

The background of the cover is a grayscale image of a room with a checkered floor and a textured wall. A bright orange horizontal band is positioned in the upper third of the image, containing the journal's title and contact information. On the left side of the orange band, there is a faint, stylized graphic of concentric circles with a central dot, resembling a ripple or a lens flare.

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Methodology of a Novel Virtual Phenomenology Interview Technique

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Abstract

The use of virtual world technology as a social and communications medium is increasing dramatically. Virtual world-based interview environments are emerging as a tool that qualitative researchers may consider either to supplement or to replace traditional face-to-face interview settings. Guided by previous studies comparing computer-mediated communications to face-to-face interviews, this study explores the character and degree of interviewer influence on participants' responses in virtual world versus traditional face-to-face environments. No significant difference in meaning units was found in the coded transcripts of virtual world environment interviews and face-to-face interviews. Results suggest virtual worlds may offer advantages over face-to-face interviewing in terms of efficiency, without sacrificing reliability, validity, or complexity. Study limitations and additional research topics are discussed.

Keywords: Interview, Virtual Worlds, Phenomenology, Cultural-Historical Activity Theory.

Methodology of a Novel Virtual Phenomenology Interview Technique

Any list of the tools needed for qualitative research in the early 21st century should include all media available for transmission and recording of data, along with all information communication relevant to the topic of the study. The explosion in the use of the World Wide Web and its interconnected modes of broadcasting messages and data have made mediated communication, in various forms, vital to most people in the developed world. The artifacts of these electronic communications are rich data sources for the qualitative researcher.

One of those forms is a virtual world. A virtual world has been defined as a “synchronous, persistent network of people, represented as avatars, facilitated by networked computers” (Bell, 2008, p.1). Popularized by Second Life™ (Linden Research Inc, 2003) and other virtual environments, interacting with others in such a setting is becoming common in social communications (Yee, Bailenson, Urbanek, Chang, & Merget, 2007), business transactions (Malaby, 2006), and academic environments (Bielaczyc, 2006). Virtual worlds seemingly provide a novel and useful environment for conducting qualitative research, as well. Data from these virtual worlds can be captured and stored safely and efficiently, and then disseminated to multiple researchers instantaneously as needed. Moreover, both audio and visual information can be recorded and analyzed for meaning, if desired.

This study compares the results obtained from face-to-face interviews with those obtained during interviews conducted in a virtual world environment. These interviews were conducted as part of a phenomenological examination of the experiences of a cohort of career-changing pre-service middle school teachers in their training viewed as an activity through the analytical lens of Cultural Historical Activity Theory (Engeström, 1987).

The focus of this particular qualitative study is to examine the methods used to explain differences in data recorded and analyzed using two distinct interview settings by answering the following research question: How might the use of a virtual world interviewer influence the answers received, as compared to an in-person interview?

Literature Review

Face-to-Face interviews, dialogues conducted in person between a researcher/interviewer and participant or participants in connection with a topic under study, are typically considered the

“gold standard” in research interviewing (Rohde, Lewinsohn, & Seeley, 1997) However, researchers increasingly are compelled to collect interview data using mediated means, such as web pages, telephones, and now virtual worlds. Results of several previous studies comparing mode of questionnaire administration and effectiveness of face-to-face interviews with other interview modalities, such as telephone interviews or internet surveys, have been mixed (Bowling, 2005; Newman et al., 2002).

Others have compared aspects of computer-mediated communications (CMC) and face-to-face contact, and have concluded that CMC is as effective or more effective as face-to-face communication in the areas of overall communication effectiveness (Tutty & Klein, 2008; Jonassen & Kwon, 2001). These studies, using more defined measures of meaning and analysis, found differing results. For instance, some have found conflicting results of effectiveness using multiple measures, such as questioning behaviors and content knowledge (Tutty and Klein, 2008) and task-orientation and perspective (Jonassen and Kwon, 2001), between CMC and face-to-face groups.

Using content analysis, other studies suggest conflicting results as well. Content analysis “extracts desired information from a body of material by systematically and objectively identifying specific characteristics of the material” (C. P. Smith, 2000, p. 314). In studies of focus groups, Reid and Reid (2005), Schneider, Kerwin, Frechtling, and Vivari, (2002), and Underhill and Olmstead (2003) found that CMC participants used significantly fewer words than face to face participants in communications analyzed in their studies, while finding no significant differences in other meaning measures in the two groups. While the studies cited above comparing CMC and face-to-face communications used typed messages as a medium of communication, Cheng, Krumwiede, and Sheu (2009) used online audio as a means of messaging, and measured quality and quantity of information provided by the groups. They determined that CMC group members produced significantly higher measures of quantity and quality of information than did face-to-face groups.

Initial Research Study

Background of the Primary Research Study

The participants in this study were pre-service teachers in a Master of Arts in Teaching (MAT) program in middle level education at “Southland University,” a major research university located in the Southeastern United States. This initial-certification teacher education program consists of a 36-hour curriculum where its graduates become certified and highly qualified to teach in the middle grades (Grades 5-9 in most of the US) in one or more of the following content areas: Language Arts, Math, Science, and Social Studies. Usually, students complete the program in 12 to 16 months. All of the students in this study are career-changers, where the student originally trained for and practiced a profession other than education for a significant period (two or more years) before beginning training for a career in education.

The MAT program is based on a cohort model, where students remain grouped together as they take classes, gain experience in a semester-long practicum, and student teach. In the underlying phenomenology study, of which this methodology research was an element, the common experience pertained to an assignment given to all members of the cohort.

Summary of the Primary Research Method

The primary research study underlying this methodology is a phenomenology of the perceptions of career-changing pre-service middle school teachers, expressed from experiences in their training, which included participation in an activity-based project. A comparison of the two modes used to record the interview data required for the phenomenology is the topic of this study.

According to Marshall and Rossman (1999), phenomenology is “the study of lived experiences and that we understand those experiences to develop a worldview” (p.112). Additionally, this type of interview is done “to describe the meaning of a concept or phenomenon that several people share...” (p. 112). The phenomenology technique used is directed toward answering the question “What is the essence of the experience?” (Creswell, 2009), a method “that stresses the interconnections of embodied subjects and their mutual constructedness” (Shildrick, 2009, p. 38) and as “the act of observation that gets re-interpreted” (Ihde, 1999, p .20).

In the underlying study, the phenomenology technique followed the method prescribed by Moustakas (1994). The first step involved bracketing the research by expressing the researchers’ own experiences with the phenomena and citing relevant literature regarding the

topic of the study. This step was followed by the examination of interview transcripts, principally the analysis of answers to semi-structured interview questions collected in both face-to-face and virtual interview environments from the underlying study's participants. Follow up interviews assessed the accuracy of qualitative data transcribed, confirmed or expanded themes uncovered in the interviews, and explored perceptions of the interviewees regarding the interview setting (face-to-face or virtual). Finally, the results of these interviews were coded using the framework of Cultural-Historical Activity Theory or CHAT (Engeström) as initial coding classifications to derive meaning units. In the phenomenology, those meaning units were reduced to meaning themes, and a composite meaning of the experience was reported and bracketed by the supporting literature (Moustakas).

Method

Description of Data Collection Techniques

The core of this methodology is an analysis of the results of the data collected in two disparate methods used for the underlying phenomenology study. One-half of the participants ($n_1=5$) were interviewed using traditional face-to-face interviews, conducted in the office of the primary researcher. In the remainder of the interviews, the researcher and participants ($n_2=5$) were not in the same physical location for the interview, but instead met in a virtual world location.

The purpose of interviews in phenomenology research is to gain research perspective on a lived experience, familiar to those participants taking part in the research. These perspectives are best obtained via a semi-structured interview of the participant's lived experiences—one that takes the form of an everyday conversation but focused on getting to the essence of the phenomena by centering on certain themes as guiding the conversation and questions asked (Kvale & Brinkmann, 2009, p. 27). As recommended by Kvale and Brinkman (2009), the interviews for this study were transcribed and both the transcripts and audio recordings, along with the interviewer's field notes, were analyzed for meaning.

Interview Question Development

For the phenomenological study, semi-structured questions were developed using the framework of CHAT, a model used to understand activity by explaining qualitative changes in human

practices over time (Engeström, 1987). CHAT served essential roles in the development of both question development and a lens for analysis of the responses. Certain terms and vital elements make up Engeström's activity triangle, the tool used here as a graphic representation of an activity system according to CHAT (Figure 1). The elements of this system were used in development of the semi-structured guiding questions during the phenomenology interviews.

Certain elements of CHAT (community, division of labor, meaning, outcome, tensions, tools, and rules) were used as meaning units for content analysis. Other attributes recorded during the interviews (length of interview in minutes, total words, number of quotations analyzed, total codes assigned, number of meaning units, number of interviewer questions, and number of conversational units) also were recorded for study.

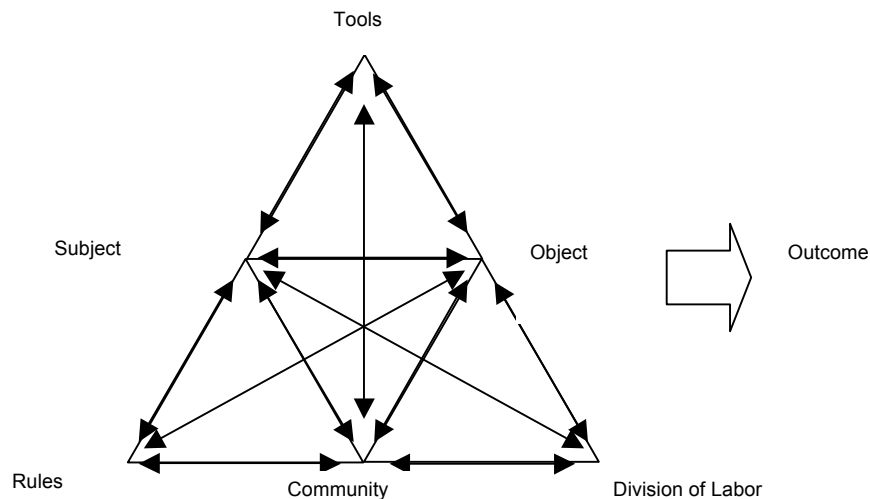


Figure 1: Engeström's Activity Triangle (Adopted from Engeström, 1987)

Data Collection Protocol

Partaking in this study required the participants' enrollment in the middle grades curriculum course and classification as a career-changer, as defined earlier in this manuscript, creating a purposeful sample (Trochim, 2001). A sign-up sheet was shared in the curriculum class among all MAT students in the cohort ($N=38$), asking for volunteers for the study. From those students indicating interest in participating, the MAT Coordinator identified those candidates that, in her professional opinion, met the career-changer criterion for participation. Of those students qualifying, ten ($n=10$) of these students were selected, with a distribution roughly representing

the sex distribution of the MAT cohort--50% female, 50% male. A mutually agreeable time was then scheduled with each participant for an interview.

As noted earlier, interviews were conducted in two modes, and participants were assigned to these two groups by convenience sampling (Trochim, 2001). The research plan called for half of interviews to be in a face-to-face meeting between the interviewer and the participant. These meetings were conducted in an office located in the classroom suite used by the MAT program (Figure 5). After providing the participant with information for informed consent the interviews began. The interviewer asked semi-structured questions and took field notes to record additional information during the interview. As is typical of phenomenology research, these discussions took the form of a conversation, with interviewees encouraged to discuss freely and to describe their experiences in response to the questions without restriction (Kvale & Brinkmann, 2009).



Figure 2: Face-to-Face Interview Setting

These face-to-face interviews were recorded using a digital audio recorder. While the audio from these interviews was transcribed, no video of the interview was recorded in the face-to-face interviews.

The other interview mode involved the use of a virtual world setting. The virtual world platform used was AET Zone (Bronack, Riedl, Tashner, & Greene, 2006), an Activeworlds-based virtual world for learning. AET Zone is designed to connect students, instructors, and

other experts, enabling each to meet and to work together in ways not available in traditional web-based environments (Cheney, Author, Sanders, Riedl, & Tashner, 2007). AET Zone principally is a pedagogical tool designed to bring the classroom experience into the virtual world by allowing both novice student and content expert to have a personal presence in a common virtual learning space, regardless of physical distance between them. Built to foster a social constructivist process in an online learning environment, the AET Zone is used to advance, "a peer-based approach to teaching and learning" (Bronack et al., 2008, p.63), consistent with the Vygotskian principle of learning with a more knowledgeable other and expanding that concept to the virtual world via the idea of presence pedagogy.

Audio and video responses to the same questions used in the face-to-face interviews were captured within AET Zone, along with field notes used during these virtual interviews. Additionally, a visual recording of the interviewer's screen during the virtual interview was recorded using CamStudio™ (Rendersoft Software, 2001) and used for analysis of interaction between the avatars of the interviewer and interviewee (Figure 3). Any interaction between the avatars was also noted in the field notes.



Figure 3: Virtual Interview Setting

The procedure for the interviews conducted using AET Zone was somewhat different from those carried out face-to-face. The participant was asked to meet the interviewer at his office. The participant then was informed of the virtual world setting of their interview and taken to another

office where the AET Zone system was started on an internet-enabled system in the second office. As all participants stated they had no experience in virtual worlds, they were instructed in the use of the AET Zone system and given a tour of the virtual world environment. The participants were provided instructions on how to respond to audio and visual prompts, and shown how to move avatars around in the virtual environment with unscripted movements and preset emotions when responding to questions. After the participant indicated their comfort in using the system, the researcher showed available avatars in the AET Zone environment and encouraged the participant to pick one that best represented him/herself.

After establishing these elements of the interview in the virtual world environment, the researcher returned to his office, where his computer was also linked to AET Zone with a pre-established avatar representing him. At that point, the interview began, using the same questions as in the face-to-face interview protocol.

Regardless of mode used, each interview concluded by thanking the participant for participating in the research and indicating brief follow-up interviews to clarify information provided in the first interview would be scheduled in a timely manner. These additional discussions took place approximately one month after the initial interview and were used in validating the results of both the phenomenology and this methodology.

Analysis Technique

After completion of the initial interviews, the resulting digital audio files were transcribed, printed, and read for initial understanding, clarification, and adjustment of erroneous transcription. After any needed corrections, the transcription was prepared for analysis by assigning each participant a pseudonym and classifying the transcript as either the result of a face-to-face interview or one conducted in the virtual interview environment.

To facilitate the next phase of analysis, a coding manual was prepared for use in evaluating the interview transcripts by two trained coders. This coding manual presented a system detailing the information needed to encode the transcribed interview for further analysis by providing operational definitions of terms utilized in this study and the underlying phenomenology. This system was intended to supply a measure for comparison of the transcripts, by means of *a priori* categories derived from CHAT with an inductive approach to assign the codes (Rourke & Anderson, 2004; C. P. Smith, 2000). These codes were generated 1)

to identify the existence of a significant statement and, 2) if present, to assign to a category of meaning according to CHAT. Each transcript was analyzed further according to the phenomenological technique described earlier.

Content Analysis

Content analysis was used for comparative analysis of the interview transcripts. Content analysis is a quantitative procedure used to cull additional information from data, such as text material, and used to examine it in a reliable and verifiable manner by using defined and explicit techniques (C. P. Smith, 2000). Smith notes, “when categories of analysis are explicit, this type of study provides a powerful method by challenging ideas concerning differences...between groups” (p. 315).

The appropriate unit for measurement for this study was determined to be the message level, based on previous, similar studies. De Wever, Schellens, Valcke, & Van Keer (2006) reviewed various methods designed to evaluate the transcripts of computerized discussion groups using a critical approach to compare these various schemes. Weinberger & Fischer (2006) indicated that for transcripts with a similar focus to the underlying phenomenology (social networking; social constructivism; community), the message was the appropriate unit of analysis.

Validity was attained using several approaches. Negative cases found in the transcripts were reviewed. All participants were given a copy of their interview transcript to note discrepancies (none were noted) and were given a follow up interview questionnaire to ensure dependability of the interview process.

Reliability for the transcript analysis was achieved by the use of a robust inter-rater reliability measure. Studies reviewed by De Wever, et al. (2006) indicated suitable measures of inter-rater reliability for such transcripts. Inter-rater reliability is defined as, “agreement or consistency among peers; the extent to which raters judge phenomena the same way” (Vogt, 2005, p.157). Two often-cited measures of inter-rater reliability (Weinberger & Fischer, 2006) are percentage of agreement and Cohen’s Kappa.

While percentage of agreement, the simplest measure of how often raters agree in their coding classification, is commonly used, this method fails to take into account the frequency a coding category is used or correct for the coders’ agreement occurring purely by chance (C. P.

Smith, 2000). Cohen's Kappa (Cohen, 1960) is used to account for these limitations. By one description, "Cohen's Kappa coefficient κ relates the number of concordant ratings to the number of discordant ratings while taking into account the agreement of ratings that could be expected by chance" (Burla et al., 2008, p.114). Cohen's Kappa yields values between +1 and -1, with +1 indicating absolute agreement between the raters, -1 indicating absolute disagreement, and zero indicating pure coincidence. Values less than zero indicate agreement worse than that obtained by chance (Burla et al., 2008). In this study, Cohen's Kappa was used as a reliability measure.

Results

The following sections illustrate the outcome of the syntactical (interview length, word total, and message count) results, inter-rater reliability, and content (meaning units, questions, and conversational units) analysis of the interview transcripts.

Interview Length, Word Total, and Message Count

Table 1 shows the interview length, word total, and message count for the ten interviews conducted (all participant names have been changed) by interview condition (face-to-face or virtual). Several differences are noteworthy. Interview time (in minutes), word total, and message counts are all lower in the virtual group when compared with the face interviews. These differences are somewhat accounted for by the presence of two outliers, Frank and Ralph, in the face-to-face group.

Mean ranking of interview length, word total, and message count differences in the two groups were examined for statistical significance using two-tailed Mann-Whitney tests (U) (Table 2). Between the two groups, interview time differed significantly ($U = 0.000$, $Z = 2.61$, $p = 0.009$). Differences in word total ($U = 5.000$, $Z = 1.567$, $p = .117$) and message counts ($U=2.000$, $Z = 2.93$, $p = .028$) did not differ significantly.

Subject	Interview Length (in min)	Total Words	Message Count
Face to Face			
Sheri	47	4,941	124
John	38	3,592	164
Frank	79	12,341	170
Misty	45	5,110	149
Ralph	63	8,806	93
Average	54	6,958	140
Virtual			
Bill	35	5,308	137
Sue	19	3,283	72
Sandra	20	3,317	82
Abigail	29	4,540	66
William	34	4,181	80
Average	27	4,126	87

Table 1: Interview Length, Total Words, and Message Count by Interview Setting

Kappa Analysis

Table 2 summarizes the Kappa calculations for meaning units, questions, and conversational units assigned, by interview condition. The Kappa range for each category is shown, along with the number of responses given for that category. Acceptable reliability for this study was defined as $\kappa > .60$ (Viera & Garrett, 2005). Of the 772 total units assigned, 30 meaning units with $\kappa \leq .60$ were excluded from further analysis, leaving 742 reliable meaning units for further content analysis.

	Kappa Range	Satisfactory Reliability Units	Unsatisfactory Reliability Units	Total Coded Units
<u>Face to Face</u>				
Meaning Units				
Community	0.61-1.00	123	0	123
Division of labor	0.60-0.78	46	0	46
Meaning	0.50-1.00	27	5	32
Tensions	0.63-0.95	94	0	94
Tools	0.57-0.84	72	9	81
Rules	0.86-1.00	95	0	95
Conversational Units				
Conversation	0.64-1.00	178	0	178
Comments	0.63-1.00	70	0	70
Questions	0.85-1.00	240	0	240
<u>Virtual</u>				
Meaning Units				
Community	0.82-0.95	111	0	111
Division of labor	0.58-0.86	38	7	45
Meaning	0.43-0.88	22	6	28
Tensions	0.50-0.92	51	2	53
Tools	0.62-1.00	43	0	43
Rules	0.73-1.00	22	0	22

Conversational Units				
Conversation	0.95-1.00	118	0	118
Comments	0.63	24	0	24
Questions	0.88-1.00	156	0	156

Table 2: Inter-Rater Reliability Analysis Results by Interview Setting

Content Analysis

Table 3 shows the total reliable meaning units assigned for content analysis, consisting of the number of *meaning units*, *questions*, and *conversational units* assigned and listed by interview condition. *Meaning units* are those answers fitting the classification of the elements of CHAT, the analysis lens of the underlying phenomenology. Those classifications consist of answers coded *community*, *division of labor*, *meaning*, *question*, *rules*, *tensions*, and *tools*. *Questions* are those direct questions asked by the interviewer, while *conversational units* are interviewer comments and conversation between the interviewer and participant. Differences in mean ranking of meaning units, questions, and conversational units of the two groups were examined using two-tailed Mann-Whitney (U) tests.

Subject	Total Codes Assigned	Meaning Units	Questions	Conversational Units
Face to Face				
Sheri	165	84	51	30
John	193	74	55	64
Frank	252	135	51	66
Misty	180	68	51	61
Ralph	139	80	32	27
Virtual				
Bill	199	97	41	61
Sue	93	47	28	18
Sandra	108	53	31	24
Abigail	102	59	24	19
William	127	75	32	20
Total	1558	742	396	429

Table 3: Codes Analysis

Differences in meaning units ranking did not differ significantly ($U=5.5$, $Z = 1.467$, $p = 0.142$). Questions differed significantly ($U= 1.500$, $Z = 2.333$, $p = 0.020$) as did differences in conversational units ($U = 2.0$, $Z = 2.193$, $p = 0.028$).

Observations of Avatar Responses

As noted previously, interviews in AET Zone were recorded in both audio and visual aspects. Additionally, field notes were taken during the interview process for both interview modes. No interaction between the interviewer and participant's avatar was observed in any of the five virtual world interviews, even upon prompting by the interviewer's avatar. No participant-initiated movements were observed in the participant's avatar.

Participants Satisfaction with Interview Mode

In a follow-up questionnaire participants were asked if the interview experience allowed them to express fully their insights and perceptions of the experience studied in the underlying phenomenology. Additionally, the participants were asked in what positive and negative ways the interview condition affected that experience. Two participants did not provide an answer or were unavailable. Of the eight participants answering these questions, all participants expressed satisfaction with both the interview experience and the interview condition. Two typical interview responses are noted below:

John (face to face): I believe that during the interview experience I was able to express my insights. I felt comfortable with the in-person interview. It felt more like a pleasant conversation than an interview.

Abigail (virtual): I felt that doing a virtual interview made it a little more of a relaxed process. I probably expressed myself a little more freely doing a virtual interview than I would have during a face-to-face interview.

Discussion

We approached this pilot study as an opportunity to gain initial insight into what differences in participant responses may exist between interviews conducted face-to-face compared with those conducted within a virtual world. Using the framework of similar studies comparing face-to-face and CMC communications in various settings, we looked at several measures of data quality, validity, and reliability common across both virtual world-based and in-person interviews. Though the population lacked the numbers for definitive statements, results suggest virtual

worlds may offer advantages over face-to-face interviewing in terms of efficiency, without sacrificing reliability, validity, or complexity.

Our results indicate differences in several areas. Interview time in the face-to-face condition was significantly higher than those conducted in the virtual environment, yet total words and total messages analyzed were not found to be significantly different. These findings imply that interview communications in the virtual environment may be more efficient, with a higher words and message per minute ratio in the virtual interview setting than in a face-to-face one.

This conclusion is bolstered by the determination of no significant differences in meaning units found in the written transcripts between the virtual and face-to-face discussions. Meaning units were the crux of the related phenomenology study used for this methodology, as they expressed the lived experiences of the participants. These findings suggest that the measured amount of perceived meaning of an experience can be shared in a virtual space with a similar level of richness and complexity as that shared within a face-to-face environment.

One caveat is the significant differences in the mean ranking of the number of questions asked and conversational items coded in the interview transcripts between the virtual and face-to-face interview conditions. Based on the results, we suggest the question whether the differences in question and conversation condition could distract from the finding of the lived experience—the essence of phenomenology research—is still open.

Additionally, the qualitative finding of participant non-interaction during the interview using a self-created avatar is notable. To quote one of the virtual world participants, “Having a person standing in the middle of the virtual world with no real purpose was a little strange.” While all virtual interviewees expressed satisfaction with the interview process and its capacity to capture the lived experience under study in the phenomenology, it appears that interaction between the interviewer and participant’s avatar added no additional value to the data gathered to capture that experience. A simple explanation of this observation is that none of the participants had any meaningful experience or knowledge in the use of virtual worlds; hence, it had no meaning to them. Regardless, it is clear that the design of the virtual world setting must suggest an explicit use or role – particularly for uninitiated users – for it to be viewed as similarly naturalistic to a traditional office.

As a pilot study with a low number of participants, any statistical inferences found lack significant power for a generalized application of our findings, but our goal was to create a frame for further studies in this area. Additionally, the participants of this study do not represent a broad sample of the overall population of individuals undergoing the experience studied in the phenomenology. Instead, they represent one example of one group for whom interview-based data may be a useful source of information for investigation and review. As more of the general population becomes increasingly familiar with virtual world technology, and as researchers become more adept at using virtual world-based interview techniques, more sophisticated investigations of the effect of virtual worlds on traditional phenomenological research methods – such as interviewing – will become possible.

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