



RESEARCH ARTICLE OPEN ACCESS

Turning the Camera Off in Virtual Interactions Can Harm the Reputation

Olga Stavrova^{1,2}  | Dongning Ren³  | Anthony M. Evans⁴¹Tilburg university, Tilburg, the Netherlands | ²University of Lübeck, Lübeck, Germany | ³Maastricht University, Maastricht, the Netherlands | ⁴Allstate Corporation, Northbrook, Illinois, USA**Correspondence:** Olga Stavrova (O.Stavrova@uvt.nl)**Received:** 1 November 2024 | **Accepted:** 19 March 2025**Funding:** The authors received no specific funding for this work.**Keywords:** camera use | engagement | leader emergence | virtual teams | Zoom fatigue

ABSTRACT

Virtual communication on digital-meeting platforms is increasingly common in work, educational and other settings. One contentious issue concerns camera use. Some suggest keeping the camera off to mitigate ‘Zoom fatigue’, whereas others argue that keeping the camera on is a sign of dedication and engagement. Here, we conducted an experiment to examine the effects of camera use from two perspectives: the perspective of actors and observers. Participants were randomly assigned to have their camera on or off while working in small groups over Zoom; we further varied whether everyone in the group had the camera on or off or whether the camera use was mixed. Following the virtual interactions, participants reported their experiences of the interaction and their perceptions of others in a round-robin design. Turning the camera off (vs. on) resulted in being perceived as less engaged, less moral and less suitable for a leadership role by other group members, but had minimal impact on the actors’ experiences (self-reported engagement, fatigue or well-being). One exception was higher self-reported fatigue levels in participants who had a natural preference to be off camera but were assigned to switch the camera on. A comparison of self and observer reports showed that people underestimated the engagement of off-camera targets. Our findings inform the social psychological research on the differences in self and other perceptions and the research on digital communication and well-being.

1 | Introduction

With the recent rise of digital communication, virtual interactions—for example, meetings, presentations and interviews held via video calls on virtual platforms such as Zoom, Microsoft Teams or Webex—have exploded in volume. The role of camera use in professional settings has been a topic of heated discussion among managers, workers and educators ever since. The media quickly coined the term ‘Zoom fatigue’, with numerous press articles discussing how camera-on interactions could contribute to exhaustion and threaten employee engagement (Landa 2021; Virtira 2021). While turning

the camera off might mitigate fatigue (Nesher Shoshan and Wehrt 2021; Shockley et al. 2021), some are concerned about its unintended consequences for individuals’ reputation. For example, as revealed in an online survey conducted by a market research company, managers consider turning the camera off as a sign of disengagement and do not see a bright company future for off-camera employees (Vyopta 2022).

Despite these debates among the practitioners, empirical academic research on the implications of camera use is scarce. The few existing studies have provided mixed findings, documenting positive (Kushlev and Epstein-Shuman 2022), negative (Nesher

This is an open access article under the terms of the [Creative Commons Attribution-NonCommercial-NoDeriv](https://creativecommons.org/licenses/by-nc-nd/4.0/) License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2025 The Author(s). *European Journal of Social Psychology* published by John Wiley & Sons Ltd.

Shoshan and Wehrt 2021; Shockley et al. 2021), or zero (Bennett et al. 2021) effects. Importantly, a key limitation of previous studies is their exclusive focus on how individuals experience the interaction themselves (e.g., self-reported engagement; actor perspective), without considering the potential influence of camera use on how they are perceived by others (observer perspective). In the present research, drawing from the social psychological literature on how people form impressions of self and others, we sought to examine the impact of camera use on both actors' experiences (e.g., self-reported engagement) and observers' perceptions (e.g., other-reported engagement).

1.1 | Effect of Camera Use: Actor Perspective

Does camera use promote positive meeting outcomes? The media richness theory (Daft and Lengel 1986; Ishii et al. 2019) can answer this question. It argues that the 'richness' of a communication medium (e.g., the ability to handle verbal and non-verbal cues) is important for communication success. Consistent with this theory, implementing a camera-on policy in digital education settings led to more student engagement and better learning outcomes (Alim et al. 2022; Austin et al. 2021; Kushlev and Epstein-Shuman 2022).

However, the benefits of richer media have been questioned when the pandemic marked a new era of remote work and organizations heavily relied on virtual platforms (such as Zoom and MS Teams) to substitute face-to-face meetings with video calls. Within a few weeks into this transition, workers, organizations and the media alike raised concerns about fatigue and exhaustion supposedly caused by being stuck in camera-on virtual meetings, as highlighted in popular press reports (e.g., Moniuszko 2021). Indeed, even though camera use may enrich communication by adding non-verbal cues, recent theoretical work proposed that it can also result in cognitive overload (Bailenson 2021). Non-verbal cues in virtual meetings might be harder to interpret (e.g., impossible to discern who is looking at whom), and meeting participants might be more likely to engage in exaggerated non-verbal signals (e.g., intensive nodding to signal agreement) (Bailenson 2021; Fauville et al. 2023). All of these factors might increase individuals' cognitive demands and contribute to meeting fatigue.

Three recent studies tested these predictions using various methods. In a one daily diary study, German and Israeli participants were surveyed three times a day for 2 weeks. In each survey, they were asked to provide information about the most recent work meeting, including the communication medium used (video conference platform, phone call, written communication or face-to-face) and their level of fatigue following the meeting. Participants reported more fatigue after meetings conducted on video than using other communication channels (Nesher Shoshan and Wehrt 2021). Another study—a 4-week long field experiment with remote workers in an American health sector company—focused specifically on comparing virtual interactions with the camera on versus off. Half of the participants were asked to keep their webcam on (vs. off) during work meetings for the first 2 weeks of the study, after which they were asked to switch to keeping their webcam off (vs. on). All participants reported the level of fatigue, voice and engagement every evening during

the study. Participants experienced more fatigue (but not less engagement nor voice) during the weeks where they had to keep their camera on (vs. off) (Shockley et al. 2021). A different pattern emerged in a study of American remote workers surveyed every hour during five workdays. For every hour, participants indicated how often they turned their webcam off during the last meeting as well as their current level of fatigue. The frequency of having the camera off was not associated with workers' fatigue (Bennett et al. 2021). Similarly, research that examined meeting outcomes other than fatigue, showed that dyads randomly assigned to work together on a series of problem-solving tasks using either an audio connection and video connection vs. only an audio connection did not differ in problem-solving performance (Tomprout et al. 2021). In summary, prior theoretical and empirical literature provides arguments both in favour and against camera use in virtual interactions.

1.2 | Effect of Camera Use: Observer Perspective

Camera use might affect not only a person's experience during the virtual interaction but also how the person is perceived by others, thus shaping their reputation. This could be particularly important in hybrid/remote teams where managers have less insight into the work that team members are doing, have fewer (and less rich) interactions to form impressions of employee productivity, and tend to underestimate employees' effort and commitment (Microsoft 2022). It is, therefore, important to understand how camera use affects worker perception in virtual interactions.

One may suspect that turning off the camera might be disadvantageous to an employee's reputation. Employees who turn off their webcams during meetings could be seen as potentially unprepared, unknowledgeable or even just slacking. In one survey of executives, nearly half of the respondents admitted that they suspect off-camera employees to secretly browse the internet, text or chat during meetings (Vyopta 2022). Turning the camera off could be seen not only as a cue to a lack of engagement and bad work ethics, but also as a signal of questionable moral standards more generally. Anecdotally, HR consultants observed that participants who have their videos off might be perceived as 'staying in the dark because [they] have something to hide' (Lobell 2021). Indeed, economic experiments showed that having seen a photograph of a stranger increased people's trust in the stranger (Eckel and Petrie 2011). Hence, exposure to visual cues might contribute to an increased perception of trustworthiness and, thus, morality. In addition, a qualitative study of LinkedIn discussion forum dedicated to virtual meetings revealed that not turning the webcam on can be interpreted as a sign of disrespect (Karl et al. 2022), which may contribute to observers' cynical views, attributing the camera-off participant low moral standards (Stavrova et al. 2020). In the present research, in addition to perceptions of competence and engagement, we measured perceptions of morality (e.g., trustworthiness, honesty) and explored whether turning the camera off could result in lower attributions of morality.

Finally, turning on the camera increases one's visibility. Visibility could be important for leader emergence—a process whereby a group member is seen as an informal group leader by peers

(Badura et al. 2022; Hanna et al. 2021). For example, employees with higher ‘passive face time’, that is, a higher amount of time they are merely seen in the office, are perceived as more dedicated and responsible (Elsbach et al. 2010)—important attributes of leader emergence (Ensari et al. 2011; Kalish and Luria 2021). Meta-analytic work suggests that traits associated with higher visibility (e.g., extraversion that describes individuals’ tendency to be the centre of attention) tend to predict leader emergence (Landis et al. 2022; Reichard et al. 2011). Herein, in addition to perceptions of engagement and morality, we also explored whether camera use can lead to leader emergence, that is, being seen as an informal group leader by peers.

In summary, while switching off the camera might be beneficial (or not) for how individuals experience the virtual interaction (actor perspective), we expected it to negatively affect how such individuals are perceived by others (observer perspective). While individuals who turn the camera off might experience less fatigue and maintain engagement, others might see them as disengaged, having lower moral standards, and a poor fit for leadership.

1.3 | Actor–Observer Bias in Virtual Interactions

The idea that camera use might affect actors’ experiences and observers’ perceptions differently receives further support from the existing research in social psychology on actor–observer bias. Past work has shown that individuals’ perceptions of themselves vs. others are often driven by different psychological processes. A key process is the fundamental attribution error (also known as the correspondence bias), which is when people tend to make internal attributions of others’ behaviours while overlooking (obvious) external reasons (Gilbert and Malone 1995; Ross 1977). For example, in a seminal experiment, participants attributed strong pro- or anti-Castro attitudes to an essayist even though they were informed that the essayist had been instructed to defend a particular position by the experimenter (Jones and Harris 1967). Further studies have shown that people tend to make such internal/dispositional attributions and ignore external/situational factors when explaining others’ (but not their own) negative behaviours or outcomes (Malle 2006). Similarly, in the context of virtual interactions, even when being fully aware of external reasons for why someone is not switching their camera on (i.e., they have been instructed to do so), perceivers might attribute this behaviour to internal reasons (e.g., Kai is not turning on his camera because he does not want to), which in turn might lead to negative evaluations (e.g., Kai has little interest in the meeting, low engagement and low leadership potential).

A related process that might lead to different effects of camera use on the impressions of self and others is the natural asymmetry in the type and amount of information available to the self and the external observer. Self-judgements stem from awareness of internal processes like thoughts and emotions, and people typically regard their internal states as trustworthy indicators of self-knowledge (Pronin and Kugler 2007). In contrast, judgements of others are based on the observation of external behaviours. This differential access to information about self versus others can have multiple consequences. For example, when inferring others’ personalities, traits reflecting internal

states (e.g., neuroticism) are harder to assess accurately than traits typically expressed through observable behaviours (e.g., extraversion or competence) (Vazire 2010). When reflecting on what led them to recognize their own attitude change, people attribute it to shifts in internal processes; in contrast, when thinking about what made them notice change in others, they point at observable cues, such as changes in behaviour (Puklavec et al. 2025). Hence, when judging their own engagement during a virtual interaction, people likely rely on internal, low-visibility cues, such as their feelings and thoughts. In contrast, when judging others’ engagement, they are limited to considering only others’ observable behaviour, such as having the camera on or off. Consequently, the camera condition might have stronger consequences for judging others than the self.

1.4 | Camera Use Norms and Natural Preferences for Camera Use as Potential Moderators

In addition to the central goal of comparing the effect of camera use on individuals’ judgement of self and others, we explored two potentially relevant moderators: the group norm of camera use and individual differences in the natural preference for camera use.

First, research on team composition effects suggests that individuals’ work outcomes are determined not only by their own behaviour, but also by the behaviour of other team members (Bell et al. 2018). Consistent with this theoretical perspective, the extent to which an individual’s behaviour is consistent (vs. not) with the camera use of other meeting attendees, that is, the social norm of camera use, could be important for both actor experiences and observer perceptions. In terms of actor experiences, existing research has shown that norm-deviant behaviours are often stigmatized and individuals whose characteristics, behaviours or lifestyle deviate from what is considered normative in the socio-cultural environment report lower psychological well-being, self-esteem and poor health (Ebert et al. 2020; Stavrova 2015; Stavrova and Luhmann 2016).

The question of whether most other session participants turn the camera on or off could also shape how each individual’s camera use behaviour is perceived by others. Person perception research has shown that people are more likely to make character inferences from others’ behaviour when this behaviour does not represent a norm (i.e., is uncommon) (Fischer 2013; McGraw 1987; Monroe et al. 2018). In the present study, we tested whether the effect of individuals’ camera use on actor experiences and observer perceptions depends on the camera use of other meeting attendees.

Second, the extent to which an individual’s camera use behaviour is consistent (vs. not) with their natural preferences for and their typical camera use behaviour could also matter for both actor experiences and observer perceptions. Receiving a treatment consistent with one’s preferences often leads to superior outcomes in various domains: patients who receive the preferred psychotherapy treatment show superior clinical outcomes (Lindhiem et al. 2014), and employees whose supervisor’s leadership style is consistent with their preferences report a higher job

satisfaction (Kruglanski et al. 2007). Being assigned to the camera on condition might improve the experience of the meeting for individuals who prefer camera-on interactions by allowing them to satisfy their need for a richer communication medium; similarly, individuals who prefer camera off interactions could benefit from turning the camera off by avoiding a potential visual cue overload and enjoying a less intense communication mode. In contrast, a mismatch between individuals' natural tendencies and the communication situation they are placed in (switching the camera on or off) could undermine their experience by increasing fatigue and decreasing engagement and well-being. This (mis)match could affect observer perceptions as well. Individuals who prefer and often engage in camera-on interactions might have perfected their video-based communication skills, leading to a more positive observer perceptions (e.g., higher engagement, competence and leadership potential). In the present study, we explored whether the effect of individuals' camera use on actor experiences and observer perceptions depends on an individual's natural preferences and experience using the camera.

2 | Present Research

We tested the effect of camera use on actor experiences and observer perceptions in an experiment. For actor experiences, we focused on the commonly studied outcomes in the virtual interaction research: fatigue, defined as 'the experience of being tired' (Smets et al. 1995), engagement, defined as 'a motivational state that captures the degree that individuals apply their physical, cognitive, and emotional energies' to a specific task (Newton et al. 2020) and well-being. Consistent with previous research (Diener et al. 1999; Park et al. 2023), well-being is broadly defined, including the dimensions of experienced emotions and—given the social context of the online interactions—social well-being (Keyes and Shapiro 2004; Ryff and Keyes 1995). For observer perceptions, we focused on perceived engagement (which allowed a direct comparison with self-reported engagement) and the outcomes commonly studied in person perception literature: perceived morality and competence (Wojciszke 2005) and in the leadership literature: leader emergence, defined as being seen as more 'leaderlike' by peers (Hanna et al. 2021).

Participants worked on several tasks in small groups via Zoom. Participants received instructions to have their camera on or off during the session (self camera use) in a group where camera use was either homogenous (every member had their camera turned on or turned off) or mixed (some group members had cameras off while others had cameras on). Our study extends prior research in several unique ways. First, we measured actor experiences and observer perceptions in a round-robin design. This allowed us to examine the effect of camera use not only on self-reported outcomes (fatigue, well-being, engagement), but also on one's reputation (how one is perceived by others in terms of engagement, morality, competence and leadership potential). Second, we tested whether an individual's camera use has different effects depending on other meeting attendees' camera use. Third, we explored whether actor experiences and observer perceptions depend on a match between individuals' natural tendencies to use the camera and the condition they had been assigned.

The study was not pre-registered. Data, materials and analysis scripts are available in the Open Science Framework (OSF) repository: <https://osf.io/wmy5r/>.

3 | Methods

3.1 | Participants

Participants were students enrolled in an undergraduate or a professional master's program in psychology at a Dutch University. The study sessions took place as an online class activity in the Spring and Fall terms of 2022. Our final sample consisted of 177 participants ($M_{\text{age}} = 21.77$ years, $SD_{\text{age}} = 2.52$, 21% male; 79.6% were of European background, 6.7% were Asian and the remaining 13.7% reported various other backgrounds). Our sample size was based on the data we were able to collect over the period of one academic year. This sample size is on par with past observational studies of interactions in small groups (Badura et al. 2022; Borteyrou et al. 2015; Ren et al. 2016). We used an effect size sensitivity analysis to determine the smallest effect size our sample was sensitive to detect with a power of 80% and $\alpha = 0.05$ (two-tailed) (Giner-Sorolla et al. 2019). We focused on the main effect size of interest for this research: the difference between the camera on and the camera off condition. We conducted separate sensitivity analyses for each dependent variable using 1000 simulations with simr package (Green and MacLeod 2016). The results showed that the smallest differences between camera on versus camera off condition that our sample size would allow us to detect ranged from Cohen's d of 0.43 and 0.49 (medium effect size). An overview of the smallest detectable effect sizes for each dependent variable is shown in Supporting Information.

3.2 | Procedure

All study sessions took place via Zoom. At the beginning of each study session, participants were informed that they would be taking part in several group activities via Zoom. Before the group activities, participants completed an online survey consisting of several measures that were collected within a project on personality and leadership attainment (Stavrova et al. 2023) and are not directly relevant to the research questions of the present paper (for transparency, the full list of measures is available on the project's OSF page).

Afterwards, participants were randomly assigned to small groups (three to six members) to work on several group activities in Zoom breakout rooms. Forty-seven percent of groups had six members, 29% had five members, 21% had four members and the rest had three members. Participants were mostly not familiar with each other: 92% of the sample indicated that they had never met other members of their group before participating in this study. Each group was asked to work together on a series of group tasks. We selected the tasks that would allow participants to get to know each other and to work together rather than individually. These tasks are frequently used in group work/group decision-making studies (Brucks and Levav 2022; Parsons et al. 2020) and could be characterized as involving a moderate level of effort: an introduction task (ice breaker), a creativity task where participants had to think of as many uses of a glass bottle as

TABLE 1 | Experimental design.

		Group camera use	
		Homogeneous	Mixed
Self camera use	On	The subject and all other group members turn the webcam <i>on</i> <i>N</i> = 48	Half of the group members—including the subject—turn the webcam <i>on</i> , while the other half turn the webcam <i>off</i> <i>N</i> = 45
	Off	The subject and all other group members turn the webcam <i>off</i> <i>N</i> = 34	Half of the group members—including the subject—turn the webcam <i>off</i> , while the other half turn the webcam <i>on</i> <i>N</i> = 50

Note: The sample sizes differ across the cells because the assignment to experimental conditions took place at the level of breakout room which differed in size (the data were collected in several 40–60 person sessions and it was not possible to divide them into perfectly equally sized smaller groups).

possible, and a group problem-solving task (NASA moon survival task) where participants had to decide, as a group, which objects to take with them in case of a crash on the moon (Hall and Watson 1970); see Supporting Information for the instructions. The group work lasted for 30 min and the full session lasted about 1 h. The duration of the group work and the full session remained the same across the conditions.

At the beginning of the group activities, a trained assistant of the experimenter was (virtually) present in each breakout room to deliver instructions regarding the group activities. The assistant left the breakout room immediately after delivering the instructions. Crucially, the assistant explained the rules regarding camera use. Groups were randomly assigned to receive instructions requesting members to use the camera in the same way (homogeneous condition) or differently (mixed condition). In the homogeneous conditions, each member in the group received the same instructions to either turn on or turn off their camera. In the mixed condition, half of the group members were asked to turn on their camera while the rest of the members were requested to leave their camera off. In groups of five participants, the division was two of three (e.g., two participants were in the camera on condition and three in the camera off condition or the other way around). This design was used so that at the individual level, each participant was placed in one of four experimental conditions: 2 (self camera use: on vs. off) × 2 (group camera use: homogeneous vs. mixed), see Table 1.

Participants' compliance with the instructions was high: according to the post-session questionnaire at the end of the session, only five participants reported the camera use not consistent with the experimental condition they had been assigned to. Removing these participants from the analyses did not affect the results (unless explicitly stated otherwise; see Section 4 below).

After the group activities, the participants were asked to complete an online survey measuring their experiences during the group work (referred to as 'actor experiences' below) and their perceptions of other members (referred to as 'observer perceptions' below). Every group member evaluated every other member of their group. The post-session questionnaire also included several exploratory measures that captured actor experiences (team liking, relationship and task conflict, satisfaction with group communication, team trust and cohesion, feeling powerful

and in charge during the group work). As these variables were exploratory and the respective analyses did not yield informative results (the experimental manipulation did not affect any of these measures), we summarized the respective results in Supporting Information. Participants were then thanked and allowed to leave their breakout room.

3.3 | Measures

3.3.1 | Actor Experiences

To measure participants' experience of engagement during the sessions, we created items to capture the definition of engagement we relied on as 'a motivational state that captures the degree that individuals apply their physical, cognitive, and emotional energies to a specific task' (Newton et al. 2020). As participants provided both self- and other-ratings of engagement, we paid particular attention to the construct validity of this scale by conducting an exploratory factor analysis using a promax rotation with two factors (self-rated engagement and other-rated engagement). The results showed that all the items loaded on their respective factors, with no cross-loading higher than 0.12 (reported in Supporting Information).

Self-rated engagement was measured using six items. Participants indicated to what extent they were fully present during the session, disengaged during the session (reverse-coded), distracted during the session (reverse-coded), whether they actively participated in brainstorming sessions, were motivated to contribute to the group task, how much they contributed and how well they performed on the group tasks. Participants rated their responses on a 7-point scale (the same scale was used for all items in the survey unless otherwise specified). Participants' responses were averaged and combined into a scale of *self-rated engagement* ($\alpha = 0.86$).

As a measure of fatigue, we used the following four items: 'During the group session, to what extent have you felt fatigued, mentally and emotionally drained, tired and exhausted'. The responses were averaged on a scale of *fatigue* ($\alpha = 0.88$). This measure is nearly identical to the general fatigue subscale of the recently published Zoom exhaustion and fatigue scale (Fauville et al. 2021).

Psychological well-being during the sessions was measured as a combination of the experiences of positive and negative emotions (enjoyment, happiness, enthusiasm, satisfaction, boredom, anger, sadness) and social well-being (connected, excluded, ignored, lonely) during the session. These items intended to reflect the broad definition of psychological well-being adapted here, including emotions and social well-being (Keyes and Shapiro 2004; Ryff and Keyes 1995). After reverse coding negatively worded items, all items were averaged into a well-being composite ($\alpha = 0.89$).

3.3.2 | Observer Perceptions

Participants were asked to answer several questions about each of the other members of their group. They were reminded that their responses are completely anonymous and were asked to answer the questions as honestly as they can.

Each member of their group was asked to assess the member's level of engagement during the group session. We used the same items for self-rated engagement, except that each item was reworded to refer to a group member (e.g., 'Was participant [name] motivated to contribute to the group tasks?'). We first computed the average rating for each item for each participant by aggregating the respective items across all the raters. The obtained items were then averaged and combined into a scale of *other-rated engagement* (average $\alpha = 0.95$).

Participants rated another member of their group on the dimensions of *morality and competence*. For each member of the group, participants indicated to what extent they think that this person is honest and trustworthy (averaged into *other-rated morality*, average $r = 0.83$) and competent, intelligent and creative (averaged into *other-rated competence*, average $\alpha = 0.94$). These items were drawn from previous research (Leach et al. 2007), with minor modifications for the context of our study (e.g., we replaced 'skilled' with 'creative'; see Supporting Information for more details).

To measure *leader emergence*, we adopted the approach from MacLaren et al. (2020) and asked participants to indicate who among their group members they would nominate as a leader. Participants were not allowed to self-nominate. We computed the number of nominations each participant received and used it as a measure of leader emergence (range: 0–5).

3.3.3 | Camera Use Preferences

Before the group work, participants responded to several questions about their preferences and usual camera use behaviour. One question measured participants' preference for the upcoming session: 'What's your preference for the upcoming online group activity? Turning my camera on (coded as 1) or leaving my camera off (coded as 0)'. The other two questions measured their usual camera use in online group meetings and online classes or lectures: 'In general, how often do you turn on your camera in online group meetings/online classes or lectures (1 = *never*, 5 = *always*)'. The responses to these two questions (usual camera use in group meetings and classes) were positively correlated

($r = 0.37$, $p < 0.001$) and averaged into a scale of usual camera use.

4 | Results

4.1 | Descriptive Statistics

Table 2 presents the bivariate associations among the outcome variables. We tested how camera use affected participants' experiences (actor experiences) and their reputations (observer perceptions).

4.2 | Actor Experiences

We ran a series of multilevel regression models (also known as general linear mixed models) (Hox and Wijnngaards-de Meij 2015) with self-rated engagement, well-being and fatigue as dependent variables, self camera use ($-1 = \text{off}$, $1 = \text{on}$), group camera use ($-1 = \text{mixed}$, $1 = \text{homogeneous}$) and their interaction as predictors. We used lme4 package in R (Bates et al. 2015). To account for observations of inter-dependence (participants clustered within groups), we included a random intercept at the level of groups. We found no significant effect of either self camera use, group camera use or their interactions. Hence, the use of a webcam in a virtual group interaction was not associated with actor experiences during the interaction. The results are reported in Table 3 and Figure S1.

4.3 | Observer Perceptions

We repeated the analyses using observer-rated (instead of self-rated) engagement, morality, competence and leader emergence as dependent variables. Here again, we used multilevel regression with participants nested within groups, resulting in a random intercept of groups. Note that we computed the average perception that each participant received in the group (for each dependent variable separately), leading to one measurement per participant. As a result, only the group can be considered as a nesting/clustering factor, not the participant. The results are reported in Table 4 and Figure 1.

For other-rated engagement, we found a significant effect of self camera use: participants assigned to attend the session with their camera on (vs. off) were perceived as more engaged in the group work. There was no significant self camera use \times group camera use interaction, suggesting that this effect did not depend on other group members' camera use. A similar pattern emerged for other-rated morality: participants assigned to have their camera on (vs. off) were perceived as more honest and trustworthy. Again, this effect was not moderated by group camera use.

Regarding other-rated competence, on (vs. off) camera group members obtained higher ratings, although this was not significant (note that this effect became significant, $p = 0.022$, after removing five participants who failed to correctly report their camera use condition, see Supporting Information). Like in the case of engagement and morality, it was not moderated by group camera use.

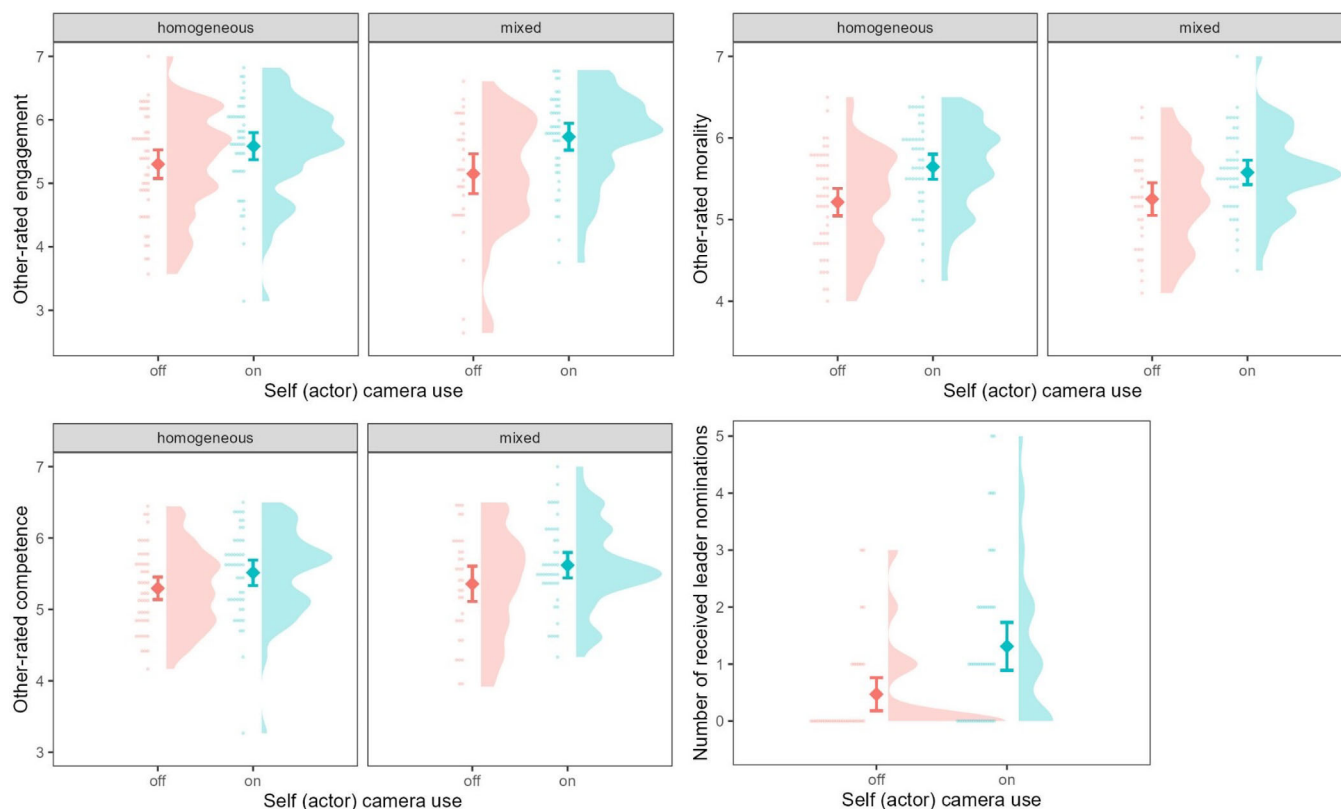


FIGURE 1 | Camera use and observer perceptions. Big dots indicate average ratings per condition, error bars are 95% confidence intervals. For leadership nominations, only the mixed condition is shown.

Finally, we tested whether a person's camera use contributed to the person being seen as more fit for a leadership role in the group. For this analysis, we used a Poisson regression as the dependent variable (number of received leadership nominations) represents a count variable. Since the maximum possible number of leader nominations one could receive was restricted by the number of members in each group, the analyses controlled for the log-transformed group size (Gagnon et al. 2008). The analyses included a random intercept at the level of groups.

In contrast to other-rated engagement, competence and morality, the leader emergence analyses were only based on the data from the groups with mixed camera use for the following reason. As leader emergence was computed as the number of nominations that each participant obtained within their group, this variable varied between participants within each group but it did not vary between groups (excluding small differences due to slightly varying group sizes). As a result, comparing 'self camera on' to 'self camera off' condition in homogeneous groups basically means comparing groups where everyone had the camera on to groups where everyone had the camera off. Since groups did not differ in average leader emergence score, examining the effect of self camera use condition on leader emergence in groups with homogeneous camera use is uninformative. In contrast, answering the original research question—whether individuals who have their camera on receive more leadership nominations from other group members than individuals who have their camera off—is only feasible in the groups with a mixed camera use. Therefore, we estimated the effect self camera use condition in mixed groups only.

We found a significant effect of self camera use. When the group camera use was mixed (i.e., some members turned the camera on while others turned it off), participants who had their camera on during the group work session had 2.8 times the rate of leadership nominations as participants who had their camera off (incidence rate ratio = 2.80, $p = 0.0003$), see Figure 1.

4.4 | Engagement: Actor–Observer Gap

As we have reported in the previous sections, the analyses of self- and observer-rated engagement showed that camera use affects the latter but not the former. Is this pattern of results driven by the benefit of camera on (i.e., perceivers overestimate the engagement of on-camera targets) or the cost of camera off (i.e., perceivers underestimate the engagement of off-camera targets)? To answer this question, we regressed engagement on self camera condition (1 = on, -1 = off), judgement type (1 = self-rated, -1 = observer-rated) and their interaction. The model included a random intercept of groups and participants (as each participant now had two measurements: self-rated and observer-rated engagement). Self camera was a between-subject and judgement type was a within-subject factor. Note that comparisons of self- and other-ratings are common in the literature on person perception (Anderson et al. 2006; Gosling et al. 2002). The results showed a significant interaction (see Table 5). When the actor camera was on, actor experiences of engagement did not differ from observer perceptions of actor engagement ($b = -0.005$, $p = 0.963$, 95% CI [-0.20, 0.19]). When the actor camera was off, observer perceptions of actor engagement were

TABLE 2 | Means, standard deviations and correlations.

Variable	M	SD	1	2	3	4	5	6
1. Self-rated engagement	5.60	0.92						
2. Well-being	5.41	0.89	0.66*** [0.56, 0.73]					
3. Fatigue	2.56	1.47	-0.44*** [-0.55, -0.31]	-0.62*** [-0.71, -0.52]				
4. Other-rated engagement	5.46	0.82	0.43*** [0.30, 0.54]	0.23*** [0.08, 0.36]	-0.11 [-0.25, 0.04]			
5. Other-rated morality	5.43	0.59	0.30*** [0.16, 0.43]	0.24*** [0.09, 0.37]	-0.07 [-0.21, 0.08]	0.60*** [0.49, 0.68]		
6. Other-rated competence	5.37	0.62	0.40*** [0.27, 0.52]	0.25*** [0.11, 0.39]	-0.12 [-0.27, 0.03]	0.78*** [0.72, 0.83]	0.75*** [0.68, 0.81]	
7. Leader emergence	0.97	1.19	0.24*** [0.10, 0.38]	0.17* [0.02, 0.31]	-0.11 [-0.25, 0.04]	0.52*** [0.41, 0.62]	0.28*** [0.14, 0.41]	0.34*** [0.20, 0.46]

Note: The unit of analysis are individual participants. Other-rated measures refer to the ratings on the respective dimension (e.g., morality) a participant received, averaged across the raters. Leader emergence = number of received leadership nominations; well-being and fatigue reflect actor experiences (self-rated). * $p < 0.05$. *** $p < 0.001$.

TABLE 3 | Camera use and actor experiences.

Predictors	Self-rated engagement				Well-being				Fatigue			
	b/d	SE	CI	p	b/d	SE	CI	p	b/d	SE	CI	p
Self camera use	0.14/0.10	0.21	-0.27-0.56	0.498	-0.15/0.12	0.20	-0.55-0.25	0.468	0.52/0.26	0.33	-0.13-1.18	0.116
Group camera use	0.13/0.10	0.21	-0.28-0.54	0.533	-0.12/0.15	0.20	-0.53-0.28	0.544	0.28/0.21	0.35	-0.40-0.96	0.417
Self × group camera use	-0.02/0.01	0.28	-0.58-0.54	0.948	0.45/0.30	0.27	-0.10-0.99	0.107	-0.57/0.24	0.46	-1.48-0.34	0.218
ICC		0				0.02				0.04		
N—Groups		37				37				37		
N—Participants		176				176				176		
Marginal R^2 /conditional R^2		0.009/NA				0.022/0.039				0.014/0.056		

Abbreviations: b, unstandardized regression coefficients; CI, confidence intervals; conditional R^2 , variance explained by fixed and random effects; d, Cohen's d; marginal R^2 , variance explained by fixed effects.

TABLE 4 | Camera use and observer perceptions.

Predictors	Other-rated engagement				Other-rated competence				Other-rated morality				Leader emergence			
	b/d	SE	CI	p	b/d	SE	CI	p	b/d	SE	CI	p	IRR	SE	CI	p
Self camera use	0.58/0.49	0.18	0.22–0.94	0.002	0.24/0.31	0.13	-0.02–0.49	0.067	0.32/0.50	0.11	0.10–0.53	0.004	2.79	0.79	1.61–4.86	< 0.001
Group camera use	0.15/0.13	0.18	-0.20–0.50	0.403	-0.09/0.14	0.18	-0.44–0.26	0.621	-0.06/0.11	0.17	-0.39–0.27	0.725	—	—	—	—
Self × group camera use	-0.30/0.19	0.24	-0.78–0.18	0.223	-0.05/0.06	0.22	-0.49–0.38	0.806	0.09/0.12	0.21	-0.31–0.50	0.644	—	—	—	—
Group size (log)	—	—	—	—	—	—	—	—	—	—	—	—	1.13	0.35	0.62–2.08	0.684
ICC	—	0	—	—	0.25	—	—	—	0.33	—	—	—	0	—	—	—
N—Groups	—	37	—	—	37	—	—	—	37	—	—	—	16	—	—	—
N—Participants	—	175	—	—	175	—	—	—	175	—	—	—	79	—	—	—
Marginal R ² /conditional R ²	—	0.071/NA	—	—	0.036/0.275	—	—	—	0.097/0.398	—	—	—	0.268/NA	—	—	—

Note: The leader emergence analysis was conducted for the mixed group camera conditions only.

Abbreviations: b, unstandardized regression coefficients; CI, 95% confidence intervals; conditional R², variance explained by fixed and random effects; d, Cohen's d; IRR, incidence rate ratio; marginal R², variance explained by fixed effects.

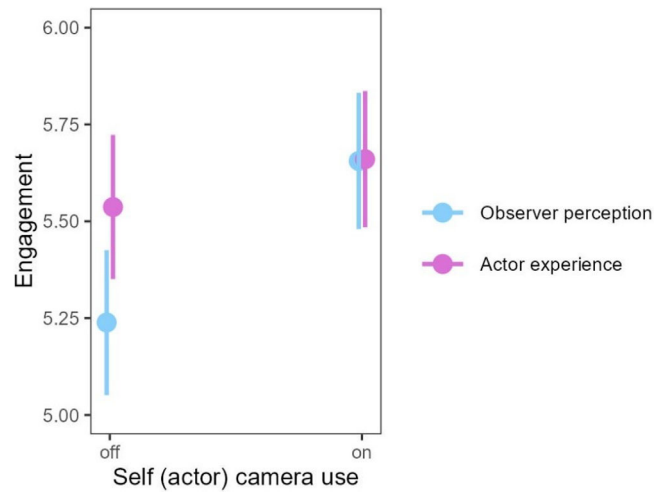


FIGURE 2 | Camera use and self-observer gap in engagement ratings. Error bars are 95% CI.

significantly lower than actor self reports ($b = -0.30, p = 0.003, 95\% \text{ CI} [-0.49, -0.11]$). These results showed that people made accurate attributions of a target person's engagement when the target person had the camera on, but underestimated the target's engagement when the target person had the camera off. That is, turning on the camera did not lead to reputational benefits; rather, not using the camera during virtual meetings resulted in reputational costs, see Figure 2.

4.5 | Camera Use Preferences and Usual Camera Behaviour

To make sure that our random assignment was successful (variables that were measured before the manipulation, such as participants' natural tendencies to use the camera, could not be confounders), we tested whether the experimental assignment was independent of pre-existing preferences and the usual camera use. We computed a multilevel logistic regression with camera use preference as the dependent variable and self and group camera use and their interaction as independent variables. Neither the main effects of the experimental factors, nor their interaction were significant (Table S23). We then repeated the analyses with the usual camera use as a dependent variable using a multilevel linear regression. Similarly, none of the experimental factors or their interaction were significantly related to participants' usual camera use (Table S23). Hence, participants who received higher engagement ratings in the camera on condition could not have done so due to their preferences or familiarity with being on camera because neither the preferences nor the usual camera use behaviour were associated with the experimental conditions.

Next, we explored whether participants' preferences and their usual camera use moderated the effect of self camera use condition. For each outcome measure (three self-rated and four other-rated outcomes), we estimated a multilevel regression with the main effects of self camera use condition, participants' preferences for camera use and their interaction. The results are shown in Tables S24 and S25.

TABLE 5 | Effect of camera use on actor–observer gap.

Predictors	Engagement			
	<i>b/d</i>	SE	CI	<i>p</i>
Self camera use	0.42/0.32	0.13	0.16–0.67	0.002
Rating type	0.30/0.44	0.10	0.10–0.50	0.004
Self camera use × Rating type	−0.29/0.32	0.14	−0.57 to −0.02	0.037
<i>N</i> —Participants		176		
<i>N</i> —Groups		37		
<i>N</i> —Observations		351		
Marginal R^2 /conditional R^2		0.063/NA		

Abbreviations: *b*, unstandardized regression coefficients; CI, 95% confidence intervals; conditional R^2 , variance explained by fixed and random effects; *d*, Cohen's *d*; marginal R^2 , variance explained by fixed effects.

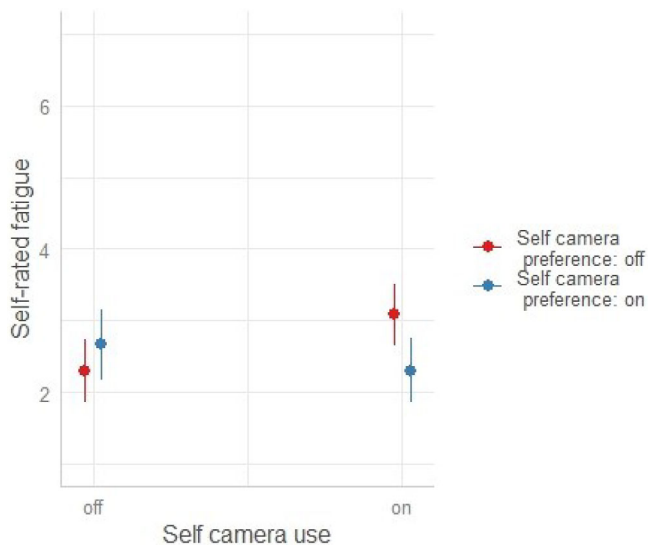


FIGURE 3 | Effect of self camera use on self-reported fatigue depending camera use preferences.

For self-rated fatigue, the interaction reached significance and is presented in Figure 3. A simple slope analysis revealed that participants who preferred to have their camera off during the session reported more fatigue when assigned to the camera on (vs. off) condition ($b = 0.79$, $p = 0.01$); participants who preferred to have their camera on during the session did not report significantly more fatigue when assigned to the camera off (vs. on) condition ($b = -0.36$, $p = 0.28$). In other words, having the camera on caused more fatigue, but only for participants who preferred to have the camera off. The moderation effect did not emerge for the remaining five outcomes (self-rated engagement, self-rated well-being, other-rated engagement, other-rated competence, other-rated morality, leader emergence).

We repeated the analyses using participants' usual camera use as a moderator (instead of participants' preferences). The results are shown in Tables S26 and S27. Of all the outcomes, there was a significant interaction between self camera use condition and participants' usual camera use only in case of leadership nominations. The interaction is shown in Figure 4. The more experienced participants were with using the camera, the more

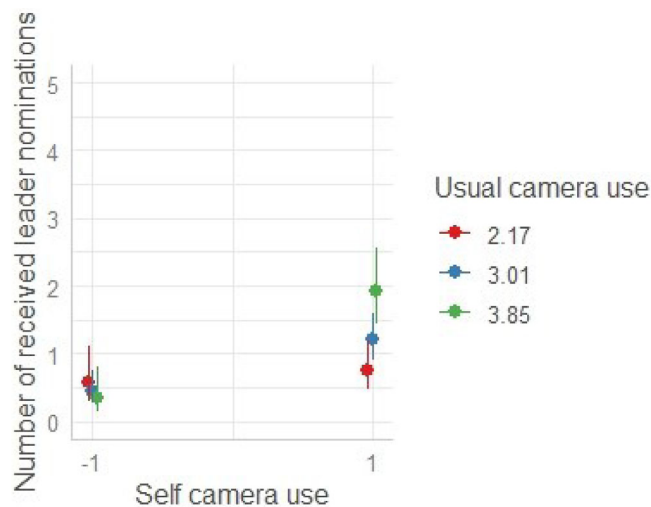


FIGURE 4 | Effect of self camera use on leadership nominations depending usual camera use behaviour. The effect of self camera use is estimated at -1 SD level of usual camera use (2.17), an average level of usual camera use (3.01) and $+1$ SD level of usual camera use (3.85); the typical camera use ranged from 1 (*I never turn on the camera*) to 5 (*I always turn on the camera*).

leadership nominations they received when assigned to the camera on (vs. off) condition ($+1$ SD_{usual camera use}: IRR = 2.56, $p = 0.01$; mean_{usual camera use}: IRR = 2.09, $p < 0.001$; -1 SD_{usual camera use}: IRR = 1.61, $p = 0.01$).

4.6 | Robustness Checks

Even though participants were randomly assigned to the experimental conditions and the assignment was unrelated to their pre-existing preferences, we explored whether other individual difference variables, such as personality traits, could have been another potential confound in our experiment. As the study included several personality measures collected for a different project (Stavrova et al. 2023)—extraversion, agreeableness, preference for solitude, need to belong, self-control and life satisfaction—we tested whether these personality traits were associated with the preference to switch the camera on versus

off. Extraversion was related to a stronger camera-on preference ($r = 0.19, p = 0.01$), while preference for solitude ($r = -0.24, p < 0.001$) and cynicism ($r = -0.19, p = 0.01$) were associated with a stronger camera-off preference. Other personality traits did not significantly predict camera use preferences (see Table S28).

Given these correlations, we conducted further robustness checks, ensuring that the assignment to the experimental conditions was independent of personality traits (extraversion, preference for solitude, cynicism) and that the effect of the self camera on condition persisted while controlling for personality (extraversion, preference for solitude, cynicism). The results provided evidence of both statements: participants with different personality scores were equally distributed across the experimental conditions and the effect of self camera use was robust against introducing personality traits as control variables. These results are summarized in Tables S29–S31).

5 | Discussion

With the rise of digital communication, there is ongoing debate about the role of camera use. One narrative is that the use of camera in online meetings is harmful (e.g., a factor that contributes to ‘Zoom fatigue’). Another narrative is that the use of the camera is essential for maintaining a good worker reputation, that is, being perceived as engaged and productive. While the potentially fatiguing effect of camera use has attracted the attention of academic research (Bennett et al. 2021; Shockley et al. 2021), its reputational consequences have not been examined before. Here, we sought to contribute to this debate by distinguishing and examining two different perspectives (actor and observer) simultaneously in a well-controlled experiment, manipulating self camera use and group camera use. Our results on actor’s experiences suggest that neither individuals’ own nor other meeting attendees’ camera use affected individuals’ self-reported fatigue, well-being and engagement.

However, individuals’ camera use mattered for how they were perceived by their teammates. We found that participants randomly assigned to turn the camera on were perceived as more engaged (although not more competent) and were attributed a higher level of morality (e.g., trustworthiness and honesty) compared to participants randomly assigned to turn the camera off. These effects did not depend on whether everyone or only a few people in the group had their cameras on. Also, in groups with mixed camera use, turning the camera on increased one’s likelihood of being considered a group leader by others. Both the effect of camera use on other-rated engagement and leadership nominations could be considered medium to large (Funder and Ozer 2019). Taken together, while it remains unclear whether switching off the camera relieves ‘Zoom fatigue’ or not, our data strongly suggest that it likely has detrimental reputational consequences by tainting observer perceptions of one’s engagement, morality and leadership potential.

It is important to note that participants knew that whether other members of their group had their webcam turned on or off was determined by the study instructions and not self-chosen by participants. This knowledge could have affected how they perceived others, for example, by making it harder

to attribute any observed behaviour to the person rather than to the experimental instructions. It is remarkable that despite this knowledge, participants’ judgement of others’ engagement, morality and leadership potential was still affected by others’ camera use. While this effect is consistent with the fundamental attribution error/correspondence bias (Gilbert and Malone 1995), it is also possible that being able to not only hear but also see someone on the screen increases this person’s visibility, making this person seem more ‘present’ and consequently, making them appear more engaged and dedicated. It is also possible that turning on the webcam led to actual behavioural changes making participants more vocal, engaged and active in the meeting. These changes could have remained unnoticed by the participants themselves but could still be registered by others. Continuing this line of research, it will be important to understand whether the mere act of turning on the camera shapes individuals’ objective behaviour in a meeting, such as increasing speaking time, the willingness to take on additional tasks or to stay in the meeting longer—all of which could be interpreted as signs of exceptional engagement and dedication by others. In addition, while the random assignment to switching the webcam on versus off ensured that we captured the *causal* effect of camera use, it might be interesting to consider whether individuals who themselves select to use the camera versus not experience the virtual interaction differently.

Our results did not provide consistent evidence of the effect of camera use on self-reported fatigue. This contradicts some of the prior studies (Shockley et al. 2021) but is consistent with others (Bennett et al. 2021). For example, in Shockley et al. (2021) field experiment, participants randomly assigned to keep their webcam on (vs. off) during work meetings reported more fatigue (but not less engagement). On the other hand, in Bennett et al. (2021) observational study, participants who had a higher frequency of camera-on interactions during a particular work hour were not more or less fatigued at the end of that hour. It is possible that switching the camera on is only fatiguing when it is mandated (like in Shockley et al.’s study but not like in Bennett et al.’s study) and inconsistent with individuals’ natural preferences. Indeed, our results suggest that being asked to switch the camera on resulted in higher fatigue for participants who preferred to stay off-camera.

It is also possible that the effect of camera use is minimal in one setting (such as a 30-min Zoom session in the present study), but it accumulates in multiple repeated video interactions and manifests over a longer period of time. In addition, in contrast to Shockley et al.’s study that took place in the first pandemic year and used remote workers, the present study took place at a later stage of the pandemic when people were starting to return to in-person interactions and used college students as participants who were unlikely to have had exclusively remote meetings and courses throughout the day. This further diminishes the possibility that a single online class session could lead to fatigue. Alternatively, it is possible that the effect of camera use on self-ratings is just smaller than what our study was powered to detect (i.e., a medium-sized effect; see the effect size sensitivity analysis Section).

Similarly, the discrepancy between actor and observer perceptions where the situation (experimenter-mandated camera use)

affected participants' ratings of others but not of themselves could be subject to untested moderators. An important one could be culture. Specifically, if the fundamental attribution error underlies the actor–observer gap in our findings, it should be mostly restricted to Western samples, like ours (the Netherlands) (Choi et al. 1999). It remains to explore whether the negative reputational consequences of switching the camera off in online interactions would emerge in cultures with stronger attention to situational cues, such as those in East Asia. Hence, more future studies using larger culturally diverse samples, various experimental paradigms and ecologically valid designs are needed to explore these possibilities.

Our results showed that turning the camera on resulted in being considered more moral but not more competent. In other words, on-camera group members might be perceived as being more motivated to contribute ideas, but their ideas might not be considered more creative or useful relative to the ideas contributed by off-camera group members. People might think that off-camera participants are more likely to be slacking and multitasking (a common concern with practitioners; Vyopta 2022), which carried more weight for the evaluation of their morality but was not particularly relevant for the evaluation of their competence. Switching on the camera might make one look more engaged and trustworthy, but not more competent.

5.1 | Limitations

To provide causal evidence for the effect of camera use, we studied it in a well-controlled experimental setting of getting-acquainted interactions among strangers, removing the confounding threat of prior relationships among the participants or pre-existing preferences. While there is definitely a good number of first time getting-acquainted online interactions at work (e.g., new client acquisition), a potentially greater share of meetings are repeated interactions with the people one has known for a while. In repeated interaction settings, camera use effects might be smaller because individuals have more data (e.g., from prior interactions) to use to inform perceptions. It is also possible that in repeated interactions, the camera effect would depend on prior impressions. For example, a repeated observation of someone always leaving their camera off might push the reputational effects stronger. Also, any camera use that deviates from a person's default mode could be considered a stronger cue to this person's interest in the interaction and, consequently, engagement. In brief, it remains to be explored how camera use shapes impressions in repeated interactions among long-term co-workers.

Furthermore, while the random assignment to camera on or off condition did not influence actor experiences, such as fatigue and engagement, it could have affected the performance of each individual group member, which in turn could have shaped the impressions they left on others. Hence, it is crucial for future studies to employ objective performance indicators. Finally, the group interaction in our study lasted 30 min and the overall session lasted 1 h. While this resembles a typical length of work meetings, it might just not be enough to elicit fatigue. Given the lack of evidence in the literature, it remains an empirical question at which point Zoom fatigue would emerge. Our study suggests

that the typical 1 h meetings do not lead to fatigue for everyone; but it is sufficient to cause fatigue among those who prefer to leave their camera off.

5.2 | Contributions

Our findings contribute to three different streams of research. First, our findings contribute to the literature on how people form impressions of strangers in relatively short online interactions. While the largest body of psychological research in this area has focused on impression formation in zero acquaintance or thin slice settings (i.e., impressions based on photographs, written text, short silent video clips or social media pages of others) (Borkenau et al. 2004; Todorov et al. 2005), understanding the processes of impression formation in actual social interactions is at least equally important. The present research underscores the role of the communication medium, contrasting the effects of video- and audio- versus only audio-supported digital communication and thus contributes to the research on impression formation in computer-mediated communication (Hancock and Dunham 2001; Johri 2012; Tanis and Postmes 2003).

Our study also contributes to the literature on actor–observer effects in person perception. We detected a discrepancy between how individual's camera use shapes how they see themselves (actor effects) versus how they are seen by others (observer effects). This finding is consistent with the research in personality and social psychology that showed how self and other reports of individual characteristics (e.g., well-being) can have different correlates. For example, in making judgement of well-being, observers tend to rely on somewhat different information than the individuals themselves (Stavrova and Haarmann 2020), suggesting that the way individuals evaluate themselves (e.g., their well-being) might depend on different factors than the way these individuals are evaluated by others. Similarly, the present study showed that individuals' camera use shaped how individuals were perceived by others but not how they perceived themselves. Thus, the present findings contribute to the person perception literature by highlighting the importance of using observer ratings in addition to self reports.

Second, our findings contribute to the literature on camera use's effect on fatigue. Empirical research on the implications of turning one's webcam off (vs. on) is scarce. The few existing studies provided mixed findings, with studies in the context of virtual learning/educational psychology documenting positive effects (Alim et al. 2022; Austin et al. 2021; Kushlev and Epstein-Shuman 2022), and studies in the context of virtual interactions at work showing negative (Nesher Shoshan and Wehrt 2021; Shockley et al. 2021), or zero (Bennett et al. 2021) effects. Here, we focused on the context of previously unacquainted work groups and presented the first test of the camera effect using a controlled setting of an 'online laboratory'. The advantage of manipulating camera use is that it eliminates concerns of confounds, allowing us to assess the causal effect of camera use on outcomes of interest. Our manipulation is also practically meaningful, providing insights into how prescribed camera use (e.g., in organizational or educational settings) through official regulations, rules, or norms could affect attendees' experiences and perceptions of others. While we do not claim that our

study settles the ongoing debate regarding the fatiguing effect of cameras, our findings are consistent with some of the prior work that questioned the fatigue-reducing effect of turning the cameras off (Bennett et al. 2021). At the same time, our additional analyses showed that—like nearly any policy—the prescribed camera use might benefit some people (i.e. who prefer to switch the camera on and usually do so) but not others. Finally, our study extends the digital communication literature by examining the camera use effect from the observer perspective and documenting the potentially damaging reputational consequences of turning off the camera.

Third, our findings contribute to the fast-growing literature on emergent leadership (Badura et al. 2022; Hanna et al. 2021). In organization and management science, volubility—the mere amount of speaking time—is considered an important predictor of leadership attainment (Brescoll 2011). Here, we showed that in the era of digital interactions, there are even easier ways of making a leaderlike impression: turning on the camera. Our results suggest that literal ‘visibility’—just being seen on a screen during a virtual meeting—determines whether one is going to be seen as ‘leader material’ or not. This pattern is consistent with previous research in communication science showing that attention-grabbing behaviours (e.g., non-verbal cues, like eye contact or expansive body postures) contributes to attribution of high status (Carney 2020). An intriguing question for future studies is to what extent one’s volubility can compensate for being not seen on the screen and whether individuals who stay off camera tend to engage in compensatory behaviour by, for instance, increasing their speaking time.

6 | Conclusions

Camera use is part of an ongoing conversation about successfully navigating the challenges of digital communication. In this research, we show that understanding the impact of camera use requires examining actors’ experiences but also an equally important perspective—the perspective of observers. Our results revealed that—unless it is misaligned with individuals’ preferences—camera use might not have an impact on actors’ experiences. However, not turning on camera has important interpersonal consequences: camera-off individuals were perceived to be less engaged, less moral and less leader-like than their camera-on counterparts. Hence, leaving the camera off in virtual meetings can damage reputation and potentially undermine one’s career progress.

Acknowledgements

We would like to thank Eva Goudswaard, Greta Weber, Lisanne Halbe, Liset van der Eijk, Marjolein Gijssels, Xenia Raft, Ioana Velțan and Viktoria Perdikogianni for their help with the data collection.

Ethics Statement

This research has been carried out in accordance with the Declaration of Helsinki and has been approved by the Ethics Review Board of the School of Social and Behavioral Sciences of Tilburg University (Protocol number RP504).

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The study was not pre-registered. Data, materials and analysis scripts are available in the Open Science Framework (OSF) repository: <https://osf.io/wmy5r/>.

References

- Alim, S., S. Petsangsri, and J. Morris. 2022. “Does an Activated Video Camera and Class Involvement Affect Academic Achievement? An Investigation of Distance Learning Students.” *Education and Information Technologies* 28: 5875–5892.
- Anderson, C., S. Srivastava, J. S. Beer, S. E. Spataro, and J. A. Chatman. 2006. “Knowing Your Place: Self-Perceptions of Status in Face-to-Face Groups.” *Journal of Personality and Social Psychology* 91, no. 6: 1094–1110. <https://doi.org/10.1037/0022-3514.91.6.1094>.
- Austin, M. R., K. A. Fogler, and D. B. Daniel. 2021. “Seeing Self and Others On-Screen Does Not Negatively Impact Learning in Virtual Classrooms.” *Scholarship of Teaching and Learning in Psychology* 8, no. 4: 368–373. <https://doi.org/10.1037/stl0000303>.
- Badura, K. L., B. M. Galvin, and M. Y. Lee. 2022. “Leadership Emergence: An Integrative Review.” *Journal of Applied Psychology* 107, no. 11: 2069.
- Bailenson, J. N. 2021. “Nonverbal Overload: A Theoretical Argument for the Causes of Zoom Fatigue.” *Technique, Mind, and Behavior* 2, no. 1: 1–6. <https://doi.org/10.1037/tmb0000030>.
- Bates, D., M. Maechler, B. Bolker, and S. Walker. 2015. “Fitting Linear Mixed-Effects Models Using lme4.” *Journal of Statistical Software* 67, no. 1: 1–48. <https://doi.org/10.18637/jss.v067.i01>.
- Bell, S. T., S. G. Brown, A. Colaneri, and N. Outland. 2018. “Team Composition and the ABCs of Teamwork.” *American Psychologist* 73, no. 4: 349–362. <https://doi.org/10.1037/amp0000305>.
- Bennett, A. A., E. D. Champion, K. R. Keeler, and S. K. Keener. 2021. “Videoconference Fatigue? Exploring Changes in Fatigue After Videoconference Meetings During COVID-19.” *Journal of Applied Psychology* 106, no. 3: 330.
- Borkenau, P., N. Mauer, R. Riemann, F. M. Spinath, and A. Angleitner. 2004. “Thin Slices of Behavior as Cues of Personality and Intelligence.” *Journal of Personality and Social Psychology* 86, no. 4: 599–614. <https://doi.org/10.1037/0022-3514.86.4.599>.
- Borteyrou, X., F. Lievens, M. Bruchon-Schweitzer, A. Congard, and N. Rasclé. 2015. “Incremental Validity of Leaderless Group Discussion Ratings Over and Above General Mental Ability and Personality in Predicting Promotion.” *International Journal of Selection and Assessment* 23, no. 4: 373–381.
- Brescoll, V. L. 2011. “Who Takes the Floor and Why.” *Administrative Science Quarterly* 56, no. 4: 622–641. <https://doi.org/10.1177/0001839212439994>.
- Brucks, M. S., and J. Levav. 2022. “Virtual Communication Curbs Creative Idea Generation.” *Nature* 605, no. 7908: 108–112. <https://doi.org/10.1038/s41586-022-04643-y>.
- Carney, D. R. 2020. “The Nonverbal Expression of Power, Status, and Dominance.” *Current Opinion in Psychology* 33: 256–264.
- Choi, I., R. E. Nisbett, and A. Norenzayan. 1999. “Causal Attribution Across Cultures: Variation and Universality.” *Psychological Bulletin* 125, no. 1: 47.
- Daft, R. L., and R. H. Lengel. 1986. “Organizational Information Requirements, media Richness and Structural Design.” *Management Science* 32, no. 5: 554–571.
- Diener, E., E. Suh, R. Lucas, and H. Smith. 1999. “Subjective Well-Being: Three Decades of Progress.” *Psychological Bulletin* 125, no. 2: 276–302.

- Ebert, T., J. E. Gebauer, J. R. Talman, and P. J. Rentfrow. 2020. "Religious People Only Live Longer in Religious Cultural Contexts: A Gravestone Analysis." *Journal of Personality and Social Psychology* 119, no. 1: 1–6. <https://doi.org/10.1037/pspa0000187>.
- Eckel, C. C., and R. Petrie. 2011. "Face Value." *American Economic Review* 101, no. 4: 1497–1513.
- Elsbach, K. D., D. M. Cable, and J. W. Sherman. 2010. "How Passive 'Face Time' Affects Perceptions of Employees: Evidence of Spontaneous Trait Inference." *Human Relations* 63, no. 6: 735–760.
- Ensari, N., R. E. Riggio, J. Christian, and G. Carslaw. 2011. "Who Emerges as a Leader? Meta-Analyses of Individual Differences as Predictors of Leadership Emergence." *Personality and Individual Differences* 51, no. 4: 532–536.
- Fauville, G., M. Luo, A. C. M. Queiroz, J. N. Bailenson, and J. Hancock. 2021. "Zoom Exhaustion & Fatigue Scale." *Computers in Human Behavior Reports* 4: 100119. <https://doi.org/10.1016/j.chbr.2021.100119>.
- Fauville, G., M. Luo, A. C. M. Queiroz, A. Lee, J. N. Bailenson, and J. Hancock. 2023. "Video-Conferencing Usage Dynamics and Nonverbal Mechanisms Exacerbate Zoom Fatigue, Particularly for Women." *Computers in Human Behavior Reports* 10: 100271. <https://doi.org/10.1016/j.chbr.2023.100271>.
- Fischer, R. 2013. "Gene-Environment Interactions Are Associated With Endorsement of Social Hierarchy Values and Beliefs Across Cultures." *Journal of Cross-Cultural Psychology* 44, no. 7: 1107–1121. <https://doi.org/10.1177/0022022112471896>.
- Funder, D. C., and D. J. Ozer. 2019. "Evaluating Effect Size in Psychological Research: Sense and Nonsense." *Advances in Methods and Practices in Psychological Science* 2, no. 2: 156–168.
- Gagnon, D. R., S. Doron-LaMarca, M. Bell, T. J. O'Farrell, and C. T. Taft. 2008. "Poisson Regression for Modeling Count and Frequency Outcomes in Trauma Research." *Journal of Traumatic Stress* 21, no. 5: 448–454. <https://doi.org/10.1002/jts.20359>.
- Gilbert, D. T., and P. S. Malone. 1995. "The Correspondence Bias." *Psychological Bulletin* 117, no. 1: 21–38. <https://doi.org/10.1037/0033-2909.117.1.21>.
- Giner-Sorolla, R., A. K. Montoya, A. Reifman, et al. 2019. "Power to Detect What? Considerations for Planning and Evaluating Sample Size." *Personality and Social Psychology Review* 28, no. 3: 276–301. <https://doi.org/10.1177/10888683241228328>.
- Gosling, S. D., S. J. Ko, T. Mannarelli, and M. E. Morris. 2002. "A Room With a Cue: Personality Judgments Based on Offices and Bedrooms." *Journal of Personality and Social Psychology* 82, no. 3: 379–398. <https://doi.org/10.1037/0022-3514.82.3.379>.
- Green, P., and C. J. MacLeod. 2016. "SIMR: An R Package for Power Analysis of Generalized Linear Mixed Models by Simulation." *Methods in Ecology and Evolution* 7, no. 4: 493–498. <https://doi.org/10.1111/2041-210X.12504>.
- Hall, J., and W. H. Watson. 1970. "The Effects of a Normative Intervention on Group Decision-Making Performance." *Human Relations* 23, no. 4: 299–317. <https://doi.org/10.1177/001872677002300404>.
- Hancock, J. T., and P. J. Dunham. 2001. "Impression Formation in Computer-Mediated Communication Revisited: An Analysis of the Breadth and Intensity of Impressions." *Communication Research* 28, no. 3: 325–347.
- Hanna, A. A., T. A. Smith, B. L. Kirkman, and R. W. Griffin. 2021. "The Emergence of Emergent Leadership: A Comprehensive Framework and Directions for Future Research." *Journal of Management* 47, no. 1: 76–104.
- Hox, J., and L. Wijngaards-de Meij. 2015. "The Multilevel Regression Model." In *The Sage Handbook of Regression Analysis and Causal Inference*, edited by H. Best and C. Wolf, 133–152. Sage.
- Ishii, K., M. M. Lyons, and S. A. Carr. 2019. "Revisiting Media Richness Theory for Today and Future." *Human Behavior and Emerging Technologies* 1, no. 2: 124–131. <https://doi.org/10.1002/hbe2.138>.
- Johri, A. 2012. "From a Distance: Impression Formation and Impression Accuracy Among Geographically Distributed Coworkers." *Computers in Human Behavior* 28, no. 6: 1997–2006. <https://doi.org/10.1016/j.chb.2012.06.038>.
- Jones, E. E., and V. A. Harris. 1967. "The Attribution of Attitudes." *Journal of Experimental Social Psychology* 3, no. 1: 1–24. [https://doi.org/10.1016/0022-1031\(67\)90034-0](https://doi.org/10.1016/0022-1031(67)90034-0).
- Kalish, Y., and G. Luria. 2021. "Traits and Time in Leadership Emergence: A Longitudinal Study." *Leadership Quarterly* 32, no. 2: 101443.
- Karl, K. A., J. V. Peluchette, and N. Aghakhani. 2022. "Virtual Work Meetings During the COVID-19 Pandemic: The Good, Bad, and Ugly." *Small Group Research* 53, no. 3: 343–365.
- Keyes, C. L., and A. D. Shapiro. 2004. "Social Well-Being in the United States: A Descriptive Epidemiology." In *How Healthy Are We? A National Study of Well-Being at Midlife*, edited by O. G. Brim, C. Ryff and R. Kessler, 350–372. University Chicago Press.
- Kruglanski, A. W., A. Pierro, and E. T. Higgins. 2007. "Regulatory Mode and Preferred Leadership Styles: How Fit Increases Job Satisfaction." *Basic and Applied Social Psychology* 29, no. 2: 137–149.
- Kushlev, K., and A. Epstein-Shuman. 2022. "Lights, Cameras (on), Action! Camera Usage During Zoom Classes Facilitates Student Engagement Without Increasing Fatigue." *Technology Mind and Behavior* 3: 1–16.
- Landa, H. 2021. "Zoom Fatigue Threatens Workplace Engagement." <https://trainingmag.com/zoom-fatigue-threatens-workplace-engagement/>.
- Landis, B., J. M. Jachimowicz, D. J. Wang, and R. W. Krause. 2022. "Revisiting Extraversion and Leadership Emergence: A Social Network Churn Perspective." *Journal of Personality and Social Psychology* 123: 811–829. <https://doi.org/10.1037/pspp0000410>.
- Leach, C. W., N. Ellemers, and M. Barreto. 2007. "Group Virtue: The Importance of Morality (vs. Competence and Sociability) in the Positive Evaluation of In-Groups." *Journal of Personality and Social Psychology* 93, no. 2: 234–249. <https://doi.org/10.1037/0022-3514.93.2.234>.
- Lindhiem, O., C. B. Bennett, C. J. Trentacosta, and C. McLearn. 2014. "Client Preferences Affect Treatment Satisfaction, Completion, and Clinical Outcome: A Meta-Analysis." *Clinical Psychology Review* 34, no. 6: 506–517. <https://doi.org/10.1016/j.cpr.2014.06.002>.
- Lobell, K. O. 2021. "Should Employees Be Required to Turn on Cameras During Virtual Meetings." <https://www.shrm.org/mena/topics-tools/news/employee-relations/employees-required-to-turn-cameras-virtual-meetings>.
- MacLaren, N. G., F. J. Yammarino, S. D. Dionne, et al. 2020. "Testing the Babble Hypothesis: Speaking Time Predicts Leader Emergence in Small Groups." *Leadership Quarterly* 31, no. 5: 101409. <https://doi.org/10.1016/j.leaqua.2020.101409>.
- Malle, B. F. 2006. "The Actor-Observer Asymmetry in Attribution: A (Surprising) Meta-Analysis." *Psychological Bulletin* 132, no. 6: 895–919. <https://doi.org/10.1037/0033-2909.132.6.895>.
- McGraw, K. M. 1987. "Outcome Valence and Base Rates: The Effects on Moral Judgments." *Social Cognition* 5, no. 1: 58–75. <https://doi.org/10.1521/soco.1987.5.1.58>.
- Microsoft. 2022. "Hybrid Work Is Just Work. Are We Doing It Wrong? Work Trend Index Report." <https://www.techsouthwest.co.uk/microsoft-hybrid-work-is-just-work-are-we-doing-it-wrong/>.
- Moniuszko, S. M. 2021. "Is It Time to Turn Our Cameras Off at Work? The Reality of Zoom Fatigue and How to Combat It." <https://eu.usatoday.com/story/tech/2021/03/22/zoom-fatigue-how-combat-and-impact-video-meetings/4716245001/>.
- Monroe, A. E., K. D. Dillon, S. Guglielmo, and R. F. Baumeister. 2018. "It's Not What You Do, but What Everyone Else Does: On the Role of Descriptive Norms and Subjectivism in Moral Judgment." *Journal of Experimental Social Psychology* 77: 1–10. <https://doi.org/10.1016/j.jesp.2018.03.010>.

- Nesher Shoshan, H., and W. Wehrt. 2021. "Understanding "Zoom Fatigue": A Mixed-Method Approach." *Applied Psychology* 71, no. 3: 827–852. <https://doi.org/10.1111/apps.12360>.
- Newton, D. W., J. A. LePine, J. K. Kim, N. Wellman, and J. T. Bush. 2020. "Taking Engagement to Task: The Nature and Functioning of Task Engagement Across Transitions." *Journal of Applied Psychology* 105, no. 1: 1–18.
- Park, C. L., L. D. Kubzansky, S. M. Chafouleas, et al. 2023. "Emotional Well-Being: What It Is and Why It Matters." *Affective Science* 4, no. 1: 10–20. <https://doi.org/10.1007/s42761-022-00163-0>.
- Parsons, C. E., T. H. Nielsen, A.-Q. Vermillet, I. Lykke Hansen, and P. Mitkidis. 2020. "The Impact of Mindfulness Training on Performance in a Group Decision-Making Task: Evidence From an Experimental Study." *Quarterly Journal of Experimental Psychology* 73, no. 12: 2236–2245. <https://doi.org/10.1177/1747021820958190>.
- Pronin, E., and M. B. Kugler. 2007. "Valuing Thoughts, Ignoring Behavior: The Introspection Illusion as a Source of the Bias Blind Spot." *Journal of Experimental Social Psychology* 43, no. 4: 565–578. <https://doi.org/10.1016/j.jesp.2006.05.011>.
- Puklavec, Z., N. Klein, and O. Stavrova. 2025. The Self-Other Polarization Bias: People Perceive Others' Political Views as Moving to Extremes While Viewing Their Own as Stable.
- Reichard, R. J., R. E. Riggio, D. W. Guerin, P. H. Oliver, A. W. Gottfried, and A. E. Gottfried. 2011. "A Longitudinal Analysis of Relationships Between Adolescent Personality and Intelligence With Adult Leader Emergence and Transformational Leadership." *Leadership Quarterly* 22, no. 3: 471–481. <https://doi.org/10.1016/j.leaqua.2011.04.005>.
- Ren, D., E. Wesselmann, and K. D. Williams. 2016. "Evidence for Another Response to Ostracism: Solitude Seeking." *Social Psychological and Personality Science* 7, no. 3: 204–212. <https://doi.org/10.1177/1948550615616169>.
- Ross, L. 1977. "The Intuitive Psychologist and His Short-Comings: Distortions in the Attribution Process." In *Advances in Experimental Social Psychology*, edited by L. Berkowitz, 173–220. Academic Press.
- Ryff, C. D., and C. L. M. Keyes. 1995. "The Structure of Psychological Well-Being Revisited." *Journal of Personality and Social Psychology* 69, no. 4: 719–727. <https://doi.org/10.1037/0022-3514.69.4.719>.
- Shockley, K. M., A. S. Gabriel, D. Robertson, et al. 2021. "The Fatiguing Effects of Camera Use in Virtual Meetings: A Within-Person Field Experiment." *Journal of Applied Psychology* 106, no. 8: 1137–1155. <https://doi.org/10.1037/apl0000948>.
- Smets, E. M. A., B. Garssen, B. Bonke, and J. C. J. M. De Haes. 1995. "The Multidimensional Fatigue Inventory (MFI) Psychometric Qualities of an Instrument to Assess Fatigue." *Journal of Psychosomatic Research* 39, no. 3: 315–325. [https://doi.org/10.1016/0022-3999\(94\)00125-O](https://doi.org/10.1016/0022-3999(94)00125-O).
- Stavrova, O. 2015. "Religion, Self-Rated Health, and Mortality." *Social Psychological and Personality Science* 6, no. 8: 911–922. <https://doi.org/10.1177/1948550615593149>.
- Stavrova, O., D. Ehlebracht, and D. Ren. 2023. "Cynical People Desire Power but Rarely Acquire It: Exploring the Role of Cynicism in Leadership Attainment." *British Journal of Psychology* 115, no. 2: 226–252.
- Stavrova, O., D. Ehlebracht, and K. D. Vohs. 2020. "Victims, Perpetrators, or Both? The Vicious Cycle of Disrespect and Cynical Beliefs About Human Nature." *Journal of Experimental Psychology: General* 149, no. 9: 1736–1754. <https://doi.org/10.1037/xge0000738>.
- Stavrova, O., and L. Haarmann. 2020. "How to Spot a Happy Person: Accuracy of Subjective Well-Being Perception From Texts." *Motivation & Emotion* 44, no. 1: 597–607.
- Stavrova, O., and M. Luhmann. 2016. "Are Conservatives Happier Than Liberals? Not Always and Not Everywhere." *Journal of Research in Personality* 63: 29–35. <https://doi.org/10.1016/j.jrp.2016.04.011>.
- Tanis, M., and T. Postmes. 2003. "Social Cues and Impression Formation in CMC." *Journal of Communication* 53, no. 4: 676–693.
- Todorov, A., A. N. Mandisodza, A. Goren, and C. C. Hall. 2005. "Inferences of Competence From Faces Predict Election Outcomes." *Science* 308, no. 5728: 1623–1626. <https://doi.org/10.1126/science.1110589>.
- Tomprou, M., Y. J. Kim, P. Chikersal, A. W. Woolley, and L. A. Dabbish. 2021. "Speaking Out of Turn: How Video Conferencing Reduces Vocal Synchrony and Collective Intelligence." *PLoS One* 16, no. 3: e0247655. <https://doi.org/10.1371/journal.pone.0247655>.
- Vazire, S. 2010. "Who Knows What About a Person? The Self-Other Knowledge Asymmetry (SOKA) Model." *Journal of Personality and Social Psychology* 98, no. 2: 281.
- Virtira. 2021. "Nearly Half of Professionals Experience "Zoom Fatigue" and Burnout from Online Meetings." <https://www.globenewswire.com/news-release/2021/04/15/2210752/0/en/Nearly-Half-of-Professionals-Experience-Zoom-Fatigue-and-Burnout-from-Online-Meetings.html>.
- Vyopta. 2022. "Vyopta Survey Reveals 92% of Execs Don't See Long-Term Future for Off-Camera Employees." <https://www.vyopta.com/blog/releases/vyopta-hybrid-work-survey-2022/>.
- Wojciszke, B. 2005. "Morality and Competence in Person- and Self-Perception." *European Review of Social Psychology* 16: 155–188. <https://doi.org/10.1080/10463280500229619>.

Supporting Information

Additional supporting information can be found online in the Supporting Information section.