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Multidimensional Analysis: A Video Based Case Study Research Methodology for Examining Individual Dance/Movement Therapy Sessions

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MULTIDIMENSIONAL ANALYSIS: A VIDEO BASED CASE STUDY
RESEARCH METHODOLOGY FOR EXAMINING
INDIVIDUAL DANCE/MOVEMENT THERAPY SESSIONS

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Abstract

Multidimensional Analysis, a video based case study research methodology, was created by this author to examine multivariable qualitative data and develop an understanding of the therapeutic value and relational characteristics of auditory, visual and contextual components in individual dance/movement therapy sessions. The purpose of this study is to evaluate the benefits and limitations of Multidimensional Analysis based on its development and use in a preliminary study. Multidimensional Analysis involved an examination of individual dance/movement therapy sessions as a whole, as differentiated moments, and again as a whole. Videotaping each session was the primary form of data collection from which all other data collection and analysis procedures originated. This methodology was beneficial in broadening the researcher's perspective and understanding of the auditory, visual and contextual components of the videotaped sessions, but also resulted in complex information that was difficult to process despite time consuming analysis procedures. Suggestions for modifying Multidimensional Analysis for future use in dance/movement therapy research are discussed, as well as implications for practicing dance/movement therapists.

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Introduction

When I began my thesis process, I was lost in the unfamiliarity of paradigms, methodologies, and designs. I had no great interest or desire to conduct an extensive research project and simply strived to complete the necessary requirements for obtaining my Master's degree in Dance/Movement Therapy (DMT). However, I was profoundly familiar with the desire to follow my curiosities and to know the unknown. In clinical practice, these desires are frequently evoked through empathy with a client. When acting upon these desires through my own creative process, I find myself grounded in self-trust and flowing with intuition. Still, I had great difficulty merging my desires and creative process with unfamiliar research methodologies. This concern came to the forefront when developing a method for studying voice and movement with sexual assault survivors.

In my clinical internship with sexual assault survivors, I witnessed the impact that their experiences of a violent trauma had on their entire being; body and mind. Their experiences continue to affect their lives, how they view themselves, how they view others, and how they view the world around them throughout their lifetime. It was my experience, as a dance/movement therapy intern, that sexual assault survivors inhibit their movement and voice in an attempt to protect themselves. This evoked my curiosity. Sometimes, characteristics of voice and movement appeared to be associated with their experience of self or the perpetrator during the traumatic event. One client in particular exhibited many inhibitions in her movement, including bound flow, rigidity, and limited use of body connectivities. She exhibited minimal shape flow support, and her range of motion stayed primarily near her body in a small use of her kinesphere. Yet when we began working on her use of breath and shape flow support through verbalizations and vocalizations accompanying her movement, not only did her movement

repertoire expand but she began addressing issues pertaining to familial relationships, assertiveness, and self-discovery. Her/our moments of insight within the sessions supported my curiosities and desire to further explore voice and movement. Through my internship experiences, I learned that sexual assault survivors both need to be heard and fear being heard because it means being seen and having power. However, I believe that this equally applies to many other populations and clientele. Like movement, voice takes up space. Voice, including breath, sound, and words, is a natural part of self-expression. Voice cannot be separated from the body or the mind, but is intertwined into both. Voice enables internal cognitive, emotional, and somatic experiences to move into external space as language and sound to be shared with and experienced by others. These characteristics continued to intrigue me and I sought to develop a research method that would allow me to increase my understanding of the qualities, functions, and interactive roles of both voice and movement in a case study.

When I began searching for methods, I sought to conduct an in-depth analysis of voice and movement separately and together as well as to consider the client's experience of voice and movement. It became apparent that video data collection would allow me to easily capture the qualities of both of these components within the context of the sessions. However, I failed to find a methodology that was suitable for examining the variables together and separately. It seemed important to find a methodology that was suitable for examining the variables together and separately, especially due to my limited knowledge regarding voice. However, I failed to find such a methodology. Additionally, my personal motivations for conducting the study involved desires to understand the roles of voice and movement as parts of a whole before the functions and benefits of the whole could be conceptualized. Furthermore, DMT research detailing methodologies that use video data are limited. Many studies used methodologies that require

additional training or computer programming (Davis, 1983; Koch, 2007), while others only briefly referred to videotaping as the form of data collection used to conduct later movement analysis (Bunce, 2006; Kowarzik, 2006). Hence, I decided to create my own approach that would allow me to preserve sessions in one initial data collection form, video, and later dissect and analyze multiple variables and characteristics in an exploratory and systematic manner. The processes involved in this approach developed into the methodology that I created and evaluated for this thesis project, Multidimensional Analysis.

Multidimensional Analysis was created as a video based research methodology for studying individual DMT sessions. The methodology itself was initially of little interest to me in completing my thesis project. It developed solely out of a need to fill a gap that would then allow me to explore other passions pertaining to voice and movement. Interest in Multidimensional Analysis as a developing research method was not evoked until the richness of resulting data proved to be provocative yet unmanageable. This made the original study of the use of voice in DMT relatively impossible to complete. Thus, my focus was redirected to the benefits and limitations of the research methods of Multidimensional Analysis. The uniqueness of Multidimensional Analysis appeared significant to the DMT field. It bridged the gap in available research methodologies, offered solutions, and presented new perspectives in examining multidimensional characteristics within individual DMT sessions.

Current literature pertaining to case study designs and video methods will be reviewed in the following chapter, followed by a description of the Multidimensional Analysis methodology. Resulting benefits and limitations of the methodology are presented and discussed for its potential value to dance/movement therapy practitioners and researchers. A glossary of terms is

included in Appendix A, and the informed consent form for the preliminary study is included in

Appendix B.

Literature Review

Dance/movement therapy professionals have acknowledged the scarcity of works within the field devoted to research related subjects and issues (Berrol & Cruz, 2004), including few available sources detailing case study designs for use in DMT research. This void became obvious to this author when she sought to develop a study to examine the significance of two session components, voice and movement, and their therapeutic value in individual sessions. This author desired a method that would allow voice and movement to be analyzed separately and together to determine their individual and interactive qualities and functions. However, no suitable DMT research methodologies were found. To begin addressing this need, it appeared that an alternative method was necessary. It seemed reasonable to consider video based approaches outside the realm of DMT research, and potential options for separating voice and movement qualities for analysis. This literature review outlines considerations for case study research, video based methods, and the use of video data in DMT research.

Case Study Research

Case studies are a common form of research used in the dance/movement therapy field. In 1996, Ritter and Low found case study methodologies to be the most popular in DMT research (as cited in Cruz & Berrol, 2004). Case study research is defined as the analysis of an event or series of events involving one specific case comprised of a single individual, a group, or a whole community (Chaiklin & Chaiklin, 2004). According to Chaiklin and Chaiklin, case study research and clinical practice are closely related. The researcher may begin a study at any point without altering treatment procedures. The difference between the two depends on the practitioner's intent. Higgens (2001) suggests that dance/movement therapists find ways to have their work serve the purpose of both research and clinical practice. In both research and clinical

practice, the researcher and/or clinician is searching for important information on an issue. The researcher/clinician examines the presenting factors in order to build new knowledge and further develop theories and effective practices (Cruz & Berrol, 2004). In advocating for more DMT research, Higgens also argues that "if we are engaged in good clinical practice, we are already doing much of what counts as research….systematic and careful study, seeking relationships and making connections, identifying themes, making interpretations, considering the significance of new discoveries" (p. 194). Chaiklin and Chaiklin assert that, in case study research, therapy sessions are analyzed with the intent of presenting findings in some form to other professionals.

Chaiklin and Chaiklin (2004) point out that one of the greatest strengths of case study research is that it allows the researcher to consider multiple factors while also considering the situation as a whole. This may be done by studying a continuum of information on different aspects of the case that may include multiple forms of data (Chaiklin, 2000). According to Chaiklin (2000), "No other form of research allows you to simultaneously see the whole and the parts or to move the parts around to create different combinations" (p. 48). These strengths contribute to the value of single-subject case studies and should be considered by researchers along with considerations for case study designs, data collection, and data analysis.

The value of single-case research designs. Aldridge (1992) insists that clinical research that determines changes in individuals is needed because the beliefs of the patient and his/her social and cultural environments influence treatment. In fact, the client's understanding of a situation or belief in a treatment affects treatment outcomes, such as in the placebo effect. In advocating for the importance of the individual in research, Aldridge continues, "the randomized trial is theoretically relevant for the clinical researcher, but all too often it randomizes away what is specifically relevant for the clinician and patient" (p. 58).

When considering single-case designs, conducting the case study research may be similar to conducting individual therapy sessions (Chaiklin & Chaiklin, 2004). Single-case designs typically stay closely related to the therapist's practices (Aldridge, 1994). Aldridge (1994) suggests that single-case designs in the creative art therapies allow researchers to closely examine development in the process of therapy, the client-therapist relationship, and clinical techniques. Single-case designs support theory building and the refining of new models for practice by highlighting individual change and relating progress directly to interventions (Aldridge, 1994). Jones (1993) agrees that direct analysis of the therapist-patient interaction is needed for building theory and practice. It allows the researcher to determine intrasubject variability of therapist and/or client as well as variability within the therapeutic relationship over time (Hilliard, 1993). Jones (1993) states that single-case designs in research provide relevance to clinical problems and the knowledge provided is readily applicable for clinicians. Aldridge (1994) supports this argument and explains the key importance of conducting case studies on individuals as "single cases bring an important facet to clinical research – that of personal application" (p. 334).

Single-case designs also allow flexibility in research methods because differing levels of analysis and considerations specific to the client can be applied (Aldridge, 1992). Furthermore, studying individual therapy sessions can avoid difficulties in recruiting and maintaining the commitment of a large number of group members (Aldridge, 1994). Jones (1993) contends the value of single-case designs is limited in that results cannot be generalized to larger populations or support theoretical models beyond the individual being studied. However, Chaiklin (2000) and Aldridge (1994) suggest that case studies are often the precursors to larger studies.

Considerations for case study designs. Case study designs vary according to the research topic and purpose. Commonly in DMT research, case studies report on what happens in a single case, on the effects of an intervention, or on progress observed (Chaiklin & Chaiklin, 2004). The varying designs and related issues of case study research should be considered before creating a method for studying and presenting findings. Researchers argue the benefits and limitations associated with using a qualitative approach, a theory-based approach, and subjectivity in the role of the researcher or participant.

Qualitative approach. According to Hilliard (1993) and Aldridge (1994), single-case designs typically involve a qualitative approach. Aldridge (1994) points out that in qualitative case studies the researcher identifies parameters of change, describes the variables involved, and explains how the change occurred. Hilliard agrees that single-case designs sometimes examine a hypothesis in a confirmatory approach. Alternatively, Hilliard also suggests that the purpose of single-case designs is often to generate a hypothesis in an exploratory approach. Aldridge (1994) explains that this exploratory approach is utilized when the client's treatment is observed and described without previously set parameters. However, the methods used in the approach need to be replicable regardless of whether it is confirmatory or exploratory (Aldridge, 1992).

Theory based approach. Multiple authors agree that in research, as in practice, the clinician should be guided by a clinical theory (Chaiklin, 2000; Chaiklin & Chaiklin, 2004). Chaiklin and Chaiklin (2004) describe case study research as involving either an inductive or deductive approach. Inductive studies are not theory based, but rather are broadly based on research goals and require the researcher to later search for a theory suitable to the research findings (Chaiklin & Chaiklin). Thus, inductive studies may result in gathering more information than necessary (Chaiklin & Chaiklin). Deductive approaches are based in theories and are more

effective because they give the researcher a way to answer the research question and communicate findings to others (Chaiklin & Chaiklin). Theory based research allows the researcher to present observations and findings with confidence that his/her judgments can be explained according to a theoretically supported clinical perspective.

However, Aldridge (1994) and Schoenfeld (1992) suggest alternatives to theory based research designs. Aldridge (1994) states, "what is required is either a formal framework by which the data can be interpreted, a standardized evaluative instrument suitable for assessment and for replication or a panel of clinical assessors to validate findings" (p. 340). This suggests that it is perhaps most important to establish validity in the study, which may be achieved by varying approaches. Schoenfeld also suggests that a theory-based approach may not be suitable for the specific nature of a study. Schoenfeld often uses a problem-driven approach instead of a theory-driven approach when current theoretical frameworks are not sufficient for the research. Schoenfeld identifies two circumstances in which he uses a problem-driven approach, "(a) I become aware of behaviors that strike me at some intuitive level as being important, but for which current theoretical frames or methods do not provide an explanation; or (b) I think I should understand something, but current theories or methods are not sufficiently well elaborated to help me understand it" (p. 211-212).

Role of the Researcher. When considering the role of the researcher, the value of one's subjective interpretations or experiences as part of the research is disputable. Case study researchers are oftentimes also the therapist because the research is conducted concurrent with or as part of the treatment (Aldridge, 1994; Levine, 2000; Meyer-Gonzalez, 2000; Quensen-Diez, 2002). This is valuable in single-case designs where research and practice are closely related and there are fewer variances in priorities between research and clinical practice (Aldridge, 1992).

When the researcher and therapist are separate, researchers tend to seek scientific evidence to validate a treatment as significantly better than another, but clinicians tend to continue seeking the best treatment specific to an individual (Aldridge, 1992).

Some researchers further argue that researcher subjectivity is important in research and should be considered (Aldridge, 1992; Quensen-Diez, 2002). When working to develop an objective study, Aldridge (1992) suggests that knowledge is disregarded when objectivity is promoted. He states "With the obsession of 'objective truth' in the scientific community, other 'truths' are likely to be ignored. As clinicians, we have many ways of knowing: by intuition, through experience, and by observation" (p. 59).

Still, Chaiklin and Chaiklin (2004) and Berrol (2000) cite arguments that researchers must be aware of the basis of their analysis as well as their perspective of the data because differing perspectives may offer alternative interpretations and, as the therapists, they are not separate from the phenomenon being studied. Quensen-Diez (2002) recognized both the importance of subjective information and its influence on her perspective as therapist and researcher. In her case study on the effects of DMT on a refugee torture survivor, Quensen-Diez addressed this issue by gathering and examining data based on both the client's input and her own subjective experiences. Nonetheless, McNiff argues that case studies are usually the presentation of the therapist and/or researcher's biases (as cited in Berrol, 2000). McNiff states that case studies are just stories that have been transformed through retelling accounts of the sessions (as cited in Berrol, 2000).

Role of Participant. Many researchers agree that understanding the participant's experience of the studied event, such as a therapy session, is an important factor in case study research (Aldridge, 1992; Aldridge, 1994; Hilliard, 1993; Jones, 1993). However, there are

differing arguments on whether a participant should be actively or passively involved in the research data collection or analysis.

Oftentimes, the participant of a case study is actively involved in the research (Meyer-Gonzalez, 2000; Quensen-Diez, 2002). A number of professionals advocate for participants as researchers or incorporating the client's responses or reflections in the study. Utilizing the client's input validates that they are a significant component of the research and therapeutic process (Aldridge, 1994). Chaiklin and Chaiklin (2004) argue that a client's perspective is important to consider when conducting case study research because behaviors can have varying interpretations.

Some researchers suggest including the participants as co-researchers while others use data collected from the participant detailing their experiences. Aldridge (1990; 1994) states that because case study research is often so closely related to treatment, it is relevant to the practitioner and the patient; thus, both may be included as researchers. In Quensen-Diez's (2002) case study, the participant acted as a co-researcher and had access to the scales and reports used for data collection. Considering that a therapist often seeks to understand within context how a patient's symptoms affect their daily life, it may also be valuable to collect data from the participant (Aldridge, 1994). Some researchers suggest using participant data in the form of written logs or diaries (Aldridge, 1994); while others use interviews or response questionnaires (Quensen-Diez, 2002). Meyer-Gonzalez (2000) gathered data directly from her client with a self-disclosing inventory of their DMT sessions.

Aldridge (1994), however, also warns that subjective biases may influence the research, especially in single-subject designs in which a client may wish to please the therapist. Hence, some researchers opt to not involve the client in research methods. McKearnan (1999) and

Levine (2000) both chose client history, movement scales, and behavioral rating instruments as alternative data collection tools that did not require direct involvement from their clients.

Data collection. A variety of techniques may be used for data collection in case study research. Yin (1994) cites six sources of case study data to include documentation, client history and records, structured or open-ended interviews, researcher's observations, participant's observations, and physical or cultural artifacts. These may be gathered in the form of notes, diaries, audiotapes, videotapes, pictures or other instruments and scales (Aldridge, 1994; Chaiklin & Chaiklin, 2004). However, Chaiklin and Chaiklin insist that all data gathered must be justifiable according to predefined operational concepts and factors that are theory-based in order to avoid unnecessary variables. This is key to the study's reliability (Chaiklin & Chaiklin). Charlton and Walston suggest that other factors that are often involved in case study research, such as relying on memory, misdiagnosis, and difficulties documenting behaviors, can result in complications or limit the study's reliability (as cited in Chaiklin & Chaiklin).

Regardless of the case study's purpose or data collection tools, Chaiklin (2000) and Yin (1994) both demand that multiple techniques must be utilized as part of the research design. Using multiple techniques allows the researcher to create triangulation by having multiple perspectives of one issue (Chaiklin, 2000). Yin (1994) suggests that triangulation is a key component of establishing validity and reliability in a case study design. Using multiple data sources allows the researcher to gather multiple measures of the same phenomenon. "Thus any findings or conclusion in a case study is likely to be much more convincing and accurate if it is based on several different sources of information" (Yin, p. 92).

Data analysis. There are numerous strategies that may be used to analyze case study data. Yin (1994), however, suggests that case study analytic techniques have not been well developed.

Yin argues that analysis should always follow a general analytic strategy that indicates what is being analyzed and why. Especially with qualitative data, Berrol (2000) warns that no matter the form of data collection, "the investigator is the instrument of, as well as the interpreter of the results. Thus the protocols for analysis need be quite rigorous to maintain truthfulness and credibility" (p. 41). When formulating such strategies for DMT research, it is important to consider common techniques in movement analysis, analysis suggestions for pattern or theme identification, and approaches for studying data across time.

Common techniques in movement analysis. Because dance/movement therapists rely heavily on movement observations in practice, movement observations are commonly part of the data analysis process in case study research (Cruz & Koch, 2004). Because movement observations involve subjectivity, it is important to consider issues of validity and reliability when formulating the research methods (Cruz & Koch). This includes having a systematic approach with methods to limit errors and biases.

Systematic approach. For validity, movement characteristics must be definable and measurable (Cruz & Koch, 2004). Chaiklin (2000) further insists that observations be approached systematically and have a theoretical basis. This is commonly achieved by using movement scales or coding systems, such as Laban Movement Analysis and Kestenberg Movement Profile (Cruz & Koch). Quensen-Diez (2002), Meyer-Gonzalez (2000), and Levine (2000) used observation analysis techniques based on theoretical coding systems or scales. McKearnan's (1999) use of coding systems and scales in DMT with an autistic child also allowed her to use comparative analysis by comparing movement and behaviors to predefined standards on the Behavior Rating Instrument for the Autistic Atypical Child. According to

Chaiklin (2000), comparative analysis further supports triangulation and allows alternative interpretations of the data to be eliminated.

Limiting errors. The researcher or person conducting the movement analysis can also influence the validity and reliability of a study due to errors (Cruz & Koch, 2004). To achieve reliability, other observers must be able to determine similar results as the researcher. To limit errors, the number of movement categories to be examined and the researcher's capacity to observe all the categories must be considered when creating analysis methods (Cruz & Koch). Cruz and Koch also recommend establishing a time frame for observations that would allow movement patterns to be efficiently identified. Humans have limited abilities to process a large quantity of information, which can lead to errors (Cruz & Koch).

Limiting biases. Still, biases and personal movement preferences influence the researcher's observations and present issues of validity and reliability (Cruz & Koch, 2004). According to Saal, Downey, and Lahey, the observer tends to base their analysis on overall interpretations versus the actual qualities occurring in the movement (as cited in Cruz & Koch, 2004). Methods can help manage these occurrences, such as limiting the researcher's accessibility to information about the participants or comparing observations with other trained professionals (Cruz & Koch).

Pattern and theme identification. Although common in DMT case studies, Yin (1994) suggests that techniques involving repeated observations, surveys, or analyzing embedded units may lead to incomplete analysis. If one of these strategies is to be used, they should be in conjunction with more effective strategies such as pattern-matching or explanation-building (Yin). In pattern-matching, Trochim explains that the researcher predicts a pattern in specific variables and compares it to an evidence based pattern to strengthen the study's validity (as cited

in Yin, 1994). Explanation-building follows the same general rule of pattern-matching except the goal is to build an explanation of the case through a series of iterations in which data is compared to a theoretical framework (Yin). Alternatively, Aldridge (1994) also suggests theme identification as a tool to define therapeutic meaning in single-case research of the creative therapies. Aldridge (1994) states, "The ability to analyze material at a higher level, to see the connections between themes and to discern the emerging meanings in the therapeutic process, is to engage in a meta-level analysis" (p. 339). Themes, patterns and context are key components of the data analysis structure in qualitative studies (Berrol, 2000). In order to define patterns and formulate meaning, qualitative methods require meticulous and repetitive analysis of the data to extract key elements (Berrol). Interpretations and descriptions can be validated by comparing them to the original data or seeking responses from participants on the accuracy of the results (Berrol).

Data across time. Yin (1994) also considers time-series analysis an appropriate technique for case study analysis. Time-series analysis involves a detailed tracking of patterns and changes of a variable over time. Hilliard (1993) agrees that a form of time-series analysis must be used in single-case designs because it allows the researcher to study variation of variables within the individual. When presenting case studies examining a client across time, both McKearnan (1999) and Levine (2000) used descriptive narratives to explain treatment progression based on intrasubject variations observed. McKearnan described changes in an autistic child's behavior and movement across a two year period, while Levine provided narrative explanations of a client's movement and behavioral changes across a two month time period. A client's life or treatment history is also commonly used in DMT case studies to support explanations of progress in treatment (Chaiklin & Chaiklin, 2004; Levine, 2000; McKearnan, 1999). Hilliard (1993)

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further argues that case studies that do not examine variables across time in single-case designs are "nonsensical" (p. 374). However, neither Yin nor Hilliard suggest time frames that would account for valid studies.

Video Data in Research

Video data is increasingly seen in research studies, particularly those of qualitative nature (Ratcliff, 2003). Video data can provide many benefits to the research process. It can be used for varying purposes in many contexts, providing both visual and audio media forms that can be played back easily (Ratcliff). Video methods have been developed for researching varying aspects of both verbal content and nonverbal behaviors in therapeutic and non-therapeutic settings (Davis, 1983; Jordan & Henderson, 1995; Ratcliff, 2003; Schoenfeld, 1992). The value of video data and methods, video data collection and analysis, and proposed video based research methods should be considered when formulating research designs.

The value of video data and methods. In essence, video data may be viewed as being unlimited in the amount of data available for countless approaches or repetitions of analysis (Jordan & Henderson, 1995). Video technology allows sequences to be played repeatedly for viewing, with numerous viewers or at different times if necessary (Jordan & Henderson). This allows the researcher to record and play back multiple components, such as interviews or visual and audio material of an event, and is especially useful when conducting a qualitative study (Ratcliff, 2003). Because videos can record information and preserve it for later analysis, the use of video methods can provide more detail and improve the quality of a study (Ratcliff).

Videotaping may also be helpful in simplifying the research process (Jacobs, Hollingsworth & Givvin, 2007). Jordan and Henderson (1995) suggest that video recordings may aid in limiting the researcher's bias because it does not require the researcher to reconstruct,

transform, or reduce the original events during the data collection stage by creating secondary meanings in the form of case notes, tallied classification, descriptions or stories. In supporting the use of video as a preferred type of data, these authors state "…we would like our theorizing to be responsive to the phenomenon itself rather than to the characteristics of the representational systems that reconstruct it and thereby constrain the direction of the analyst's thinking" (p. 51). Jacobs, et al. (2007), however, warn against the expectation that video data provides a neutral or objective view because of the complexity of the video data and methods. Still, they also point out that video data can simplify the research process by allowing the researcher to make some decisions after data collection if necessary, such as selecting a secondary analysis option. Furthermore, the researcher does not need to establish observation reliability during the videotaping (Jacobs, et al.).

  Video data collection. There are many options and consequences to consider when deciding upon methods for collecting video material for a study. Videotaping data comes with limitations that must be weighed to make informed decisions before recording events and to understand the data that has been gathered (Ratcliff, 2003). Videotaping is beneficial if one desires an efficient method for capturing behavior, but videotaping and the resulting video data may also be more complex than anticipated (Jacobs, et al., 2007). Quality control procedures for the videotaping should be determined prior to beginning data collection, such as location or angle of camera, storage equipment, and computer software to be used (Jacobs, et al.). These should be consistent with research goals, and include specific features of interest to the study (Jacobs, et al.).

  Potential problems with the equipment, videotaping environment, or restrictions of use on participant release forms should also be evaluated (Jacobs, et al., 2007). Any decisions made

regarding the approach to collecting video data will also affect and limit the information to be analyzed (Jacobs, et al.). Video material is limited to the perspective from which it was recorded and reflects only a part of the phenomenon being studied (Ratcliff, 2003). Thus, issues pertaining to observation analysis and participant reactivity should be addressed when formulating video data collection procedures.

  Observation analysis. Limitations of videotaped data should be considered due to its effect on the researcher's ability to fully observe participants (Cruz & Koch, 2004). This may complicate movement observation and analysis in DMT research (Cruz & Koch). Cruz and Koch suggest that the researcher's view may be obstructed due to the camera angle, some body parts may not be observable, or the participants may move in and out of view. Furthermore, pictures in the video data are only two-dimensional and limit the observer's ability to correctly determine movement qualities in one of the planes (Cruz & Koch). Thus, when video data is collected for observation analysis, collection methods should consider limitations regarding the location of the camera, and the type of equipment used (Ratcliff, 2003; Cruz & Koch, 2004). Videotaping may be done from a "distant outsider" perspective or from an "insider participant" perspective (Ratcliff, p. 114). Multiple video cameras may be used to capture more than one subject or perspective (Fraenkel, 1983). Ratcliff also identifies methods that include participants in decisions pertaining to camera location or, alternatively, a camera that remains in one place for "scientific objectivity" (p. 114). Researchers using video methods also argue whether or not a participant, the researcher, a non-participant, or automatic camera settings should run the camera equipment on or off a tripod (Ratcliff). These considerations will vary among studies depending on the predicted reactions from participants and the resulting complications it may introduce during analysis (Ratcliff).

Participant reactivity. Ratcliff (2003) explains that reactivity, when a participant's behaviors are a reaction to the camera, is a common problem when using video methods. Extra measures can be taken to compensate for this, such as hiding the camera with one way mirrors (Fraenkel, 1983) or using a wide-angle camera lens (Ratcliff). Ratcliff discovered in his study that wide-angle camera lenses captured more typical activities of children in the periphery where they thought they were hidden from the camera's view. In DMT research involving movement analysis of videotaped data, Cruz and Koch (2004) also identified reactivity as an issue. However, they refer to this issue as "social desirability" and explain that participants often want to appear cooperative or at their best when being observed, which can affect movement choices (Cruz & Koch, p. 49). Cruz and Koch suggest using a later portion of the videotaped data when the participant is more likely to be natural, relaxed, or adjusted to the camera. Toncy (2004) compensated for participant reactivity by encouraging her participants, Egyptian Muslim women, to videotape her movement as an alternative when they refused to be videotaped themselves. In this unique situation, Toncy chose to recreate her participants' dances as well as dance her kinesthetic response to their movement.

Video data analysis. Ratcliff (2003) suggests that decisions must be made about the purpose of analysis and types of information that will be analyzed from the videos. Jacobs, et al. (2007) agree that an analysis plan must be created before beginning the research project, but argues that the plan should be flexible to allow for versatility in examining the data from multiple and/or unforeseen perspectives. Ratcliff suggests that one benefit of video data is that there is a wide range of analysis options; videos have multiple types of information available and the same video can be evaluated multiple times for different purposes. Ratcliff further explains that because videotapes contain an extensive amount of information, descriptions of data can be

exhaustive and lengthy if an analysis plan or purpose is not defined. Depending on the research, different parts of the video may be used for analysis while others are not (Ratcliff). Still, Jacobs, et al. warn that the complexity of video data lends itself to formulating new analysis ideas after data collection; thus, it is important to prioritize and avoid analysis methods that require more expertise than is available to the researcher. These considerations influence the research plan, which may vary according to the researcher's belief about how the audio and visual data should be analyzed and the involvement of the participant in data analysis.

   Analysis of audio and visual data. Professionals who use video methods have differing opinions on how the video data should be analyzed. Some professionals analyze the audio material separate from the visual data, such as Mehan or Erickson and Schultz (as cited in Ratcliff, 2003). In these studies, the audio data were evaluated for components of communication separately from the visual cues of non-verbal communication seen in the video pictures. Ratcliff suggests that, depending on the purpose of the study, it may be valuable to separate the audio data and visual data for analysis when it is followed by an analysis of both played simultaneously.

   Involvement of participant. In video analysis, researchers such as Ratcliff (2003) suggest that participants may be actively involved in data analysis by providing their perspective on the data or acting as a co-analyst. Many researchers propose that interviewing participants about their experiences or observations of the event as they view the videotapes can be beneficial in qualitative analysis because interpretations come directly from the participants (Jordan & Henderson, 1995; Ratcliff 2003; Stewart, 1992). Others may indirectly seek an understanding of the client's experience by analyzing the client's statements (Jordan & Henderson; Ratcliff). Some do this after transcribing the video; but if transcription is used Ratcliff suggests using a

partial, focused, or theory-driven approach to avoid consuming time. Others may choose to analyze the client's comments directly from the video data (Jordan & Henderson; Ratcliff).

Proposed video based research methods. There are many methods used in video analysis. Stewart (1992) suggests that audio and video data can be interpreted qualitatively, coded structurally, evaluated for behavior identification, or examined for participant responses. When using an interpretive approach in evaluating videotapes, Stewart states that the researcher may watch the data until relevant material appears and then conduct a more structured analysis of the relevant material. Jordan and Henderson (1995) agree that repeated viewing and listening allows unseen patterns, behaviors, and movements in the phenomena to be exposed. Categories emerge throughout the analysis process as the researcher's understanding of the data deepens. This is Jordan and Henderson's approach in Interaction Analysis, a methodology used to examine interactions of human beings with each other and with environmental objects, artifacts, and technologies. Alternatively, some researchers choose to code video data by using checklists or preset categories to classify data, such as participant statements (Stewart). Others use a combination of approaches to acquire the information needed for their purpose (Ratcliff, 2003). When using a form of observation analysis, some of the proposed methods for approaching video data include Schoenfeld's (1992) macroscopic approach, Schoenfeld's (1992) microscopic approach, and Erickson's microanalysis (as cited in Ratcliff, 2003), all of which have identifiable similarities.

Macroscopic approach. Schoenfeld (1992) used a macroscopic approach to videotape analysis in one of his case studies investigating students' problem solving behaviors. This macroscopic approach is "coarse grained," focusing on a small number of points in the data that presumably explain the event being studied (p. 182). In his observation analysis of the videos,

Schoenfeld used coding schemes that were established by former researchers in his field but discovered that this resulted in coding a large amount of irrelevant data. Schoenfeld suggests that video analysis focus on behaviors of interest with a selective versus comprehensive approach. However, this may be problematic if the researcher is unsure what is important to the study. This may be the case if the study is exploratory in nature. To address this issue, Schoenfeld selected video segments that appeared relevant to his topic, described them abstractly with an identified reason for their relevance, and created a list of questions and categories that were then used to develop a scheme for analysis. However, he described this approach as "a disaster in practice" and "far too cumbersome" because the established categories and analytical scheme were created before the selected video segments were actually analyzed; the resulting attempt at analysis showed that many of the categories were actually irrelevant to the event studied in each video segment (p. 188). Furthermore, Schoenfeld suggests coding selectively for events that both do and do not take place, such as the decision making behaviors that his participants did not use in their problem-solving approach. Overall, Schoenfeld reported that a macroscopic approach was useful in determining patterns of behavior but not for interpreting the underlying mechanisms of those behaviors.

   Microscopic approach. Schoenfeld (1992) also used a microscopic approach in a case study investigating a student's mathematical learning process. The microscopic approach is a "fine-grained" examination of the data with an attempt to understand as many variables as possible (Schoenfeld, p. 182). His use of the microscopic approach involved a full analysis of seven-hours of videotape that he called "excruciatingly detailed" (p. 196). He began by conducting a preliminary analysis on "interesting incidents" observed in the data so that he could determine what to examine in further detail and why (p. 197). However, this was not successful

because it was difficult to clearly identify incidents in small segments of the video that represented the focus of the examination, moments in which the student showed cognitive change in the learning event. This led to the detailed analysis of the videotapes as a whole in an effort to understand the changes in the student's understanding as it was traced from the beginning to the end of the seven hours of data. Schoenfeld reported that this method resulted in periodic new understandings of the data, which then led to reconsidering the whole model of explanation developed at that point in analysis. Furthermore, he explained that the microscopic approach led to questioning the researcher's confidence in conclusions. Schoenfeld suggested that gathering data in varying contexts to improve validity by determining the presence and frequency of the phenomenon studied as not artifact-like or atypical (Schoenfeld).

Microanalysis. Erickson's method, microanalysis, is commonly used in qualitative video analysis (as cited in Ratcliff, 2003). According to Ratcliff, Erickson's approach allows for repeated examination of sequences that enables the researcher to track, describe, and measure the studied components in detail. The researcher can then note similarities and differences between recurring events observed in the data, as well as describe the unique qualities of rare events observed in the data. This allows the researcher to develop conclusions and evaluate their value within context.

According to Ratcliff (2003), Erickson's microanalysis of video material includes five steps. First, an entire sequence is examined at its natural speed without pausing so that the researcher can take notes on the event as a whole. Second, the researcher identifies key shifts in activities and outlines the frames that begin, focus, and end the event before the next key shift. The third step involves elaborating on the segments identified in the second step to determine how participants contribute to or influence each event. In the fourth step, nonverbal

communications and statements from the participants are transcribed with a focus on the research

purpose and cultural influences. Finally, the earlier identified segments of the video are

compared with the rest of the video data to confirm whether or not it is representative of the data

as a whole. This may involve analyzing additional segments, counting common or rare events,

and looking for exceptions.

Collier and Collier suggest that Erickson's full microanalysis process is not necessary,

but can be modified as a part of video analysis (as cited in Ratcliff, 2003). They suggest that

videos be watched in their entirety and the events in the video be categorized or coded. Then

microanalysis can be used to examine details needed before organizing conclusions and details

within context (Ratcliff).

Summary of similarities in video analysis methods. Some similarities among video

methods described above are identifiable. Each begins by observing the data as a whole,

followed by identifying focal points for the study by selecting portions or categorizing data for

further examination. Then, details of the data are examined through a form of in-depth analysis,

note taking, or coding. Each approach focuses on the research topic or event through pattern

identification of behaviors that did and did not occur. Finally, validity and reliability are weighed

by comparing interpretations to a larger portion of the data or within context.

Video Data in Dance/Movement Therapy Research.

Because DMT research often involves a form of movement analysis, it is not uncommon

to use video data to collect and observe the movement (Cruz & Koch, 2004). However, research

is limited on DMT video based methodologies. All DMT research found using a form of video

analysis did so for the sole purpose of movement observation analysis. Some researchers, such as

Kowarzik (2006) and Bunce (2006), mention that sessions were videotaped for later movement

analysis but never provide methodological explanations of the video collection or analysis process. In order to further understand the use of video material in DMT research, considerations for video collection and analysis, participant contribution and value, movement observation scales, and video based methods must be reviewed.

       Considerations for video collection and analysis. Dance/movement therapy researchers should consider the limitations and benefits of using video data collection and analysis. Videotaping can affect the participant as well as the research study. In addition to those limitations identified by Cruz and Koch (2004) as described earlier, others have identified difficulties with using video data in research. Problems arose in Fraenkel's (1983) use of videotapes, including difficulty identifying facial expressions and the inability to decipher breathing patterns. Furthermore, pictures in video data are only two-dimensional and limit the observer's ability to correctly determine movement qualities in one of the planes (Cruz & Koch). It also appears common for DMT researchers to opt for analyzing video data without sound, although no researchers offered a rationale for this decision (Bojner-Horwitz, Theorell, & Anderberg, 2003; Fraenkel, 1983; Stahl, 2003).

       Dance/movement therapy researchers have also found many benefits of using video material for movement analysis. Kowarzik (2006) explained that video material provided a record of data over time and allowed observations made during the sessions to be cross-referenced with subsequent video movement analysis. Similarly, Nishida (2008) recorded data over time and conducted a study on her personal acculturation process as an international dance/movement therapy student. For this study, Nishida completed a three phase movement analysis on two ten minute videotapes, one before and one after her she completed her studies in dance/movement therapy. Nishida, Bunce (2006), and Kowarzik (2006) also used video analysis

conducted by movement analysts instead of or in addition to movement observations conducted by the therapist. Nishida hired a certified movement analyst to analyze video segments in addition to her own analysis. When evaluating a DMT program with patients with dementia, Kowarzik used an observational assessment tool to analyze sessions as they took place. A second movement analyst then conducted a detailed video analysis of each session to observe group development and dynamics. In a study on patients with Parkinson's disease, Bunce found that involving a second movement analyst allowed the therapist to set aside personal desires for identifying movement changes or improvements in the participating clients. In recommendations for future research, Bunce also suggested using video data to create longitudinal studies of client improvements and postural changes over the course of several years.

Still, when using video methods for the analysis of movement, many DMT researchers chose to use two or more additional forms of data collection or analysis. Nishida (2008) completed a narrative analysis of journal entries. Bojner-Horwitz, et al. (2003) and Bunce (2006) both used participant questionnaires, while Bunce (2006) and Kowarzik (2006) both audiotaped and transcribed interviews. Blood tests (Bojner-Horwitz, et al.), case study vignettes (Bunce), and therapists notes and observations (Kowarzik) were also used as data.

Participant contribution and value in video analysis. Bojner-Horwitz, et al. (2003), Fraenkel (1983), and Karkou (2006) all included their participants in the analysis of video materials. Karkou conducted an evaluation of a community based DMT project in which video segments of sessions were selected and shown to participating clients as a reminder of what had occurred in the sessions. However, Bojner-Horwitz, et al. and Fraenkel chose to involve their participants in a more in-depth analysis process. Bojner-Horwitz, et al's fibromyalgia participants measured changes they observed in their movement patterns in videotapes collected

before, in the middle, and after 14 months of DMT treatment. These patients were videotaped individually, completing functional movement sequences that they had learned for the study. After completing the treatment, each patient ranked her changes in mobility, perception of movement pain, and energy along a five-point scale before and after viewing each of the three videotapes without sound. Alternatively, Fraenkel used video methods to study empathy observed in dyadic movement profiles, including those of client and therapist as well as friendship dyads. Fraenkel used Kagan's Interpersonal Process Recall System (as cited in Fraenkel), a video-assisted recall method, to prevent interrupting the dyadic interactions as well as to allow participants to observe and describe their experience of pre-selected 10 minute segments of the videotapes. The participants who viewed the videotapes in Fraenkel's study also specified moments in which they felt understood, misunderstood, or neutral in their interactions with their therapist or friend. These moments were then examined by the researchers without audio to define non-verbal empathic behaviors including specific acts, gestures, postures, and affect.

Bojner-Horwitz, et al. (2003) and Karkou (2006) also reflected on the therapeutic value of including participants in video analysis of their movement. Bojner-Horwitz, et al. suggest that video-based research in the creative art therapies can be therapeutically valuable to clients because it may provide a "somatically directed focus" (p. 262). Further explaining the benefits to patients involved in the video-interpretation, Bojner-Horwitz, et al. state, "When patients see themselves on video, movement patterns, and therefore body signals, are more visible and thus easier for patients to evaluate. Seeing their own facial expressions and body language while moving also influences their perceptions" (p. 262). Karkou also suggests that this approach has therapeutic value in that "it was also an opportunity for some of them to see themselves moving

for the first time: a way of seeing themselves and knowing that they have been 'seen' in a more concrete manner" (p. 42).

Movement observation scales in video analysis. Movement observation scales are sometimes used for the analysis of video data in DMT research. Cruz and Koch (2004) suggest that the Kestenberg Movement Profile is frequently used for analyzing videotapes of patients. Stahl (2003) created and pilot tested the Open/Closed Movement Analysis Scale (OCMA) to distinguish characteristics of free, expressive/open, and restricted/closed movement observed in the participants' spontaneous movement during five varying musical styles. Stahl used the OCMA to examine 20 second segments of movement observed on muted videotapes. Davis's Movement Psychodiagnostic Inventory (MPI) is a movement observation scale that is designed to be used in video analysis of an individual therapy session (as cited in Cruz & Koch, 2004). The MPI uses Laban Movement Analysis language and is valuable in studying spontaneous movements that are both voluntary and involuntary to measure abnormal motor behaviors (Cruz, 2009). The use of videos to observe movement when using the MPI allows the researcher to replay segments and distinguish subtle movements (Cruz). However, the MPI is designed to be used by researchers who are not also the therapist in the session (Cruz & Koch, 2004).

Video based methods. Although video data is commonly used with varying approaches to movement observation analysis, few sources document research methodologies that are primarily video based. Two video based studies on the use of THEME (Koch, 2007) and DaNCAS (Davis, 1983) were found to examine nonverbal movement or behavioral patterns, both of which require special training or computer programming.

THEME. Koch (2007) conducted a video analysis case study on an administrative group to determine characteristics of verbal and nonverbal behavioral patterns. Koch used THEME, a

pattern analysis computer software program to complete her analysis. THEME was developed by

Magnusson using code-based pattern detection for the purpose of "performing structural analysis

of intra- and inter-individual real-time behavior records, and it takes simultaneously into account

information about both the order and the relative timing of behavioral events in repeated

patterns" (as cited in Koch, 2007, p. 34). Koch used pre-determined verbal and non-verbal

behavior categories and two movement analysis categories from the Kestenberg Movement

Profile, efforts and pre-efforts. Based on pre-determined criteria, only one 17 minute scene from

all video material was selected for further analysis. Using the pre-selected categories, the video

scene was then observed and coded at the same time. With the help of THEME, the researcher

was able to detect repetitive patterns and collect statistical outputs.

DaNCAS. Davis (1983) developed DaNCAS, the Davis Nonverbal Communication

Analysis System, as a video research methodology to analyze individual psychotherapy sessions

between a therapist and client, and suggests that it could be tailored for use in DMT sessions.

Davis insists that single-case designs involving a qualitative approach to examining movement

qualities would benefit therapists. If this design was used, Davis argues that therapists could

improve knowledge pertaining to psychodiagnoses, the therapeutic relationship, and changes and

progress in clients. Davis suggests that studies considering multiple aspects of interaction in the

therapy session are needed and that "practitioners interested in nonverbal communication

research will benefit most from replicable, multivariable process studies of movement behavior

because these have the greatest promise for generating original and clinically sophisticated

insights into the therapy process" (p. 50).

For this purpose, Davis (1983) developed DaNCAS as a systematic observation analysis

approach to examining interaction patterns with an emphasis on the importance of qualitative

aspects of movement. The DaNCAS system requires that videos show participants in full body view so that observation can take place in real time without stopping, although the videotape maybe reviewed multiple times. The researcher watches the video without sound and uses a coding system in which smaller segments of the video may be coded in more detail if they contain a concentration of the variables examined in the study. However, using DaNCAS requires the researcher to first undergo training in the methodology and coding manual. In reviewing the research literature, no other sources were found evaluating DaNCAS or documenting its use in a research study.

Conclusion

Case study methodologies are commonly used in DMT research. Still, although there is ample research available to describe case study designs and considerations in psychotherapy, fewer sources were found specifying case study designs for use in the DMT field. Furthermore, information available for video based methods in DMT research is even more limited. Considering that DMT research typically involves a form of movement observation analysis for which video data is commonly collected, video based designs would be beneficial to the field. Additionally, single-case research designs contain multivariable richness that appears compatible with the similar richness found in video data and analysis options. The creation of a video based case study methodology that does not require additional computer programming or extensive training would offer researchers new options and unique perspectives. In dance/movement therapy, this would allow researchers to use video data to analyze movement as well as other aspects of the sessions. For these reasons, Multidimensional Analysis was created as a video based methodology for studying the value and relational functions of selected components within

individual DMT sessions. The methodology for Multidimensional Analysis will be described in

the following chapter.

Methodology

Case study research is common in the dance/movement therapy field because it is so closely related to clinical practice. Case studies allow the clinicians and/or researchers to examine the effectiveness of treatment modalities with the benefits of having a continuum of information on both the parts and the whole of the case (Chaiklin, 2000). This provides research design flexibility and allows for multiple levels of analysis. Because DMT research often involves video data collection for movement analysis, video research methods for DMT case study designs may provide ample and unique information.

A unique video methodology for studying individual DMT sessions, Multidimensional Analysis, emerged during a preliminary study by this author that investigated the use of voice in DMT. The efficacy, benefits, and limitations of the methodology itself is the focus of the current study. Multidimensional Analysis was created to examine multivariable data and to develop an understanding of the relationship between components in the session and the client's experience of that relationship. This research method involved a continuous process of data collection and analysis. Data forms were dissected to examine components of the session that were relevant to the research topic. This was followed by integrating and further examining the data forms within the larger context of each session as a whole. This chapter will begin with background information regarding the preliminary case study in which the research method was developed. Multidimensional Analysis will then be described, including the procedures for data collection and analysis.

Background Information

  Several aspects of the preliminary case study investigating the use of voice in dance/movement therapy contributed to the development of Multidimensional Analysis. These included the focus of the case study, client and setting, session structure and agency policies.

  Focus of the case study. The focus of the preliminary case study was the exploration of the benefits and limitations of the use of voice in DMT, and the methodology was developed to evaluate specific voice and movement characteristics of individual DMT sessions and enhance understanding of the client's experience of the sessions. Voice qualities and movement qualities were analyzed separately, together in relation to each other, and again within the larger context of the whole session. Although the methodology was initially used to examine voice and movement, it could be used to study alternative components of individual DMT sessions.

  Client and setting. The client was a 30 year old White woman who was an adult survivor of child sexual abuse and who had been receiving counseling at a sexual assault crisis center in a western suburb of Chicago, Illinois for approximately ten years. She was referred for dance/movement therapy and counseling in September, 2008. At the time the case study was conducted, she had been regularly attending weekly Chacian-based individual DMT sessions led by me during my internship for approximately nine months.

  The client's movement was bound and stayed near her torso when she began dance/movement therapy. The client's breath was also held and shallow. During movement, the client was encouraged to notice her breath. This reminder typically elicited a deep inhale. Over the course of treatment, the client was encouraged to make her breath audible or make sounds when she felt it was appropriate. These interventions were used to encourage the client to stay present in the room, in her body, and with her feelings. Additionally, they were used to

encourage the use of flow and modulation of Effort qualities as tools for managing her anger and expressing a larger range of emotions. The client began to use audible breath, words, and vocal sounds in the DMT sessions more frequently. She appeared less inhibited in both her use of voice and movement. Observing these changes in the client led to an increased interest in the relationship between vocal qualities and movement qualities. Furthermore, it led to an increased desire to understand the client's experience of the use of her voice in the DMT sessions.

 Session structure. Over the course of the client's treatment, a Chacian-based structure was utilized for each session and continued even after the initiation of case study research. The routines and rituals we had developed were unchanged because the research was combined with the client's current treatment. Furthermore, I played the dual role of therapist and researcher. Maintaining the session structure was necessary in order to maintain a safe environment for the client as well as to maintain my therapist perspective during the sessions.

 The Chacian approach involves the use of body action, symbolism, and rhythmic activity in which the therapist is actively engaged in a therapeutic relationship with the clients both verbally and in movement (Levy, 2005). The Chacian approach is also typically a three phase group process in which the session begins with a warm-up that is developed into themes before completing the session with a closure of movement or verbal processing (Levy). These techniques were used in the preliminary study with the three phase process adapted to the client's individual DMT sessions. The three phases used in the session structure included a check-in, dance/movement, and closure/verbal processing. The session structure began with a check-in involving discussions of the client's experiences throughout her week as well as her non-verbal bodily responses to those experiences. The client was then invited to express herself through dance/movement and was offered choices for music selection. Movement was based on a theme

identified by the client during the check-in, such as wanting to love herself, or simply the client's feelings and desire to move in the given moment. Body action, symbolism (often through imagery), and rhythmic activity, key elements of the Chacian approach, were encouraged by the therapist through verbal observations and mirroring the client's use of voice and movement. The client's experiences and reflections on the whole session were discussed for closure/verbal processing. Discussions were non-directive and were based on the client's responses. Questions were used to clarify her experience. Because a non-directive approach was utilized, the closure/verbal processing phase provided contextual data specific to the client's insights. The value of the client's responses was of great interest in the preliminary study and became a key aspect of Multidimensional Analysis. Furthermore, all three phases were used to provide structure to Multidimensional Analysis procedures. For example, transcripts were outlined according to each phase and procedures for the examination of contextual data in the sixth stage of analysis were specified according to the different information presented at each phase of the sessions.

Four individual DMT sessions were prescheduled, one per week, for the preliminary study. Although using a Chacian based approach to individual DMT sessions is not necessary to use this methodology for research, it influenced the creation of the methodology. The preliminary research study was an exploration of the use of voice within the Chacian structure.

Agency policies. Restrictions determined by the agency for which I was working were considered when formulating Multidimensional Analysis. These restrictions were established according to agency policies that protected the client's confidentiality and rights. They limited who had access to the data and where the data was to be stored and analyzed. Restrictions also

determined how long the data could be kept and what information was allowed in the presentation of research findings.

It was determined that only I, as the therapist and researcher, was allowed to view all collected data and research materials. This required me to consider methods that could support the validity of findings without any collaboration with other professionals or the client's treatment team, such as creating triangulation within the methodology by using multiple techniques as suggested by Chaiklin (2000) and Yin (1994). Furthermore, time limitations were set to destroy any videotaped data within 120 days after all sessions had been videotaped. The destruction of transcripts was also required within 120 days after all transcripts were completed, with the exception of using quotations from the sessions to support research findings. Thus, it was necessary to formulate procedures that would allow me to analyze the data within the given time frame while also preserving necessary information to finalize analysis and formulate results after the deadline if needed.

Procedures

The unique methodology of Multidimensional Analysis developed for the preliminary case study investigation of the use of voice described above includes several forms of data collection and multiple stages of data analysis. Specific references to this preliminary study are used to clarify procedural methods.

Data collection. Three forms of data collection were utilized in Multidimensional Analysis: videotaping sessions, transcribing session videotapes, and recording process notes. The rationale and method for each form of data collection will be discussed in this section.

Videotaping sessions. As described in the Literature Review, the use of videotaping is common in qualitative research to record and play back multiple components (Ratcliff, 2003)

and is sometimes used to analyze movement in DMT research (Cruz & Koch, 2004). Four individual therapy sessions were videotaped with the client's consent.

Rationale. Sessions were videotaped in order to collect data during each session without altering the pre-developed routines of the session structure. Videotaping sessions was also intended to limit any research related interruptions during the therapeutic process of each session by allowing analysis decisions and observation reliability to be addressed at a later point. Videotaping sessions provided a way to preserve each session as a whole. This was done to limit bias at the time of collection so that a therapist perspective could be maintained during the session. Furthermore, data specific to the research study could be gathered later when the videotapes were examined from a researcher perspective. Videotaping also allowed for the simultaneous collection of both visual and auditory forms of data, which were both key to analyzing the use of voice and movement in the preliminary study.

Method. A camcorder was placed on a shelf in the corner of the therapy room prior to the client's arrival. This location was chosen to limit the distractions it caused as well as to record data as clearly as possible. The client had experienced her sessions being recorded from this location on two prior occasions for supervision purposes; so, choosing this location for the research study provided relative consistency with those experiences and minimized her reactivity to the camera. The shelf in the corner allowed the camcorder to record the client from a front diagonal viewpoint. This location provided the fullest view of the client with fewer obstructions so that she could be clearly observed later during data analysis. The camcorder was located outside of the client's direct line of vision according to her regular choice of location in the room and general attention toward me during the session. The location was also opposite to the audio player in the room so that any music used would not dominate the audio data on the videotapes.

This was particularly crucial in the preliminary study because the client's use of voice in each session was a focus of analysis. These quality control procedures allowed video data collection to remain consistent while considering research goals.

The camcorder was turned on upon entering the room with the client before sitting down to begin the session. One complication occurred during a session in which the camcorder began making a beeping noise shortly after beginning the session. This was a distraction and the client stopped her discussion to question what was wrong with the camera. The camcorder was adjusted to end the beeping noise and the session continued. The camcorder was not stopped until after the client had left each session. Again, these procedures were chosen to limit the client's reactivity to the camera.

Transcribing session videotapes. Transcribing is also a common data collection tool used in research (Ratcliff, 2003), and is often used when documenting a series of sessions or interviews (Bunce, 2006; Kowarzik, 2006). Each one-hour session videotape was transcribed for the study.

Rationale. Session videotapes were transcribed in order to preserve the content for each session. Originally, transcribing session videotapes became part of the data collection process due to the time limitations given on destroying the videotapes. Transcribing preserved as much content as possible for a longer period of time.

Method. The transcripts included all verbalizations and/or vocalizations used during movement and verbal discussions from throughout the sessions. In the transcripts, additional descriptive words were added to define vocalizations, a component being studied in the preliminary research. For example, the client's laugh might have been described as "abrupt and loud," or an exhale was described as "hardly audible and soft." These decisions focused the

transcripts on data that were relative to the study. The three phases of the Chacian-based session structure were labeled as check-in, dance/movement, and closure/verbal processing. This was done for ease of reading and in anticipation of locating information that might be needed from one of the three phases should the videotapes no longer be available. One example of this is locating the client's responses in closure/verbal processing versus verbalizations from during dance/movement.

Each transcript was completed independently before beginning the next. The session videotapes were played on Windows Media Player while transcribing the content in an open Microsoft Word document. This required frequent switching between the two open programs in order to record all of the discussions and pause, play, or rewind the video as needed. In an effort to speed up the process, considering the time constraints, HyperTRANSCRIBE was purchased after transcribing the first session to complete the remaining sessions. HyperTRANSCRIBE is a computer program that allows the transcriber to type data while playing a video in 5 second increments and using keyboard controls to quickly play, replay, or skip increments. However, only two of the remaining three sessions were formatted to be compatible with HyperTRANSCRIBE due to complications from originally transferring the video from the camcorder to a DVD. The fourth session was transcribed according to the initial method. Transcribing each session was completed during intervals between the data analysis stages. This was because the completion of each transcript was time consuming and could not be completed in one sitting.

Recording process notes. The third form of data collection involved the documentation of process notes, a commonly used data form in case study and DMT research. Process notes are descriptions of the researcher's observations and reflections made throughout each stage of data

analysis and are used to track and organize data. No clinical process notes were kept during the video data collection phase for use in this study.

Rationale. Recording process notes provided a method for continuous data collection throughout data analysis. Two types of information were included in process notes: 1) information pertaining to selected moments within individual sessions and 2) information pertaining to the overall study. Process notes pertaining to the first type of information recorded detailed descriptions specific to each session and their respective significant moments that were selected in stage two of analysis. These notes included observations, thoughts, and rising questions and were organized and labeled according to the order of each stage of analysis. This was intended to make the notes more decipherable while also showing the commonalities or new revelations that were documented progressively through the analysis.

The second type of information in the process notes pertained to overall implications and potential themes that needed further consideration and evaluation throughout data analysis. For example, counter to original beliefs, I began to wonder if loud voice volume accompanied indulgent qualities in movement just as often as it did fighting qualities. This was an overall observation that was recorded as a potential theme instead of as a part of process notes specific to one significant moment within a session.

Method. Process notes were initially handwritten in a notebook because the stages of data analysis required viewing video material on the computer. While the data was played on the computer in Windows Media Player, observations were written as process notes and the data was replayed as needed. For process notes specific to significant moments and each session, the handwritten notes were typed and organized into their respective Microsoft Word documents after each stage of analysis was completed. Each session's process notes were labeled according

to each selected significant moment. Each significant moment was also labeled according to the stages of analysis, as mentioned in the rationale.

Process notes that pertained to the overall study were handwritten in the form of a running list of questions, thoughts, and potential themes. These process notes were kept separate from process notes for each session unless an overall theme was identified in a given session. All of the process notes were labeled, when needed, according to their respective data form, stage of analysis, or type of theme. In the preliminary study, for example, themes pertaining to vocal qualities of the auditory data were labeled separately from themes pertaining to the therapeutic value of the relationship between voice and movement.

Data analysis. The process of data analysis included seven stages: 1) assessing session videotapes, 2) selecting significant moments, 3) dissecting significant moments, 4) reconstructing significant moments, 5) sequential reviewing of all the significant moments, 6) examining session transcripts, and 7) integrating and defining themes. The stages of data analysis served to differentiate data forms and then reconnect the data in a manner that would broaden the understanding of the use of voice in DMT. Data analysis stages one, two, and three each narrowed perspective in order to examine components of the session pertaining to the research topic. Stages four, five, six and seven gradually re-expanded my perspective so that the relationships between the components could be analyzed. Furthermore, each session underwent analysis stages one through four independently from the following session. Stages five, six, and seven considered data from all the sessions together. All seven stages will be detailed below.

Assessing session videotape. Each session videotape underwent an initial assessment in its first stage of analysis. This assessment involved watching each video in its entirety to observe the session for the first time after participating in the session as the therapist. As indicated in

methods and suggestions described by Jordan and Henderson (1995), Ratcliff (2003), Schoenfeld (1992), and Stewart (1992), it is common for video analysis methods to involve observing the data as a whole in the beginning of analysis before looking at finer constructs within the data.

Rationale. Assessing each videotape in its entirety allowed me to view data from the perspective of a researcher. This was complementary to my initial experience of the data as the therapist in the session. As a therapist, observations and interventions were based on the client's presenting issues and treatment goals. Observing the session again as a researcher redirected my thoughts and observations to the research topic – the use of voice in dance/movement therapy. This researcher perspective was established at this stage and maintained throughout data analysis. It provided an opportunity to identify voice and movement qualities that may have otherwise been overlooked during the session. For example, detailed gestural movements may have been overlooked during the session when focusing on the client's overall use of effort qualities.

Method. I watched each session from beginning to end on Windows Media Player on the computer in a private office at the research site. While watching, I took brief process notes in the manner described earlier. The notes described context and very general observations that pertained to the research topic. For example, I notated if the client chose to begin movement based on a theme or if she used primarily vocalizations as opposed to verbalizations throughout the session.

Selecting significant moments. In the second stage of data analysis, I selected smaller segments from each session's video to undergo a more in-depth analysis related to the research topic, the use of voice in DMT. These segments are referred to as significant moments. The process of selecting the significant moments involved establishing criteria that defined what was significant to the study and how to identify those features in the data.

Rationale. Selecting significant moments narrowed the scope of data to smaller segments of each session. Because video data is complex, this limited my perspective so that the smaller data sets could undergo a more in depth analysis. Limiting the data in this way allowed for analysis of voice and movement separately, to determine their individual qualities, how they related to each other, and how they were experienced by the client. Conducting an extensive analysis of these components and their patterns for the total four hours of collected data on the videotapes would not have been feasible. Thus, narrowing the data set was essential.

Method. Guidelines were established for determining what segments of the sessions were to be included in the research study. They defined what was relevant and why it was relevant for answering the research question. For example, the research question was "what are the benefits and limitations of the use of voice in dance/movement therapy with an adult survivor of child sexual abuse?" In order to answer this question, it was important to understand voice, movement, the relationship between voice and movement, and the experience of each by the client. Thus, criteria were used to identify the significant moments of each session that included these aspects. In the preliminary case study, the significant moments were chosen based on the following: 1) moments where voice and movement are used together as a form of expression, either by the client, the therapist in response to the client, or both the client and therapist together, 2) moments of observable changes in voice and/or movement qualities or 3) moments the client referred to during discussions within the sessions. Establishing criteria made my preconceived notions about relevance concrete, and determined what moments of the sessions warranted further analysis.

The duration of each significant moment was set to be a maximum of 1 minute. This time frame was selected to maintain focus on the purpose and functions of voice and movement in the significant moment versus the overall frequency of their use in the session. Noting the time

segment on the videotape for each moment allowed it to be identified later. Additionally, the number of significant moments selected for each session was limited to 10. This was decided arbitrarily and the number of moments selected for each session depended on how often the defined criteria for what was significant to the study were present in the videotape. The total time for the significant moments in each session ranged from 53 seconds to 4 minutes and 52 seconds. The accumulated time for all significant moments equaled 12 minutes, which is significantly more manageable than the original 4 hours of videotaped data.

When significant moments were identified, the videotape was paused to notate the timing of each segment. Process notes also described the reasons for selecting the moment and how it met the criteria. These notations included a brief description of the role of both the client and therapist in the moment, such as "client is first to use her voice with a direct kicking movement and the therapist is using her voice to mirror the music and client's movement."

Dissecting significant moments. The third stage of analysis involved dissecting the significant moments into two components: 1) auditory data and 2) visual data. Although it is uncommon to see this approach in DMT research, some researchers, such as Ratcliff (2003), suggest that it is valuable to analyze auditory and visual data both separately and simultaneously.

Rationale. Separating the auditory and visual data allowed each to be analyzed independently so that their individual characteristics could be identified. This facilitated an understanding of each data form's salient qualities and functions. It was necessary to develop an understanding of voice and movement separately so that the relationship between their qualities and functions could be more clearly defined later in analysis. Narrowing the scope of observation to one component at a time minimized the influence and biases presented by the other.

Method. Auditory data was analyzed first due to the likelihood that biases regarding movement qualities would be more influential had they been analyzed first. I had less knowledge and awareness of auditory qualities in comparison to those of movement qualities. Each significant moment was then played in Window's Media Player. However, the program did not have the capability of presetting the starting and stopping points for each significant moment. Thus, each moment was played in a minimized screen that allowed for simultaneously reading the timing on the DVD when necessary and also limiting distractions of the visual data. To further limit distractions of the visual data, the auditory data was played while facing away from the computer screen. Computer keys specific to controlling the DVD player allowed me to quickly and easily pause the data so that the timing of each significant moment could be monitored without watching the visual data. Each moment was paused frequently to allot time for taking detailed handwritten notes. The auditory data for each significant moment was replayed as needed until process notes were completed.

Process notes in narrative form recorded the sequence of events and differentiating qualities initiated by the therapist and/or client. Process notes described the vocal qualities associated with breath, voice volume, vocal pressure, and vocal timing. These qualities were readily identifiable and easily described with everyday language. It was possible to distinguish differences and variations. These identified vocal qualities were then categorized to further define the data. For example, the client's use of voice during each selected moment was categorized as 1) verbalizations in which the client used words, 2) vocalizations in which the client used audible sounds and 3) a combination of verbalizations and vocalizations. Categorizing in this way structured the notations for ease of reading while defining key differences for each significant moment.

Once the auditory data analysis was completed, I took a recuperative break before analyzing the visual data. Taking a break in analysis allowed me to limit the influence of newly developed assumptions about the anticipated analysis of visual data. Analysis of the visual data involved watching the videotaped material on Windows Media Player with the volume turned off on the computer. Similar to the analysis of auditory data, the significant moments were identified again according to the timing notations from stage two of analysis. The DVD was paused and replayed as needed by using the computer keys. The timing of the significant moments was visible below the video and monitored easily. Process notes described the sequence of events, contributions of therapist and/or client, and movement qualities. Language from Laban Movement Analysis (LMA) (Hackney, 2002) and the Kestenberg Movement Profile (KMP) (Amighi, Loman, Lewis, & Sossin, 1999) was used to define the movement qualities. Both LMA and KMP are common movement analysis systems used in DMT practice and research. This movement analysis language enhanced my memory of the movement qualities and sequences of the given moment, particularly after the destruction of the videotapes.

Another recuperative break was taken after the visual data were analyzed. All process notes for this and previous stages were then typed for ease of organization before beginning stage four.

Reconstructing significant moments. The fourth stage of the analysis involved reconstructing the significant moments by reconnecting the auditory and visual data forms and examining them. This was done to analyze the relationship between voice and movement.

Rationale. Analyzing the components together reintegrated the two forms of data, auditory and visual, into their natural state. Examining the significant moments again as a whole improved my understanding of how the individual components related to one another. After

examining the auditory and visual data separately, reviewing them together determined if qualities of voice and movement occurred simultaneously or independently. I thought that this might also reveal new relationships that were overlooked when one data form was extracted from the other.

Method. Each significant moment for a given session underwent this fourth stage of analysis independently. First, process notes from stage three were read to remember the qualities of voice and movement that were previously identified for the significant moments. Each significant moment was then relocated on the video according to the timing notations from stage two of analysis, and watched in its entirety, with picture and sound, on Windows Media Player. Timing for each significant moment was monitored on the computer screen in the same manner that was used when analyzing the visual data. Process notes written at this stage focused on the relationship between the auditory and visual components, and detailed three types of information: 1) descriptions of qualities specific to voice, movement, or both, 2) the presence or lack of correlations between qualities identified in this stage and stage three of analysis, 3) any altered or new thoughts, feelings, and interpretations of the data. Computer keys controlling the DVD player were used to easily play, pause, and replay segments of each moment as needed to gather this information. Once this was achieved, each significant moment was observed again from beginning to end without pausing the video. This gave me a sense of potential themes and the overall value of the significant moment. These implications and other notations were added to the typed process notes. The method was repeated for each significant moment of the session being analyzed.

Sequential reviewing of all significant moments. The fifth stage of analysis included an all inclusive review of the significant moments. It was completed in one viewing with a pause

between each significant moment to write process notes. According to Berrol (2000), in order to define patterns and formulate meaning, qualitative studies require meticulous and repetitive analysis of data. In this study, the sequential review clarified previously gathered information and answered questions that had accumulated from the previous stages of data analysis.

Rationale. Reviewing all the significant moments consecutively allowed me to re-examine all process notes that documented the analysis of each significant moment. This confirmed the cohesiveness and legibility of notes. Clarifying and recording details that were absent from the process notes increased the likelihood that descriptions of the significant moments and the entailing voice and movement qualities would be decipherable later, considering the allotted time given for destroying the videotaped data. It also allowed me to evaluate information pertaining to all the significant moments together. Conducting a sequential review provided a renewed look at previously gathered thoughts, feelings, and interpretations with a focus on the data as a whole.

Method. All previous process notes were printed and notations were reviewed to identify any indiscernible information or seemingly incomplete descriptions. These were underlined on the process notes so that they would be identifiable when each significant moment was reviewed. Any additional questions that arose during this process were also hand written in the margins of the notes so that they could be considered during the video analysis. Once this was completed for all of the process notes, the significant moments were watched with the picture and sound in sequential order across all four sessions. The videos for each significant moment were played, paused, and replayed only as needed to clarify the underlined notations and answer the questions. Once this clarification was completed, the moment was replayed once from beginning to end to observe it as a whole one last time. Process notes also included a brief summary of the overall

voice and movement qualities as well as the clinical value observed in each moment. For example, one process note summarized that the client accelerated her movement and vocalizations while another commented on attunement between client and therapist. This stage of analysis continued until it was accomplished for all of the significant moments from all four sessions, and this took approximately one hour.

Notations were handwritten on the process notes during analysis and then added to the typed process notes. It was necessary to add some information to previous notations for intelligibility and understanding. Information gathered at this stage was typed in red within the previous notations so that they would remain identifiable as resulting from the sequential review and not the previous stages of analysis. Additional notes summarizing each significant moment were also typed in red, but in their own section. Notations and observations that were noticed frequently throughout the sequential review were added to the running list of potential themes for further consideration.

Once the sequential review of all the significant moments was completed, the DVDs of the videotaped data were destroyed as per agency policy.

Examining session transcripts. The sixth stage of analysis was examining session transcripts to identify contextual data pertaining to the research topic. Transcript analysis is commonly used in case study research, and in this study it was necessary to understand the client's experience of the sessions as important to understanding the value of voice and movement.

Rationale. Examining session transcripts provided a way to review contextual data for validity and reliability, comparing interpretations to a larger portion of the data or within context. Contextual data represented the underlying framework from which the client chose to express

herself in the sessions. Analyzing contextual data also offered recognition of the client's experience of the sessions via the identification of her comments about the use of voice and movement. This was particularly important in understanding the value of the relationship between the use of voice and movement within the DMT sessions. Although still subjective in nature, this also provided an additional level of analysis that was based on statements from the client as opposed to observations of the researcher.

Method. All transcripts were printed and read in order from session one to session four. This was done for consistency and to limit confusion regarding the client's references to events that occurred from one week to the next. As each transcript was read, words and phrases were underlined. Summarizing comments and potential themes were handwritten in the margins. This information differed depending on the section of the transcript being examined.

In the transcript section from session check-in, the underlined words and phrases pertained to conversational themes, expressions of emotions, descriptions of physical or emotional movement, and the clients' descriptions of self. In session one, for example, the client described a family relationship as "strained" "awkward" and "strange" on a number of occasions, which was described in greater detail as involving a lack of "conversations," "that affectionate thing," "privacy," or "understanding." Words describing movement included "stuck" and "not afraid to push." Furthermore, words describing her emotions and sense of self were identified as including "angry," "frustrated," "hurt," "empty," and "not good enough." Underlining this contextual information provided a general overview of issues presented by the client in the given session.

In the section of the transcript from the body of the session, labeled as dance/movement, the underlined words, phrases and summarizing comments related to potential themes, the

client's intent, or the client's experience of the moment. For example, "I'm just trying to think, like, what I want to do" was underlined and then labeled with a potential theme of "self-awareness." Each significant moment was also identified according to descriptions of verbalizations and vocalizations in the transcripts. Each significant moment was bracketed and numbered by hand on each transcript so that they could be easily located.

The analysis of the section of the transcript from the end of the session, labeled closure/verbal processing, focused on words and phrases the client used to describe her use of voice and movement together, including her intentions, observations, preferences and reactions. Words describing qualities of voice and movement were then labeled with potential themes with consideration of the context. For example, "I needed to be goofy...goofiness and that lightness" was labeled as pertaining to the use of free flow, light weight, and play. Particular attention was given to reflections the client made about significant moments that had undergone the in-depth analysis in previous stages. Finally, the underlined words and summarizing comments also pertained to the client's emotional expressions, overall themes, and the client's interpretations of the session.

Integrating and defining themes. The seventh and final stage of data analysis involved integrating the gathered information and further defining themes in order to determine conclusions for the research study. Themes, patterns and context are key components of data analysis structure in qualitative studies (Berrol, 2000), and it is also suggested by Aldridge (1994) as a tool for defining therapeutic meaning in single-case research.

Rationale. Integrating and defining themes addressed the research question through consideration of potential themes gathered across all stages of analysis. Integrating these themes compared and contrasted multiple forms of data so that overall themes could be defined. This

improved validity and resulted in multidimensional support for research conclusions, a value found in multivariable processes of video data analysis. In summary, integrating and defining themes during this stage of analysis constructed a comprehensive understanding of the benefits and limitations of the use of voice in individual dance/movement therapy sessions.

Methods. Integrating and defining themes, although considered the seventh stage of analysis, was actually a continuous process throughout data analysis. This began by first identifying potential themes in each stage of analysis. Potential themes were derived from observations pertaining to specific significant moments as well as general patterns across all the sessions. These themes varied depending on each stage of analysis, and were notated in the process notes as described earlier in the methods.

Integrating themes began by gathering all of the process notes. The notes were read to underline information identifying common themes that pertained to the four data forms that had been analyzed: 1) audibly identified qualities, 2) visually identified qualities, 3) audibly and visually identified qualities, and 4) contextual information. From these themes, it became apparent that a new running list was needed to continue the integration process. This list further integrated overall themes into two categories: 1) overall themes identified from analysis of the significant moments and 2) overall themes identified from discussions and verbal processing. Each category was limited to overall themes that could be handwritten on one notebook page. This further summarized, narrowed, or combined findings into overall themes that could be compared further between the two categories.

Finally, a conclusive list was created to define the final themes of the study. This list detailed overall themes pertaining to the potential benefits of the use of voice in individual DMT sessions. Within the list, each of the final themes was paired with supportive themes that had

been identified from each of the four data forms and from the two categories. For example, improved assertiveness was identified as a final theme and was supported by underlying themes from the data forms, such as the client's frequent use of direct space or eye contact, vocalizations accompanying fighting qualities of movement, and contextual comments about feeling confident and powerful when using her voice to accompany movement. Additionally, the relevant significant moments and direct quotations from the client were also noted for use in the presentation of findings. This was done to further support each final theme and the overall conclusions with examples from the data.

However, this final stage of analysis was not fully completed due to complications in data analysis, the time commitment needed, and the alternative decision to examine the research methodology itself as the focus of this thesis. These issues will be described further in the following chapter where the resulting benefits and limitations of the Multidimensional Analysis method will be discussed.

Results

Multidimensional Analysis, a video based research methodology, was created to examine in detail the value and relational functions of selected components in individual dance/movement therapy sessions. Procedures of Multidimensional Analysis were developed so that important aspects of the individual sessions would not be overlooked. Procedures included an examination of each session as a whole, as differentiated components, and again in its entirety. Using examples from the case study, the results presented in this chapter will assess the benefits and limitations of using this research methodology. This chapter will discuss the value of the data collection and data analysis procedures, as well as the overall value of the research methodology.

Benefits and Limitations of Procedures

Procedures for data collection and data analysis will be evaluated for their benefits and limitations.

Data collection. The value of videotaping sessions, transcribing session videotapes, and recording process notes will be discussed as data collection tools. Examples will also be given for how they influenced the data analysis in Multidimensional Analysis.

Videotaping sessions. The use of videotaping as a form of data collection was invaluable in the preliminary study, primarily because it generated so much relevant data that could be examined both in isolation and as a whole. However, this abundance of data required considerable sorting and discernment in preparation for data analysis.

Benefits. Videotaping each session proved beneficial in providing a wealth of options for data analysis with multiple data forms. It provided auditory and visual data as expected; however, it also recorded contextual data that was important for understanding the client's experience of each session. Thus, videotapes held three forms of data: visual, auditory, and contextual. This

allowed for making procedural choices to limit focus to subsets of data deemed significant to the study.

Videotaping the sessions allowed for the creation of a method for reviewing all three data forms to determine their individual and collaborative qualities. Each form of data could be extracted from the videotapes and examined independently. All three data forms could also be analyzed in relation to each other as they appear naturally on the videotapes. When used to study voice and movement, this allowed their qualities to be examined separately and then compared for their relational functions. Had visual, auditory, and contextual data been collected independently from one another, this would not have been possible. Videotaping the sessions provided data that could be analyzed as separate parts as well as together as a whole.

Limitations. Videotaping each session also had its limitations. While videotaping provided many options, it also created pressure to use as much data as possible. This resulted in a simultaneous process of gathering information while at the same time working to delimit the data to what was necessary for the study. Videotaping also did not preserve everything from each session. It provided only one angle of view in which the client, or parts of her, were occasionally obstructed.

Transcribing session videotapes. Transcribing the videotapes contributed to the value of the study by providing a third data form for analysis, contextual data, which was initially unexpected. Transcribing also provided recuperation from examining other forms of data, but the time required for transcribing resulted in less time being available for the stages of data analysis.

Benefits. Transcribing the videotapes fulfilled its original purpose of preserving content from the sessions beyond the destruction of the videotapes. As the methodology continued to develop, transcripts had additional purposes. Transcripts recorded the client's responses and

reflections about her experience of the session. For the preliminary study, recording this information was important for developing an understanding of how the client experienced the use of voice and movement as valuable or valueless to her in the sessions. Transcribing session videotapes provided a way to extract contextual data in typed form so that it could be reviewed later in stage six of data analysis after the destruction of the videotapes. This limited the potential bias of visual and auditory data influencing the researcher's perspective of contextual information. Visual and auditory data would have been present had the contextual data been evaluated in its original form on the videotapes.

Transcribing also required slowing down in order to capture all of the content. This promoted close attention to all of the verbal discussions and auditory qualities of voice, which were both important aspects of the preliminary study. It required thorough review and description of the sessions so that the transcripts would be decipherable. Transcribing also facilitated setting aside preconceptions regarding the research because it focused attention on factual documentation versus interpretations of the data. This brought awareness to events and thematic information in the session that had not previously been noticed. Furthermore, transcribing was completed between other stages of analysis and was beneficial in that the cyclical nature of transcribing helped with recuperation from the exploratory nature of analysis. Transcribing was experienced as an incubation stage. It allowed illumination to occur because thoughts were open to all information.

Limitations. Large portions of the transcripts were actually unused. Transcription contributed to difficulties with restricting the amount of data undergoing analysis. It required repetitive reviewing of the videotapes in order to capture the details of all conversations whether or not they pertained to the research topic. Thus, it was the most time consuming form of data

collection. In order to complete all transcripts, less time was allotted to each stage of analysis. Because the transcripts were completed throughout the study, it was also a disruption of the flow from one stage to the next.

Recording Process Notes. Process notes proved significant in maintaining awareness of personal responses to data while also recording a large quantity of information in a usable format. Nonetheless, the excessive amount of information gathered became counter-productive with redundancy and limited relevancy of many of the notations.

Benefits. Recording process notes contributed to staying grounded and focused throughout the research study. It allowed me to track observations and thoughts to avoid getting lost or becoming overwhelmed by the data. Outlining notes according to each stage of analysis was helpful in maintaining focus and relocating information as needed when new thoughts arose. Furthermore, tracking observations and thoughts encouraged meta-processing by requiring my attention to where, why, and how focus was drawn to certain qualities or themes of the data. This provided insight into the research topic as well as my personal process. Recording process notes also allowed me to monitor and weigh my judgments made throughout the study. It helped determine which aspects to examine in more detail while also encouraging attention to personal biases.

Limitations. Recording process notes was also a limitation due to the excessive amount of notes accumulated across the seven stages of data analysis. At times, when recording process notes I digressed into unclear or unnecessary information. Process notes were redundant in many instances such as recording context similar to what was already documented in the transcripts. Furthermore, attempts at categorizing overall implications in process notes according to data form, stage of analysis, or type of theme, resulted in confusion due to too much information

being gathered from too many aspects of the study. This resulted in additional information to sort through in order to determine the final themes and conclusions of the study.

Data analysis. The seven stages of data analysis each added their own value to the research methodology. The intention for the first three stages was to gradually narrow my perspective so that significant components of the data could be further analyzed. Stages four through seven aimed to broaden my perspective so that information from the in-depth analysis could be considered within the context of the sessions as a whole. Each stage of analysis possessed both advantages and disadvantages in accomplishing its purpose.

Assessing session videotape. Assessing sessions by watching each videotape was the first stage of analysis that aimed to establish a researcher perspective. However, watching sessions first experienced as the therapist resulted in some advantages and disadvantages.

Benefits. When viewing each recorded session as a natural whole I grounded my observations in the research topic as opposed to the presenting psychosocial concerns of the client or the effectiveness of interventions. This promoted a direct focus instead of the indirect and all-encompassing attention I had as the therapist. Reviewing the whole session this way also limited the influence of preconceived notions that were formulated during my initial experience of the sessions and enabled me to set aside assumptions regarding the general qualities of the components being studied; in this case, voice and movement. Setting aside assumptions further allowed for seeing events not noticed or experienced during the session. Furthermore, this researcher was able to observe herself as the therapist interacting with the client.

Limitations. Although assessing data from a researcher perspective was beneficial, reviewing a session already experienced as the therapist and observing oneself on the videotapes complicated my ability to witness the sessions neutrally. Thus, it was not possible to review the

data solely as the researcher and subjective interpretations were an intrinsic part of the analysis. Observing myself as therapist was, at times, a distraction that resulted in feelings of vulnerability and raised questions about how the therapist should be examined as a contributing factor in the session. Watching the videotapes could not erase the actual experience of the session. Similarly, it could not replace the value of initially experiencing the session as part of the client's process.

Selecting significant moments. Selecting significant moments proved beneficial in creating a relevant subset of data that addressed the research question, as was intended, but the collection of significant moments resulted in more complex information than was necessary for the study.

Benefits. Defining criteria for moment significance enhanced my awareness of the rationale for choosing each moment and guided my decisions about whether or not a moment was going to contribute to the study. These criteria acted as concrete standards to return to for stability throughout the selection process. They also allowed for exploration of multiple features of voice and movement. This was important due to my limited knowledge about the relationship between voice and movement prior to conducting the study. For example, the criteria guided the selection of moments that involved verbalizations, vocalizations, or both. Additionally, the criteria guided the selection of moments with differing movement and vocal qualities, such as moments of movement characterized by either fighting or indulging qualities. Even with such broadly defined criteria, the same voice and/or movement events appeared repeatedly within the significant moments; for example, modulation of increasing pressure in both voice and movement. The repetitive information was helpful in identifying the consistency of salient qualities across the data. It also validated interpretations of the data as observations reoccurred throughout analysis.

Establishing criteria for moment selection strategically limited the data to a much smaller accumulated time so that the data could undergo more in-depth analysis; 12 minutes of the 4 hours. Strategically limiting the time frame for each individual moment to one minute resulted in time frames that varied from 6 seconds to 1 minute. The shorter moments were less complicated and clearer to analyze than the longer ones.

Limitations. The process of selecting significant moments also divided my attention while watching the videotapes. There was a larger portion of the sessions that met the criteria than was originally expected. In the preliminary study, one of the criteria was defined as moments where voice and movement are used together as a form of expression, either by the client, the therapist in response to the client, or both the client and therapist together. During the videotaped sessions, either the client, the therapist, or both were using voice and movement together the majority of the time except during verbal processing. This was likely due to the session structure which involved frequent mirroring and interpersonal interactions as interventions in the sessions. Because the criteria had been broadly defined it supported the exploratory nature of the study, but it also justified the use of many segments within a session. This made the selection process more difficult and contributed to problems arising from over selecting moments. The collection of significant moments provided significantly more information than appeared necessary to answer the research question. Similarly, contrary to the benefits provided by the shorter significant moments, the longer significant moments had more intricate data and more fluctuations in voice and movement qualities. This made analysis more complex and lengthy descriptions ultimately more difficult to decipher. Thus, it may have been beneficial to further limit both the criteria for moment selection and the duration of the selected moments.

Dissecting significant moments. Dissecting the significant moments allowed me to analyze voice and movement as individual components by separating the auditory data from the visual data. My improving understanding of the components' qualities and functions increased my ability to conceptualize their individual contributions and recognize implications that warranted examination in the next stage of analysis. The methods used in this stage varied in their abilities to provide clear and reliable analysis of the components.

Benefits. Separating the auditory data and visual data from each other was greatly beneficial for distinguishing qualities of each. The keenness of my senses appeared to increase when only one sense was the primary tool for analysis. When examining movement qualities, the focus on visual data highlighted details that could have otherwise been overlooked; such as, the client's increasing body part usage. The gradual and specific additions to her movement with related (finger and hand) or unrelated (head and foot) body parts were more readily identifiable without biases presented with sound and the presence of auditory data. Similarly, analysis of the auditory data alone allowed for recognition of qualities that were previously unnoticed. One example of this involved distinguishing the differences between the two vocal qualities of volume and pressure. I had perceived these qualities to be the same thing prior to analyzing the auditory data separately; but, as the research progressed it became apparent that they functioned separately from one another. Findings such as these enabled the correction of misconceptions based upon initial impressions. Using categories to define characteristics of the data, such as "vocalization" or "verbalization," then aided in the identification of patterns and themes as the research progressed.

Similarly, although unintended, conducting separate analysis of auditory data and visual data provided more insight by requiring additional attention to my participation as therapist and

my influence within the therapeutic relationship. Considering the therapist's influence on vocal qualities as well as movement qualities became imperative because the structure of the sessions involved mirroring and frequent interpersonal interactions. Process notes describing the therapist's voice and movement, and interactions with the client helped determine the origin of observed changes over the course of the significant moments. Determining the origin of changes in the client's movement qualities and vocal qualities separately aided me in understanding the role and potential value of both the therapist's and client's use of voice and movement in the significant moment. For example, the auditory data analysis allowed for noting the order of who used their voice, when it was used, and if there were noticeable changes independently or mutually. This led to the awareness that the modulation of voice volume usually occurred in collaboration between client and therapist in which each would gradually increase their volume higher than the other. Furthermore, analyzing the auditory data alone required differentiation between client and therapist based solely on their voices. At times this differentiation was not possible, but even this proved valuable in that it provided information regarding potential themes such as vocal attunement.

Taking a break after analyzing each component also proved to be an imperative method at this stage of analysis. It provided a time of recuperation as was intended. The breaks contributed to the amount of time spent on data analysis; but, especially when the break was taken over a day, it acted as a time of incubation. It also provided time for the necessary personal processing of prejudices and reactions to the data as they naturally arose in retrospect. This brought more awareness to personal biases. Processing this information during the breaks promoted clarity of mind and the appropriate attention in future stages of analysis.

Limitations. Although dissecting the two data forms allowed some qualities to become more perceptible, it also made some qualities of the data more difficult to distinguish. For example, sometimes it was difficult to identify specific vocal qualities due to interference from the music that was also a part of the auditory data. Similarly, although unexpected, analyzing visual data made it difficult for me to limit preconceived notions pertaining to the auditory data. This was largely due to important characteristics of the auditory data also having visual cues. For example, facial expressions and mouth movements gave implications for when vocal expressions were used. These distractions made the identification of movement qualities and functions more difficult.

The lack of a specific set of qualities or criteria to focus on in analysis was also a limitation, especially in movement analysis. The choice to use LMA and KMP language was intended to increase the ability to decipher the meaning of the process notes and remember the selected moments after destruction of the videotapes. However, the resulting amount of information gathered was overwhelming at times. It was difficult to repetitively examine and identify the movement qualities according to LMA and KMP, although utilizing both sufficed for the description of movement as it was presented. Ultimately, language choices contributed to some inconsistencies in notations.

In addition, documenting process notes in narrative form encouraged deviation from the research focus and resulted in the gathering of unnecessary information. For example, some narratives from the visual data analysis included more detailed descriptions of interactions and sequences than the movement's actual qualities. This led to the need to further clarify the descriptions in later stages, and thus resulted in lengthier process notes. This disadvantage was more avoidable with the shorter and less complex significant moments.

Reconstructing significant moments. Reconstructing the significant moments, stage four of analysis, focused on the relationship between voice and movement. Viewing the significant moments as a whole led to revisions of previous notations and began an integration process that was partially counterproductive but revealed unknown information.

Benefits. This stage of analysis allowed previous interpretations of the data to be re-examined. Reviewing the auditory and visual data together corrected misconceptions pertaining to the components' individual qualities and functions. It also made it possible to answer questions that arose in stage three of analysis. For some of the significant moments, this stage provided clarification about which vocal qualities were credited to the client versus therapist. Observing the client's facial movements while listening to her words also allowed for altering notations of the auditory data so that they correctly described her verbalizations. Thus, this stage was beneficial in correcting inaccurate notations and adding information that was undeterminable by viewing only one form of data.

Reconstructing the significant moments was also helpful in beginning an integration process by incorporating original and revised information from stage three of analysis. Because individual qualities of voice and movement had been identified, examining voice and movement in relation to each other illuminated overall aspects of the data. As expected, observing the auditory and visual data together again made connections between the individual qualities and how they functioned as a whole. It allowed notations from the analysis of auditory and visual data to be compared for similarities and differences while observing their relations; for example, whether or not the client used indirect qualities in both her voice and movement. The previously defined categories were helpful in providing structure for the direct comparison of qualities between the components. For example, when the client used verbalizations to clarify and

articulate her experience, her movement also became more articulate with attention to detail. While her verbalizations described her intention, she showed increased intention in her movement. By first determining the relevant voice and movement qualities independently and categorizing verbalizations separately from vocalizations, these similarities were identified while watching the moment in its entirety.

Similarly, viewing the auditory and visual components together again also revealed if correlations between their defined qualities occurred in a given moment, and allowed for consideration of the sequence of events in these correlations. This resulted in the identification of themes involving the interactions and relational functions of the components. At this stage of analysis, these themes still pertained primarily to individual significant moments and generally defined overall observations rather than specific qualities. For example, some of the significant moments showed that the client engaged in more affect and eye contact with the therapist when using her voice. Additional process notes regarding qualities of both movement and voice supported these observations. Thus, reconstructing significant moments in this fourth stage of analysis provided a renewed overall impression of each selected moment, its value, and potential themes to be considered in the next stage of analysis.

Limitations. While reworking previous process notes about both auditory and visual data was helpful in clarifying unanswerable questions from stage three of analysis, it also drew attention away from the functions of the relationship between voice and movement. Additional reflection upon various qualities occurred that was not intended for this stage of analysis. At times, reexamining notations led to second guessing the validity and value of the original observations from earlier stages of data analysis, which in turn affected observations of the relationship between auditory and visual components. This increased the risk of biases

influencing interpretations of the data which worked against the attempt to limit bias by analyzing the auditory data and visual data both separately and simultaneously.

Also, observing the auditory and visual data together did not permit me to distinguish definite correlations. There were too many aspects contributing to every second of each significant moment. Examining the visual and auditory data together allowed me to notate which qualities of voice and movement seemingly occurred simultaneously, but it did not allow me to discard additional influences such as the music, therapeutic interventions, or general setting. For the same reason, the cause and effect of one component on the other was not determinable.

Sequential reviewing of all significant moments. As the fifth stage of analysis, reviewing the significant moments in sequential order allowed for reflection on the value of each moment with respect to answering the research question. At the same time, it highlighted common characteristics and themes across the data as a whole. This process made it possible to improve the quality of process notes but also complicated them by adding more information.

Benefits. Clarifying notations improved the quality of the descriptions recorded in the process notes. It corrected discrepancies and further explained the sequence of events for each moment. Clarifying process notes from the previous stages of analysis allowed each selected moment to be observed again and compared against the text that was used to describe it. Furthermore, it refreshed memory of moments that had become less familiar due to the time that had elapsed since the sessions had undergone the previous four stages of analysis.

Conducting a sequential review of the significant moments also continued the integration process by allowing for the re-examination of information gathered from the accumulation of the significant moments rather than individual significant moments themselves. This provided a new perspective of the data. It reorganized thoughts and interpretations that had emerged throughout

the lengthy process of analysis in stages three and four. Because this stage involved both observing the significant moments and reviewing process notes, it made it possible to make sense of the data by identifying consistencies and variations across the broad spectrum of information gathered for the whole data set. This allowed the validity of interpretations to be weighed based on the accumulative data versus individual moments. It also allowed for the consideration of alternative interpretations as new observations pertaining to the accumulative data became apparent. This gave insight into potential themes that were based on qualities and functions frequently noted throughout all descriptions of the significant moments. For example, examining all the moments together allowed me to recognize that the client's vocalizations were consistently used during exertion in the client's movement. Verbalizations, on the other hand, were used at varying times before, during, or after the client's movement. These differences were noteworthy and important to understanding the relationship between voice and movement.

Limitations. At this stage of analysis, improving process note descriptions pertaining to the qualities and functions of the auditory and visual components proved more important to the research than descriptions detailing the movement or vocal sequences. This was because understanding the sequences was not necessary to understand the research topic. For example, clarifying similarities between the client's use of increasing vocal pressure and strong weight in movement improved my ability to understand the relationship between voice and movement; whereas, describing the details of the execution of these qualities did not further my understanding of the relationship. These details only complicated process notes by adding more information that required interpretation and sorting when identifying themes and formulating conclusions later in analysis. Clarifying notations and considering the validity of interpretations involving individual significant moments also posed difficulties that influenced the reliability of

analysis. While this stage aimed to improve notations, it also raised questions about the accuracy of information gathered at earlier stages of analysis. This was problematic because observations at this stage were based on viewing the auditory and visual data together, while the dissection of significant moments in stage three of analysis was designed to limit biases presented by each form of data. This led to confusion and doubt about my abilities to analyze the data with a clear perspective. Temptations arose to alter information from previous stages but were controlled by focusing on notations that were identified prior to this stage of analysis as needing clarification.

Examining session transcripts. As the sixth stage of analysis, the process of examining session transcripts had some advantages and disadvantages related to maintaining a researcher perspective, identifying the contextual value of the examined components, and extracting supportive quotations.

Benefits. As a researcher, examining session transcripts in order to identify contextual data was rejuvenating. It provided a sense of grounding and reconnection to an interest in the preliminary research topic: the therapeutic meaning of how and why the use of voice and movement affected the client. Identifying contextual data provided a way to recognize the client as imperative to the study and offered a reminder of the purpose for conducting the preliminary research. This affirmed the intrinsic value of the preliminary research, which helped me maintain stamina and focus in the current study.

Because each section of the transcript was reviewed for general context and the significance of voice and movement, the sessions were also considered again as whole units but with improved understanding of the data they contained. This was enlightening, and the exploratory nature of the methods in this stage made it possible to intuitively identify significant words or phrases. Furthermore, because this stage required analysis of text versus video material,

the researcher perspective was renewed by experiencing the data in a different manner. This had

unanticipated effects on controlling biases in the analysis process. It curbed preconceptions and

personal criticisms that arose while observing the client and therapist interacting in the session.

The examination of contextual data separate from the other data forms minimized kinesthetic

reactions connected to the process of empathic reflection that spontaneously accompanied

observations of the auditory and visual data. This provided opportunities for new reactions to be

experienced when reading the data, which in turn influenced reflections on both former and new

interpretations of the data.

Analyzing the contextual information from each session made it possible to identify the

significance of the examined auditory and visual components and their relationships within the

context of the session as a whole. Examining transcripts in this way also made it possible to

formulate an understanding of the significance of the client's use of voice and movement as it

pertained to the issues and topics of discussion presented in the session. This began the process

of reconnecting the accumulated data and previously identified themes to the purpose of the

research by answering the questions "So what?" and "What does this information have to do

with the research topic and its clinical value?" This provided information regarding the clinical

significance of the data that was specific to the client's personal story.

Limitations. Examining session transcripts did provide a greater understanding of the

client's experience of the use of voice in her DMT sessions. However, difficulties in extracting

quotations occurred because the transcripts contained much more information than was

necessary. Identifying quotations required re-reading each transcript and examining the data to

determine when the client referred to one of the significant moments or when she spoke of her

experience of voice and movement. Ultimately, the quotations were extracted primarily from

verbal discussions that took place at the end of each session in which the client reflected on her experience of the session as a whole. This was unacknowledged prior to beginning the analysis of transcripts; thus, examining session transcripts for quotations resulted in a largely unnecessary use of time.

Difficulties were also experienced with limiting biases when examining the transcripts for contextual data and extracting quotations. For both the auditory and visual data, interpretations had been made and accompanying biases identified throughout the lengthy analysis process. Categories, themes, and general qualities were identified at earlier stages of analysis and had undergone further elaboration in stage five. This became a disadvantage in that a welcoming perspective was difficult to maintain when considering alternative or contradictory information. Thus, it may have been more beneficial to examine session transcripts for contextual data earlier in the analysis process, such as prior to completing the sequential reviewing of the significant moments. In the preliminary study, however, this was unavoidable due to time restrictions placed on destroying the videotapes.

Integrating and defining themes. Identifying and integrating themes comprised the final stage of analysis; although in some ways this was an integral aspect of the data analysis in its entirety. This stage allowed for the consideration of multiple possibilities for how data from each stage of analysis connected and related to that from other stages. However, the process of integrating themes also promoted a lack of focus in the research that complicated the ability to formulate conclusions for the study.

Benefits. Identifying and labeling potential themes throughout data analysis provided a way to organize observations by allowing important information to be tracked and monitored. Identifying, tracking, and monitoring information as its relevance to the study was noted

refreshed my curiosity about the research topic. This was key to maintaining a researcher's perspective and a sense of purpose in completing each stage of analysis. The continuous process of examining data for potential themes also assisted in tracking the process of the study and the points at which insight was gained. Knowing the points of insight allowed for exploration of similar points in the data in order to continue weighing their relevance. For example, it became apparent that the client frequently used verbalizations to clarify her intentions or experience of the movement. After this insight was gained, similar points in the data were considered in weighing the relevance of this interpretation as a potential theme.

Because potential themes were labeled throughout analysis, these themes were readily identified, compared, and contrasted during the process of integration. An abundance of intricate information resulted from the multidimensionality of the data forms as well as the use of multiple types of analysis. Although the preliminary study was not completed, the multi-levels of information could have supported conclusions with complexity that is unique to this research method. However, the diversity and intricacy of the data could also have limited the ability to reach these conclusions.

Limitations. Limitations were apparent in the overall approach to identifying potential themes, as well as final themes and conclusions. Identifying potential themes throughout the study was intended to provide structure to the analysis process through pattern identification and labeling to facilitate integration. However, it also contributed to a continuous gathering of complex information pertaining to the data and personal thoughts, feelings, and interpretations. The process notes were full of lists and descriptions that were congested with information and not entirely understandable. Even though earlier stages of analysis had been designed to limit the amount of data, the exhaustive amount of information actually gathered throughout the study was

not anticipated. This contributed to confusion regarding the purpose and direction of theme integration. The methods for identifying potential themes had involved continuous gathering of new information in various forms without methods or criteria for limiting the data at each stage of analysis.

Because the seven stages of analysis provided a large quantity of thematic and descriptive data, the process of integrating themes derived from this data yielded seemingly endless conclusions. Extensive notes and multiple forms of data made it very difficult to distinguish relevant from irrelevant information. Consequently, an enormous amount of time commitment was required to identify patterns and integrate themes.

Overall Benefits and Limitations of the Methodology

Overall, Multidimensional Analysis provided much valuable information pertaining to multiple aspects of the case study. As described in the benefits and limitations of each stage, the information gathered was sometimes found to be relevant while other times not. In retrospect, the methods devised for each stage of data analysis served purposes that were not always considered when including them in procedures. The methods of Multidimensional Analysis were oftentimes both a benefit and a limitation depending on the objective. Additionally, methods that proved beneficial at one stage of analysis sometimes acted as a limitation during a later stage. Hence, the value of the methodology may be determined by considering the interplay of the benefits and limitations discovered throughout the process. The methodology created a diverse and holistic approach to exploring individual dance/movement therapy sessions, but it also created a complexity of information that was not effectively limited at each stage of analysis.

Benefits. The complexity of video material and the approach unique to Multidimensional Analysis allowed all data to be gathered initially as one source and later separated into multiple

forms of data to create triangulation. This made it possible to examine individual DMT sessions in a case study as a whole, as differentiated components contributing to the whole, and again as a whole. The process allowed for identification of qualities and functions of the data that would not have been noticed had the data been analyzed in a different manner.

After identifying two components of the sessions, voice and movement, Multidimensional Analysis allowed for examination of the inter-relational dynamics of these components. The methodology permitted each key component of the study to first be defined within different data forms. For example, movement qualities were first defined in the analysis of visual data while vocal qualities were first defined in the analysis of auditory data. This simplified the complexity of the sessions so that attention could be focused on one component and made it possible to process smaller amounts of information at one time. This resulted in discovering and examining unknown voice and movement qualities, which, in turn, improved understanding of their value and functions within the session. Understanding these components separately improved the ability to identify the significance of their relationship dynamics at later stages of analysis. Furthermore, the process of dissecting the video into visual data and auditory data and then reconstructing them back into their original form allowed the validity of interpretations to be weighed against the data as a whole.

Using multiple forms of data, including auditory, visual and contextual data, was especially significant in Multidimensional Analysis. The use of multiple forms required multiple methods for analyzing the data, provided multiple types of information, and assisted in limiting biases at each stage of analysis. The result was a more holistic approach to explorations of the research topic because the analysis of each form of data provided unique information. Moreover, using transcripts to derive a contextual data set was most valuable since the client's experiences

and feedback were considered to be indispensable for answering the research question posed in the preliminary case study. Considering these three data forms made it possible to understand how they individually and in relationship to each other revealed the potential therapeutic value of the use of voice in DMT. The ability to consider the significance of each form of data as it contributed to understanding the dynamics of individual dance/movement therapy sessions was only possible because of the complexity and diversity of video data. Multidimensional Analysis, as a case study methodology, appears to hold much promise as a tool for investigating any number of research questions.

Limitations. The wealth of information gained from the multiple data forms and stages of analysis proved to be a challenge as well as a primary benefit of the methodology. The methods were designed to limit the scope of the data with the intention to study specific types of data in detail to determine their significance. The procedures allowed small pieces of data to be examined at one time; but this ultimately generated a large amount of data overall. While the methods enabled the auditory, visual and contextual data to each undergo a meticulous analysis, the resulting quantity of information proved counterproductive in formulating conclusive results.

In hindsight, it is apparent that each stage of analysis yielded information that was valuable for the purposes of that particular stage; however, a large amount of that information became irrelevant when identifying and integrating themes for conclusions. The methods were not useful in discerning between relevant and irrelevant information as the process of analysis progressed to each stage. Instead, each stage only yielded different information that later required additional clarifying, limiting, and categorizing. The data became more complicated at each stage instead of facilitating pattern and theme identification. The complexities created by

the multiple data forms and analysis processes limited the ability to utilize the triangulation they had been created to provide.

In addition, as previously described, including auditory, visual and contextual data forms in the study required differing approaches for analyzing each one. Each stage of analysis was designed to yield a different type of information and perspective; however, this led to questioning the purpose of the study. For example, the goal of the preliminary study was to understand the value of the use of voice in DMT. However, Multidimensional Analysis was created to examine four different aspects, including the functions and value of voice, movement, voice and movement, and the client's experience of each. Criteria for studying each of these aspects were broadly defined due to the exploratory nature of the study and lack of prior knowledge or research available on the topic. Hence, the resulting data provided varying perspectives that suggested multiple research purposes competing for the researcher's attention and focus.

Another limitation, the lack of flexibility in the research process, may be the result of the methodology or its implementation. Because it is an original methodology, designed for a specific and exploratory case study and tested only once, it was not adaptable to the needs and purpose of the study as the research progressed at each stage. Failures and limitations of each stage were not acknowledged or corrected during its application in the study and instead the process continued. For example, large portions of the transcripts were ultimately not used because information pertaining to the client's experience of voice and movement was the only contextual data needed for the study. If this had been acknowledged and modified earlier in the process it would have greatly reduced transcription time spent on transcribing and the amount of

data requiring analysis in stage six. In the future, allowing for more flexibility of design may eliminate some of these issues and simplify the process of final theme integration.

Still, the benefits and limitations of Multidimensional Analysis have implications for research and practice in the dance/movement therapy field. These implications, and recommendations for future studies, are discussed in the following chapter.

Discussion

Multidimensional Analysis was created as a video based methodology to examine the therapeutic value of the use of voice in individual dance/movement therapy sessions. The methodology was successful in utilizing multiple data forms, visual, auditory, and contextual, extracted from the collected videos to broaden the researcher's perspective and understanding of the research topic. On the other hand, Multidimensional Analysis methods resulted in a complexity of information that was difficult to limit. This chapter will provide suggestions for the modifications and use of Multidimensional Analysis in future DMT research. Implications for dance/movement therapists in practice will also be discussed.

Modifications of Multidimensional Analysis

Procedural modifications can address the limitations of this methodology. As explained in the results chapter, the multiple stages of analysis of Multidimensional Analysis resulted in over-collecting data that contributed to confusion regarding purpose and direction. This issue could be addressed by further narrowing the research purpose and/or the criteria established for data collection and analysis at each stage.

Narrowing the research purpose. When using the Multidimensional Analysis in case study research, it may be beneficial to explicitly define a hypothesis or further specify the research question. The preliminary study was exploratory, there was an absence of related research, and the researcher lacked background knowledge related to the topic. Hence, the research question was broadly defined as "What are the benefits and limitations of the use of voice in dance/movement therapy with an adult survivor of child sexual abuse?" With this broadly defined question, the purpose and focus of the study shifted as each stage of Multidimensional Analysis progressed. When using Multidimensional Analysis, it would be

advisable to investigate topics for which the researcher has some prior knowledge or theory base. As suggested by Chaiklin & Chaiklin (2004) and Chaiklin (2000) every aspect of a study should be grounded in theory to prevent gathering more information than is needed. If a suitable theory is not available, Aldridge (1994) encourages researchers to first identify a formal framework or standardized instrument for interpreting data. If either of these options were to be implemented prior to beginning the study, the researcher could then narrow the research purpose to studying specific points of interest in the data and their inter-relational dynamics. These modifications would also enable the researcher to reduce inconsistencies by clearly defining criteria for data collection and analysis.

Criteria for data collection and analysis. Although criteria for data collection and analysis will differ according to the research purpose, researchers should consider ways to limit data and guide theme identification through the stages of Multidimensional Analysis. Criteria for selecting significant moments should be as specific as possible. This would clarify the intent and rationale for choosing each moment before analysis begins. Furthermore, it would limit the number and length of significant moments. As suggested by Cruz and Koch (2004), fewer and shorter moments would improve the researcher's capacity to observe the necessary characteristics and functions of the studied components.

Considering observation capacity over time led Cruz and Koch (2004) to further suggest limiting categories for observation. For example, selecting the verbal processing segment of the videos as the source for contextual data would have greatly reduced transcription time and analysis in stage six of Multidimensional Analysis. Additionally, using specific criteria for selecting aspects of voice and movement could have been beneficial, such as isolating LMA's Effort category as a focus for data collection and analysis. Alternatively, if using

Multidimensional Analysis in an exploratory study, criteria could be further limited and incorporated into each stage of analysis on an ongoing basis to assist in theme identification and integration throughout the research process. For example, once voice had been categorized as "vocalizations" or "verbalizations," one category could have been chosen as the focus for further analysis. The flexibility this would have provided would have reduced data collection and simplified the process for defining and integrating themes.

Changing the time frame of selected moments and defining categories for data collection and analysis would also further limit focus to what was most relevant to the study. Such changes would enable the researcher to reduce data collection for both transcripts and process notes. This, in turn, would aid in focusing the researcher's perspective during analysis on qualities and characteristics of the data functions and interactions rather than needing to review lengthy narrative descriptions. As suggested by Chaiklin & Chaiklin (2004), all data must be justifiable to avoid unnecessary variables.

Use of Multidimensional Analysis in Dance/Movement Therapy Research

Multidimensional Analysis may be particularly useful to the DMT field in that it provides a video based approach to research that does not require additional training or computer programs like other video based methodologies used in the field, such as THEME (Koch, 2007) and DaNCAS (Davis, 1983). Furthermore, videos are commonly used in DMT research for movement analysis (Cruz & Koch, 2004). Multidimensional Analysis offers a way to utilize the richness of video data for additional purposes beyond movement analysis. Multidimensional Analysis simplifies initial data collection by allowing the researcher to first gather the necessary information in video form and then later separate types of data to be compared and contrasted. If the researcher is also the therapist, this also allows her to keep these roles separate to the extent

possible while remaining present with the client and focusing on the necessities of the session. As encouraged by Yin (1994), this allows the researcher to have multiple measures of the same phenomenon originating from one source. This also improves validity and reliability by allowing interpretations of the data to be considered within the context of the case study as a whole. Seeing the whole and the parts of a case study through a continuum of information is cited by Chaiklin (2000) as a unique characteristic of case study research. Multidimensional Analysis utilizes this strength by engaging the multiple data forms available through its video based approach.

For DMT researchers, the thematic diversity made possible by Multidimensional Analysis offers a unique way to present case study findings. Multidimensional Analysis is also adaptable to other research designs and approaches.

Presentation of case study findings. Multidimensional Analysis offers a new way to present findings in DMT research. In that Multidimensional Analysis is a video-methodology specifically created to examine individual DMT sessions, it is a unique approach not currently found in literature available on DMT research designs. Multidimensional Analysis utilizes video based data forms as inter-relational components contributing to a functioning whole. This allows the researcher to offer multi-level explanations of session dynamics and to propose why they may or may not be of therapeutic value. This is unique in that the multi-level explanations evolve from the analysis of different data forms within one source. All the data forms are considered independently and relationally, instead of one or the other, with examples easily extracted from the selected significant moments.

Adaptability to other research approaches and designs. Although Multidimensional Analysis was created for case study research of individual DMT sessions, it could also be

adapted to other research approaches and designs. The methodology was used to identify and define data qualities in a qualitative approach when studying the use of voice and movement. Alternatively, it could be used to categorize and count data qualities in a quantitative approach. Furthermore, the methodology could be modified to meet the needs of the researcher depending on the chosen focus. There are many different elements that co-exist in individual DMT sessions. The relationships between those elements and their functions in the sessions contribute to how the client experiences each session. Multidimensional Analysis allows the researcher to dissect these complexities. Such studies could aid dance/movement therapists in evaluating the therapeutic value of their interventions, their session structure, etc. The possibilities are endless. Because video material offers so many possibilities for creating subsets of data, these subsets may be defined according to sight, sound, and text as in the preliminary study; however, this would depend on the topic under investigation. Although defining subsets in this way was a unique strength of the study investigating the use of voice in DMT, the subsets do not necessarily need to be defined in this way. For example, if studying the use of a prop in relation to movement in DMT sessions, the methodology could be used for a comparative analysis by defining separate data sets pertaining to moments in which the prop is used and moments in which it is not.

Implications for Dance/Movement Therapists in Practice

Jones (1993) and Aldridge (1994) proposed that the closer the research methodology follows the structures of clinical practice the more applicable findings may be for therapists. This is a strength of single-case research designs. Chaiklin & Chaiklin (2004) suggest that case study research and case study as practice only differ in intent. Hence, case study designs have implications for therapists in practice because research and practice are so closely related. Cruz

and Berrol (2004) further argue that the relationship between research and practice is complex and "linked by their mutual dependence on a systematic body of knowledge" and, thus, is significant in the growth of DMT clinicians (p. 14). Many dance/movement therapists and other creative therapists play the dual roles of therapist and researcher (Aldridge, 1994; Levine, 2000; Meyer-Gonzalez, 2000; Quensen-Diez, 2002). Engaging in the roles of therapist as researcher and researcher as therapist influenced my understanding of each. To further elaborate upon the implications for practicing therapists, the following section describes discoveries pertaining to my personal creative processes and to harmonizing mobility and stability within both roles of therapist and researcher.

Discovering creative processes. Throughout the experience of creating, utilizing, and examining Multidimensional Analysis, I discovered how much the methodology actually reflects my creative process as a therapist. Therapy involves a continuous process of assessing the client, identifying areas of potential for growth, creating and implementing interventions, receiving and interpreting the client's responses, and reassessing the client to continue the process throughout the session. Similarly, on a smaller scale, creating movement interventions requires a dance/movement therapist to analyze the client's presenting repertoire as a whole, select one quality or aspect to address, and then consider the client's response to the intervention before proceeding. A therapist is constantly making decisions based on both the case as a whole and the interrelating parts of that whole. This creative process became the framework for Multidimensional Analysis methods. Hence, this research study taught me a lot about my own creative process, strengths, and weaknesses as a new therapist. Other dance/movement therapists may discover that this methodology has some similarities to their own creative processes. Using

Multidimensional Analysis may be heuristically beneficial for those who wish to further understand and grow in these areas.

Harmonizing mobility and stability. The process of developing and using Multidimensional Analysis brought awareness to my personal strengths in finding mobility and stability as well as the lack of harmony between them. In finding mobility in my thoughts and intuitive decision making, I discovered my own meaning making processes and desires for the euphoric experience of insight and knowledge building. My creative process for formulating interventions within DMT sessions involves pattern identification across multiple contributing factors. This is propelled by curiosity and intuition regarding how the contributing factors function to support or inhibit growth in the client and progress in treatment. These characteristics are reflected in Multidimensional Analysis' methodological structures for identifying and defining the qualities of components in the sessions with a focus on their value in the sessions and to the client. Working within this creative process as researcher and/or clinician requires flexibility and trust, but also evokes free flow and playfulness. This sense of mobility creates an environment conducive to change and adaptability. In Multidimensional Analysis, all of these characteristics were important for navigating unknown territories within the data and allowing arising themes to support the study's progression.

However, my tendencies for identifying patterns and meaning making can also be counter productive if new knowledge is not gained. As a deceiving form of stability, rigidity is sometimes evoked if I am unable to obtain an understanding of the mechanisms of a pattern. This causes free flow to change to bound flow, trust to mistrust, and the flexibility then resembles an indirect and searching hypervigilence. Such experiences, in turn, create a fight instead of a flow between mobility and stability when processing and acting upon gathered information. This

process was reflected in the limitations of the methods used in Multidimensional Analysis. The methodology sometimes faltered in a struggle between maintaining the procedural structure while using an exploratory approach. For example, criteria outlined ways to limit data collection but remained flexible enough so that almost any information was justifiable. This resulted in stagnation that limited my abilities to adapt methods for addressing limitations as they arose. When used as a benefit, the procedural structure of Multidimensional Analysis provided a true source of stability to return to after finding mobility in my intuitive and exploratory processes.

Conclusion

The development of Multidimensional Analysis allowed this author to conduct an in-depth exploration of selected components in individual dance/movement therapy sessions. Through the use of multiple data forms found in video material, including visual, auditory, and contextual data, this video based methodology made it possible to examine the multivariable richness found in case study research. Both video based research and case study research may be viewed as multidimensional in that they both contain interactive parts that create a whole. Multidimensional Analysis utilized this characteristic by facilitating a process of dissecting each video/session into three data forms—auditory, visual, and contextual—as they presented during the sessions. In order to develop a holistic understanding through a case study, the qualities and functions of the parts needed to be first observed and understood, before they could be reconstructed and examined as an integrated whole. Like examining the brush strokes of a painting to understand its creation and further appreciate its beauty, all of the layers were needed to understand the case study in its entirety. However, in order to better achieve these unique goals of Multidimensional Analysis, it is recommended that future researchers carefully specify and delimit their purpose, focus, and criteria for data. The use of Multidimensional Analysis revealed that the wealth of information available in even a single session is extensive and the magnitude of data collected and analyzed should be monitored, weighed for relevance, and limited.

In the dance/movement therapy field, Multidimensional Analysis may be particularly significant due to the common method of using video data to observe and analyze movement. However, this methodology allows the researcher to reap the benefits of video data beyond that of movement analysis, and can provide unique perspectives to researchers and/or practitioners

who venture to understand a client, structures of a session, the therapeutic value of interventions, or even their own creative processes. Multidimensional Analysis may be a valuable resource to the dance/movement therapy field and those who seek to expand their abilities in research and/or practice.

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Definition of Terms

Body Connectivities

Body connectivities, referred to as "Patterns of Total Body Connectivity" by Hackney (2002), are six basic developmental movement patterns including " Breath (both cellular and lung respiration), Core-Distal Connectivity (Navel Radiation…), Head – Tail Connectivity (Spinal…), Upper-Lower Connectivity (Homologous), Body-Lateral Connectivity (Homolateral), and Cross-lateral Connectivity (Contra-lateral)" (p. 42-23). These patterns are based on the understanding that the whole body is connected and the parts are in relationship to each other – a principle of Bartenieff Fundamentals (Hackney).

Chacian Technique

Marian Chace was a pioneer in the dance/movement therapy field who primarily worked with psychiatric patients. Her technique is a three phase system of group therapy in which movement is the primary mode of expression and interaction among the participants. The three phases include a beginning warm-up followed by theme development and ending with group closure. Throughout the group process, Chace used four modes of intervention including body action, symbolism, rhythmic activity, and the therapeutic movement relationship (Levy, 2005). Levy identified four important contributions of the Chacian technique in dance/movement therapy, including "1. The therapeutic movement relationship, 2. The use of ongoing verbal narration as a form of reflecting on the group and individual process, 3. The use of rhythmic movement as an organizing and clarifying force, and 4. The use of dance as a cohesive group process – a form of group psychotherapy" (p. 27).

Dance/Movement Therapy (DMT)

"Dance therapy is a form of psychotherapy. Differentiated from traditional psychotherapy, it utilizes psychomotor expression as its major mode of intervention and as the agent of change" (Levy, 2005).

Effort

One of Laban's four categories of movement, "Effort reflects the mover's attitude toward investing energy in four basic factors: Flow, Weight, Time, and Space. These inner attitudes need not necessarily be conscious to be operative. Effort change is generally associated with change of mood or emotion and, hence, is an inroad to expressivity. Effort coordinates the entire being in a dynamic way" (Hackney, 2002, p. 219).

Flow

Flow, a movement quality, is one of the Effort factors in Laban Movement Analysis. Flow is defined as two polar Effort Elements: Free flow and Bound flow (Hackney, 2002). Hackney explains, "Flow is the baseline 'goingness,' the continuity, of the movement out of which the other effort elements emerge and return. Often Flow becomes the major expressive statement. In everyday language we sometimes associate flowing movement with Free Flow, but Bound Flow is also 'goingness' (i.e. going in a controlled way). Flow is frequently related to feelings – either outpouring or containing them" (p. 219).

Kestenberg Movement Profile (KMP)

The KMP is a comprehensive system for the observation, analysis and notation of movement that was created by Judith Kestenberg and her colleagues. The KMP expands on Laban Movement Analysis by adding new movement categories that are based in a developmental framework. KMP is comprised of two systems. System I expands Laban's Effort

category into four movement categories that represent developmental sequencing including 1) tension flow rhythms, 2) tension flow attributes, 3) pre-efforts, and 4) efforts. System II differentiates Laban's Shape category into five movement categories that represent the progression of relational developmental movement patterns including 1) bipolar shape-flow, 2) unipolar shape-flow, 3) shape-flow design, 4) shaping in directions, and 5) shaping in planes. (Amighi, Loman, Lewis, & Sossin, 1999).

Kinesphere

"Kinesphere is defined physically by the distance that can be reached all around the body without taking a step. Kinesphere is defined psychologically by the space the mover senses is hers or his, the space s/he effects" (Hackney, 2002, p. 223).

Laban Movement Analysis (LMA)

Rudolf Laban developed LMA as a system that defines elements of movement according to four basic categories including 1) Body, 2) Effort, 3) Shape, and 4) Space. These elements can be used to generate movement as well as describe observations of movement. The Body category defines how the whole body is connected and organized, which body parts are and are not active, and where in the body movement is initiated. The Effort category defines the quality and energy invested in the movement. The Shape category defines the body's form and how the mover's shape changes in relation to self or the environment. The Space category defines the mover's use and approach to their personal movement space, the kinesphere, as well as the mover's use of dimensions and planes (Hackney, 2002).

Multidimensional Analysis

Multidimensional Analysis is a video based case study research methodology. It was created by this author to examine multivariable qualitative data and develop an understanding of

the therapeutic value and relational characteristics of auditory, visual and contextual components in individual dance/movement therapy sessions. Videotaping each session is the primary form of data collection in Multidimensional Analysis. Other forms of data collection, including process notes and transcripts, and data analysis procedures originate from the videotapes. There are seven stages of analysis that involve an examination of the individual dance/movement therapy sessions as a whole, as differentiated moments, and again as a whole. This is done to develop a holistic understanding of the case study.

Shape Flow Support

According to Hackney (2002), "Underlying all shape change is the basic change in the body's form which happens in the process of breathing. This baseline process of Growing and Shrinking is called Shape Flow Support" (p. 221).

Stability-Mobility

Stability-Mobility is a principle of Bartenieff Fundamentals in movement that encourages full expression and psychophysical development. Hackney (1998) defines this concept as "Stabilizing elements and mobilizing elements interact continuously to produce effective movement…For both Stability and Mobility, Fundamentals concentrates on finding the active connections from the core of the body out into the limbs. These connections are then either activated for grounding (stability) or activated to move the body part (mobility)…it is important to focus on both stabilizing and mobilizing elements, and especially their interrelationship (p. 46).