

# Building Negotiator Trust Through Social Presence – Effects of Communication Media and Information Reprocessability on Trust in Negotiations

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negotiation, trust, computer-mediated negotiation, information reprocessability, experiment

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## Abstract

Despite growing prevalence of digital communication, computer-mediated negotiations have a negative reputation in scientific research. However, extant studies focused predominantly on lean communication technologies (e.g., email). We examined effects of communication media on trust and negotiation outcomes considering current-state technologies with rich information transmission (i.e., videoconferencing). Based on communication and trust theories, we expected that video-based as compared to face-to-face negotiations lead to lower trust due to perceptions of lower social presence, higher psychological distance, and higher risk in video conferences. However, we expected information reprocessability as technological feature to reduce risk perceptions and thereby the negative effect of communication medium. In a preregistered experimental study ( $n = 320$ ), dyads negotiated a work contract. Communication medium (face-to-face – video conference) and information reprocessability (not videotaped – videotaped) were manipulated in a between-subject design with time (pre-negotiation – post-negotiation) as additional within-subject factor. Perceived risk, psychological distance, and social presence were measured as mediating processes. Consistent with our hypotheses, communication medium affected trust indirectly via social presence. However, the overall differences between communication media regarding trust, economic outcomes, and negotiation time were not significant. Together, the findings suggest that face-to-face and computer-mediated negotiations can yield quite similar results when using rich communication media.

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### Introduction

Globalization and technological progress increase the use of digital communication technologies in negotiations (Berger, 2013; Backus et al., 2020; Mazei & Hertel, 2016). In fact, computer-mediated communication has become the “new normal” in many workplace settings over the past years (Raghuram et al., 2019, p. 308). This development has further been accelerated by the global COVID-19 pandemic that has made digital communication a necessity in many fields overnight in order to handle travel restrictions or the need for physical distancing. At least part of these changes is quite likely to remain after the current pandemic (e.g., Rudolph et al., 2021).

Despite this increasing prevalence of digital communication, computer-mediated negotiations (i.e., “negotiations using media other than face-to-face communication”; Stuhlmacher & Citera, 2005, p. 70) suffer from a rather bad reputation. Previous research suggests that computer-mediated negotiations lead to lower interpersonal trust than face-to-face settings (e.g., Geiger, 2020; Lu et al., 2017; Naquin & Paulson, 2003), which in turn might cause more hostile behavior and inferior economic outcomes (e.g., Kong, et al., 2014; Stuhlmacher & Citera, 2005). Therefore, computer-mediated negotiations seem not to be advisable despite potential benefits such as lower travel costs and higher scheduling flexibility.

However, we argue that extant research might underestimate the potential of computer-mediated negotiations by focusing on lean communication media. So far, existing frameworks on computer-mediated negotiation (e.g., Thompson & Nadler, 2002) as well as most primary studies predominantly considered email or text-based communication (see Geiger, 2020; Kersten & Lai, 2007; Lu et al., 2017; Stuhlmacher & Citera, 2005) with rather slow and/or restricted content transmission. In contrast, few research has explored effects of rich media in negotiations, such as videoconferencing, although this technology is increasingly standard in the last years (Ebner, 2017; Ebner, 2021; Geiger, 2020). Moreover, the strong focus on text-based media in research on computer-mediated negotiations intertwines multiple aspects of social interactions, such as media richness, media synchronicity, and channel of communication (i.e., text vs. language). As a consequence, it is unclear which specific characteristics of computer-mediated negotiations might be responsible for differences in negotiations, and potential positive effects of computer-mediated communication (CMC) might be overlooked.

The current study systematically investigates how and why negotiations are altered when digital communication technologies are used. In doing so, we revisit findings from the late 1990ies and early 2000s (e.g., Moore et al., 1999; Naquin & Paulson, 2003) given that communication technology has advanced considerably in the last two decades (e.g., Kurtzberg et al., 2018; Raghuram et al., 2019; Waytz & Gray, 2018). We detangle the various mechanisms that might cause differences between face-to-face and computer-mediated negotiations. Specifically, we compared face-to-face negotiations with video-based negotiations conducted via a modern video conferencing tool. In a

preregistered experimental study<sup>1</sup>, we investigated how computer-mediation and information reprocessability (i.e., due to videotaping) affect trust in negotiations.

The current study makes the following contributions to the literature: First, by comparing face-to-face with video-based negotiations, we address important but so far neglected negotiation context with high practical relevance in current work contexts. At the same time, we advance existing theory by providing a focused test of mediated communication effects while other relevant aspects of communication (synchronicity, richness of information, etc.) are kept constant. Notably, these different communication features are often confounded in prior research, making clear conclusions about the underlying processes difficult (e.g., Naquin & Paulson, 2003). Second, we advance existing theory on computer-mediated negotiations and interpersonal trust by using media theories (e.g. Dennis et al., 2008) to explain how and why social exchange is altered in online negotiations. Specifically, we examine the perceived risk, psychological distance, and social presence in a situation as mechanisms of communication media effects on trust in negotiations. Moreover, we test whether information reprocessability as a core feature of CMC can reduce the perceived risk in negotiations (e.g., Breuer et al., 2016; Gefen et al., 2008) and might even lead to advantages of online as compared to face-to-face settings. Finally, the current research contributes to the small but important literature on trust emergence and trust development in negotiations (Kong et al., 2017; Lu et al., 2017; Yao & Storme, 2021), and provides insights on social-emotional negotiation outcomes, which are far less investigated than economic negotiation outcomes in computer-mediated negotiations (Geiger, 2020).

### **Negotiations, Trust, and Social Exchange**

Negotiation is “an interpersonal decision-making process necessary whenever we cannot achieve our objectives single-handedly” (Thompson et al., 2010, p. 493). Following this definition, negotiations are an important part of business and everyday life (Thompson, 1990), and can take place in many different situations (e.g., negotiating individual salary, negotiating business contracts, discussing with friends or family to decide on weekend activities). Typically, negotiations involve the exchange of both material/economic and immaterial/social goods (e.g., Kong et al., 2014; Mertes et al., 2021). Thus, in this study, we consider negotiations as social exchange situations (e.g., Blau, 1967; Mertes et al., 2020; Mitchell et al., 2012), and focus on specific media characteristics (e.g., Dennis et al., 2008) that can alter the processes and outcomes of negotiations.

We focus on negotiator trust because trust is an important component for initiating, establishing, and maintaining social relationships (e.g., Balliet & Van Lange, 2013; Lewicki & Polin, 2013). Trust is commonly defined as “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, irrespective of the ability to monitor or control that other part” (Mayer et al., 1995, p. 712). According to Social Exchange Theory, the provision of beneficial resources by one exchange party creates an obligation to return beneficial resources for the other party (e.g., Blau, 1967; Gouldner, 1960). However, neither party can be sure that the other party will indeed reciprocate. Therefore, trust is essential in social exchange situations (Blau, 1967) as important precondition for reaching beneficial outcomes in negotiations and other organizational contexts (e.g., Breuer et al., 2016; Colquitt et al.,

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<sup>1</sup> All hypotheses were preregistered via open science framework. Our preregistration included three additional hypotheses. However, we do not cover these hypotheses in this paper to maintain a clear focus. Results regarding the additional hypotheses are available upon request. The preregistration is accessible using the following link: <https://osf.io/47cqn>

2007; Kong et al., 2014; Yao et al., 2021). Importantly, however, trust is often an important negotiation outcome itself. As many negotiations take place in long-term relationships, in business as well as in other contexts, previously built trust can facilitate future interactions serving as currency (Kong et al., 2017; Lewicki & Stevenson, 1997; Yao & Storme, 2021).

Existing theory considered post-negotiation trust as consequence of structural and processual factors (e.g., Kong & Yao, 2019; Lewicki & Stevenson, 1997) suggesting negotiator attributes, counterpart attributes, context attributes (Lu et al., 2017), and their interplay as potential trust antecedents (Levine et al., 2018; Sondern & Hertel, 2019). However, few empirical works have investigated trust as negotiation outcome, thus providing only limited evidence that negotiator attributes (e.g., affect, negotiation behavior), counterpart attributes (e.g., negotiation behavior, reciprocity) and contextual attributes (e.g., previous relationship, communication medium) affect negotiator trust (Kurtzberg et al., 2018; Lu et al., 2017; Sondern & Hertel, 2019; Yao et al., 2017).

### Computer-Mediated Negotiations

Past computer-mediated negotiation research has been conducted in two rather separate research traditions. In the organizational behavior and management field, researchers considered communication technology as a tool that enables communication among negotiators (Kersten & Lai, 2007) and focused on the association between communication media, negotiation processes and negotiation outcomes (e.g., Geiger, 2020; Lim & Benbasat, 1992). In the group decision support systems field, researchers focused more on the software supporting negotiations, and on the socio-technical system constituted by the interaction of negotiators with negotiation support systems (i.e., software designed to support negotiators more substantively in their negotiation activities, beyond mere provision of a communication channel; Kersten & Lai, 2007; Lim & Benbasat, 1992).

Existing research suggests that computer-mediated as compared to face-to-face negotiations require more negotiation time (Purdy et al., 2000), lead to more hostile negotiation behavior, inferior economic negotiation outcomes (e.g., Stuhlmacher & Citera, 2005), less rapport (e.g., Moore et al., 1999; Morris et al., 2002), and less interpersonal trust before and after negotiations (e.g., Geiger, 2020; Lu et al., 2017; Naquin & Paulson, 2003). Moreover, research on negotiation support systems showed that negotiation support systems increase constructive negotiation behavior and lead to better negotiation outcomes (e.g., Delaney et al., 1997; Gettinger et al., 2012; Jonker et al., 2016; Rangaswamy & Shell, 1997). Yet, research in both traditions has strongly relied on the comparison of email- to face-to-face negotiations, thus neglecting richer communication media (Kersten & Lai, 2007; Lim & Yang, 2004; Lu et al., 2017; Stuhlmacher & Citera, 2005). In fact, video was the least investigated communication medium in the past six decades despite its high importance in practice (Geiger, 2020). Therefore, video-based negotiations as research topic constitute an academic blind spot and potential practitioner pitfall (Ebner, 2017).

Although considerable knowledge about computer-mediated negotiations exists, there are various shortcomings in the literature. First, the strong focus on email as representative technology of computer-mediated negotiation is problematic as the comparison of text-based with face-to-face negotiations intertwines multiple aspects relevant for social interactions, such as media richness, media synchronicity, and channel of communication (i.e., text vs. language). Moreover, such a comparison neglects that the communication media differ in core media characteristics (see Table 1; e.g., Clark & Brennan, 1991; Dennis et al., 2008), which may hinder or support specific social processes (Geiger, 2020; Hertel et al., 2017) and as consequence affect trust between negotiators. Therefore, the communication media used in negotiations should be differentiated and compared based on their media characteristics.

So far, most existing research has compared computer-mediated negotiations using media with very different media characteristics. Specifically, email and face-to-face communication differ in all media characteristics suggested by two well accepted theories: Grounding in Communication and Media Synchronicity Theory (see Table 1; for a more detailed overview, see Geiger, 2020). Thus, the media characteristics and subsequent psychological processes that might have caused disadvantages in computer-mediated negotiations remained unclear. Moreover, potential positive effects of some media characteristics might have been overlooked when comparing media differing in many characteristics. As a consequence, more systematic comparisons of media attributes are desirable to advance our understanding of computer-mediated negotiations and to account for mixed findings in the literature (see Geiger, 2020; Swaab et al., 2012). Comparing video-based and face-to-face negotiations is such a systematic test because co-presence, which provides physical and tactile communication cues (e.g., touching, shaking hands), is a key difference between face-to-face and CMC that could affect negotiations (see Table 1; Clark & Brennan, 1991; Dennis et al., 2008; Ebner, 2017).

**Table 1**

*Comparison of core media characteristics of face-to-face, video, and email communication based on the review of Geiger (2020) as well as the theoretical frameworks by Clark and Brennan (1991), and Dennis et al. (2008)*

Framework	Media characteristics	Communication medium		
		Email	Video	F2F
Grounding in Communication (GIC)	<b>Co-presence:</b> A and B are located in the same physical environment	<b>No</b>	<b>No</b>	Yes
	<b>Visibility:</b> A and B can see each other	<b>No</b>	Yes	Yes
	<b>Audibility:</b> A and B can talk to each other	<b>No</b>	Yes	Yes
	<b>Co-temporality:</b> B receives something at the same time A sends it	<b>No</b>	Yes	Yes
	<b>Simultaneity:</b> A and B can send and receive at the same time	<b>No</b>	Yes	Yes
	<b>Sequentiality:</b> Communication cannot be interrupted by third parties	<b>No</b>	Yes	Yes
	<b>Reviewability:</b> B can review messages sent by A	<b>Yes</b>	No	No
	<b>Revisability:</b> A can revise their messages to B	<b>Yes</b>	No	No

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	<b>Symbol sets:</b> Number of possible ways/channels to encode communication	<b>Medium by attachments</b>	<b>Medium</b>	Large
	<b>Transmission velocity,</b> at which the message can be sent	<b>Low to Medium</b>	High	High
Media Synchronicity Theory (MST)	<b>Reprocessability:</b> Extent to which the medium allows the message to be reviewed	<b>Yes</b>	<b>Yes, if recorded by software</b>	No (unless videotaped by cameras)
	<b>Rehearseability:</b> Possibility to practice or optimize a message before sending	<b>Yes</b>	No	No
	<b>Parallelism:</b> Number of possible parallel transmissions of a message	<b>High</b>	Limited (tech. restrictions)	Limited to attendees

*Note.* Email refers to an asynchronous exchange of messages (i.e., not instant messaging). Text in bold- and italics-type letters indicates differences of either video or email communication from face-to-face communication. GiC = Grounding in Communication (Clark & Brennan, 1991); MST = Media Synchronicity Theory (Dennis et al., 2008); F2F = face-to-face; tech. = technical.

Second, extant literature is rather short of research on negotiations with more advanced communication technologies with video transmission (e.g., Ebner, 2021; Geiger, 2020). This may be due to the assumption that similar media, such as video and face-to-face, do not differ with respect to negotiation processes and outcomes (Ebner, 2017). However, this assumption is yet to be tested. Indeed, Pesendorfer and Koeszegi (2006) found considerable differences when comparing synchronous and asynchronous text-based negotiations in a qualitative study.

Third, most primary studies on computer-mediated negotiations are rather old (see Lu et al., 2017; Stuhlmacher & Citera, 2005; Swaab et al., 2012, for meta-analyses). For instance, two decades ago video conferencing research was conducted with technical platforms strongly differing from those used today regarding the software, hardware, screen size, and audio/video quality, and people were far less experienced with video conferencing (Ebner, 2017; Geiger, 2020). Finally, many different theoretical perspectives on computer-mediated negotiations co-exist while largely lacking integration (Geiger, 2020). Indeed, studies often seem to choose those theories that provide an explanation for a specific phenomenon. Addressing this issue and diverging empirical findings from the literature, Swaab et al. (2012) suggested a rather parsimonious framework that, however, does not include predictions about social-emotional negotiation outcomes. In sum, a unified theoretical framework is still lacking. Thus, a proper and contemporary understanding of how computer-mediated negotiations using modern technology affect interpersonal trust and other negotiation outcomes is lacking. This is problematic as theory suggests that the employed communication medium affects trust, which “can play a crucial role in explaining the key differences between virtual and face-to-face negotiations” (Kong & Yao, 2019, p. 124).

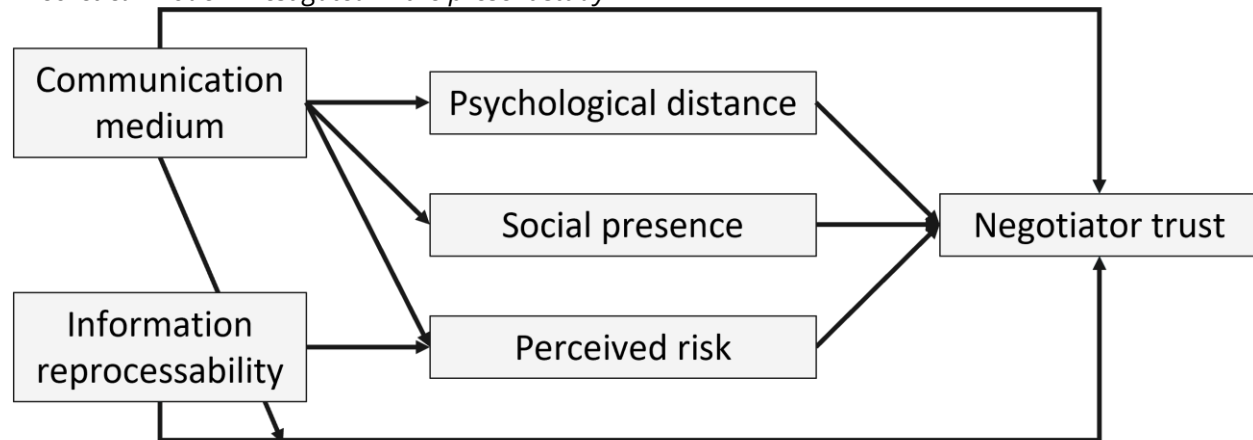


## The Present Research: Trust in Computer-Mediated Negotiations

The present study initially addresses the described shortcomings. Specifically, we compare face-to-face and video-based negotiations as two very similar communication media mainly differing with respect to negotiator co-presence. Thus, we test negotiator co-presence as a causal factor for differences in negotiator trust between face-to-face and computer-mediated negotiations while holding other media characteristics and context factors constant. In doing so, we also investigate social presence, psychological distance, and risk perceptions as potential underlying psychological mechanisms. Moreover, we address the assumption that face-to-face and video as very similar communication media lead to similar economic and socioemotional negotiation outcomes. Further, we examine whether the documentation of negotiations (i.e., information reprocessability) as feature provided by modern video conferencing tools can serve as a resource in computer-mediated negotiations by addressing the increased risk in online environments. Figure 1 shows our theoretical model.

**Figure 1**

*Theoretical model investigated in the present study*



Despite the high similarity of face-to-face and video communication (i.e., both are high synchronicity media using visual and auditory channels for communication) and people's increased experience with CMC (Ebner, 2017; Raghuram et al., 2019; Waytz & Gray, 2018), we assume that video-based negotiations lead to lower post-negotiation trust than face-to-face negotiations. According to SET as our overarching theoretical framework, many conditions can affect social exchange processes—among them the “context in which the exchange takes place” (Blau, 1967, p. 98). Therefore, the communication medium should play an important role because its restrictions and functionalities should shape the exchange setting and actual exchange. Communication theories associate CMC with perceptions of higher psychological distance and less social presence, ambiguous communication, depersonalization, and behavioral disinhibition (e.g., Daft & Lengel, 1986; Dennis et al., 2008; Short et al., 1976; Wellens, 1986). Therefore, we argue that the lack of negotiator co-presence in video-based negotiations affects the social exchange processes, the negotiators' perceptions of their counterpart and the exchange situation, and as consequence negotiator trust. Specifically, video-based and face-to-face communication in negotiations should constitute different exchange situations altering the negotiation process in at least three ways.

First, video-based negotiations should lead to lower negotiator trust than face-to-face negotiations because the media differ in the support of social presence. First conceptualized by Short

et al. (1976) as the salience of the interactants and their relationship in mediated communications, we understand social presence as the moment-by-moment awareness of the co-presence of another real person accompanied by a sense of engagement and understanding with this person (Biocca et al., 2001; Oh et al., 2018). Creating this awareness and engagement is important for successful media use (Biocca et al., 2001) and thus should be a crucial element of computer-mediated interactions (Oh et al., 2018). Yet, some social and non-verbal cues can only be transmitted in face-to-face communication (e.g., touch) and some cues (e.g., proximity, eye contact) are distorted when transmitted via media with restricted communication channels (Biocca et al., 2003; Dennis et al., 2008; Short et al., 1976). The possibility to transmit such social and non-verbal cues contributes to the degree of social presence supported by a medium (e.g., Biocca et al., 2003; Short et al., 1976). As the lack of negotiator co-presence, the screen size, and the quality of the image captured by the camera in video-based negotiations restrict the transmission of social and non-verbal cues (e.g., Basch et al., 2020), video-based negotiations should lead to lower perceptions of social presence than face-to-face negotiations. Empirical research supports this assumption (e.g., Basch et al., 2020; Biocca et al., 2001; Short et al., 1976). Moreover, the physical/tactile communication channels lacking in video negotiations are important for building an interpersonal, emotional connection (Ebner, 2017). Overall, the feelings of separation, the lower levels of social interaction, and the reduced social presence should impair the development of negotiator trust in video-based negotiations because CMC increases situational uncertainty and accurate judgements of the counterpart's trustworthiness become more difficult (Mayer et al., 1995).

Second, video-based negotiations should lead to lower negotiator trust than face-to-face negotiations because CMC leads to different perceptions of psychological distance (i.e., a feeling that someone is close or far away from the self; Gino & Galinsky, 2012; Trope & Liberman, 2010). The number and variety of available communication channels should affect how spontaneous, fast, and flexible communication is, and how psychologically close or distant people feel when using CMC (Wellens, 1986). The more communication bandwidth decreases, the more people should perceive their counterpart as psychologically distant (Wellens, 1989). Despite the technological progress in the last decades and the constantly increasing audio and video quality of CMC, we posit that negotiators in computer-mediated and delocated negotiations should still perceive their counterpart as psychologically more distant than in face-to-face negotiations due to the restricted communication bandwidth and factual physical separation (Dennis et al., 2008; Trope & Liberman, 2010). While feelings of psychological closeness bond people together (Gino & Galinsky, 2012), psychological distance should lead to feelings of separation and a more object-like treatment of the counterpart (Short et al., 1976). Such increased feelings of psychological distance, depersonalization, and separation from the counterpart resulting from the lack of negotiator co-presence in video-based negotiations should impair trust development as negotiators should be less willing to make themselves vulnerable to someone they feel disconnected with. Existing negotiation research supports these basic theoretical assumptions (e.g., Lu et al., 2017; Naquin & Paulson, 2003; Stuhlmacher & Citera, 2005).

Third, video-based negotiations should lead to lower negotiator trust than face-to-face negotiations because mediated communication leads to different risk perceptions (i.e., an individual's assessment of how risky a situation is in terms of situational uncertainty and the possibility to control uncertainty; Sitkin & Weingart, 1995). When making trust decisions, risk perceptions play an important role as they may affect people's perceived consequences of trusting behavior (Mayer et al., 1995). Assessing the risk in a situation typically involves monitoring the environment and considering context factors, such as the communication medium (Van der Werff et al., 2019). Negotiators should perceive computer-mediated negotiations as riskier due to a lower experience of situational control, increased



perceived risks of misunderstandings, and greater opportunities for deception and exploitation by others (Naquin & Paulson, 2003; Thompson & Nadler, 2002). This increased perception of risk in computer-mediated negotiations should lead to a lower motivation to trust the counterpart and to make oneself vulnerable (Naquin & Paulson, 2003; Van der Werff et al., 2019), and therefore to lower trust as compared to face-to-face negotiation. Thus, we predict:

**H1.** Video-based negotiations lead to lower post-negotiation trust between negotiators as compared to face-to-face negotiation.

**H2a.** The relationship between communication media and negotiator trust is mediated by perceived social presence.

**H2b.** The relationship between communication media and negotiator trust is mediated by perceived psychological distance.

**H2c.** The relationship between communication media and negotiator trust is mediated by perceived risk.

However, CMC not only comes with restrictions for social exchange, but can also provide benefits such as a high accessibility of information, automatization, or reprocessability of information (Hertel et al., 2017). As trust is closely related to risk perceptions (see Mayer et al., 1995), Gefen et al. (2008) suggested identifying risk-reducing IT tools to manage the increased risk perceptions in online environments in order to facilitate trust. Aside from the lack of negotiator co-presence, video-based and face-to-face negotiations may also differ regarding information reprocessability (i.e., reviewability of the communication; Dennis et al., 2008) unless face-to-face meetings are equipped with external video technology (see Geiger, 2020). This means, CMC enables an easy or even automatic storage of many working steps (Dennis et al., 2008). Such a documentation of interactions may provide many advantages in collaborative settings (Breuer et al., 2016; Hertel et al., 2017). For instance, information reprocessability as characteristic of the employed negotiation medium is a context factor that may affect the assessment of situational risk (e.g., Van der Werff et al., 2019). Contrary to the negative effects suggested for CMC, we assume that information reprocessability leads to higher levels of post-negotiation trust between negotiators. Specifically, information reprocessability, as a feature inherent in many digital communication media, should serve as a resource for negotiators. When all statements and actions during a negotiation are videotaped and thus documented, the perceived risks and the factual appearance of deception and exploitation should be reduced (e.g., Breuer et al., 2016; Hertel et al., 2017). Further, the implementation of an accountability mechanism could be beneficial for negotiations in general, and computer-mediated negotiations in specific (Thompson & Nadler, 2002). Therefore, information reprocessability should decrease the perceived risks in negotiations, increase negotiators' trust motivation and result in higher negotiator trust (Naquin & Paulson, 2003; Van der Werff et al., 2019).

Notably, it seems that information reprocessability, which is also a feature of email negotiations (see Geiger, 2020; Thompson & Nadler, 2002), was not sufficient for establishing trust in email negotiations more than a decade ago (e.g., Lu et al., 2017; Naquin & Paulson, 2003). However, we think that information reprocessability is less powerful in email negotiations due the asynchronicity of email communication and related feelings of anonymity (see for example research on escalating communication or "flaming" in email communication, e.g., Turnage, 2007). Moreover, reprocessability in email communication only provides proof of what has been written, which should

reduce personal accountability (Thompson & Nadler, 2002). In contrast, reprocessability in video or personal communication provides proof of both the actors and their statements, thus increasing negotiators' personal accountability. In sum, the high degree of anonymity in email communication should be detrimental for building negotiator trust (Thompson & Nadler, 2002). Therefore, information reprocessability should be a helpful tool to establish trust particularly in synchronous communication and when a visual channel is provided.

Moreover, we expect information reprocessability to be more beneficial in computer-mediated as compared to face-to-face negotiations because the possibility to review a past negotiation addresses the risk in a negotiation situation. As negotiators should have higher risk perceptions in computer-mediated negotiations (Gefen et al., 2008; Naquin & Paulson, 2003; Thompson & Nadler, 2002), we argue that information reprocessability as a potential risk-reducing tool should be more advantageous in computer-mediated negotiations as it specifically addresses the negotiators' worries and concerns prevalent in such a negotiation situation. Thus, we predict:

**H3.** Negotiations with information reprocessability lead to higher post-negotiation trust of negotiators than negotiations without information reprocessability.

**H4.** The relationship between information reprocessability and negotiator trust is mediated by perceived risk.

**H5.** Communication media moderate the relationship between information reprocessability and post-negotiation trust such that the relationship is stronger in video-based negotiations than in face-to-face negotiations.

## Methods

To test our hypotheses, we conducted an experimental laboratory study employing a 2 x 2 x 2 design with the between-subject factors communication medium (face-to-face vs. video conference) and information reprocessability (not videotaped vs. videotaped), and the within-subject factor time (pre-negotiation vs. post-negotiation). The participants were randomly assigned to one of four experimental conditions and to a negotiation counterpart. The negotiation task was an adaptation of the paradigm applied by Olekalns and Smith (2009). The participants had to negotiate seven issues of a work contract—one distributive, four integrative, and two indifference issues<sup>2</sup>. Both negotiation parties could obtain between 0 and 18.800 points depending on the negotiated agreement. Further, both parties had an alternative to a negotiated agreement (i.e., a BATNA) that was worth 9.000 points. The negotiation task was the same for all dyads, however the negotiators either negotiated face-to-face or via video conference using a laptop (communication medium manipulation), and the

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<sup>2</sup> Instructions and payoff schedules for both negotiation parties can be accessed using the following link: [osf.io/pcr8z](https://osf.io/pcr8z). For distributive issues, both parties have opposing interests and value the issue equally high (i.e., obtaining more points leads to an equal loss for the counterpart). For integrative issues, parties have opposing interests, however they value issues differently. Thus, it is possible to find mutually beneficial agreements based on preferences. For indifference issues, only one party is interested in the specific issue, whereas the other party is not interested at all. However, the party who is not interested in the issue can deceive the other party about the value of the indifference issue to enforce concessions on other issues.

negotiation was either videotaped or not (information reprocessability manipulation) depending on the experimental condition. In the face-to-face condition, we recorded the negotiation using two digital cameras placed on tripods, whereas we used the recording function of the video conference software *Skype* ([www.skype.com](http://www.skype.com)) in the online condition.

### Sample

Based on a power analysis with *G\*Power* assuming medium sized effects (Faul et al., 2007), 160 negotiation dyads (i.e., 320 participants) were necessary to have sufficient statistical power for our analyses. After the data collection, our sample consisted of 320 complete data sets. Four dyads had to be excluded prior to data analysis due to technical or instructional problems during the experiment, and we collected four additional dyads in the respective experimental conditions. Thus, our final sample consisted of 320 German-speaking adults (169 males, 149 females, no gender information for 2 participants;  $M_{age} = 24.18$ ;  $SD = 4.83$ ) in 160 negotiation dyads (35 female-female, 44 male-male, and 81 mixed-gender dyads). The participants were recruited in a German city with a large university using social media, notice boards, flyers, email distribution lists, and a participant database of the university. Over 90 percent of the participants were students. On average, the participants indicated moderate levels of negotiation experience ( $M = 2.60$ ,  $SD = 1.33$ ), medium levels of video call experience ( $M = 4.43$ ,  $SD = 1.43$ ), and very low levels of counterpart familiarity ( $M = 1.34$ ,  $SD = 1.12$ ) on 7-point scales. For their participation, all participants received 15 Euros, feedback on their negotiation performance, and scientific negotiation tips. Further, we informed all participants at the beginning of the study that the 25 negotiators with the best individual negotiation outcomes would receive an additional 30 Euros after the completion of our data collection.

### Procedure

Prior to the study, the participants selected possible dates for their participation from multiple options in a survey on the online scheduling website *Doodle* ([www.doodle.com](http://www.doodle.com)). Based on their availability, the participants were randomly assigned to a negotiation dyad and a participation date. Further, the participants were randomly assigned to their role in the negotiation simulation (i.e., either applicant or recruiter). Then, we invited both dyad members by separate emails to participate in our study and asked them to come to separate laboratory rooms. All rooms used (i.e., two office rooms and one larger negotiation/conference room) were located in the same building. However, the participants started the study separately in rooms located on different floors to avoid contact between participants before the actual negotiation.

Each dyad was assigned to one of the four experimental conditions based on an a-priori created randomization plan. When the participants arrived at the assigned laboratory room, the trained experimenters welcomed the participants and gave them a brief standardized introduction to the experiment. Then, the participants read instructions for the experiment and were asked to give their informed consent for participation. When both participants had given consent, the actual experiment started. First, participants completed an online survey providing general information about the upcoming negotiation simulation and the negotiation setting (i.e., the applied communication medium and whether they would be videotaped or not). Then, the participants simultaneously received their role-specific instructions from the experimenters and had ten minutes to prepare themselves for the negotiation (e.g., by reading the instructions and taking notes). After preparation time, the experimenters initiated a short video call via *Skype* (max. 1 min. duration), to give the participants a first impression of their counterpart. The participants were asked to take their

role and to introduce themselves during the video call. Afterwards, the participants once again received information about the negotiation setting, completed two pre-negotiation questionnaires, and received final instructions for the negotiation from the experimenters.

Depending on the experimental condition, the participants negotiated either face-to-face or via video conference. In the face-to-face condition, the experimenters led the participants to the negotiation room where the participants met in person for the first time and took a seat at opposite sides of a table. In the online condition, the participants stayed in the office rooms and the experimenters initiated a video call via Skype. Once the communication setting was established, the experimenters additionally started the video recording in the information reprocessability condition and informed the participants that the subsequent negotiation would be recorded. Regardless of the experimental condition, the experimenters gave final instructions, handed a stopwatch to each participant, answered questions, and then left the room. After the experimenters had left the room, the participants had 30 minutes to negotiate. The participants could either agree on one of the five given options for each negotiation issue (i.e., agreement) or decide one-sidedly or mutually to accept their respective alternative offer (i.e., impasse; only one dyad reached impasse). If the participants did not reach agreement within 30 minutes, the experimenters ended the negotiation once the time limit had expired (i.e., an impasse). Upon termination of the negotiation, the participants wrote down the terms of agreement and the experimenters checked the agreement. Depending on the experimental condition, the experimenters ended all video recordings and video calls, and participants returned to their laptop, where they answered the post-negotiation questionnaires. Once the participants had finished the questionnaires, the experimenters compensated and debriefed the participants.

## Measures

We adapted items to the context of negotiations if necessary and used the common procedure of back-and-forth translation when no German version of a questionnaire was available. The initial translation was performed by the first author to ensure expertise in the field of negotiation and trust, the back translation was performed by a bilingual student assistant to ensure language proficiency. Disagreements regarding the translations were resolved by discussion. In the following, we first report our focal measures (i.e., dependent and mediating variables), then we report additional and control measures.

### ***Dependent and Mediating Variables***

We measured negotiators' pre- and post-negotiation trust using the *Organizational Trust Inventory-Short Form* (OTI-SF; Cummings & Bromiley, 1996) that was adapted for negotiation contexts by Naquin & Paulson (2003). The OTI-SF consists of 12 items assessing the negotiators' trust in their counterpart on a 7-point scale (1 = *totally disagree* to 7 = *totally agree*). The OTI-SF measures three dimensions of trust (good-faith, honesty, and reliability) and an overall score for trust can be calculated ( $\alpha_{Pre} = .79$ ;  $\alpha_{Post} = .85$ ). A sample item is "In my opinion, the other party is reliable". As suggested by Naquin and Paulson (2003), the pre- and post-negotiation measure were identical except that the pre-negotiation questionnaire was in future tense. Moreover, we assessed trust development using the 2-item measure by Yao et al. (2017) that was rated on a 7-point scale ( $\alpha = .90$ ; 1 = *totally disagree* to 7 = *totally agree*). A sample item is "I trust the other party more than at the beginning of the negotiation".

To assess social presence, we adapted 6 items from the *Networked Minds Measure of Social Presence* (Biocca et al., 2001) – a widely used measure for social presence (see Oh et al., 2018). We

used each three items from the dimensions *mutual awareness* and *mutual understanding*. The participants rated on a 7-point scale (1 = *totally disagree* to 7 = *totally agree*) how strong they perceived their counterpart's presence in the negotiation ( $\alpha = .75$ ). Sample items are "It often felt to me as if my counterpart and I were in the same office together." (mutual awareness), and "I was able to clearly communicate my intentions to my counterpart." (mutual understanding).

To assess psychological distance, we used the *Inclusion of other in the self scale* (Aron et al., 1992) and an item adapted from Gino and Galinsky (2012). The Inclusion of other in the self scale is a picture-based measure showing participants two circles symbolizing themselves and their counterpart. There are seven different pictures in which the two circles overlap to a different degree. The participants had to decide on this 7-point scale which picture reflected the relationship with their counterpart best. The item adapted from Gino and Galinsky (2012) was "How close/distant did you feel from your counterpart in the negotiation". The participants rated this item on a 7-point scale from 1 (*very close*) to 7 (*very distant*). We averaged both items to obtain our measure of psychological distance ( $\alpha = .72$ ).

As measure of perceived risk, we used three self-constructed items assessing participants' thoughts about the upcoming negotiation. Following Sitkin and Weingart (1995), we asked the participants whether they perceived the negotiation as threatening and negative situation with potential for loss. Specifically, the participants had to rate their agreement concerning three statements about the negotiation on a 7-point scale ( $\alpha = .73$ ; 1 = *totally disagree* to 7 = *totally agree*). A sample item is "I believe that I can be exploited in the upcoming negotiation".

As a measure of the economic negotiation outcome, we calculated the individual outcome of each negotiator by adding the points the negotiator achieved in the negotiation simulation. For the joint negotiation outcome, we calculated the sum of the scores both negotiators of a dyad achieved. Moreover, the negotiation time was assessed by the experimenters using stopwatches.

### **Additional and Control Variables**

As control variables, we measured the participants' disposition to trust ( $\alpha = .61$ ) by the measure of Mayer and Davis (1999), video call affinity ( $\alpha = .79$ ) by three items adapted from the *email-affinity scale* (Geiger & Parlamis, 2014), negotiation experience (two items;  $\alpha = .91$ ), experience with video conferences (two items;  $\alpha = .48$ ), perceived power (three items,  $\alpha = .76$ ; Sondern & Hertel, 2019), and counterpart familiarity (one item). For exploratory and replication purposes, we also assessed several additional variables: negotiation behavior (12 items by Gunia et al., 2011), self-reported deception (three items), positive and negative reciprocity (two items for each construct from Sondern & Hertel, 2019), escalating reciprocity (two self-constructed items), and subjective negotiation outcomes (*Subjective Value Inventory*; Curhan et al., 2006).

## **Results**

We conducted our main analyses with the package *lme4* of the statistics software *RStudio*. To test our hypotheses while controlling for the dyadic nature of our data (i.e., data within dyads are statistically dependent) as well as potential actor and partner effects, we calculated multiple linear mixed models (LMMs) with negotiators (level 1) nested within negotiation dyads (level 2) and our experimental factors as dummy-coded predictors (e.g., Kenny & Kashy, 2011). For communication medium *face-to-face* served as reference group, for information reprocessability the reference group was *not videotaped*. We controlled for negotiators' role in our analyses to test empirical distinguishability of dyad members and for potential actor and partner effects (e.g., Kenny & Kashy,



2011; Nestler et al., 2015). As controlling for negotiators' role did not change the results, dyad members were not empirically distinguishable. Thus, we report our analyses without controlling for negotiators' role. For mediation analyses, we followed the common statistical procedures (MacKinnon et al., 2007; Preacher & Hayes, 2004) and used the regression weights obtained from LMMs to calculate indirect effects. We then used Level-2 bootstrapping and calculated confidence intervals (CI) based on the standard deviation of the bootstrapped indirect effects to test the indirect effects for significance (e.g., Hayes, 2009; Kenny et al., 2003). When testing a specific mediator, we initially controlled for the remaining mediators in our LMMs. However, we report our mediation analyses without control variables as including the other mediators as control variables did not change results. The  $\alpha$ -level was .05 for all analyses and the reported  $p$ -values are two-tailed if not noted otherwise. For directed hypotheses, we tested one-tailed (e.g., Field et al., 2012). Table 2 provides descriptive statistics, scale reliabilities and intercorrelations for dependent, mediating, and control variables.

Prior to our analyses, we tested whether randomization between the experimental conditions was successful with respect to control and demographic variables. For age, dyad gender composition, negotiation experience, video experience, disposition to trust, and counterpart familiarity we found no group differences (for ANOVAs or  $\chi^2$ -Tests: all  $p > .08$ ). Only video call affinity was slightly unbalanced, with the participants in the video condition reporting higher video call affinity than the participants in the face-to-face condition ( $p = .02$ ). However, given that video call affinity did not correlate with our dependent variables, we calculated our models without control variables.

Moreover, we conducted confirmatory factor analyses (CFA) to examine the construct validities of post-negotiation trust, perceived risk, social presence, and psychological distance. First, we conducted CFA and confirmed the three-factor structure of the OTI-SF ( $\chi^2 = 151.26$ ,  $df = 51$ , CFI = .95, RMSEA = .08, SRMR = .07). Second, we tested a three-factor model with each mediating variable as separate factor. Results indicated only close to acceptable fit ( $\chi^2 = 177.09$ ,  $df = 41$ , CFI = .91, RMSEA = .10, SRMR = .09). As the items of the mutual understanding dimension of social presence had low factor loadings on the social presence factor, we fitted a four-factor model with two separate factors for the dimensions of social presence ( $\chi^2 = 41.59$ ,  $df = 38$ , CFI = 1.00, RMSEA = .02, SRMR = .03). Results showed significantly better fit for the four-factor model ( $\chi^2$ -Difference = 135.50,  $df = 3$ ,  $p < .001$ ). Therefore, we conducted our analyses with the overall social presence scale (as stated in the preregistration), but we also used the subscales for additional analyses. Finally, we compared several measurement models<sup>3</sup> to check distinctiveness of our dependent and mediating variables. Results indicated the best fit for the seven-factor model (see Table 3), thus providing evidence for construct distinctiveness of post-negotiation trust and the mediators.

### Trust as Negotiation Outcome

The results of our LMM with post-negotiation trust as dependent variable (see Table 4) showed no significant main effects of communication medium and information reprocessability. Thus, there was no support for Hypothesis 1 and 3. Although the regression coefficient for communication medium was in the predicted direction and almost reached the significance threshold (i.e., one-tailed  $p = .054$ , and the upper bound of the confidence interval only slightly overlapped zero), further analyses qualified the underlying effect as small ( $r = .08$ ,  $d = .16$ ; obtained from a  $t$ -test). The interaction

<sup>3</sup> We compared a 7-factor model (trust dimensions and mediators with social presence dimensions) with a 6-factor (trust dimensions and mediators), a 4-factor (trust dimensions and combined factor for all mediators), a 2-factor (trust vs. mediators), and a 1-factor model.



**Table 2**

*Descriptive statistics (M, SD) and intercorrelations for dependent, mediating and control variables*

Variable	M (SD)	Intercorrelations													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Trust (pre)	4.34 (.66)	(.79)													
2. Trust (post)	4.74 (.81)	.40*	(.85)												
3. Social presence	5.12 (1.03)	.02	.31*	(.75)											
4. Psych. distance	3.77 (1.15)	-.11	-.36*	-.29*	(.72)										
5. Perceived risk	3.71 (1.06)	-.35*	-.17	-.06	-.02	(.73)									
6. Dispositional trust	2.73 (.51)	.26*	.12	.06	-.02	.02	(.61)								
7. Video call affinity	4.68 (1.27)	-.03	-.01	-.04	-.10	-.08	-.01	(.79)							
8. Video experience	4.43 (1.43)	-.02	-.13	.02	.03	-.09	.02	.43*	(.48)						
9. Neg. experience	2.60 (1.33)	.02	-.00	-.02	-.06	-.18	-.02	.19*	.25*	(.91)					
10. Perceived power	3.91 (1.18)	-.02	-.31*	-.16	.12	.28*	.02	-.01	-.00	-.12	(.76)				
11. Familiarity	1.34 (1.12)	-.03	.01	.08	-.01	-.00	-.07	.05	.11	.00	.01	-			
12. Individual outcome	13.03 (2.19)	-.11	.21*	.09	-.21*	-.09	-.07	-.01	.05	.13	-.39*	-.01	-		
13. Joint outcome	26.05 (2.23)	-.10	.15	.14	-.17	-.03	-.01	.08	.11	.06	-.25*	.01	.51*	-	
14. Negotiation time	20.33 (6.70)	-.10	-.26	-.12	.10	.05	-.01	.11	.16	.13	.06	.06	.00	-.01	-

*Note.* Numbers in the diagonal of the correlation matrix indicate Cronbach’s alpha. For single items there is no Cronbach’s alpha. Outcomes were divided by 1000. Pre = pre-negotiation; Post = post-negotiation; Psych. = Psychological; Neg. = Negotiation.

\*Holm-adjusted  $p < .05$ .

effect of communication medium and information reprocessability was also not significant, thus not supporting Hypothesis 5. Stepwise model comparisons confirmed that none of the three predictors included in our LMMs explained a significant amount of variance (see Table 5). The variance explained by all three predictors was less than one percent.

**Table 3**

*Results of confirmatory factor analyses (CFAs) checking construct distinctiveness of our dependent and mediating variables*

Model	CFI	RMSEA	SRMR	$\chi^2$	df	df-Difference	$\chi^2$ -Difference
1-Factor	.38	.17	.13	2378.80	230		
2-Factor	.63	.13	.13	1501.78	229	1	877.02***
4-Factor	.82	.09	.12	863.50	224	5	638.28***
6-Factor	.92	.06	.08	478.83	215	9	384.66***
7-Factor	.97	.04	.05	317.24	209	6	161.59***

**Table 4**

*Results of the linear mixed model with our experimental factors as independent and trust as dependent variable*

Predictor	$b_i$	SE( $b_i$ )	90%-CI
Intercept	4.87*	0.10	[4.70; 5.04]
Medium (M)	-.24	0.15	[-.47; .00]
Reprocessability (R)	-.14	0.15	[-.38; .10]
M x R	.21	0.21	[-.13; .55]

*Note.* Medium (0 = face-to-face, 1 = video conference), and Reprocessability (0 = not videotaped, 1 = videotaped) were entered as dummy-coded predictors.  $b_i$  = unstandardized regression coefficients; CI = Confidence interval.

\* $p < .05$ , two-tailed using Satterthwaite's method.

**Table 5**

*Results of Stepwise Model Comparisons*

Model	df	AIC	Deviance	$\chi^2$ -Diff.	df-Diff	$p$	$R^2_{GLMM}$
Baseline (only random intercept)	3	766.80	760.80				.287
+ Medium (M)	4	767.15	759.15	1.65	1	.20	.290
+ Reprocessability (R)	5	769.05	759.05	0.10	1	.75	.293
+ M x R	6	769.99	757.99	1.05	1	.31	.296

*Note.* We entered the predictors in a stepwise manner to test every predictor for significance. We report conditional  $R^2_{GLMM}$  (i.e., variance explained by the entire model calculated using the approach by Nakagawa et al. (2017).  $\chi^2$ -diff. = Chi<sup>2</sup>-Difference;  $df$ -diff = degrees of freedom for Chi<sup>2</sup>-Difference-Test.

Our mediation analyses (see Table 6) revealed a significant negative indirect effect of communication medium on trust via social presence (supporting Hypothesis 2a). Negotiators in video negotiations perceived their counterpart as less present/salient, and social presence in turn positively predicted negotiator trust. In light of the lack of direct effect of communication medium on trust, our results point towards an inconsistent mediation. Additionally, we tested the two social presence subscales, mutual presence and mutual understanding, as mediators due to our findings in the conducted CFA. Results revealed a significant negative indirect effect of communication medium on trust via mutual presence, but no indirect effect via mutual understanding. The employed

communication medium only affected negotiators' perception of co-presence, whereas the communication medium did not affect negotiators' mutual understanding.

Contrary to our hypotheses, we did not find mediation effects of perceived risk or psychological distance. Thus, our findings do not confirm Hypotheses 2b, 2c, and 4. However, all assumed mediators (including the social presence subscales) did significantly predict negotiator trust (i.e., all b-paths were significant and in the expected direction). Thus, our findings support the assumed importance of psychological distance and risk perceptions for trust emergence.

**Table 6**

*Results of the conducted mediation analyses*

Predictor	Mediator	a-path	b-path	AB [CI]	C'	C
Medium	Social presence	-1.06**	.23**	-.24 [-.34; -.14]	.14	-.13
	<i>Mut. presence</i>	-2.23**	.09**	-.19 [-.30; -.08]	.08	-.13
	<i>Mut. understanding</i>	.10	.32**	.03 [-.02; .09]	-.17	-.13
	Psych. distance	-.07	-.23**	.02 [-.05; .08]	-.15	-.13
	Perceived risk	.05	-.13**	-.01 [-.04; .03]	-.13	-.13
Reprocessability	Perceived risk	.09	-.13**	-.01 [-.04; .02]	-.02	-.03

*Note.* We derived the coefficient of the a-path and b-path from calculated LMMs. The a-path shows the relationship between predictor and mediator, the b-path shows the relationship between mediator and trust as dependent variable. Rows in italics indicate explorative analyses for the social presence subscales. AB = indirect effect derived from the multiplication of a- and b-path; CI = bootstrapped 95%-confidence interval; C' = direct effect of predictor when controlling for the respective mediator; C = main effect of predictor without controlling for the respective mediator; Mut. = Mutual; Psych. = Psychological.

\*\* $p < .01$ , two-tailed using Satterthwaite's method.

### Supplementary Analyses

In addition to our confirmatory analyses, we conducted several supplementary analyses that provide further insights beyond our confirmatory research. First, we examined how communication medium and information reprocessability affected objective negotiation outcomes as previous research found that video-based as compared to face-to-face negotiations require more negotiation time and lead to inferior objective negotiation outcomes (e.g., Purdy et al., 2000; Stuhmacher & Citera, 2005). The results of a LMM with individual negotiation outcome as dependent variable (see Table 7) showed no significant main effects of communication medium and information reprocessability, nor a significant interaction effect. Similarly, regression analyses (at the dyad level) with joint negotiation outcome and negotiation time as dependent variable did not show any significant effects (see Table 8). Thus, communication medium and information reprocessability did not affect objective negotiation outcomes.

Second, we explored whether communication media and information reprocessability already affect trust prior to the actual negotiation as previous theorizing suggests that negotiators anticipate the upcoming interaction and proactively form and regulate trust in their counterpart before the negotiation has even started (Naquin & Paulson, 2003; Van der Werff et al., 2019). Further, we explored whether potential trust differences prior to a negotiation become stronger through the actual negotiation due to restrictions and advantages of media characteristics that might hinder or facilitate social (exchange) processes and thereby affect trust as important socioemotional negotiation

outcome (Geiger, 2020). Therefore, we calculated a LMM with pre- and post-negotiation measurement (level 1) nested within negotiators (level 2) and negotiation dyads (level 3). The experimental factors and time served as dummy-coded predictors of negotiator trust. The results (see Table 9) revealed only a significant positive main effect of time. Trust between negotiators increased from pre- to post-negotiation measurement. However, trust did not differ prior to the negotiation as a function of communication medium or information reprocessability. Moreover, neither communication medium nor information reprocessability interacted with time. Thus, trust increased over time regardless of our experimental manipulations.

**Table 7**

*Results of the linear mixed model with our experimental factors as independent and individual negotiation outcome as dependent variable*

Predictor	$b_i$	$SE(b_i)$	95%-CI
Intercept	13.19*	0.25	[12.71; 13.67]
Medium (M)	-.15	0.35	[-.83; .53]
Reprocessability (R)	-.37	0.35	[-1.04; .31]
M x R	.37	0.49	[-.59; 1.33]

*Note.* The individual outcome was divided by 1000. Medium (0 = face-to-face, 1 = video conference), and Reprocessability (0 = not videotaped, 1 = videotaped) were entered as dummy-coded predictors.  $b_i$  = unstandardized regression coefficients. CI = Confidence interval  
\* $p < .05$ , two-tailed using Satterthwaite's method.

**Table 8**

*Results of the multiple regression models with our experimental factors as independent and joint negotiation outcome and negotiation time as dependent variables*

Predictor	Joint outcome			Negotiation time (in minutes)		
	$b_i$	$SE(b_i)$	95%-CI	$b_i$	$SE(b_i)$	95%-CI
Intercept	26.39*	0.35	[25.68; 27.08]	19.33*	1.07	[17.22; 21.44]
Medium (M)	-.30	0.50	[-1.29; .69]	1.53	1.51	[-1.45; 4.51]
Reprocessability (R)	-.73	0.50	[-1.72; .26]	1.31	1.51	[-1.67; 4.29]
M x R	.74	0.71	[-.66; 2.14]	-1.70	2.14	[-5.92; 2.52]
Total $R^2$ ( $f^2$ )	.01 (.01)			.01 (.01)		
F-Test ( $p$ -value)	.72 (.54)			.41 (.75)		

*Note.* As both dyad members have the same joint negotiation outcome and negotiation time, we analyzed the data at the dyad level ( $n = 160$ ). The joint outcome was divided by 1000. Medium (0 = face-to-face, 1 = video conference), and Reprocessability (0 = not videotaped, 1 = videotaped) were entered as dummy-coded predictors.  $b_i$  = unstandardized regression coefficients. CI = Confidence interval  
\* $p < .05$ , two-tailed.

**Table 9**

Results of the 3-level linear mixed model with our experimental factors as independent and trust as dependent variable

Predictor	$b_i$	$SE(b_i)$	95%-CI
Intercept	4.44**	0.08	[4.28; 4.59]
Time (T)	.38**	0.08	[.23; .54]
Medium (M)	-.02	0.09	[-.20; .15]
Reprocessability (R)	-.17	0.09	[-.34; .01]
T x M	-.11	0.09	[-.29; .07]
T x R	.13	0.09	[-.04; .31]

Note. Time (T), Medium (M), and Reprocessability (R) were entered as dummy-coded predictors. The factor levels *pre-negotiation*, *face-to-face*, and *not videotaped* served as reference group.  $b_i$  = unstandardized regression coefficients; CI = Confidence interval.

\*\* $p < .01$ , two-tailed using Satterthwaite's method.

## Discussion

Building on Social Exchange Theory (e.g., Blau, 1967), strategic communication theories (e.g., Dennis et al., 2008; Short et al., 1976), trust theories (Mayer et al., 1995; Van der Werff et al., 2019) and literature on digitization of work processes (e.g., Hertel et al., 2017; Gefen et al., 2008; Thompson & Nadler, 2002), we revisited the current negative perspective on computer-mediated negotiations, and extended previous theorizing and empirical findings on trust and outcomes of computer-mediated negotiations. We compared face-to-face negotiations with video-based negotiations conducted via a modern video conferencing tool that were either reprocessable (i.e., videotaped), or not. In doing so, we addressed video-based negotiations as important but so far largely neglected research topic, and provided a systematic and contemporary comparison of computer-mediated vs. face-to-face negotiations that avoids confounds existing in prior research due to the comparison of media strongly differing in multiple media characteristics. In addition to the lack of negotiator co-presence as one important characteristic of CMC, we considered information reprocessability as a potential resource for trust-building.

As expected, the results of our experiment showed that negotiator co-presence as difference between video-based and face-to-face negotiations affects negotiator trust. Specifically, video-based negotiations decreased negotiator trust indirectly through perceived social presence of the negotiation counterpart. Additional analyses showed that this effect was driven by negotiators' perception of lower mutual presence in computer-mediated as compared to face-to-face negotiations. Additionally, the other proposed psychological processes, perceived risk and psychological distance, also predicted negotiator trust. These findings suggest that our experimental paradigm reflected relevant processes in a valid way.

Importantly however, there were no significant overall effects of communication media, information reprocessability, or their interplay on trust in the dyadic negotiations. Similarly, neither economic negotiation outcomes nor negotiation time differed as function of communication media or information reprocessability. Further, negotiator trust increased from pre- to post-negotiation measurement independent of communication media and information reprocessability. With each 80 dyads negotiating face-to-face and via video, our study had sufficient power to show even small-sized main effects of communication medium as we chose our sample size to detect the assumed interaction effect of communication medium and information reprocessability. The actual effect sizes

we found in our study (i.e.,  $r = .08$  or  $d = .16$  when converted), indicate – if at all – a possible small effect of communication medium on trust. Thus, considering the very large negative effect of communication medium on negotiator trust found in Naquin and Paulson's (2003) landmark study and the large correlation found in Lu et al.'s (2017) previous meta-analysis only including older studies, computer-mediated negotiation was not as bad as might have been expected based on prior research findings (also see Mazei & Hertel, 2016). The absence of a significant negative main effect of communication medium (i.e., when we did not control for social presence as mediator) indicates inconsistent mediation and suggests that a so far uncovered positive process counteracted the negative indirect effect of communication medium via social presence.

Perceived risk and psychological distance were significantly related to negotiator trust. As expected, higher perceived risk and psychological distance were associated with less trust. Yet we found no evidence for the proposed mediation effects as the communication medium did not affect perceived risk and psychological distance. Overall, our findings support the assumption that perceived risk, psychological distance, social presence, and both dimensions of social presence are relevant psychological states with regard to trust emergence in dyadic negotiations.

### Theoretical Implications

Our findings have several theoretical implications for negotiation and trust. Contrary to previous findings (e.g., Lu et al., 2017; Naquin & Paulson, 2003; Stuhlmacher & Citera, 2005), we found no support for a negative view on computer-mediated negotiations that is prevalent in the literature. So far, Naquin and Paulson (2003) showed an extraordinarily large negative effect of CMC on negotiator trust ( $d \approx -3.5$ ) in their landmark study (see Mazei & Hertel, 2016), and Lu et al. (2017) found a large correlation between communication medium and trust in their meta-analysis on trust determinants in negotiations ( $r_{corrected} = .57$ ; i.e., face-to-face > CMC for three studies comparing email and face-to-face negotiations). In addition, previous research showed that video negotiations lead to lower economic negotiation outcomes ( $d = .22$ ; Stuhlmacher & Citera, 2005) and require more negotiation time than face-to-face negotiations (e.g., Purdy et al., 2000). In contrast, our study showed no differences in negotiator trust, economic negotiation outcomes, and negotiation time depending on the employed communication medium. This is in line with the assumption of classical media theories (e.g., Daft & Lengel, 1986; Dennis et al., 2008) that face-to-face and modern video conferencing can have quite similar effects. The small differences in media characteristics between face-to-face and video conferencing resulting in almost equally high media richness and synchronicity for face-to-face and video negotiations thus may provide an explanation for our findings.

Importantly, the present study does not question the validity of previous findings regarding computer-mediated negotiations. Rather, our study offers systematic and contemporary insights regarding the use of rich communication media in dyadic negotiations. Early studies on computer-mediated negotiation consistently showed disadvantages of text-based and video negotiations (e.g., Citera et al., 2005; Naquin & Paulson, 2003; Stuhlmacher & Citera, 2005). More recent works showed that video negotiations lead to higher trust than text-based negotiations (Kurtzberg et al., 2018), and that the disadvantage of text-based negotiations might result from difficulties in emotion detection (Laubert & Parlamis, 2019). Yet, the specific media characteristics and subsequent psychological processes causing differences between face-to-face and various forms of computer-mediated negotiation remained largely unclear.

In our study, we identified the lacking negotiator co-presence as media characteristic causing differences between face-to-face and video-based negotiations. Specifically, we found that social presence mediated the effect of the employed communication medium on negotiator trust.



Interestingly, however, the communication medium did not impair negotiators' mutual understanding—a strong, positive predictor of negotiator trust. On average, the lacking physical co-presence of the negotiation counterpart did only reduce negotiators' mutual awareness, which in turn impaired trust emergence. This is in line with the assumption of Social Exchange Theory (Blau, 1967) that context factors such as the communication medium can influence the exchange setting and subsequent exchange.

Regarding perceived risk and psychological distance, we found no evidence for mediation. However, the fact that both the perception of risk and psychological distance predicted negotiator trust emphasizes the importance of negotiators' psychological states for trust emergence in negotiations. Thus, our findings extend the present knowledge of trust determinants in negotiations (e.g., Lu et al., 2017). Future research in this field might identify contextual factors or supportive IT tools reducing negotiators' perceptions of risk and psychological distance in negotiations.

In the current study, we found no support that information reprocessability may serve as resource or as accountability mechanism reducing risk in an exchange situation (e.g., Gefen et al., 2008; Hertel et al., 2017; Thompson & Nadler, 2002). Yet, further research investigating whether and how technological features serve as resources in computer-mediated but also face-to-face negotiations is necessary. Identifying helpful technology features or software tools might provide us with the means to counteract existing negative processes in negotiations (e.g., Gefen et al., 2008; Hertel et al., 2017; Lim & Benbasat, 1992). The inconsistent mediation pattern we found in our study suggests that benefits of computer-mediated negotiations exist and emphasizes the need for more studies taking a resource perspective on computer-mediated negotiations.

Finally, our empirical findings challenge the conceptualization of risk as moderator of the trust–outcome link, as for instance proposed in the Model of Organizational Trust (Mayer et al., 1995). Instead, our results support recent theorizing in the trust literature assuming that situational risk perceptions may directly affect trust by reducing individuals' motivation to trust a counterpart (Van der Werff et al., 2019). Although we did not assess the suggested motivational mechanism, our results are consistent with the proposition that perceived risk affects interpersonal trust aside from the traditionally investigated trustworthiness perceptions (Van der Werff et al., 2019). Therefore, future research might consider risk both as an antecedent of trust and as moderator of trust effects.

### **Practical Implications**

Our findings have several implications for practice in the management field when it comes down to negotiations, trust-building, and long-term business relationships. Based on existing literature, computer-mediated negotiations had a rather bad reputation and did not seem advisable despite some suggested benefits such as saving travel costs. Now, our findings suggest that negotiators and companies can rely on rich communication media such as video conferencing in negotiations without worrying about strong negative side effects regarding interpersonal trust or profit. Importantly, negotiators' mutual understanding does not suffer in video negotiations conducted via a contemporary video conferencing tool. Instead, the negative indirect effect of video negotiations on trust only resulted from decreased social presence perceptions. Therefore, negotiators might try to increase social presence in video negotiations by using larger, high-resolution video screens, high quality video and audio equipment or virtual reality devices. Additionally, one could try to reduce the amount of social cues that are filtered out or distorted by the communication medium by filming and transmitting negotiators' full body instead of displaying only the head and parts of the upper body.

Further, in light of the absence of negative effects of information reprocessability, it seems to do no harm to record video negotiations, especially when this is facilitated by integrated recording options in modern video conferencing tools. Although we found no indications for direct benefits of information reprocessability, the video recordings might still be used for training purposes (e.g., to provide negotiators with feedback regarding their performance).

### Limitations and Future Directions

The results of our study have to be interpreted in light of limitations that offer various further opportunities for future research. First, our decision for an experimental design comes with the commonly known benefits and downsides. However, we think that the adaption of a well-established negotiation task<sup>4</sup> provided a good balance between internal and external validity with respect to our study goals and the difficulties of obtaining field data with sufficient statistical power. Nonetheless, it is important that future research replicates our findings in real world negotiation settings and with more experienced negotiators.

Second, the average age of our participants was quite low with about 24 years, and experience with video as communication medium rather high. Therefore, it seems that our sample mostly consisted of so called “digital natives” (i.e., people that have grown up using advanced communication technology), which could at least partly account for our non-significant findings regarding communication medium. Specifically, comparing video-based and face-to-face negotiations in a sample of digital natives constitutes a rather conservative test of our hypotheses due to the probably higher technology acceptance and affinity of younger generations. Today, computer-mediated communication is the new normal (Raghuram et al., 2019): People establish and maintain (trusting) relationships with people around the world through mediated communication (e.g., chat, video calls), which constitutes a significant difference between our study and previous works on trust in computer-mediated negotiations. Such positive attitudes towards CMC may have diminished media effects in our study. Yet, digital natives constitute the future workforce. Thus, the possibility of generational effects to us underlines the importance of updating previous research on computer-mediated negotiations.

Third, the specific operationalization of our manipulations limits the generalizability of our findings. In our study, we informed participants about the negotiation setting they would be confronted with (i.e., online or in person, videotaped or not). In doing so, we explicitly highlighted the setting of the upcoming negotiation. On the one hand this was necessary to comply with ethical and transparency standards, on the other hand we also used the instructions to increase the salience of our manipulations. While this might have affected external validity as such a procedure would probably not occur in business or private settings, this also means that the small, almost significant disadvantage of video negotiations regarding trust would probably be even smaller in field settings due to less salience of the communication medium and information reprocessability.

Fourth, we decided to use very direct and obvious manipulations. The participants in different experimental conditions used different communication media and were actually videotaped in the respective conditions. In the face-to-face condition with information reprocessability, the participants saw the cameras and heard a sound when the experimenters started the recordings. In the video condition, the participants saw that the video call was recorded, which was indicated by a red dot and

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<sup>4</sup> The task we adapted from Olekalns and Smith (2009) originates from the New Recruit Task (Neale, 1997).

a permanent note on the display of their laptop saying that a recording was in progress. While we consider our manipulation of the communication medium as straight forward and realistic, we think our reprocessability manipulation could be improved by providing the negotiators with the possibility to make use of the recorded video. It is possible that we did not find the expected effect of information reprocessability because the video recording did not have (sufficient) practical relevance for the negotiators. Consequently, future studies might provide negotiators with opportunities to actually use the video in a way recordings of conducted negotiations could be used in business contexts (e.g., to check statements or commitments made by the other party, to control the terms of agreement). Another possibility to increase the effectiveness of our reprocessability manipulation, that probably is easier to implement in an experiment, would be to explain the value of being able to reprocess the negotiation in the instructions so that negotiators could internalize the given information and act accordingly while negotiating.

Finally, the theoretical arguments we have used to derive our conceptual model lack theoretical parsimony to a certain degree. While we used Social Exchange Theory as overarching and integrating framework, we also integrate theoretical arguments from established strategic and social-psychological communication theories, which unfortunately reflects the current state of theory building in the field of computer-mediated negotiations (see Geiger, 2020). While our study provides an empirical test of the employed theoretical perspectives and arguments, thereby contributing to the existing literature, it does not (intend to) contribute to the development of a unified theoretical framework that is desirable for the future. Nonetheless, we think that our approach of providing a focused test of specific media characteristics will be helpful for future theoretical works aiming to derive a unified and as parsimonious as possible framework for understanding computer-mediated negotiations.

Overall, our study provided new and contemporary insights regarding computer-mediated negotiations. Yet, clearly more research is necessary to gain a profound understanding of the differences between face-to-face and video-based negotiations, as well as computer-mediated negotiations in general. We need more empirical studies in the field of computer-mediated negotiations that systematically vary specific media characteristics as such work could provide us with valuable insights regarding the impact of specific media characteristics. Such insights about factors causing differences between face-to-face and computer-mediated negotiations and the underlying processes may provide the knowledge that is necessary to create online negotiation environments supporting social exchange and thereby both economic and socioemotional negotiations outcomes.

Moreover, future research might uncover the process(es) counteracting the negative mediation effect of social presence because this could reveal potentials that are inherent in video-based negotiations. Based on some participants' comments after the experiment, affect and/or experienced stress might explain parts of the inconsistent mediation we found. Specifically, some participants reported that being separated from the counterpart made it easier to use notes from the preparation phase, because the counterpart could not spy out their documents. In fact, this may even have reduced the risk inherent in the video condition to some degree. Additionally, not being in the same room during the negotiation may also have reduced stress caused by direct social interaction with the counterpart (e.g., Hertel et al, 2008). Therefore, negotiators in the video conditions may have experienced lower strain before and during the negotiation, which might have contributed to higher trust (Lu et al., 2017), and thus somewhat balanced more negative effects of distributed work on trust emergence. Future research might examine these potentially different effects of spatial distribution of negotiators.

Further, the present findings already provide us with knowledge about one relevant psychological process in computer-mediated negotiations that can be subject to further research

investigating potential moderators of the revealed mediation process. For instance, it could be promising to increase the mutual awareness component of social presence (i.e., counteracting the negative effect of communication medium on social presence) in video-based negotiations. Yet, it is also important to note that contemporary video conferencing technology already allows to negotiate via video without constraints regarding negotiators' mutual understanding.

### Conclusion

This study revisited the predominantly negative view on computer-mediated negotiations, highlights potentials for future research on computer-mediated negotiations and contributes to a better understanding of how and why trust emerges in dyadic negotiations. We compared face-to-face negotiations with computer-mediated negotiations conducted via a modern video conferencing tool. Thereby, we updated existing research on computer-mediated negotiations and addressed an important research gap with high practical relevance—video-based negotiations. In addition, we investigated how information reprocessability as feature inherent in many modern communication media affects negotiations, and which psychological processes underlying computer-mediation of negotiations.

Our findings provide first empirical evidence that, nowadays, negotiators can use rich communication media such as video conferencing in negotiations without sacrificing interpersonal trust, a stable business relationship between negotiation parties, or economic profit. This is important as we live in an increasingly globalized world, which oftentimes forces individuals or companies to conduct business and negotiate via communication technology. Just now, the global COVID-19 pandemic is making CMC and online interactions a necessity. As a consequence, the current crisis has put video as communication medium in the limelight due to the current rise of advanced video communication technologies. Yet, our review of existing negotiation literature shows that the most practical advice we can provide for video negotiations is based on email negotiation research. The finding that social presence is a central process in negotiations provides new avenues for how video negotiations might be improved. Yet, we want to encourage researchers to conduct further, systematic studies on computer-mediated negotiations and trust emergence in negotiations because many questions remain open in these two research fields that have the potential to provide us with knowledge how to negotiate more successfully and sustainably.

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