

**Exploring the adaptations made by violinists studying the viola as
second instrument**

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ABSTRACT

Three areas of adaptation, namely physical, technical and cognitive, have to be considered if a successful transition from the violin to the viola is to be achieved. This qualitative study followed an interpretative phenomenological design. Data was collected by conducting semi-structured interviews with six participants from Pretoria, South Africa, all of whom had taken up the viola after becoming proficient in playing the violin. The aim of the study was to explore the physical, technical and cognitive adaptations made by violinists studying the viola as a second instrument. Findings derived from the analysed data were divided into five superordinate themes. The first superordinate theme, "Physical differences between the violin and the viola as instruments", revealed that, because the sizing of the viola is not standardised, the chosen size should be synchronised with the physique of the violist. The size and weight of the viola in the transition process were also regarded as representing a significant adaptation. The second superordinate theme pertains to left-hand technique as affected by the physical differences between the instruments. Although there is a similarity between violin and viola techniques, subtle technical differences distinguish them. Topics occurring in this section were elements of fingering, the longer viola fingerboard, shifting, and vibrato. The following superordinate theme, "Right-hand technique as affected by the physical differences between the instruments", revealed the challenging adaptation involved in acquiring the correct bowing technique for the viola. This section further investigated issues relating to bow hold, the concept of transmitting natural weight rather than artificial pressure into the bow, and the resistance by the viola strings. It was suggested that, once a viola-specific bowing technique had been learned, violin bowing technique would be improved. Injuries and pain caused by the transition to the viola represented the fourth superordinate theme, particularly emphasising the issue of set-up, which, in the case of choosing an appropriate viola, should be customised according to the unique physique of the player. The fifth and final superordinate theme, "Methods for mastering the alto clef", showed that transitioning violists apply methods both requiring note-reading and not doing so. The findings indicated that methods which do not require the active reading of notes on the staff are not as effective as those in which the performer learns to identify note names and pitches. The study concluded that an understanding of the physical, technical and cognitive adaptations required for a successful transition process, should be cultivated by the transitioning violist.

Keywords: viola, violin, adaptation, technique, second instrument, alto clef.

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CHAPTER 1

INTRODUCTION

1.1 Introduction and background to the study

"One of the best habits a violinist can make is to practise his [or her] whole violin repertoire on a viola with a viola bow" (Menuhin 1991:84).

Even though I began violin lessons at the age of four, my exposure to chamber music was scant. In my second year of undergraduate music studies, I was asked to play the violin part in the "Trout" Quintet (D. 667) by Franz Schubert (1797–1828). This experience birthed in me a deep love for chamber music. The following year, after already having extended my chamber music repertoire substantially, as well as establishing a permanent piano trio, I started attending viola lessons, hoping to unlock future opportunities as a chamber musician.

As a violinist, I had to make certain adaptations for the journey to the viola as a second instrument. The most significant changes confronting me were the size and weight of the viola, and the process of learning to read the alto clef after almost 18 years of reading only the treble clef. I soon realised that, rather than cultivating an internalised understanding of the alto clef, it was tempting to take a shortcut, playing viola parts by ear. However, this habit was a negative influence on my sight-reading proficiency. Less prominent differences between playing the two instruments included the differing bowing techniques and unique approaches to fingering. These adaptations are documented by, *inter alia*, William Primrose (1991:173–188), Luther and Guerriero (2016:30–32) and Watts (2014:1–3).

According to Watts (2014:1), violinists who attempt to play the viola with their frame of reference rooted in violin technique often experience physical complications, which may lead to potential injuries. Several months into playing the viola, I suffered symptoms of clicking, stiffness and pain in both sides of my jaw. Eventually, the pain and discomfort became more severe on the left-hand side, probably because the instrument is positioned on the left side of the body. I consequently considered changing my chin rest. Due to the injury I suffered, together with the challenge of learning to read the alto clef, I have a personal interest in this research study.

Literature on the transition from the violin to the viola pertains mostly to a single aspect of the transition process. In my opinion, it is important to offer an integrated view, combining the physical, technical and cognitive aspects of this journey. A more comprehensive impression of

the reality of transitioning from the violin to the viola would thus be provided. This research study could be valuable to both violin and viola teachers with pupils transitioning from the violin to the viola.

1.2 Research questions

1.2.1 Main research question

How do violinists adapt physically, technically and cognitively when studying the viola as a second instrument?

1.2.2 Secondary research questions

- How do violinists approach the physical differences between the violin and the viola as instruments?
- How do violinists studying the viola approach the technical adaptations caused by the differing physiological demands between the two instruments?
- How is score reading cognitively approached by violinists studying the viola?

1.3 Aim of the study

This study explores the physical, technical and cognitive experiences of violinists who have transitioned to the viola as their second instrument, with the purpose of identifying ways of potentially avoiding injury and developing bad habits. This includes finding an effective method of learning to read the alto clef. The aim of this study is to provide solutions to the challenges facing the artist. The focus on three levels of adaptation in this study, namely physical, technical and cognitive, fills a lacuna in the literature, as the majority of studies focus mainly on a single element of the adaptation process (Bronner 2007; Luther & Guerriero 2016; Russell 1939; Watts 2014). Data was collected by conducting semi-structured interviews with violinists willing to share their own lived experiences of adaptation while studying the viola as a second instrument. The results that arose from the collected and analysed data served to formulate solutions to the challenges faced by violinists wishing to make the transition to the viola. Violin and viola teachers could also benefit from this research study.

1.4 Chapter outline

Chapter 1 of this dissertation is introductory, including background information pertaining to the study, as well as the main and secondary research questions guiding the study. In Chapter 2, a detailed literature review is provided pertaining to the physiological, technical and cognitive adaptations necessary for a violinist taking up the viola as a second instrument. Chapter 3

consists of the methodological aspect of this research study, including sections describing the research approach, the research design, the data collection and analysis methods, sampling, trustworthiness, the delimitations of the research, and ethical considerations. The results following the data analysis are presented in Chapter 4. In Chapter 5, the research findings are discussed and compared with literature sources. Chapter 6 offers a summary of the study, outlining consequent conclusions in response to the research questions. Finally, all the sources cited in this study are entered in a list of references. The appendices consist of the information letter, the letter of informed consent, the semi-structured interview questionnaire, and an example of the data analysis.

1.5 Conclusion

This study aims to explore the adaptations made by violinists who take up the viola as a second instrument. Physical, technical and cognitive adaptations represent the three main areas of this transition. Findings pertaining to the lived experiences of people who had undergone the transition from the violin to the viola, are derived from an analysis of semi-structured interviews.

A review and summary of relevant literature sources is presented in the following chapter. The focus of this discussion is on the physical, technical and cognitive aspects involved when a violinist takes up the viola as a second instrument.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The violin and the viola are both members of the string instrument family, and, in broad terms, they are played in a similar manner. It is interesting to note that a number of well-known violinists, including David Oistrakh (1908–1974), Shlomo Mintz (b.1957) and Jaime Laredo (b.1941) also mastered the viola (Bernas 2001:1; Campbell 2001:1; Schwarz 2001:1). Similarly, recognised violists, such as Yuri Bashmet (b.1953) and Paul Hindemith (1895–1963), initially played the violin (Potter 2001:1; Schubert 2001:1). Many books are devoted to discussing the techniques for either the violin or the viola, but literature on the differences and similarities between the two instruments, and, more specifically, the process of learning to play the viola when one has already mastered the violin, is sparse. In this section, literature focusing on the individual instruments will be reviewed (Boyden & Monosoff 1989; Boyden & Woodward 1989; Fischer 1997; Flesch 1939; Galamian 1962; Menuhin 1991), as well as writings which incorporate aspects of both instruments (Luther & Guerriero 2016; MacLeod 2008; Primrose 1991; Stowell 2004; Watts 2014).

This literature review will explore the necessary adaptations by a violinist who learns to play the viola as a second instrument with reference to the following three categories: 1. Physical differences between the violin and the viola as instruments; 2. Technical changes due to the physical differences between the instruments; 3. Methods for mastering the alto clef.

2.2 Physical differences between the violin and the viola as instruments

The violin and the viola belong to the violin family, and both are held in a horizontal position when played (Stowell 2004:54). The violin is the highest-pitched member of the family, with four strings tuned on *g*, *d'*, *a'*, and *e''* (Boyden & Walls 2001:1–6). The viola, on the other hand, also appropriately known in French as *alto*, sounds a perfect fifth lower than the violin, with strings tuned on *c*, *g*, *d'*, and *a'* (Boyden & Woodward 2011:1). When compared with the violin, all the measurements, including the weight of the viola, are increased. Furthermore, the viola bow is heavier than a violin bow and is nearly 0.3 centimetres longer (Watts 2014:6–7). It is significant to note that, although the viola represents an entire section of the violin family, with a different range, it is approximately only six centimetres longer than the violin, and 180 grams heavier (Boyden & Woodward 2001:1; Watts 2014:6).

Like the violin, the anatomy of the viola consists of certain set components. However, the actual length of the body of the viola may fall within the approximate parameters of 40.6 to 43.2 centimetres (Watts 2014:4–5). The benefit of playing a larger viola would be the potential to produce a richer quality of sound, while a smaller instrument would be easier to handle technically (Watts 2014:4). Boyden and Woodward (2001:1) state that, if a violist wanted to achieve "optimum strength of tone and, especially, beauty and depth on its lower strings, the ideal size for a viola would make it too long for the player's arm". According to Jeong (2012:1), the ideal length of the viola in terms of the ratio of size to sound quality, should be roughly 52 centimetres. As a result, a violist would choose an instrument proportionately adjusted to his or her personal physique (Boyden & Woodward 2001:1). Consequently, in contrast to that of the violin, the size of the viola could not be standardised. Violists who are of a small build, especially female violists, generally play on smaller instruments, whereas violists of larger stature would make use of larger instruments (Primrose 1991:182–184; Watts 2014:4). Kievman and Oppelt (1981:27) believe that the approximate length of 41.9 centimetres should be considered to be the midpoint between what is classified as a "small" or a "large" instrument. It is nevertheless important to note that there are indeed limits to the size of the instrument: the possible length range of the viola is roughly 38.1 to 50.8 centimetres (Kievman & Oppelt 1981:26). The well-known British violist Lionel Tertis (1876–1975) preferred an instrument with a body of approximately 44.45 to 45.72 centimetres in length (Forbes 2001:1; White 2006:166). Contrary to the varying lengths of a viola, the standardised length of the body of a violin is 35.5 centimetres (Boyden & Walls 2001:2; Watts 2014:6).

Jeong (2012) and Watts (2014) both discuss the phenomenon of asymmetrically-shaped violas. Various unique violas have been created by luthiers such as Otto Erdesz (1917–2000), Hiroshi Iizuka (b.1945) and David Rivinus (b.1949) (Jeong 2012:4; Watts 2014:8). The Erdesz model is characterised by a "cut-away" right shoulder, which enables the violist to shift to high positions with more ease than when they have to navigate around the shoulder of the instrument (Jeong 2012:11). Although the viola designed by Iizuka is not asymmetrical, it possesses a unique shape resembling the *viola d'amore* of the Baroque period (Jeong 2012:17). Arguably the best known example of an asymmetrically-shaped viola is the "Pellegrina" viola built by Rivinus, which could be described as having a rhombus-like shape with large upper left and lower right bouts and smaller upper right and lower left bouts (Jeong 2012:22; Watts 2014:8). The following image of the "Pellegrina" by Rivinus demonstrates its asymmetrical proportions:

Figure 1: The “Pellegrina” viola¹



2.3 Left-hand technique as affected by the physical differences between the instruments

The celebrated British violist William Primrose (1904–1982) is quoted as expressing his disdain for "the number of violinists today who appear to believe that all they have to do is to possess themselves of a viola, and play away on it to their heart's content" (Primrose 1991:173). He further claims that such violinists rob the viola of "its uniqueness, its quiddity", referring to them as "criminals" and "mere 'fiddlers'" (Primrose 1991:173–174). These accusations presumably stem from his observation of violinists who had taken the differences between the two instruments too lightly and who had not devoted enough time to truly mastering the viola as an instrument in its own right. According to Primrose (1991:174), the areas of fingering and bowing represent two main technical aspects in which the violin and the viola techniques differ. In addition, MacLeod (2008:43) attends to the aspect of vibrato, which differs between violin and viola playing, while Watts (2014:1) proposes shifting (moving the left hand from one position to another on the instrument) as a possible obstacle. The nature of the respective techniques for

¹ Image and permission granted by David Rivinus on 3 July 2019.

the violin and the viola indeed allows the possibility for a violinist to play the viola to a certain extent without prior knowledge of the more subtle technical differences. Moreover, the majority of violists were initially trained as violinists, after which they decided to transition to the viola (Gebrian 2012:12–13; Gee 2012:48). However, an understanding of the small technical changes are paramount for the new violist seeking to build a healthy technique, not only bringing the instrument to its full potential, but also avoiding unnecessary injury (Encinas 2017:9; Van der Vyver 2010:43–44; Watts 2014:1–2; White-Smith 2000:56).

The element of fingering in violin technique is extensively discussed in the seminal source *The Art of Violin Playing* (1939) by the renowned Hungarian violinist and pedagogue Carl Flesch (1873–1944) (Schwarz & Campbell 2011:1). Primrose (1991:177–178) describes open strings as the "glory" of the viola, while Van der Vyver (2010:41) regards viola open strings as enhancing the natural resonance of the instrument. Flesch (1939:120) asserts that the use of the open E-string on the majority of violins often results in a harsh sound in ascending passages involving string crossings. This could possibly be because E-strings are generally made of steel, easily causing a screeching sound, as opposed to the other strings, which are usually made of either a gut or a steel core wound with silver wire (Boyden & Walls 2001:7–8; Slatford 2001:44–45). Yampolsky (1967:94–98), on the other hand, praises the qualities of open strings on the violin. The type of sound desired by the performer plays a significant role in the choice of fingering. According to Lionel Tertis (in Fang 2008:70), sympathetic vibrato should be applied to notes played on the open strings of the viola in order to avoid a bland sound. Wolf tones, the result of a resonance irregularity due to the build of the instrument, pose a challenge to both violinists and violists in terms of fingering (Gebrian 2012:84; Oldham & Lindley 2001:1). Oldham and Lindley (2001:1) consider wolf tones to be associated with "violins of poor craftsmanship". Ultimately, the choice of fingering when playing the violin or the viola is based largely on personal preference.

The length of the fingerboard is a significant difference between the violin and the viola. According to Watts (2014:6), the average difference in fingerboard length between the two instruments is 4.57 centimetres. This distinguishing physical feature of the viola results in larger finger spacing, as well as the possibility of inaccurate intonation (Encinas 2017:18; Van der Vyver 2010:37). Luther and Guerriero (2016:30–31) advise violists to practise scales in order to familiarise themselves with the larger finger spacing on the viola fingerboard. Encinas (2017:18) proposes a solution to potential intonation discrepancies requiring the violist to adopt a flatter left-hand position in which not only the tips of the fingers are used to depress the strings. This

author suggests that a larger surface area of the finger on the string diminishes the aforementioned scope for error. Further, the physique of each violist plays a role in their approach when it comes to the longer viola fingerboard, especially in terms of double stops and the use of the fourth finger (Dalton 1988:147; Gee 2012:48; Pampulha 2015:23). Because the finger spacing is widest in first position, Gee (2012:48) devised a system whereby first position is divided into "first positions 1-A and 1-B", thereby offering more comfort to a violist with a small physique who is experiencing difficulty or discomfort due to the large spaces between the notes.

An additional left-hand obstacle faced by violinists transitioning to the viola is the issue of shifting, which is defined by Monosoff (2001:1) as "the movement of the left hand from one position to another on the fingerboard of any string instrument". Watts (2014:46–48) claims that, even though shifting is comfortable in the lower positions of the viola, shifting in high positions, and especially high positions on the C-string, can be challenging. In contrast with the violin, the wider body of the viola hinders the comfortable movement of the left hand and forearm (Watts 2014:47). In order to successfully execute shifts in higher positions on the viola, it is necessary for the player to "swing" the elbow and hand around the instrument (Watts 2014:47–48).

Importantly, although the hindrance of the body of the viola is more pronounced when playing on the C-string, it should nevertheless be taken into account when playing on the other strings (Watts 2014:50–51). The hold of the viola plays a significant role in the execution of shifts. If the instrument is positioned and held between the jaw and shoulder, the performer will experience more freedom in the left arm to comfortably shift positions whilst successfully rotating the left elbow in order to navigate around the wide bout of the viola (Barrett 1997:64–65; Chang 2018:68). Gee (2012:48) and Sievers (2005:27) both describe violists' tendency to make more use of half, second and fourth positions than do violinists. It may be inferred that this practice results from the wider finger spacing on the viola fingerboard (as mentioned above), thus compelling the violist to shift towards notes which would, when playing the violin, be accessible by merely extending the fingers.

Vibrato is described by Moens-Haenen (2001:1) as the undulation of a pitch achieved by the left-hand fingers "rocking" back and forth on the string. According to research conducted by MacLeod (2008:51), violinists tend to employ a wider-sounding vibrato than violists do. MacLeod (2008:53) further argues that, although the vibrato width on the violin resembles the vibrato width on the viola, the vibrato may sound narrower on the viola owing to the larger size of the instrument, including the longer strings. It could thus be inferred that violists should make use of a wider physical vibrato movement in order to achieve a vibrato sound similar to that of

violinists (MacLeod 2008:53). Watts (2014:53–54) suggests that vibrato speed decreases proportionately as the instrument increases in size. On a more subtle level, the author moreover claims that a slower vibrato speed would be used on lower strings than it would be on higher strings. For example, the G string on the violin would require a slightly wider and slower vibrato than that of the E string (Watts 2014:53). Conversely, both Palumbo (1984:59) and White-Smith (2000:59) believe that vibrato on the viola, although wider than vibrato on the violin, should not, as a rule, be slower than violin vibrato. However, the chosen vibrato speed should reflect the specific tone colour and musical interpretation conveyed by the performer. Barrett (1997:108) advises violinists who transition to the viola to "develop a wider, but not slower vibrato".

2.4 Right-hand technique as affected by the physical differences between the instruments

Bowing technique is arguably the most challenging obstacle in the process of successfully transitioning from the violin to the viola. According to Primrose (1991:175), "problems of sonority and tractability" require violists to adopt a bowing technique unique to the instrument. The differences in the bowing techniques for the violin and the viola are ascribed mostly to the greater weight of the viola bow, as well as to the way in which viola bow strokes are employed (Watts 2014:58–59). Because the viola is much less responsive than the violin in terms of sound production, firmer bow grip control is required from the violist (Watts 2014:59–60). This idea is supported by Luther and Guerriero (2016:31–32), who suggest that teachers should encourage viola students transitioning from the violin to "wrap" their fingers around the bow more than would be customary when playing the violin, thus transferring more weight from the arm onto the string through the bow. Significantly, Primrose (1991:176) considers the bow to be part of his own body by stating: "when I put my bow in the viola case at the end of a performance or study period, I like to imagine that I am, in a sense, detaching one-third of my arm in so doing".

White-Smith (2000:57) emphasises the idea of making use of the natural weight of the arm rather than creating pressure on the strings by forcing down on the right wrist while bowing. She also claims that this technique minimises the risk of injury while enhancing the quality of sound produced. In addition, Nordstrom and Nordstrom (2018:33) maintain that a slower bow speed to accommodate the increased string resistance of the viola should be combined with the application of natural weight for the purpose of creating a beautiful sound. These authors propose a "sound equation" in which the correct combination of weight, bow speed, and choice of sounding point (the position of the bow on the strings) work together to achieve the "desired sound" (Nordstrom & Nordstrom 2018:33). The American viola pedagogue Karen Tuttle (1920–

2010), teaches violists to incorporate natural weight in viola bowing by keeping the right shoulder relaxed (Dane 2002:30).

2.5 Potential injuries for the violinist transitioning to the viola

In order to prevent injuries while playing a musical instrument, the ergonomics between the musician and his or her instrument is of paramount importance (Paull & Harrison 1997:97). According to Roos (2001:3-4), ergonomics could be defined as "the relationship between people and their working environment". As there are distinct physical differences between the violin and the viola, certain ergonomic factors should be taken into account when transitioning from the violin to the viola. These factors include, *inter alia*, the choice of chin rest and shoulder rest, as well as the size of the instrument (Roos 2001:3-5-3-6; Watts 2014:10).

As mentioned above, violas exist in a variety of sizes (Watts 2014:4). To prevent injury, violinists who wish to transition to the viola should choose an instrument suitable for their physical size (Chapman 2000:63; Watts 2014:4; White-Smith 2005:58). A larger viola means more weight, longer strings and a longer, heavier bow (Watts 2014:10). Watts (2014:10) comments that violists who have only recently transitioned from the violin frequently experience discomfort in the neck muscles, the shoulder, the hand, the forearm and the upper arm. He further claims that, "because of the bigger, heavier viola and bow, [...the] violist is [in general] more often injured than the violinist" (Watts 2014:19).

Physical injuries involving a violist's left hand and arm include tendonitis and cubital tunnel syndrome, conditions which are both linked to the constant effort required of the upper arm to support the position of the elbow while playing (Watts 2014:12-13). Tendonitis is defined as inflammation of tendons, in this instance in the forearm (Freiberg 2008:67). Cubital tunnel syndrome originates in the elbow area where the ulnar nerve becomes constricted, resulting in symptoms such as numbness and clumsiness in the forearm and hand (Drake, Hensley, Chen & Taylor 2017:64). Incorrect vibrato technique may, among other conditions, lead to carpal tunnel syndrome of the left hand, as well as shoulder impingement on the left side (Watts 2014:13-14). Carpal tunnel syndrome features symptoms similar to those of cubital tunnel syndrome and is also classified as nerve-related (Eberlin, Vargas, Chuang & Lee 2015:374). However, although the ulnar nerve is compressed in the elbow in the case of cubital tunnel syndrome, the diagnosis of carpal tunnel syndrome is based on the compression of the median nerve in the hand (Okutsu, Hamanaka, Chiyokura, Miyauchi & Sugiyama 2001:155). Hand tension may be a factor contributing to the development of carpal tunnel syndrome (Dias, Burke,

Wildin, Heras-Palou & Bradley 2004:329; Kamholz, Beck, Haslik, Högler, Rab, Schrögendorfer & Frey 2004:323).

The violist's right arm becomes strained owing to the thicker, longer viola strings, which require a slower bow speed. Even though the movement of the right arm differs from that of the left, similar injuries may occur to the right arm, namely tendonitis, cubital tunnel syndrome and carpal tunnel syndrome (Watts 2014:17–18).

In addition to the injuries mentioned above, it has been realised that both violinists and violists are prone to developing a jaw dysfunction known as Temporomandibular Joint Disorder (TMD) (Attallah, Visscher, Van Selms & Lobbezoo 2014:532; Bejjani, Kaye & Benham 1996:408; De Souza Moraes & Antunes 2012:46). TMD manifests in symptoms such as jaw pain and clicking of the jaw (Alpayci & Bozan 2016:254; Lautar 2000:71). Further symptoms may include headaches, limited movement of the jaw and loss of hearing (Attallah et al. 2014: 532). Significantly, Lautar (2000:71) states that TMD is more severely experienced by violists than by violinists.

Injuries related to the set-up of the instrument comprise both contact dermatitis beneath the left side of the jaw resulting from an inappropriate chin rest, and neck and back pain originating from an inappropriate or incorrectly adjusted shoulder rest (Denig 2017:28; Dinwiddie 2007:39; Raymond, Romeo & Kumke 2012:22). Finding and maintaining an ergonomically correct set-up suited to the physique of the individual performer is essential if injury is to be avoided (Denig 2017:27; Dinwiddie 2007:38; Tietze 2000:74). Various combinations of shoulder and chin rests are available to the violist. Chang (2018:11) cites three options for chin rest positioning on the viola: to the left of the tailpiece, on the tailpiece, and slightly off-centre towards the left of the tailpiece. Arguably, the Krédle brand, which offers custom height and angle adjustment options, could be regarded as the most interesting type of chin rest mentioned by this author (Chang 2018:13). Shoulder rest brands include Kun, Wolf and Bon Musica. The Kun brand is popular, and may be adjusted in terms of height and width. However, the material with which the Kun rest is manufactured is either plastic, wood or carbon fibre, thus rendering it inflexible (Chang 2018:20–21). Unlike the Kun brand, the Wolf shoulder rest may be bent and shaped according to the physique of the individual (Chang 2018: 21–22). The Bon Musica shoulder rest is characterised by a unique "hook", which fits over the performer's shoulder, and is both pliable and adjustable (Chang 2018:22–23; Dinwiddie 2007:39).

2.6 Methods for mastering the alto clef

Luther and Guerriero (2016) suggest ways of aiding the transition from the violin to the viola. Because viola parts are composed mostly in the alto clef, one of the greatest challenges faced by the violinist wishing to learn to play the viola is, conceivably, that of reading the alto clef. It is, nonetheless, essential for the learner to be *au fait* with both the alto and the treble clefs, as certain works for viola contain sections which are written in the treble clef (Luther & Guerriero 2016:30). This can be seen in Example 1 below, which was taken from the viola part of the *Élégie for viola and piano*, Op. 44, by Alexander Glazunov (1865–1936) (Glazunov 1894:2).

Example 1: Glazunov, *Élégie for viola and piano*, Op. 44. Viola part, bars 27–30.



Russell (1939:577–578) addresses the awkwardness resulting from the violist's regularly having to switch between reading the alto and the treble clefs in much of the orchestral repertoire. This author describes these changes of clef as "pointless", claiming that the player's concentration is interrupted when a change of clef takes place in a difficult or challenging passage (Russell 1939:578). Because these changes of clef are frequent in viola repertoire, a violist arguably needs to be *au fait* with both the alto and treble clefs, and also to be practised in the skill of switching clefs at any given time.

Luther and Guerriero (2016:30) suggest that learners compose their own melodies, or even copy out scales in the alto clef before reading this clef while playing. More advanced learners are encouraged to practise reading the alto clef by playing pieces that include shifts and transitions to and from the treble clef (Luther & Guerriero 2016:30). Finally, a learner who is not yet practised in reading the alto clef is advised to participate in ensemble pieces containing a viola part that is relatively simple in comparison with the violin part (Luther & Guerriero 2016:30). However, the violist should realise that it might be difficult to find a single work meeting this demand in its entirety. Consequently, single movements or sections which feature easier viola parts may instead be carefully selected from larger works. Examples 2 and 3 below demonstrate the difference in the level of difficulty between the first violin and the viola parts of the *Menuetto* section of the third movement of *String Quartet No. 8 in F major*, K.168, by Wolfgang Amadeus Mozart (1756–1791) (Mozart 1882a:4; Mozart 1882b:2). The upbeats to bars 1, 5 and 21 of the violin part, for example, need to be played in fifth position, whereas the entire viola excerpt could be performed in first position and requires no shifting.

Example 2: Mozart, *String Quartet No. 8 in F*, K.168. 3rd mvt. 1st violin part, bars 1–24.

MENUETTO.

Example 3: Mozart, *String Quartet No. 8 in F*, K.168. 3rd mvt. Viola part, bars 1–34.

MENUETTO.

Barrett (1997:104–105) and Pounds (in Callus 2006:57) describe the "third position method" of learning to read the alto clef: the violist pretends to play in third position on the violin while actually playing in first position on the viola, effectively "transposing" the music by a third. Understandably, violists are cautioned against routinely using this method, as it results in the violist failing to learn the names of the notes on the alto clef staff (Barrett 1997:104–105).

2.7 Conclusion

Both qualitative and quantitative studies were perused during this literature review. It is evident that a wide range of factors is involved when a violinist learns to play the viola as a second

instrument. Because the two instruments differ significantly in terms of construction, there are various technical differences between playing the violin or the viola. The three main physical distinctions are the differences in size, length and weight between the instruments and their respective bows. These distinctions require numerous technical adaptations in order to prevent injury, including different approaches to fingering, bowing and bow hold, vibrato and shifting. Moreover, the technical adaptations for each individual may differ proportionately. Potential injuries when the transition from violin to viola is not approached cautiously occur mostly in the nerves in the hands and arms, but could, in extreme cases, also limit the player's shoulder movement. Another prominent aspect of the transition is the introduction of the alto clef. One suggested method for learning to read the alto clef is for the violist to participate in chamber music groups that choose repertoire which features a relatively simple viola part.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

Chapter 3 will discuss the research methodology for this study. This includes the chosen research approach and design, which are substantiated by reference to the relevant literature. Further, the methods of data collection, sampling, data analysis and interpretation are highlighted. Finally, issues of trustworthiness, delimitations and ethics are considered.

3.2 Research approach

This research study follows a qualitative approach. Qualitative research is defined by Nieuwenhuis (2011:50) as requiring "rich descriptive data", focusing on personal experiences by individuals. The process of exploring the experiences by selected individuals, as well as the meanings of these experiences, in this case, the physical, technical and cognitive adaptations undergone by the musicians, require the use of qualitative research methods. This approach is in contrast to quantitative research, which is based on numerical data and statistics (Mujis 2013:1). Certain educational aspects of music involve meaningful individual experiences (Bresler 2012:535). In this research study, the adaptation made by a violinist learning to play the viola as a second instrument contains two elements which are linked to teaching methods, namely the technical obstacles that have to be overcome, as well as the reading of the alto clef. In addition, the qualitative approach is relevant, as this study relies on a small sample of participants with whom semi-structured interviews were conducted as the data collection method (Morgan 2012a:798; Usher & Jackson 2017:188–189).

3.3 Research design

The research design for this study takes the form of an Interpretative Phenomenological Analysis (IPA) study. IPA originated in phenomenology and aims to explore the detailed lived experience by participants (Smith & Eatough 2011:35–36). Phenomenological research focuses on a specific phenomenon with the aim of delving into the related human experience (Bloor & Wood 2011:128; Eberle 2013:184). The transition from the violin to the viola could be considered a phenomenon in its own right. The research design for this study is based on the paradigm of phenomenology, which is rooted in investigating human lived experiences or *phenomena* (Adams & Van Manen 2012:616–617). This is further validated by Moustakas (in Vincs 2017:50), who states that a phenomenological research study is dependent on "a topic

and question that have both social meaning and personal significance". Adams and Van Manen (2012:614) maintain that an important aspect of a phenomenological research project is "the study of the lifeworld as we immediately experience it, pre-reflectively, rather than as we conceptualize, theorize, categorize, or reflect on it". This immediacy is vital for accuracy in investigating the process that violinists physically, technically and cognitively undergo when transitioning to the viola. An interpretative phenomenological stance is taken where the participant's lifeworld is seen in a context relevant to the specific individual (Wojnar & Swanson 2007:175).

This research study is both exploratory and explanatory. The exploratory approach is prevalent in qualitative research, because the collected data should be analysed in an "open-ended" manner, allowing a wide scope for possible results (Stebbins 2012:325). The following quotation by Maxwell and Mittapalli (2012:324) accurately sums up the function of the explanatory aspect of this research study:

The term *explanatory research* implies that the research in question is indeed to explain, rather than to simply describe, the phenomena studied.

In summary, this research project does not aim to exclusively explore the different facets involved in transitioning from the violin to the viola, but also to provide an interpretation and explanation of the adaptations needed to effectively make this transition, as well as to study the effects of this on the physical, technical and cognitive aspects.

3.4 Data collection techniques

The data collection technique for this research study took the form of semi-structured interviews. (See Appendix C for the semi-structured interview questionnaire for violinists who studied the viola as a second instrument). According to Usher and Jackson (2017:188–189), semi-structured interviews consisting of open-ended questions allow participants to best convey their accounts of specific lived experiences in phenomenological research studies. While structured interviews are more rigid and mostly make use of questionnaires, semi-structured interviews involve a personal engagement between the researcher and the participant: the participant responds to promptings from the researcher within the boundaries set by certain open-ended questions (Olsen 2014:33–34). Unstructured interviews, on the other hand, are directed only by a topic (Olsen 2014:34). Bloor and Wood (2011:129) maintain that interviews are one of the best and most popular data sources for phenomenological studies. For this study, the semi-

structured interviews were audio recorded, using a mobile phone (Olsen 2014:35). In addition, because a conversation consists of both verbal and nonverbal communication, the interviews were conducted in person (Ayres 2012:811). The researcher took notes while conducting the interviews when the participants expressed important information through nonverbal cues. Once the interviews had been conducted and recorded, the researcher carried out a verbatim transcription of each interview. Interview time with the participants ranged from 30 minutes to one hour. The average length of one interview was 37 minutes.

3.5 Sampling strategy

Purposive sampling was used for this phenomenological study (Bloor & Wood 2011:129). This sampling strategy is defined by Morse (2011:884) as "the deliberate seeking out of participants with particular characteristics". A total of six participants were interviewed for this study. According to Morgan (2012a:798), most qualitative studies are based on small sample sizes in order to avoid saturation of data. He states that "the goals of the [qualitative] research emphasize an in-depth and highly contextualized understanding of specific phenomena, and such goals are well-suited to small sample sizes" (Morgan 2012a:798). Daniel (2012:243) suggests that six to ten participants are chosen for a phenomenological study.

Morgan (2012b:799–800) further claims that selecting a "wide range of different cases within the population of interest" could improve the richness of the collected data. For this research study, the participants were selected from both genders, with varying ages and levels of experience. Differing hand sizes and arm lengths, for example, are possible physiological factors in which gender might play a role, while varying levels of practical skill could result in different individual experiences of transitioning from the violin to the viola on the technical level. Suitable participants for this study were procured by seeking references from violin and viola teachers and orchestra members in and around Pretoria. Finally, six participants who met the requirements for this research study were selected and contacted personally before the letter of information (see Appendix A) was sent.

3.6 Data analysis and interpretation

Following the procedure of Interpretative Phenomenological Analysis (IPA), the first step of analysing the semi-structured interview transcripts involved note-taking and bracketing while reading the transcripts, after which the notes were transferred to a coding system. The codes were, in turn, grouped into subthemes. The final stage of the analysis resulted in the arrangement of the subthemes into five larger, superordinate themes, namely 1. Physical

differences between the violin and the viola as instruments; 2. Left-hand technique as affected by the physical differences between the instruments; 3. Right-hand technique as affected by the physical differences between the instruments; 4. Injuries and pain caused when transitioning to the viola; 5. Methods for mastering the alto clef.

In a broad sense, the superordinate themes correlate with the three areas discussed in the literature review, as well as with the three research questions which pertain to: 1. Violinists' approach to the physical differences between the violin and the viola; 2. Violinists' approach to technical adaptations required by the physiological demands when studying the viola; 3. Score-reading (Smith & Eatough 2011:45–48; Storey 2011:53–54). Information provided by the participants during the semi-structured interviews which did not pertain to the areas mentioned above was not used for analysis (Roulston 2013:304). Further, the examples from the raw data, as quoted in Chapter 4, do not include every instance when a certain topic was mentioned by a participant. Examples were selected for clarity (Dale Bloomberg & Volpe 2012:110).

According to Eatough and Smith (2011:179), the IPA method of analysing interviews is closely related to investigating participants' lived experiences. Smith and Eatough (2011:41) state that "one-to-one semi-structured interviewing" is ideal for interpretative phenomenological analysis, as the individual participant is thus given a full opportunity to express his or her personal lived experience of the phenomenon under study.

3.7 Trustworthiness

The trustworthiness of a research study is achieved by following more than one method, set of data source, or researcher (Rothbauer 2012:892). According to Benner (2012:462), it is important in an interpretative phenomenological study to obtain corroboration from an unrelated researcher when it comes to the interpretation of data. The themes identified during the process of analysing and interpreting the data were thus verified by an independent researcher. A total of six participants were interviewed following the same semi-structured interview questionnaire. The interview is recognised by Adams and Van Manen (2012:618) as an interpretative phenomenological data collection technique, as it is seen as a means "to explore interpretative meaning aspects of lived experience material". Quality is further ensured in an interpretative phenomenological study by remaining "true to the text" (Benner 2012:463). In this case, the text takes the form of the semi-structured interview transcripts. The participants were requested to review the interview transcripts of their responses to the interview questionnaire to ensure a true representation of their views. In order to warrant additional trustworthiness, the researcher will retain possession of the analysed interview transcripts for a period of 15 years.

3.8 Delimitations of the study

This study focuses on the adaptations made by violinists who have learned to play the viola. It should be noted that the study was conducted from a violinist's perspective rather than that of a viola player. Participants were carefully selected according to the following main criteria: each participant had to be proficient in playing both the violin and the viola. In addition, it was essential for each participant to have had some experience of playing chamber music, orchestral playing, and/or solo performance. The collected data is limited to what was gathered from the semi-structured interviews with six participants, all based in Pretoria, South Africa. This research study provides a view of the physical, technical and cognitive adaptations experienced by an adult violinist taking up the viola. Children under 18 years of age were excluded from this study.

3.9 Ethical considerations

The human participants interviewed for this study were given detailed relevant information before they consented to participate. (See Appendix A for the letter of information.) Consent was made official by signing an informed consent form. (See Appendix B for the letter of informed consent.) No children under the age of 18 were asked to participate in the research. The participants' identities were kept confidential by referring to them as "Participant A", "Participant B", and so forth when documenting the findings in the dissertation. The participants were given the option of withdrawing from the study at any time, without consequence. This dissertation and all the data collected from the participants, i.e. audio recordings and transcripts of the interviews, will be archived by the University of Pretoria for 15 years, and will be used only for academic purposes.

3.10 Conclusion

This chapter provided a discussion of the various aspects of the methodology followed in this study, as well as an explanation of the methodological steps taken in conducting the research in order to obtain answers to the questions forming the basis of the study. The relevance of the chosen research methods was explained within the applicable context. In Chapter 4, the results of the six transcribed and analysed semi-structured interviews will be presented.

CHAPTER 4

RESULTS

4.1 Introduction

In this chapter, the results of the data collected during the semi-structured interviews conducted with six participants are presented. Analysis of the data revealed five superordinate themes, each with a number of subthemes. A deductive structuring of the data resulted in a correlation between the superordinate themes and the five themes discussed in the literature review (Chapter 2), namely: 1. Physical differences between the violin and the viola as instruments; 2. Left-hand technique as affected by the physical differences between the instruments; 3. Right-hand technique as affected by the physical differences between the instruments; 4. Injuries and pain caused when transitioning to the viola; 5. Methods for mastering the alto clef.

The subthemes emerged from an inductive analysis of the data. In this chapter, each superordinate theme, including the supporting subthemes and examples from the raw data, is presented in table format at the beginning of each section. An alphabetical labelling system was used to protect the participants' identities.

4.2 The participants' backgrounds

The six participants interviewed for this study comprised four females (Participants A, B, D and E) and two males (Participants C and F). The stage at which each participant made the transition from the violin to the viola, as well as the amount of violin training each participant had undergone when they made the transition, allows for diversity of the data. In this section, a short summary of the background of each participant gives the reader a comprehensive context for the data presented in this chapter.

Participant A made the transition from the violin to the viola during her third year of music studies, after having achieved a level of skill on the violin that allowed her to participate in orchestral playing, as well as to complete the Grade 8 violin examination. She is a violin and viola teacher.

Participant B, who is registered as a tertiary music student with the viola as her first instrument, transitioned to the viola at the age of 14, when she was at the Grade 5 level on the violin.

Participant C took up the viola in high school, after having played the violin for four years.

When Participant D made the transition at the age of 17, the viola was her third instrument. At that time, she was playing the violin in her school orchestra.

Participant E began attending violin lessons at the age of 9 and took up the viola at age 12.

Participants C, D and E teach both the violin and the viola.

Finally, Participant F had 14 years of violin experience before he transitioned to the viola during his first year of tertiary music studies in 1989, when he was 19 years of age.

4.3 Superordinate theme 1: Physical differences between the violin and the viola as instruments

Superordinate theme 1, "Physical differences between the violin and the viola as instruments", presented the following two subthemes: 1. The physical size of the instrument; and 2. The size and weight of the viola in the transition process.

Table 1: Superordinate theme 1

Superordinate theme 1: Physical differences between the violin and the viola as instruments	
Subtheme	Raw data example
1. Physical size of the instrument	<p>Participant A: [...] violas don't really have a standard sizing.</p> <p>Participant B: I can't actually have the biggest viola, because I'm very short. So, my arms doesn't [sic] allow it.</p>
2. Size and weight of the viola in the transition process	<p>Participant E: [...] everything about [the viola] is just bigger than the violin.</p> <p>Participant D: [...] the weight on your shoulder. That is also quite a difference.</p>

4.3.1 Subtheme 1: Physical size of the instrument

All the participants mentioned this subtheme. It became evident that the size of the viola as an instrument depends on two factors, namely the sound of the instrument and the violist's physique. According to Participant E, the viola should actually be much larger than is conventional in order for it to achieve its full potential in terms of sound.

Participant E: *Basically comes down to just the dimensions of the instrument. So everyone... You... you get told a hundred times as a violist that your instrument... In order to make the best sound for the strings, um, the viola should be quite a bit bigger. But, obviously, that would then inhibit the way you can play it.*

In addition, Participant E asserted that the diminished size of the viola requires violists to make a conscious effort to produce optimal sound.

Participant E: *So the instrument's too small for the strings, basically. Um, whereas the violin and the cello are... The body of the instrument's at the right proportion... proportions for the strings that it's using. Um, so the viola you have to work a lot harder in order to get the strings to resonate in the same way that they do on the violin and the vio... ah, and the cello.*

The relation between the size of the viola and the violist's physique therefore seems to pose the issue of choosing a viola with the potential for a good sound, but which is still suited to the unique physique of the violist. The collected data revealed that participants with a smaller physique played on violas with smaller proportions.

Participant B: *I can't actually have the biggest viola, because I'm very short. So, my arms doesn't [sic] allow it.*

Participant C: *You can get violas of thirteen, fourteen inches, that is [sic] smaller. Uh, like 38 centimetres. That's fine, uh, my teacher was small. He was tiny. He played on a smaller viola.*

Conversely, participants with a larger build played on larger instruments. It should be noted that these participants experienced the viola as more comfortable to play than the violin.

Participant D: *I am quite tall and I've got long arms and big hands. So she suggested the viola, because she thought I would simply feel more comfortable on the instrument. Turns out she was 100% right. I felt like coming home when I started playing viola.*

Participant F: *Physiological similarities between, um, my physical size, and the size of the viola, I would say it is easier for me to take up the viola and play it naturally. Um, on the violin, there are some challenges, because of the big hands, um, that makes it a bit more difficult.*

Participant C pointed out that he needed to change to a larger viola as he became taller.

Participant C: *[...] when I played the viola, I had a small viola, because I was the sixth shortest in my matric class [...]*

Participant C: *But when I started growing in the army, and I got a bigger instrument, that's when the difference became more apparent.*

Participant E voiced the possibility of having an asymmetrically-shaped viola.

Participant E: *I've seen various instruments, uh, in my time, uh, there was this one viola... I think it was _____ who had this, um, weird viola with the... the proportion... So the right-hand shoulder of the viola was much smaller than the left-hand shoulder of the viola [...] and to balance it out, the left-hand bottom part of the viola was much bigger than the right. So, it's kind of took from the right-hand shoulder and put it on to the left-hand bottom corner. So it was very asymmetrical [...]*

4.3.2 Subtheme 2: Size and weight of the viola in the transition process

This subtheme was identified in five of the six interview transcripts. According to these participants, the size of the viola, albeit based on the violist's physique, proved to be one of the most noteworthy adaptations in terms of the physical differences between the violin and the viola.

Participant B: *Well, obviously, the size was something to get used to.*

Participant D: *[...] me playing a rather large viola, uh, the sheer length and width of the instrument.*

Participant E: *I think the biggest technical challenge that I first experienced was the bigger instrument.*

Participant F: *[...] for me it's just the... the length of the instrument.*

Participant A stated that she experienced fatigue due to the size of the viola.

Participant A: *[...] in the beginning, the size change is a big thing. You get tired a lot.*

The weight of the viola was mentioned by Participants A, B and D as having been a significant factor in the early stages of their viola careers. The weight of the instrument contributed to the fatigue experienced by Participant A, and this also inhibited her practice time.

Participant A: *[...] I'd say the weight is a pretty big difference. You get tired a lot earlier in the beginning. So when you start switching over, you can't practise for the amount of time that you're used to practise.*

Participant B: *[...] in the beginning it was really the... the weight and the size. Um, but once I got used to it, it was fine.*

Participant D: *And obviously the weight on your shoulder. That is also quite a difference.*

It is evident that, although the violist's physique influences the size and, indirectly, the weight of the chosen viola, these two factors nevertheless played a significant role during the participants' transition progress from the violin to the viola. In the case of Participant A, it affected her energy levels, as well as the length of her practice sessions.

4.3.3 Summary of Superordinate theme 1

As presented above, Superordinate theme 1 is supported by two subthemes. Subtheme 1, "The physical size of the instrument", demonstrates the views of all six participants regarding the size and structure of the viola. One participant pointed out that the viola, as an instrument, is too small for the violist to produce a sound similar in quality to that of violin and the cello, with the same ease. Because the size of the viola is not standardised, the participants further believed that the size chosen depended on the violist's physique. The existence of asymmetrical violas was also mentioned.

In Subtheme 2, "Size and weight of the viola in the transition process", five of the six participants declared that they had to adapt to the larger size and heavier weight of the viola. These two factors resulted in fatigue, which caused one participant to decrease the time devoted to her practice sessions.

4.4 Superordinate theme 2: Left-hand technique as affected by the physical differences between the instruments

The second superordinate theme is supported by the following five subthemes: 1. Similarity between the violin and viola techniques; 2. Fingering and the use of open strings; 3. The longer fingerboard; 4. Shifting; and 5. Vibrato.

Table 2: Superordinate theme 2

Superordinate theme 2: Left-hand technique as affected by the physical differences between the instruments	
Subtheme	Raw data example
1. Similarity between the violin and viola techniques	Participant A: <i>It's more difficult to execute some of the techniques, but the techniques essentially are the same.</i>

<p>2. Fingering and the use of open strings</p>	<p>Participant D: [...] [fingering] <i>is really the one aspect of the two instruments that I consider being pretty much the same.</i></p> <p>Participant C: [Fingering] <i>depends on the [...] period [of the music]. Not on the... not on the instrument.</i></p>
<p>3. The longer fingerboard</p>	<p>Participant D: [...] <i>the different distance between the notes on the fingerboard. Now you have to extend your fingers in order to play viola.</i></p> <p>Participant F: [...] <i>whenever I have to pick up the viola, it does take a few scales to just get used to the gaps, or... or the different spacings. Finger spacings.</i></p>
<p>4. Shifting</p>	<p>Participant E: <i>On the viola, so, um, I think you would have to deal with shifting a bit more.</i></p> <p>Participant B: [...] [shifting is] <i>the same as on... on the violin. You just... um, it's only muscle memory.</i></p> <p>Participant E: <i>There's some keys which second position just works so much easier [...]</i></p>
<p>5. Vibrato</p>	<p>Participant E: [...] <i>generally speaking, the vibrato on the viola can afford to be a little bit wider and slower.</i></p>

	<p>Participant A: [...] it's easier if you have an arm vibrato to start with.</p>
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4.4.1 Subtheme 1: Similarity between the violin and viola techniques

The similarity between violin and viola techniques was predominant throughout five of the six semi-structured interviews. The participants expressed a definite similarity between the two techniques.

According to Participants A and B, this similarity is closely linked to the physical similarity between the violin and the viola as instruments.

Participant B: [...] the technique doesn't differ as much, um, because it's very... it's a very... instr... instruments are very similar.

Participant A: [...] if you had bad technique as a violinist, then that... those mistakes that you make will carry over to the viola and become much larger, because then you have to compensate for a physical change as well. So if you were not able to execute things like staccato, then you will not be able to execute things like staccato on the viola. It's not... it's not really a different instrument, it's just a different size.

During their interviews, Participants A and E said that violin technique could be seen as the basis upon which viola technique is built. According to Participant A, her teacher, who taught both the violin and the viola, thought it necessary first to improve her violin technique before transitioning to the viola.

Participant A: I think she wanted me to first improve violin technique for a bit, even though we didn't really work on technique explicitly.

Participant E: I think [viola technique] does build on violin technique.

Participants A and D also stated that violin technique could be transferred to the viola.

Participant A: [...] sometimes getting lessons from violinists, on the violin, works very well. Because you have to... you can transfer all of that to the viola.

Participant A: When, in fact, you have a good violin technique, then probably it's not such a big change when you go to the viola.

Participant D: [...] practically I've done all my professional playing on the viola. So that is also where I've got the broadest repertoire, where I've got the most experience. It is all transferable, obviously [...]

Participant D: *I've got one girl that plays both violin and viola with me, and if I give her technical exercises, I always tell her to do them on the viola. [...] Because it is physically more straining on the muscles to build up agility. You have to press harder on the strings. You have to extend the fingers a bit wider. If she does the exercises on the viola, usually after that, on the violin, they almost play itself. She says it feels a lot easier.*

Participant F, who had had 14 years' training on the violin before transitioning to the viola, said he experienced no difference between playing the violin and the viola. Participant A also stated that once she had overcome the physical differences between the instruments, she would often, whilst playing, confuse the violin with the viola and vice versa.

Participant F: *I don't need to rethink it or anything. So I think whatever I had to adapt to is now part of the muscle memory. So it's... I don't even consider... consider it when I change between the two instruments.*

Participant F: *[...] at the end it was not a difference for me to play between the two.*

Participant A: *But, as you go on, you realise that there's not really all that much different, and it becomes confusing because you forget on which instrument you are playing, and you forget which instrument has which strings.*

In summary, the majority of participants acknowledged that there was a similarity between the technical aspects of the violin and the viola. This similarity, however, could depend on both the physical dimensions of the two instruments and an established violin technique before transitioning to the viola.

4.4.2 Subtheme 2: Fingering and the use of open strings

Three of the five participants who voiced the issue of fingering and the use of open strings on the viola, emphasised the role the music played in the choice of fingering. According to Participants B, C and D, the same fingering principles apply when playing either the violin or the viola.

Participant B: *[Fingering] differs from what I play. Obviously, in Baroque you can use more open strings, because you don't have to, um... you... it's just a different approach to the music.*

Participant C: *Especially if we play, uh, the Baroque styles. Bach... those kind of things, we use a lot of open strings. It depends [...] on the period. Not on the... not on the instrument.*

Participant D: *[...] [fingering] is really the one aspect of the two instruments that I consider being pretty much the same. I mean, you adapt your fingering, obviously, to the musical phrase that is at hand. So you will make your decisions whether or not to use an open string, as opposed to a fourth finger, or whether to play something in position or*

not. You will make that according to the music that is at hand. So there... that is something where I don't really find a difference between the two instruments.

From the above raw data examples, it is evident that both Participants B and C referred to the use of open strings on the viola when playing Baroque music. Participant A had undergone training in Baroque viola playing, and stated that she makes more use of open strings on the viola than on the violin. According to this participant, open strings on the violin do not sound pleasant, unlike open strings on the viola, which sound better.

Participant A: *We use a lot more open strings. We are a lot more comfortable to use open strings, because our open strings sound nicer. They're at a lower register [...]*

Participant A: *[...] you [as a violinist] start getting used to the idea that you want to vibrato on the strings that would be your open strings, because they sound a little bit ugly. They... they're overly bright when you play them as open strings. We don't have that thing with the viola.*

Participant A made reference to wolf notes occurring on her viola which affected her choice of fingering. Depending on the build of the instrument, wolf notes occur at a specific resonance frequency on certain instruments. Wolf notes can cause a lack of string vibration at this frequency, resulting in a dead note on the instrument. Further, it can affect the volume at which the note is produced (Oldham & Lindley 2001:1).

Participant A: *[...] you encounter things like wolf notes in places where you would never normally expect them, because they don't appear on the violin. So in third position, for instance, I always have a problem when I have to play an F or an F#. So I try to avoid playing them at that particular place, which means that I tend to stick to lower positions.*

4.4.3 Subtheme 3: The longer fingerboard

This subtheme featured prominently in the data collected from each of the six participants. The viola's longer fingerboard results in larger spaces between the notes than occurs on the violin fingerboard. This was thought to affect various areas of left-hand technique, including intonation, shifting and playing double stops.

The following excerpts from the raw data demonstrate the views of Participants A, C and D when it comes to stretching the fingers to reach the notes on the viola's fingerboard.

Participant A: *[...] the distance between different frames... I don't know how to say it... The distance between your fingers is only a little bit bigger. It does make a big change when, um, you had a problem stretching for things already on the violin.*

Participant C: [...] *the biggest thing that I had to understand was that the space... the fingerboard on which you play is so much bigger than the violin.*

Participant D: [...] *the most obvious [difference] that everybody thinks of first would be the different distance between the notes on the fingerboard. Now you have to extend your fingers in order to play viola. You have to come back together when you play violin.*

The relationship between the longer fingerboard and intonation was pointed out by Participants A and E.

Participant A: *Intonation-wise, you have to learn the distances, because it's a little bit bigger. But you get used to it fairly quickly. It's not really a problem if you are aware of it from the beginning.*

Participant E: *So the bigger finger spacings for the left hand. So, you know, with the intonation.*

The collected data indicated that shifting is not the only issue affected by the viola's longer fingerboard. The spaces between the notes in low and high positions also change significantly, as does the distance travelled between the high and low positions.

Participant B: [...] *the shifting was also... I had to get used to the bigger shifts and the bigger spaces between the fingers [...]*

Participant B: [...] *in the lower, um, uh, positions, the, um, spaces are obviously much bigger on the viola as on the violin. But when you get to the high posi... positions, mostly like fifth or sixth position, then it really doesn't differ that much. Um, and it's only, like, a millimetre or two millimetres.*

Participant C: *So when you shift, th... the spaces between first position and seventh position is huge in the... the... in the viola.*

Participant C: *It's just something that you've got to remember is the distance that you travel on the viola is much bigger. [...] And it's to get used to the spaces.*

Participant F explained that his personal physique enabled him to play certain double stops more comfortably on the longer fingerboard of the viola than on the violin, while Participant E stated that the size of her hands affected the double stops that would be physically possible for her to play.

Participant F: [...] *because of my big fingers, it... it becomes quite tricky to do the, um, double stops on the... in the higher positions. Um, especially, let's say from, um, fi... sixth position upwards. Um, I have to squeeze them in really tight on the violin, while it's easier to... to do those small intervals on the, um, let's say a minor sixth would be, um, easier to do on the viola than on the violin.*

Participant E: *I suppose it depends on... from person to person and the size of your hands, and things like that. But, you know, on violins when you get things like fingered octaves [...] there's no chance I would ever be able to do that.*

Participants C and F used scales to help them adapt to the wider spaces between the notes on the viola fingerboard.

Participant C: *And of course scales, to understand the spacing of the notes, because it's much bigger.*

Participant F: *[...] whenever I have to pick up the viola, it does take a few scales to just get used to the gaps, or... or the different spacings. Finger spacings. But then it... it's back. So it's part of the muscle memory, but you have to just get used to it if you don't do it every day.*

4.4.4 Subtheme 4: Shifting

Each of the six participants elaborated on the aspect of shifting with reference to the viola. In general, shifting was said to be based on principles similar to those in violin technique, with certain changes made in accordance with the larger viola. They also referred to muscle memory in relation to shifting. According to four of the six participants, the specific key in which a piece of music is written, could influence the way in which shifting is approached.

For the following participants, shifting on the viola resembled shifting on the violin.

Participant A: *What a violinist teaches you [about shifting] is useful for the viola as well, because the basic principle applies.*

Participant D: *You need to know where you start from. You need to hear the note that you want to get at, and you need to know in which position it is, so that you roughly know where on your instrument you are supposed to end up on. But that is the same on both instruments, I think.*

Participant E: *So with the shifting, wh... you know, shifting from first to, I suppose you could even say fifth position, is not too different between the violin and viola.*

Participants B and F also pointed out the similarity between violin and viola shifting. They also commented on the role of muscle memory.

Participant B: *[...] [shifting is] the same as on... on the violin. You just... um, it's only muscle memory. So you just have to practise it.*

Participant F: *[...] I think in general it's... it's part of the, um, violin technique as well. Um, it's [...] just a matter of exercising each, um, shift. Um, and getting used to that. So it's muscle memory at the end. You just have to learn the bigger gaps. But I would say it*

comes so naturally, after a while, that you don't think about it anymore. So it was initially doing the shifts, getting used to those distances, and then it's... it's part of the technique.

Participant A related shifting to the size of the viola, suggesting that the left elbow be brought closer to the body to aid the navigation of the left arm around the wide shoulder of the instrument.

Participant A: *I think sometimes it's a bit harder to play in higher positions, because you have to negotiate an instrument that would require your elbow to be a lot more involved because it's bigger. Um, so, where a four octave scale is not a problem with a violinist, it becomes a really big problem when you play the viola. [...] I remember I had a lot of trouble playing four octave scales and my teacher used to say it was because I had to negotiate this working around the instrument. Of course, then later I learnt that if, in principle, you try to push your elbow forward and keep it closer to your body, then it's easier to negotiate any type of turn.*

According to Participant E, when the left elbow is brought closer to the body to shift into high positions on the viola, it feels uncomfortable and could affect her intonation negatively.

Participant E: *Because your elbow, at that point, if your thumb's come round [the neck of the viola], your elbow is right under the instrument as well, and it just makes it all a little bit more uncomfortable and slightly harder to maintain the intonation security up there.*

Participant C discussed shifting in terms of both the weight and the differences in size between the violin and the viola. He proposed that shifting on the violin is easier than it is on the viola, owing to the smaller, lighter structure of the violin. Although he did not mention the role of the elbow in the shifting process, he pointed out that the violist has to support the instrument with the chin and the shoulder.

Participant C: *Oh ja, and the shifting. On the violin, much easier. Viola, because you are bigger, you work with a bigger instrument, you've got to realise that you... your pressure... the combination pressure of your chin and your shoulder when you shift, it's got to... you've got to have more contact before your shift. On the violin, because of the lighter instrument, it's much easier.*

Participant C stated further that he makes more use of shifting when playing the viola than when playing the violin. According to him, half position and second position fulfil an important role in viola technique, whereas these positions are seldom used by violinists.

Participant C: *[...] you play a lot in half position on the viola, which you don't do on the violin, necessarily. Uh, half and second position are the two positions that you use in viola.*

Participant C: [...] on the viola, you use half position quite a lot. So you have to [...] be very agile on the viola.

Participant E, who makes more use of second and fourth positions on the viola, agreed.

Participant E: On the viola, so, um, I think you would have to deal with shifting a bit more. Um, using a lot more second position. Second and fourth position, which violinists tend to bypass, and kind of avoid, because they can. They can kind of stretch to reach notes, whereas on the viola it's a bit more difficult to do that. So, um, ja. Just utilising a lot more of the in-between positions, which violinists often can get away with... with ignoring.

Moreover, this participant made a connection between the use of second position and the key in which the music is written.

Participant E: There's some keys which second position just works so much easier [...] F major or D minor. Or okay. F major, C major, um... And, ja. Depending on the structures of the runs, but [...] what comes to mind is F major, C major, and E-flat, I suppose, would be there as well.

Interestingly, Participant C also found the key of E-flat to be easier on the viola, although he did not mention the use of second position in this instance.

Participant C: So different keys are now easier to play. Um, like E-flat major, for instance, is fantastic on the viola. On a violin, not necessarily so.

Participants A and D emphasised the placement of the open strings in various keys and its effect on shifting and playing in certain positions.

Participant A: I suppose, in a way, you shift more. Because many times, keys... If you play with other people, like violinists for instance, they tend to play in keys like D major that robs you of one of your open strings, where they still have all of their open strings. So, eventually, in a key like D, you are going to have to play in a half position.

Participant D: [Shifting] depends on the key of the music. The viola is more friendly to flat keys than the violin is, because of the way that we are tuned because of our open strings. So I tend to use half and second position a lot more, already from keys like A major and E major, with rising number of sharps.

It is evident from the discussion on this subtheme that the participants experienced various factors that influenced both their shifting technique and the amount of shifting required by the music that they played. These included the dimensions of the instrument, the security of the muscle memory and the key in which the music was written.

4.4.5 Subtheme 5: Vibrato

In the discussion on this subtheme, it is apparent that the participants considered vibrato used on the viola as more an arm vibrato than a wrist vibrato, thus resulting in a wider vibrato.

According to three of the six participants, this is owing to the lower register of the viola.

Participants B and D elaborated on the use of arm vibrato when playing the viola.

Participant B: *Actually, um, I started seeing it in the orchestra recently, that the viola players, um, use their arms more than their fingers. And violin players, um, have more flexible fingers, if I can... ja. They use their fingers and their hands more for the vi... for... for vibrato. And we use our forearms more.*

Participant D: *I know that ever since I started playing the viola, I've used arm vibrato.*

Participant C explained that he makes use of a combination of arm, wrist and finger vibrato when playing the viola.

Participant C: *[...] the moment I go over to the viola, I use my elbow and my wrist and part of my finger as well.*

Participant A attributed the need for a wider vibrato to the thickness of the viola strings.

Participant A: *[...] you need a wider vibrato, mostly, on the viola, because the strings are thicker, and it... it takes a little bit more to manipulate them.*

Participant A: *But I know with some of my colleagues, and when I spoke to other violists, people who learnt wrist... wrist vibrato first, because that's... it has to do with a particular teaching method, had real trouble when they got to the viola, because the vibrato that they had, sounded very anxious, and they had to widen it systematically to get the same rich sound that you would ordinarily get on the violin.*

The "anxious" sound resulting from wrist vibrato on the viola that Participant A pointed out was also noted by Participant C.

Participant C: *If you do a wrist vibrato on a viola, just a wrist vibrato, it sounds like a screechy cat. It doesn't make sense.*

Participant C, furthermore, commented on the need for a wider vibrato on the viola because of its longer strings.

Participant C: *So the vibrato on the viola is much more difficult than just [...] wrist vibrato on the violin. [...] it's the longer instrument. It's the longer... longer string. It's a longer string, and the... the notes... the note is... the vibrato... note plus vibrato is a*

couple of millimetres, where in violin, it can be one or... or half millimetre [...] and on the viola it can be three or four millimetres.

Participants B, E and F discussed the frequency or width of vibrato in relation to the register of the music performed. These participants maintained that, in general, the vibrato used on the viola would require more width.

Participant B: *[...] on the violin it's definitely more... it's faster, um, quicker, and it's more intense. Um, especially because violin... they usually play, um, very higher, and in higher octaves, so you need to have a fast and a... vibrato to actually hear it. On the viola, in... ja, it's not... it is a wider, and a broader, and a, um, fatter vibrato.*

Participant E: *[...] with the higher registers, you're obviously going to need a much smaller, faster, tighter vibrato. Otherwise it's going to just sound like a wobbling soprano singing an aria. Um, and... Viola you can get away with a bit more of a warmer, wider vibrato. Obviously depending which register you're playing in on the viola, and... and on the violin. And what style of music, and things like that. So you still need the flexibility in your vibrato, but, generally speaking, the vibrato on the viola can afford to be a little bit wider and slower.*

Participant E: *I wouldn't say the physical dimensions [play a role in determining the type of vibrato]. Because if you... if you're playing a higher register on the viola, you would need to work on it to get a faster vibrato, just because you're in the higher register. [...] I don't think the physical dimensions of the instrument has got too much to do with the... determining the type of the vibrato. At the end of the day, it needs to be what the music calls for, not what the instrument makes easier or harder.*

Participant F: *[...] I had to work on my vibrato a little bit, just to get it, um, in line, or... or according to the, um, requirements of playing on the lower strings. [...] I'd say, on the lower, warmer strings, more arm vibrato.*

According to Participant D, the atmosphere of the music also affects the vibrato frequency. She believed that the choice of vibrato depended completely on the interpretation of the music performed, and not on the instrument on which it is played. Participant C agreed, stating that the choice of vibrato is also influenced by the tempo of the piece or movement being played. However, Participant C found the difference between slow and fast vibrato on the viola to be much more significant than on the violin.

Participant D: *Now if you play a pianissimo passage in high tension, you will use a very narrow amplitude, and a fast vibrato in order to create the tension. If you play something more relaxed, you will swing wider, and have a slower vibrato. So the... that, for me, is not instrument specific. [...] that is again something about the music, about the kind of, uh, tension or relaxation that you are trying to project with the phrase.*

Participant C: *[...] you must be able to vary your vibrato tremendously between slow movements and fast movements [...] on violin you also do it, but the movement is small if*

you do it a bit slower. On the viola, if you want to do a broader vi... uh, vibrato - slower - you've got to increase everything. Got to think slower.

4.4.6 Summary of Superordinate theme 2

Data pertaining to Subtheme 1, "Similarity between the violin and viola techniques", was gathered from five of the six participants. Certain participants attributed this similarity to the physical similarity between the violin and the viola as instruments. Violin technique was viewed as the basis upon which viola technique is established, and lessons from violinists were regarded as beneficial to the violist.

In Subtheme 2, "Fingering and the use of open strings" was explored. Three participants considered violin and viola fingering to be based on the same principles. According to certain of the participants, the chosen music also contributes to the choice of fingering. One participant, who had undergone training in Baroque viola performance, maintained that the open strings of the viola have a beautiful sound and should be included more often in viola fingering.

The third subtheme, "The longer fingerboard", consists of participants' experiences concerning the wider finger spacing on the viola fingerboard and the consequent influence thereof on intonation and shifting. One participant, who has a tall physique, felt more comfortable playing double stops on the viola fingerboard than on that of the violin, while another stated that certain double stops are impossible to execute on the viola. Two participants practised scales to familiarise themselves with the larger finger spacing on the viola fingerboard.

Subtheme 4, "Shifting", deals with the issue of shifting on the viola, which was described by five participants to resemble violin shifting. Both muscle memory and a more active movement of the left elbow when shifting beyond the wide shoulder of the instrument, were employed by the participants when shifting on the viola. The data revealed that certain participants tended to make more use of half, second and fourth positions when they were playing the viola, as opposed to when they were playing the violin. Moreover, four of the participants were of the opinion that the specific key of a passage has an influence on shifting.

The final subtheme of Superordinate theme 2, "Vibrato", revealed that the participants used arm rather than wrist vibrato when playing the viola. According to five of the participants, the longer and thicker strings of the instrument, in addition to the lower register of the viola, require a wider vibrato. However, the atmosphere and interpretation of the music performed, ultimately determined the type of vibrato chosen.

4.5 Superordinate theme 3: Right-hand technique as affected by the physical differences between the instruments

The data analysis revealed the following five subthemes as supportive of Superordinate theme 3: 1. Right-hand technique as a challenging adaptation; 2. Bow hold; 3. Arm weight as opposed to pressure; 4. Resistance of strings; and 5. Viola bowing technique improving violin bowing.

Table 3: Superordinate theme 3

Superordinate theme 3: Right-hand technique as affected by the physical differences between the instruments	
Subtheme	Raw data example
1. Right-hand technique as a challenging adaptation	Participant D: <i>What I find most challenging is how you treat your bow.</i>
2. Bow hold	<p>Participant E: <i>I also find the role that your right-hand fingers play at the different parts of the bow is a lot more specific on the viola than on the violin.</i></p> <p>Participant D: <i>[...] the viola bow is on average several grams heavier than the violin bow [...]</i></p>
3. Arm weight as opposed to pressure	<p>Participant D: <i>[...] you have to apply your arm weight to pretty much every millimetre of the bow [...]</i></p> <p>Participant C: <i>I had to learn to use a full bow without pressure.</i></p>
4. Resistance of strings	Participant D: <i>[...] on the viola, you work against an active resistance of the strings.</i>

	Participant F: [...] it does require a bit more energy to, um, stimulate the string to vibrate.
5. Viola bowing technique improving violin bowing	Participant E: [...] I think it really helped my violin sound production [...] I was more versatile with the bow once I got to know how to use the bow correctly.

4.5.1 Subtheme 1: Right-hand technique as a challenging adaptation

Most of the participants experienced the bowing technique for the viola as one of the most challenging aspects of transitioning from the violin to the viola. The right-hand technique was described by certain participants as more difficult to master than the left-hand technique. In addition, these participants regarded the right-hand technique of the viola as a lifelong learning process.

According to Participant B, the right-hand technique was the most difficult obstacle she had to overcome in her transition to the viola, whereas Participant C had to learn to use his right arm in a different way.

Participant B: [...] the bowing was a very difficult transition. Um, I'm still, actually, trying to just perfect it. Um, because everyone... you are always so focused on what your left hand is doing - the notes you are playing - that you sometimes forget the impact that your bowing arm has. Um, and the sound that it can create. And, um... So, ja, I think the bowing was difficult for me.

Participant C: The bow technique I had to relearn.

According to Participant E, the bowing technique requires more attention than the left-hand technique when transitioning to the viola.

Participant E: [The overall most difficult adaptation was] the technical changes that came with the bow. [...] the way to use the bow to get the most out of the s... most sound out of the viola. Um, that... that took the longest to overcome. The left-hand technicalities you can just practise enough and that will sort that out. The right hand you really, really have to work at. It's quite a different story.

Participant D explained that a player should be aware of the right hand. Furthermore, both Participants D and E stated that the process of perfecting the bowing technique on the viola could be regarded as a lifelong learning curve.

Participant D: *[When] somebody that has played violin changes to viola, they've been moving their bow like this for years and years. And to adapt that... to change that... that can be difficult. Because a lot of people move their bow without really being aware of what they are doing. So now they have to be made aware first what they are currently doing in order to then change it. And that is quite a process.*

Participant D: *Bowing technique. [...] and that's a lifelong thing. I'm still at it.*

Participant E: *[Bowing technique is] quite a different approach, and it takes quite a few years to kind of get used to it, especially if you first start on the violin and then go on the v... go on to the viola.*

4.5.2 Subtheme 2: Bow hold

This subtheme was derived from data collected from each of the six participants. Aspects mentioned concerning the viola bow hold included the increased weight of the viola bow, as well as the discomfort for the right hand. The participants expressed various opinions on the difference between the bow hold for viola and the violin.

Participants B and E viewed the viola bow hold as basically similar to the violin bow hold.

Participant B: *[...] the bow hold, um, isn't a... it doesn't differ as much.*

Participant E: *So, I don't know if the bow hold itself... You know, the w... placement of the fingers on the bow, if that differs too much.*

Participant E, however, clarified that, even though the hold for the viola bow resembles the hold for the violin bow, the role of the right-hand fingers is greater in viola bowing technique than in the right-hand technique for the violin.

Participant E: *I also find the role that your right-hand fingers play at the different parts of the bow is a lot more specific on the viola than on the violin. On the violin you can get away with your little finger on the right hand not doing a huge amount of work, whereas on the viola, in certain parts of the bow, it's really working very hard in order just to maintain that balance and create the contact that you need between the hair and the string to produce a good sound.*

Although Participants C and D claimed that the viola bow hold differed from the violin bow hold, they agreed with Participant E (above) that the position of the right hand fingers on the viola bow should cover a broader area of the bow, and that the entire hold of the bow should be deeper than that for a violin bow hold. According to both Participants C and D, the bow hold needs to be flexible and relaxed when playing the viola.

Participant D: *I find that the two middle fingers are more important on the viola just to help hold the bow, and create a broader... um, a broader spot on which to hold it. On the violin, you can hold the bow between two fingers. [...] On the viola, you need this distance, for example between the index finger and the fourth finger. Just this distance, because of the length of the bow, and of the weight that pulls that side because of the angle. You need a broader distance just in order to balance that.*

Participant C: *[...] you learn to play with a... with a deeper hand... with a lower [right] hand position on the viola [...]*

Participant C: *With the viola, the bow hold... you learn much more flexibility on the viola.*

Participant D: *So you have to have a very flexible hold of the bow.*

Participant A admitted that tension in her right hand was uncomfortable when holding her viola bow.

Participant A: *I would say that though the bow hold did not change a lot, at least not at a conscious level, not in the beginning, because at that point I was not aware that I carried a whole lot of tension in my fingers.*

Participant A: *I have a lot of tension [in my right hand] which I haven't addressed, and this made things difficult.*

Participant A mentioned the weight of the bow as a potential factor affecting the comfort of her bow hold.

Participant A: *[...] your hand is uncomfortable for a while, while you get used to the weight of the bow, the weight of the instrument, the resistance of the strings.*

The weight of the bow, as well as the balance point of the bow, was cited by Participant D when discussing the viola bow hold. However, she did not refer to discomfort. Before transitioning to the viola, Participant F had started using a viola bow when playing the violin. He stated that the weight of the bow contributed to the adaptation he had to make in terms of bowing.

Participant D: *[...] bow hold is a different one, because the viola bow is on average several grams heavier than the violin bow, and also, the point of gravity on the bow is slightly different. So you have to adapt your bow hold.*

Participant F: *[Using the viola bow on the violin] was actually, initially, a bit of a [sic] additional weight that I had to get used to.*

Although the participants experienced various challenges that affected their hold of the viola bow, it is evident from the excerpts quoted above that the role of the right-hand fingers, as well as the weight of the viola bow were, arguably, the two most common issues which had to be addressed when these participants transitioned to the viola.

4.5.3 Subtheme 3: Arm weight as opposed to pressure

This subtheme focuses on the issue of creating sound with the viola bow by using the natural weight of the arm, rather than placing artificial pressure on the strings by forcing with the wrist or index finger.

The following statements by Participants C, D, E and F pertain to the concept of transferring the weight of the right arm into the bow.

Participant C: *[...] on the viola, [bowing is] a real push and pull to the utmost. No pressure whatsoever. It's just the weight of the arm.*

Participant D: *[...] what changed my bow hold the most is the fact that you have to apply your arm weight to pretty much every millimetre of the bow. And if you have any part of your right arm that is not completely relaxed, you just can't do that. There will be places on your bow when you pull a full bow, where you haven't got the same transmission of weight as in others. If you have any part of your right arm that is not completely relaxed.*

Participant D: *[...] when you play, and you apply your arm weight, you have to find a way in which your whole arm, hand, wrist goes with the bow, but in every millimetre of the bow. Otherwise you don't have an even sound.*

Participant D: *[...] to have every millimetre of your bow with the same arm weight, that requires you basically to have a rubber arm. You have to adapt every millimetre of the movement of your bow in a way that there is nothing blocking the application of weight at that specific place of the bow.*

Participant E: *There's a lot more focus on your arm weight being used in the weight of the bow to... in order to create the sound that you need on the viola.*

Participant F: *Apply more weight [to the viola bow] to get a proper tone.*

The above excerpts from the interview conducted with Participant D emphasise the importance of using the entire bow when playing the viola, as well as being able to transmit arm weight into every part of the bow. Participant C supported this statement.

Participant C: *I had to learn to use a full bow without pressure. Violin, of course, as well, but on the viola, it is... the string vibrates much slower than the viola... ag, than the violin.*

Participant C: *[...] you learn to play absolutely to the tip of the... of the bow. Violin, not... not necessarily.*

According to Participants C and D, pressure, instead of the application of arm weight to the viola bow, could negatively affect the sound produced. Participant C maintained that the tension of the viola strings requires minimal additional pressure.

Participant C: *[Viola strings] are less tight than the violin strings, so they're less forgiving. When you press with your wrist on a viola, you make the worst sound you can make. On a violin, you get away with it, because of the tightness of the string. You can use a bit of wrist action to get, um, a... a... a... a bigger sound.*

Participant D: *Pressure [from the bow arm] doesn't work. [...] Because with pressure... pressure, you kill the volume of the sound. You achieve a loud sound, but it doesn't have a volume. [...] It sort of collapses.*

Participants D and E indicated that, although pressure created by the index finger of the right hand is commonly found in violin bowing, the right wrist should not pronate when playing the viola.

Participant D: *[...] a lot of people go into pronation, uh, at the tip. This turning of the arm in order to apply pressure on the index finger in order to hold the bow there. But the moment you do anything that lifts your elbow up, you take the weight off the bow immediately. So you have to find a way to get to the tip and hold your bow in a way that you don't do this (pronates wrist). But if you watch violinists play, a lot of them do that very, uh, blatantly, that at the heel you are like this, and then you get to the tip and it goes a little bit like that. But that is something for example that you have to eliminate. You have to keep down with your shoulder. You have to keep down with your elbow, otherwise you lift the weight off, and you compensate by pressure.*

Participant E: *But I did find with violinists, they tend to lean too much on the index finger, whereas it needs to be, like, the position of the hand almost needs to be straightened up a bit more and a bit more weight placed on the small finger. Um, ja. That helps with the weight distribution of the arm into the bow to cr... get the good sound out of the viola.*

It is significant that both Participants D and E thought that, if one's bowing technique was not specifically adapted to the requirements of the viola, the outcome would sound like "a violinist playing the viola".

Participant D: *[...] if you come from the violin, you will sound like a violinist playing viola for quite a while, because [of] this adapting [of] your right arm technique.*

Participant E: *And I think [adjusting the bowing technique is] often a part that kind of gets left behind. Because you can play the viola without adjusting your bow... that way you use your bow too much. Um, but you're not gonna play it very well. And that often is, you know, that's where you kind of have to decide if you're gonna do this properly, or if you're just gonna be a violinist who plays the viola as well.*

4.5.4 Subtheme 4: Resistance of strings

Information pertaining to this subtheme was gathered from all the participants, except for Participant C. An analysis of the collected data showed that the implications of the resistance from the viola strings include a more active use of the bow, as well as lifting the right elbow higher when playing the viola. The participants maintained that the string resistance is directly linked to the register in which viola music is written. In addition, *spiccato*, a specific bow stroke, was mentioned by two participants with reference to the resistance of the strings.

In the following data excerpt, Participant D explained that viola strings, as opposed to violin strings, require more effort from the performer in order to produce a good sound.

Participant D: *[...] on the viola, you work against an active resistance of the strings. You have to really work with your bow and with your bow arm. You have to work the bow into the strings.*

Participant A suggested that the resistance by the lower strings of the viola be approached with more energy, while Participant F said that lifting the right elbow helped when playing on the lower strings.

Participant A: *I did a lot of scales, and I did a lot of studies, um, to practise playing in the lower register and getting used to having to bow really hard, especially on the C-string.*

Participant F: *I would say something that, um, Professor _____ taught me right from the start, was to lift my, um, elbow higher. And I think that... that was part of his technique, because he also played both instruments, which did... which, in my opinion, does give you more control over the weight of the instrument, especially if you're playing on the lower strings.*

Participants E and F emphasised the idea of applying a more active use of the bow.

Participant E: *[...] so [on] the viola you have to work a lot harder in order to get the strings to resonate in the same way that they do on the violin and the vio... ah, and the cello. Um, so the... what that involves is just using your bow in a more... I suppose, active sense.*

Participant F: *[...] it does require a bit more energy to, um, stimulate the string to vibrate.*

During the interview conducted with Participant A, she pointed out that the different registers of the viola require different levels of effort to create the same sound from each.

Participant A: *So you have to work a lot harder with sound, and, also, the difference... well, I've experienced it this way with the instruments that I've played, that the difference between the effort put into the lower register and the effort put into the upper register, trying to get sound out, is quite big.*

This participant explained that more effort is needed when playing in the lower register of the viola.

Participant A: *[...] your lower register has to sound exactly the same, at the same volume and the same intensity, as you have in the upper register. But because you want that, you have to make a little bit more effort.*

Participant F said that *spiccato* is also influenced by the viola's strings. He commented that the player needs more control over the bow, specifically when playing *spiccato* on the lower strings

Participant F: *So there is, if you're doing spiccato on the lower strings, a bit more control that you require. [...] I found that the, um, string, because it's... its more absorbent of the, uh, bounce of the, um, the actual bow from the strings, um, you need to control [the bow] slightly different [when playing spiccato or sautillé].*

4.5.5 Subtheme 5: Viola bowing technique improving violin bowing

Participants A, E and F were of the opinion that various aspects of their violin bowing had been positively influenced after having mastered the viola bowing technique. They expressed their views in the following excerpts.

Participant A: *[...] you work a lot on sound, so your sound tends to, um, improve a lot if it wasn't very good before you switched to viola.*

Participant E: *[...] I don't think most violinists actually use their bow to its full potential on the violin. Because it's not necessarily needed to. Because you can create a really good sound from the violin without really working on the bow too much, or, you know, using the full weight of the arm on the bow, and making sure all the fingers are engaged in the different parts on the bow. Um, so I think... I think it really helped my violin sound production in terms of, you know, how th... I... I was more versatile with the bow once I got to know how to use the bow correctly.*

Participant F: *So it did help me a lot in the violin playing, um, the... the knowledge of knowing how to play with more energy from your bow arm.*

4.5.6 Summary of Superordinate theme 3

Superordinate theme 3, "Right-hand technique as affected by the physical differences between the instruments", consists of five underlying subthemes.

In Subtheme 1, "Right-hand technique as a challenging adaptation", four participants expressed their views on the right-hand viola technique as requiring more attention than the left-hand technique during the transitional phase from the violin to the viola. One participant specifically remarked that he had to learn to use the bow in a new way, while another emphasised the importance of cultivating an awareness of the right hand when playing the viola.

In Subtheme 2, "Bow hold", it was revealed that, although the actual positioning of the fingers on the viola bow is similar to the violin bow hold, the role of the right-hand fingers is greater, as it maintains the balance of the hand. Two participants addressed the need for a flexible bow hold. They stated that the viola bow hold should be lower and deeper than a violin bow hold. According to three of the participants, the viola bow is heavier than the violin bow.

Subtheme 3, "Arm weight as opposed to pressure", demonstrates the views of four participants on the issue of transferring the natural weight of the right arm into the bow, rather than creating artificial "weight" by forcing the right wrist when bowing, which has the potential to negatively affect the sound produced. Two participants asserted that the entire bow should be used when playing. They urged violists to avoid pronating the right wrist.

Subtheme 4, "Resistance of strings", reveals that more effort and energy are required to draw a good sound from the viola. The conclusion was that the register of the viola repertoire plays an additional role in determining the amount of effort needed from the bow arm. One participant referred to the *spiccato* bowing technique as requiring more bow control owing to the increased resistance of the viola strings.

In the fifth subtheme, "Viola bowing technique improving violin bowing", three participants pointed out that they experienced improvement in their violin bowing technique after having adapted to the technique of viola bowing.

4.6 Superordinate theme 4: Injuries and pain caused when transitioning to the viola

Data supporting Superordinate theme 4 was present in all the semi-structured interview transcripts. The following four subthemes were derived from Superordinate theme 4: 1. Physical dimensions of the viola; 2. Playing the viola for extended periods; 3. Incorrect set-up; and 4. Finding the correct set-up.

Table 4: Superordinate theme 4

Superordinate theme 4: Injuries and pain caused when transitioning to the viola	
Subtheme	Raw data example
1. Physical dimensions of the viola	<p>Participant D: <i>I've got relatively small wrists, and I've got a big instrument. So [carpal tunnel syndrome] was prone to happen again.</i></p> <p>Participant B: <i>[...] my hands start to... started to cramp a lot, um, because of the bigger spacing between the fingers [...]</i></p>
2. Playing the viola for extended periods	<p>Participant B: <i>I couldn't practise more than 15 minutes at a time when I started viola.</i></p> <p>Participant A: <i>[...] I'm not entirely fit when I go into these bouts of playing a lot.</i></p> <p>Participant D: <i>[...] if you play orchestra, if you sit long hours and you have to hold that instrument up, there is no way you can do that if you are not sitting exactly right [...]</i></p>
3. Incorrect set-up	<p>Participant C: <i>Right in the beginning was where the shoulder rest made a difference [...]</i></p> <p>Participant B: <i>"...] I have the very famous, um, viola hickey on my neck [...]</i></p>
4. Finding the correct set-up	<p>Participant A: <i>[...] as I started playing the viola, I made [the shoulder rest] a little bit</i></p>

	<p><i>smaller [...]</i></p> <p>Participant E: <i>[...] my teacher liked to use the centre chin rest on the viola. [...] Which also helps a bit with shifting.</i></p> <p>Participant E: <i>[...] as you go through different phases, [the set-up] will change through your life [...]</i></p>
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4.6.1 Subtheme 1: Physical dimensions of the viola

Participants A, B, D and F said that they suffered injuries, pain or discomfort due to the increased dimensions of the viola when they transitioned from the violin. Prominent affected areas included the left hand, arm and fingers. Certain participants also felt the effect in their biceps, shoulders, jaw and neck.

According to Participant A, her left wrist overextended owing to the weight and size of the viola.

Participant A: *[...] what I have personally found is that, with the violin, where I tend to keep my left-hand wrist quite straight, as I was taught, with the viola I tend to overextend it, and this causes problems sometimes. I think it's because the instrument is heavier.*

Participant A: *[...] the wrist - as I mentioned, I tend to overextend, because I need to reach around, and it's a... it's a natural, intuitive solution, but it's not the best type of solution to negotiating the size of an instrument [...]*

Even though Participant F did not explicitly point to pain in his left wrist, as in the case of Participant A, he did, however, explain that he needed to extend his left wrist more when playing the viola as opposed to what was necessary when playing the violin.

Participant F: *[The most challenging technical aspect of transitioning to the viola] was the left arm, the stretching, um, while keeping the thumb and all the fing... fingers in position with the, um, wrist, basically, stretched out a bit further.*

Participant D experienced a more serious injury when she developed carpal tunnel syndrome in her left wrist. This injury was indirectly linked to the size of the viola.

Participant D: *I've got relatively small wrists, and I've got a big instrument. So [carpal tunnel syndrome] was prone to happen again.*

Participant B explained that she experienced pain in her left hand which was caused by the longer viola fingerboard.

Participant B: *[...] my hands start to... started to cramp a lot, um, because of the bigger spacing between the fingers [...]*

According to Participant A, she suffered pain when she played four octave scales on the viola.

Participant A: *[...] it hurt a lot to play four octave scales. It was awful. Really bad.*

Other areas of discomfort caused by the dimensions of the viola were highlighted by Participants A and B.

Participant A: *I would imagine that I probably experienced some pain here in my shoulders, because it worked in a new way. I think my biceps got sore, but in the same way that you would do weights, and then you get used to it.*

Participant B: *[...] I don't have a long neck. And, the instrument is a bit thicker. It was also a problem for me to have to extend my neck a lot of the times. And that was also very sore.*

4.6.2 Subtheme 2: Playing the viola for extended periods

The injuries and pain pointed out in Subtheme 2 are indirectly connected to the physical dimensions of the viola, as outlined in Subtheme 1 of Superordinate theme 4. The analysed data, however, presented sufficient information to create a separate subtheme pertaining to injuries and pain resulting from playing the viola for extended periods of time. Supported by relevant quotations from the raw data, this subtheme includes references to personal practice sessions and orchestra rehearsals where members are required to play seated. There are also problems that arise from practising or playing the viola using incorrect technique.

According to Participants B and E, practising for too long during the early stages of transitioning from the violin to the viola could cause pain in the arms and shoulders.

Participant B: *I couldn't practise more than 15 minutes at a time when I started viola, because it was too heavy. Um, and I had to rest, and my arms were so sore afterwards.*

Participant E: *I remember my viola teacher that I first started viola with, um, being very... very cautious with how long I would practise. So she, you know, she said, "You know, don't practise for more than half an hour for... for now. And then you... rather do seven or ten, whatever, half hour sessions in a day, than try practise for three hours in*

one session, because you're going to give yourself a... a shoulder injury. And if it... if you are getting shoulder pain, then stop and have a break."

Participants A and B referred to extended periods of playing that made them clench their jaws.

This caused additional pain for Participant B.

Participant A: *[...] if I play for a long time, and I play a lot of viola, then I tend to clench my jaw.*

Participant B: *[...] my jaw tends to hurt when I play for a very... uh, when we have an orchestra rehearsal, or something that's over three or four hours, then I really... then my jaw hurts a lot, because I think I, um, tend to bite [...] too hard, just because I, um, concentrate so much [...]*

Participant B: *I'm concentrating so much that I tend to bite, and, uh, it's not great. Um, but also, I think it could also be that I'm pressing down on the viola to... um, to try and compensate for it getting very heavy when you play for so long. [...] Instead of holding it up, you just press down more. Um, so I think that's maybe a reason that it gets hurt... um, sore.*

When Participant E played the viola for extended periods of time, she experienced pain in her neck.

Participant E: *[...] if you go through busy times, I land up, um, maybe just getting a bit of a niggle in my neck, and that can be sorted out by rolling on a foam roller or going for a sports massage, or some deep tissue massage, or something like that.*

Participants A and E considered the necessary level of fitness for playing the viola for long hours at a time.

Participant A: *[...] I'm not entirely fit when I go into these bouts of playing a lot.*

Participant E: *Obviously, you build the stamina and the muscles required to hold the instrument for longer periods.*

Participants B and D also mentioned the idea of having to be fit in order to play the viola for an extended period of time. They specifically referred to this fitness in relation to orchestral playing.

Participant B: *My back gets sore a lot when I play. Um, especially when you're sitting, um, because you have to sit up straight. You get... I get very tired. Um, it's almost like you have to get fit when you play in an orchestra, and you know you have a very long rehearsal. Um, ja. Um, my back gets very sore very quickly.*

Participant D: *[...] you have to see to it that you develop some decent back muscles [...] to help you.*

According to Participants C and B, incorrect posture when playing seated could potentially cause back injuries due to the weight of the viola.

Participant C: *Wrong posture, sitting in an orchestra, leaning forward, putting all that pressure on your back. Not just the violin or the viola, orchestra playing. Orchestra playing on a violin... Once again, it's a lighter instrument, but on the viola, if you tend to lean forward and look at the notes, you sit with, physically, more weight [...] on your back. So it's posture and right shoulder.*

Participant B: *[...] I think the weight... I don't think violins, um, or violinists, struggle as much with getting tired, because the violin isn't really heavy, and they don't have to work hard... as hard to, um, keep a straight position... sitting up straight [...]*

The issue of playing the viola while sitting in an orchestra was further elaborated by Participant D. She emphasised the importance of maintaining a correct posture, which can also be influenced by the chair on which one is sitting.

Participant D: *[...] especially if you play orchestra, if you sit long hours and you have to hold that instrument up, there is no way you can do that if you are not sitting exactly right, and the instrument is sitting exactly right. You will pick up trouble if you haven't done that.*

Participant D: *[...] the obvious [thing] is sitting up straight. You have to take very good care that your knees are lower than your hips when you sit. Because that influences how your pelvis is tilted, and that again influences your lower spine.*

Participant D: *So, you have to find a way in which you can sit up straight, so that your instrument is still sitting here. Because the moment you lean forward, you have to support it with your hand. [...] And that is when you start running into trouble, because then your arm is taking a lot of strain. [...] your arm is extended quite a bit more forward than when you play the violin. So there is no way that not even your upper arm can carry itself. You have to physically carry it all the time.*

Participant D: *[...] I, uh, got one of these triangular seating cushions, so that if you get a bad chair, and... Here we usually get bad chairs. Um, I mean, the orchestra chairs that we used to have back in Germany, I haven't seen anything that comes close to it here, ja. So, if you have a bad chair, make sure you've got something to sit on that sorts you out.*

The final aspect of Subtheme 2 pertains to potential injuries and pain that could arise from playing the viola using an incorrect technique. Participants C, D and F voiced their opinions on this issue.

According to Participant C, the incorrect right-hand technique of placing pressure on the bow via the wrist could create injuries in the right elbow. In addition, he stated that the little finger of the right hand should be flexible and relaxed in order to avoid injury to the right arm.

Participant C: [...] *that's where a lot of people pick up injuries. When they force with their wrists. [...] And also, they pick up problems in their elbows [...] when you force your wrist, look what happens to your elbow. It pulls tight. [...] So if you're going to play a tremolo like this, and you press with your wrist, you pick up problems.*

Participant C: [...] *if you play with a straight pinkie on the viola, you're gonna die. You're gonna have tendonitis in your... in your arm, because the moment you've got a straight pinkie, that muscle going across pulls tight. That's why the moment you bend your pinkie, you relax.*

As stated earlier, Participant D suffered from carpal tunnel syndrome in her left wrist. She said the tension she carried in her left hand contributed to this injury.

Participant D: [...] *[carpal tunnel syndrome] was a direct combination of playing under stress on a big instrument doing this, and then also squeezing with the left hand.*

Participant F referred to potential muscle tightness resulting from intensive practice using incorrect technique.

Participant F: [...] *I would say if you really work hard, obviously, um, and the technique is not correct, then you can end up, um, straining muscles.*

In this section, it becomes evident that various factors contributed to the participants' experiences in terms of injuries and pain when playing or practising the viola. The main causes of injury and pain included playing the viola for long periods of time, playing while seated with an incorrect posture and playing the viola using incorrect technique.

4.6.3 Subtheme 3: Incorrect set-up

Four of the six participants experienced injuries, pain and/or discomfort due to an incorrect viola set-up. The most common problem the participants mentioned involved neck pain. Other issues included back pain and an injury caused by the chin rest.

Participants A, B and C referred to discomfort of the neck caused by the shoulder rest. It should be noted that Participant A experienced pain while playing with a Baroque set-up.

Participant A: *I also started doing, um, Baroque viola, and we don't have shoulder rests for that, and you also play with your chin at a different part of the instrument. So, learning how to balance that, and learning how to bow straight, because the physics have to slightly change, caused me... well, still causes me a lot of pain. I always have to go through a big adjustment period, because I tend to bend my neck, and nothing is really in balance when I play that way.*

Participant B: [...] [Flattening the shoulder rest] was the one for me, because my... I know my neck got very sore in the beginning.

Participant C: Right in the beginning was where the shoulder rest made a difference. [...] there was [sic] no injuries, but I felt a pulling.

Participant C shared his insight concerning back pain originating from an incorrect shoulder rest position.

Participant C: [...] people taking up the viola, and a shoulder rest that was not the right height. They picked up problem [sic] in their upper back. Huge problems. Uh, so much so that they changed back to violin.

Participants B and D developed injuries beneath the left side of the jaw as a result of the chin rest. According to Participant D, a different chin rest brought a positive change in the irritated area, while posture and good hygiene also played an important role.

Participant B: [...] I have the very famous, um, viola hickey on my neck [...]

Participant D: [...] before I had my chin rest adapted, I had quite some trouble with this spot here (points to sore beneath left side of jaw). It kept getting infected with the pressure and the weight of the instrument, and if you compensate for that by squeezing, then you can pick up trouble there. [...] Lacerations, or even sometimes like little pimples growing there and getting infected and getting bigger.

Participant D: [...] this one here (sore beneath left side of jaw) disappeared after I had my chin rest changed and also started using a different shoulder rest.

Participant D: [...] that was a gradual thing, but the more you adapt your posture and the less the instrument actually moves here, the better that gets. And also a big point is disinfect your chin rest. [...] Because what starts this whole thing is not the actual pressure, it's bacteria that grow on your chin rest, because it's got constant contact with your skin. Skin cells are rubbing off on it and staying there, and the moment you have bacteria in there, that's when you get inflammation. So I just got some spray alcohol, and I would wipe it off [...] in regular intervals. I still do that. Now that helps.

4.6.4 Subtheme 4: Finding the correct set-up

The process of finding the correct set-up was highlighted by each of the six participants. Five of the six participants experienced a more comfortable set-up after they had lowered the shoulder rest and had moved the chin rest towards the centre of the viola. The collected and analysed data, moreover, revealed that the correct set-up is determined by a process requiring time and patience.

According to Participants A and B, a flatter shoulder rest compensated for the thickness of the body of the viola.

Participant A: *[...] my shoulder rest tended to be quite high in general. And then, as I started playing the viola, I made it a little bit smaller, because the instrument is thicker, and I didn't quite need the weight... the height anymore.*

Participant B: *I definitely had to, um, lower my shoulder rest, because the instrument is a bit thicker. Um, and my neck isn't as long.*

Participant C adjusted his violin shoulder rest to a higher setting so that it resembled his set-up on the viola.

Participant C: *On the violin itself, I also changed, uh, the shoulder rest on the violin. [...] I started using a higher shoulder rest just to keep it on the same level as the... as the viola.*

Participant B found that the chin rest was more comfortable when it was positioned either in the centre of the instrument, or towards the centre of the instrument.

Participant B: *The chin rest... Um, I actually, um, just shifted it a bit to the middle of the instrument. Not as much, but just a little bit. Um, just because the instrument is bigger, um, and it is more difficult to... I just felt more comfortable putting it a little more to the middle, because otherwise the instrument is way too much on my shoulder, and it's just out of reach, you know.*

Participant C expressed his intention of changing his current viola chin rest to one positioned towards the middle of the instrument, which would assist his bowing technique and right hand.

Participant C: *[...] I will change my chin rest over also to a middle one, to get... to get the viola half out of the way, that you've got more access... access to the strings. Because, at this stage, the viola is more here, so I play more front with my bow. And once I put it in the middle, like the violin is now, the whole viola goes a little bit back with a more relaxed bow hand.*

Both Participants D and E experienced shifting on the viola to be easier and more comfortable when using a middle chin rest on the instrument, as opposed to a chin rest towards the side of the viola.

Participant D: *[...] on the violin I always used to have the chin rest on the side of the tailpiece, and with my viola I moved it on top of the tailpiece, more to the middle of the instrument. Um, for the simple reason it makes it a lot easier for the left arm if you don't have to come in that far. My viola is considerably broader than my violin was, and if you play in the upper positions you have to come around. So if the instrument is too much this side, you put a lot of strain on that part of your arm. So I moved the instrument a little bit more outside, so that that is easier.*

Participant E: [...] my teacher liked to use the centre chin rest on the viola. [...] Which also helps a bit with shifting. If you think... if you have the chin rest that goes to the left of the tailpiece, you've got just that little bit more space of the viola to get around. Whereas if the viola shifted up five centimetres or so, up your shoulder, it's a little bit less space to get around the shoulders when you're shifting. Um, so I've... and I still use the centre chin rest [...]

Participant D advised violists to play seated in order to determine the type of set-up they should have on their instrument. She explained that freedom of movement when playing the viola while standing, allows the player to compensate for a potentially incorrect set-up.

Participant D: [...] you really have to find out as much as you can about your specific instrument and your specific body and your way of playing. You have to adapt that to each other. Now, you can hold any instrument in any which way, but only for a limited amount of time. Now, so if you play orchestra professionally, that's actually the best thing you can do in order to find the ideal set-up for your instrument.

Participant D: [...] if you play mostly standing, like whe... when I studied. If... if I didn't play university orchestra, I would never play sitting down. And when you play standing up, you can compensate a hell of a lot. Now, so there it doesn't matter so much. But the moment you start playing seated, that is where you really find out what works and what doesn't. [...] I can only recommend that. Play seated as much as you can. Play chamber music, play orchestra. Not just for the music, but also to find out how best to hold your instrument.

The final point that emerged from the analysed data relating to this subtheme refers to the timeous process of finding the correct set-up for the instrument and the violist's physique.

Participants C, D and E concurred.

Participant C: [...] my shoulder rest, um, I had to adjust... it took a while 'till I got, uh, the right [setting] [...]

Participant D: [...] I fiddled around for quite a long time, trying to find the exact right chin rest and the exact right shoulder rest [...] to match both my instrument and the individual shape of my shoulder and length of my neck, and all of that. That took a while. That took several years until I had worked that one out.

Participant E: And as you go through different phases, [the set-up] will change through your life, as well. I think the set-up I had when I was first starting the viola is very different from the set-up I have now and will be very different from the set-up I have in ten years' time, I'm quite sure.

The above responses obtained from the analysed data suggest that finding the eventually correct set-up may involve lowering the shoulder rest setting, considering using a chin rest positioned in the centre of the viola, playing seated in order to avoid compensating for a set-up

that is not ideal for one's individual physique, and allowing ample time for the process of establishing a comfortable set-up.

4.6.5 Summary of Superordinate theme 4

In the first subtheme of Superordinate theme 4, "Physical dimensions of the viola", four participants described injuries and/or pain, mostly in their left hands, arms, wrists and fingers caused by the weight and size of the viola, as well as the longer viola fingerboard. The most serious injury mentioned under this subtheme is carpal tunnel syndrome.

Subtheme 2, "Playing the viola for extended periods" showed that the body areas mostly affected include the arms, shoulders, jaw and neck. Further, four participants emphasised the importance of attaining a certain level of fitness, which would enable them to play the viola for extended periods of time without injury. Three participants mentioned posture in relation to playing in a seated position for long periods of time, while three participants maintained that lengthy periods of playing the viola using incorrect technique could also lead to injury and pain.

Subtheme 3, "Incorrect set-up", was mentioned by four of the six participants. They had experienced neck and back pain as well as an injury beneath the left side of the jaw.

The experiences of all six participants regarding the process of finding a correct and comfortable set-up are pointed out in Subtheme 4, "Finding the correct set-up". The prevalent views concerning a comfortable set-up seemed to involve a flatter shoulder rest and a chin rest positioned towards the middle of the instrument. One participant encouraged violists to play in a seated position when searching for the correct set-up, as this inhibits compensatory habits to a certain extent. Finally, three participants explained that the process of finding the correct set-up for the viola involved time and patience.

4.7 Superordinate theme 5: Methods for mastering the alto clef

Superordinate theme 5 is supported by two relevant subthemes: Methods involving note-reading, and Methods not involving note-reading.

Table 5: Superordinate theme 5

Superordinate theme 5: Methods for mastering the alto clef	
Subtheme	Raw data example
1. Methods involving note-reading	<p>Participant A: [...] when I start working with viola students, I tend to give them a lot of sight-reading, because that is really the only way to know the clef.</p> <p>Participant D: [...] I would write the open strings in, so that I had landmarks.</p> <p>Participant F: I did a lot of scales. And then starting off with easier pieces.</p>
2. Methods not involving note-reading	<p>Participant F: It was a visual transition. So not learning each note on the clef, but just doing a... a shift on the, um, clef.</p>

4.7.1 Subtheme 1: Methods involving note-reading

This subtheme, referring to various methods of learning to read the alto clef, involves reading the notes on the staff. The methods the participants referred to included sight-reading, making use of certain notes as anchor points from which neighbouring pitches are calculated, scales and playing easier repertoire items.

Participants A and D discussed sight-reading as a method for mastering the alto clef.

Participant A: [...] I was sight-reading the entire first two weeks that I switched. Which, I think, probably improves your adaptation to the clef.

Participant A: [...] practising sight-reading more improves your knowledge of where the notes are, and how to play them. So, you get to know the clef better. It's not a difficult transition at all, if you do it with sight-reading.

Participant D: [...] I would just start playing and sight-reading [...] as much as I could.

When he was learning the alto clef, Participant C was playing in an orchestra, which compelled him to master this clef rapidly.

Participant C: *[Orchestral playing] was the best, I think, because I learnt to read the alto clef very quickly. [...] Because you're forced to.*

According to Participants A and E, the rate at which the alto clef can be mastered, depends on the violist's ability to read music effectively.

Participant A: *[...] when I start working with viola students, I tend to give them a lot of sight-reading, because that is really the only way to know the clef. It's the same thing with if you were a bad sight-reader, the... the... it... you have the same lack of skill. If you are a bad sight-reader, it means you didn't know where notes are. And you don't know how to play them.*

Participant E: *And I've now had a few violin students who I've managed to introduce to the viola as well, and some of them have picked it up really quickly and others are really struggling. And I'm trying to figure out what it is that makes... makes it easy or makes it hard. And I think... I think the level of reading music itself plays a great part to it.*

Participant A used flashcards to enhance her sight-reading skills in the alto clef.

Participant A: *The idea is that you have a flashcard that's in the C-clef, and that the flashcard has a note on it, and you have to say the note name and play it.*

In addition, Participant A felt more uncomfortable reading notes on the lower strings, an issue which she overcame by sight-reading.

Participant A: *The C-string was the most difficult one, because it's all these ledger lines, and they seem fairly strange, and you get confused for what they mean. So I got confused, initially, between the low C and the low D. I used to mix them up. So I had to do a lot of sight-reading, specifically on the C-string and the G-string, just to get used to that.*

Participants A, B and D referred to the use of specific pitches as "landmarks" or "anchor points" as a method of learning the notes of the alto clef. According to Participant A, this method relies on pre-established knowledge of violin fingering.

Participant A: *[...] mostly I used the open string and the third finger as a reference point on each string. So then you work out what the closest note is. But I think most of it is an unconscious thing. I learn open strings first, because that was how the sight-reading worked. So, when you can recognise the open strings, you have more or less an idea, from playing the violin, how the fingering works.*

Participant D also referred to the open strings of the viola as anchor points.

Participant D: *I had a book, uh, with studies in there, and I... I would write the open strings in, so that I had landmarks.*

Participant B used the "middle C" positioned on the middle line of the staff as a landmark when reading the alto clef

Participant B: *[...] in the beginning, I, um, always used the, um, Middle C to just get my head, um, to where it needed to be.*

Participants A, B, C and F referred to the third method of learning the alto clef involving reading the notes, which is playing easier pieces and scales

Participant A: *[...] my teacher gave me a bunch of really easy pieces, and I just sort of dived into [reading the alto clef].*

Participant B: *I did a lot of scales, and I think that helped a lot.*

Participant C: *I, uh, got a lot of children that I changed over from violin to viola, that play double - both of them violin and viola today - but what I did was, I took them a step back [...] like a Grade 3. If they're a Grade 5 or 6 standard, I would start with Grade 3 viola pieces and take them through, basically, in a term... in a term and a half I would take them up to the repertoire where they were. [...] Just to get the alto clef comfortable for them.*

Participant F: *I did a lot of scales. And then starting off with easier pieces. Um, just to get used to the reading.*

Participants C and E indicated the importance of knowing where the notes are placed on the staff when reading the alto clef.

Participant C: *I had to realise, uh, where the notes were. I just had to realise where the... where the notes were, and I took it from there.*

Participant E: *I think it's just getting used to where the notes in that alto clef lie on the viola, and then being able to be comfortable with where they are on the instrument.*

4.7.2 Subtheme 2: Methods not involving note-reading

In the previous subtheme, the participants referred to methods of learning to read the alto clef by reading the actual notes on the staff. Under subtheme 2 they also discussed ways of playing music written in the alto clef without actively reading the notes. In the participants' experience, most of the methods that did not involve note-reading eventually posed challenges or confusion. These methods included the visual transposition of notes, reading fingerings above the notes and playing by ear.

Participants B, C, E and F made use of a visual transposition method to play in the alto clef.

Participant B: *[...] when I started to think in terms of intervals, instead of where notes are, that actually helped quite a lot.*

However, when Participant B was faced with playing in various positions, the method of thinking in intervals was not as effective.

Participant B: *Um, especially when I have to sight-read in the treble clef, um, because you can read the notes, and I can tell you it's a B or a D or whatever, but, um, playing the inte... reading the intervals is... I think it's more ea... it's easier, um, because of, um, like you know, um, from the first finger to the third finger. It's always on a line on the staff. So, if you just think in terms of one, three, one, three, one, three, or whatever. Um, that is... that's easier for me to do. [...] Second position's not great for... for that method.*

Participant E mentally transposed the notes of the alto clef by certain intervals. This caused difficulty in identifying the names of the notes on the staff.

Participant E: *[...] quite quickly you pick up that you're basically transposing a third. And if you just think that way it makes it much easier to read the viola music. Um, it did take me... what did take me a while to really get used to, though... I... I could read the viola music, and I could play it on my viola, but if you asked me what note that was, just pointing to a note in the alto clef, it took me a long time to figure it out. So I didn't actually know the names of the notes. I could relate where that note was on the viola, but I didn't... and if I figured out where it was on the viola, then I could tell you the name. But I couldn't look at the music and tell you what the name was of the note.*

Participant E: *It's kind of... it's... it can be a bit confusing, but, ja. So everything's just kind of up... up a third. Um, if you... and then you don't... it's exactly the same strings. So that's probably why it took me a while to get to know the names of the notes, because I was thinking, "Okay, we're on the A-string... it's the A-string, it's just a third higher." But it's actually the D-string.*

Participant E explained the further confusion resulting from mental and visual transposition of notes.

Participant E: *I think, um, because it's so... you know, we spoke about it's reading in thirds from the... from the treble clef on the violin. Um, because it's so similar, it can often cause some confusion, and then you land up playing a third out, or you... or it won't be a third, but what you... what you're reading is a third out. Or, you know, you forget which instrument you're on.*

Participant F employed a similar method, which also resulted in not learning the names of the notes on the staff.

Participant F: [...] I took a short-cut and just transferred everything... I think it was a fifth. [...] I basically just adjusted the notes, um... um... and it was... It was a visual transition. So not learning each note on the clef, but just doing a... a shift on the, um, clef. So, ja. So not thinking about the name of each note, but thinking of its position relative to... between the two, um, clefs.

Participant F admitted that playing in high positions still posed a challenge in terms of the names of the notes.

Participant F: [Playing in] *higher positions, where you actually have to work out the note names* [is the most challenging issue concerning the reading of the alto clef]. *Because I... I never did that enough. So I still have to look at the note names when I, um, when I go up in high positions.*

Participant C referred to yet another method of visual transposition, which, in his case, caused difficulties when playing on the lower strings.

Participant C: [...] *there is a little bit of a short-cut. You can just, basically, transpose, you know, if you look at where the D is, and that is a C. [...] So, if you want to trans... just transpose, on the lower notes, that's not so, uh, uh, easy.*

Participant C cited a method according to which the player presumably plays in a certain position on the violin when, in reality, he or she is playing in first position on the viola.

Participant C: [...] *it's a way to get around* [the reading of the clef]. *Um, because you play... uh, the notes are upside down. And if you play... if you imagine you play third position on the... on the... on the viola... or on the violin, or sometimes fifth position, for that matter [...] Then it's the same as first position* [on the viola].

Significantly, Participant A was instructed to avoid using a transposition method when learning the alto clef. She explained that, when the music included changes between the alto and treble clefs, a visual transposition method could potentially confuse the performer.

Participant A: [My teacher] *told me, specifically, not to do, um... There are some visual tricks that some other violists... violin-switchy* [sic] *people have to... to be able to read in the viola clef; like, they read something up or down a line... a line or a space. And I've never been able to do that type of visual magic. So I... I didn't really have that as an option, and I still don't understand how that could possibly work. Because, in our repertoire, we switch between viola clef and, um, the G-clef. So, if you have that kind of habit, you have a real problem when you start playing in the G-clef again, because your eye can't make the adjustment that quickly.*

Participants B, D and each referred to muscle memory, playing by ear and reading fingerings rather than playing actual notes as additional methods that do not involve reading notes when playing in the alto clef.

Participant B: *Just playing, um, high notes on a low string is very... almost doesn't make sense. So I have to... that's also something that I have to approach doing muscle memory, just doing over and over and over again. Um, instead of reading it. Um, which is probably not the best thing [...]*

Participant D: *[...] what I find a lot with my students at _____, when they come from the violin, for them it takes the longest to learn to read the clef. [...] Because a lot of them had been playing violin before, and they want to get into their new piece quickly enough, so a lot of them play by ear. [...] They go in there very fast. They learn the melody, and from then on they play by ear and they don't read the notes anymore. But the moment you give them a new song, of which they don't have an idea yet, they are standing there and battling with the reading of the clef all over again. So that seems to be the biggest challenge for a lot of them.*

Participant E: *So if the students are still reading... kind of fing... you know, fingers above the notes to... they... they're not actually fully understanding what the notes are just yet in the music. I think that makes it a bit harder.*

It is evident from data presented under Subtheme 2 that methods of playing music in the alto clef without reading the notes may appear easy during the early stages of learning the clef. However, once elements such as clef changes and position shifts are introduced, these methods seem to lose their effectiveness.

4.7.3 Summary of Superordinate theme 5

The first subtheme of Superordinate theme 5 is titled "Methods involving note-reading". This section deals with the six participants' methods for mastering the alto clef which involve reading notes on the staff. Sight-reading, orchestral playing, and using certain notes in the alto clef as "landmarks" were highlighted. Four participants referred to playing easier repertoire items and scales to help the transitioning violist learn to read the alto clef.

The second subtheme, "Methods not involving note-reading", refers to the experiences by all the participants when it came to methods of learning the alto clef which do not require actively reading notes on the staff. Various methods of visual and mental transposition were described as initially easy. However, once the participants were faced with shifting, clef changes and playing on the lower strings of the viola, these methods were confusing. Muscle memory, playing by ear and reading fingerings instead of notes were cited by three participants as additional methods of playing in the alto clef without actively reading the notes.

4.8 Conclusion

The analysed data presented in this chapter showed the individual experiences of the six participants in this research study. These experiences include the physical dimensions of the instruments, differing technical approaches to both the right and left hands, injuries and set-up, as well as various approaches to reading the alto clef. Although the six participants emerged from unique background circumstances, a correlation exists between the majority of opinions expressed in this chapter. In Chapter 5, the five superordinate themes, including the supporting subthemes, will be discussed and compared with the relevant literature sources explored in Chapter 2.

CHAPTER 5

DISCUSSION

5.1 Introduction

The main aim of this research study was to explore the physical, technical and cognitive adaptations experienced by violinists who had transitioned to the viola. In this chapter, each of the five superordinate themes, with supporting subthemes derived from the analysis of the six semi-structured interviews, will be discussed in conjunction with existing literature sources as referred to in the literature review (Chapter 2). The data analysis revealed various influences on each participant's experience during and after the transition process from the violin to the viola. The following five superordinate themes emerged: 1. Physical differences between the violin and the viola as instruments; 2. Left-hand technique as affected by the physical differences between the instruments; 3. Right-hand technique as affected by the physical differences between the instruments; 4. Injuries and pain caused when transitioning to the viola; 5. Methods for mastering the alto clef. A summary of the relevance of the findings relating to the literature discussed will follow at the end of this chapter.

5.2 Physical differences between the violin and the viola as instruments

Two subthemes were isolated from this superordinate theme, namely "The physical size of the instrument", and "The size and weight of the viola in the transition process".

From the collected and analysed data relating to the **physical size of the instrument**, it became evident that both the sound of the instrument and the physique of the violist played a role in the choice of a viola's size. Further, there was reference to asymmetrical violas. The analysed data indicated that the size of a viola should actually be larger than what would be comfortable to play if the instrument was to reach its full potential in terms of sound. This phenomenon is pointed to by Boyden and Woodward (2001:1), and Watts (2014:4). Jeong (2012:1) comments that the ideal size for a viola in terms of proportions comparable to that of the violin would result in 53 centimetres in length, whereas the average length of a modern viola is approximately 42 centimetres. Owing to the dimensions of the viola, violists are consequently required to make more effort than violinists have to if they are to achieve a beautiful sound. According to Watts (2014:9), however, the sound produced from a viola is dependent not only on the size of the instrument, but also on its specific build. He quotes the advice by the internationally acclaimed violist William Primrose, when urging violists to opt for an instrument

with a wider and deeper body for maximum sound potential (Watts 2014:9). In addition, Chapman (2000:63) states that a larger viola would not necessarily produce a better sound than a smaller instrument, but that the quality of the viola itself plays a role in the sound it offers. Data pertaining to the relationship between the size of the viola and the physique of the violist showed that violists with a smaller physique required smaller instruments, while individuals with a large build found the viola more comfortable to play than the violin. Barrett (1997:108), Chapman (2000:63) and Primrose (in Dalton 1988:9) emphasise the importance of selecting a viola suited to the build of the musician. Primrose (in Dalton 1988:6), nevertheless, witnessed female violists who had conquered the issue of the larger instrument despite having a smaller physique. He explains that "having a large hand [for playing the viola] and being of medium to large stature is an advantage, but certainly not a requirement" (Dalton 1988:7).

The phenomenon of asymmetrically-shaped violas, as referred to by Participant E, is considered by Jeong (2012). This author includes a discussion of possible asymmetrical shapes for the body of the viola, as built by Otto Erdesz (1917–2000) and David Rivinus (b.1949). Erdesz built several violas with the right shoulder cut away, imitating the shape of a grand piano in the sense that the higher strings do not require the same large instrument body for resonance as do the lower strings (Jeong 2012:11–13). Significantly, the asymmetrical "Pellegrina" viola was designed by Rivinus at the request of a female violist who was afraid of experiencing injuries caused by a large viola. She was in search of an instrument suited to her small frame, but one which did not compromise the sound. The viola that Rivinus made had a rhombus-like body shape, consisting of a small, shallow right upper shoulder and a large and much deeper left upper shoulder (Jeong 2012:21–24; Watts 2014:7–8).

The **size and weight of the viola in the transition process** from the violin to the viola were mentioned by the participants as two of the most noteworthy physical differences between the two instruments to which they had to adapt. Although certain participants played on smaller instruments, they still experienced the larger dimensions as an obstacle to be overcome during the transitional phase. On average, the viola is approximately six centimetres longer than the violin, while the mean weight difference is approximately 180 grams (Watts 2014:6). Interestingly, Primrose (in Dalton 1988:47) comments that the difference in weight between the two instruments is much less significant compared to the difference in size. The larger size of the viola, according to Primrose (in Dalton 1988:47), requires the left arm to be more extended than when playing the violin. It could thus be concluded that the added exertion for the left arm due to the greater length of the viola may cause the violist to experience the viola as being

heavier than its actual weight. Primrose (in Dalton 1988:50–51), in support of this theory, advises violists to hold the instrument with the left hand, rather than squeezing it between the left shoulder and neck. Davis (1974:68–69) maintains that the perceived weight of an object is dependent on the length of the lever by which it is lifted. Therefore, as the weight of the instrument is situated on the extended left arm (the "lever"), the performer perceives the viola (the "object") as weighing more (Davis 1974:68–69; Palumbo 1984:59). The act of holding a viola could be described as the mechanism of a Class 2 lever, whereby the fulcrum, or support, of the lever is the violist's shoulder, the effort is exerted at the opposite end of the mechanism by the player's hand and arm, and the load carried by the lever action takes the form of the viola itself (Sclater & Chironis 2007:4–5).

5.3 Left-hand technique as affected by the physical differences between the instruments

This superordinate theme is supported by five subthemes, namely 1. Similarity between the violin and viola techniques; 2. Fingering and the use of open strings; 3. The longer fingerboard; 4. Shifting; and 5. Vibrato.

A **similarity between the techniques of violin and viola playing** was pointed out by five of the six participants in this study. Certain participants linked this similarity to the physical similarity between the two instruments. Van der Vyver (2010:42) refers to the physical similarity between all the stringed orchestral instruments, resulting in certain similarities between the techniques applied to each of these instruments. However, regardless of the build of the instruments, there are several subtle differences between the techniques for the violin and the viola (Encinas 2017:9; Van der Vyver 2010:43–44; Watts 2014:1–2; White-Smith 2000:56). In addition, the participants considered viola technique as built on an established basis of violin technique. This view is reflected in literature by Gebrian (2012:12–13), who explains that, during the nineteenth and early twentieth centuries, although the viola was beginning to gain popularity as an instrument in its own right, the majority of violists at the *Paris Conservatoire* were former violinists. According to Van der Vyver (2010:5), the viola is still often viewed in South Africa as an auxiliary instrument. Gee (2012:48) comments that many violists first learn to play the violin before transitioning to the viola. Because violists often first learn the technical principles of the violin, it could be concluded that violin technique forms the basis of viola technique, even though subtle adjustments need to be made to truly master the instrument. Certain participants offered a further point during the data collection process, which pertains to the transferability between violin and viola technique. This could be regarded as accepting the concept of viola technique

building on violin technique. Significantly, Participant D encouraged one of her pupils to practise the same technical exercises on both the viola and the violin. Moreover, Yehudi Menuhin advises similarly concerning following this practice, by stating that "a reserve of flexibility and strength" is gained, and the ear becomes more attuned to precise intonation (Menuhin 1976:84). The findings arising from the data analysis showed that, once a sufficient level of experience had been achieved on both the violin and the viola, the participants ceased to be conscious of the technical adaptation necessary to switch between the instruments. Participant A eventually mistook the violin for the viola and vice versa. White-Smith (2000:60) claims that the aim of transitioning from the violin to the viola requires, in the final instance, automatic necessary adjustments without the thought processes slowing down to successfully execute viola-specific technical demands.

The second subtheme which emerged from Superordinate theme 2 is that of **fingering and the use of open strings**. The data showed that three of the six participants regarded viola fingering as being dependent on the requirements of the music. In addition, these participants based viola fingering on the same principles as those for violin fingering. Music from the Baroque period was mentioned as an example of when open strings would be used on the viola. Participant A said that she preferred the use of open strings when playing the viola. According to this participant, the sound of open strings on the viola is of a higher quality than that of open strings played on the violin. It is worth noting that this participant had undergone Baroque training, which could be the reason why she prefers to use open strings. The use of open strings on the viola is encouraged and emphasised by Van der Vyver (2010:41), who states that the natural resonance of the instrument is reflected in the sound of the open strings. Primrose (1978:177–178) maintains that approaching viola fingering from a violinist's point of view is "a cardinal error", as the open strings of the viola "are its glory". Lionel Tertis (in Fang 2008:70), on the other hand, maintained that when open strings are used on the viola, a vibrato should be applied on a note an octave from the open string, thus affecting the open string sympathetically. Tertis (in Fang 2008:70) described an open string in a slow passage played on the viola without a sympathetic vibrato as having a "dead tone". It could thus be inferred that the interpretation of the music is significant in the choice of fingering and the resulting type of sound. One of the participants referred to wolf-tones affecting her choice of fingering. However, according to Gebrian (2012:84), a violist should preferably attempt to play the notes where these discrepancies occur very slightly out of tune. Wolf-tones are the result of irregular resonance due to the build of the instrument (Oldham & Lindley 2001:1). Therefore, playing the note somewhat sharper or flatter would result in a different resonance frequency.

Each of the six participants referred to **the longer viola fingerboard** as affecting intonation, shifting and the execution of double-stops on the viola. The participants maintained that the spacing between the fingers of the left hand is wider when playing the viola than when playing the violin. This phenomenon corresponds with the views expressed by Van der Vyver (2010:37). Encinas (2017:18) also refers to the longer fingerboard of the viola as a factor influencing intonation. Interestingly, the participants who mentioned the length of the fingerboard with reference to intonation did not experience this as problematic, but as an aspect of which one should be aware. This is supported, and even regarded as beneficial, by Menuhin (1987:84), who explains that, when a violinist practises his or her repertoire on a viola, "there is *absolutely* no danger of playing out of tune; on the contrary, the ear learns to direct and adjust the fingers".

The data analysis demonstrated that the distance travelled on the viola when shifting to and from various positions is greater, than when shifting on the violin. This is also owing to the longer viola fingerboard (Watts 2014:46–48). One participant with a particularly large physique experienced playing on the viola's longer fingerboard as a relief, as he had to "squeeze" his fingers together when playing double stops on the violin. According to Roos (2001:4-22), tall individuals often feel "squashed up" when playing the violin. She encourages these violinists to transition to the viola. Another participant, on the other hand, stated that the stretching of the left-hand fingers required by fingered octaves as too large to execute. This issue is addressed by both Pampulha (2015:23) and Primrose (in Dalton 1988:147), who confirm that the relationship between the larger size of the viola and the physique of the violist renders these intervals impossible to play for most performers. Some participants made use of scales to accustom themselves to the wider spaces on the viola fingerboard. This correlates with the method suggested by Luther and Guerriero (2016:30–31). According to these authors, scales offer a violist (who has transitioned from the violin) practice in correct finger placement and intonation.

The fourth subtheme addresses the issue of **shifting**. Several participants expressed their belief that viola shifting is similar to violin shifting. According to William Primrose (in Dalton 1988:139), shifting on the viola is accomplished with the use of a guiding finger. This entails shifting to the desired position with the finger that was used to play the previous note, after which the new finger for the note in the new position will be placed on the fingerboard once the hand has arrived in its correct position. By using this technique, the arrival in the new position is announced with clarity: the first note played in this position will not still be sliding up the fingerboard (Dalton 1988:139–140). A further shifting technique mentioned by Primrose is that

of sliding into the new position with the same finger used for the first note in this position (Dalton 1988:139–140). When done correctly and discreetly, this results in a *portamento* effect, a sound which is often associated with Lionel Tertis's playing (Pampulha 2015:13; Tertis 1991:148–149). Significantly, both of these shifting methods are accepted and are taught in violin technique (Fischer 1997:157–158; Galamian 1962:25). Moreover, the participants stated that muscle memory helped them to execute shifts. According to Sievers (2005:124), muscle memory should, in fact, already be established in first position in order to secure intonation. Watts (2014:29) highlights the importance of muscle memory in assisting both violinists and violists to "consistently execute repetitive motions". Owing to the larger size of the viola, the participants experienced some difficulty in shifting to high positions when the left arm was required to negotiate the shoulder of the instrument. Participant E stated that from fifth position, shifting on the viola is no longer similar to shifting on the violin. The solution to this issue, as proposed by the participants, involves the movement of the left elbow towards the body, thus providing the left forearm with more space to move around the viola and to access higher positions. Literature confirms this technique. Watts (2014:46–48), writes that, although the left elbow plays a role in violin shifting, the movement is more pronounced when playing the viola as a result of having to come around the larger instrument. This issue also played a role in the design of asymmetrical violas, as discussed earlier (Sinsabaugh 2005:45). Chang (2018:66) and Barrett (1997:64) support the opinion of Participant C, who finds it helpful to support the viola between the chin and shoulder when shifting. This may be because, when playing in high positions, the left thumb needs to move around to the right side of the neck of the viola and consequently no longer supports the weight of the viola (Watts 2014:51–52).

The participants expressed their tendency to shift more when playing the viola and particularly to make more use of half, second and fourth positions. Gee (2012:48) mentions the use of half and second positions as more prevalent in viola playing, owing to the wider spaces between the notes on the fingerboard. Sievers (2005:27) maintains that "even-numbered positions as well as half positions have generally been overlooked in the study of the violin". Primrose (in Dalton 1988:123-124) admits that, although every violist possesses a unique left-hand physiology, he prefers the frequent use of half position, because, in many cases, this maintains the balance of the left hand. Four of the six participants described a connection between certain positions and the key of the music. The specific keys and positions mentioned by the participants are varied. White-Smith (2000:59) discusses this point.

The fifth and final subtheme supporting Superordinate theme 2 addresses differences in **vibrato** between the violin and the viola techniques. The majority of participants regarded arm vibrato as their preferred type of vibrato when playing the viola. They ascribed the use of arm vibrato to various physical attributes of the instrument, including the lower register, and thicker, longer strings. In support of the use of arm vibrato when playing the viola, Primrose (1987:188) makes the following statement:

I may be specific, however, in saying that in playing the viola one should use an arm vibrato almost exclusively. A wrist vibrato produces too rapid an oscillation speed to be satisfactorily perceived by the ear of the listener.

The advice given by both Primrose (in Dalton 1988:153–154) and Tertis (1991:148) is that vibrato should sound natural. MacLeod (2008:52) suggests that the ratio of the width of the vibrato and the register of the music be synchronised, resulting in a narrower vibrato for a higher pitch, and a wider vibrato for a lower pitch. According to Luther and Guerriero (2017:26–27), "violin vibrato" when playing the viola sounds "too narrow, tight and unimpressive". These assertions could be interpreted as correlating with the need for a natural sounding vibrato as discussed by Primrose and Tertis, as well as by the participants, with their views on the relationship between arm vibrato and the register of the viola. White-Smith (2000:59) and Palumbo (1984:59) discuss the longer, thicker strings of the viola and their effect on viola vibrato technique. These authors believe that the physical differences between the violin and the viola result in physical changes when it comes to the execution of vibrato. Watts (2014:53) maintains that the width of the vibrato on stringed instruments increases proportionately according to the size of the instrument. Participant C stated that he makes use of a combination of his elbow, wrist and finger when executing vibrato on the viola. To him, a wrist-only vibrato on the viola "sounds like a screechy cat". According to violin pedagogue Carl Flesch (1873–1944) (in Fang 2008:28), the combination of the three types of vibrato, as suggested by Participant C, results in "a perfect vibrato". This participant's views are corroborated by Encinas (2017:18–19) and Primrose (1987:188), both of whom maintain that wrist vibrato on the viola is not as effective as it is on the violin, as it does not offer adequate width for the oscillation to be clearly audible.

The final point regarding the vibrato width mentioned by the participants is the conviction that the type, speed and width of vibrato should ultimately be determined by the music being performed, in order to effectively enhance the dynamics, tension and speed of the composition. This view is discussed in the literature by Fang (2008:30), Galamian (1962:37–38), MacLeod

(2008:52) and Primrose (1987:188). In conclusion, vibrato is essentially an expressive device which should be creatively applied by the individual performer to enhance his or her unique interpretation of the music.

5.4 Right-hand technique as affected by the physical differences between the instruments

Superordinate theme 3 consists of the following five subthemes: 1. Right-hand technique as a challenging adaptation; 2. Bow hold; 3. Arm weight as opposed to pressure; 4. Resistance of strings; 5. Viola bowing technique improving violin bowing.

Subtheme 1 pertains to **right-hand technique as a challenging adaptation**. During the data collection process, Participants B and E stated that the bowing technique for the viola was one of the most difficult adaptations made during their transition from the violin to the viola, especially in terms of sound production. According to Participant C, he had to completely relearn the bowing technique when he took up the viola. Participants D and E considered the bowing technique for the viola to be a lifelong learning process. In support of these findings, Primrose (in Dalton 1988:60–61) refers to viola bowing as a "can of worms", resulting in various "tribulations" and "enormous difficulties" with which his students were faced. Further, he points out the error of merely adapting the violin bowing technique for playing the viola (Dalton 1988:61). In accordance with the experience of Participant C, it can thus be inferred that a viola-specific right-hand technique should be learned. According to Nordstrom and Nordstrom (2018:36), both the violin and the viola require a "distinct approach" in terms of bowing. It could be concluded that the right-hand technique for the viola poses a challenging and a lengthy adaptation because it differs significantly from the right-hand technique for the violin. Both Primrose (in Dalton 1988:60) and Watts (2014:58) describe the issue of bowing as one of the most significant technical differences between the two instruments. Bowing difficulties and their effects on sound production are referred to by Primrose (1987:175), Luther and Guerriero (2017:26) and Nordstrom and Nordstrom (2018:33). This topic will be discussed under Subtheme 3.

Subtheme 2 covered the **bow hold** in viola playing, which was, in essence, experienced as being similar to the violin bow. However, the participants emphasised the greater role of the fingers of the right hand when bowing on the viola. Participants C and D stated that the hold of the viola bow should be deeper, lower and broader than a violin bow hold. The challenges faced by Participants A, D and F when it came to the bow hold included right-hand tension and the heavier viola bow. The similarity between the violin and viola bow hold is evident when

comparing the teachings by violin pedagogue Ivan Galamian and viola pedagogue William Primrose. Both teachers instruct violinists and violists respectively to create a circle with the thumb and second (middle) finger when holding the bow (Galamian 1962:45; Primrose 1987:176). Further, Primrose (1987:176) explicitly states that this bow grip "is not unique to the viola". However, in agreement with the findings of the analysed data, Watts (2014:60–61) explains that the right-hand fingers, when playing the viola, need to have secure contact with the bow at all times. This corresponds with the opinion of Participant E, who pointed out that the fourth (little) finger of many violinists is often inactive. On the contrary, Watts (2014:61) claims that "the pinkie [of the violist] is always engaged from frog to tip". Participants C and D emphasised the importance of the second (middle) and third (ring) fingers in creating a deep bow grip. This is confirmed in the literature by Luther and Guerriero (2016:31) and Watts (2014:60). The American viola pedagogue Karen Tuttle (1920–2010) (in Dane 2002:29), highlighted the importance of a balanced bow hold. Although she believed that the spacing of the right-hand fingers should be determined by the physique of the violist, Tuttle, in accordance with the teachings by Primrose and Galamian, taught a bow hold with the main focus placed on the thumb and second finger, while the remaining three fingers create and maintain balance (Dane 2002:29). Primrose (in Dalton 1988:75) states that "the weight of the hand on the bow should be equalized through the fingers". It can thus be concluded that the right hand of the violist should attain a certain dimension of breadth in order to maintain a balanced and "equalized" bow hold.

The obstacles of right-hand tension, and the heavier weight of the viola bow, as experienced by Participants A, D and F, are discussed in relevant literature sources. Barrett (1997:76) regards tension in the right hand as often being the result of an inflexible thumb. This author advises violists to constantly maintain movement and suppleness in the right-hand thumb while playing. Tuttle (in Dane 2002:29) advises similarly. General flexibility and suppleness of the right hand are also advocated by Barrett (1997:70), Primrose (1987:176) and Watts (2014:60). The slightly heavier weight of the viola bow calls for a "more engaged and secure" bow hold (Watts 2014:58). The combination of flexibility and secure contact between the fingers and the bow should result in a "malleable yet strong" bow hold as proposed by Primrose (in Dalton 1988:78).

The third subtheme, "**Arm weight as opposed to pressure**", is confirmed by various authors. Data findings revealed the participants' experiences demonstrating that the natural weight of the right arm should be transposed into the bow to create sound, rather than contriving artificial weight in the form of pressure originating from the wrist or first (index) finger. In addition,

Participants C and D iterated that the entire bow should be used with the application of arm weight. Exerting pressure rather than weight when bowing on the viola was described as resulting in poor sound quality. According to Participant D, this is a sound that "sort of collapses". Primrose (1987:176) warns as follows: "No! and, again, no! to pressure or anything like it." In Dalton (1988:66), Primrose again emphasises that "there should never, never, NEVER, be any thought of pressure in viola bowing!". The solution proposed by this pedagogue for the issue of weight rather than pressure involves positioning the right upper arm and the forearm lower than the actual bow, thereby confirming the view of Participant D concerning a low shoulder and elbow (Dalton 1988:61). According to Watts (2014:63), this stance promotes the transferability of natural weight into the bow. This concept is confirmed and taught by Nordstrom and Nordstrom (2018:34), as well as White-Smith (2000:57–58). Although Tuttle (in Dane 2002:30–31) teaches that the right elbow should be above the wrist, she also believes that natural weight should be used instead of artificial pressure. Use of the full bow when playing the viola, including the role of the right hand fingers, is described by Barrett (1997:75) as follows: "Weight is transferred in the course of the whole bow from the little finger at the frog to the index finger at the point".

Participants C, D, E and F mentioned sound quality in conjunction with the weight transmission from the right arm into the bow. Participants D, E and F maintained that a much better sound quality is achieved when natural weight is successfully transferred into the bow, than when pressure is created by the right wrist or index finger. White-Smith (2000:57) explicitly discusses tone quality with regard to weight rather than pressure when bowing. Luther and Guerriero (2017:26) advise students to cultivate an awareness of a sense of "heaviness" in the right arm in order to improve their sound. Conversely, pressure results in a thin sound lacking in resonance (Dalton 1988:61; Watts 2014:62–63). Both Participants D and E made an interesting observation pertaining to viola technique: if the correct viola bowing technique is not learned during the transitional phase, the sound will remain that of "a violinist playing the viola". Primrose (in Dalton 1988:61) refers to a "true viola sound" which should be sought by violists. Moreover, Barrett (1997:107) maintains that, when violin technique is applied to the viola, the resulting sound is unsatisfactory. According to Primrose (1987:173), violinists who attempt to play the viola without cultivating the correct technique, play the "big-fiddle" rather than the viola. Bowing technique was also discussed by Participants A, B, D, E and F in terms of the **string resistance** of the viola. They explained that the viola strings require more effort from the performer to obtain a good sound, especially the lower strings, which require more energy and

active bow use from the violist. Nordstrom and Nordstrom (2018:33) and Watts (2014:66) refer to the viola's string resistance. These authors propose a slower bow speed to aid the violist in creating the desired sound. Encinas (2017:13) claims that more "work" from the violist is necessary for successful bowing on the viola. Participant F recommended that a high right elbow is also beneficial. Karen Tuttle (in Dane 2002:30–31), as mentioned previously in Subtheme 3, advocates an elbow which is "always above the wrist". Although the strings of the viola are in general thicker than violin strings, the lower strings are the thickest and therefore pose more resistance than the upper strings.

Participant A highlighted the register of the music as playing a role in determining the amount of effort and energy required to effectively stimulate the viola strings. In addition, the *spiccato* bowing technique was described by Participant F as requiring more control from the bow arm when playing on the lower strings of the viola. This could be closely related to the varying thickness of the viola strings, as mentioned above. According to Palumbo (1984:59) and Primrose (in Dalton 1988:111), the different strings of the viola need different amounts of weight and attack when bowed. Besides, the difference in approach between the low and high viola registers is more than that for the violin (Palumbo 1984:59).

Participants A, E and F experienced an **improvement in their violin bowing after having learned the viola bowing technique**, especially in terms of the sound quality. The violin pedagogue Yehudi Menuhin (1987:84) urges violinists to practise their repertoire "on a viola with a viola bow, as distances, pressures and weights are greater and a reserve of flexibility and strength is built up". Additionally, Primrose (1987:175) regards violinists who employ a bowing technique similar to that of the viola as achieving a good sound on the viola. Finally, Nordstrom and Nordstrom (2018:32) believe that a violist who transitions to the violin is less likely to experience difficulties in obtaining a good sound than when a violinist transitions to the viola.

5.5 Injuries and pain caused when transitioning to the viola

The first two subthemes of Superordinate theme 4 refer to two reasons why participants experienced pain, injury or discomfort during the transitional phase from the violin to the viola, namely the "Physical dimensions of the viola", and "Playing the viola for extended periods". Subthemes 3 and 4 respectively pertain to "Incorrect set-up", and "Finding the correct set-up".

Subtheme 1, "**Physical dimensions of the viola**", consists of participants' experiences of injuries, pain and discomfort related to the size and weight of the instrument while transitioning from the violin to the viola. Participants A and F both had to extend their left wrist more when

playing the viola than when playing the violin. In the case of Participant A, this adaptation to the size and weight of the viola meant that she overextended her wrist. Watts (2014:12–13) refers to the larger dimensions of the viola in terms of a violist's left arm as executing a more intense task than that of a violinist. Paull and Harrison (1997:84) assert that "wrist flexion is invariably the position or overused movement which will cause trouble for all musicians, athletes and workers". Barrett (1997:58) advises violists to keep the left wrist aligned with the arm when playing in lower positions, with the exception of extending the wrist slightly outwards when more challenging playing requirements arise, such as chords. Gee (2012:49) uses the term "pookage" to describe an overextended left wrist, explaining that this problem is directly linked to the asynchronous size of the instrument to the physique of the violist. Participant D experienced a more serious injury related to the left hand, namely carpal tunnel syndrome, for which she had to undergo specialised surgery. Participant B experienced cramps in the left hand due to the wider spacing between the notes on the longer viola fingerboard. According to Watts (2014:41–42), the spacing of the left-hand fingers, particularly when playing in lower positions, requires the violist to cultivate an awareness of the left wrist. Watts (2014:41–42), furthermore, urges the performer to counteract the overextension of the wrist by bringing it slightly closer to the neck of the viola which results in a flatter hand position, as well as more scope for wider finger spacing. Participant A experienced pain when playing four-octave scales on the viola. Watts (2014:50–51) offers various reasons for the discomfort suffered when playing passages involving extremely high positions, as well as shifts to and from these positions. First, the wide shoulder of the viola requires the player to swing the left elbow around the instrument and bring it close to the body in order to successfully shift to positions in the upper reaches of the instrument's range. Second, once the hand and fingers can no longer comfortably reach the notes on the fingerboard, the violist's left thumb should be released from the neck of the viola and placed on the side of the fingerboard, moving with the hand as it travels. This leads to the solution of the third challenge, namely the difficulty of fully depressing the viola strings onto the fingerboard in such high positions: as the left hand is now above the fingers (rather than behind them), the fingers have enough leverage to depress the strings adequately.

Participants A and B referred to shoulder, biceps and neck pain. The shoulder and biceps discomfort experienced by Participant A when she transitioned to the viola resulted from the muscles working in previously unknown ways. Palumbo (1984:59) and White-Smith (2005:56) relate this physical adaptation to the greater length and width of the viola. Neck pain, however,

although Participant B described it as resulting from the thickness of her viola, is more closely related to Subthemes 3 and 4, and will be discussed below.

The second subtheme of Superordinate theme 4 pertains to **injuries and pain experienced by the violist when playing the viola for extended periods**. Participants B and E referred to arm and shoulder pains as issues during their transitional phase from the violin to the viola, which created the need to curtail their practice sessions to 15 and 30 minutes respectively. According to Banick (in Watts 2014:22), the length of practice sessions is directly related to injuries experienced by various musicians. In addition, Kuo (in Watts 2014:24–25) determined that violists are more often the victims of performance-related injuries than are violinists. It could therefore be concluded that, when a violinist takes up the viola, extra care should be taken to avoid potentially harmful situations during the early stages of the transition. Watts (2014:24–25) concurs with this caution by stating that "the additional weight, size and proportions of the viola cause even more physical strain on the upper extremities". Participants A and B both reported a tendency to clench their jaw when playing the viola for long periods of time. This results in pain for Participant B in particular. A condition known as temporomandibular disorder (TMD) affects the joints of the jaw causing pain, tinnitus and clicking sounds when opening the mouth (Alpayci & Bozan 2016:254). According to these authors, "long-term viola playing may be a powerful aggravating factor for symptoms of TMD". De Souza Moraes and Antunes (2012:46) reach the same conclusion by stating that the pressure placed on the jaw when playing, as well as the clenching of teeth, are two of the most prominent causes of TMD in violin and viola playing. Violists, yet again, have been found to suffer from this condition more often than violinists (De Souza Moraes & Antunes 2012:46). Neck pain resulting from extended periods of viola playing, referred to by Participant E, has the potential to cause nerve and muscle injuries, accompanied by intense pain (Watts 2014:16).

A certain level of fitness was mentioned by four of the six participants as being beneficial when playing the viola for long periods of time. Although Participants A and E referred to such fitness in a general sense, Participants B and D specifically highlighted the importance and necessity of strong back muscles for orchestral playing. General "strength and stamina" required for playing the viola is mentioned by White-Smith (2005:56). Paull and Harrison (1997:110) advise all musicians to engage in appropriate physical exercise in order to maintain fitness, flexibility and strength. These authors claim further that an exercise routine helps the musician in avoiding instrument- or performance-related injuries. Lower back pain is a common problem among orchestral musicians (Raymond et al. 2012:21). According to Paull and Harrison (1997:56–57),

sitting causes fifty percent more strain on the back than standing does. It can thus be inferred that injuries may occur, not only from playing the viola for extended periods of time, but also from playing in a seated position for long hours. Contrary to the opinion of Participant D regarding the development of back muscles for seated viola playing, Paull and Harrison (1997:126) more precisely suggest appropriate back stretches, as well as abdominal muscle exercises while maintaining an upright posture. According to these authors, back muscle strength alone does not necessarily prevent injury. Certain participants commented on posture, while Participants B, C and D referred to the weight of the viola aggravating the tendency to lean forward while playing seated. Paull and Harrison (1997:68) discuss the act of lifting an object while sitting as potentially harmful to the lower back, as injury is avoided by keeping the back straight. Because the viola is reasonably heavy, holding it up in an orchestral setting could be regarded as comparable to lifting an object. It can therefore be concluded that leaning forward while playing the viola not only leads to poor posture, but could also result in lower back injury due to excessive strain. Participant D described the components of a correct seated posture. She emphasised the importance of sitting upright, maintaining an obtuse angle between the hips and knees. Participant D further highlighted the additional relation between the performer's chair and posture. She recommended the use of a specific cushion to promote correct posture. These points are corroborated in the literature by Paull and Harrison (1997:60–61) and Roos (2001:3-3).

The third point relating to Subtheme 2 pertains to potential injuries resulting from playing the viola for long periods of time using incorrect technique. Participant C referred to the consequence of contriving artificial pressure with the right wrist as having the potential to cause elbow injuries (as discussed in Subtheme 3 of Superordinate theme 3). In addition, he emphasised the importance of bending the little finger of the right hand in order to avoid harm to the tendons in the right arm. White-Smith (2000:57) agrees, stating that "natural arm weight rather than applied pressure [...] can result in a less resonant sound and possible injury". Concurring with Participant C concerning harm to the tendons of the right arm, Watts (2014:18) cites tendonitis as one of the most prevalent injuries to the right upper body when transitioning from the violin to the viola. This author, however, attributes the majority of right-hand injuries to tension in the thumb. As mentioned previously, Participant D suffered from carpal tunnel syndrome in the left hand. She maintains that this problem was caused partly by tension in her left hand, a common cause of this injury (Dias et al. 2004:329; Kamholz et al. 2004:323; Watts 2014:13–14). Potential muscle strains when playing the viola using an incorrect technique were mentioned by Participant F. Watts (2014:1) claims that, when violin technique is applied to the

viola, strains may result. As discussed in Superordinate theme 2, violin and viola technique differ significantly in both obvious and subtle ways. Therefore employing violin technique when playing the viola could constitute "incorrect technique".

Four of the six participants had suffered injury, pain and/or discomfort due to **incorrect set-up** on the viola. Participants A, B and C referred to neck discomfort related to their set-up. In the case of Participant B, a lower setting on her shoulder rest was applied to counteract the neck pain she experienced during the transitional phase from the violin to the viola. According to Dinwiddie (2007:39), an inappropriate choice of shoulder rest may lead to tension in the neck muscles. Significantly, this author emphasises the fact that each violist possesses a unique physique which should be taken into account when adjusting the set-up (Dinwiddie 2007:39). The discomfort experienced by Participant A resulted from playing without a shoulder rest. Although Chang (2018) advocates the practice of playing the viola without a shoulder rest, Dinwiddie (2007:38) recommends this type of set-up only when the individual has a short neck which requires no additional space to be filled once the viola has been placed in position. Notably, Participant A had to "bend" her neck in order to enable her to play without a shoulder rest. It can thus be concluded that her physique was not suited for this manner of playing the viola. Moreover, Participant C referred to back injuries originating from an incorrectly adjusted shoulder rest as the main reason that certain violists permanently reverted to the violin. The trapezius muscle, which is located in the shoulder, upper back and side of the neck, is described by Watts (2014:15) as "overwhelmed" when the instrument is clenched between the violist's shoulder and jaw, a position implying that the shoulder rest is too low.

Raymond et al. (2012:22) describe the sore beneath the left side of the jaw as experienced by Participants B and D as "contact dermatitis". Denig (2017:28) claims that "[h]orrible bruises and wounds on the neck are common for players who use chinrests [sic] that are the incorrect shape for their jawline". It can therefore be concluded that, in addition to the shoulder rest, the chin rest should also correspond with the violist's physique, thus supporting the choice of Participant D to change to a different model of chin rest. Further, this participant claimed that good posture contributed to the improvement of the skin condition beneath her jaw. According to Denig (2017:28), a suitable chin rest should promote freedom of movement of the head. This freedom should then result in improved posture, as the head is not forced into one set position by the chin rest. In addition, Participant D explained that maintaining good hygiene of the chin rest aids in combating this skin condition. This is supported and emphasised in the literature by Gambichler, Boms and Freitag (2004:5).

The concluding subtheme pertains to advice from the participants on **finding the correct set-up** for the viola. Participants A, B and C expressed their views on the viola shoulder rest. According to Participants A and B, their set-up became more comfortable after they had lowered the shoulder rest. Participant C increased the height of his violin shoulder rest to create a similar feeling for his set-up on the viola. Dinwiddie (2007:40) and Tietze (2000:74) suggest that the space between the shoulder and the jaw is filled in accordance with the individual physique of the violist. However, because the body of the viola is thicker than that of the violin, it may be concluded that a shoulder rest used for the viola would, in general, be flatter than a shoulder rest in a violin set-up. Interestingly, White-Smith (2005:58) points out that the shoulder rest is not the only tool with which the height of the set-up can be determined; she urges violists to bear in mind the different height possibilities offered by chin rests, such as the adjustable Krédde chin rest (Chang 2018:13).

Each of Participants B, C, D and E experienced a chin rest positioned towards the centre of the viola as more comfortable than one situated on the left side of the tailpiece. Both right- and left-hand technique, shifting in particular, were said to benefit from a middle chin rest. Although there seems to be a lacuna in the literature when it comes to the effect of the type of chin rest on left-hand technique, White-Smith (2005:57) confirms the choice of a centre chin rest when the violist's right arm is too short to play a full bow with a chin rest next to the tailpiece. White-Smith (2005:57) and Wiegert Bossuat (2005:57) both propose a middle chin rest, enabling violists to see all four strings of the viola simultaneously while playing. In addition, Roos (2001:3-6–3-7) recommends a centre chin rest for string players with narrow shoulders. The necessity should be emphasised to consider the unique physical build of each individual violist when choosing an appropriate chin rest (Denig 2017:28).

Participant D suggested that a seated position could help the violist determine the ideal set-up. She believes that, while sitting, the body is not at liberty to compensate for a potentially harmful set-up, as would be possible when standing. According to Roos (2001:3-3), "full body mobility" is attained when standing. It can thus be inferred that movement of the body is limited to a certain extent when playing seated. Correspondingly, Paull and Harrison (1997:56–57) advise instrumentalists to avoid unnecessary sitting owing to strain on the back. Although this is not explicitly supported by the literature, Participant D's view could be understood in the sense that complete mobility of the body may result in unwanted actions masking an essentially incorrect set-up.

Participants C, D and E referred to the process of finding the correct set-up as lengthy and continuous, as well as potentially changing throughout a performance career. Chang (2018:8) corroborates this view, stating that "[t]here are many models of chinrests [sic] and shoulder rests available, and just like the brand of string we use, there is no perfect model, so players might not stick to one forever". Different brands of chin rest mentioned by Chang (2018:11–12) include Flesch, Teka, Kaufman, Berber and Krédde. Various types of shoulder rests are also available, of which the most popular are, arguably, Wolf, Bon Musica and Kun (Chang 2018:19). Owing to the sheer number of shoulder and chin rest possibilities, it can be concluded that time and patience may be needed to find the ideal combination.

5.6 Methods for mastering the alto clef

The final superordinate theme of this study contains a total of two subthemes, namely "Methods involving note-reading", and "Methods not involving note-reading".

Subtheme 1 pertains to various **methods employed by the participants to learn the alto clef by actively reading the notes on the stave**. Sight-reading was mentioned by Participants A, C, D and E as one of the most effective methods of learning to read the alto clef. Participant C directly referred to sight reading in an orchestral context, where he experienced rapid progress in his ability to read the alto clef. According to Luther and Guerriero (2016:30), sight-reading the viola part in chamber and orchestral pieces is a valuable tool in mastering the alto clef. These authors maintain that "the viola parts are typically much easier than the violin parts" (Luther & Guerriero 2016:30). Mastering the alto clef includes knowing where specific notes lie on the viola fingerboard, knowing how to play these notes and being able to read music at an acceptable standard in general. Barrett (1997:104) highlights the importance of "pitch identification", an aspect which is also discussed by Luther and Guerriero (2016:30). Although it is not categorically stated in the literature, it can be inferred from both the analysed data, as well as the literature cited thus far, that the level of music reading proficiency on the part of the violist (as opposed to sight-reading proficiency) is closely related to the extent of the success experienced in reading the alto clef. Participant A found the use of flashcards beneficial during the transitional phase from the violin to the viola. She explained that each flashcard would display a note in the alto clef on a stave, prompting her to name and play that note. Both Barrett (1997:103) and Luther and Guerriero (2016:32) approve of this method of exercising fluency in alto clef reading. Participant A, moreover, said that sight-reading aided her in reading the notes of the C and G strings on the alto clef with increasing ease.

An additional method of learning to actively read repertoire in the alto clef is the use of "landmarks" on the staff. The various landmarks discussed by Participants A, B and D respectively include open strings and notes played with the third finger in first position, open strings, and "middle C". White-Smith (2000:59) advises transitioning violists to use open strings as reference points, as well as "middle C", when learning to read the alto clef. Furthermore, Barrett (1997:104) affirms that "the identification of the location of notes representing open strings" should be taught at the very beginning of the transitional phase.

The third way in which the participants learnt the alto clef via note reading involves playing easier repertoire and scales. Luther and Guerriero (2016:30) suggest that reading simple pieces would "create a feeling of success", possibly avoiding frustration and cultivating motivation for the player. This advice is confirmed by Barrett (1997:102). According to White-Smith (2000:59), transposed violin repertoire could be read in the alto clef and played on the viola. Despite the fact that practising scales is not mentioned as a method of learning to read the alto clef, violists are nevertheless advised to copy out scales in the alto clef (Luther & Guerriero 2016:30). It could be argued, however, that the physical act of playing scales on the viola while reading the notes in the alto clef would offer valuable experience in learning to read this clef. In this way, both kinaesthetic and visual information are processed. Participants C and E emphasised the importance of the violist being familiar with the placement of notes on the staff, which, in essence, could be seen as forming the basis of note reading.

Contrary to the first subtheme, the second subtheme explores the participants' **methods of learning to read the alto clef without actively reading the notes on the staff**. Participant B explained that she initially read the alto clef by calculating intervallic relationships between notes on the staff. As opposed to using first and third positions, this method caused difficulty when playing in second position. Luther and Guerriero (2016:30) cite position shifts as one of the challenges in learning to read the alto clef. It can thus be inferred that, if a visual or mental transition is used as the only way of "reading" the clef, playing in various positions which involve differing finger patterns, would inevitably lead to confusion. Sinsabaugh (2005:44) may be quoted as follows: "If students don't know the names of the notes—only the fingering numbers in first position—they will struggle to shift positions, because the finger numbers will change when shifting positions but the name of the note will always stay the same." Participant E explained that she mentally transposed the music of the alto clef by a third as though she were playing the violin. This transposition corresponds with the "third-position method" described by Barrett (1997:104–105), where "each note in the alto clef [is read] a third lower than printed". The

challenges faced by Participant E as a result of the use of the third position method, namely mistaking the violin for the viola and vice versa, as well as struggling to identify the names of the notes on the staff, reflect the possible obstacles mentioned by Barrett (1997:104–105) due to the use of this method. Participant C cited a method of transposing notes in the alto clef up by a second, which, according to him, posed a challenge on the lower strings of the viola. Although these methods are also advocated by Pounds (in Callus 2006:57), this author does not refer to any potential difficulties caused by such associations. Participant F visually transposed the notes of the alto clef by a fifth, which resulted in challenges when playing in high positions. Moreover, Participant C elaborated on the third position method, stating that fifth position may also be assimilated to third position in the same manner as first position. Literature supporting these two methods could not be identified. According to Participant A, she was warned against visual transposition methods when learning the alto clef, as the changes between the treble and alto clefs often found in viola repertoire may cause confusion when these methods are employed. In addition to shifting, Luther and Guerriero (2016:30) regard clef changes as a significant challenge for violists learning to read the alto clef. It can therefore be deduced that, if the performer is unfamiliar with the exact pitches, a change of clef could potentially cause further complications due to an apparent intervallic leap between the last note in the alto clef and the first note in the treble clef, or vice versa. (See section 2.6 in the literature review, Chapter 2 for an example of this phenomenon.)

Alternative methods of playing in the alto clef without reading the notes on the staff described by Participants B, D and E respectively, include muscle memory and playing by ear, as well as reading fingerings, rather than reading the notes. Wallace (in White-Smith 2000:59) refers to muscle memory as a tool in playing music written in the alto clef. This method, however, should be the result of playing transcribed repertoire on the viola which had previously been learned on the violin. Interestingly, playing by ear and possessing well-developed aural skills seem to positively impact actual music reading (Gudmundsdottir 2010:5; Mishra 2014:461). As it is impossible to play a foreign composition by ear, sight-reading would compel transitioning violists to read the alto clef. Furthermore, reading fingerings rather than notes could, arguably, also result in confusion once shifting and clef changes are introduced. For example, when playing in fourth position, the first finger on the D-string would produce an A, while, in first position, the first finger would play an E. Barrett (1997:104) summarises this subtheme as follows: "Devices and tricks employed to allow quick reading of the viola clef are questionable if they do not require identification of pitch names."

5.7 Conclusion

In essence, Superordinate theme 1, "Physical differences between the violin and the viola as instruments", pertains to the physical size of the instrument, as well as the size and weight of the viola during the transition process.

The second superordinate theme, "Left-hand technique as affected by the physical differences between the instruments", is discussed in five different areas, namely the similarity between the violin and viola techniques, fingering and the use of open strings, the longer viola fingerboard, shifting, and vibrato.

Superordinate theme 3 explores "Right-hand technique as affected by the physical differences between the instruments", and is supported by the following subthemes: 1. Right-hand technique as a challenging adaptation, 2. Bow hold, 3. Arm weight as opposed to pressure, 4. Resistance of strings and 5. Viola bowing technique improving violin bowing.

Superordinate theme 4, "Injuries and pain caused when transitioning to the viola", consists of subthemes pertaining to injuries and pain caused by the physical dimensions of the viola, injuries and pain caused when playing the viola for extended periods, incorrect set-up, and the process of finding the correct set-up.

The fifth and final superordinate theme relates to the cognitive issue of learning to read the alto clef. The various methods of accomplishing the task, as described by the participants in this study, are divided into two subthemes: 1. Methods involving note-reading, and 2. Methods not involving note-reading. In conclusion, the discussion offered in this chapter of the five superordinate themes each with corresponding supporting subthemes proves that the majority of findings presented in Chapter 4 correlate with and are substantiated by existing literature.

CHAPTER 6

SUMMARY AND CONCLUSIONS

6.1 Introduction

This study explored the adaptations made by violinists studying the viola as a second instrument. Physical, technical and cognitive elements were investigated by first perusing and summarising the existing literature relevant to these three areas. A qualitative approach was adopted, following an interpretative phenomenological research design. These methodological aspects, including the sampling strategy, data collection and analysis techniques, trustworthiness, delimitations of the study and ethical considerations, were outlined in Chapter 3. Chapters 4 and 5, respectively, offer the presentation of data findings, and the discussion of these findings in relation to the existing body of relevant literature. The summary and conclusions drawn in Chapter 6 will respond to the original research questions, and, finally, will suggest recommendations for future related research.

The literature review presented in Chapter 2 pertained to the physical, technical and cognitive factors involved in transitioning from the violin to the viola. The most prominent physical differences between the two instruments are considered to be the weight and size distinctions, as cited in Boyden and Walls (2001), Boyden and Woodward (2011) and Watts (2014). Various asymmetrical viola designs, as discussed by Jeong (2012), were referred to. Left-hand technique as affected by the physical differences between the violin and the viola was significantly discussed by Gebrian (2012), Gee (2012), MacLeod (2008), Primrose (1991) and Watts (2014), and focused on areas including fingering, shifting and vibrato. Nordstrom and Nordstrom (2018) and Primrose (1991) offered valuable information on the right-hand technique for the viola. Potential injuries caused by both physical and technical aspects of the viola, including the set-up of the instrument, were also discussed in the literature review, citing a number of authors, namely Chang (2018), Denig (2017), Dinwiddie (2007), Lautar (2000), Paull and Harrison (1997), Roos (2001) and Watts (2014). The literature review concluded with a discussion of the cognitive aspect of learning to read the alto clef, an integral part of transitioning to the viola. Cited authors include Barrett (1997), Callus (2006), and Luther and Guerriero (2016).

The analysed data showed a correlation between the adaptations made by the participants and the resulting technical changes. The correlation included both subtle and larger-scale differences between the instruments. Injuries, pain and discomfort experienced by the

participants were essentially related to the physical dimensions of the instrument. This increasingly emphasised the importance of ascertaining an individual-specific set-up. Significantly, four of the six participants acknowledged the advantages of using a chin rest positioned in the middle, i.e. on the tailpiece of the viola. Finally, the cognitive element of reading the alto clef was approached by methods involving note-reading, as well as visual and mental transitions offering merely a temporary solution to reading the clef. The majority of findings in this study correlated with and were substantiated by the literature.

6.2 Answering the research questions

This study is based on the main research question: **"How do violinists adapt physically, technically and cognitively when studying the viola as a second instrument?"**

The first of three secondary research questions, **"How do violinists approach the physical differences between the violin and the viola as instruments?"**, pertained to the size and shape of the viola. Owing to the unstandardised and asynchronous ratio of its dimensions and consequent potential sound quality, each individual violist should select an instrument which is best suited to his or her physique. Asymmetrically-shaped violas have been designed by various luthiers to experiment with the synchrony of the build and sound of the instrument, as well as the physical and technical comfort offered by the instrument. Although violas exist in a variety of shapes and sizes, the data findings in this study indicated that the larger size and heavier weight of the viola resulted in one of the initial adaptations required for violinists who transition to the viola. The greater length of the instrument means that the left arm must extend further than when holding the violin. This mechanism, known as a Class 2 lever, causes the violist to experience the weight difference more intensely, as the weight is extended to a point further away from the body.

The findings representing the answer to the following secondary research question: **"How do violinists studying the viola approach the technical adaptations caused by the differing physiological demands between the two instruments?"**, are divided into two sections, namely left-hand technique and right-hand technique.

Because many violists initially study the violin, the analysed data showed that the left-hand technique for the viola was, in a general sense, regarded as relying on a foundation established by violin technique. However, it was emphasised that the subtle technical differences between the two instruments need to be understood and mastered. Fingering was found to be similar to that employed in violin playing. One participant, nevertheless, explained that the use of open

strings in viola fingering produces a resonant sound. Literature supported this view. Wolf tones, as well as the unique requirements of the music performed, were identified as further factors influencing the choice of fingering. As opposed to violin playing, it was shown that the longer viola fingerboard required different approaches to intonation, shifting and the execution of double-stops in viola playing. Shifting on the viola, although technically similar to shifting on the violin, is complicated by the physically wider bout of the viola, around which the player's left arm must move to reach high positions. This difficulty is resolved by bringing the left elbow closer to the body when shifting. Further, the left thumb should be positioned on the side of the fingerboard in high positions, rather than being anchored under the neck, as in violin playing. Data findings in this study, moreover, indicated that violists tend to make more use of half, second and fourth positions than do violinists, owing to the wider finger spacing required by the longer viola fingerboard. The final aspect of left-hand technique which arose from the findings concerns the issue of vibrato. Although nuances of vibrato are selected in relation to the particular music interpreted and performed, it became apparent that violists generally make use of arm vibrato, as the longer and wider strings, including the lower register of the viola, require a wider vibrato action than that for the violin.

The findings showed that right-hand technique embodies one of the most challenging adaptations for violinists transitioning to the viola as a second instrument. Even though the bow hold was described as resembling a violin bow hold, the right-hand fingers play a more vital role in keeping the hand balanced. The increased weight of the viola bow requires firmness as well as flexibility in the bow hold. A significant concept which emerged from this study involves transferring the natural weight of the right arm into the viola bow when playing, rather than creating artificial pressure with the wrist in order to avoid the idea of playing the viola using violin technique. The findings showed that the thicker strings of the viola pose more resistance when bowing than do violin strings, thus requiring more energetic movement of the bow arm. In addition, the difference in arm weight and attack of the string in relation to the high and low registers of the viola were regarded as greater than in violin bowing. In the final instance, it was indicated that a well mastered viola-specific bowing technique is beneficial to violin bowing technique and assists in improving performance on the violin.

The injury, pain and discomfort suffered by violists is related to both physical and technical facets of playing. The increased weight and size of the viola, particularly during the transitional phase from the violin to the viola, was described as the cause of, inter alia, shoulder pain, biceps pain, and the overextension of the left wrist. The longer fingerboard, moreover, resulted

in muscle spasms in the hand. Analysed data indicated that practice sessions during the transitional phase should be curtailed to avoid injury or discomfort caused by the physical dimensions of the viola. Jaw and neck pain developed as a result of playing the viola for extended periods of time. The cultivation of stamina, fitness and an upright posture emerged as positive habits to be adopted by violists. Conditions including tendonitis and carpal tunnel syndrome were ascribed to the use of incorrect technique in viola playing, such as artificial pressure when bowing, and left-hand tension.

The physiological relation between the set-up and potential injuries in viola playing emerged from data findings. The need for the selection and adjustment of the shoulder and chin rest in accordance with the violist's physique became evident, in order to prevent injuries, including neck pain, back injuries, and contact dermatitis beneath the left side of the jaw. Significant findings concerned the identification of an ideal set-up, a flatter shoulder rest and a middle chin rest.

The third and final secondary research question: "**How is score reading cognitively approached by violinists studying the viola?**", pertained to different methods employed by violists to learn the alto clef. The findings led to two broad categories, namely methods involving note-reading, and methods which do not require the active reading of notes on the staff. Sight-reading, the identification of notes presented on flashcards, and the use of landmarks, such as the open strings of the viola, are examples of methods of learning to read the alto clef via note-reading. In addition, the results indicated that practising scales, simple pieces, and transposed repertoire previously studied on the violin, serve to enhance alto clef reading skills. Various methods of playing in the alto clef without actively reading the notes became evident, including the "third position method" used by performers to play the viola in first position as if it were the third position on the violin. However, when the violist is not familiar with the names of the notes which are played, these visual and mental methods of transposition eventually lead to obstacles and confusion.

In summary, the main research question of this study: "**How do violinists adapt physically, technically and cognitively when studying the viola as a second instrument?**", is answered with reference to the three secondary questions. Physical adaptation to the increased size and weight of the instrument should be taken into account when choosing an instrument, when scheduling practice time, and identifying an ideal set-up. The subtle left-hand and right-hand technical adaptations required by the violinist transferring to the viola correspond with certain physical differences between the two instruments, namely the longer viola fingerboard,

thicker strings, and the heavier bow. Playing the viola for extended periods of time, particularly when using incorrect technique, may cause injury, pain and discomfort. In the final instance, the cognitive aspect of learning to read the alto clef may be approached either by actively reading the notes on the stave, or by visually or mentally calculating which notes to play. Despite possible temporary success with the second method, the former method of learning to read and identify the notes on the alto clef is recommended. A knowledgeable approach to the physical, technical and cognitive aspects of adapting to the viola from the violin should result in musical and intellectual satisfaction, as well as a career free from injury and pain.

6.3 Limitations of the study

This IPA study is based on the lived experiences of six participants from Pretoria, South Africa. The participants represented both genders and a wide age range, as well as unique backgrounds and levels of experience. Changes in the number of participants, or the combination of gender, age, background and experience may have given rise to varied results. A technical difficulty occurred during the last ten minutes of the recording of the semi-structured interview with Participant E. Even though the remainder of the interview was conducted and recorded a second time, valuable data may have been lost. The study focused on musicians who transitioned to the viola after having achieved proficiency on the violin. Violists who had not studied the violin were not considered for this study.

6.4 Recommendations for future research

The scope of this research study could be extended in several areas. A future study involving a larger sample of violinists who transitioned to the viola is recommended, applying more specified criteria when it comes to the level of experience and the background of the participants, which may lead to more concrete and generalised findings. In addition, a comparison is recommended between the physical, technical and cognitive aspects of violists who commenced their music training on the viola, and those who transitioned to the viola after they had learned to play the violin. A study of violinists transitioning to other stringed instruments, such as the cello or the double bass, may lead to valuable insights concerning the elements of adaptation. Finally, a study comparing the various methods of transitioning from the violin to the viola as taught by different string pedagogues could also be considered.

6.5 Conclusion

This study explored the physical, technical and cognitive aspects of the adaptation process experienced by violinists who transitioned to the viola as a second instrument. The physical

differences between the violin and the viola were considered as leading to subtle technical changes affecting both the right and left hands. It was further ascertained that the transition from the violin to the viola should be approached with caution so as to avoid any injury, pain and discomfort caused by physical or technical issues. Both the choice of instrument and the set-up of the chosen instrument were regarded as being fundamentally determined by the unique physique of the individual, and have to be adapted and adjusted accordingly. Lastly, several approaches to the cognitively acquired reading of the alto clef by the newly transitioned violist became apparent. These included sight-reading, scales, and the infamous "third position method".

In conclusion, every violinist who wishes to transition to the viola, whether on a temporary or a permanent basis, should realise that the viola is not merely an instrument which is almost like the violin, albeit a fifth lower in pitch. It is essential for violinists who seek to play the viola to respect and acknowledge the uniqueness of this instrument. The viola represents an exclusive sphere of music which should be approached accordingly. The three areas explored in this study embody the most crucial aspects of the transition process from the violin to the viola. A thorough understanding of the physical differences between the two instruments, the resulting technical adaptations, and comfortable reading of the alto clef should be cultivated for the journey of becoming a violist in the true sense of the word.

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APPENDIX A

LETTER OF INFORMATION

Research title: Exploring the adaptations made by violinists studying the viola as second instrument

Dear Violinist/Violist

I, Aimée S. Porter (student no. 14007828), am currently enrolled for a Master of Music (MMus) degree at the University of Pretoria.

Aim of the study: The study aims to explore aspects including physiological changes demanded by the increased size and weight of the viola; technical adaptations, such as new approaches to fingering, bowing and sound production; as well as the cognitive adaptation of learning to read the alto clef. Semi-structured interviews will allow you as participant to share your experience of learning the viola as a second instrument.

Procedure: Your participation will involve a semi-structured interview conducted by me, the principal researcher. This will take approximately 40 minutes of your time. The interviews will be audio-recorded. Your identity, as well as the information you share, will be treated with strict confidentiality.

Risks and benefits: Participation is completely voluntary and you are free to withdraw from the study at any time. There are no risks or direct benefits involved for participating in this project. In case you decide to withdraw there will be no negative consequences, nor will you need to explain your reason. You are encouraged to ask any questions you might have about the study.

Who will have access to the results of the study? The research will be handled by myself as principal researcher, and my supervisor. Results will be used for academic purposes only. Data will be archived at the Department of Music for a minimum of 15 years, during which the raw data might be used for further research.

The study will only commence once ethical approval has been obtained from the Research Ethics Committee of the Faculty of Humanities, University of Pretoria.

Your participation will be greatly appreciated. Please feel free to contact me or my supervisor should you require more information concerning this study.

Kind regards

Aimée S. Porter
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Supervisor: Dr HS Rhodie
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APPENDIX B
LETTER OF INFORMED CONSENT

FULL NAME OF PARTICIPANT: _____

RESEARCH TITLE:

Exploring the adaptations made by violinists studying the viola as second instrument.

I hereby give my consent to participate in the above-mentioned research project. I acknowledge that the collected data may be used for current and future research. I confirm that I understand what is required of me during the research project. I am also aware that I may withdraw from the study at any time should I wish to do so.

Signature of participant

Date

Signature of principal researcher



APPENDIX C

SEMI-STRUCTURED INTERVIEW QUESTIONNAIRE FOR VIOLINISTS WHO STUDIED THE VIOLA AS A SECOND INSTRUMENT

1. At what stage in your musical career did you take up the viola as second instrument, and why?
2. Do you still actively play violin and viola?
3. What challenges, in your experience, do playing both instruments pose in terms of technique?
4. What did you experience as the most noteworthy physical difference between the violin and the viola as instruments?
5. How did you come to terms with these differences in the technical adaptations you had to make when you started learning the viola?
6. Do you feel that viola technique "builds" on violin technique, or did you have to relearn some of the technical aspects when you started learning the viola? Please explain.
7. How do you approach viola fingering as opposed to violin fingering?
8. How did you experience the differences in violin and viola bowing, as well as the bow hold?
9. Would you say that vibrato used when playing the violin differs from that used when playing the viola? How do you perceive and manage vibrato when playing the viola?
10. How do you approach the issue of shifting when you play the viola?
11. What, in your experience, was the most challenging technical aspect of transitioning to the viola?
12. Have you ever experienced any injuries, for example in your hands, arms, neck, shoulders, jaw, or anywhere else, which resulted from taking up the viola as second instrument? If yes, please explain.
13. What, in your opinion, was the reason for the injury/injuries?
14. What changes did you make to your instrument set-up (chin rest & shoulder rest) when you made the transition? How did it differ from your violin set-up?

15. Do you feel that the set-up plays a role in avoiding potential injuries when transitioning from violin to viola? Please explain.
16. How did you approach the process of learning to read the alto clef?
17. Do you feel as comfortable in reading the alto clef as you do in reading the treble clef? Please explain.
18. What, in your experience, is the most challenging issue, if any, concerning the reading of the alto clef?
19. Do you think of yourself as a violinist or a violist?
20. In conclusion, what, in your experience, was the overall most difficult adaptation you had to make in order to master the viola? Please explain.

APPENDIX D

EXAMPLE OF CODING

<p>Transcript of Semi-structured Interview with Participant D as conducted on 28 February 2019</p>	
<p>Researcher: Thank you very much for taking part in my research. Um, let's start off with the first question.</p> <p>Participant D: Ja.</p> <p>Researcher: At what stage in your musical career did you take up the viola as second instrument, and why?</p> <p>Participant D: Um, \I was still in high school, and at that stage it was effectively my third instrument. I was seventeen//. And the reason why is, um, I was a late starter on the violin, and I had a very good friend in school orchestra, and she always wanted me to go and study music. She was a year above me. She was gonna go and study music and she... we played together in the school orchestra. She knew pretty well what I could do... what not. \And she noticed that I am quite tall and I've got long arms and big hands. So she suggested the viola, because she thought I would simply feel more comfortable on the instrument. Turns out she was 100% right. I felt like coming home when I started playing viola//.</p> <p>Researcher: Alright. So, do you still actively play violin and viola, or...</p> <p>Participant D: I do, but violin only on occasion. No, I do it... \I teach both instruments, so I will, obviously, play with my students, but I teach a lot with my viola. Even my violin students, I usually teach with my viola//. \But I still do play violin, now also in orchestras. Every now and then... sometimes it happens that somebody needs a violin and they don't know who to go to. But it's rare occasions. Mostly I play viola.</p> <p>Researcher: Alright. So, what challenges, in your experience, do playing both instruments pose in terms of technique?</p> <p>Participant D: Um, the most obvious one that everybody thinks of first would be \the different distance between the notes on the fingerboard. Now you have to extend your fingers in order to play viola. You have to come back together when you play violin//. \I never found that so bad, because that is something that we do anyway when we shift positions. We are very used to notes being in different distances to each other. So that is just one more adaptation//. \What I find most challenging is how you treat your bow//. Because, \on the violin, usually you play with a relaxed bow hold, and the sheer weight of the bow in itself is usually enough to make a decent sound on the instrument. Obviously, if you want to play <i>forte</i> or <i>fortissimo</i>, you have to work for it, but just in order to get a good sound, you don't have to do such a lot//. Whereas \on the viola, you work against an active resistance of the strings//. \You have to really work with your bow and with your bow arm. You have to work the bow into the strings//. \You have to use the weight of your arm. You have to come down. You have to put that weight on the bow in order to aid the bow to get the sound out//. \So that's a completely different way of using your right arm. The left hand I didn't find that challenging, but the right arm is really very different//.</p> <p>Researcher: Alright. Great. We'll come back to arm...</p>	<p>17 yrs, viola 3rd instrument</p> <p>Bigger physique - viola more comfortable</p> <p>Teaches violin & viola</p> <p>Mostly plays viola</p> <p>Longer fingerboard - extend fingers</p> <p>Shifting & fingerboard Bow technique - challenge Vin - weight of bow & good sound</p> <p>Resistance of strings Work bow into strings Arm weight + bow weight Right arm - very different</p>