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RESEARCH ARTICLE

What Creates Listening Online?

Exploring Reciprocity in Online Political Discussions with Relational Content Analysis

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Democratic governments frequently use online tools to include large numbers of citizens in participation processes. Against the backdrop of deliberative theories, such initiatives are subject to normative needs. This article examines the equality of participation. Previous research has mainly focused on equality in terms of access to, and voice within, deliberation processes. However, much less is known about the factors that influence the distribution of reciprocity in online political discussions. Proposing a theoretical distinction between simple replying and deliberative reciprocity, this study addresses the question: What obstructs or promotes deliberative reciprocity online? Drawing on previous online communication research, we assume that communication style, gender and users' activity are important predictors of simple replying and deliberative reciprocity. Results of a quantitative relational content analysis indicate that in order to receive deliberative reciprocity users should ask questions, propose arguments, be humorous, have a critical attitude and use a male user name. Storytelling and expressions of emotions show no significant associations with deliberative reciprocity.

Keywords: online deliberation; reciprocity; listening; equality; relational content analysis

In recent years, governments around the world have introduced participation formats such as town hall meetings, deliberative polling, participatory budgeting or consensus conferences to engage citizens into politics. Online platforms are frequently used to facilitate these kinds of participation processes (Coleman & Shane, 2012). Against the backdrop of deliberative democracy, such innovations are subject to normative needs such as *equality of participation.* Normatively, deliberation should be protected against domination 'by a baseline of equality' (Beauvais & Bächtiger, 2016: 1). All participants should have the same rights and opportunities to take part in the deliberation (Gutmann & Thompson, 2004). Empirically, research suggests that online deliberation processes usually fall short in terms of equality, since the 'digital divide' or 'participatory divide' excludes certain groups from engaging with political or social issues online (Hargittai & Walejko, 2008; Norris, 2001). These divides particularly concern *access* or *structural equality* (Graham, 2008). In contrast, *discursive equality* focuses on the actual process of communication, which constitutes the backbone of deliberative public spheres. According to Graham (2008), discursive equality requires 'that all participants within the process of deliberation be considered equal members' (p. 21). Consequently, this should result in an equal distribution of voice. However, studies on discursive equality have shown that online discussions are often dominated by a few very active users (Albrecht, 2006; Graham & Wright, 2014; Koop & Jansen, 2009).

While the distribution of voice is an important dimension of deliberation, we want to adopt another crucial perspective on equality by focusing on the *distribution of reciprocity* within deliberation processes. Reciprocity is recognized as a core principle of democracy in several theoretical traditions. However, most theories do not attribute to reciprocity the central role that deliberative democracy does (Gutmann & Thompson, 2002). Within deliberative theory, reciprocity could be seen as a norm of fundamental importance in the sense that it is not only a key element of deliberative talk, but also serves several important functions with regard to the outcomes of deliberation (Barber, 1984; Gutmann & Thompson, 2002; Morrell, 2018). Given this extraordinary role of reciprocity, Himelboim (2008) suggested that potential benefits of political online communication should not be assessed by an individual's mere ability to use the internet for political purposes, or by their actual contribution in online discussions, but rather by the patterns of reciprocity in online environments. Similarly, Dahlgren (2005) highlighted 'interaction' as one central analytical dimension of online public spheres.

This study puts its focus on reciprocity in online political discussions. In the most basic sense, by reciprocity we mean listening or reading what others say and responding to it. Previous research has shown great variance in the degree of reciprocity in online discussions (Esau et al., 2017;

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Stromer-Galley, 2007; Zhou et al., 2008), but there is a lack of research *explaining* the different levels of reciprocity. In order to investigate different forms of reciprocity, we are going to introduce a distinction between *simple replying* and the more demanding concept of *deliberative reciprocity* (coherent, respectful *and* reasoned replies) in the theory part of this paper. Against this backdrop, we analyze whether participants differ in terms of receiving deliberative reciprocity and what predicts this particular form of reciprocity online. Accordingly, the paper pursues the main research question: *Which factors obstruct or promote deliberative reciprocity in online political discussions?*

Previous research has mostly analyzed the technical structure of online interaction (e.g., Himelboim, 2008; Wilhelm, 1998). Some have also differentiated types of more substantial reciprocity (Graham, 2008; Graham & Witschge, 2003). Most deliberation research either focuses on content and misses the relational and structural aspects of communication (content analyses, e.g., Stromer-Galley, 2007) or disregards the content of communication to focus on relations and structure (network analyses, e.g., Aragón et al., 2017). This study applies an innovative methodological approach using quantitative relational content analysis of a full sample of 1,308 user comments posted in a local government online consultation. The relational character of the content analysis makes it possible to extract information about the content of user comments *and* the relations between comments. Thereby, we elaborate how certain characteristics of communication (arguments, questions, constructiveness, critical attitude, storytelling, emotions and humor) and user characteristics (gender, anonymity and activity) are associated with different forms of reciprocity online.

Theoretical Groundwork: Deliberative Democracy and Two Concepts of Deliberation

Deliberative democracy refers to a form of democracy in which a particular concept of communication (deliberation) is placed at the center of decision making. Consequently, communication is conceptualized as the key source of legitimacy. However, two decades after Dryzek (2000) stated the 'deliberative turn', scholarship on deliberation has not yet reached a uniform understanding of its most central term, *deliberation*. Beyond the minimal agreement that democratic processes should involve communication about, rather than merely an aggregation of preferences, there is little consensus on how deliberation should be defined and consequently operationalized (Bächtiger et al., 2010). The theoretical literature suggests that there are two camps, which either hold a more *classic* or *expansive* view on how deliberation should be defined (Bächtiger & Parkinson, 2019; Polletta & Gardner, 2018).

Classically, the term *deliberation* has been understood as a communication process in which equal participants justify their positions in a respectful manner, always willing to accept the forceless force of the better argument (Habermas, 1996; Thompson, 2008). In this perspective, deliberation is seen to follow the ideal of *rational* discourse in which verifiable reasons are mutually contested. Opposing this classic view, other scholars have argued that alternative forms of communication such as expressions of emotions, storytelling and humor should also be considered to be part of deliberation (Dryzek, 2000; Young, 2000). Since norms of 'rational' deliberation 'are not neutral, but tend to reflect the communicative styles of already powerful social groups' (Bickford, 2011: 1025), classic conceptions of deliberation bear the risk of excluding other groups and therefore may reproduce existing inequalities (Bickford, 2011; Sanders 1997; Young, 2000). This is particularly problematic within the process of deliberation, when some participants have fewer chances to make contributions, introduce topics or criticize others' proposals or if certain forms of communication are not thought or seen to be of equal value. Thus, even though marginalized groups may have access to a deliberation process (external inclusion), this may not translate to 'internal inclusion', meaning that their claims are listened to or taken seriously (Young, 2000).

While both camps hold different views about what exactly constitutes deliberation, neither the classic nor the expansive perspective challenges the value of reciprocity. Therefore, reciprocity seems to provide common ground and could be considered to be a core norm of deliberation (Pedrini et al., 2013). To date, however, we know little about the factors that stimulate or impede the relation between different forms of communication and reciprocity. Thus, in this study we investigate whether certain forms of communication that are related to either classic or expansive conceptions of deliberation are associated with reciprocity.

Equality and Reciprocity in Deliberation

Since deliberative theory states that legitimacy is predicated upon the inclusion of those affected by a discussed issue, everybody affected must have equal opportunities to influence the deliberative process. Thus, the standard of equality is twofold: having access to a deliberation process (*access equality*) and equality during the process (*discursive equality*) (Graham, 2008; Thompson, 2008). In this paper, we focus on discursive equality. Usually, discursive equality is judged by the share of voice participants have within deliberation processes. Sanders (1997) stresses that when certain participants routinely speak more than others, participation is not equal and one central democratic value is violated. Even though theorists agree that equality in terms of voice also counts for equality with regard to *reciprocity*, there is little literature on the problem of being ignored by others or the withdrawal of consideration in deliberation processes (but see Beauvais, 2019; Pedrini et al., 2013; Scudder, 2020).

Sociological theorists have stressed the fundamental role of reciprocity for societies ever since (e.g., Gouldner, 1960; Simmel, 1950). Becker (1956) emphasized the role of reciprocity for humankind, introducing the term *homo reciprocus*. Simmel (1950) states that social equilibrium and cohesion could not exist without reciprocity, meaning that every social relation rests on the principal of giving and returning. From a communication theory perspective, reciprocity is a fundamental element of conversations. Human conversations emerge when individuals reply to each other's speech acts (otherwise we would call it a monologue) (for a more detailed discussion see also:

Austin, 1962; Bormann et al., 2021; Grice, 1975; Searle, 1969). Generally speaking, according to Pelaprat and Brown (2012), 'reciprocity is always a return-action in a broader context of exchange, where an initial giving necessitates a return' (p. 1).

Within deliberative theory, the role of reciprocity can hardly be overestimated. In fact, reciprocity is the basic principle underlying deliberation, and theorists have stressed its necessity for several outcomes of deliberation processes (Barber, 1984; Gutmann & Thompson, 2002; Morrel, 2018). While voice is necessary for opinion articulation, reciprocity is fundamental for the epistemic functions of deliberation, which refers to discourse's capacity to encourage learning, change opinions and preferences, the emergence of informed reasons and error voidance (Estlund & Landemore, 2018). In particular, the mutual engagement with different standpoints and reasons also triggers the epistemic function of deliberation and leads to error avoidance (Bohman, 2007). The deliberative assumption of communicative rationality rests on the premise that participants interact with each other, thus, performing reciprocity. Reciprocity also enables empathy, mutual understanding and orientation to the common good (Barber, 1984). Furthermore, reciprocity represents a central norm of politeness and civility because it implies the recognition of another person. Therefore, reciprocity also serves what Beauvais and Bächtiger (2016) have called 'ethical functions' such as mutual recognition, community building and the development of trust.

Recently, Scudder (2020) reflected on the importance of reciprocity by introducing the concept of *'deliberative uptake'*, which she defines as 'fair consideration of the arguments, stories, and perspectives that particular citizens share in deliberation' (p. 504). Even though Scudder avoids the term *reciprocity*, the concept of deliberative uptake can be understood as a specific form of reciprocity, which goes to 'the normative core of meaningfully democratic deliberation' (p. 505). Scudder argues that reciprocity is directly connected to the values of equality and inclusiveness, since by taking up others' contributions, 'we recognize their moral equality of voice' (p. 512). Thus, in order to reach the normative goal of inclusive (democratic) deliberation, participants' input in deliberation needs to be both included and fairly considered. While inclusion is mostly a matter of access to a deliberative forum, fair consideration is a matter of reciprocity within deliberation processes. This argument points toward an important issue we discussed earlier: Young's (2000) categories of external and internal inclusion. Even though people have access to deliberation (external inclusion), not considering their input will lead to an internal exclusion of those people. Thus, the withdrawal or refusal of reciprocity is a very powerful practice.

The importance of reciprocity is also acknowledged by the literature on *listening* in deliberation (Bickford, 1996; Dobson, 2012; Morrell, 2018). Morrell (2018) has emphasized the crucial role of listening for reciprocity, saying that 'without listening to others and understanding their concerns, it would be impossible for citizens to demonstrate reciprocity' (p. 238). Dobson (2012) has shown that listening is connected to several key concepts of deliberative democracy such as legitimacy, mutual understanding, disagreement and empowerment (see also Barber, 1984). Previously, Bickford (1996) stressed the adversarial nature of politics and argued that 'political listening' does not necessarily resolve conflicts but it helps 'to act in the face of conflict' and 'clarify the nature of the conflict' (p. 2). She further emphasized the powerful implications of listening by referring to a conversation between Socrates, Polemarchus and Glaucon in *The Republic* by Plato: 'Socrates suggests an alternative: he might persuade Polemarchus to let him go. "But could you persuade us," Polemarchus challenges, "if we refused to listen?" And Glaucon responds firmly, "there's no way".' (Bickford, 1996: 1). What is pointed out convincingly here is that the refusal of reciprocity is an effective way of exercising power.

However, while listening is a central element in deliberative theories, it is hard to investigate empirically, particularly in online discussions. Listening occurs in the minds of the receivers of a message and therefore is challenging to study (Wikin & Trochim, 1997). A comprehensive analysis of listening would require exploring whether participants have listened to others without explicitly expressing that they have (Pedrini et al., 2013). Therefore, we do not attempt to empirically capture listening but rather propose to study the more observable concept of reciprocity. In the next section we further qualify the concept of reciprocity by distinguishing between *simple replying* and *deliberative reciprocity*.

Concepts: Reciprocity, Simple Replying and Deliberative Reciprocity

We now want to move forward by defining and operationalizing the empirical reference point of this study, namely, *reciprocity*, *simple replying* and *deliberative reciprocity*. Graham and Witschge (2003) have defined reciprocity in online contexts as 'the taking in (listening, reading) of another's claim or reason and giving a response to that claim' (p. 176). However, they also stress that meaningful reciprocity that aims to create understanding requires different levels of engagement with the positions of others. While reciprocity requires the listening to, or reading of, another's claim and some sort of response to it, there should be further reflexivity and empathy to achieve mutual understanding (Graham & Witschge, 2003). Similar, Kies (2010) suggested a nuanced interpretation of reciprocity that considers other deliberative criteria in order to ensure what we will call deliberative reciprocity. This nuanced conception is needed because reciprocal messages are not automatically reciprocal in the sense that they help to foster deliberative discussions. From a theoretical perspective, a user comment can be reciprocal in the sense that it is a reply to another comment, but still not meet the concept of deliberation. This is well illustrated by the example of someone replying with: 'You are a dumbass, never heard such a stupid idea!' Thus, a comment can be reciprocal to the extent that it relates to another person's comment, but at the same time being disrespectful, poorly justified, and/or off topic, which means that 'the deliberative value that is given to the

reciprocal character of a message is annihilated by the nondeliberative content or intention of the message' (Kies, 2010: 46). In the same vein Pedrini et al. (2013) highlighted the role of respect when measuring reciprocity. Drawing on Gutmann and Thompson (1996) and Mansbridge et al. (2012), they argue that reciprocity is a concept of mutual exchange entailing both interactivity and respect. The respectful uptake of one another's reasons means to value the moral force of others' positions, sources and reasons, and thus also implies non-domination (Pedrini et al., 2013). Furthermore, in order to distinguish different forms of reciprocity, Jensen (2014) has used the concepts of positive and negative reciprocity. While the first mirrors constructive ways of mutual engagement (e.g., acknowledgment of an argument), the later represents dysfunctional communication such as flaming or incivility.

This short account of the literature suggests that reciprocity is not a one-dimensional entity but rather a multi-dimensional concept that should be qualified against the backdrop of other norms of deliberation. We suggest that this can be done by bringing in the concept of deliberative reciprocity, which we distinguish from simple replying. We define *simple replying* as an interaction among participants that is reciprocal but does not contain coherence, reasoning *and* respect. Compared to this, *deliberative reciprocity* is a more demanding concept defined as a reciprocal comment, which is on topic, respectful in tone and reasoned. **Figure 1** shows the relation of the central theoretical terms under investigation.

While both simple replying and deliberative reciprocity are reciprocal in the sense that they refer to a prior statement within a discussion, the latter is much more demanding. Acknowledging reciprocity, respect and rationality as core norms of deliberation (Gutmann & Thompson, 2002; Habermas, 1996; Pedrini et al., 2013) within the concept of deliberative reciprocity allows us to qualify reciprocity in a theoretically comprehensive manner. This is particularly important in the context of online deliberation where, according to previous research, uncivil and hateful comments are frequently present (e.g., Coe et al., 2014; Davis, 2021; Friess et al., 2021). Accordingly, users that disturb online discussions by replying to other comments in a disrespectful, unreasoned or incoherent manner would fall in the category of simple replying but not fit with the concept of deliberative reciprocity.

Previous Research: Reciprocity in Online Discussions

Both theoretical arguments and empirical evidence suggest that reciprocity is a crucial element of online deliberation. From its early beginnings, online communication research has been focusing on the extent to which users engage with one another (Wilhelm, 1998). Research has investigated the effects of reciprocity in political discussions. For example, Arguello et al. (2006) found that participants who have received replies are more likely to participate in further discussions. Fiore et al. (2002) showed that participants' perceptions of respect and trust for fellow participants were positively related to the number of received replies. Experimental research has found that being ignored online leads to a reduced sense of belonging (Williams et al., 2000). Additionally, research suggests positive relationships between participation in reciprocal online discussions and increased political knowledge and participation in general (Strandberg & Grönlund, 2012).

Regarding the distribution of reciprocity, previous research indicates that reciprocity online is highly skewed. Several studies have shown that the connectivity of web pages as well as the distribution of social interactions often fit the power law, which means that a small number of actors attract a large and disproportionate number of replies (Albert et al., 1999; Raban & Rabin, 2009). Furthermore, previous research shows a wide range of reciprocity online. Stromer-Galley (2007) reports 83% user engagement with previous comments in government-run online forums on public schools. Black et al. (2011) found 63% reciprocity in user discussions on Wikipedia, while Zhou et al. (2008) report less than 14% reciprocity in newspaper comment sections. Completing the picture, Esau et al. (2017) found significant variance in the percentage of reciprocal user comments on Facebook (66%), news websites (76%) and discussion forums (54%).

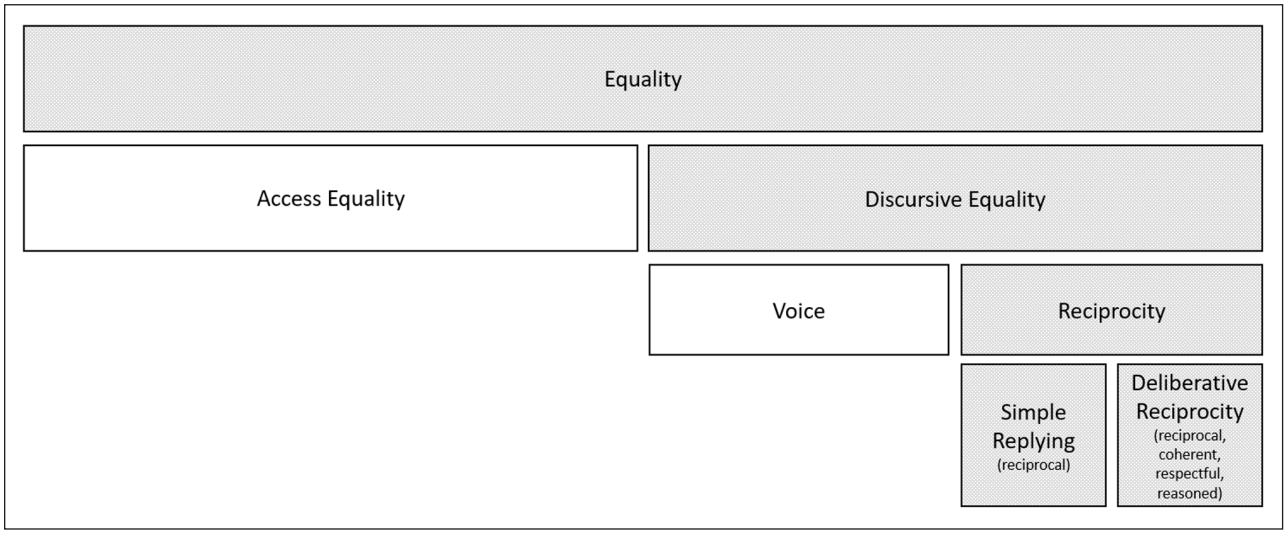

Figure 1: Equality and Reciprocity in Deliberation.

Research Questions and Hypotheses

Based on the previous results, it is appropriate to state hypotheses for certain factors influencing reciprocity online. Other factors derive solely from normative assumptions of deliberative theories and therefore require a more explorative approach. In these cases, we propose research questions.

Classic Deliberation and Reciprocity

First, coming from a classic conception of deliberation (Bächtiger et al., 2010), we want to know how argumentation, critical questions and constructiveness, as characteristics of deliberation, which theoretically should have an influence, obstruct or promote simple replying and deliberative reciprocity empirically. Besides the finding that factual information in previous user comments can have a positive influence on interactive user engagement in general (Ziegele et al., 2014), there is no empirical evidence about how arguments, questions or constructiveness are related to simple replying or deliberative reciprocity. Due to the lack of empirical evidence we ask:

> RQ1 *Do arguments, questions and constructiveness obstruct or promote simple replying and deliberative reciprocity?*

Expansive Deliberation and Reciprocity

Second, we want to know how storytelling, expressions of emotions and humor, as forms of communication that come to the forefront in more expansive concepts of deliberation, influence deliberative reciprocity. Research suggests that such alternative forms of communication may go hand in hand with traditional forms of deliberation (Black, 2008; Graham, 2008; Jaramillo & Steiner, 2014; Polletta & Lee, 2006). For example, Poletta and Lee (2006) analyzed an online consultation on the future of Lower Manhattan. Their findings show that storytelling was more likely to engage with other users and their comments (70%) compared to non-narrative claims (37%). Further, the study showed that 'narrative claims were 1.6 times as likely as non-narrative claims to elicit a response' (p. 714). In comparison to storytelling, the impact of expressions of emotions and humor on receiving reciprocity are rather contradictory. Expressions of negative emotions have shown positive effects on user engagement (Esau, 2022). However, another study found the effect only at a marginal level of significance (Heiss et al., 2019). Expressions of positive emotions have been found to have either positive effects on reciprocity (Heiss et al., 2019) or to be negatively associated with both reciprocity and argumentation (Esau et al., 2019). Humor had a positive effect on the number of user comments (Heiss et al., 2019), but also has been associated in a negative way with respect (Esau et al., 2019). Consequently, we ask:

> RQ2 *Do storytelling, expressions of emotion and humor obstruct or promote simple replying and deliberative reciprocity?*

Critical Attitude and Reciprocity

Beyond online deliberation research, a diverse range of communication studies suggests that critical messages (e.g., controversial statements, negativity, social or political conflicts) influence the degree of users' interaction with the respective content. For example, studies that have employed news value theory in order to predict interactivity in comment sections reveal that certain 'discussion factors' in news articles (Weber, 2014) and user comments (Ziegele et al., 2014) enhance reciprocity in comment sections. One significant finding in both studies was that controversy, expressed in the form of a critical attitude, increases the likelihood that others will engage in commenting. Analyzing predictors for user interactions with politicians' Facebook posts, Bene (2017) and Heiss et al. (2019) found that critical postings increase the likelihood of receiving user comments and shares. Therefore, we hypothesize:

> H1 *Comments showing a critical attitude will receive more simple replying than comments showing a neutral or supportive attitude.*

However, since we do not know how critical comments are related to the concept of deliberative reciprocity, we ask:

> RQ3 *Does a critical attitude obstruct or promote deliberative reciprocity?*

Gender and Reciprocity

The history of the exclusion of women from the public sphere has motivated a large body of literature analyzing the role of gender in online and offline political discussions. Findings suggest a substantial gender gap in voice and authority, particularly in discussions where few women are present (Karpowitz et al., 2012; Mendelberg et al., 2014; Quinlan et al., 2015). For example, Beauvais (2019) found that people are less likely to revise their opinion after hearing an argument made by a woman, while counter-arguments made by a man increase willingness to revise opinion. Iosub et al. (2014) found that women tend to use similar communication styles and interact preferentially with other women. Thus, the authors conclude that 'being able to involve more women and to give them more space in the community would also result in a virtuous cycle of female participation, through the creation of a communication environment where they feel more comfortable' (p. 20 f.). Overall the results suggest that women are not treated as men's equals during political discussions. Therefore, we hypothesize and ask:

> H2 *Users with female user names will receive less simple replying compared to users with male user names.*
>
> RQ4 *Does a male user name have an impact on receiving deliberative reciprocity?*

Users' Activity and Reciprocity

Analyzing Usenet newsgroups Arguello et al. (2006) found that users' prior engagement and the content of their comments influenced the likelihood that they would

receive deliberative reciprocity. Further, frequent posters were more likely to get replies than newcomers. Himelboim (2008) found a strong relation between participants' contributions in Usenet groups and the number of replies: 'In other words, the more one gives to the group, the more he or she receives back' (p. 168). Graham and Wright (2014) also underline the positive functions of so-called 'super participants' who provide help and reply to others, summarize threads and are empathetic toward other users' problems and frequently engage in rational critical debate. We therefore hypothesize and ask:

H3 *Super participants will receive more simple replying than less active users.*
RQ5 *Does user activity have an impact on deliberative reciprocity?*

Anonymity and Reciprocity

Finally, we want to shed light on the impact of anonymity on reciprocity. The more general question of whether users' anonymity or identification fosters deliberation is a point of controversy in the literature. While some researchers have argued that anonymity may help participants to feel free to express their opinions (Rhee & Kim, 2009), others have stressed the loss of accountability, which may support disrespectful or uncivil behavior (Santana, 2014). It has been argued that the identification of users can foster deliberation in terms of respect and rationality (Janssen & Kies, 2005). However, the empirical evidence on the effects that anonymity has on the quantity and quality of reciprocal user comments is limited. Therefore, we ask:

RQ6 *Does anonymity obstruct or promote simple replying and deliberative reciprocity?*

Method

Past research on discursive equality and reciprocity analyzed the content of online user comments, determining the percentage of postings coded as replies (Black et al., 2011; Stromer-Galley, 2007). Other studies with network analytic approaches, interested in the relations between user comments, measured reciprocity at a participant-to-participant level, showing centralization tendencies and highlighting prominent users in online discussion networks (Black et al., 2011; Graham, 2008). The content analysis used in this study combines these two approaches by coding the content of user comments and the relations between comments. The relational content analysis method has been developed and applied to the data by the main author in her PhD project (Esau, 2022). The coding was conducted using the brat rapid annotation tool (BRAT) (Stenetorp et al., 2012). BRAT allows text span annotations for the coding of user comments' content (e.g., words, sentences) as well as for relation annotations for the coding of relations between comments (e.g., references to previous statements). The web-based annotation tool is available under an open-source license and is intuitive in usage. After the coding procedure, data can be exported and converted into different formats (e.g., MS Excel; SPSS). To the best of our knowledge it is the only open-source software available that provides suitable computational support for the purpose of data gathering for a relational content analysis.

Sample

Using BRAT, a full sample of 1,308 user comments in 320 topic-related discussion threads was manually coded and analyzed (see also Esau, 2022). The analyzed user discussions took place in a government-run online consultation on the local level of politics in Berlin, Germany. The consultation process focused on the future use of the 'Tempelhofer Field', a former airport in the center of the capital that since 2010 is a public urban park area. The 300-hectare area is used by citizens and tourists as an open space for recreation and leisure. Over the years, citizens have developed a close relationship to this place. It has hosted many self-organized projects (e.g., urban gardening, arts, education, nature) and is used for diverse activities (e.g., skating, kite landboarding, biking). In September 2011, a citizens' initiative was formed to oppose construction plans of the state government. In May 2014, during a referendum, the majority of the population voted for a bill supporting the citizens' initiative opposing any type of construction on the field. Against this background, a high level of *personal involvement* as well as *controversy* on certain topics (e.g., constructions and commercial use) had to be expected, both of which can be considered preconditions for fruitful deliberation (Gutmann & Thompson, 2004). From November 1, 2014, to December 31, 2015, the citizens located around the area and the public in general were invited by the local administration to submit proposals for the development and maintenance of the Tempelhofer Field. The suggestions and accompanying discussions would later inform the administration, policy making and planning process.

The online public space selected for analysis can be seen as an example of a 'strong public sphere' (Fraser, 1990) because of the possibility it offers to not only express opinions but also to participate in a decision-making process (Janssen & Kies, 2005). Furthermore, the design of the platform was characterized by the necessity to register for active participation (for writing and replying to comments). Contributions were published immediately and were not moderated on the platform. The main topic and objectives of the participation process were defined in advance and structured through sub-topics. Further information (e.g., a detailed map of the field, the legal framework) helped focus the arguments of the participants. These design features as well as the fact that it was a government-run forum have been shown to provide favorable conditions for a higher deliberative quality compared to regular online discussions (Esau et al., 2017; Esau, 2018; Strandberg, 2015; Towne & Herbsleb, 2012; Wright & Street, 2007).

Coding

In order to perform a relational content analysis, a coding scheme was developed based on previous content and network analyses of online deliberation (Black et al., 2011; Esau et al. 2017; Graham, 2008; Steenbergen et al., 2003; Stromer-Galley, 2007). The unit of analysis for the

predictor variables is the user comment or an utterance within a user comment. The material was coded by five trained coders. Before the actual coding, coders were instructed to read the entire discussion thread. After this, all comments within a threaded discussion were coded in the order of appearance in the tree structure of the thread. The coders worked with two parallel open windows, one with the respective comment, which was opened in the annotation tool BRAT (see **Figure 2**), and the other with an HTML view of the entire discussion thread. Beginning with the variables on the comment level and continuing with variables on the level of utterances, the characteristics of communication were coded by marking a text passage in BRAT and assigning it to one or more than one of the categories. The overlapping coding was allowed as utterances can be a mix of different forms of communication, for example, storytelling and argumentation or positive emotional expression and humor. For this study the data was re-coded from the level of utterances to the level of user comments. Most variables were re-coded dichotomously. While doing so, the presence of a certain criteria within a user comment was coded [1] while its absence was coded with [0].

Simple replying and deliberative reciprocity: In this paper, we focus on two dependent variables: (1) simple replying and (2) deliberative reciprocity (see **Figure 3**). The first dependent variable *simple replying* captures all sorts of replies to other users' comments (including off-topic and disrespect). In contrast to this, the second dependent variable *deliberative reciprocity* includes only replies that are on topic, respectful and contain at least one argument. First, each comment was coded based on whether it was *on topic* regarding the initial proposal, meaning that it referred to the proposal at the start of the discussion thread. Second, it was coded based on whether the comment had a baseline of *respect* when referring to other users or individuals outside the discussion, meaning that it was free from aggressive or offensive language. Third, it was coded based on whether the comment contained an *argument* for or against an assertion or assumption.

Classic characteristics of deliberation: Referring to classic concepts of deliberation, we coded utterances as argumentation, constructiveness, questions of information or questions of reason. Utterances with justifications or evidence for or against an assertion or assumption were coded as *argumentation.* It is important to note that making an argument and replying to others with an argument is not the same in our data. We used two different variables to distinguish between argumentation as a characteristic of initial comments (predictor) and

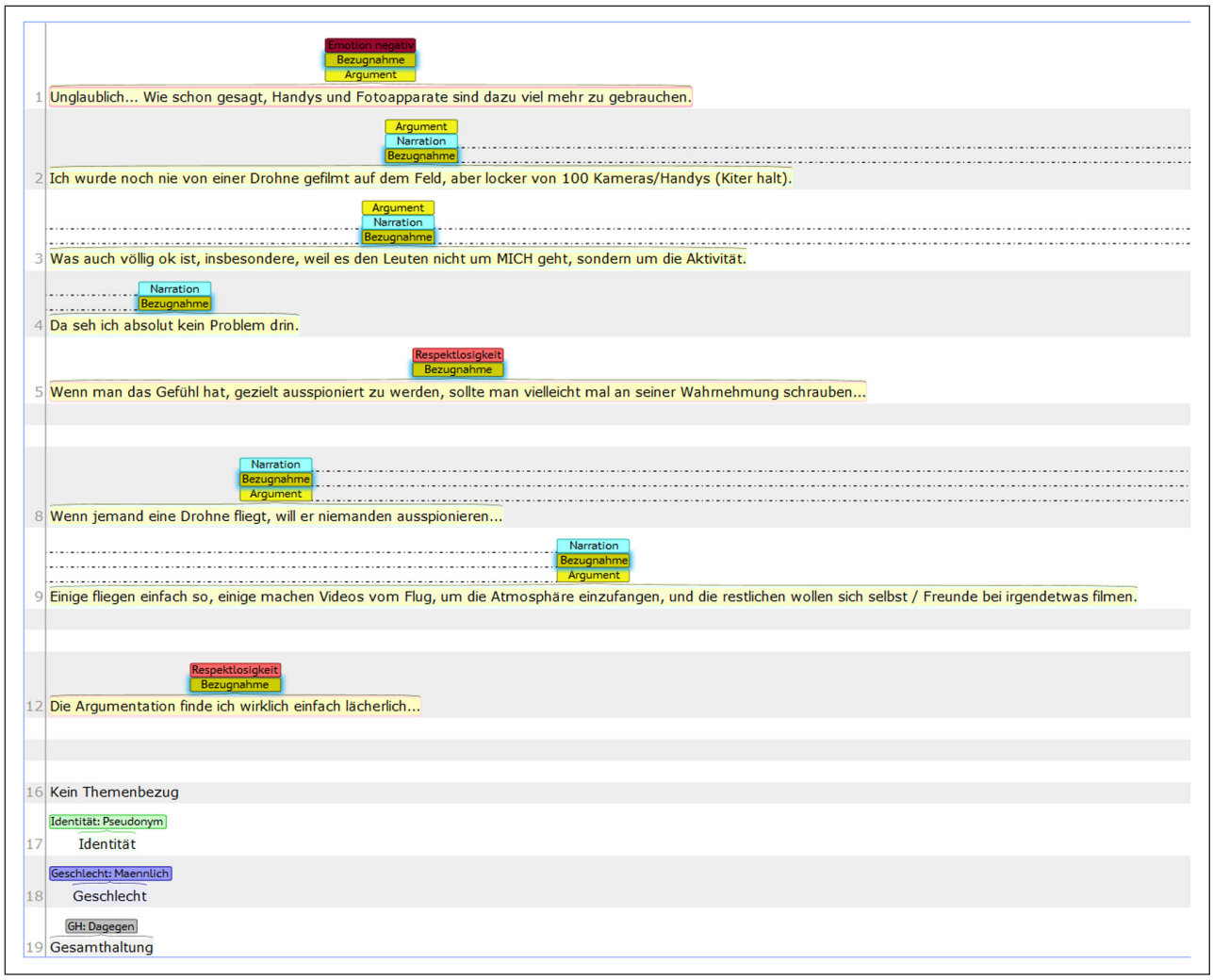

Figure 2: Screenshot BRAT during coding procedure.

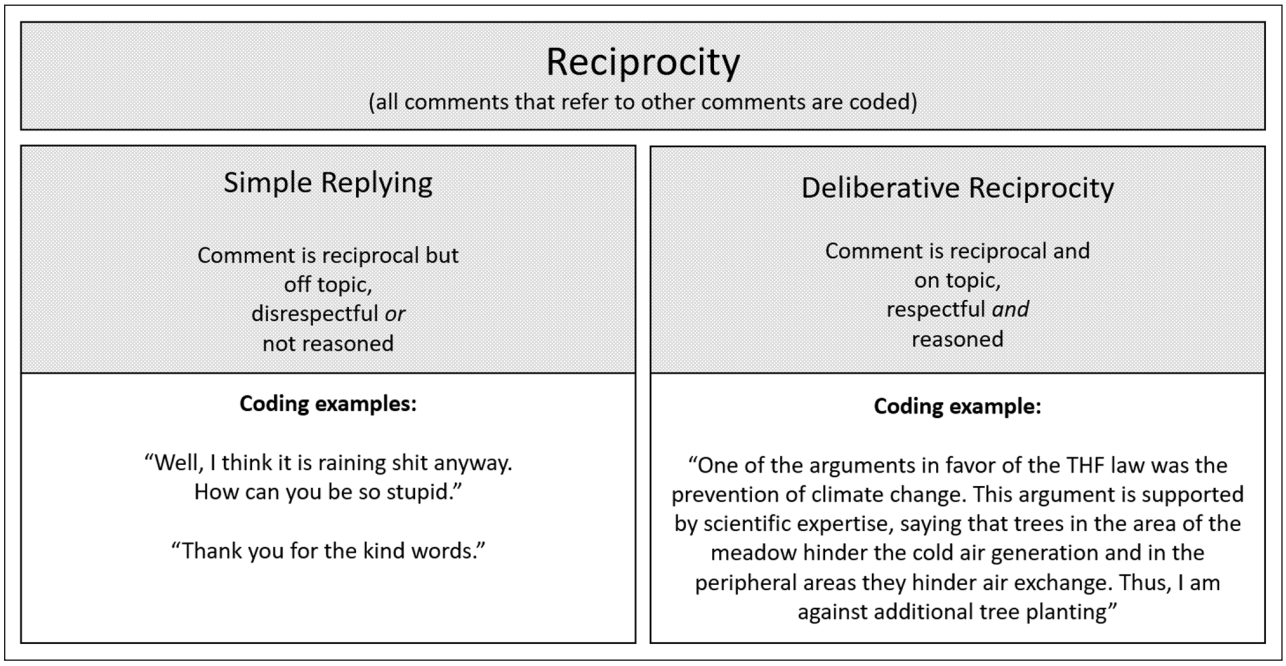

Figure 3: Coding examples for both concepts of reciprocity under analysis.

argumentation as a characteristic of reply comments (outcome). Constructive elements like solutions for dealing with a problem in the discussion or proposals for a compromise between different positions were coded as *constructiveness*. Genuine questions seeking for information from other users were coded as *question of information* and questions seeking for justification of a claim were coded as *question of reason*.

Expansive characteristics of deliberation: Storytelling, expressions of emotions and humor were coded as characteristics of expansive conceptions of deliberation. A narrative of one or more events from a personal or reported subjective perspective was coded as *storytelling*. Expressions of emotions, emojis and appeals to the emotions of others were coded according to the valence of the expressed emotion. Emotions like joy, enthusiasm or hope were coded as *positive emotion* and emotions like anger, fear or sadness were coded as *negative emotion*. Witty, playful or clearly not seriously meant statements that are supposed to make other users laugh were coded as *humor*. The aim was not to make judgments about good or bad humor, but to search for utterances that used elements of humor such as exaggeration, surprise and absurdity, often in combination with emojis (see **Table 2**, Appendix).

Critical attitude: For the coding of the overall attitude of each user comment, the additional variable comment attitude was implemented in BRAT. Comments were coded either as favorable, neutral or having a *critical attitude* with regard to the initial proposal at the start of the discussion thread. **Table 2** (Appendix) provides an overview of all presented variables with coding examples.

User characteristics: As user characteristics, *gender* (0 = female user name; 1 = male user name; unknown = 99) and the level of *user identification* (0 = pseudonym, 1 = full name) were coded. Regarding gender, we rely on self-identification on the basis of the user name (e.g., 'Heike' is coded as female user name, 'Peter' is coded as male user name). The *activity* of the users was coded automatically based on the number of comments on the entire platform published under the same user name. Users who wrote 10 or more comments were defined as *super participants*.

Control variables: The *comment length* (in characters) was coded automatically. On average, user comments consisted of 345 characters or 62 words. The shortest comment consisted of one character and the longest comment had 5,525 characters. For the analysis, the variable was formed using visual classification and categories from previous research (Ziegele et al., 2014). The categories are 1 = very short (1–70 characters), 2 = short (71–200 characters), 3 = medium (201–350 characters), 4 = long (351–1,500 characters), 5 = very long (1,501–5,525 characters). The second control variable was the *comment position* in the discussion thread. On average, 4 comments per thread were written. The longest thread contained 103 comments. A comment's position in the discussion thread was categorized as: The beginning of the thread (comments 1–30), the middle of a thread (comments 31–60) and the end (comments 61–103). Further, the *number of up votes* was automatically assessed and used as a control variable.

The intercoder reliability between the five coders was tested for all categories. **Table 2** reports the frequencies of the variables in the final data set, Krippendorff's α (Krippendorff, 2004) and the percent agreement values (Holsti, 1969). The range of the reliability scores according to Krippendorff's α was for all manually coded variables between .68 and .95.

Results

All user contributions submitted to the consultation platform were analyzed in this study. The coded data set consisted of a total of 1,308 user comments. Initial proposals positioned at the beginning of each discussion thread, contained a proposal (e.g., remove opening hours) and prompted a subsequent discussion in the form of

user comments. In the following analysis we focus on the interaction between users in these discussion threads.

In a first step we calculated the number of comments that were replies to previous comments. Out of all 1,308 comments, 508 (39%) comments were replies of any sort (*simple replying*) that referred to 375 (29%) comments (*reply-stimulating comments*). However, the majority of user comments in the data set of 933 (71%) did not receive any sort of reciprocity. For the purpose of this analysis we focused on the 375 reply-stimulating comments, whose characteristics constituted our independent variables. Of the 375 reply-stimulating comments, 284 (76%) received one simple reply, 74 (20%) received two simple replies and 17 (4%) received more than two replies of any sort.

In the next step we focused on the 508 reciprocal comments (*dependent variables*). This subset of user comments fulfilled the requirement for *simple replying* (reciprocal) and also exhibited further deliberative characteristics (reciprocal, coherent, respectful and reasoned). The comments in this subset were therefore considered to be examples of *deliberative reciprocity*. Out of the 375 reply-stimulating comments, 294 (78%) received the more demanding type of reciprocity (*deliberative reciprocity*). Accordingly, a relatively large proportion of reciprocal comments were further characterized as examples of deliberative reciprocity. The distribution of deliberative reciprocity is therefore similar to that of simple replying: 229 comments received one deliberative response, 52 comments prompted two deliberative responses and 12 comments received more than two replies that could be characterized as deliberative. Of the 508 simple replies, 234 (46%) could not be identified in terms of gender. Of the remaining 274 simple replies, the vast majority, 218 (80%), were written under a male user name and 56 (20%) were written by users who identified themselves as women. Two hundred seventy-four (54%) of the simple replies were written by a super participant and only 51 (10%) were identifiable in terms of the full name of the user. Further, the data shows slightly bigger biases for deliberative reciprocity: deliberative replies were mostly written by users who identified as men (81%), very active (54%) and anonymous users (89%).

The dependent variables show typical characteristics of count variables (Cameron & Trivedi, 2013). Due to the skewed distribution, logistic regression (Pampel, 2010) is more suitable than ordinary linear regression. We therefore calculated two binary logistic regression models, one for each dependent variable (see **Table 1**). The results of the regression analysis show that several factors significantly predict the probability of simple replying and deliberative reciprocity to other users' comments.

Classic Concepts of Deliberation: RQ1 asked about the influence of argumentation, questions and constructiveness (as characteristics of communication considered to comply with classic concepts of deliberation) on simple replying and deliberative reciprocity. We find that argumentation (b = 0.54, $p < .05$), question of information (b = 1.02, $p < .01$), question of reason (b = 0.56, $p < .05$) and constructiveness (b = 0.60, $p < .1$) are significantly associated with deliberative reciprocity. Further, we find differences comparing the results on simple replying and deliberative reciprocity. The results show that argumentation and questions of reason are strongly associated with deliberative reciprocity – stronger than with simple replying (see **Table 1**). In contrast, questions of information and constructiveness are more strongly associated with simple replying. The most significant factor associated with both simple replying and deliberative reciprocity is question of information. For example, the odds of receiving deliberative reciprocity are about three times higher for comments with a question of information than for comments without.

Expansive Concepts of Deliberation: RQ2 investigated the influence of storytelling, expression of emotion and humor on simple replying and deliberative reciprocity. The results show that only humor is a significant predictor of deliberative reciprocity (b = 0.61, $p < .05$). Further, humor shows to be much stronger associated with deliberative reciprocity than with simple replying. Storytelling is not significantly associated with both variables simple replying (b = –0.06, p = .800) and deliberative reciprocity (b = –0.04, p = .884). Findings further indicate a negative association between positive emotions and simple replying (b = –0.78, $p < .01$) but no significant association with deliberative reciprocity (b = –0.38, p = .193). Negative emotions are not significantly associated with simple replying (b = 0.11, p = .691) and deliberative reciprocity (b = 0.17, p = .546).

Critical Attitude: Drawing on 'discussion factors' proposed by previous research on user comments, H1 expected that user comments showing a critical attitude would receive more replies. The results support the hypothesis by showing a significant positive relation between critical attitude and simple replying (b = 0.91, $p < .001$). Further, we wanted to know whether a critical attitude obstructs or promotes deliberative reciprocity (RQ3). The results show that a critical attitude is strongly associated with deliberative reciprocity (b = 0.99, $p < .001$).

User characteristics: H2 expected users with female names to receive fewer replies than users with male names. Following this, RQ4 asked whether having a male user name has an impact on the amount of deliberative reciprocity one receives. Supporting H2 and answering RQ4, the findings show that users' gender is an important predictor of both simple replying and deliberative reciprocity. User comments written under a male user name receive two times more deliberative reciprocity than user comments with a female user name (b = 0.65, $p < .01$). The association between gender and simple replying is weaker (b = 0.52, $p < .05$). Furthermore, H3 predicted that users' activity would have an impact on simple replying. However, the positive relation between users' activity and simple replying was not significant (b = 0.25, p = .215). Regarding RQ5, findings indicate that users' activity had a significant positive impact on deliberative reciprocity (b = 0.47, $p < .05$). Finally, answering RQ6 we found that the identification of users via full names was not associated with simple replying (b = 0.00, p = .999) nor deliberative reciprocity (b = –0.11, p = .707).

Control variables: The results for the three control variables – comment length, position in a thread and other users' up

Table 1: Logistic Regression Analysis of the Effect of Characteristics of Communication and Users on Simple Replying and Deliberative Reciprocity.

	Model I Simple replying		Model II Deliberative reciprocity	
Item	***b*-value**	**Odds**	***b*-value**	**Odds**
Block 1:				
Argumentation	.41†	1.51	.54*	1.72
Question of information	1.51***	4.53	1.02**	2.78
Question of reason	.51†	1.66	.56*	1.75
Constructiveness	.72*	2.04	.60†	1.82
Block 2:				
Storytelling	–.06	.94	–.04	.97
Positive emotion	–.78**	.46	–.38	.69
Negative emotion	.11	1.11	.17	1.18
Humor	.56†	1.75	.61*	1.84
Block 3:				
Critical attitude	.91***	2.48	.99***	2.70
Block 4:				
Gender (Ref. cat.: male user name)	.52*	1.67	.65**	1.91
Activity (Ref. cat.: super participant)	.25	.78	.47*	.63
Identification (Ref. cat.: full name)	.00	1.00	–.11	.89
Block 5 (control variables):				
Length: Very long (Ref. cat.)	—	—	—	—
Length: Long	.84	2.31	.48	1.60
Length: Medium	1.09**	2.97	.94*	2.57
Length: Short	.76†	2.13	.37	1.45
Length: Very short	.90**	2.46	.75†	2.12
Position: End (Ref. cat.)	—	—	—	—
Position: Middle	.85†	2.34	.73	2.07
Position: Beginning	.78†	2.18	.76†	2.14
Pro votes	.12**	1.13	.11*	1.12
Constant	–3.79		–4.10	
R^2 (Cox & Snell)	.16		.15	
R^2 (Nagelkerke)	.23		.23	

Note: If no reference category is mentioned, variables were coded as present or not present; n = 1,308; 0 = no simple replying / deliberative reciprocity received, 1 = simple replying / deliberative reciprocity received; ***p < .001; ** p < .01; * p < .05; † p < .1.

votes – show that very short comments and comments of middle length receive more simple replying and deliberative reciprocity than very long comments (**Table 1**). Further, comments posted at the beginning or in the middle of a thread receive more simple replying and also more deliberative reciprocity. The number of up votes is another predictor of simple replying and deliberative reciprocity.

Discussion

Within this study we targeted the issue of discursive equality in online deliberation processes, by focusing on the distribution of reciprocity. Emphasizing that reciprocity is a core norm in deliberative theory, this study asked which factors obstruct or promote reciprocity in online discussions. In order to qualify the concept of reciprocity we suggested a distinction between simple replying (reciprocal comments) and deliberative reciprocity (reciprocal comments that also live up to the deliberative norms of coherence, respect and reasoning). The results of the quantitative relational content analysis indicate that in order to receive deliberative reciprocity in online discussions, users should ask questions, provide reasons, be humorous, have a critical attitude, use a male user name, write between 200 and 300 characters, comment

at the beginning or in the middle of the thread, collect other users' up votes and be active in other discussions.

These findings on predictors of deliberative reciprocity in online political discussions have implications for the theoretical understanding of online deliberation processes. Several authors have argued that classic conceptions of deliberation bear the risk to reinforce existing inequalities and have called for a more expansive concept that includes more forms of communication beyond argumentation (e.g., Dryzek, 2000; Sanders, 1997; Young, 2000). For example, Young (2000) argued that an inclusive concept of democracy requires an account of how different forms of communication 'can contribute to political discussion that aims to solve collective problems justly' (p. 77). In particular, she recognized greeting, rhetoric and narrative as important additional forms of communication. However, even if this leads to more inclusive discussion, 'it remains unclear whether these procedural changes can effectively promote fair consideration' (Scudder, 2020: 509). This study found that communicative elements associated with the classic 'Habermasian' reading of deliberation such as reasoning, critical attitude, genuine questions and constructiveness are positively associated with the concept of deliberative reciprocity in online contexts. Storytelling as well as the expression of emotions did not show significant associations with deliberative reciprocity. On the one hand, these findings seem to support the theoretical argument of the classic camp. On the other hand, they also support the main argument of the expansive camp: comments of users with male user names as well as classic argumentative communication received significantly more public attention in online deliberation, thereby strengthening existing inequalities. Against this background, we should not make premature assumptions that forms of communication such as storytelling and expressions of emotions are inferior or detrimental to deliberative reciprocity. Instead, we think that we lack an expansive understanding of deliberative reciprocity, that for example may also include empathy or genuine questions (see Esau, 2022). Different forms of communication may have different functions in different contexts (Bächtiger & Parkinson, 2019). Our results, for example, indicate that humor has a positive influence on deliberative reciprocity. A joke could thus be beneficial for rational and critical political debate. Further research should focus on how different elements of deliberation are related dynamically to each other in the course of discussions in various online environments.

Another important learning derived from this study concerns gender inequality in online participation. The results of the study show that besides inequality in terms of access (Herring & Stoerger, 2014), voice (Karpowitz et al., 2012) and persuasiveness (Beauvais, 2019), women are also disadvantaged with regard to receiving both simple replying and deliberative reciprocity in online deliberation processes. This finding emphasizes concerns previously formulated by feminist authors (Bickford, 1996; Sanders, 1997; Young, 2000). Furthermore, these findings support the calls for anonymity in digital public spheres, which is supposed to have an equalizing effect since it suspends visible markers such as gender, race or socioeconomic status (Asenbaum, 2018; Herring & Stoerger, 2014).

Finally, these findings provide implications for online participation practice, which frequently intends to stimulate reciprocal discussion. Reciprocity in online discussions is a rare phenomenon (e.g., Quinlan et al., 2015; Zhou et al., 2008). This was also found to be the case in our sample, where more than two thirds of the comments (71%) did not receive any form of reciprocity. The factors found to predict reciprocity could guide community rules, moderation efforts and the design of online deliberation processes in order to stimulate reciprocity. For example, platform designers could stimulate deliberative reciprocity by providing opportunities for anonymous participation as well as restrict the length of contributions. However, since a restrictive design can be problematic with regard to free deliberation, nudging mechanisms seem to be more promising (Thaler & Sunstein, 2008). Unlike restrictive design features, nudging preserves free and complex decisions by users. However, a nudge still attempts to change user behavior by changing the choice architecture, in the sense that certain choices are more appealing for users (Menon et al., 2020). In our case, a nudge may consist of a hint that a certain statement exceeds the length of a post typical users are willing to read and respond to, or the suggestion that anonymous statements are also possible. Further research should investigate whether such nudges are able to foster reciprocal deliberation online (see Manosevitch et al., 2014).

It goes without saying that this study is subject to several limitations, which raise further research questions and opportunities. First, it can be argued that the theoretical distinction between simple replying and deliberative reciprocity online is underdeveloped and does not capture the empirical complexity. For example, when we think of comments that are disrespectful but still foster deliberative debate by introducing a striking argument or by 'waking up' other participants to join the discussion. Such comments do not receive particular attention through the framework used in this study. Future studies could approach this and focus on the relationship between disrespectful and deliberative communication. Second, since we analyzed discussions in a government-run online consultation forum, which could be considered to be a strong public online space (Esau et al., 2019; Janssen & Kies, 2005), the findings have to be interpreted with caution. Other online spaces such as social network sites, news websites or non-political online spaces may produce other results. For example, Heiss et al. (2019) found that interactions on Facebook are driven by reasoning, negative tonality, references to political competitors, humor as well as by post length. While these findings are in line with our findings, they also found that positive emotions drove users' interactions on Facebook, which was not the case in our study. Further research, thus, should analyze reciprocity in a more comparative perspective focusing on different online spaces. Third, the current study did not consider the multi-level structure of online discussions: utterances are nested in comments that are nested in threads that are nested on platforms. Future studies could use multilevel modeling, which would allow to account for the variability between different discussion topics, threads and platforms.

Finally, we restricted our focus to a set of factors that were assumed to influence reciprocity in online discussions. However, research suggests that other factors such as moderation (Wright & Street, 2007), group size (Himelboim, 2008) or platform design (Esau et al., 2017) also affect reciprocity. Future research should investigate diverse factors' influence on reciprocity and on deliberative reciprocity as one specific form of reciprocity.

This seems particularly important given today's media environment and recent societal challenges. Two decades ago, Barber (1999) characterized online discussion as follows: 'people talking without listening, confirming rather than problematizing dogmas, convicting rather than convincing adversaries, passing along responsibility to others for everything that has gone wrong in their lives' (p. 40). What Barber pointed out in this statement is a general lack of reciprocity in online discussions, a phenomenon that we still monitor today. In times of a rapid increase of communication opportunities and public voice, increasing polarization and the rise of populism, it seems more important than ever to make vigorous efforts to foster more equal participation and reciprocity in public discourses. However, such efforts can only be successful if we gain a more comprehensive understanding of reciprocity in online environments. A first step toward such an understanding has been made in this study by exploring factors that affect deliberative reciprocity in online political discussions. Further research should follow this path and contribute to a more refined understanding of deliberative reciprocity online.

Appendix

Table 2: Definitions, Frequencies and Intercoder Agreements for all Variables (N = 1.308).

Variable	Definition	Example	Frequency	PA	α
Topic relevance	Comment refers to the initial proposal at the start of the discussion thread	'This is bad programming of the website' (technical comment, no topic relevance)	98%	1	.75
Argumentation	Comment contains at least one argument (justification of a statement)	'One of the decisive arguments in favor of the THF law was the prevention of climate change in general and for the city center of Berlin in particular. The argumentation, supported by scientific expertise, says that trees in the area of the meadow hinder the cold air generation and in the peripheral areas they hinder air exchange. I am therefore against additional tree planting.'	66%	.90	.75
Respect	Comment contains no disrespect. Signs of disrespect are aggressive or offensive language, statements which are characterized by insulting, abusive, or derisive language towards other users.	'OMG!! Move to the country, Berlin is not good for you!' (disrespect) 'How can you be so stupid.' (disrespect)	99%	.99	.68
Question of information	Comment contains at least one question that asks for information	'Is it now actually guaranteed that the gardens on the southern edge will be preserved?'	7%	.95	.75
Question of reason	Comment contains at least one question that asks for reason	'What's wrong with dog owners having their say on what should change in the dog run areas?'	11%	.93	.72
Constructiveness	Comment contains at least one constructive element, e. g. proposal for a solution or compromise	'As a compromise, the park authority could be given the right to temporarily ban wind sports at its own discretion directly on site on days with large numbers of visitors in the affected areas.'	5%	.99	.81
Storytelling	Comment contains at least one narrative from a personal or reported subjective perspective	'The Allmende Gardens are one of the greatest attractions. Pedestrians are happy to find small-scale structures after the monotony of the fields and to be able to admire the small in the big. The relative chaos of the gardens in boxes is surprisingly unimportant to them, not even to the ladies in beige colored trench coats from Köpenick. While Swabian travel groups spread out modestly silent over the benches to eat their hard-boiled eggs and sandwiches, other groups of visitors are completely uninhibited to involve the gardeners in lengthy conversations…'	26%	.93	.80

(contd.)

Variable	Definition	Example	Frequency	PA	α
Positive Emotion	Comment contains at least one positive emotional expression (e. g. joy, enthusiasm, hope)	'Cycling is awesome, sport for everyone, the field a wonderful place for it!'	18%	.93	.73
Negative Emotion	Comment contains at least one negative emotional expression (e. g. anger, fear, sadness)	'The term *useful animals* says it all – thinking and feeling creatures with their own needs should only exist to fulfil a benefit for us... frightening, if you think about it more closely.'	13%	.92	.78
Humor	Comment contains at least one witty, playful or clearly not seriously meant statement that is supposed to make others laugh. Signs of humor can be e.g. surprising combinations of thoughts, puns, ambiguities.	'Petrol station becomes "filling station": Funny idea... *;-)*' (pun) 'Feldhase, ask your hopping brothers and sisters and their squeaking friends in the Hasenheide if they suffer from sleep deprivation' ('your hopping brothers and sisters and their squeaking friends' is used here as a playful, mocking language towards the user 'Feldhase'. The statement has been coded as humor and disrespect.)	8%	.95	.72
Critical attitude	Comment is critical of the initial proposal at the start of the discussion thread	'We have enough parks in Berlin that are open at night and what's the point? Smashed glass bottles, piles of rubbish, drug dealing, party tourists.'	25%	.88	.81
Gender (ref. male user name)	Comment was posted by a user with a male user name	MichaelB (male user name) Deliberation_Girl_92 (female user name)	67%	.94	.90
Activity[1] (ref. super participant)	Comment was posted by a super participant, i.e. a user that has contributed 10 or more comments	–	40%	–	–
Identification (ref. full name)	Comment was posted by a user with a full name as a user name	Surnames are characterised by a full first and last name (e.g. 'Ute Schmitz' or 'GerdKalcher').	9%	.98	.95
Simple replying	Comment addresses another comment	'That's exactly what I think.' (respectful reply to another comment, on topic, no argument)	29%	.93	.85
Deliberative reciprocity	Comment addresses another comment, stays on topic, is respectful and contains a least one argument	'This point really made me doubt but if the security staff remains in place, it is absolutely no problem to enforce at least the statutory rest period instead of closing the field to the public.'	23%	–	–

Note: The presence of the variables within a user comment was coded [1] while its absence was coded with [0]; percent agreement (PA); Krippendorff's Alpha (α); [1]Activity has been automatically coded; [2]Deliberative reciprocity is a recoded variable including exclusively replies that are on topic, respectful and argumentative.

Competing Interests

The authors have no competing interests to declare.

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