more objectivity. The results also make it clear that knowledge about the use of automated communication, with simultaneous non-labeling, is associated with less credibility. Accordingly, it is extremely relevant for communicators to label automated communication and to make the actual author's identity transparent.

However, the labeling of a post as automated or not automated in combination with prior training on the use of automation has no impact on the NPO's perceived trustworthiness. Rather, the credibility of the post, the general propensity to trust and the prior attitude towards the organization influence the extent to which people rate an NPO as trustworthy. This result reflects the factors already known from trust research that are considered relevant to the trust process. With regard to the willingness to donate as an act of trust, the present study shows that in addition to credibility, the general propensity to trust, previous knowledge and—not surprisingly—the perceived trustworthiness all exert a positive influence. Furthermore, the labeling of the post as automated coupled with prior training has positive effects on the willingness to donate compared to no training/automation.

Overall, this study shows that the effects of the experimental groups are comparatively small. Possible explanations for this could be the hitherto rather weak competence of humans to recognize automated communication. Moreover, many people do not seem to be aware that technologies such as algorithms and artificial intelligence are increasingly being used for strategic communication. Both aspects emphasize the great responsibility of organizations that use automated strategic communication: Strategic communication is not neutral, as relevant content is brought into the public discourse in the organization's interest. As soon as parts of the public cannot recognize whether algorithms create and share political and interest-driven content, it is the organization's responsibility to mark this transparently and to sensitize the public. Here, concrete and application-oriented guidelines for professional practice are needed so that communicators can gain confidence in how they can use non-human content in an ethically responsible and goal-oriented manner. The question of the author and the agency will become increasingly important in the use of artificial intelligence and algorithms for the creation and distribution of content and must be discussed under ethical aspects (Hepp 2020; Marechal 2016). This increasing relevance of automated communication is already being discussed in communication science and PR research with a view to communication practice (Galloway and Swiatek 2018; Hepp 2020; USC Annenberg Center for Public Relations 2019; Wiesenberget al. 2017). In addition to knowledge about how artificial intelligence works and what it can be used for, critical questions must also be asked to relieve communicators and increase the efficiency of communication. These include the extent to which people are willing to interact with algorithms (Galloway and Swiatek 2018) and the effects of using automated communication on

the communication relationships between the organization and its stakeholders. Although the use of data-based technologies can significantly change the daily work of communicators, also in terms of the skills required to do so, collaboration between communicators and technology can also be profitable—despite the basic skepticism that may exist. This is where scientific research can start: How can communicators succeed in collaborating with technology? What are the challenges they face in their daily work? What are the hurdles at the organizational level, such as the availability of resources or the willingness of employees to overcome these during implementation and use? To what extent does the use of data-based technologies change classical processes of strategic communication planning? And what should cooperation with external service providers who offer the tools for automated communication look like?

The study also has limitations that need to be considered when interpreting the results: the non-significant effects of perceived transparency can possibly be traced back to the operationalization with one item. Further research should consider transparency as a multidimensional construct. Only the intention to make donations was operationalized as a trusting behavior. Further studies should also look at the actual donation behavior, as there may be a greater discrepancy between intention and action. Furthermore, it would be interesting to investigate to what extent automated communication has an impact on trustworthiness in other NPOs or other types of organizations. In the case of fictitious organizations, the significant effect of existing attitudes could also be avoided.

Nevertheless, the present study contributes to existing research by making the implications of the use of automated communication in strategic communication tangible. In view of the increasing datafication of (strategic) communication, further research is needed in order to reflect on the potential of automated strategic communication against the background of socially and ethically desirable forms of use as well as stakeholder acceptance.

References

- Appelman, A., & Sundar, S. S. (2016). Measuring message credibility: Construction and validation of an exclusive scale. *Journalism and Mass Communication Quarterly*, 93(1), 59–79. <https://doi.org/10.1177/1077699015606057>.
- Bentele, G. (1994). Public trust – normative and social basis for public relations. In W. Armbrrecht & U. Zabel (Eds.), *Normative aspects of public relations: Fundamental questions and perspectives. An introduction* (pp. 131–158). Opladen: Westdeutscher Verlag.
- Bentele, G., & Seidenglanz, R. (2015). Trust and credibility: Terms, approaches, research overview and practical relevance. In R. Fröhlich, P. Szyszka, & G. Bentele (Eds.), *Handbook of public relations: Scientific foundations and professional action. With encyclopedia* (pp. 411–429). Wiesbaden: Springer VS. <https://doi.org/10.1007/978-3-531-18917-8>.
- Blöbaum, B. (2016). Key factors in the process of trust. On the analysis of trust under digital conditions. In B. Blöbaum (Ed.), *Trust and communication in a digitized world: Models and concepts of trust research* (pp. 3–25). Cham: Springer.

- Borucki, I. (2019). Politische Parteien zwischen Sein oder nicht Sein? Digitale Transformation als Organisationsumbruch [Political parties between being or not being? Digital transformation as organizational upheaval]. In J. Hofmann, N. Kersting, C. Ritz, & W. J. Schünemann (Eds.), *Politik in der digitalen Gesellschaft: Zentrale Problemfelder und Forschungsperspektiven [Politics in the digital society: Central fields and research perspectives]* (pp. 123–150). Bielefeld: Transcript Verlag.
- Brachten, F., Stieglitz, S., Hofeditz, L., Kloppenborg, K., Reimann, A. (2017). Strategies and Influence of Social Bots in a 2017 German state election – A case study on Twitter. In *Proceedings of the Australasian Conference on Information Systems 2017, Hobart, Australia* (pp. 1–12).
- Brandtzæg, P. B., & Følstad, A. (2017). Why people use chatbots. In I. Kompatsiaris, J. Cave, A. Satsiou, G. Carle, A. Passani, E. Kontopoulos, et al. (Eds.), *Internet science. 4th international conference, INSCI 2017, Thessaloniki, Greece, November 22–24, 2017* (pp. 377–392). Cham: Springer International Publishing AG. <https://doi.org/10.1007/978-3-319-70284-1>.
- Coddington, M. (2015). Clarifying journalism's quantitative turn: A typology for evaluating data journalism, computational journalism, and computer-assisted reporting. *Digital Journalism*, 3(3), 331–348. <https://doi.org/10.1080/21670811.2014.976400>.
- Das, T. K., & Teng, B.-S. (2004). The risk-based view of trust: A conceptual framework. *Journal of Business and Psychology*, 19(1), 85–116.
- Deutscher Rat für Public Relations. (2016). *No social bots in active PR, public affairs and reputation work*. Retrieved 27 November, 2019, from http://drpr-online.de/wp-content/uploads/2016/12/Diskussionspapier_Social-Bots_161219.pdf
- Diakopoulos, N., & Koliska, M. (2017). Algorithmic transparency in the news media. *Digital Journalism*, 5(7), 809–828. <https://doi.org/10.1080/21670811.2016.1208053>.
- Dietz, G., & den Hartog, D. N. (2006). Measuring trust inside organisations. *Personnel Review*, 35(5), 557–588. <https://doi.org/10.1108/00483480610682299>.
- Dijcks, J. (2012). *Oracle. Big data for enterprise (Oracle working paper)*. Retrieved 11 February, 2019, from <http://www.oracle.com/us/products/database/big-data-for-enterprise-519135.pdf>
- Edwards, C., Edwards, A., Spence, P. R., & Shelton, A. K. (2014). Is that a bot running the social media feed? Testing the differences in perceptions of communication quality for a human agent and a bot agent on Twitter. *Computers in Human Behavior*, 33, 372–376. <https://doi.org/10.1016/j.chb.2013.08.013>.
- Engelke, K. M., Hase, V., & Wintterlin, F. (2019). On measuring trust and distrust in journalism: Reflection of the status quo and suggestions for the road ahead. *Journal of Trust Research*, 9(1), 66–86. <https://doi.org/10.1080/21515581.2019.1588741>.
- Ferrara, E., Varol, O., Davis, C., Menczer, F., & Flammini, A. (2016). The rise of social bots. *Communications of the ACM*, 59(7), 96–104.
- Følstad, A., Nordheim, C. B., & Bjørkli, C. A. (2018). What makes users trust a chatbot for customer service? An explanatory interview study. In S. S. Bodrunova (Ed.), *Internet science. 5th INTERNATIONAL CONFERENCE, INSCI 2018 St. Petersburg, Russia, October 24–26, 2018, proceedings* (pp. 194–208). Cham: Springer. <https://doi.org/10.1007/978-3-030-01437-7>.
- Galloway, C., & Swiatek, L. (2018). Public relations and artificial intelligence: It's not (just) about robots. *Public Relations Review*, 44(5), 734–740. <https://doi.org/10.1016/j.pubrev.2018.10.008>.
- Gandomi, A., & Haider, M. (2015). Beyond the hype: Big data concepts, methods, and analytics. *International Journal of Information Management*, 35(2), 137–144. <https://doi.org/10.1016/j.ijinfomgt.2014.10.007>.
- Gentsch, P. (2019). *Künstliche Intelligenz für Sales, Marketing und Service: Mit AI und Bots zu einem Algorithmic Business – Konzepte und Best Practices [Artificial intelligence for sales, marketing and service: With AI and bots to an algorithmic business — Concepts and best practices]*. Wiesbaden: Springer. <https://doi.org/10.1007/978-3-658-25376-9>.
- Guzman, A. L., & Lewis, S. C. (2020). Artificial intelligence and communication: A human-machine communication research agenda. *New Media & Society*, 22(1), 70–86. <https://doi.org/10.1177/1461444819858691>.

- Haim, M., & Graefe, A. (2017). Automated news: Better than expected? *Digital Journalism*, 5(8), 1044–1059. <https://doi.org/10.1080/21670811.2017.1345643>.
- Hallahan, K., Holtzhausen, D., van Ruler, B., Verčič, D., & Sriramesh, K. (2007). Defining strategic communication. *International Journal of Strategic Communication*, 1(1), 3–35. <https://doi.org/10.1080/15531180701285244>.
- Hepp, A. (2020). Artificial companions, social bots and work bots: Communicative robots as research objects of media and communication studies. *Media, Culture and Society*, 42(7–8), 1410–1426. <https://doi.org/10.1177/0163443720916412>.
- Hoffjann, O. (2011). Vertrauen in Public Relations [Trust in Public Relations]. *Publizistik*, 56, 65–84. <https://doi.org/10.1007/s11616-010-0103-4>.
- Holland, D., Krause, A., Provencher, J., & Seltzer, T. (2018). Transparency tested: The influence of message features on public perceptions of organizational transparency. *Public Relations Review*, 44(2), 256–264. <https://doi.org/10.1016/j.pubrev.2017.12.002>.
- Kaplan, A., & Haenlein, M. (2019). Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence. *Business Horizons*, 62, 15–25. <https://doi.org/10.1016/j.bushor.2018.08.004>.
- Keller, T. R., & Klinger, U. (2019). Social bots in election campaigns: Theoretical, empirical, and methodological implications. *Political Communication*, 36(1), 171–189. <https://doi.org/10.1080/10584609.2018.1526238>.
- Kohring, M. (2004). *Vertrauen in Journalismus: Theorie und Empirie [Trust in journalism: Theory and empirical research]*. Konstanz: UVK Verlagsgesellschaft mbH.
- Lebeuf, C., Zagalsky, A., Foucault, M., & Storey, M.-A. (2019). Defining and classifying software bots: A faceted taxonomy. In *Proceedings of the 1st international workshop on bots in software engineering, Montreal, Quebec, Canada - May 27, 2019* (pp. 1–6). Retrieved 8 June, 2020, from <http://chisel.cs.ubc.ca/pubs/lebeuf-BotSE2019.pdf>
- Lewicki, R. J., Tomlinson, E. C., & Gillespie, N. (2006). Models of interpersonal trust development: Theoretical approaches, empirical evidence, and future directions. *Journal of Management*, 32(6), 991–1022. <https://doi.org/10.1177/0149206306294405>.
- Lommatzsch, A. (2018). *A next generation chatbot-framework for the public administration*. Retrieved 8 June, 2020, from <http://www.dai-labor.de/fileadmin/Files/Publikationen/Buchdatei/Lommatzsch-Chatbotframework.pdf>
- Lucassen, T. (2013). *Trust in online information* (Dissertation). Centre for Telematics and Information Technology, Enschede. Retrieved 8 June, 2020, from <http://teunlucassen.nl/wp-content/uploads/2013/02/Teun-Lucassen-Trust-in-Online-Information.pdf>
- Luhmann, N. (2014). *Vertrauen: Ein Mechanismus der Reduktion sozialer Komplexität [Trust. A mechanism for the reduction of social complexity]* (5th ed.). Bielefeld: UVK.
- Marechal, N. (2016). When bots tweet: Toward a normative framework for bots on social networking sites. *International Journal of Communication*, 10, 5022–5031.
- Mayer, R. C., & Davis, J. H. (1999). The effect of the performance appraisal system on trust for management: A field quasi-experiment. *Journal of Applied Psychology*, 84(1), 123–136.
- Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). An integrative model of organizational trust. *Academy of Management Review*, 20(3), 709–734.
- Mirbabaie, M., Stieglitz, S., Priesmeyer, J., & Kindel, M. (2019). Einsatz von Spielmechaniken und Bots zur Moderation von Kreativitätsprozessen in Unternehmen [Use of game mechanics and bots to moderate creativity processes in companies]. *HMD Praxis der Wirtschaftsinformatik*, 46(1), 147–159. <https://doi.org/10.1365/s40702-018-00475-5>.
- Möllering, G. (2006). *Trust: Reason, routine, reflexivity*. Oxford: Elsevier.
- Möllering, G., & Sydow, J. (2005). Kollektiv, kooperativ, reflexiv: Vertrauen und Glaubwürdigkeit in Unternehmungen und Unternehmungsnetzwerken [Collective, cooperative, reflexive: Trust and credibility in enterprises and enterprise networks]. In B. Dernbach & M. Meyer (Eds.), *Vertrauen und Glaubwürdigkeit. Interdisziplinäre Perspektiven [Trust and credibility. Interdisciplinary perspectives]* (pp. 64–93). Wiesbaden: VS Verlag für Sozialwissenschaften.

- Montal, T., & Reich, Z. (2017). You, journalist. Who is the Author? Authorship, bylines and full disclosure in automated journalism. *Digital Journalism*, 5(7), 829–849. <https://doi.org/10.1080/21670811.2016.1209083>.
- Neudert, L.-M., Kollanyi, B., & Howard, P. N. (2017). Junk news and bots during the German federal presidency election: What were German voters sharing over Twitter? *Comprop, Data Memo*, 2017(2), 1–5.
- Nickerson, D. W., & Rogers, T. (2014). Political campaigns and big data. *Journal of Economic Perspectives*, 28(2), 51–74. <https://doi.org/10.1257/jep.28.2.51>.
- Öksüz, A., Walter, N., Distel, B., Räckers, M., & Becker, J. (2016). Trust in the information systems discipline. In B. Blöbaum (Ed.), *Trust and communication in a digitized world: Models and concepts of trust research* (pp. 205–223). Cham: Springer.
- Parasuraman, R., & Riley, V. (1997). Humans and automation: Use, misuse, disuse, abuse. *Human Factors*, 39(2), 230–253. <https://doi.org/10.1518/001872097778543886>.
- Pentzold, C., & Fölsche, L. (2019). *Die öffentliche Verhandlung von Big Data in politischen Kampagnen [The public trial of big data in political campaigns]*. Retrieved 08 June, 2020, from <https://www.abida.de/sites/default/files/ABIDA%20Gutachten%20Digitaler%20Demos.pdf>
- Pirson, M., & Malhotra, D. (2011). Foundations of organizational trust: What matters to different stakeholders? *Organization Science*, 22(4), 1087–1104.
- Rawlins, B. L. (2008). Measuring the relationship between organizational transparency and employee trust. *The Public Relations Journal*, 2(2), 1–21.
- Ripperger, T. (2003). *Ökonomik des Vertrauens. Analyse eines Organisationsprinzips [Economics of trust. Analysis of an organizational principle]* (2nd ed.). München: Mohr Siebeck.
- Ross, B., Pilz, L., Cabrera, B., Brachten, F., Neubaum, G., & Stieglitz, S. (2019). Are social bots a real threat? An agent-based model of the spiral of silence to analyse the impact of manipulative actors in social networks. *European Journal of Information Systems*, 28(4), 394–412. <https://doi.org/10.1080/0960085X.2018.1560920>.
- Röttger, U. (2018). Trust. In R. L. Heath & W. Johansen (Eds.), *International encyclopedia of strategic communication*. New York, NY: John Wiley & Sons. <https://doi.org/10.1002/9781119010722.iesc0194>.
- Röttger, U. (2019). Vertrauen und Glaubwürdigkeit in der Unternehmenskommunikation [Trust and credibility in corporate communications]. In A. Zerfaß, M. Piwinger, & U. Röttger (Eds.), *Handbuch Unternehmenskommunikation [Corporate communications manual]* (pp. 1–20). Wiesbaden: Springer Gabler. https://doi.org/10.1007/978-3-658-03894-6_15-1.
- Schnackenberg, A. K., & Tomlinson, E. C. (2016). Organizational transparency: A new perspective on managing trust in organization-stakeholder relationships. *Journal of Management*, 42(7), 1784–1810. <https://doi.org/10.1177/0149206314525202>.
- Seeger, A.-M., Pfeiffer, J., & Heinzl, A. (2017). When do we need a human? Anthropomorphic design and trustworthiness of conversational agents. In *Proceedings of the sixteenth annual pre-ICIS workshop on HCI research in MIS, Korea, 2017*, 1–6).
- Scholz, T. M. (2017). *Big data in organizations and the role of human resource management. A complex systems theory-based conceptualization*. Frankfurt: Peter Lang.
- Schultz, C., Einwiller, S., Seiffert-Brockmann, J., & Weitzl, W. (2019). When reputation influences trust in nonprofit organizations. The role of value attachment as moderator. *Corporate Reputation Review*, 22(4), 159–170. <https://doi.org/10.1057/s41299-019-00067-z>.
- Shorey, S., & Howard, P. N. (2016). Automation, big data, and politics: A research review. *International Journal of Communication*, 10, 5032–5055.
- Stieglitz, S., Brachten, F., & Kissmer, T. (2018). Defining bots in an enterprise context. In *Thirty ninth international conference on information systems, San Francisco 2018*, 1–9. Retrieved from <https://aisel.aisnet.org/cgi/viewcontent.cgi?article=1168&context=icis2018>
- Stieglitz, S., & Wiencierz, C. (2019). Digitalisierung, Big Data und soziale Medien als Rahmenbedingungen der Unternehmenskommunikation [Digitalization, big data and social media as frameworks for corporate communications]. In A. Zerfaß, M. Piwinger, &

- U. Röttger (Eds.), *Handbuch Unternehmenskommunikation [Corporate communications manual]*. Wiesbaden: Springer Gabler.
- Sztompka, P. (2006). New perspectives on trust. *American Journal of Sociology*, 112(3), 905–919.
- USC Annenberg Center for Public Relations. (2019). *PR.Tech. The future of technology in communication: 2019 global communication report*. Retrieved 09 April, 2019, from <https://annenberg.usc.edu/research/center-public-relations/global-communications-report>
- Valtolina, S., Barricelli, B. R., Di Gaetano, S., & Diliberto, P. (2018). Chatbots and conversational interfaces: Three domains of use. In *Proceedings of the fifth international workshop on cultures of participation in the digital age*, 62–70. Retrieved from <http://ceur-ws.org/Vol-2101/paper8.pdf>
- Veel, K. (2018). Make data sing: The automation of storytelling. *Big Data & Society*, January-June, 1–8. <https://doi.org/10.1177/2053951718756686>.
- Vodafone Institute. (2016). *s Big data. A European survey on the opportunities and risks of data analytics*. Berlin. Retrieved 8 June, 2020, from <http://www.vodafoneinstitut.de/bigdata/links/VodafoneInstitute-Survey-BigData-en.pdf>
- Waddell, T. F. (2018). A robot wrote this? *Digital Journalism*, 6(2), 236–255. <https://doi.org/10.1080/21670811.2017.1384319>.
- Waddell, T. F. (2019). Can an algorithm reduce the perceived bias of news? Testing the effect of machine attribution on news readers' evaluations of bias, anthropomorphism, and credibility. *Journalism & Mass Communication Quarterly*, 96(1), 82–100. <https://doi.org/10.1177/1077699018815891>.
- Weiner, M., & Kochhar, S. (2016). *Irreversible: The public relations big data revolution*. Retrieved 8 June, 2020, from www.instituteforpr.org/wp-content/uploads/IPR_PR-Big-Data-Revolution_3-29.pdf
- Wiencierz, C., & Röttger, U. (2016). Trust in organizations: The significance and measurement of trust in corporate actors. In B. Blöbaum (Ed.), *Trust and communication in a digitized world: Models and concepts of trust research* (pp. 91–111). Cham: Springer.
- Wiencierz, C. (2017). *Vertrauen in politische Parteien: Der Einfluss von Gesprächen über Wahlwerbung auf die Vertrauenswürdigkeit [Trust in political parties: The influence of talks about election advertising on trustworthiness]*. Wiesbaden: Springer VS. <https://doi.org/10.1007/978-3-658-15567-4>.
- Wiencierz, C., & Röttger, U. (2017). The use of big data in corporate communication. *Corporate Communications: An International Journal*, 22(3), 258–272. <https://doi.org/10.1108/CCIJ-02-2016-0015>.
- Wiencierz, C., & Röttger, U. (2019). Big data in public relations: A conceptual framework. *The Public Relations Journal*, 12(3), 1–15.
- Wiesenberg, M., Zerfass, A., & Moreno, A. (2017). Big data and automation in strategic communication. *International Journal of Strategic Communication*, 11(2), 95–114. <https://doi.org/10.1080/1553118X.2017.1285770>.
- Wrigley, S. (2019). Bots, artificial intelligence and the general data protection regulation: Asking the right questions. *Trinity College Law Review*, 22, 199–211.
- Wu, Y. (2020). Is automated journalistic writing less biased? An experimental test of auto-written and human-written news stories. *Journalism Practice*, 14(8), 1008–1028. <https://doi.org/10.1080/17512786.2019.1682940>.
- Xu, A., Liu, Z., Guo, Y., Sinha, V., & Akkiraju, R. (2017). *A new chatbot for customer service on social media. CHI 2017, May 06-11, 2017, Denver, CO, USA* (pp. 3506–3510). <https://doi.org/10.1145/3025453.3025496>.
- Zamora, J. (2017). I'm sorry, Dave, I'm afraid I can't do that: Chatbot perception and expectations. *HAI 2017, October 17–20, 2017, Bielefeld, Germany*. <https://doi.org/10.1145/3125739.3125766>.