

University of Memphis

University of Memphis Digital Commons

Electronic Theses and Dissertations

11-10-2022

The Influence of Audio and Video Quality on Perceptions of the Psychotherapist

Olivia Glasgow

Follow this and additional works at: <https://digitalcommons.memphis.edu/etd>

Recommended Citation

Glasgow, Olivia, "The Influence of Audio and Video Quality on Perceptions of the Psychotherapist" (2022). *Electronic Theses and Dissertations*. 3202.
<https://digitalcommons.memphis.edu/etd/3202>

This Thesis is brought to you for free and open access by University of Memphis Digital Commons. It has been accepted for inclusion in Electronic Theses and Dissertations by an authorized administrator of University of Memphis Digital Commons. For more information, please contact khhgerty@memphis.edu.

THE INFLUENCE OF AUDIO AND VIDEO QUALITY ON PERCEPTIONS
OF THE PSYCHOTHERAPIST

by

Olivia G. Glasgow

A Thesis

Submitted in Partial Fulfillment of the

Requirements for the Degree of

Master of Science

Major: Clinical Psychology

The University of Memphis

December 2022

Abstract

The recent Coronavirus pandemic made remote means of conducting psychotherapy more common, and although there is a large amount of research on the mode of therapy, little research exists on the effects of video and audio quality on perceptions of the therapist. The purpose of this study was to investigate how the evaluation of a therapist changes when viewing different audiovisual qualities of recorded in-person therapy interactions. Participants were randomly assigned to view audio or video therapy interactions with differing levels of audiovisual quality. Analyses revealed a statistically significant difference in observer perceptions of interpersonal characteristics, such as empathy and alliance, when viewing different audiovisual qualities. Follow-up analyses indicated higher levels of the interpersonal perceptions when viewing therapy interactions of poor audiovisual quality, indicating that therapists were viewed as having more positive interpersonal characteristics when the audiovisual quality was distorted. These results suggest that concern about audio and video quality in online therapy interactions may be misplaced.

The Influence of Audio and Video Quality on Perceptions of the Psychotherapist

Online-delivered therapy, commonly referred to as teletherapy, has existed for many years, but with the Coronavirus pandemic necessitating stay-at-home orders, therapists were met with an ethical obligation to protect their clients and offer online services. The increased use of technology has made remote therapy more popular as a more accessible treatment approach, but some doubt that it could ever fully replace in-person therapy (Lovejoy et al., 2009). Despite this prior doubt in teletherapy's ability to be an acceptable replacement to in-person therapy, the COVID-19 pandemic caused individuals to accept doing therapy alone in their office, or even in their own home, as the new normal. The switch to remote therapy was rated relatively positive by psychotherapists, specifically by therapists who identify with a cognitive-behavioral approach (Békés & Aafjes-van Doorn, 2020). With the increased use of remote therapy during the COVID-19 pandemic, therapists were left with the decision of what format to provide therapy, with two options being video and audio-only therapy; requiring therapists to consider the pros and cons of each.

Therapists reported concerns about the ability to communicate empathy and emotions to clients through video therapy, as well as maintain an authentic therapeutic alliance; however, a survey of therapists who have done therapy through video sessions reported that the relationship remained strong (Aafjes-van Doorn et al., 2020). In addition to positive ratings from therapists, clients have shown positive experiences with online therapy. Although some research has pointed to positive experiences in remote psychotherapy, it is important to examine the specific ways in which the therapeutic

interaction may be affected by video and audio effects, both verbally and nonverbally.

The increased use of teletherapy during the COVID-19 pandemic encouraged an interest in the nonverbals that can be seen through the screen or heard over the phone, and how the quality of an audio or video may influence one's perception of a therapist.

The importance of nonverbal behaviors has been studied for many years, both in and out of the therapy room (DiMatteo et al., 1980; Fretz et al., 1979; Tyson & Wall, 1983). The Profile of Nonverbal Sensitivity (PONS) Test measures people's accuracy in perceiving others' auditory and visual nonverbal cues. Individuals are able to perceive the nonverbal cues portrayed in the PONS test with high accuracy, even with a very short exposure to the stimuli (Rosenthal et al., 2011). More specifically, eye contact and forward trunk lean have both been found to improve a client's perception of their therapist's empathy, therapeutic alliance, and credibility (Dowell & Berman, 2013).

A common concern with teletherapy is that clients may perceive therapist nonverbal behaviors differently when seen through a computer screen or heard over the phone. When therapy is performed remotely, information channels are lost. For example, facial movements and body tension may not be portrayed as accurately through a video call (or not at all in audio-only therapy), which could be detrimental to the client's perception of the therapist. According to Roesler (2017), there is also a certain level of general uncertainty in an online therapy session, which could be stemming from the loss of important interactional levels, in addition to the possibility of technical difficulties. While a therapist can account for the technical difficulties on their side, the client's technology is a different story (Roesler, 2017). A survey revealed that concerns about internet-based

CBT involve issues that may be a technology company's responsibility, such as the limitations of internet (Topooco et al., 2017).

The worldwide pandemic has shifted therapy to several videoconferencing applications, such as Zoom, Microsoft Teams, Skype, Facetime, and many others. While these applications allowed communication to take place virtually, Jiang (2020) explained in a BBC article that some individuals claimed that it has detrimental effects on our daily lives. The BBC article discusses an interview with Gianpiero Petriglieri, an associate professor at INSEAD, who claimed that nonverbal cues, voice tone, and body language are harder to read in these online video calls. This increased level of focus is leading to something commonly referred to as "Zoom fatigue." A suggestion was made to limit the video interaction, and instead turn off the camera and focus on the interaction happening between the individuals (Jiang, 2020). Using a sample of over ten thousand people, Fauville et al. (2021) studied Zoom fatigue, showing that the frequency and duration of meetings increased the fatigue. Nonverbal mechanisms were significantly related to Zoom fatigue, accounting for 29% of the variance in scores, with being physically trapped and mirror anxiety being the largest predictors of the fatigue (Fauville et al., 2021). Others claimed that our brains have trouble perceiving the subtle face twitches because of pixelated and/or frozen videos (Murphy, 2020). These video effects can make mirroring of body movements difficult, which may lead to an uneasy feeling that could be impeding on one's perception of empathy and connection to the therapist. In sum, Murphy (2020) explained that Zoom has been claimed to leave individuals feeling isolated, anxious, and disconnected.

These claims are even more worrisome when the technical aspects of video calls are taken into consideration. The goal of having a good video quality during a remote therapy session can be obtained by streaming the video at a consistently high rate with low delay (Yu et al., 2014). The quality of mobile video calls is highly vulnerable to negative video effects with both strong and weak WiFi or cellular connections (Yu et al., 2014). This high vulnerability to video effects makes it difficult for individuals to perceive hidden emotions through micro-expressions, which can be as fast as 100 ms to 166 ms (Yan et al., 2013). These facial micro-expressions have been so difficult to detect in conversations that coding systems are being created and tested to detect and measure them (Polikovsky, 2013). The struggle in detecting these important, emotion-telling facial expressions seems troubling in a therapy session that is interrupted by video quality and audio issues. Another concern with video quality involves the amount that one's video may be affected. Schupp et al. (2008) added differing levels of color noise pixilation on images of pleasant, neutral, and unpleasant pictures, finding that emotional arousal occurred when the stimulus pictures could be recognized, but not when the image was so pixelated that it could not be. Similarly, the number of technical difficulties affecting the video may influence the viewer's perception. Shatzer et al. (2018) found that individuals who viewed a clear stimulus were more tolerant of audiovisual asynchronies, while those who viewed a blurred stimulus were less tolerant of the audio and video being out-of-sync.

Remote therapy may be negatively perceived because of the cognitive interpretation of communication through videos. When video therapy is compared to face-to-face therapy, there are some issues that may influence a client's perception of the therapist.

One example (Ferran & Watts, 2008) found that individuals that interacted online were more influenced by someone's likeability, rather than the content being said. The cognitive workload has also been self-reported as significantly higher for individuals interacting via videoconference, which may have a connection to the "Zoom fatigue" mentioned previously (Ferran & Watts, 2008). Another effect of video therapy can be seen when delays are involved. When there is a presence of a 1.2 second delay, it can lead the individual to unknowingly view the speaker as less friendly, self-efficient, and active when compared to a connection without the delay (Schoenberg, 2012).

Concerningly, the therapeutic relationship between the client and therapist has been claimed to be less secure due to the unavoidable technical difficulties (Roesler, 2017).

With the unavoidability of video effects during remote therapy, one option is to stick to an audio-only form of communication. Whittaker (1995) stated that the importance of video has been overestimated in the past. This has been seen in older research findings suggesting that, in remote conversations, audio-only and video are equivalent in many manners, including the number of interruptions (Sellen, 1995). The development of rapport in telephone therapy was said to be possible with suggested strategies, such as the use of levels of empathy similar to face-to-face therapy, an increased emphasis on listening to clients' verbal content while interpreting paralanguage cues, and mirroring client tone, words, and speed (Beel et al., 2020). A systematic review (Irvine et al., 2020) was done to examine the prior literature on the differences between face-to-face and telephone provided therapy. This review did not find strong evidence suggesting that telephone therapy provides any harmful effects to the interactions in therapy. Cognitive behavioral therapy provided via telephone has been found to provide similar satisfaction

and alliance levels as therapy provided in person (Himelhoch et al., 2013; Fann et al., 2015; Stiles-Shields, et al., 2014). A systematic review (Haregu et al., 2015) found that telephone-based therapy effectively reduces depression and may even be more effective than face-to-face treatment.

Although research has previously looked at video therapy compared to audio-only therapy, there is limited research on how video and audio quality affects a client's perception of a therapist; however, research exists on how humans respond to visual and audio stimuli in different qualities. In a study done by Belmudez et al. (2009), individuals have been found to be sensitive to video quality effects, as well as having the ability to detect differences in levels of quality. In the same task, these individuals rated differences in audio quality in a less differentiated way due to their focus on overall acceptability (Belmudez et al., 2009). When visual and audio inputs become discrepant, individuals have been found to respond more to audio inputs than video (DePaulo, 1978). While there seems to be some equivalence with audio-only and video, there are some challenges with audio-only communication. Newman and Schwarz (2018) found that presented research is found to be rated lower when the presentation audio is poor, even if the information is the same as a good quality audio presentation. In addition, when using a video, individuals receive both visual and audio interactions, while only receiving the audio in audio-only. Abbott and Shahin (2018) studied this visual and audio interaction using EEGs on individuals viewing speakers saying consonant vowels, finding that viewing visual speech impacts an individual's encoding at the auditory cortex.

Video and audio sources have been used for many years, both as recorded stimuli and virtual communication. Video and audio resources provide a convenient way of

experiencing past events in a way that is similar to an in-person experience. One thing that is commonly forgotten are the different qualities that video and audio resources may have due to poor connection, age of the recording, or many other reasons. Despite the likelihood of quality issues that may be experienced, the human brain can adapt in certain ways, such as the phonemic restoration effect. This phenomenon explains that when a sound is missing from a speech signal, the human brain has the ability to synthesize the sound and allow it to be heard by an individual (Kashino, 2006). While the brain has the ability to account for some audio quality effects, Antons et al. (2012) found that individuals who listened to an audio with negative effects rated the quality lower than clear audios, but also experienced more fatigue from listening to the poor-quality clip. Visual quality also demonstrated effects on the brain, with right parietal lobe activation when viewing high quality videos, which indicates a relationship between positive emotional processes and high-quality videos, and the opposite for low quality (Kroupi et al., 2014). Video and audio qualities have been studied for many years, but current events have increased the usage of online school, work, and therapy. The increased use of technology opens the question of how one may be influenced when they begin experiencing their events through video and audio resources.

The purpose of this study was to experimentally compare therapy interactions in video format versus audio-only format as well as varying levels of quality as they relate to perceptions of the therapist. This exploratory study aimed to add to literature on the influence of video and audio quality effects on the perception of common factors commonly related to the outcome of a therapy session, as well as adding to the literature on what channels are the most influential on perception forming using video vs. audio

formatting. The increased use of teletherapy encouraged the study aim; however, the main goal was to determine what extent quality influences the perception of a psychotherapist in in-person therapy interactions edited to be video versus audio-only recordings. The study aimed to provide information using a randomized experiment to see if audiovisual quality has a causal impact on observers' perceptions of a therapy interaction, as well as aimed to encourage future studies focusing on teletherapy sessions. The study aimed to answer the following questions: When observers watch a video of a therapy session, do they have a more positive perception of the therapist in comparison to listening to an audio-only therapy session? How does the quality of the video and audio influence an observer's perception of the therapist?

Method

Participants

Students enrolled in psychology courses from the University of Memphis were recruited through the SONA System software. 263 completed the study. Of the 263; 17.1% identified as male, 82.5% identified as female. 81% identified as a woman, 16.3% identified as a man, 0.4% identified as transgender, 1.5% identified as nonbinary, 0.4% chose not to disclose, and 0.4% identified as something other than the options listed. 1.1% identified as American Indian or Alaskan Native, 5.3% identified as Asian, 36.9% identified as Black or African American, 0.8% identified as Native Hawaiian or Other Pacific Islander, and 57.8% identified as white. The average age was 20.7 years. In order to maximize the impact of video and audio quality effects, students with auditory and visual disabilities were screened from participation. The study duration had a median of

10.3 minutes and was completed in their own home on a personal computer. The participants were compensated with 0.5 course credits through the Sona System.

Measures

Barrett-Lennard Relationship Inventory: The 10 empathy items from the Barrett-Lennard Relationship Inventory: Form Obs-40 (Version 3) (Barrett-Lennard, 2015) were used to measure the participant's perceptions of the therapist's empathy. The measure was rated using an 11-point scale ranging from -5 (NO, I strongly feel that is not true) to +5 (YES, I strongly feel that is true). The original version of the Barrett-Lennard Relationship Inventory (Barrett-Lennard, 1962) has been found to show high levels of split-half reliability (Barrett-Lennard, 2015). A review by Gurman (1977) provided separate reliabilities for the four scales, with an internal reliability of .84 for empathy. For analyses, the scale was later coded to span from 1-11, with 1 representing lower empathy and 11 representing higher empathy.

Credibility/Expectancy Questionnaire (CEQ): This measure has previously been found to measure two distinct yet similar constructs, therapist credibility and expectancy. The questionnaire is relatively short, consisting of six items. Two range from 0% to 100%, providing an 11-point scale. The other four items on the scale ranged from 1 (not at all) to 11 (very). The CEQ has previously been found to have high internal validity, with a Cronbach's alpha ranging between 0.81 to 0.86. Similarly, test-retest reliability has been found at 0.82 for the expectancy items and 0.75 for the credibility items (Deville & Borkovec, 2000). For analyses, the scale was later coded to span from 1-11, with 1 representing lower credibility/expectancy and 11 representing higher credibility/expectancy.

Working Alliance Inventory – Observer Form: The therapeutic alliance was measured using the observer version of the WAI-O, which originally consists of 36 items (Darchuk et al., 2000; Tichenor & Hill, 1989). The original version of the WAI was created by Horvath and Greenberg (1989) to measure the alliance between therapist and client. The WAI-O consists of three separate scales: agreement on tasks, agreement on goals, and development on bonds (Bordin, 1979). For the purpose of this study, only the items involving emotional bonding were included, due to the irrelevance of the other items in terms of this study. This measure was rated using an 11-point scale ranging from 1 (never) to 11 (always). The interrater reliability of the WAI-O has been found to be .92, with an internal consistency of .98 (Tichenor & Hill). The WAI-O is a promising measure, not only because of its validity and reliability, but also because of its utility. For analyses, the scale was later coded to span from 1-11, with 1 representing lower alliance and 11 representing higher alliance.

Demographics. Participants reported information about their demographics and background (e.g., age, race, biological sex, gender, marital status, previous therapy experience, etc.).

Materials

In-person therapy videos from the APA's database were edited and cropped to focus on the therapist, framed in a way that shows only the therapist from the chest up. The interactions were edited using VideoPad Video Editing Software to portray different levels of video and audio quality (good vs. bad). The groups included a clear quality video with clear audio, a video with the picture blurred (4.5 blur setting on VideoPad) and clear audio, an audio-only with clear sound (sound extracted from the video using

VideoPad), and an audio-only with a noise edited over the audio. Each video clip was four minutes. The stimuli were all created using two recordings with a male therapist and two recordings with a female therapist. The stimuli included a male and female therapist with clients presenting depression and a male and female therapist with clients presenting anxiety.

Procedure

The study was administered through Qualtrics. The participants were provided a consent form at the beginning of their Qualtrics survey confirming that they were over 18 and agreed to participate in the study. All participants were asked to wear any necessary/prescribed eyewear to allow proper view of the content on the computer. Once informed consent was provided, the participants were randomly assigned to one of the experimental groups using Qualtrics' randomizer. After watching the initial stimulus, participants answered attention check questions related to the stimulus content to ensure that they paid attention to the recording. If they failed the check, they were sent to watch the stimulus again. After passing the attention check, the participants were directed to the questionnaires measuring the portrayed therapist's empathy, therapeutic alliance, therapist credibility, and expectancy, as well as a final questionnaire asking for demographic information. Any participants that did not make it past the attention check were not included in the analysis.

Preliminary Analyses

Each of the four variables were coded to range from 1-11, with 1 representing lower positivity of perception and 11 representing higher positivity of perception. A preliminary analysis was conducted to see intercorrelations between the four dependent

variables. Empathy and alliance were found to be strongly positively correlated, $r(261) = .73, p < .01$. Empathy and credibility were found to be moderately positively correlated, $r(261) = .54, p < .01$. Empathy and expectancy were found to be moderately positively correlated, $r(261) = .40, p < .01$. Alliance and credibility were found to be moderately positively correlated, $r(261) = .63, p < .01$. Alliance and expectancy were found to be moderately positively correlated, $r(261) = .53, p < .01$. Credibility and expectancy were found to be strongly positively correlated, $r(261) = .74, p < .01$. Because of the strong correlations between the two interpersonal variables, empathy and alliance, they were combined to create a variable that reflects a perception of interpersonal characteristics. Additionally, because of the strong correlation between credibility and expectancy, the two non-interpersonal variables were combined to create a variable that reflects a perception of skill.

Results

An initial analysis was conducted using a quality (high/low) \times format (video/audio) \times therapist sex (male/female) \times presenting problem (depression/anxiety) \times type of measure (interpersonal/skill) analysis of variance with type of measure representing a repeated measures factor. The analyses showed a statistically significant interaction between the type of measure and the quality of the stimuli, $F(1, 247) = 9.00, p = .003$, indicating that the scores on the types of measure depended on the quality of the stimuli, with perceptions being more positive for low quality, but only for the interpersonal measures.

Follow-up tests investigating the type of measure variables separately were conducted to further investigate the interaction between type of measure and quality. The

first analysis included the interpersonal measure as the dependent variable and quality, format, therapist sex, and presenting problem as independent variables. This analysis suggested a statistically significant main effect of quality, $F(1, 247) = 4.83, p = .03$, indicating that the poor quality stimuli were rated more positively than the high quality stimuli. The second analysis included the skill measure as the dependent variable and quality, format, therapist sex, and presenting problem as independent variables. The results of this analysis suggested no main effects or interactions. The results for the interpersonal and skill measures, as well as the modest effect size, can be seen in Table 1. The analyses failed to reveal statistically significant interactions with format, indicating that the format of therapy (whether it is audio or video) did not influence perceptions of the therapist.

Discussion

Contrary to expectations, those who viewed the poor audio or video quality perceived the therapist to have more positive interpersonal characteristics, such as empathy and alliance, than those who saw clear audio and video quality. On the other hand, the audio or video quality had no statistically significant effect on the observer's perception of skill characteristics, such as credibility and expectancy. Additionally, the results suggested that perceptions of audio or video quality do not depend on the sex of the therapist or the presenting problem of the client, which increases the generalizability of the results.

One study aim was to investigate whether observers viewing a video of a therapy interaction have a more positive perception of the therapist in comparison to listening to an audio-only therapy interaction. The results of the study showed that there was no

difference in perceptions of the psychotherapist when watching a video compared to listening to an audio. Additionally, the study aimed to examine how audiovisual quality may influence an observer's perception of the therapist. The results indicated that interpersonal perceptions, such as empathy and alliance, are affected by audio and video quality, while perceptions of skill, such as credibility and expectancy, are not.

The current research findings of interpersonal ratings being more positive for poor audiovisual quality may be related to some theoretical orientations, such as psychoanalytic theory. The current study results suggest that having a clear view of the therapist may not be best choice, similar to Freud's idea of having clients lay on a couch, without view of the therapist, to allow the therapist to be portrayed as a blank slate (Friedberg & Linn, 2012). It is possible that the distorted view of the therapist allowed the observer to perceive the therapist as a blank slate, allowing their own favorable perceptions to be projected onto the therapist in the recordings.

While the results differ from the expected outcome, there are other sources of research evidence consistent with this effect. Some research has been done on perceptions of individuals wearing face masks (Hies & Lewis, 2022; Patel et al., 2020). Attractiveness ratings were found to be the highest when individuals were wearing face masks. The increased attractiveness was suggested to be attributed to the "occlusion effect" caused by the covering part of the face, which is consistent with the effect in the current study (Hies & Lewis, 2022).

Past research has also examined perceptions regarding reduced visual input, such as blur, contrast, and occlusion (Sadr & Krowicki, 2019). Specific to the blur condition, as the blur increased, the level of perceived attractiveness also increased with a clear and

large effect (Sadr & Krowicki, 2019). The increase in perceived attractiveness was seen in all three conditions, with no differences between images of males and females. This study referred to the effect as the “partial information effect” (Sadr & Krowicki, 2019), which is consistent to the current study’s findings. Another source of evidence consistent with the current effect was referred to as the “less is more” effect, showing that ambiguousness about individuals leads to a higher liking, while a higher level of familiarity leads to less liking in interpersonal situations (Norton et al., 2007). This decrease in likability is said to be attributable to an increased knowledge of differences between the two individuals (Norton et al., 2007). In terms of audio input, the “phonemic restoration effect” has shown that the brain can adapt to audio distortions and understand what was said (Kashino, 2006). This phenomenon could have been at play when individuals viewed the poor-quality audio, allowing them to still understand and form perceptions of the therapist.

As documented in several past research studies, less information may not always be detrimental in interpersonal interactions. The current effect may have led to more positive perceptions of ambiguity when observers were originating their interpersonal perceptions of the psychotherapist. Additionally, the participants may have experienced an opportunity to create their own more favorable attributes for the therapists that were portrayed as unclear, therefore leading to more positive interpersonal perceptions. The current study does not suggest that therapists should purposefully distort their audiovisual quality during an online therapy session, but instead it provides evidence that imperfect audiovisual quality may not need to be a therapist’s top concern. Additionally, the current

findings suggest that more research is needed to see how this phenomenon may be at play in a real-world online therapy interaction.

Strengths and Limitations

Many strengths and limitations can be identified with this study. First, one limitation involves the setting of the study. While the study consisted of a relatively large sample, it should still be acknowledged that all the responses were collected from the same university with college undergraduates. Similarly, to protect confidentiality, the study did not collect names or direct identifiers, which caused some difficulty in identifying study completion on the SONA system. Credit was granted manually by the researcher after a period passed, although it is possible that participants completed the study more than one time. This occurred on at least three occasions. The use of online resources also allowed potential carelessness during survey completion. The survey implemented attention checks that were required to be answered correctly before moving on; however, it is possible that participants did not pay close enough attention to the remaining portions of the questionnaire. Additionally, the editing of audio and video were systematically altered; however, it is possible that the level of quality distortion was not an appropriate level for optimal manipulation. The study only included one level of distortion for the video and audios, with only high- and low-quality. It is possible that different levels of “low” quality may be perceived differently. Another possible limitation involves the length of the stimuli. It is possible that observer perceptions could be different when viewing a clip longer than four minutes; however, past research suggests that viewing longer segments does not provide ratings more consistent with the full therapy interaction, apart from therapeutic alliance ratings (Lewin & Berman, 2021). Another

consideration for this research involves the use of pre-recorded therapy sessions from the APA database. While the videos were edited to show therapists front-on, it is possible that these videos did not provide an accurate representation of what online video therapy looks like. The videos were chosen based on the availability of clips showing the therapist in an appropriate position for editing; however, the emotion level and content being discussed was not taken into consideration. Similarly, it is possible that research involving clients, rather than observers, could provide different results. Additionally, while the statistical significance levels indicates that the difference in interpersonal ratings was unlikely to happen by chance, readers should be aware of the effect sizes, which are at a smaller level, as can be seen in Table 1.

Future Directions

Future studies are necessary to see if the results can be replicated. The findings can be extended by expanding the sample to represent a larger portion of the population, such as recruiting participants across alternative online sources. Additionally, the study could be broadened by creating videoconferencing interactions between a client and therapist, which would allow a more realistic representation of online therapy. Similarly, the poor-quality conditions could be systematically manipulated to represent other common technical issues seen in online therapy, such as delays, audio cutting in and out, and so on. Also, future studies could be conducted during genuine teletherapy sessions to identify how a client perceives quality effects, rather than an observer. Different times of therapy interactions should also be examined to see if quality effects influence perceptions differently depending on how emotionally charged the conversation is. Lastly, future studies should address whether there hits a point of maxing out on quality

effects, such as the effect demonstrating a U-shaped phenomenon. This could be studied by manipulating the poor quality into several different levels to have different degrees of distortion, which could allow examination of how perception may change after a certain level of distortion.

Conclusion

Research has been done on the differences between online therapy and in-person therapy; however, little research has focused on the effects of audio and video quality when viewing or hearing a therapist online. The current study aimed to examine the effects of audio and video quality on observer's perceptions of a therapist. The current study suggests that poor quality increases positive interpersonal perceptions of therapists when viewed or heard online, while perceptions of skill were not affected by poor audio or video quality. The findings of this research provide experimental evidence that the concern about having perfect quality online therapy may be misplaced.

References

- Aafjes-van Doorn, K., Békés, V., & Prout, T. A. (2020). Grappling with our therapeutic relationship and professional self-doubt during COVID-19: Will we use video therapy again? *Counselling Psychology Quarterly*, 1-12.
- Abbott, N. T., & Shahin, A. J. (2018). Cross-modal phonetic encoding facilitates the McGurk illusion and phonemic restoration. *Journal of neurophysiology*, 120(6), 2988-3000.
- Antons, J. N., Schleicher, R., Arndt, S., Möller, S., & Curio, G. (2012, July). Too tired for calling? A physiological measure of fatigue caused by bandwidth limitations. In *2012 Fourth International Workshop on Quality of Multimedia Experience* (pp. 63-67). IEEE.
- Barrett-Lennard, G. T. (1962). Dimensions of therapist response as causal factors in therapeutic change. *Psychological Monographs: General and Applied*, 76(43), 1.
- Barrett-Lennard, G. T. (2015). *The Relationship Inventory: A Complete Resource and Guide*. John Wiley & Sons.
- Beel, N., Machin, T., & Phillip, K. (2020). Understanding the cues and strategies counsellors use to develop rapport with clients through telephone counselling. *Psychotherapy and Counselling Journal of Australia*, 8(1), 1-9.
- Belmudez, B., Moeller, S., Lewcio, B., Raake, A., & Mehmood, A. (2009, October). Audio and video channel impact on perceived audio-visual quality in different interactive contexts. In *2009 IEEE International Workshop on Multimedia Signal Processing* (pp. 1-5). IEEE.
- Békés, V., & Aafjes-van Doorn, K. (2020). Psychotherapists' attitudes toward online therapy during the COVID-19 pandemic. *Journal of Psychotherapy Integration*, 30(2), 238.

- Bordin, E. S. (1979). The generalizability of the psychoanalytic concept of the working alliance. *Psychotherapy: Theory, Research & Practice, 16*(3), 252.
- Darchuk, A., Wang, V., Weibel, D., Fende, J., Anderson, T., Horvath, A. (2000). Manual for the *Working Alliance Inventory – Observer Form (WAI-O)*: Revision IV.
- DePaulo, B. M. (1978). Decoding discrepant nonverbal cues. *Journal of Personality and Social Psychology, 36*(3), 313.
- DiMatteo, M. R., Taranta, A., Friedman, H. S., & Prince, L. M. (1980). Predicting patient satisfaction from physicians' nonverbal communication skills. *Medical Care, 37*(6), 376-387.
- Dowell, N. M., & Berman, J. S. (2013). Therapist nonverbal behavior and perceptions of empathy, alliance, and treatment credibility. *Journal of Psychotherapy Integration, 23*(2), 158.
- Devilley, G. J., & Borkovec, T. D. (2000). Psychometric properties of the credibility/expectancy questionnaire. *Journal of Behavior Therapy and Experimental Psychiatry, 31*(2), 73-86.
- Fann, J. R., Bombardier, C. H., Vannoy, S., Dyer, J., Ludman, E., Dikmen, S., Marshall, K., Barber, J., & Temkin, N. (2015). Telephone and in-person cognitive behavioral therapy for major depression after traumatic brain injury: a randomized controlled trial. *Journal of Neurotrauma, 32*(1), 45-57.
- Fauville, G., Luo, M., Muller Queiroz, A. C., Bailenson, J. N., & Hancock, J. (2021). Nonverbal Mechanisms Predict Zoom Fatigue and Explain Why Women Experience Higher Levels than Men. *Available at SSRN 3820035*.
- Ferran, C., & Watts, S. (2008). Videoconferencing in the field: A heuristic processing model. *Management Science, 54*(9), 1565-1578.
- Fretz, B. R., Corn, R., Tuemmler, J. M., & Bellet, W. (1979). Counselor nonverbal behaviors and client evaluations. *Journal of Counseling Psychology, 26*(4), 304.

- Friedberg, A., & Linn, L. (2012). The couch as icon. *The Psychoanalytic Review*, 99(1), 35-62.
- Gurman, A. S. (1977). Therapist and patient factors influencing the patient's perception of facilitative therapeutic conditions. *Psychiatry*, 40(3), 218-231.
- Haregu, T. N., Chimeddamba, O., & Islam, M. R. (2015). Effectiveness of telephone-based therapy in the management of depression: a systematic review and meta-analysis. *SM J Depress Res Treat*, 1(2), 1006.
- Hies, O., & Lewis, M. B. (2022). Beyond the beauty of occlusion: medical masks increase facial attractiveness more than other face coverings. *Cognitive Research: Principles and Implications*, 7(1), 1-6.
- Himelhoch, S., Medoff, D., Maxfield, J., Dihmes, S., Dixon, L., Robinson, C., Potts, W., & Mohr, D. C. (2013). Telephone based cognitive behavioral therapy targeting major depression among urban dwelling, low income people living with HIV/AIDS: results of a randomized controlled trial. *AIDS and Behavior*, 17(8), 2756-2764.
- Horvath, A. O., & Greenberg, L. S. (1989). Development and validation of the Working Alliance Inventory. *Journal of Counseling Psychology*, 36(2), 223.
- Irvine, A., Drew, P., Bower, P., Brooks, H., Gellatly, J., Armitage, C. J., Barkham, M., McMillian, D., & Bee, P. (2020). Are there interactional differences between telephone and face-to-face psychological therapy? A systematic review of comparative studies. *Journal of Affective Disorders*, 265, 120-131.
- Jiang, M. (2020). The reason Zoom calls drain your energy. *Testo disponibile al sito* <https://www.bbc.com/worklife/article/20200421-why-zoom-video-chats-are-so-exhausting>.
- Kashino, M. (2006). Phonemic restoration: The brain creates missing speech sounds. *Acoustical Science and Technology*, 27(6), 318-321.

- Kroupi, E., Hanhart, P., Lee, J. S., Rerabek, M., & Ebrahimi, T. (2014, September). EEG correlates during video quality perception. In *2014 22nd European signal processing conference (EUSIPCO)* (pp. 2135-2139). IEEE.
- Lewin, R. K., & Berman, J. S. (2021). How much of a psychotherapy session must be viewed to judge interpersonal qualities of the therapist? *Journal of Psychotherapy Integration*. Advance online publication. <https://doi.org/10.1037/int0000256>
- Lovejoy, T. I., Demireva, P. D., Grayson, J. L., & McNamara, J. R. (2009). Advancing the practice of online psychotherapy: An application of Rogers' diffusion of innovations theory. *Psychotherapy: Theory, Research, Practice, Training*, *46*(1), 112.
- Murphy, K. (2020). Why zoom is terrible. *The New York Times*, *23*.
- Norton, M. I., Frost, J. H., & Ariely, D. (2007). Less is more: the lure of ambiguity, or why familiarity breeds contempt. *Journal of personality and social psychology*, *92*(1), 97.
- Office of Institutional Research. (2020). *Student Demographics*. https://www.memphis.edu/oir/data/public_student_demographics.php
- Patel, V., Mazzaferro, D. M., Sarwer, D. B., & Bartlett, S. P. (2020). Beauty and the Mask. *Plastic and reconstructive surgery. Global open*, *8*(8), e3048. <https://doi.org/10.1097/GOX.00000000000003048>
- Polikovskiy, S., Kameda, Y., & Ohta, Y. (2013). Facial micro-expression detection in hi-speed video based on facial action coding system (FACS). *IEICE Transactions on Information and Systems*, *96*(1), 81-92.
- Roesler, C. (2017). Tele-analysis: The use of media technology in psychotherapy and its impact on the therapeutic relationship. *Journal of Analytical Psychology*, *62*(3), 372-394.

- Rosenthal, R., Hall, J. A., DiMatteo, M. R., Rogers, P. L., & Archer, D. (2011). Profile of Nonverbal Sensitivity (PONS test): Manual. *Unpublished manuscript available from JA Hall, Northeastern University, Boston, MA.*
- Sadr, J., & Krowicki, L. (2019). Face perception loves a challenge: Less information sparks more attraction. *Vision Research, 157*, 61-83.
- Schoenenberg, K., Raake, A., & Koeppel, J. (2014). Why are you so slow?— Misattribution of transmission delay to attributes of the conversation partner at the far-end. *International Journal of Human-Computer Studies, 72*(5), 477-487.
- Sellen, A. J. (1995). Remote conversations: The effects of mediating talk with technology. *Human-Computer Interaction, 10*(4), 401-444.
- Schupp, H. T., Stockburger, J., Schmälzle, R., Bublatzky, F., Weike, A. I., & Hamm, A. O. (2008). Visual noise effects on emotion perception: brain potentials and stimulus identification. *Neuroreport, 19*(2), 167-171.
- Shatzer, H., Shen, S., Kerlin, J. R., Pitt, M. A., & Shahin, A. J. (2018). Neurophysiology underlying influence of stimulus reliability on audiovisual integration. *European Journal of Neuroscience, 48*(8), 2836-2848.
- Stiles-Shields, C., Kwasny, M. J., Cai, X., & Mohr, D. C. (2014). Therapeutic alliance in face-to-face and telephone-administered cognitive behavioral therapy. *Journal of Consulting and Clinical Psychology, 82*(2), 349.
- Tichenor, V., & Hill, C. E. (1989). A comparison of six measures of working alliance. *Psychotherapy: Theory, Research, Practice, Training, 26*(2), 195.
- Topooco, N., Riper, H., Araya, R., Berking, M., Brunn, M., Chevreur, K., ... & behalf of the E-COMPARED, O. (2017). Attitudes towards digital treatment for depression: a European stakeholder survey. *Internet Interventions, 8*, 1-9.

- Tyson, J. A., & Wall, S. M. (1983). Effect of inconsistency between counselor verbal and nonverbal behavior on perceptions of counselor attributes. *Journal of Counseling Psychology, 30*(3), 433.
- Yu, C., Xu, Y., Liu, B., & Liu, Y. (2014). "Can you SEE me now?" A measurement study of mobile video calls. In *IEEE INFOCOM 2014-IEEE Conference on Computer Communications* (pp. 1456-1464). IEEE.

Table 1

Perceptions of Therapist Interpersonal and Skill Characteristics at High and Low Levels of Audiovisual Quality

	Audio or visual quality				<i>F</i>	<i>d</i>
	High		Low			
Therapist characteristic	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>		
Interpersonal	7.91	0.13	8.32	0.14	4.83*	-0.19 ^a
Skill	7.28	0.16	7.13	0.17	0.40	0.06

Note. N = 263. The interpersonal category is comprised of empathy and alliance perceptions. The skill category is comprised of credibility and expectancy perceptions. The two characteristics range from 1-11, with 1 indicating less positive perception and 11 indicating more positive perceptions.

^a Negative effect size indicates the low-quality stimuli being rated more positively than the high quality.

* $p < .05$.



Institutional Review Board
Division of Research and Innovation
Office of Research Compliance
University of Memphis
315 Admin Bldg
Memphis, TN 38152-3370

September 24, 2021

PI Name: Olivia Glasgow
Co-Investigators:
Advisor and/or Co-PI: Jeffrey Berman
Submission Type: Initial
Title: The Influence of Audio and Video Quality on Perceptions of the Psychotherapist
IRB ID: #PRO-FY2022-39

Expedited Approval: September 21, 2021

The University of Memphis Institutional Review Board, FWA00006815, has reviewed your submission in accordance with all applicable statuses and regulations as well as ethical principles.

Approval of this project is given with the following obligations:

1. When the project is finished a completion submission is required
2. Any changes to the approved protocol requires board approval prior to implementation
3. When necessary submit an incident/adverse events for board review
4. Human subjects training is required every 2 years and is to be kept current at citiprogram.org.

For additional questions or concerns please contact us at irb@memphis.edu or 901.6783.2705