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"Why was I not taught to use this software earlier?" A gendered exploration of university students' beliefs towards their future use of CAQDAS

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Abstract:

The use of computer-assisted qualitative data analysis software (CAQDAS) for the organization and analysis of qualitative data has been a hotly debated topic among qualitative researchers since the inception of the technology in the 1980s (Smith & Hesse-Biber, 1996; and Bong, 2002). Proponents of the software claim that QDAS can help strengthen the validity, reliability, and accuracy of data analysis, whereas critics have cautioned that the use of such software distances the researchers from the data and attempts to make the data objective (Saldaña, 2013). The debates surrounding the use of qualitative software have contributed to a lack of student training in academic settings. Consequently, few studies have examined the student experience and decision-making process regarding the use of QDAS in the university setting (Paulus, Woods, Atkins, &Mackin, 2015). Using reflective response data collected from participants of a beginner qualitative coding workshop, this paper adds to the limited literature on student experiences using QDAS by examining gender differences in how participants critically reflected on their first experience using QDAS and examines the likelihood that participants would use QDAS in their future work. Findings from this study indicate that participants who used QDAS for the first time perceived that there are more potential benefits to using QDAS versus manual coding. Gender differences were present with female participants strongly believing that the software would allow them to be more effective and efficient researchers, and male participants believing that they would be better able to gain deeper insights into their data.

1. Introduction

Since the 1980s, researchers have been using computer-assisted qualitative data analysis software programs—CAQDAS—to organize and analyze qualitative and mixed-methods data (Davidson, Paulus, & Jackson, 2016). Although the software has been in existence for over thirty years, globally there has been large scale skepticism among scholars of whether qualitative data analysis software (QDAS) should be used for qualitative research (see Kelle, 2007; Saldaña, 2013; and Rodik&Primorac, 2015). Smith and Hesse-Biber (1996) found that that when QDAS was first introduced to researchers, a positive 'user experience' was strongly correlated with how proficient an individual was with using computers in general. Gilbert, Jackson, and di Gregorio (2013) echoes this sentiment by stating that 'using QDA software well required both general computer skills and—even more importantly—an understanding of qualitative research methods. Users with low computer skills will naturally struggle with the software, regardless of the level of their research skills' (p. 229). In today's global culture with technology embedded in most aspects of everyday life, a positive user experience of QDAS is not as strongly associated with one's familiarity with computer use. Nevertheless, there remains a lack of opportunities for students in university

settings to receive training in qualitative research methods courses on the use of QDAS to organize and analyze their qualitative research (Gibbs, Friese, Mangaberia, 2002).

Paulus and Bennett (2017) assert that although 'today's students ask how to best integrate new technologies, such as smart phones, social media, and QDAS into their qualitative research practice' (p. 21), training in academic qualitative research methods coursework on how to use QDAS is still lacking or nonexistent. By conducting a thorough review of the literature regarding teaching graduate-level qualitative research methods courses, Paulus and Bennett (2017) found only four studies which mentioned the use of QDAS in graduate-level courses. They attribute the lack of QDAS training in graduate programs as being pushed aside because of the demanding curriculum for qualitative research courses. The curriculum for qualitative research method courses is often packed with theoretical and conceptual learning and scholars have found that there is often not enough time in a single course for students to learn a new computer software program in addition to the mandatory course content (Nind, Kilburn, & Luff, 2015). Silver and Woolf (2015) add that some students who are enrolled in qualitative methods course often have diverse methodological backgrounds. For instance, in a single course, the knowledge base that students are drawing on is disproportionate with some students possessing less basic knowledge of qualitative methods compared to others. Consequently, the different levels of background knowledge on qualitative methods can make it difficult for university instructors to teach the foundations of qualitative research methods in a graduate course let alone teach advance analysis techniques using computers. Raddon, Raby, and Sharpe, (2009) also acknowledge that it is often difficult to teach qualitative data analysis because of the multitude of theoretical and empirical content needed to be covered in a single research methods course. When reflecting on teaching qualitative methods, Raddon et al. found that teaching qualitative research by focusing on the creative and analytical processes of the method was made even more difficult in large classroom environments.

The structure the classroom, composition of the students taking the course, and alignment of course content with curriculum objectives have all contributed to a lack of QDAS training in qualitative research methods courses within the university setting. Kelle (2007); however, observes that from the early days of using software programs to analyze qualitative data, there has been '…a lively debate around the potential methodological merits and dangers of computer use in qualitative research with discussants expressing great optimism as well as concerned warnings' (p. 443). This debate has also contributed to skepticism surrounding the use of QDAS which is centered on the issues of whether or not QDAS should be utilized by qualitative researchers much less taught to students in the university setting. Kelle further argues that those who are critical of the use of QDAS view such software programs as distancing oneself from the data which goes against the theoretical principles of the methodology. Saldaña (2013) strongly opposes the idea that the use of QDAS distances a researcher from their data by arguing that 'coding *well* requires that you read and reread and reread yet again as you code, recode, and recode yet again. Coding *well* leads to total immersion in your data corpus with the outcome being exponential and intimate familiarity with its details, subtleties, and nuances' (p. 39). Therefore, although students desire to have training in qualitative software programs and to integrate this technology into the classroom, in almost all disciplines, such training is lacking or nonexistent based on methodological and theoretical debates surrounding the use of computer assisted-software for analyzing qualitative data, and a lack of opportunities for students to be exposed to such software in the classroom setting (see Woods, Macklin, & Lewis, 2015; and Paulus & Bennett, 2017).

As a result of the debates surrounding the use of QDAS in qualitative research, there are only a handful of studies which have examined the experiences of students using QDAS for qualitative data analysis in a university setting, especially in relation to how students engage with the software and reflect on if they would use it on their own in their future academic work (Blank, 2004; and Paulus & Bennett, 2017). Under this premise, this paper seeks to address the gap in the literature by examining gender differences in the user experience of graduate students that were trained to use QDAS for the first time in their academic careers. Utilizing qualitative data gathered from reflective feedback from graduate student participants in a beginner QDAS workshop, the following research questions framed the study:

(1) Does gender impact the overall user experience of students learning to use qualitative data analysis software for the first time?

(2) What factors determine if students will use QDAS in their future academic work?

The paper begins with a review of the literature regarding the methodological and theatrical debates surrounding qualitative research methods and the use of computers for qualitative data organization and analysis. I then explain the methods and procedures used to collect and analyze the data for the current study. The paper concludes by presenting the findings, addressing the perceptions of how students believe they will engage with QDAS in the future, and explores how QDAS can strengthen the methodological skillset of students interested in both qualitative and quantitative methods.

2. Review of relevant literature: Debates surrounding qualitative research methods

Qualitative research, by definition, falls under the interpretivist framework and has always suffered from being perceived as exceedingly subjective in nature. According to Ambert, Adler, Adler, and Detzer (1995) one of the main objectives for conducting qualitative research is to '…learn about how and why people behave, think, and make meaning as they do' (p. 880). Therefore, researchers who are analyzing qualitative data must approach their analysis from the three major epistemological paradigms (i.e. interpretivism, hermeneutics, and social constructionism) which all provide findings that are subjective in nature. The merit of qualitative research is; however, continuously judged against the perceived benefits of objectivity that comes from conducting quantitative research which has, in some cases, undervalued qualitative methods as a viable approach to conducting research. There is a common belief that the methods involved in qualitative research are easier to use than quantitative research. Neuendorf (2002), states that '…with regards to content analysis, there seems to be a widespread but wrongheaded assumption that "anyone can do it" with no training' (p.xv). Silverman (2001) echoes this statement when he states that several academics believe that they have an 'interesting life' and naturally write a journal article about their life to gain an easy publication. He cautions that such practices and ideations regarding qualitative methods as being 'easy' have repercussions to the scholarship that is produced. By not being adequately trained in qualitative research methods and having the belief that qualitative methods are easier than quantitative methods, this can often cause researchers to not fully understand how to accurately analyze such data and be not fully versed in the necessary training that is involved in conducting such research. Inevitably, the research that is produced weakens the credibility and validity of the methods being employed and leaves it open to be contested by others.

The debate between objective and subjective data collection and analysis has led to more researchers looking to employ mixed-methods research designs to capture the strengths of both qualitative and quantitative research methods. Within the last 20 years, there has been more emphasis and importance placed on social science research which utilizes a mixed-method research design combining methods from both the qualitative and quantitative traditions (Creswell & Plano Clark, 2007). According to Corbin and Morse (2003), '…doing qualitative research has become trendy, and a qualitative piece is often included as part of a larger quantitative study' (p. 351). The popularity of this approach stems from the belief that it offers a viable alternative to the debates surrounding whether qualitative or quantitative methods bring researchers closer to absolute truths. The popularity of such an approach stems from the belief among mixed-methods researchers that by mixing both qualitative and quantitative methods, one can gain a more holistic picture of the social issue under study by combining data from two different research traditions. For instance, through the process of mixed-methods research, the researcher can take advantage of the combination of what Geertz (1973) argues is 'thick personal description' from qualitative data and large generalizable numbers from quantitative data. Proponents of this approach therefore believe that a mixed-methods designs offer a passive stance on the quantitative-qualitative debate by creating and presenting possible research designs that have the potential to bring researchers closer to portraying the realities of their research questions (Creswell & Plano Clark, 2007).

Although research designs which utilize mixed-methods have gained popularity in recent years, university student training in almost all disciplines regarding how to use computers to analyze qualitative or mixed-methods data is severely lacking. Consequently, within the literature, there are very few studies which have

examined the experience students have with learning how to use CAQDAS in their research projects (see Woods, Macklin, & Lewis, 2015; and Paulus & Bennett, 2017). As previously mentioned in this article, the lack of computer training to analyze qualitative data in university settings is due to several factors (i.e. demanding course curriculum (Nind, Kilburn, & Luff, 2015; and Paulus & Bennett, 2017), class size and methods background of students (Raddon, Raby, and Sharpe, 2009; and Silver &Woolfs, 2015), access to the software or labs for demonstration purposes (Rettie, Robinson, Radke, & Ye, 2008), and the course instructor's familiarity with the software (Fielding & Lee, 1998; Moss & Shank, 2002; and Basit, 2003). In addition to the factors already mentioned, it is also important to explore how one's belief in upholding the fundamental principles of the qualitative research tradition (i.e. being close to the data, contextualizing data, flexibility in methodological choices etc.) contribute to an individual's decision-making process of whether or not to utilize QDAS for coding qualitative data (Kelle, 2007; and Paulus & Bennett, 2017). Kelle (2007) argues that although proponents of the software see it as beneficial in terms of being more efficient with analyzing large amounts of data, '… critics have often expressed their concerns about a potential alienation between researchers and their data and the enforcement of analysis strategies that go against the methodological and theoretical orientations qualitative researchers see as the hallmark of their work' (p. 443). Additionally, as Saldaña (2013) expresses, some researchers view electronic coding as a researcher's attempt to gain more objectivity in their study. Instead of viewing the coding process as the method that a researcher selects to extract symbolic meaning from the data captured through a code, some view this research tool as a reductionist process moving the research closer to quantitative research.

Several scholars have determined that critics of QDAS have doubts surrounding the software in terms of: 1) the use of computer software to steer the analysis process, 2) the time it takes to learn new software programs and updates to the existing software which have contributed to misperceptions of what the software can actually do to enhance the data organization and analysis process (See Gilbert, Jackson & di Gregorio, 2013; and Woods et. al., 2016). MacMillan and Koenig (2004) observe that when CAQDAS is mentioned in the literature, it is done so in a manner which presents the software as having a '…wow factor [which] is reflected in an assumption that the software is the methodology, and that by simply learning to operate the program, the researcher is doing analysis' (p. 180). Subsequently, because of the resistance around the use of QDAS, most university training for how to use and understand QDAS programs comes from independent workshops typically at the graduate level (Carvajal, 2002). Both Davidson and Jacobs (2008) and Paulus and Bennett (2017) argue that there is a need to teach QDAS to students in the university setting as a way of integrating technology into the classroom environment. The lack of student training opportunities; however, has contributed to only a few studies being published on the experiences of students using QDAS to organize and analyze qualitative data. As a result, this study aims to add to the gap in the literature by examining the personal reflections of graduate students who participated in a QDAS workshop to gain insight into their perceptions of the software and to gauge whether or not they would use the software in the future.

3. Materials and methods

3.1. Data

The data for this study were obtained from anonymous feedback questionnaires given at a three-hour workshop to learn the basics of MAXQDA mixed methods qualitative data analysis software. At the end of the workshop, participants were asked if they would be willing to complete an anonymous feedback questionnaire containing two questions regarding the workshop, and one demographic question. The participants were made aware that their responses would be used to improve workshops in the future to provide feedback to best meet the learning needs of individuals who are learning to use qualitative software programs. Since the questionnaires were voluntary, anonymous, and a form of secondary data collection, ethics for this study was unnecessary. In accordance with the Canadian Tri-Council Policy Statement (TCPS 2) issued by the government of Canada, the use of secondary data does not need ethical review if the data is anonymous. The TCPS defines anonymous data as '…the information never had identifiers associated with it (e.g., anonymous surveys) and risk of identification of individuals is low or very low' (p. 57). Given the size of the workshop, the risk of linking the feedback to an individual was extremely low.

The questions contained in the questionnaire were all open-ended questions. Participants were told if they did not feel comfortable answering a question, that they were able to skip the question. Participants were asked the following three questions on a paper form: *(1) Describe the coding process that you used in the workshop, (2) What would you do differently if you were to code interview transcripts again? (3) How do you identify your gender?* Glixman (1965) argues that gender plays an important role in how individuals process information. Participants were asked to identify their gender as a question on the feedback questionnaire so that the workshop facilitator could review the feedback and revise the workshop materials to better meet the needs of future individuals participating in the workshops. From this feedback, participants indicated that twenty were male and thirty-two were female. Of the sixty individuals who attended the workshop, fifty-two filled out the paper copy feedback questionnaire. Gender identification was the only demographic variable that could be asked to keep the questionnaire feedback anonymous. Due to the number of individuals participating in the workshop, the demographic variables of age and highest level of education completed would have identified some participants who were visibly older than most of those partaking in the workshop.

3.2. Sample and workshop

The sample represented in this paper includes fifty-two individuals who signed up for a three-hour beginner workshop to learn the basics of coding interview transcripts using the qualitative software program MAXQDA. The workshop was held in 2019 at a research-intensive university in Canada. All the participants in the workshop had affiliation with the university (i.e. graduate students) and had completed at least one university course credit in research methods during their academic career. The workshop was the first time the individuals attending had ever used software to analyze qualitative data, despite having at least a general working knowledge of qualitative research methods. Prior to the workshop, the participants were given two oral history interview transcripts to read over. The oral histories were conducted with World War Two veterans who described their experiences as young teenagers entering the war. The transcripts were each roughly five pages in length and were used to demonstrate how to qualitatively code transcripts using qualitative software. Participants were also given a beginner reading on qualitative coding to help familiarize them with the process. The materials for the workshop were provided to the participants a week prior to the workshop occurring.

The oral history interviews that were provided to the participants were on the topic of World War Two. The topic of World War Two was selected for the interview transcripts because in the Canadian secondary school system, mandatory history classes cover this topic in detail, thus providing most of the participants with some basic working knowledge to understand what the interviewees were referring to in the interviews. Additionally, due to the importance of World War Two as a major world event, participants who were not previously educated in Canada would have a basic working knowledge of the topic.

When the participants who signed up for the workshop received the two transcripts, the workshop facilitator provided basic information on what topics would be covered during the workshop (i.e. user interface of the software, how to code, how to export codes etc.) and told the participants that they had the option to code the transcripts manually before attending, code the transcripts manually during the workshop, or code the transcripts using MAXQDA during the workshop. By the end of the workshop, participants had to demonstrate to the facilitator that they possessed a basic skill set to use the software. To do this, participants had to create a project file from the program by uploading the transcripts into the software program, creating codes, and exporting the coded segments out of the software program. Therefore, if participants manually coded the transcripts before or during the workshop, by the end of the session, they were required to apply the coding that they had done manually to electronic files in the software program.

By allowing participants the flexibility of pre-coding the transcripts manually before attending the workshop, this process allowed the workshop participants to think about their own coding process and determine what they would do differently the next time they were required to code qualitative data. Table 1 shows the percentage of the responses that were coded regarding how the participants coded their interview transcripts for the workshop by gender. Of the participants in the workshop who provided feedback on their coding experience, 53.50 per cent mentioned that they only coded their transcripts during the workshop using the

software program compared to 25.60 per cent who mentioned that they manually coded the transcripts before attending the workshop, and 20.90 percent mentioned that they coded the transcripts manually during the workshop. Females were the most likely to mention that they manually coded the transcripts before attending the workshop compared to males (28.10 per cent and 18.20 per cent respectively).

Table 1. Percentage of the responses coded in relation to the participant's method of coding by gender

Percentage distribution			
	GENDER		
Method of coding	**Male**	**Female**	**Total**
Manually coded before attending the workshop	18.20	28.10	25.60
Manually coded during the workshop	18.20	21.90	20.90
Only coded using MAXQDA	63.60	50.00	53.50
Total	100.00	100.00	100.00
(N)	***20***	***32***	***52***

3.1. Analysis

Each hard copy questionnaire was typed up and saved in separate document files. The data used in this study were coded using the qualitative software program MAXQDA. Each response file was uploaded into the software program. Questions one and two were thematically coded using MAXQDA to find emerging patterns and reoccurring sub-codes in the feedback responses (Saldaña, 2013). Question three was turned into a document variable attached to each response and used to compare the responses of the participants by the gender description written on their response sheet. Gender was used as a document variable to measure differences in how the participants reflected on the coding process and to see if gender impacted their responses regarding what they gained from the experience of working with the software. Berger (2015) argues that personal characteristics (i.e. gender, race, age, political stances etc.) of a researcher can impact the reflexive practices necessary to conduct and analyze qualitative data. Therefore, because gender was a question from the feedback used to understand how individuals participating in the workshop processed the training information, the variable of gender could also be used to differentiate the participants' responses regarding the coding process using QDAS.

4. Findings

Data from the reflective responses anonymously collected from the participants of the workshop show that after attending the workshop, both males and females perceive that there are potential benefits to using qualitative software programs for coding interview transcripts in the future. Table 1 shows the percentage of the responses coded from the anonymous questionnaire that correspond to three major themes regarding the question "What would you do differently if you were to code interview transcripts again?" The themes that were developed in the qualitative analysis of the responses are: 1) learning strategies for coding, 2) hesitancy to use qualitative software in the future, and 3) perceived benefits for using qualitative data analysis software. The three themes are subdivided by twelve codes and are cross-compared by the demographic variable gender (See Table 2).

Table 2. Percentage of the responses coded in relation to how the participant would code interview transcripts differently in the future by gender

Percentage distribution

	GENDER		
	Male	**Female**	**Total**
Themes and codes related to the question: ***"What would you do differently if you were to code interview transcripts again?"***			
Learning strategies for coding			
Read both transcripts before coding	28.00	21.62	23.23
Think about time management in relation to coding	8.00	9.46	9.09
Stop over coding	0.00	8.11	6.06
Code segments instead of line by line	8.00	9.46	9.09
Hesitancy to use qualitative software in the future			
Prefer to do manual coding	8.00	12.16	11.11
Improve confidence level related to using the software	4.00	10.81	9.09
Perceived benefits for using qualitative data analysis software			
Be able to store all my ideas in the software	4.00	2.70	3.03
Save time by just using MAXQDA	0.00	13.51	11.11
Use MAXQDA to gain deeper insights into the interview transcripts	16.00	5.41	8.08
Linking codes across transcripts by only using MAXQDA	4.00	2.70	3.03
Create more analytical themes from grouping codes	12.00	2.70	5.05
Create more codes that speak to the emotions of the interviewee	8.00	1.35	3.03
Total	100.00	100.00	100.00
(N)	***20***	***32***	***52***

4.1. Learning strategies for coding

There were several topics which were recognized as being equally important to both male and female participants in the workshop. In terms of learning strategies for qualitative coding, the participants in the workshop indicated strongly that if they were to code interview transcripts again, they should read thoroughly through the transcripts before doing any coding. Both males and females believed that the more they engaged with the data they were analyzing, they would be more effective at coding the data (28.00 per cent and 21.62 per cent respectively). Although the participants had a week to read the two transcripts and introductory reading on coding prior to attending the workshop, several individuals felt that if they were to read the transcripts multiple times prior to coding that they would be able to code the transcripts more effectively by having more familiarity with the content. Two participants wrote that:

> I believe that if I were to code interview transcripts again that I should leave myself A LOT of time to be able to read over the transcripts. Due to personal commitments, attending classes at the university, and overall not having great time management skills, I only read the transcripts once. I think I need to read things over at least two to three times before I really understand something. That way I can pay more attention to what the interviewees were saying in response to questions and know what they really felt about different topics. [Female participant]

> The demonstration of how to code transcripts using qualitative software taught me that you need fresh eyes when reading transcripts. I did not leave myself enough time to fully read the transcripts which resulted in me feeling rushed to try to read both transcripts and missing important information that the interviewee was saying. I should have read the transcripts well before attending the workshop. I sort of read them last minute which I now know makes a big difference when coding. [Male participant]

These findings are consistent with the literature on doing a 'close-read' of the data before coding or analyzing data (see Fielding & Lee, 1998; and Moss & Shank, 2002). Moss and Shank (2002) argue that the close-read strategy for analyzing qualitative data allows researchers to find '…crucial nuggets of insight [that] are often infrequent' (p. 7) and are less likely to be uncovered by using other forms of coding. The close-read strategy further allows researchers the ability to get close to the data and discover emerging patterns. The inability to be close to the data is one of the largest critics of using QDAS for analyzing qualitative data (Kelle, 2007).

Possessing strong time management skills was a topic that was strongly linked to having the ability to read the transcripts multiple times and was equally important to both males and females. Several participants stated that it was simply a time management issue on their part by not having read the transcripts before attending the workshop. For one female participant, she believed time management contributed to her experience coding during the workshop when she wrote:

> This was my first time coding qualitative data. It was also my first time using any type of software to analyze research data. I therefore, do not have much experience doing research but I am eager to learn. I think the next time that I code data I will make a plan and think through the data collection and analysis steps. By participating in the workshop, I now understand that you really need to leave enough time to do an effective job coding. If I want to stick with researching in the future, I need to develop strong time management skills which would be helpful in all my work. [Female participant]

Time management in relation to analyzing data was among the main topics that were highlighted during the workshop by the workshop facilitator. During the workshop, participants were told that to conduct any research project, researchers need to think about how long it would take to collect, organize, and analyze qualitative data. As a result, both male and female participants mentioned that they would need to think about time management in relation to coding the next time they are required to code qualitative data (8.00 per cent and 9.46 per cent respectively). Reflections on how the participants went about coding during the workshop revealed that both males and females acknowledged that they needed to develop and improve their own time management skills.

Gender differences were present when examining the responses of how males and females reflected on how they would go about coding qualitative data in the future. Female participants felt strongly (8.11per cent) that they would stop over-coding the transcripts the next time they code using MAXQDA. No male participants mentioned the problem of over-coding the transcripts in their responses. Two female participants stated that they had well over 100 codes that they created during the workshop. As a result of over-coding the interview transcripts, the female participants reflected that the next time they would code interview transcripts they would change their strategy and have fewer codes over all. This sentiment is shown in the following feedback from participants:

> I am indecisive person. Next time I code, I would read over the transcripts, leave time to reflect on what the interviewee said, write down thoughts on what resonated strongly with me, and then start coding. I coded every single sentence multiple times which resulted in chaos. I need to look at a sentence and see what code the sentence best represents. [Female participant]

> My codes were all very similar to each other. I should have collapsed my codes earlier because they were overlapping so much. I did not do this which resulted in me having 165 codes which became difficult to manage. [Female participant]

> I was not satisfied with the codes I was creating. I created a lot of codes before I settled on ones I liked. Next time I code, I need to be less picky about the codes I create and just try my best to capture what is being said in the text. [Female participant]

Lee and Fielding (1998) also found that CAQDAS users describe the problem of over-coding with the use of QDAS. In their empirical study, some users noted that in a single sentence that they could find eight to ten codes making their analysis too complex. Marshall (2002) advises that novice coders often fall into the trap of over-coding because of their inexperience. Through the process of identifying that the female participants were over-coding the transcripts, 9.46 per cent of the female responses mentioned that the participants would change their coding strategy from coding line-by-line to coding larger segments of text. Although males did not mention that they over-coded the transcripts, they did agree with the female participants by also mentioning that they would code larger segments of text the next time they qualitatively coded data:

> The first interview I coded line-by-line. This was such a time-consuming process that when I went to code the second interview, I started to read chucks or text and then coded the entire chuck with an overarching code. When I code next time, I will code large chunks of texts like I did the second time around because I thought this process was better for me. [Female participant]

> Next time around, I would code passages with a single code. At first, I was coding each word in a sentence. I was not looking at the bigger picture of what the interviewee was actually saying. I think I could do a better job by reading the transcript first and then coding passages for a prevalent theme. [Male participant]

Although both males and females stated that they would change their coding strategy the next time they code qualitative data, it is important to remember that those participating in the workshop only had two transcripts to code equaling ten pages in total. Consequently, the choice of the coding strategy that they employ in the future should '…be dependent on the size of the project, the funds and time available, and the inclination and expertise of the researcher' (Basit, 2003, p. 143).

4.2. Hesitancy to use qualitative software in the future

Through the reflective responses of participants in the workshop, there were two strong codes associated with hesitancy to use qualitative software in the future. Gender differences were present for this theme with female participants being more likely to mention that they would prefer to do manual coding compared to male participants (12.16 per cent and 8.00 per cent respectively). The main reason given for why manual coding would be preferred was largely tied to the participants wanting to physically hold a tactile object such as a highlighter and mark up a paper copy of the transcript. The need to physically hold onto the data or objects while coding is demonstrated in the following reflections:

> I prefer to hold something in my hand. Having a physical copy would allow me to actually touch the data. I like to physically highlight text because I find I can remember it better. Next time I code, I would probably just do manual coding. [Female participant]

> Next time I code, I think I would do it the 'old-fashioned' way. I think if you had over twenty transcripts using a software program would be beneficial. When you only have a few transcripts and they are not that long, I think manual coding is best. [Male participant]

> I like to limit my time on computers. Because of this I think I would prefer to manually code next time. I am happy that I learned how to use the software but I think that if I had paper copies of the transcripts that I would not miss any important details by coding by hand. [Female participant]

In their extensive review of the user experience of researchers using CAQDAS, Gilbert et. al (2013) also found that missing paper was among the five difficulties CAQDAS users experienced when switching from manual to electronic coding. As García-Horta and Buerra-Romas (2009) attest, not long ago, the only coding method researchers had was to do manual coding. CAQDAS allows researchers the availability to use computers to complete their analysis; however, the software is not a right fit for all users and some will always prefer manual coding versus electronic methods.

Related to the hesitancy of users to employ QDAS in the future, female participants were more likely to mention that if they had more confidence in themselves related to the use of the software that they would use it in the future compared to males (10.81 per cent and 4.00 per cent respectively). Female participants

overwhelmingly feared that they would do something wrong using the software program in the coding process which can be best demonstrated in the following feedback responses:

> In the future, I would need to feel more confident in my abilities to use MAXQDA for qualitative coding. I was comfortable using the software with the assistance of the instructor in the room for the demonstration. I will not always have an instructor with me when I code using the software. If I had more training, I think I could boost my knowledge of the program and feel better able to use the software in the future. [Female participant]

> I am completely new to using software like this. In the future, I would need to read more about the software, watch videos, or attend more workshops to feel more confident in my ability to use the software correctly. I made a lot of errors by clicking the wrong buttons, so I need more practice and familiarity with the program before I use it in the future. I see how beneficial the software can be to a researcher. I need to have more practice though so that the process feels more natural to me. [Female participant]

> I think more practice would make the experience of using MAXQDA to be smoother in the future. I felt a little stressed because I have never coded using software before. I did not want to do something wrong and delete everything. I think if I used the software more that I would be more confident and not worry about silly things like deleting all my work. [Female participant]

The literature shows that the way individuals problem solve is often clustered by gender which has direct implications for software use and development (Berger, 2015; and Burnett, Stumpf, Macbeth, Makri, Beckwith, Kwan, Peters, & Jernigan, 2016). The findings from this study directly correlate with the literature indicating that gender does plays a role in determining if individuals will use the software in the future.

4.3. Perceived benefits for using qualitative data analysis software

Although a portion of the participants mentioned that they would prefer to do manual coding in the future, both males and females believed that if they were to code qualitative data in the future, that they would benefit from using qualitative software. Females mentioned that it would save them a lot of time to use the qualitative software especially if they were to code several text documents. One participant who did manual coding before attending the workshop wrote that:

> I thought it would be helpful to have a better understanding of the transcript I was going to code using software if I did manual coding before attending. I think in the future that if I am working on a research project that I would do each step using a qualitative software program. It would make the process more efficient and save me a lot of time. [Female participant]

Male participants were much more likely to mention their perceived benefits of using qualitative software compared to females in relation to the major topics presented in Table 2. Male participants believed that the use of MAXQDA software would allow them to gain deeper insights into the subject matter that the interviewee was describing in the transcript (16.00 per cent). Additionally, they strongly believed that they could create more analytical themes by using the software to collapse their codes (12.00 per cent) and create themes that spoke to the emotional content of the interview (8.00 per cent). The following feedback from the questionnaire highlights the features of the software that participants found to be most useful to them when considering if they would use the software in the future:

> As I began coding using the MAXQDA, I quickly realized that I was just reading the text and not actually interpreting the meaning of the text through an analytical lens. By having all of my codes in the software program where I can easily view them, I am better able to see what codes I have developed and to think about what the interviewee is actually saying. This way I can reflect on what the interviewee said and the code that I have matched to the text segment. Ultimately, I see my research skills improving by being able to see all of my work in one organized area and create more meaningful insights from my data. [Male participant]

> I did a little bit of manual coding before coming to the workshop. I found with the use of MAXQDA that I could see all of my codes evolving in the computer interface as I was coding. I liked this feature of the software. I think that by using CAQDAS in the future, that it will help me to gain better insights into my data by digging deeper into the patterns that emerge. [Male participant]

> In the future, I would definitely use some type of qualitative data analysis software program when coding qualitative data. It helped me organize what I was doing. I have done manual coding in the past and when you have a lot of pieces of paper, the coding process can get confusing. I think I was better able to see patterns in the data that were emerging by using the software. Why was I not been taught to use this software earlier ? [Female participant]

Females also mentioned these topics; however, males were overwhelmingly more likely to mention these benefits after participating in the workshop. These findings are also strongly supported in the literature. For instance, Saldaña (2013) suggests that 'CAQDAS, unlike the human mind, can maintain and permit you to organize evolving and potentially complex coding systems into such formats as hierarchies and networks for "at a glance" user reference' (p. 31) which directly relates to the efficacy and effectiveness of using QDAS for coding. Additionally, Hesse-Biber (1996) found that users of QDAS believed that the efficiency of organizing codes through the software program enabled users to be more creative with the coding process. They argue that, '…creativity can flourish from handling more codes, enabling the researcher to obtain a more complex picture of the data' (p. 426) which is what the participants from the workshop also found in reflecting on the process of coding using QDAS.

5. Discussion and Conclusion

This study examined the gender differences in the user experience of graduate students that were trained to use QDAS for the first time in their academic careers. The findings of this study suggest that the user experience of individuals learning to use QDAS for the first time is gendered. Although both males and females perceived that there would be future benefits to using QDAS the next time they were required to code qualitative data, in terms of confidence to use the software, time efficiency, and effectively coding data to gain deeper insights, the frequency of which participants mentioned these aspects of the software and their experience using the software were all gendered. Three major themes were present in the findings regarding what students would do differently if they were to code qualitative data again being: (1) learning strategies for coding, (2) hesitancy to use qualitative software in the future, and (3) perceived benefits for using qualitative data analysis software.

In terms of learning strategies for coding, participants reflected that they need to do a close-read of the data before coding and that over-coding could be lessened with the use of QDAS in their future coding experiences. When instructing students on how to qualitatively code data using software, it is therefore advantageous to emphasize the importance of leaving enough time to fully engage with the data for those who are newly learning how to qualitatively code using computers. This was the code which was most frequently found in the responses of both males and females. The findings suggest that students conducting qualitative analysis using QDAS still believe that the qualitative principle of being close to the data should be a priority when coding using computers. Thus, it should be emphasized that the close-reading strategy can also be implemented using QDAS before coding begins. Connected to close-reading, several participants mentioned that they were over-coding the data using QDAS. To remedy this issue, those coding qualitative data with QDAS should develop strong research question(s) that are front and center of the analysis process so that the research question(s) can drive the coding experience. By doing so, both experienced and inexperienced coders can focus their coding on pieces of data that speak most strongly to the question(s) they are trying to answer.

Compared to males, females had more hesitancy in their responses regarding if they would use QDAS in the future. The hesitancy was largely based on preferring to do manual coding and having enough self-confidence to use the software on their own without an instructor to help troubleshoot if problems using the software were to arise. In developing training materials to teach students how to use QDAS, instructors should be cognisant of issues surrounding student confidence in using the software. It was found that females feared doing something wrong using the software. If students were provided more opportunities prior to using the software in their graduate studies, confidence levels among university students using QDAS would likely increased over time as they develop a strong QDAS skillset from practical experience.

The feedback from the participants overwhelmingly indicated that both males and females perceived there to be potential benefits for using qualitative software to code data in the future. It is therefore pertinent that QDAS training be made available to students to complete coursework and projects involving qualitative

data analysis. As seen in both the findings of this study and the literature, those utilizing QDAS have found that the software allows them to '…bridge the gap between quantitative and qualitative data analysis. Some qualitative researchers who use QDA software also do quantitative analysis on the very same data' (Smith & Hesse-Biber, 1996, p. 427). Therefore, if QDAS is taught to students in the university setting, it has the potential to reinforce their learning of both qualitative and quantitative research methods and provide them with a new skillset which can be applied to a multitude of research projects. Although there is much skepticism surrounding the use of computers for qualitative data analysis centered on making the distinction of upholding the basic principles of the research tradition, creativity and closeness of the data can still be achieved by using computers to help support and organize the analysis of qualitative data. Students are eager to learn how to implement the technology into their research practices. It is up to instructors to help support their student's learning by providing them with different tools to help cultivate their curiosity for technological applications for qualitative coding.

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