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# Visual and Auditory Cues in Telehealth: Shaping Service Providers' Perceptions


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## Extended Abstract


The use of technology-based face to face communication has increased over the last years and has also gained importance in the healthcare sector. In health care, the application of telehealth enables the delivery of healthcare services such as consultations over a distance regardless of the physical location of the healthcare provider and the patient. Applications and internet platforms that enable the provision of telehealth services, such as the video consultation provider 'Teleclinic' in Germany, have become increasingly popular. This development highlights the growing acceptance and integration of digital solutions in the healthcare system, which have the potential to conquer critical healthcare challenges by making medical consultations more accessible and convenient for patients. Moreover, telehealth holds potential for cost reduction, and thus helps to mitigate rising financial burdens on healthcare systems that are driven by aging populations, an increasing prevalence of chronic diseases, and the expansion of available treatment options.

However, these benefits can only be fully realized if users accept and use such technology. As the primary decision-makers in determining whether or not to offer telehealth

services, physicians play a pivotal role in their implementation. Accordingly, ensuring that healthcare providers have positive experiences with telehealth is essential, as their satisfaction directly influences the likelihood of adoption and continued use. In the context of digital services, the successful adoption depends not only on technical functionality but also on how well the service aligns with user expectations, especially in terms of the surrounding digital and virtual environment. This is particularly relevant in telehealth, where virtual backgrounds allow users to effortlessly modify their (digital) surroundings during video consultations, offering a simple way to change the digital environment. However, existing literature primarily focuses on the technical design and functionality of telehealth services, often neglecting the users' experiences and perceptions. To our knowledge, no study has investigated the role of the digital environment as a visual cue from a physician's perspective. Addressing this research gap, our study investigates the physician's perception of the patient's digital environment.

Our study builds on fluency theory, which suggests that stimuli are processed more fluently when they are presented in a context that is visually congruent or cognitively less demanding, which in turn has been shown to positively affect key outcomes, such as the product evaluations or the purchase intentions of customers. Prior research indicates that physically plausible scenes and authentic real-world backgrounds facilitate faster object recognition and contribute to processing fluency. In the context of teleconsultations, which can take place from any location, we propose that the ambiguity introduced by the use of a customized (i.e., personally tailored) virtual background, concealing the individual's actual background, may adversely influence physicians' perceptions of the service. Specifically, we propose that a customized versus real video background of the patient negatively affects perceived fluency, which in turn positively influences physicians' intention to use telehealth services again. Given

that telehealth consultations are often conducted from patients' homes (i.e., environments that may lack the controlled, quiet settings typically found in clinical spaces) background distractions such as ambient noise or interruptions are common. Building on research that shows that such disruptions within service processes can negatively affect perceptions of the service, we propose that auditory distraction (e.g., background noise) moderates the relationship between the type of video background used during teleconsultations and perceived fluency, such that the negative effect of the virtual background on perceived fluency is strengthened in the presence of auditory distraction compared to its absence.

We conducted a scenario-based online experiment using a between-subjects design, with physicians serving as participants who were randomly assigned to one of our four experimental conditions. Participants provided information on their medical and demographic background. They were then asked to imagine conducting a telehealth consultation with a patient and watched a video depicting the closing phase of the appointment. Depending on the experimental condition, the patient was shown with either an unedited or a customized video background. Additionally, the presence of an external auditory distraction was manipulated so that the patient's video either contained an auditory distraction (i.e., dog barking) or not. After completing the scenario, participants answered a survey assessing the variables of interest. Both latent measures, perceived fluency and physicians' intention to use telehealth services again, showed good reliability scores (Cronbach's alpha > .89).

For our analysis, we used a final sample of n>120 participants. Our analysis reveals that the customization of the patient's video background negatively affects physicians' perceived fluency ($b = -.95$, $p < .01$). Further, we find that perceived fluency in turn has a positive effect on physicians' intention to use telehealth services again ($b = .33$, $p < .001$). Since we find no

significant direct effect of customization of the patient's video background on physicians' intention to use telehealth services again ($b = .39$, $p = .10$), perceived fluency fully mediates the relationship between the customization of the patient's video background and physicians' intention to use telehealth services again, highlighting the crucial role of perceived fluency. Interestingly, no moderating effect of auditory distraction in the relationship between customization of the patient's video background and physicians' perceived fluency was found. However, our experimental data reveals a negative direct effect from auditory distraction on perceived fluency ($b = -1.36$, $p < .001$).

Accordingly, our findings are in line with fluency theory and introduce perceived fluency as an important mediator that helps to explain how the patients' customized video background impacts physicians' intention to use telehealth services again. Our findings support previous literature stating that the environmental design in a service setting affects service perceptions and outcomes. Subsequently, telehealth platforms could refrain from giving users (i.e., patients) the option to customize the video background. Interestingly, our data did not confirm any differences arising from the presence of auditory distraction during the teleconsultation. However, the negative effect of auditory distraction on perceived fluency suggests that the visual and the auditory environment independently affect cognitive processing during teleconsultations rather than interacting with each other. To develop a comprehensive understanding of environmental effects in telehealth settings, it is essential to further distinguish between specific types of virtual backgrounds and auditory distractions. Such differentiation allows for deeper insights into which virtual and auditory cues are particularly influential and whether certain cues exert stronger effects than others on physicians' perceptions and service outcomes. Although we were not able to empirically confirm all our theoretical assumptions, we believe our tentative findings

contribute to a better understanding of the conditions under which telehealth services achieve high levels of acceptance among relevant stakeholders. Additionally, our findings may support healthcare providers in their efforts to achieve service excellence in telehealth.