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Philosophical, Design, and Ethical Considerations of Work-Based Voice Pedagogy Research: A Critical Evaluation

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Introduction

There are many perspectives through which one can view our complex world, and likewise a variety of approaches one can take to learn more about it. I will first explore prominent ontological, epistemological, and axiological positions, along with related paradigms and their impact on research. I will then delve into a critical evaluation of various research designs, methodologies, and methods that are applicable to voice pedagogy research, as well as relevant ethical concerns. Since there is not unanimous agreement among research methodology authors and the terminology and definitions presented differ from source to source (Creswell, J.W. and Creswell, J.D., 2022), I will attempt to include the perspectives of several authors, focusing on concepts that are particularly applicable to my area of practice: barbershop ensemble coaching.

Research Paradigms

Before beginning a research project, it is important to assess one's perspectives on reality, knowledge, and ethics (Edelheim, 2015), and use them to inform one's research plan. *Ontology*, or "the study of being," (Edelheim, 2015, p. 31) informs our understanding of reality (Edelheim, 2015). The classic diametrically-opposed ontologies are *realism*, which argues for an objective reality, and *relativism*, which argues for a subjective reality, with other blended ontologies existing on the spectrum between the two (Easterby-Smith *et al.*, 2018). A realist voice pedagogy researcher would likely be primarily concerned with objective aspects of singing like physiological and acoustic measurements, while a relativist voice pedagogy

researcher would likely be primarily concerned with more subjective aspects of singing, such as individuals' perceptions of or opinions related to their own singing experience.

Epistemology, or "the study of knowledge," (Edelheim, 2015, p. 31) informs how we assess truth (Edelheim, 2015). Like ontologies, epistemologies can be expressed on a continuum, with *positivism* on one end arguing that we should measure aspects of reality objectively, and *social constructionism* on the other end arguing that we should measure aspects of reality subjectively, taking into account individuals' perspectives (Easterby-Smith *et al.*, 2018). A positivist voice pedagogy researcher would likely utilize objective measurement methods such as controlled experimentation to conduct their research, while a social constructivist voice pedagogy researcher would likely opt for more subjective measurement methods such as focus groups.

Axiology, or "the study of value or of goodness," (Edelheim, 2015, p. 31) informs what researchers feel "is valuable and ethical" (Killam, 2013, p. 6). A researcher's axiology stands to greatly impact their decisions made throughout the research process, as they strive to execute their project in a manner consistent with their personal code of ethics, as well as other legal and institutional ethical requirements.

Together, a researcher's ontological, epistemological, and axiological positions inform their choice of *paradigm* (Chilisa and Kawulich, 2012), or "a loose collection of logically related assumptions, concepts, or propositions that orient thinking and research" (Bogdan and Biklin, 1998, p. 22). A paradigm can be thought of as a "way of framing what we know, what we can know, and how we can know it." (Sheppard, 2020, p. 5). Four common research paradigms are postpositivist, constructivist, transformative, and pragmatic (Creswell, J.W. and Creswell, J.D., 2022). *Postpositivism* asserts that reality is deterministic and its proponents attempt to verify theories and discern cause-and-effect relationships in their research (Creswell, J.W. and Creswell, J.D., 2022). *Constructivism* posits instead that reality is created by people through social dynamics (Sheppard, 2020). Unlike postpositivists who begin with a theory in mind, constructivists strive to establish a theory based on their research findings (Creswell, J.W. and Creswell, J.D., 2022). *Transformativism* emerged from arguments that postpositivism "imposed structural laws and theories that did not fit marginalized individuals in our society or issues of power and social justice, discrimination, and oppression" (Creswell, J.W. and Creswell, J.D., 2022, p. 10). Transformativists aim to reshape our social world through their research by elevating the perspective of marginalized communities (Chilisa and Kawulich, 2012). Finally, *pragmatism* is a more moderate paradigm, whose advocates value tenets of both postpositivism and constructivism (Morgan, 2014) and reject being bound to one extreme paradigm in favor of views that are practical based on their lived experience (Anderson *et al.*, 2021).

Researchers in voice pedagogy – a multidisciplinary field spanning the natural sciences, social sciences, fine arts, and education – may reasonably approach their work through any paradigm, depending on their worldviews and research topics. A postpositivist voice pedagogy researcher might want to learn how certain vocal exercises or techniques impact vocal production and acoustic output, and to do so could take objective physiological or acoustic measurements of individuals or ensembles. For instance, Guzmán *et al.* (2013) investigated the impact of straw and tube phonation exercises on vocal tract and glottal function through

a postpositivist lens, using measurements such as anatomical distances, sound pressure level, formant frequencies, and subglottic pressure level. Conversely, a social constructionist voice pedagogy researcher might be more interested in a subjective topic such as understanding singers' perspectives on their participation in ensemble singing. Unadkat, Camic, and Vella-Burrows (2017) utilized a constructivist approach in their work interviewing couples, one member of whom had dementia, to understand the benefits that participating in group singing afforded these individuals. Transformativist voice pedagogy researchers may be interested in studying topics like inclusiveness of singers of all sexual orientations and gender identities in their area of voice. Palkki and Caldwell (2018) took this approach, surveying queer college students about their experience in secondary school choral programs about feelings of safety and inclusion. Other voice pedagogy researchers opt for pragmatism, combining elements of the aforementioned paradigms. Moss, Lynch and O'Donoghue (2018) did this by developing a survey about the health benefits of choral singing, which featured both quantitative and qualitative components.

Reflecting on my own attitudes, I tend toward a postpositivist worldview, largely influenced by my analytical nature and educational background in mathematics, economics, and statistics. As such, I am naturally drawn toward studies that utilize objective methods, as is customary in the postpositivist paradigm. However, while I aim to employ coaching strategies and techniques backed by voice science and neuroscience, singing is primarily art, and attempting to coach and study it through a purely scientific lens would result in nuances like individual perceptions of their singing experience and aesthetic preferences being ignored. Additional challenges like limited funding, lack of access to sophisticated research equipment, and regular access to only a small number of potential research subjects will also make conducting purely objective studies logistically difficult, if not impossible. Therefore, given these limitations, my future research will likely be most aligned with the pragmatic paradigm, combining aspects of postpositivism and constructivism to address my research questions as comprehensively as is feasible.

Research Methodologies

There are three primary research methodologies: *qualitative*, which focuses on understanding people's subjective perspectives and using inductive reasoning to generate related theories based on what is observed, *quantitative*, which aims to objectively measure variables of interest and employ deductive reasoning to test related theories and relationships, and *mixed methods*, which combines elements of qualitative and quantitative methodologies (Creswell, J.W. and Creswell, J.D., 2022) and relies on abduction, or a combination of both inductive and deductive reasoning. (Suddaby, 2006). Like research philosophy concepts, methodology can be thought of as a spectrum with qualitative and quantitative as the endpoints and most studies being best described as mixed methodology located at some point between (Creswell, J.W. and Creswell, J.D., 2022).

Like paradigms, each methodology can be applied to voice pedagogy research. Litawa (2018) conducted a case study on one amateur singer and the impact of his community choir participation on his emotional well-being and quality of life. This qualitative approach appropriately addressed this research

question, as each singer has their own perspectives and emotions, and a "qualitative approach…reflects the complexity of the situation more than statistical analyses would" (Litawa p. 467). I will reserve discussion of a major limitation of this study for the Qualitative Methods section.

Austin (2007) investigated the differences in jaw position in novice versus experienced Western Classical singers by measuring jaw movement with a "head-mounted cephalostat with a strain gauge" (p. 73) and analyzing the movement data. This quantitative study featured a sample size of twelve singers with voice training experience ranging from one semester to 20 years. The authors did not find statistically-significant differences between novices and experienced singers, but did find such differences across pitches and vowels. The representative sample of subjects in this study gives credence to the generalizability of its findings across the population of classical singers, although further research could strengthen this notion further.

Many multidisciplinary areas of voice pedagogy research lend themselves well to a mixed methodology. Moss, Lynch and O'Donoghue (2018) used a survey with closed-ended questions that allowed for quantitative analysis, along with open-ended questions which allowed for qualitative analysis. Their mixed methodology struck a good balance of allowing for some objective statistical analysis of results overall as well as comparisons by demographics like gender and amateur/professional status, while also garnering insights from each participant's explanation of the benefits that were most notable for them. The authors acknowledge that the scale and options chosen for the closed-ended questions may have impacted their results, in addition to the fact that the survey was published online for anyone to access. This allowed them to reach a wider audience, obtaining nearly 1,800 responses, but possible selection bias must be taken into account.

My natural tendency toward the postpositivist paradigm and deductive reasoning attracts me most to studies that are primarily quantitative. However, the limitations of looking at barbershop ensemble coaching through an exclusively-quantitative lens, as well as the logistical challenges discussed previously will also likely make mixed methods the most holistic and robust approach for my future research.

Qualitative Research Methods

There are several qualitative research methods that are relevant to research questions in the barbershop ensemble coaching space, and also feasible given the limited resources associated with my practice. One such approach is *qualitative interviews*, which feature open-ended questions, allowing participants to respond in their own words, and are typically conducted in-person (Sheppard, 2020). Krallmann (2016) interviewed choral members and leaders about how music and singing impacted their lives. Within the groups of interest, each interview featured the same open-ended questions, which provided a common structure across participants while allowing them the freedom to respond as they saw fit. The author identified themes in the responses relating to how music and singing positively impacted the participants both individually and interpersonally. An interview methodology such as this could be a reasonable approach in my practice, depending on the research question and population of interest. The chief logistical concern if the population of interest is all barbershop singers, who live all over the world and whose attitudes may be largely

influenced by their local ensemble experience, is achieving a representative sample of participants. This may necessitate conducting interviews over the phone or a video call to have the largest possible reach and minimal possible barriers to participation.

Focus groups feature a group discussion with multiple participants, which can produce different learnings than would be gleaned from a standard qualitative interview (Sheppard, 2020). Horwitz *et al.* (2023) conducted focus group interviews in their study of ways to integrate singing into children's school day, identifying a large group of music teachers as candidates for inclusion, and then randomly selecting five to reduce potential biases. The authors identified six key themes from the conversation related to integrating singing into primary education. Their sampling process was prudent to mitigate any latent sources of bias that would otherwise be unaccounted for. This method applied to my practice would present similar logistical challenges to qualitative interviews. The simplest environment to conduct a focus group of the larger barbershop population would be at a large event such as the Barbershop Harmony Society International Convention where barbershoppers from around the world are present, but it must be noted that barbershoppers who are actively engaged in the competition culture, who live geographically closer to the convention site, and who are of sufficient financial means to travel to and attend the convention would likely be overrepresented in the data.

Case studies focus on analyzing a small number of cases in great depth (Creswell, J.W. and Creswell, J.D., 2022). Litawa's (2018) case study discussed previously is a prime example of this research method in the voice pedagogy space. An obvious limitation of this study is that it focuses on only one subject whose experience does not necessarily align with that of the general population, although its findings could be used to design a more wide-reaching study aimed at gathering stronger and more generalizable evidence. This would be the easiest type of qualitative method to implement from the perspective of gathering a sample, since even just one participant could be utilized. However, I would need to thoughtfully select the small number of participants and exercise caution in attempting to generalize the results even to a narrowly-defined population.

I strive to follow principles of Ragan's (2018) Evidence-Based Voice Pedagogy in my practice, including not just utilizing science-based methods, but also honoring each singer's individual experience to help them grow along their vocal journeys. The qualitative methods discussed above could provide valuable insight into singers' experience during a study, to see how their observations align with other data like ratings of vocal quality from outside listeners, as well as objective measurements like changes in formant frequencies.

Quantitative Research Methods

There are four overarching quantitative research design types featuring progressively increasing levels of researcher intervention and control. In an effort to further the literature for their topic, quantitative researchers typically assess the existing body of evidence and design their project at an increased level of intervention or control (Keele, 2010).

In *descriptive research*, no attempt is made to intervene in the scenario of interest, with researchers simply describing the phenomena of interest in terms of their attributes (O'Dwyer and Bernauer, 2016). Results are typically presented as descriptive statistics, which may be compared between groups of interest, although statistical inference is not possible (Keele, 2010). Gish *et al.* (2012) utilized a survey to describe singers' habits and opinions related to vocal warm ups. While this study's methodology was appropriate for an initial foray into this topic, its generalizability is limited in part since the participant pool skewed toward singers with significant experience, leaving the perspectives of less-seasoned vocalists underrepresented. The authors also acknowledge limitations in the survey itself, noting that future follow-up studies should include questions to understand other characteristics of the participants like voice type and singing style, as well as open-ended questions that allow subjects to describe any warm up exercises they utilize that are not listed explicitly in the preceding closed-ended questions.

Correlational research attempts to identify relationships in the data (Keele, 2010). This allows the researchers to not only describe their observations but to make assessments of how metrics vary together, although they still are unable to draw conclusions of causality (VanderStoep and Johnston, 2009). Correlational research is typically conducted to be a successor of related descriptive research, as it would not be possible to assess correlation without first describing the situation of interest (Keele, 2010). The primary results of correlational research are correlation coefficients, which numerically convey how strong a relationship is and whether it is direct or indirect (Sheppard, 2020). Achey, He, and Akst (2016) explored the correlation between singers' level of adherence to vocal hygiene best practices and their level of vocal handicap, concluding that while conservatory students tended to prioritize their vocal hygiene, they still experienced a considerable degree of handicap. This project design allowed for more rigorous statistical analysis than Gish *et al.* (2012), although the authors acknowledged data issues resulting from unclear question wording and typographic errors, underscoring the importance of carefully designing and proofreading the questionnaire in any survey-based study to mitigate risk of ambiguity that could compromise the study.

Quasi-experimental research begins to investigate causality (Sheppard, 2020). Quasi-experiments closely resemble experiments in that they feature intervention by the researchers and aim to make causal inferences, but lack either random sampling or a control group, two necessary conditions to be considered a true experiment (Keele, 2010). Therefore, quasi-experimental evidence is not as strong or generalizable as experimental evidence and subsequent experimental studies could verify and strengthen the results (Keele, 2010). Fu *et al.* (2018) quasi-experimentally studied how group singing impacted the health of senior community residents, testing a "3-month structured group-singing program that consisted of 12 weekly 75-min sessions" (p. 140). The study lacked a control group, and hence did not qualify as a true experiment. The group singing program was based on several related studies on similar programs, and the high level of satisfaction the participants had in the program and the significant improvement shown in several areas studied suggested that it was a sound intervention.

Experimental research, based on the scientific method, is the "highest-level of inquiry" and the "'gold-standard' for research," and must be rigorously controlled (Keele, 2010, p. 41). The level of rigor enabled

by randomization and a control group is what allows experimental researchers to make strong claims of causality (Keele, 2010). Galinha, García-Martín, and Lima's (2022) experiment utilized a random controlled trial (RCT) design to investigate how ensemble singing impacted their subjective and social well-being. Unlike Fu *et al.* (2018), this study featured a RCT, so it qualified as a true experiment, and the authors strove to carefully maintain the integrity of their experimental design, although they acknowledged that the control participants had a variety of different experiences rather than one identical experience, so the results should be interpreted with caution.

While experimental research features the most rigor of the four forms of quantitative research, it would also be by far the most challenging to implement in my practice due to the strict randomization and control requirements and resource limitations discussed previously. Quasi-experiments could be feasible by, for instance, relaxing the randomization requirement and splitting subjects into treatment and control groups to test the impacts of a treatment. If quasi-experimental research also does not prove to be possible for me, I will likely resort to a study with descriptive or correlational components, which could inform future more rigorous quantitative research.

Mixed Research Methods

Mixed methods studies combine qualitative and quantitative methods, and take multiple forms depending on the order in which the components are conducted. *Convergent mixed methods studies* feature near-simultaneous qualitative and quantitative data collection and integrated analysis (Creswell, J.W. and Creswell, J.D., 2022). Davies, Bentham, and Duah's (2023) convergent mixed methods study investigated how group singing affected children's well-being, featuring both a quasi-experimental component and a focus group component. They found that group singing tended to positively impact children's lives, although the design allowed for the possibility of bias related to insider research, since one of the authors was the teacher of the participants. I will reserve discussion of this ethical issue for the next section of the paper.

Alternatively, the qualitative and quantitative components may be completed at different times. *Exploratory sequential mixed methods studies* collect the qualitative data first and quantitative data last, while *explanatory mixed methods studies* do the opposite (Creswell, J.W. and Creswell, J.D., 2022). Chua's (2018) explanatory study on music teacher identity and agency featured a first phase of qualitative interviews, followed by a second phase quantitative survey. The author implies that they selected this design in part due to their tendency toward the constructivist paradigm and embrace of "diverse ways of knowing and expression" (Chua, 2018, p. 63). They used their qualitative results to inform their quantitative survey design, allowing them to test findings from the qualitative phase with a broader audience. The study does have limitations around the participants in the survey, as only music teachers from Singapore participated, and those who opted to participate may skew toward a more positive point of view on their profession (Chua, 2018). Conversely, Gallo's (2019) explanatory inquiry into how formative assessments impact the accuracy of young children's singing features a quasi-experiment, followed by a case study. They used their quasi-experimental results to

inform their case study selection and design, to allow for deeper inquiry on findings that warranted clarification (Gallo, 2019). Sequential studies have a key advantage relative to convergent ones since the second phase of the study can be informed by the results from the first phase which may be surprising or unanticipated, with the key downside being that they generally require more time and resources to conduct (Creswell and Plano Clark, 2011).

A mixed methods approach seems like a great fit for my future research. A carefully designed mixed methods study could allow me to approach research questions in my barbershop ensemble coaching practice as holistically and robustly as possible, given my resource constraints.

Ethics and Insider Research

Researchers must consider ethical issues in all types of research involving humans, at all stages of research (Creswell, J.W. and Creswell, J.D., 2022). Beauchamp and Childress (2001) outlined four key principles for conducting ethical research involving human subjects: *respect for autonomy*, *nonmaleficence*, and *justice*. Institutions typically have their own requirements that compel its researchers to meet high ethical standards. The University of Wales Trinity St. David (2022) cites five fundamental facets of research ethics based on the research community's agreed-upon best practices: *honesty*, *rigor*, *transparency and open communication*, *care and respect*, and *accountability*. These principles, along with principles like those proposed by Beauchamp and Childress (2001) informs the university's list of research standards including *ensuring informed consent*, *avoiding deception*, *allowing withdrawal*, and *ensuring confidentiality* (University of Wales Trinity St. David, 2022). Researchers must also apply for ethical approval before conducting any research deemed to carry even slight risk, and avoid research misconduct, including but not limited to fabricating results, falsifying research processes or data, and plagiarism (University of Wales Trinity St. David, 2022).

A particular ethical concern for work-based researchers is *insider research*, situations where a researcher conducts research in their own work environment (Costley, Elliott, and Gibbs, 2010). This insider position can be helpful, as researchers may glean more robust results if the participants are more comfortable being transparent with them than they would be with researchers with whom they are unfamiliar (Dwyer and Buckle, 2009). However, this can also be a drawback if instead participants assume the researchers will read between the lines and are less forthcoming in their responses as a result, or if the researcher has a significant bias due to their experience as an insider (Dwyer and Buckle, 2009). Such bias could also skew the data analysis, impacting the extent to which findings that align with the researcher's personal experience are emphasized versus those that do not (Dwyer and Buckle, 2009). Insider researchers must consider these potential pitfalls and mitigate them through critical reflection of their own views and the research process itself in order for their research findings to be considered legitimate (Dwyer and Buckle, 2009).

In addition to the set of standard research ethics concerns, I am undoubtedly an insider in my barbershop ensemble coaching practice. I have a relationship with the members of all ensembles with whom I

am privileged to work, and I know many of these ensembles' members quite well. I need to critically assess my relationships with the people participating in my research to identify sources of possible bias, especially in components of my research that are qualitative in nature, and mitigate them to the greatest extent possible through meticulous reflection. I have also sung in ensembles myself for over eighteen years and in barbershop ensembles, specifically, for almost nine years. I must ensure that my personal experience does not result in me leading my research participants toward any particular responses, or skew my analysis toward confirming my personal biases developed through my ensemble singing experience. These considerations will be imperative to validate my future research, given the nature of my practice and my insider status in it.

Conclusion

After an exploration of the philosophical underpinnings of research, as well as common research methodologies and methods, I believe that I am likely to conduct pragmatic research using a mixed methods approach for the most robust study feasible, given the limitations of conducting research in my barbershop ensemble coaching practice. The next step in my research journey will involve selecting a research topic and a research design that will allow me to approach my topic as thoroughly and ethically as possible. I look forward to advancing to the next phase of the research process and working toward my first practice-based research project and all of the learning that will come with it.

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