The impact of psychological skills and mindfulness training on the psychological well-being of undergraduate music students

by

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Submitted in fulfilment of the requirements

for the degree

Magister Artium in Psychology

in the

Faculty of Humanities

Department of Psychology

University of Pretoria

Pretoria

January 2013

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Declaration

I declare that the work that has been done in this dissertation is my own original work and have not previously been used or submitted for degree purposes at any other University. References have been listed and acknowledged.

Signature:

Date:

Acknowledgements

- Firstly, I want to thank God for giving me this incredible opportunity and for granting me the capacity and creativity to do this research project. I also want to thank God for allowing me to see the love of God in everything and everybody and for revealing His abundant amount of love, care and kindness every single day.
- A special and grateful word of appreciation to Prof. David Maree for his guidance and support during my research.
- I also want to thank my parents, Ben and Neeltje, and my sister, Jani, for believing in me and for supporting me throughout the whole process. You have motivated and supported me and I deeply appreciate the love and care that you give me every single day. I also want to give a grateful thanks to my dad for his enormous amount of guidance, support, assistance, effort and mentorship throughout this whole process and especially for his willingness to present and run the intervention programme with the undergraduate music students. I also want to give a grateful thanks to my mom for her support and assistance during the research project and to Jani for her constant support, electronic assistance, and statistical refinement.
- I also want to express my gratitude to Dr. Clorinda Panebianco-Warrens for her input and logistic support in this study.
- A warm word of appreciation to Mrs. Idette Noomé for her academic and skillful editorial assistance, as well as high quality language refinement in this study.
- Thank you to Mrs. Marelize Snyman and Mrs. Christine Smit for their support with the statistics.

To my parents, Ben and Neeltje,

and to my sister, Jani.

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SUMMARY

The impact of psychological skills and mindfulness training on the psychological well-being of undergraduate music students

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Extensive research on the psychological benefits of psychological skills training in sport has been conducted in Sport Psychology, with unambiguous positive results. However, psychological skills training has not yet been fully applied in the Psychology of Music. Mindfulness training, and specifically the mindfulness, acceptance and commitment (MAC) approach, has been applied in sport, but thus far no MAC intervention on musicians has been published. The combination of Psychological Skills Training (PST) and mindfulness (the MAC approach) training is more rare and has not yet been used in music studies. The configuration of mindfulness (MAC) and PST has been applied in a sport setting, but has never been tested in a proper intervention programme for music students. This study fills this gap.

The primary aim of this research was to implement and evaluate the effect of PST, in combination with mindfulness, on undergraduate music students. The second aim was to determine whether the intervention programme had an impact on the students' psychological well-being and the management of music performance anxiety. The third aim was to evaluate whether the students' psychological skills and mindfulness have improved. The fourth aim was to determine whether the combination of PST and mindfulness training was successful. The fifth aim was to evaluate whether the cross-over from Sport Psychology to the Psychology of Music in terms of the knowledge base, intervention PST protocols and psychometric measuring instruments was meaningful. The sixth aim was to determine whether the correlations between the psychological constructs (subscales) of the pre-intervention test measurements on all the respondents were meaningful.

A convenience sample of 36 undergraduate music students from the Department of Music at the University of Pretoria was selected. The students were asked to participate voluntarily. The experimental group consisted of 21 students, and the remaining 15 students formed the control group.

A quasi-experimental design was implemented in this research to address problems that might occur because of the voluntary selection method employed. Voluntary participation was adopted to ensure that the participants were fully engaged in and committed to this study. The aspects of motivation and commitment were essential prerequisites for this research to be successful, because full commitment and maximum attendance of the intervention sessions were crucial to be able to determine the impact of this intervention programme.

The results indicated a significant improvement in positive relationships with others within the experimental group, as measured by Ryff's Psychological Well-being Scale. Pre- and post-intervention test results within the experimental group indicated a statistically significant improvement in all three subscales of the Competitive State Anxiety Inventory-2 (cognitive state anxiety, somatic state anxiety and self-confidence). A statistically significant improvement on five of the seven subscales of Bull's Mental Skills Questionnaire (self-confidence, anxiety and worry management, concentration ability, relaxation ability and levels of motivation) were reported, and on the Five Facet Mindfulness Questionnaire, the subscales of "describe" items and "non-judge" items improved significantly from the pre-intervention test to the post-intervention test in the experimental group. Interestingly, the growth mindset within the experimental group also increased significantly, while the fixed mindset decreased significantly. This significant positive increase in the scores of the experimental group might be an indication that the intervention programme had a moderately significant impact on important psychological dimensions of the participating undergraduate music students.

OPSOMMING

Die impak van psigologiese vaardigheids- en bewussynsgewaarwordingsopleiding op die psigologiese welsyn van voorgraadse musiekstudente

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Uitgebreide navorsing oor die psigologiese voordele van psigologiese vaardigheidsopleiding is suksesvol gedoen in Sportsielkunde, met ondubbelsinnige positiewe resultate. Psigologiese vaardigheidsopleiding is egter nog nie ten volle toegepas in Musieksielkunde nie. Bewussynsgewaarwordingsopleiding met spesifieke verwysing na die “mindfulness, acceptance and commitment” (MAC) benadering is reeds op sportgebied gedoen, maar tot dusver is geen MAC intervensies met musikante gepubliseer nie. Die kombinasie van psigologiese vaardigheids- en bewussynsgewaarwordingsopleiding as intervensiestrategie is skaarser en is nog nie in die musiekkonteks gebruik nie. Die konfigurasie van bewussynsgewaarwording- en psigologiese vaardigheidsopleiding is reeds in ‘n sportkonteks gebruik, maar is nog nooit in ‘n goed beplande intervensieprogram vir musiekstudente getoets nie. Hierdie studie vul hierdie leemte.

Die hoofdoel van die navorsing was om psigologiese vaardigheidsopleiding in kombinasie met bewussynsgewaarwordingsopleiding op voorgraadse musiekstudente toe te pas en die gesamentlike effek daarvan op hulle te bepaal. Die tweede doelwit was om te bepaal of die intervensieprogram ‘n impak op die student se psigologiese welsyn en hantering van musiekdeelname-angs gehad het. Die derde doelwit was om te bepaal of die student se psigologiese vaardighede en bewyssynsgewaarwordinge verbeter het. Die vierde doelwit was om vas te stel of die kombinasie van psigologiese vaardigheids- en bewussynsgewaarwordingsopleiding suksesvol was. Die vyfde doelwit was om te sien of die

oordrag van kennis, psigologiese vaardigheidsopleiding, intervensieprotokolle en psigometriese meetinstrumente vanaf die veld van die Sportsielkunde na Musieksielkunde betekenisvol was. Die sesde doelwit was om vas te stel of die korrelasies tussen die psigologiese konstrukte (subskale) van die voorintervensie toetsmetings van al die respondente sinvol was.

'n Gerieflikheidsnavorsingsgroep bestaande uit 36 voorgraadse musiekstudente van die Departement van Musiek aan die Universiteit van Pretoria is geselekteer, en is gevra om vrywillig deel te neem aan hierdie navorsingsprojek. Die eksperimentele groep het uit 21 studente bestaan, terwyl 15 studente deel van die kontrole-groep was.

'n Kwasi-eksperimentele ontwerp is in hierdie navorsing toegepas om probleme aan te spreek wat dalk mag opduik rakende die vrywillige seleksieprosesmetode wat in hierdie navorsingsprojek gebruik is. Vrywilligers is gebruik om te verseker dat die deelnemers ten volle betrokke en toegewy was aan die studie. Aspekte soos motivering en toewyding was onmisbare voorwaardes om die sukses van die navorsing te verseker, omdat 'n hoë vlak van toewyding en maksimum bywoning van die intervensiesessies noodsaaklik was om die volle impak van die intervensieprogram te kan bepaal.

Die resultate het 'n betekenisvolle verbetering op Ryff's Psychological Well-being Scale rakende "positiewe verhoudinge met ander" by die eksperimentele groep getoon. Intragroepvergelyking van voorintervensie- en na-intervensietoetsing vir die eksperimentele groep het ook betekenisvolle verbeteringe in al drie subskale van die Competitive State Anxiety Inventory-2 (kognitiewe angs, somatiese angs en selfvertroue) getoon. 'n Statistiese betekenisvolle verbetering op vyf van die sewe subskale van Bull's Mental Skills Questionnaire (selfvertroue, hantering van angs en bekommernis, konsentrasievermoë, ontspanningsvermoë en motiveringsvlakke) is in die na-intervensietoetsing by die eksperimentele groep gevind. By die eksperimentele groep was daar ook 'n betekenisvolle verbetering op die bewussynsgewaarwordingsubskale van die "beskryf" items en "nie-oordeel" items, soos gemeet deur die Five Facet Mindfulness Questionnaire, gevind tussen die voorintervensie- en na-interventsietoetsing. 'n Interessante bevinding was dat die groei-ingesteldheid by die eksperimentele groep betekenisvol verbeter het, terwyl die fiksasie (nie-leer) ingesteldheid verminder het. Al bogenoemde betekenisvolle verbeteringe in die gemete resultate van die eksperimentele groep was 'n aanduiding dat die intervensieprogram wel 'n matige betekenisvolle impak op belangrike psigiese dimensies van die voorgraadse musiekstudente wat aan die studie deelgeneem het, gehad het.

CHAPTER 1:

PROBLEM STATEMENT AND RESEARCH GOAL

The aim and final end of all music should be none other than the glory of God and the refreshment of the soul

Johann Sebastian Bach (cited in Aronson, 2008, p. 101)

1.1 Introduction

Music is a primordial phenomenon and making music has been a natural and instinctive human activity since the beginning of time. The deep creative desire to make music has always formed part of human cultures across the world. As a result, modern cultures have inherited and continue to develop a multiplicity of forms of music as an art that has many genres, and a vast variety of musical instruments. Musical performance, whether the musician is a member of a world-class symphony orchestra or who performs in front of thousands of spectators, requires not only years of sophisticated training and persistence, but also very refined motor skills that have to be exercised under conditions of enormous pressure. When one compares a musical performance to a sport performance, one realizes that there are some striking similarities. Performing for an audience, doing an audition, or sometimes being judged (in the case of competitions) can create extreme levels of music performance anxiety which need to be managed and which may be equated to the extreme levels of performance anxiety which an Olympic athlete has to manage. In both these kinds of situation, intense concentration is required.

According to Kabat-Zinn (2008, p. 72), effective concentration is characterized by a single-minded focus on the task at hand. This focus is known in Sanskrit as “onepointedness”. The simple “onepointed” here and now focus of the musician can also be compared to the intensity of focus required of a top sportsman or sportswoman. Both music and sport require high levels of refined motor skills development and execution, as well as intense levels of motivation, persistence and effort over many years. In spite of these striking similarities, which imply potential areas of overlap between the fields of Psychology of Music and Sport Psychology, interestingly the Psychology of Music has not developed at the same pace as Sport Psychology. According to the literature available via the Scopus research platform, overall, the amount of

research in Sport Psychology is almost double that of research in the context of the Psychology of Music. For example, the amount of research on Psychological Skills Training (PST) in sport has increased exponentially in the last 20 years (Edwards, 2007). Sport psychological skills training can be defined as the "systematic and consistent practice of mental or psychological skills for the purpose of enhancing performance" (Weinberg & Gould, 2003, p. 242). In a sport context, a PST programme usually consists of training in maintaining concentration, arousal management, maintaining confidence and enhancing motivation, as well as mental imagery and effective goal setting (Weinberg & Gould, 2003).

The logic of and rationale for using PST for music students arises from the fact that a musician needs to maintain optimal focus levels under very high pressure in the kinds of situations that occur regularly during important music performances and in competitions. PST can provide the necessary mental toughness, as well as the resilience needed to mitigate and overcome the enormous amount of stress that is part and parcel of giving music performance. However, in an extensive electronic search using all the relevant search platforms available (Scopus, EBSCOhost, PsycINFO®), only a limited number of studies could be found on PST applications in music.

One of the first significant research projects pertaining to the field of psychological skills and PST in the context of music was done by Talbot-Honeck and Orlick (1998). The research project used a qualitative research method, and its primary aim was to uncover the most important psychological prerequisites (skills) for performance excellence in music. This seminal research study highlighted the importance of mental skills such as a refined performance focus, a continued growth mindset and deep commitment as some of the most vital skills and psychological attributes that are essential prerequisites for optimal performance in music (Talbot-Honeck & Orlick, 1998). The research on PST in the years that followed tended to focus mostly on testing the impact on musicians of only one or two psychological skills that were included in an intervention programme. A recent and significant study incorporating a full spectrum of psychological skills in a well-planned intervention was conducted by Clark and Williamon (2011).

Taking into account all the available research pertaining to the field of PST in the context of music, it appears that the amount of research done in the Psychology of Music on PST is still meagre in comparison with the vast amount of research done on PST in the field of Sport Psychology. Although the management of music performance anxiety, as one of the crucial components and prerequisites for optimal performance in music, is well-established in the

Psychology of Music (Kenny, 2011), the specific role that PST can play in mitigating the harmful effect of over-arousal and unmanageable stress levels is clearly still under-researched. Studies on the role of psychological well-being as an important prerequisite for optimal performance for musicians are almost completely absent in the research landscape of the Psychology of Music. This lack of research cannot be fully explained. The current study was undertaken to address this gap in the research in the field. The lack of research in the Psychology of Music, and specifically the limited presence of research on PST, necessitated a strong reliance on research in the field of Sport Psychology, which is the most closely related sub-discipline in Psychology that can be used as a reference framework for this research in the area of the Psychology of Music.

Almost the same argument applies to research on mindfulness, and specifically the mindfulness, acceptance and commitment (MAC) approach, in the context of music. A search of all the relevant and available research platforms and databases revealed no reports of research projects that adopted the MAC approach. Only eight research projects using the MAC approach could be found, which were conducted in the context of sport. With regard to the relation between mindfulness and psychological well-being in general, a total number of 106 articles were identified, of which only one article was relevant to the music context. Taking all the above-mentioned facts into account, one can conclude that the unique combination applied in the approach used in this study, namely a combination of PST and the MAC approach has never been conducted in the field of Psychology of Music.

1.2 Rationale for this Study

Prior research in the sport context has shown that PST has generally been used to enhance enjoyment and self-satisfaction levels, as well as the overall quality of performance (Weinberg & Gould, 2003). Recent research has shown that PST programmes have also been implemented to determine the impact of PST on psychological well-being (Edwards, 2007). This particular study indicated that a PST programme is not only effective in the sport context, but has also improved the participants' psychological well-being in a community environment (Edwards, 2007). An enormous amount of research has been conducted in the last past three decades on PST in sport and exercise (Wann & Church, 1998). Research has also confirmed the effectiveness of PST's impact on psychological well-being (Edwards, 2007).

It has been reported in Sport Psychology that PST can mitigate the detrimental effects of performance anxiety on a sport participant's performance (Weinberg & Gould, 1999). Research has indicated that PST can be a very effective mechanism to cope with stress and to improve mental toughness (Gucciardi, Gordon, & Dimmock, 2009). The versatility and adaptability of PST has also been confirmed in other life domains. For example, an effective PST progamme has been applied in a corporate setting (Murphy, 2005). These effective applications of PST open up the possibility of the use of PST in a variety of different life contexts in a meaningful and efficient way. A leading sport psychologist, Daniel Gould, has even made a plea to Sport Psychology researchers to venture into other performance-evaluative spheres to learn more about facilitating human performance in domains such as business, the arts and music (Gould, 2002). It is therefore logical to argue that PST can be very appropriate and useful for musicians.

Research on mindfulness-based interventions has increased exponentially in the last few years (Kabat-Zinn, 2007). The effectiveness of mindfulness-based interventions has been reported in mitigating a wide range of psychological problems, including serious clinical disorders such as post-traumatic and psychotic symptoms, as well as binge eating (Mace, 2008). Mace also reported that mindfulness-based interventions have been effective in treating mood and anxiety disorders.

The link between mindfulness and psychological well-being has been established by a significant number of research projects, particularly over the last decade (Brown & Ryan, 2003; Olendzki, 2005). Based on the existing body of knowledge on mindfulness and psychological well-being, one can argue that mindfulness-based intervention in combination with PST training may be an effective strategy to increase the impact of an intervention programme. Admittedly, adopting such an approach may also be perceived as taking a leap into the unknown, because there is no prior record of applying this unique combination, except in a ground-breaking study by Bernier, Thienot, Codron and Fournier (2009), which creatively combined mindfulness training with PST in a qualitative intervention study on seven elite golfers. Bernier et al.'s (2009) study confirmed the effective applicability of combining PST and mindfulness training in an intervention programme.

By contrast, Kabat-Zinn (2007), one of the leading experts on mindfulness, has expressed some reservations about combining mindfulness training with cognitive training. He admits that it "is a fairly common practice in clinical psychology" (Kabat-Zinn, 2007, p. 234), but adds a *caveat* - "it makes sense if all you are doing is introducing one more method or technique for attention regulation, or to enhance relaxation, or for cultivating insight into a broad spectrum of

approaches that are all being employed in the service of a successful therapy" (Kabat-Zinn, 2007, p. 434). He warns that the nature of mindfulness training can sometimes clash with cognitive approaches and that there is thus a risk in combining mindfulness with other cognitive techniques (Kabat-Zinn, 2007).

The MAC approach, which consists of three essential components, namely, mindfulness, acceptance and commitment, lends itself to a combinative approach with psychological skills training. The reason for this statement, according to Bernier et al. (2009), is that the combination of PST and an acceptance of inner psychological states is in alignment with the third wave of cognitive psychological research. Most prior researchers in PST and mindfulness research opted for a one-dimensional approach, using either PST or a mindfulness approach. The current research project adopts a more inclusive approach, focusing on the complementary unity between PST and mindfulness. In adopting such an angle, this research project is unique in the current research landscape.

1.3 Problem Statement

Research has shown that extreme levels of performance anxiety among sport and music performers can have a severe detrimental effect on performance (Balague, 2005; Fehm & Schmidt, 2006; Osborne & Kenny, 2008). Performance anxiety can jeopardize a musician's performance to such an extent that it can present a severe threat to the person's career. Moreover, it has a negative impact on the total well-being of the performer (Fehm & Schmidt, 2006). It has been reported in recent research on the music performance anxiety of gifted musicians that almost one-third of a sample of music performers were negatively affected by unmanageable performance anxiety, to such an extent that some even reported resorting to dysfunctional coping strategies such as the overuse of prescription drugs and alcohol (Fehm & Schmidt, 2006). It can thus be argued that extremely high levels of music performance anxiety may have a negative effect on the psychological well-being of musicians, given that dysfunctional coping mechanisms were found among musicians who experienced unmanageable levels of anxiety in their performance (Fehm & Schmidt, 2006).

It seems that the psychological well-being of musicians has not really been a critical focus for research in the field of the Psychology of Music, because an electronic search on the psychological well-being of musicians turned up, no results. An extensive amount of research on PST in sport has shown that participants in such intervention programmes can improve their

ability to manage their performance anxiety more efficiently through the use of psychological skills, and indicated an overall improvement in their psychological well-being when such skills were applied (Edwards, 2007; Weinberg & Gould, 1999). This finding implies that it is vital that musicians also receive PST. It also indicates why doing research on the effect of PST on undergraduate music students is indispensable. What makes the current research unique is the combination of PST with mindfulness, which has never been applied to musicians before. (A thorough electronic search with different variations on the topic of this study found no similar or related studies). The application of the MAC approach in sport has been researched, but more extensive research on its application in music is needed in comparison with the application of PST in sport (Bernier et al., 2009). An extensive electronic search revealed, only three studies on mindfulness in the context of music. This fact emphasises the need for this research project and indicates why it is vital to enter into this unknown territory in the current study.

Taking into account all the facts and arguments raised in the rationale and problem statement, the research question for this study can be distilled and stated as follows: **Can the unique combination of PST and mindfulness training improve the psychological well-being of and lead to more effective management of music performance anxiety among undergraduate music students?**

1.4 Aim of this Study

If this study can provide sufficient evidence that PST, in combination with mindfulness training, can improve the overall psychological well-being of undergraduate music students, as well as mitigate the negative harmful effects of high levels of music performance anxiety, this research can potentially have radical training implications for undergraduate music students. According to the available literature, the psychological well-being of musicians, which is also interconnected with effective music performance anxiety management may be under threat (Fehm & Schmidt, 2006). It is therefore crucial that this problem be mitigated through the implementation of new PST and mindfulness training programmes that may be incorporated into the curriculum of undergraduate music students.

The primary aim of this research was to implement and evaluate the effect(s) of PST in combination with mindfulness on undergraduate music students. The second aim was to determine whether the intervention programme had an impact on the psychological well-being and on the management of music performance anxiety. The third aim was to evaluate whether

the students' psychological skills and mindfulness improved after the intervention. The fourth aim was to determine whether the combination of PST and mindfulness training was successful. The fifth aim was to evaluate whether the cross-over from Sport Psychology to the Psychology of Music, in terms of the knowledge base intervention PST protocols and psychometric measuring instruments, was meaningful. The sixth aim was to determine whether the correlations between the psychological constructs (subscales) of the pre-intervention test measurements on all the respondents were meaningful.

The second and third subsidiary aims focused on clarifying and differentiating between the outcome and the effectiveness of the process, to determine this specific impact firstly, on psychological well-being and performance anxiety, and secondly, to determine whether the participants' psychological skills and mindfulness improved. If there is no improvement in the skill and mindfulness levels of the experimental group, the effect of the intervention programme on psychological well-being and performance anxiety can be questioned. The fourth subsidiary aim was necessitated by the lack of research, theories and measuring instruments in the field of Psychology of Music. To meet this subsidiary aim, insights from Sport Psychology, as a closely related performance-evaluative science to the Psychology of Music, were used to provide the necessary knowledge, protocols and measuring instruments for this unique research project. A lot of research on psychological skills has already been done in Sport Psychology, and such research already includes mindfulness research. This provided an adequate platform for this unique study in the field of Psychology of Music, and made it possible to borrow knowledge and measuring instruments from the field of Sport Psychology. The fifth subsidiary aim was set to determine whether the combination of psychological skills and mindfulness training were meaningful and supports the main aim of determining the impact of psychological skills and mindfulness training on the psychological well-being of undergraduate music students. The sixth subsidiary aim, to determine meaningful correlations, provided valuable information regarding the relation between the different subscales and provided evidence of the quality of the measuring instruments used.

1.5 Research Hypothesis

It was hoped that the experimental group would demonstrate a significant improvement in their psychological well-being, as well as reduced music performance anxiety and increased psychological skills and mindfulness both within the experimental group and in comparison with

the control group. To take a more objective position in relation to the research hypothesis of this study, the aims of this study can be translated to the following research hypothesis-driven questions:

- Can PST and mindfulness training improve the psychological well-being and reduce the music performance anxiety of undergraduate music students?
- Do PST and mindfulness training improve psychological skills and mindfulness per se?
- Is the combination of PST and mindfulness meaningful?
- Is the cross-over of knowledge from Sport Psychology to Psychology of Music effectively achieved?
- Are the correlations between the psychological constructs (subscales) of the pre-intervention test measurements on all the respondents meaningful?

Answers to these research hypothesis-driven questions are addressed in the discussion and conclusion in Chapter 6.

1.6 Outline of Chapters

In the first chapter, the problem statement and research goal are thoroughly explained by highlighting the rationale for and the aim of this study. In Chapter 2, a conceptual understanding of the central constructs in this study is provided, and the theoretical underpinnings of psychological skills, mindfulness, psychological well-being and music performance anxiety are described. In Chapter 3, an in-depth exploration of prior research, especially recent research, on psychological skills, mindfulness, psychological well-being and music performance anxiety is conducted in the form of a literature review. The review focuses on research in the field of the Psychology of Music as well as in the ambit of Sport Psychology, which is the closest sub-discipline to the Psychology of Music. The methodology of this study is explained in detailed in Chapter 4, discussing measuring instruments, data collection procedures, the research design, and the sampling method employed in this study. Chapter 5 presents all the individual results and a summary of the results, and the statistical analyses are explained. The final chapter, (Chapter 6) concludes the study by reflecting on the results, the strengths, limitations and conclusions of this study, and by making some recommendations regarding possible future research.

CHAPTER 2:

CONCEPTUAL UNDERSTANDING AND THEORETICAL UNDERPINNINGS

Letting everything become your teacher

Jon Kabat-Zinn (2009, p. 1)

2.1 Theoretical or Paradigmatic Point of Departure

Psychological skills training (PST) is firmly embedded in a cognitive psychological paradigm (Hill, 2001). The cognitive trend in Psychology is one of the main trends in modern Psychology. The term "cognition" refers to "the faculty of knowing or perceiving things" (Oxford Paperback Dictionary, 1994, p. 153) and comes from the Latin term *"cognoscere",* which means to be conscious or to know something (Jordaan & Jordaan, 1984, p. 31). Meyer, Moore and Viljoen (2003) identify the core of cognitive psychology as the study of the individual's cognition and consciousness. In more concrete terms, cognitive processes refer to attention, perception, pattern recognition, as well as memory (Galotti, 2008). According to Hill (2001, p. 63), the cognitive model depicts the individual as "an active participant in creating reality through information processing" and therefore emphasises the role of perceptions. The main assumption of the cognitive theory is that in order to understand a person's behaviour fully, one first needs to look at the person's mental processes. Cognitive theory therefore relies on investigating how mental processes are systematized to be able to determine how people create and attach meaning to situations, people and things (Galotti, 2008).

It is particularly the cognitive-affective theory that provides a theoretical framework for the current intervention study. The basic assumption of cognitive-affective theory is that all emotions, for example music performance anxiety - can be directly linked to the specific cognitive content and perception of a person that can lead to either functional or dysfunctional behaviour. According to this theory, the aspects of thinking and feeling are intimately related (Passer et al., 2009). To apply this framework to the case of a musician, if for example, a musician perceives and interprets the physical symptoms of activation and arousal as signs of weakness and uncontrollable stress, the perception can lead to distress, which is dysfunctional and counteractive for performance. If the cognition of the musician (performer) can be

transformed through the effective use of psychological skills, the musician would be able to interpret and perceive the same physical symptoms of arousal and stress as constructive signs that his or her body and emotions are getting into a state of readiness for performance. This constructive interpretation can lead to a state called eustress, which is associated with a more optimal state of mind that may facilitate peak experiences (Selye, 1979). In short, the cognitive content of the musician's cognition and specifically the musician's perception determines whether or not the musician creates a positive facilitating or a negative debilitating emotion for performance.

In recent years, the mindfulness movement has been developed in a medical and health care context (Kabat-Zinn, 2007). The pioneering of the Mindfulness-Based Stress Reduction (MBSR) approach in the original work of Jon Kabat-Zinn in the 1970s led the mindfulness movement to be positioned in a scientific and research-based medical paradigm. Research on mindfulness in general, and MBSR and Mindfulness-Based Cognitive Therapy (MBCT) in particular, has increased exponentially in both medical and psychological settings. The positive research results in this field are also stimulating research in other life settings, for example, the corporate environment (Kabat-Zinn, 2007).

The basic principles of mindfulness can be linked to the Gestalt therapy approach, as formulated by Perls, one of the founders of Gestalt therapy. It is particularly the emphasis on awareness that links Gestalt therapy closely to the healing mindfulness principles. The profound statement by Perls (1974, p. 17) "that awareness per se – by and of itself – can be curative" is in a sense fully in line with the mindfulness approach.

Some of the basic principles of the mindfulness approach also resonate with Perls's comment that "because with full awareness you become aware of this organismic self-regulation, you can let the organism take over without interfering, without interrupting; we can rely on the wisdom of the organism" (Perls, 1974, p. 17). The claim that the mindfulness approach is well-established as a scientific movement is supported by the increase of international scientific conferences, as well as the fact that researched publications on the topic in highly respected journals have increased exponentially in the last decade. The impact of mindfulness research, especially on neuroscience, and its significance for functional magnetic resonance imaging (fMRI) research has increased rapidly, with the result that the approach is now successfully and firmly entrenched in the scientific community (Kabat-Zinn, 2007).

2.2 Psychological Skills

2.2.1 Conceptual understanding of psychological skills

Psychological skills refer to focusing and maintaining concentration, the regulation of arousal levels, the enhancement of confidence and maintaining the right amount of motivation (Weinberg & Gould, 2003). Psychological skills are thus skills that create an important means to be able to cope with extreme levels of stress in any high performance situation. Psychological Skills Training (PST) can increase the capacity to handle high pressure situations. According to Weinberg and Gould (2003, p. 242), PST is the "systematic and consistent practice of mental or psychological skills for the purpose of enhancing performance." Wann (1997) also describes PST as a thorough, comprehensive intervention programme that is specifically designed to educate and manage oneself in mental preparation for an event or situation.

The wide range of research that has been conducted on psychological skills, particularly in sport and exercise, focuses mainly on the following: mental imagery, goal setting, self-confidence, arousal management (performance anxiety) and concentration (Weinberg & Gould, 1999). Mental imagery refers to the cognitive recreation and rehearsal of a specific exercise (Gill, 2000). Mental imagery is also a form of simulation and similar to a real sensory experience (Weinberg & Gould, 2003). Goal setting is primarily based on motivation and it refers to the attainment and establishment of desired objectives (Harwood, 2005). Self-confidence refers to belief in one's ability to complete an event with success. Self-confidence can also have a negative impact on one's performance and inhibit one's performance if one is over- or under-confident (Weinberg & Gould, 1999). Arousal relates to the natural energy that is essential in performance, but can also be affected by debilitating factors such as anxiety (Martens, Vealey, & Burton, 1990). Concentration is vital in any performance and it is a prerequisite for success, because concentration involves putting one's focus directly on the task at hand (Harris & Harris, 1984). According to Weinberg and Gould (2003), concentration also implies focusing on and selecting relevant task cues, having awareness of the situation, maintaining focus over time and effective shifting of attentional focus when necessary. Schmid and Peper (1993, p. 71) describe concentration as "the ability to focus one's attention on the task at hand and thereby not be disturbed or affected by irrelevant external and internal stimuli."

According to previous research, these psychological skills can be effective in improving the quality of performance in high pressure situations. The development and refinement of psychological skills by regular and systematic practice, according to established protocols and

procedures, can have a significant impact on the quality of a person's performance (Wann & Church, 1998). According to Nideffer (1985), the first psychological skill, which is mental imagery, can be dramatically improved by focusing on the visualization of an event, and through the implementation of memory aids, such as music. Goal setting can be improved through motivation which is in alignment with measurable, specific, realistic, action-related and timetabled goals (Bull, Albinson, & Shambrook, 1996). Weinberg and Gould (2003) describe **arousal** as activation at a psychological and physiological level and it can range from being in a deep sleep to experiencing intense excitement. Scales referred to as self-report measures can be implemented to measure the level of arousal. Negative arousal, which often takes the form of anxiety, can be reduced through the regulation of breathing, positive conditioning and progressive relaxation (Weinberg & Gould, 1999). Concentration can be improved through the implementation of cue words and self-talk (Perry, 2005). Concentration can also be enhanced by focusing on breathing, because attending to one's breathing is a simple way to activate "onepointed" focus where distractions are minimized (Kabat-Zinn, 2008, p. 72).

2.2.2 Theoretical underpinnings of psychological skills

The purpose of exploring the theoretical underpinnings of psychological skills is to provide an in-depth understanding of the theories that underlie psychological skills. The discussion of the relevant theories that underpin the psychological skills also provides a deeper understanding of the skills as phenomena that are employed in this study as part of the intervention programme. The individual skills are therefore discussed in more detail below.

The essence of **mental imagery** is the ability to see with the mind's eye and to be able to use "all the senses to re-create or create an experience in the mind" (Vealey & Greenleaf, 2001, p. 248). Mental imagery can also be referred to as visualization, cognitive rehearsal, mental training, covert training and symbolic training (Potgieter, 2006). Various theories provide an explanation for the effectiveness of such imagery.

The psycho-neuromuscular theory is one of the most widely accepted theories and provides a well-founded explanation for the effectiveness of mental imagery as a psychological skill. This theory focuses on subliminal neuromuscular activity, which is also referred to as the Carpenter effect. The psycho-neuromuscular theory is based on the assumption that when one imagines a specific movement, the brain transmits the impulses to the relevant muscles through neural pathways (Potgieter, 2006). This leads to subtle movement in the muscles that cannot be

consciously detected. Therefore, in a sense, the muscle is being loaded or primed for a specific movement.

The symbolic-learning theory is primarily based on the notion that one must plan one's action in advance. This pre-planning process enables one to develop and foster a "mental blue print" for one's action (Potgieter, 2006, p. 153).

The combination of the physiological aspects of the psycho-neuromuscular theory, as well as the cognitive aspects of the symbolic learning theory is called the set theory.

The set theory states that mental imagery can enhance performance in different ways. It helps one to perform optimally, firstly, by adjusting to the right level of physiological activation and, secondly, by paying more attention to task-relevant cues (Potgieter, 2006).

The psychological skill of **goal setting** is based on the simple psychological reality that it is difficult to be effective in a specific situation if one has no goal in mind. Goal setting is therefore perceived as one of the most useful skills in performance enhancement (Potgieter, 2007). Goal setting can increase motivational levels, assist sound planning in difficult situations and increase one's sense of purpose and direction (Potgieter, 2007). Potgieter (2007) emphasises that goal setting can be used to improve performance in a variety of activities ranging from complex engineering projects to relatively simple activities such as cutting down trees. Research on the effects of goal setting has produced some of the most robust findings in the psychological literature.

There are a number of criteria for goal setting. Optimal goal setting becomes possible when goals are relevant to and realistic for the performer, and it can also be valuable to put goals in writing. It is important to create long-term as well as short-term goals, and these goals should have deadlines. Goals should be formulated positively and not negatively - for example, it is better to say "I will do this" rather than to say "I will not do that". It is also necessary to create goals that may be challenging, but are not unrealistic. It is also important to remember that goals should be measurable and flexible, and they should also be prioritized according to what is most important to the performer. The acknowledgement of small successes is absolutely necessary to increase the level of motivation for planning other goals for the future. The last two criteria for successful goal setting are that goals should lead to action and that individual goals should also be aligned with team goals (Potgieter, 2006).

The **self-efficacy theory** provides a model to study the effect of **self-confidence** on performance. According to Weinberg and Gould (2003), self-efficacy refers to one's perception

of one's own ability in performing a task successfully. According to Bandura's self-efficacy theory, self-efficacy by itself cannot make a person successful, because it is also necessary that the performer has the ability and the wish or desire to succeed. This theory underlines the fact that self-efficacy also affects one's level of effort, persistence and choice of activities; those who appear to have a high level of self-efficacy are more prone to set challenging goals (Bandura, 1997).

The terms **concentration and attention** are used interchangeably by most sport psychologists. Attention is usually referred to as "the concentration of mental effort on internal or external events" (Moran, 1996, p. 70). The term attention entails three major constructs, namely alertness, activation of limited resources or capacity and selectivity (Perry, 2005). Alertness implies a readiness to respond and maintain an optimal sensitivity. Alertness therefore refers to optimal readiness to respond effectively to the immediate environment and relevant stimuli. Activation is closely connected with attentional processes. If a person feels tired, sleepy and/or bored, it is difficult for him or her to attend to and respond to relevant stimuli. Conversely, an overactivated and highly anxious person may also experience attentional problems. The key to optimal concentration may be found in the inverted-U principle which states that optimal attentional levels may be linked to more effective regulation of activation where the individual is able to balance him- or herself between under and over arousal (Potgieter, 2006). Attention as part of a limited resource refers to the isolating capacity in the processing of information.

The capacity models of attention were developed using the concept of divided attention (Moran, 1996). The capacity theories explore human being's ability to perform two or more tasks at once. In sport and in music, this may be one of the prerequisites for effective concentration. For example, a rugby player must be aware of all the possible openings in the line of defence, and must focus on the ball at the same time. A musician playing in an orchestra may also divide his or her attention between the conductor and a crescendo part of music to be able to effectively interpret and synchronize the music performance.

Selectivity entails the preferential processing of competing information in spite of other distractions (Perry, 2005). The selection of the relevant refers to the filter model and theory of effective concentration (Garner, 1974).

According to Garner (1974), human beings have a natural survival mechanism that protects them from an overload of information from their environment. The selection of what is relevant does not only keep people sane by not overloading their limited attentional resources, but is also the key to effectiveness and optimal performance in any area of life. In essence, the

selectivity principle in concentration comes down to the “filtering” ability to hold on to relevant stimuli and block out irrelevant stimuli.

In practical terms, McCluggage (1983, p. 158) captures the core of effective concentration in the following statement: “Concentration is a flexible awareness of what is important and what is not important to the task-of-the-moment.” The essence of concentration as formulated in Gestalt terms is therefore the ability to differentiate clearly between figure (relevant stimuli) and ground (background stimuli). The ramifications of this statement for any kind of performance can be translated to the ability of not only finding what is relevant in a particular performance situation, but also the ability to move from the irrelevant stimuli to the relevant, the more relevant and the most relevant stimuli of the performance.

The psychological skill of **arousal management** and all the relevant theoretical underpinnings of this important psychological skill are discussed in Section 2.5 (under the heading of “Music Performance Anxiety”).

This discussion on the most relevant theories that explain psychological skills as phenomena can provide a deeper understanding of the dynamics and effectiveness of the skills that are employed in the intervention programme implemented in the current study.

2.3 Mindfulness

The main purpose of this section on mindfulness is to clarify the construct mindfulness and to define and delimit the concept in a psychological research context. In their overview of mindfulness in a psychological framework, Brown, Ryan and Creswell (2007) identify a need for conceptual agreement and for clearly underpinning the meaning of mindfulness. Conceptual agreement on mindfulness is critical to create a stable and useful platform for basic and applied research in this relatively new field of psychological investigation (Brown et al., 2007).

The aim of a theoretical underpinning of mindfulness as a psychological construct is to uncover the main characteristics of mindfulness of phenomena. Brown et al. (2007) point out that there is considerable variance in the way that mindfulness is described in the psychological literature, which creates research problems with regard to the nature of mindfulness at a theoretical as well as at an operational level.

2.3.1 Conceptual understanding of mindfulness and the MAC approach

Mindfulness means being consciously aware of the present moment in a non-judgemental way. Mindfulness is a way to get ourselves unstuck from the future and the past and to become solely aware of the present moment (Kabat-Zinn, 2008). A way to describe mindfulness is a broader observation of one's present thoughts, feelings and sensations (Baer, 2003; Kabat-Zinn, 2003). Mindfulness also refers to our capacity for self-knowing and for awareness, and it is cultivated or strengthened by paying attention (Kabat-Zinn, 2007). Another description of mindfulness is the observation of the ongoing stream of internal and external stimuli as it presents itself in a non-judgemental way (Baer, 2003) and bringing awareness to practically any situation (Wylie & Simon, 2004).

Concentration as an important psychological skill operates coherently with mindfulness, and this amplifies the necessity of employing this unique configuration of psychological skills and mindfulness in this study. Concentration is also referred to as *"samadhi"* or "onepointedness" in Sanskrit, and concentration is seen as the ability of the mind to keep an unwavering attention on a specific object during observation (Kabat-Zinn, 2008, p. 72). The terms "attention" and "concentration" are employed interchangeably by most sport psychologists (Bond & Sargent, 1995), which emphasises even more the close relationship between psychological skills and mindfulness. Cognitive researchers normally describe attention as "the concentration of mental effort on internal or external events" (Moran, 1996, p. 70). An early researcher, William James (1890, p. 37) defines attention as "taking possession by the mind, in clear and vivid form, of one out of what seem several simultaneously possible objects or trains of thought." The essence of James's (1890) seminal definition of attention implies the ability to withdraw attention from some things to be able to deal more effectively with others. The concept of attention is skillfully integrated in a formal definition of mindfulness by Brown et al. (2007, p. 212) as "a receptive attention to and awareness of present events and experience." This concise and simple basic definition of mindfulness by Brown et al. (2007) may be helpful in identifying the core characteristics of mindfulness and shedding more light on the true nature of mindfulness in a psychological theoretical framework.

The MAC approach has recently been employed as an effective intervention strategy for performance-evaluative contexts such as sport. The MAC development within the broader mindfulness movement has effectively been employed in the field of Sport Psychology (Bernier et al., 2009; De Petrillo, Kaufman, Glass, & Arnhoff, 2009; Gooding, & Gardner, 2009). The approach consists of three basic constructs, namely mindfulness, acceptance and commitment.

The MAC approach “emphasizes mindful, nonjudging awareness and acceptance of moment-to-moment cognitive, affective, and sensory experiences” (Gardner & Moore, 2007, p. 33). This approach specifically emphasises the concept of willingness, which implies that the performer is willing and chooses to experience sensations, emotions and thoughts fully, even if they are unpleasant. Commitment, the third construct in the MAC approach, refers to the process where a performer actively chooses those specific behaviours that are associated with high levels of performance and that are in full alignment with personal values that represent a willingness and commitment to deliver high quality performance (Gardner & Moore, 2007).

2.3.2 Theoretical underpinnings of mindfulness and the MAC approach

Mindfulness can be related to Gestalt theory, which also includes the idea of awareness and of living fully in the present moment (Perls, 1974; Perls, Hefferline, & Goodman, 1980). Gestalt therapy focuses on obtaining the centre of oneself as a prerequisite for optimal awareness, because according to Perls (1974), being grounded or centered in oneself is the highest state that a person can achieve. Perls (1974) also argues that awareness itself can be curative, which explains why awareness is an important asset for self-regulation. The pivotal role accorded to awareness correlates perfectly with Kabat-Zinn’s (2009, p. 82) injunction – he urges: “Do not try stopping or pushing thoughts away. Make room for them, observing them as thoughts, and letting them be.” In other words, Gestalt therapy suggests that being aware of one’s own thoughts and feelings can be curative in itself.

Mindfulness can be explained in theoretical terms by highlighting the most prominent characteristics of mindfulness. The first characteristic is clarity of awareness, which refers to a pure or lucid awareness that gives a clear picture of reality and also eliminates the operation of preconceived ideas in the mind (Gunaratana, 2002; Sogyal, 1992; Welwood, 1996). Such clarity of awareness can also include the notion of an unbiased receptivity of the mind that allows the revelation of certain phenomena that usually remains hidden, allowing them to come into focus (Brown et al., 2007). Ryan (2005) believes that clarity of awareness promotes insight into oneself and others.

Non-conceptual awareness is the second characteristic of mindfulness. Brown et al. (2007) point out that non-conceptual awareness allows the simple noticing of what is taking place at a specific moment. Hayes, Stohahl and Wilson (1999) note that humans tend to view, construct and interpret the world in a specific way. In other words, human cognitive operations are fuelled

by whatever humans encountered. This definition of normal cognition stands in contrast to Brown et al.'s (2007) view of mindfulness – with the normal cognition as reflective mode by Hayes et al. (1999). Brown et al. (2007, p. 213) point out "that attention and cognition are tightly intertwined." Therefore, mindfulness refers to a pre-reflective mode of being in which comparison, categorization and evaluation have not yet taken place (Marcel, 2003). Mindfulness is primarily concerned with direct experience, in a non-interfering way.

The distinction between pre-reflective and reflective modes of being is also established concepts in the phenomenological paradigm. Van den Berg (1985, p. 51), one of the key figures in the phenomenological movement, captures the essence of the difference between the pre-reflective and reflective modes of being in the following statement: "Reflection creates a distance between man and world, a distance prereflectively unknown in everyday life." The non-conceptual awareness and the non-interfering way of being closely relates to the pre-reflective world as described in the phenomenological paradigm.

The third characteristic of mindfulness is the flexibility of awareness and attention. This flexibility can be seen as a kind of zoom lens that can focus on a wide variety of things that are taking place, or it can focus on something specific. In other words, one can have a clear awareness of a spectrum of things, or one can be especially aware of a particular thing or object (Welwood, 1996). Kornfield (1993, p. 213) presents a similar view, describing flexibility as being "mindfully aware of all that is currently salient, and one can also be mindful of something in particular."

Previous research has shown that attentional control and a concentrative capacity are both associated with mindfulness (Dunn, Hartigan, & Mikulas, 1999). However, Dunn et al. (1999) believe that mindfulness and concentration are two distinct and unique abilities; Engler (1986) explains the main difference between mindfulness and concentration, namely that mindfulness is a broader concept than concentration and forms the awareness base where concentration can be directed to a specific object. According to Brown et al. (2007, p. 213), concentration is primarily a restriction of attention to a specific object, meaning a focused attention, whereas mindfulness is "a fluid regulation of states of attention and awareness." The term "fluid regulation" in this context refers to being open to awareness in the broadest sense, so that stimuli are allowed to enter and to disappear from a person's field of awareness.

The fourth characteristic of mindfulness entails taking an empirical stance toward reality. This empirical stance signifies the quest to obtain "full facts" and evidence that can corroborate the perception (Brown et al., 2007, p. 213). The whole idea of mindfulness as having an "unprejudiced receptivity" should not be misinterpreted (Brown et al., 2007, p. 214). Marcel

(2003) points out that an unprejudiced receptivity refers to a deep immersion and vibrant awareness of what is happening at a specific junction, and should not be misinterpreted as behaving in an aloof or disinterested way towards a situation or experience. Indeed, mindfulness can enhance one's interest in life, as has been shown in research that has demonstrated higher levels of compassion for oneself, as well as empathy for other people as resulting from greater mindfulness (Neff, 2003; Shapiro, Brown, & Biegel, 2007). In other words, the term "unprejudiced receptivity" refers mainly to seeing and feeling things in a non-judgmental way. For example, the fact that attention is given to emotions and physical sensations does not mean that a person experiences his or her emotions and sensations in a lesser way (Gunaratana, 2002).

A present-orientated consciousness is the fifth characteristic of mindfulness. The mind tends to travel through time into the past and future, and the mind normally does not engage fully with the present moment at all times (Brown et al., 2007). Raskin and Rogers (1995, p. 146) confirm this notion by describing "full functioning" as "allowing awareness to flow freely in and through one's experiences." This tendency of a human being to dwell on the past and on fantasies about the future disengages the person temporarily from the immediacy of experience in the present (Sheldon & Vansteenkiste, 2005). The thoughts about the future that relates to goal attainment is not the only means to obtain effective goal attainment, because research conducted by Sheldon and Vansteenkiste (2005) show that a present-orientated consciousness can promote effective goal attainment. Sheldon and Vansteenkiste (2005) admit that dwelling on the past and future may serve an important self-regulatory purpose of protecting and maintaining the self, but they warn that there is a natural tendency to give too much attention to the past and future at the cost of living in the present moment. Clinical approaches such as the Gestalt approach and more humanist psychologies emphasise the critical importance of the immediacy of experience. Thus, for example, Gestalt Psychology points out the importance of being in the present for effective therapy to take place (Perls, 1974).

The last characteristic of mindfulness is stability or continuity of attention and awareness. The degree of stability or continuity of awareness varies, because awareness may be fleeting or it may be continuous. According to Brown et al. (2007), the mere recognition or realization that one is not aware is itself part of being mindful. Therefore, mindfulness enables one to alternate between a narrow and a broad focus without loss of collectedness or distraction (Brown et al., 2007).

In the last three decades, the mindfulness movement has branched out into a number of significant areas of specialization. The best-known approach in a medical setting was established by Jon Kabat-Zinn (1982). His Mindfulness-Based Stress Reduction (MBSR) approach has been extensively employed in intervention studies over the last 25 years (Brown et al. 2007; Kabat-Zinn, 1982). Other significant developments in the mindfulness movement that can be noted include Mindfulness-Based Cognitive Therapy (MBCT) (Segal, Williams, & Teasdale, 2002), which applies the mindfulness principles in a therapeutic setting. Significant developments that are specifically relevant to this study are the more commitment-orientated mindfulness approaches that place a particular emphasis on the acceptance and commitment dimensions of mindfulness, namely the Acceptance and Commitment Therapy (ACT) developed by Hayes et al. (1999). A recent development is a significant contribution by Gardner and Moore (2007) that focuses on high performance under pressure. Since Gardner and Moore's (2007) comprehensive book *The Psychology of enhancing human performance* was published, there has been a noticeable increase in the number of intervention studies, particularly the performance-evaluative context of sport, that have appeared in international journals.

There are three distinct constructs in the **MAC approach**, namely mindfulness, acceptance and commitment (Gardner & Moore, 2007). **Mindfulness,** according to the MAC approach, can be summarised as a "mindful, nonjudging, present-moment attention" (Gardner & Moore, 2007, p. 32). Gardner and Moore (2007, p. 34) emphasise the process of mindfulness as attaining "a form of heightened present-moment awareness." The MAC approach aligns itself fully with the conceptual understanding and explanations of mindfulness of the mainstream view of mindfulness as represented by experts such as Jon Kabat-Zinn, who defines mindfulness as "paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally" (Kabat-Zinn, 2008, p. 4). In the MAC approach, mindfulness exercises can be helpful in developing higher levels of acute awareness that can assist in improving self-regulation, which is particularly relevant to creating and maintaining optimal performances. Gardner and Moore (2007), who reviewed research conducted on athletes using the MAC approach, conclude that, in line with the theoretical predictions of the MAC approach, where the approach was used, athletes' concentration, attention and awareness improved significantly and their ability to mitigate negative thoughts and feelings increased. Optimal states referred as flow also increased significantly with the help of the MAC approach (Gardner & Moore, 2007).

Acceptance, the second construct in the MAC protocol, is defined as "acceptance of internal processes such as thoughts, emotions, and bodily sensations" (Gardner & Moore, 2007, p. 32). A key perception in the MAC process is the ability to perceive emotions, thoughts and bodily

sensations as passing subjective states and not as realities that need to be judged right or wrong, or good or bad (Gardner & Moore, 2007). Even if the emotions are extremely uncomfortable and unwanted, the individual needs to stay in full contact with these negative unacceptable and uncomfortable thoughts and emotions. If an individual wants to escape and get rid of these uncomfortable thoughts and emotions, it may lead to an increase in cognitive activity and may eventually lead to an extreme self-focus that may impede performance.

The **willingness** to stay in full contact with thoughts and emotions, even if these emotions and thoughts are extremely uncomfortable, is a fundamental prerequisite in the MAC approach. In this approach, the concept of experiential avoidance refers to a phenomenon where any negative thought or emotion is judged bad and wrong. The individual's main need to get rid of uncomfortable experiences (and in a sense get out of the situation), becomes a primary focus. Someone in this state may utter statements such as "I can't handle meetings when I feel this bad"; or "I didn't take the shot because my confidence is down" (Gardner & Moore, 2007, p. 31). A central contribution of the MAC approach (which may also be the main reason for the effectiveness of this approach), is the fact that this approach highlights the need for a clear differentiation between task focus attention and self-focus attention. With effective awareness of the task at hand and acute awareness of all the internal cues (thoughts, emotions and bodily sensations), as well as external cues (environmental), an individual who has mastered the MAC process is able to transcend possible self-focus distractions that are detrimental to performance and is able to direct all attentional energy towards the task at hand (task focus) to achieve optimal performance.

Commitment, as the third construct in the MAC approach, is an important prerequisite for the effectiveness of the MAC process. Commitment refers to actions and behaviour in line with values that are conducive to creating and maintaining high quality performance levels in whatever performance endeavour an individual is engaged. This commitment also includes willingness to endure uncomfortable experiences and even adverse conditions as part of a commitment to one's own performance integrity and as part of a high value that the individual puts on excellence (Gardner & Moore, 2007). Finally, commitment boils down to an individual's willingness to embrace unpleasantness in the service of high performance and is able to maintain high levels of performance "in spite of" or "whatever it takes".

2.4 Psychological Well-being

2.4.1 Conceptual understanding of psychological well-being

Psychological well-being is a positive psychological concept and is similar to mental health. It has been evaluated and has been under extensive empirical review over the last decade (Wissing & Van Eeden, 1998). The concept well-being originated from the ancient Greek word *eudemonia,* which also means happiness (Ryff, 1989). One of the first scales on well-being, Diener's Satisfaction With Life Scale, used the subjective concept of well-being. The scale has been subject to a large amount of research (Conway & Macleod, 2002; Diener, Emmons, Larsen, & Griffen, 1985).

The concept of well-being has been transformed in the work of Ryff (1989) from a subjective outlook to a more objective, standardized outlook. This objective conceptualization of well-being refers to a particular empirical construct, which is conceptually and theoretically grounded. Ryff (1989) did empirical research to develop, a standardized instrument that measures well-being accurately. This scale, Ryff's Psychological Well-being Scale, is currently regarded as an objective, standardized measurement of psychological well-being (Conway & Macleod, 2002; Keyes, Shmotkin, & Ryff, 2002; Ruini et al., 2003; Ryff, 1989; Ryff & Keyes, 1995).

2.4.2 Theoretical underpinnings of psychological well-being

Psychological well-being can be explained theoretically by referring to certain characteristics that define what positive psychological functioning entails. Ryff (1989) lists six main characteristics of psychological well-being. Self-acceptance is the primary criterion for achieving optimal well-being, because having a positive attitude towards oneself is a necessary prerequisite for obtaining a high level of psychological well-being. Secondly, maintaining positive relations with others is important, since healthy relationships with other people is always a focal point in being mentally healthy. Autonomy is the third characteristic, because an independent person does not constantly rely on other people's approval for reaching a high level of positive psychological functioning. The fourth characteristic is environmental mastery, because a person who has the ability to adapt actively and effectively to the environment will evidently reach an optimal level of well-being. Purpose in life is a central characteristic of psychological well-being, due to the fact that purpose creates meaning in life. This also relates to Frankl's existential theory (Shantall, 2003), which states that people are motivated and driven mainly by searching

for meaning and purpose in life. The last characteristic that describes optimal well-being is personal growth, because developing one's optimal potential will lead to optimal well-being. This characteristic relates to Maslow's theory of self-actualization (Moore, 2003) - according to Maslow, reaching one's true potential is the ultimate goal of human life.

One can make use of additional indicators of psychological well-being that are indirectly related and associated with well-being in general. One such approach, which can be closely associated with psychological well-being, is the theory of goal orientation. Goal orientation consists of two constructs, namely task- and ego orientation. The terms "task orientation" and "ego orientation" are mainly used in the sport psychological context, whereas "mastery orientation" and "performance goals orientation" are more commonly found in general Psychology.

Task orientation (mastery orientation) refers to focusing on improving skills, as well as to gaining and learning new skills. An ego orientated person can be sharply contrasted with a task orientated person, because ego orientation (performance goals orientation) involves being more focused on proving oneself than on improving one's skills. An ego orientated person also values feelings of superiority and winning the competition (Duda, 1993).

Task orientation plays an important role in the improvement of one's psychological well-being. Roberts and Ommundsen (2007, p. 168) give a clear description of task orientation in sport in the following statement: "When participants perceive mastery criteria (high in task orientation) to be operative in the sport context, motivation is optimized, participants are invested in the task, persist longer, performance satisfaction and enjoyment are enhanced, peer relationships are fostered, cheating is lessened, burnout and dropout are reduced and athletes feel more positively about themselves." The current evidence on the relationship between goal orientation and psychological well-being indicates that mastery orientation can be associated with psychological well-being (Duda, 1993). However, goal orientation cannot be regarded as a direct indicator of psychological well-being at this stage of the evolution of research pertaining to goal orientation and psychological well-being.

Another indicator of psychological well-being is self-theories, which entails entity- and incremental theories (Dweck, 2000). Self-theories underline primarily the different perceptions of the performer's ability. There are two different perceptions of one's own abilities, namely, firstly, the entity theory, which is also called the fixed mindset and secondly, the incremental theory, which is also called the growth mindset. The entity theory or fixed mindset entails the belief that one has an unchanging ability. In other words, one believes that no matter how hard one practises, one will not be able to achieve an improvement. The incremental theory or growth

mindset refers to the belief that one can grow, develop and cultivate one's abilities through constant hard work and practice. An individual with a growth mindset values effort and perceives failure as a temporary setback, and believing that through hard work and effort, one's abilities can be actualized and failure can be transmuted into success (Dweck, 2000). As in the case of task orientation, the growth mindset is associated with positive psychological benefits and is consequently a strong indicator of psychological well-being (Dweck, 2000). Dweck (2000, 2005) is a strong proponent of the educational understanding of goal orientation. The incremental or developmental mindset overlaps significantly with a mastery orientation or task orientation. The fixed mindset also overlaps significantly with the performance goals orientation or ego orientation.

2.5 Music Performance Anxiety

2.5.1 Conceptual understanding of music performance anxiety

Performance anxiety that occurs specifically in a music context can also be referred to as stage fright. According to Steptoe and Fidler (1987, p. 128), stage fright is "any form of severe anxiety about performance in public." Steptoe et al. (1995) believe that the primary problem with stage fright is that one moves one's attention away from the task at hand, which consequently increases the chances of making a mistake. The symptoms of performance anxiety vary from apprehensive thoughts and memory disturbances to physical symptoms such as increased muscle tension, nausea, hyperventilation, dizziness and trembling (Steptoe et al., 1995). Music performance anxiety, which is also known as stage fright, and the debilitating and afflicting effect of performance anxiety on musicians is a wide-spread problem in the art of music performance (Yoshie, Kudo, Murakoshi, & Ohtsuki, 2009). In an extensive survey involving 2,212 musicians, it has been found that music performance anxiety is the most frequent non-musculoskeletal medical problem among musicians (Yoshie et al., 2009). A disturbing finding in their study was the fact that 20% of the respondents opted to use beta-blockers to cope with such performance anxiety.

It is important to distinguish between state- and trait anxiety, and the relation of these two types of anxiety with performance anxiety. According to Weinberg and Gould (2003, p. 80), trait anxiety refers to "an acquired disposition that predisposes a person to perceive a wide range of objectively non-dangerous circumstances as threatening and to respond to these with disproportionate state anxiety levels." Weinberg and Gould (2003, p. 80) describe state anxiety

as “moment-to-moment changes in feelings of nervousness, worry, and apprehension associated with arousal of the body.” Taking into account the definitions provided by Weinberg and Gould (2003), it seems evident that performance anxiety is more closely related to state anxiety than to trait anxiety. Although there is always an interaction between state- and trait anxiety, the intervention programme implemented in the current study specifically targets state anxiety, in order to mitigate the detrimental effect of music performance anxiety.

A musician’s goal to perform optimally in any performance, leads to feelings of worry and apprehension. Therefore, this apprehensive state is state anxiety, because it is a temporary anxiety that occurs specifically during a competition or music performance. Performance anxiety is more likely to occur if the musician has a history of social phobia. According to Barlow and Durand (2005, p. G-14), social phobia is an “extreme, enduring, irrational fear and avoidance of a social or performance situation.” Therefore, social phobia is closely related to performance anxiety, because performing arts such as music usually involve an audience. The common denominator between music performance anxiety and social phobia is the fact that in both people are “required to do something while others are watching and, to some extent, evaluating their behavior” (Barlow & Durand, 2005, p. 149). According to the DSM-IV criteria, the crucial difference between music performance anxiety and social phobia is that music performance anxiety only occurs in the music performance setting, whereas social phobia applies to a variety of different life settings, where individuals are painfully shy in a variety of different social situations (Barlow & Durand, 2005).

Kenny’s (2011) work on music performance anxiety explains that various connotations can be attached to the term “music performance anxiety”, and consequently there is not always consensus about how to define the term. Even though the terms “performance anxiety”, “stage fright” and “music performance anxiety” are often used interchangeably, they still denote different levels of severity of the anxiety that is being experienced. Reinforcing the above argument, one can clearly identify such distinctions in the opposing views of Brodsky (1996) and Fehm and Schmidt (2006). According to Brodsky (1996), stage fright implies that an individual can be placed at the extreme level on the continuum of the levels of severity pertaining to music performance anxiety, whereas Fehm and Schmidt (2006) believe that stage fright signifies a less severe level of anxiety in relation to music performance anxiety. However, according to Salmon (1990), several authors have recommended that all forms of expression other than music performance anxiety should be discarded, in order to avoid confusion regarding the term.

It is also relevant to distinguish between music performance anxiety and social phobia, because music performance anxiety should not be referred to as social phobia "unless the anxiety or avoidance leads to clinically significant impairment or marked distress" (Kenny, 2011, p. 49). This argument explains why Kenny (2011) highlights the fact that performance anxiety has only been briefly discussed as part of a differential diagnosis in social phobia and has never been classified in the DSM, up to and including the DSM-IV.

Steptoe (2001) claims that music performance anxiety has four components. The primary component is affect or feelings. Secondly, it consists of cognitions. The third component is physiological reactions. Lastly, there may be hormonal imbalances. Affect relates to feelings of anxiety, apprehension or tension, whereas cognitions refer to loss of concentration, misreading of the score or memory failure. The physiological reactions involve disturbances in a person's heart rate, breathing, salivation and gastrointestinal function. Hormonal imbalances include the release of cortisol and excessive epinephrine.

2.5.2 Music Performance Anxiety – a theoretical framework

Kenny's (2011) work provides an in-depth theoretical framework for music performance anxiety. According to Kenny (2011), the Yerkes-Dodson law, which is also referred to as the Inverted-U hypothesis, postulates that there is an optimum zone of performance between the levels of too much or too little activation (arousal). However, this hypothesis does not adequately address the complexity of the arousal-performance relationship, or its interactive effect with other important aspects, such as situational, intrapersonal and performance-related aspects. Kenny (2011, p. 141) believes that it is "unfortunate that even recent articles in music journals continue to report the Yerkes-Dodson law in its original form."

There are other theories that may provide a more thorough theoretical explanation for music performance anxiety, such as

- the three-systems model of fear (Lang, 1977);
- the multidimensional anxiety theory (Martens, Burton, Vealey, Bump, & Smith, 1990);
- the catastrophe model of anxiety and performance (Hardy, 1990; Hardy & Parfitt, 1991);
- Kerr's (1997) reversal theory;
- the optimal zones of arousal hypothesis (Hanin, 2000); and

- the Inverted-U hypothesis as one of the many theoretical explanations of music performance anxiety (Kenny, 2011; Yerkes & Dodson, 1908).

Two of these models are prominent in the sport context, namely the multidimensional anxiety theory (Martens et al., 1990), and the catastrophe model (Hardy, 1990; Hardy & Parfitt, 1991). The theories that pertain specifically to the music context also include theories such as De Nelsky's theory, Montello's theory, Wilson's three-dimensional model of music performance anxiety and Kenny's emotion-based model of music performance anxiety (Kenny, 2011).

The theories mentioned above that pertain to music performance anxiety are briefly discussed below. The Inverted-U hypothesis, as previously explained, provides an explanation for the relationship between arousal and performance. This theory holds that, as the arousal level increases, so does the quality of performance, but only up to a certain point where, if that level of arousal is surpassed, the quality of performance begins to deteriorate. In other words, the Inverted-U form represents a peak performance with an optimal level of arousal, but, contrastingly, a decrease in the quality of performance with either an extremely high or an extremely low level of arousal (Weinberg & Gould, 2003).

The three-systems model of fear was introduced by Lang (1977), who claims that three components are connected to music performance anxiety, namely the behavioural, verbal, and physiological components. He argues that these components were interactive, but also operated independently from one another (Kenny, 2011).

The multidimensional anxiety theory proposes that there are two different types of anxiety, namely cognitive anxiety and somatic anxiety, which affects performance in a different way. The multidimensional anxiety theory entails the belief that cognitive anxiety, such as worry or apprehensive thoughts, is negatively related to performance. Somatic anxiety follows the Inverted-U curve, which means that somatic anxiety can only play a facilitative role up to a certain point in the performance. In other words, if the somatic anxiety surpasses the optimal level of physiological arousal, the somatic anxiety consequently becomes a debilitative factor in the performance (Weinberg & Gould, 2003).

The catastrophe model of anxiety and performance predicts that cognitive anxiety will determine whether the effects that are caused by physiological arousal are small, large or catastrophic (Hardy & Parfitt, 1991). In other words, if cognitive anxiety is low, then an inverted-U curve represents the relationship between the level of physiological arousal and performance. As somatic anxiety increases, it becomes more likely that a negative relationship between cognitive

anxiety and performance will also increase, which may lead to a radical decline in performance (Kenny, 2011).

The reversal theory looks at both the positive and the negative aspects linked to the stress-moderating effects of certain personality characteristics (Apter, 1982). Therefore, this theory pays specific attention to the role of personality variables that causes a particular stress-moderating effect on performance. This theory entails four pairs of opposite meta-motivational states that influence a person's experience of his or her own motivation, namely level of arousal (telic/paratelic) and quality of hedonic tone (feelings of unpleasantness/pleasantness) (Kenny, 2011).

The optimal zone of arousal hypothesis was proposed by Hanin (2000), who also referred to this theory as the individualized zones of optimal functioning. According to Hanin (2000), each individual has a unique zone of optimal state anxiety in which the person can deliver the highest quality of performance. This implies that each person performs at his or her best at different levels of the arousal continuum. In other words, some individuals experience an optimal zone of functioning at the lower end or mid-range of the continuum, while others' optimal zone lies at the upper end of the continuum. This theory differs from the Inverted-U hypothesis in the sense that each person's zone of optimal functioning is seen as unique (Weinberg & Gould, 2003).

The following four theories and models, namely De Nelsky's theory, Montello's theory, Wilson's three-dimensional model and Kenny's emotion-based model of music performance anxiety have not yet been proven robust empirical evidence in respect of their applicability to music performance anxiety, but they do provide a foundation for the development of testing in further research (Kenny, 2011).

De Nelsky's theory is based on learning theory principles, which include the following essential elements:

- very early reinforcement for outstanding performances in the initial stages of music development;
- performance outcomes become a central part of the child's self-esteem;
- a steady increase in competitions with fewer rewards as feedback;
- negative feedback on the child's performance by highly critical judges;
- an obsession with being perfect in performance as the overriding goal;
- the so-called "de-automatized" phenomenon, where automatic behaviour is disrupted even though a child practises very hard;

- a focus on more possible negative outcomes in performance; and
- an increase in performance anxiety and a positive feedback of this negative cycle (Kenny, 2011).

According to Montello's theory, eight key factors can cause music performance anxiety, namely

- the development of the "inner critic";
- an ambivalent relationship with the primary music instrument;
- insufficient preparation and a decrease in practice for performance;
- a decrease in commitment to perform at a high level;
- a decrease in the will, as well as a lack of focus during performances;
- uncomfortable feelings in performing in front of an audience;
- deteriorating self-worth, and
- ambivalent feelings towards and relationships with the audience (Kenny, 2011).

Wilson's three-dimensional model of music performance anxiety is an extension of the Yerkes-Dodson law. This theory captures the three interactive factors that determine the level of anxiety during a performance. These three interactive factors are, firstly, the trait anxiety of the performer, secondly, the degree of task mastery achieved in the performance and lastly, the degree of situational stress experienced in a performance (Kenny, 2011).

Kenny's emotion-based model of music performance anxiety is built primarily on Barlow's (2002) description of the process of music performance anxiety. According to Barlow (2002, p. 84), the process takes place in the following way:

> "Situational cues associated with negative affect result in a shift from an external to an internal focus of attention directed to somatic sensations, as well as the affective and self-evaluative components of the context, which result in further increases in arousal and anxiety."

This description explains the emotional basis of music performance anxiety (Kenny, 2011).

Performance anxiety is a combination of three different systems. It operates through the interaction of physiological arousal, behavioural responses and fearful cognitions (Craske & Craig, 1984). Physiological arousal refers to somatic responses from the body in the form of an increase in the heart rate and sweating, as well as tension in the muscles. Behavioural responses entail the inhibition of refined motor skills and making unnecessary mistakes. Fearful

cognitions include anxious thoughts of losing (in a competition) or being negatively evaluated for not performing optimally (Craske & Craig, 1984; Terry, 1989).

There are also theories that can provide an explanation of how and why an optimal state of arousal can be achieved in order to maintain an optimal performance. The social facilitation theory is such a theory. It looks at the presence of spectators or an audience as a factor that facilitates a performance when the performance contains simple or well-learned skills, but conversely decreases the quality of a performance that involves complex or unlearned tasks (Weinberg & Gould, 2003).

Another well-accepted theory that explains the optimal zone of arousal is the Inverted-U hypothesis. The Inverted-U hypothesis clearly illustrates where exactly the optimal level of arousal should be in order to mitigate the level of performance anxiety. If the desire level of physiological arousal can be achieved, it lessens the level of performance anxiety and consequently leads to a better performance. The theoretical explanation for the Inverted-U hypothesis is that the optimal state of arousal can increase the quality of performance, but either high or very low arousal can decrease the quality of performance (Weinberg & Gould, 2003). In other words, both extremes of over-arousal and under-arousal can lead to a decline in one's performance. Kenny (2011), as indicated earlier in the discussion, shows that the Inverted-U hypothesis does not cover all the complexities of the performance situation.

Like Kenny (2011), Balague (2005) also criticizes the Inverted-U hypothesis, focusing on two possible problems regarding this theory. Firstly, the theory only provides an explanation after the outcome of the performance, while a theory should be able to predict what the outcome will be, instead of just explaining the outcome of the phenomenon itself. Secondly, this theory does not incorporate the different interpretations of arousal, since arousal can be interpreted as anxiety, but also as a sufficient level of energy or readiness. Raglin and Hanin (2000) explore the modifications and criticisms of the Inverted-U hypothesis. An example of one of the many criticisms for this theory is given by Neiss (1988), who states that this theory does not account for individual differences.

Another theory that provides a better understanding of performance anxiety is the catastrophe model. This theory is related to the Inverted-U hypothesis, but its primary focus is on the effect of cognitive anxiety. In other words, physiological arousal (also known as somatic anxiety) may have little effect on performance, whereas cognitive arousal can have a large effect on performance. This theory emphasises that if cognitive anxiety is high, it can surpass the optimal level of arousal, which can consequently lead to a sudden decrease in the quality of

performance (Weinberg & Gould, 2003). According to Balague (2005), this rapid decline or catastrophic drop can occur in a matter of seconds, explaining the description of the three variables (physiological arousal, cognitive anxiety and quality of performance) as contributing to a catastrophe model. The three variables explain that when the cognitive anxiety is low, then the inverted-U curve will be representative, but if cognitive anxiety is high, then physiological arousal will exceed a certain threshold, and this will in turn lead to a catastrophic drop or rapid decline in performance. Potgieter (2006) points out that when this catastrophic drop occurs, it is difficult for a performer to recover. Reductions of cognitive anxiety that occur after the catastrophic drop cannot instantly improve performance.

In Tan, Pfordresher and Harré's (2011) book *Psychology of music: From sound to significance,* the social psychological framework of music performance anxiety is explored. The social psychological paradigm focuses on the effect of the audience on a performer. The notion of social facilitation, in other words, the notion that the presence of an audience can enhance performance, also relates to the social facilitation theory in the sport context. Triplett (1898, p. 533), who has investigated the effect of social facilitation, claims that in the sport context, "the bodily presence of another contestant participating simultaneously in the race serves to liberate latent energy not ordinarily available." Zajonc (1965) has refined the idea of social facilitation by suggesting that an audience can improve a person's performance when it comes to relatively easy or well-learned tasks, but not when it comes to complex tasks. When the presence of an audience has a detrimental effect on performance, it implies performance anxiety or "stage fright" (Tan et al., 2011).

Performance anxiety is mostly caused by the kind of evaluation that the performer experiences and not necessarily by the size of the audience (Yerkes & Dodson, 1908). In other words, the interpretation of the performance by the performer, whether the performer views the evaluation as part of an audition or as part of a competition or an examination can strongly influence the performer's level of anxiety. The Yerkes-Dodson law, with the typical Inverted-U hypothesis, applies to both the sport- and music context. It represents the argument that arousal caused by the audience can begin to be debilitating and can undermine the performance if it goes beyond a certain point, because it has surpassed that optimal level where the audience facilitates the performance (Yerkes & Dodson, 1908). The Yerkes-Dodson law also illustrates the inverted-U curve that can also be found in the Inverted-U hypothesis.

Music performance anxiety may be an isolated disorder, but it may also form part of other co-morbid disorders. Research has shown that a generalized anxiety disorder, which entails an

excessive irrational worry about everyday concerns, is the most prevalent co-morbid disorder, because it appears that about one third of a group that display severe performance anxiety also suffer from generalized anxiety disorder (Sanderson, DiNardo, Rapee, & Barlow, 1990).

In *The Oxford handbook of music psychology* (Hallam, Cross, & Thaut, 2009), the different characteristics of optimizing a music performance are discussed. Characteristics such as overlearning one's techniques (Oliveira & Goodman, 2004), familiarity with the performance venue, as well as adequate rehearsal (Hallam et al., 2009) are some of the necessary conditions to optimize performance, which is also described as being "in the zone" and experiencing a "state of flow" (Hallam et al., 2009). This flow experience in any music performance closely relates to Csikszentmihalyi's (1990) description of a flow experience in sport. This optimal experience is a state of concentration that causes absolute absorption in an activity and it is characterized by alertness, being unselfconscious and experiencing effortless control in a performance (Csikszentmihalyi, 1990).

There are a number of factors that influence a performer's susceptibility to experiencing music performance anxiety. Factors such as gender, age, a negative self-concept, low self-efficacy, sensitivity to evaluation by others and the entity theory of ability can play a role in the probability of experiencing music performance anxiety. These factors are briefly discussed below:

- Gender: Research has shown that females are generally more anxious and consequently more susceptible to experiencing music performance anxiety than males (Kenny & Osborne, 2006; Papageorgi, 2007).
- Age: Adolescence appears to be the stage in life at which a performer is most highly susceptible to experiencing music performance anxiety (Papageorgi, 2007).
- Negative self-concept: A negative self-concept can make one more prone to music performance anxiety, because, according to Papageorgi (2007), the existence of a positive self-concept can lead to an increase in self-esteem. Maintaining confidence can therefore also decrease the probability of experiencing music performance anxiety.
- Low self-efficacy: Studies on self-efficacy that pertains specifically to the music context have shown that higher levels of self-efficacy can positively influence overall achievement in graded examinations (McCormick & McPherson, 2003, 2006).
- Sensitivity to evaluation by others: According to Papageorgi, Hallam and Welch (2007, p. 86), "the fear of being negatively evaluated and of hopes and expectations not being fulfilled can trigger nervousness."

- Entity theory of ability: Dweck (2000) believes that musicians who are driven by the factors highlighted by the entity theory instead of the incremental theory are more susceptible to experiencing music performance anxiety, due to their fixed mindset and their disbelief in the possibility of constant improvement and growth.

2.6 Summary

The main goal of this chapter was to provide a theoretical framework for this study. This study is firmly embedded in the cognitive psychological paradigm. What makes this study unique is the combination of PST and the mindfulness approach. In the remainder of the study, the effect is tested of this intervention programme on the key components of psychological well-being and music performance anxiety in a music context. A conceptual analysis and a theoretical explanation of the key components were provided in this chapter. In the next chapter, the latest research and literature on these key components and relationships between the components are focused on.

CHAPTER 3:

LITERATURE REVIEW

Music and rhythm find their way into the secret places of the soul

Plato (cited in Aronson, 2008, p. 104)

3.1 Overview of the Literature

The main objective of this study was to ascertain the possible effect of an intervention approach that consists of using training to enhance psychological skills and mindfulness on the psychological well-being and levels of music performance anxiety experienced by undergraduate music students.

The main strategy of the literature review was to identify research that relates as closely as possible to this study. In an electronic search for relevant literature pertaining to the particular configuration of PST, mindfulness, psychological well-being and performance anxiety in the specific context of music, it became clear that almost no prior studies have attempted to measure such effects or could be used to corroborate the current exploratory study.

A second strategy that was adopted to make the literature search more substantial was to break the research topic up into meaningful sections. The fact that PST and mindfulness as an intervention combination has almost never been researched created an enigmatic lacuna in the research landscape around this particular research topic. In the literature search, no intervention research studies were found on PST in a music context. The combination of mindfulness training with PST compounded the problem – using the available search platforms (Scopus, EBSCOhost, PsycINFO®), no prior research project with this combination could be identified in music, sport or any other life setting. This necessitated a separation between psychological skills and mindfulness, in order to widen the literature research. Therefore, PST in relation to psychological well-being and performance anxiety was separated from the relationship between mindfulness, psychological well-being and music performance anxiety. This separation also did not provide sufficient data. The only useful option that remained was to isolate the key concepts of PST, mindfulness, psychological well-being and music performance anxiety completely, and to focus on the research that was available on each of these topics in the context of music and sport.

A third strategy that became necessary was to include research in the field of Sport Psychology, because research pertaining to this topic is much more developed in Sport Psychology than in the Psychology of Music. As was argued in the first chapter, the performance elements in the sport setting appear to bear a striking resemblance to those in a music setting. Therefore, it was possible to fall back on the available research findings in Sport Psychology.

3.2 Psychological Skills

3.2.1 Psychological skills in music

Research on the role and importance of psychological skills, as well as psychological skills training, is an underdeveloped area in the Psychology of Music (Clark & Williamon, 2011). The lack of research on PST in the music context is striking if one compares it to the large amount of research done on PST in the sport context. Some initiatives to let PST research cross-over from Sport Psychology to the Psychology of Music came from recognized experts in the field of Sport Psychology. Gould, a prominent sport psychologist, made a plea for Sport Psychology researchers to use their expertise in meaningful cross-overs to other performance domains, including music (Gould, 2002).

One of the first cross-overs from sport to music was attempted by Orlick, who is known internationally for his work and research in the applied setting of Sport Psychology. He collaborated with Talbot-Honeck in the publication of one of the first articles on psychological skills in music performance (Talbot-Honeck & Orlick, 1998). This creative research effort by Talbot-Honeck and Orlick (1998) employed Orlick's (1992) model of excellence as a framework for research on how top classical musicians can achieve and maintain a consistently high level of performance.

An interesting marriage between Sport Psychology and the Psychology of Music is evident in this research project. In this specific study on classical musicians, the researchers attempted to determine the existing psychological skills that were spontaneously developed by the classical musicians (Talbot-Honeck & Orlick, 1998). It was a qualitative research project, using in-depth interviews with the musicians. Mental preparation and a number of mental skills were identified as a remedial approach to overcome the detrimental effects of music performance anxiety. According to the research findings, the primary prerequisites for optimal performance are creativity, spontaneity and flexibility, followed by "a deep commitment to music and/or excelling, non-materialistic goals, a strong sense of self, a positive perspective based on continued growth

and learning, and an abiding love for and enjoyment of music and music making" (Talbot-Honeck & Orlick, 1998, p. 61).

Another interesting area in the research of PST in the music context was introduced by Partington (1995), who focused on the mental preparation strategies of classical musicians a few days before an important performance. He found that the musicians' pre-performance routines were individualized, flexible, idiosyncratic and highly developed through personal years of experience. Follow-up research work on the importance of pre-performance routines was done by Connolly and Williamon (2004). They also identified the importance of pre-performance routines and the usefulness for music performing students. Some PST skills that were identified as useful in students' music performances were the ability to relax on a mental and physical level, focus and concentration, mental imagery, simulation, goal identification and ideal performance states (Connolly & Williamon, 2004).

Another major trend in PST research on musicians developed specifically to investigate the problem of music performance anxiety. Research on the role of PST to mitigate the debilitating effect of music performance anxiety on the quality of music performance was done by Esplen and Hodnett (1999), Gratto (1998) and Stanton (1994). The role of mental imagery in music performance received special attention, because of the crucial role that mental imagery plays in the musician's total preparation for music performance. Holmes (2005) identified the crucial role of mental imagery in the cognitive processes and specifically how such imagery can be associated with the technical and emotional input that can assist with motivation and music memory.

Self-efficacy as an important predictor for success was initially posited by Bandura (1977). In the field of the Psychology of Music, research in this area was developed in pursuit of reliable predictors of success in music performance (McCormick & McPherson, 2003, 2006). Although self-efficacy is not strictly speaking, a psychological skill, researchers in the field of PST have identified self-efficacy as an important psychological attribute that can influence quality of performance (Weinberg & Gould, 2003). McPherson and McCormick also determined in their research that self-efficacy can play a crucial role in a musician's attitude and behaviour in practice before music examinations (McCormick & McPherson, 2003, 2006). In the refinement of research on the role of self-efficacy as an important predictor of success in music performance, research by Ritchie and Williamon (2011) indicates that self-efficacy is task-specific, and that therefore more differentiation is needed regarding the application of self-efficacy to the music context. Weinberg and Gould (2003) emphasise the importance of the self-

efficacy theory, because it can provide a model to study the role of self-confidence in a performance-evaluative setting. This background information is provided because the current study includes self-confidence as one of the subscales in the CSAI-2 that also determines cognitive and somatic anxiety.

Clark and Williamon (2011) made a major contribution to research on the value of PST intervention programmes on musicians. In their nine-week intervention mental skills training programme, they used an experimental design study on music students in a music conservatoire in England. In previous research on PST and music, psychological skills had been researched in isolation, for example, focusing on breathing and relaxation skills (Gratto, 1998), training and behavioural rehearsal (Kendrick, Craig, Lawson, & Davidson, 1982) and mental imagery and visualization (Esplen & Hodnett, 1999). All this prior research was intended to determine how these isolated skills can improve a musician's ability to manage trait and state anxiety (Clark & Williamon, 2011).

Clark and Williamon (2011) set a benchmark for PST research on musicians, the multifaceted nature, as well as the full spectrum of performance preparation and key psychological skills such as mental imagery, mental rehearsal, goal setting, arousal control, cognitive restructuring, self-talk, focus and concentration, are all included in their thorough intervention programme, which was implemented over a period of nine weeks. The experimental design study by Clark and Williamon (2011) was conducted on 23 students (experimental group n = 14; control group n = 9) at a music conservatoire in England. The results of their study indicated significant changes in the musicians' perspectives towards music-making, self-regulated learning (p = .001), music skills (quantity of practice) (p = .039), music skills (technical proficiency) (p = .028), imagery (p = .006), imagery (interoceptive sensations) (p = .027), imagery (exteroceptive sensations) (p = .017) and self-efficacy (p = .016). It is interesting to note that there was no improvement in the participants' levels of cognitive and somatic anxiety, or their self-confidence as measured by the CSAI-2R. This research by Clark and Williamon (2011) is an excellent example of intervention research in PST and music and sets a new creative benchmark and direction for future research in this area.

3.2.2 Psychological skills in sport

A wealth of research literature on PST in a sport setting is available, because PST was perceived since the origins of the field as providing the basic and fundamental tools to improve

performance in a sport setting (Weinberg & Gould, 2003). In literature overviews of PST in a sport setting done more than 15 years ago by Greenspan and Feltz (1989) and Weinberg and Comar (1994), a total of 45 studies were already identified in a sport setting. In this extensive overview of the available research, it was found that 38 of the studies (85%) clearly indicated positive performance effects. Since the mid 1990s, research on PST has steadily increased. Some of these studies focus on only one psychological skill, while others look at a combination of psychological skills as part of established PST intervention programme protocols and packages (Weinberg & Williams, 2006).

The effect of psychological skills on well-being has recently been extensively researched in the sport context (Edwards, 2007). Edwards (2007) focuses his research on football players. He points out that psychological skills can also be referred to as mental toughness skills. Gucciardi et al. (2009, p. 307) describe mental toughness as a "multifaceted construct made up of multiple key components including values, attitudes, cognitions, emotions, and behaviors." Research by Edwards and Steyn (2008) clearly illustrates that psychological skills and psychological well-being are interrelated concepts with overlapping components. Edwards and Steyn (2008) believe that PST programmes that include biological, social and spiritual components can help to improve general life skills, health and performance. In their 2008 study, a PST programme proved to be efficient, showing improvement on both psychological skills and psychological well-being (Edwards & Steyn, 2008).

According to Edwards (2007), there is a variety of contemporary PST programmes, but the variations are dependent on certain factors, such as the level of competition, the performer's age, as well as competing as an individual or as part of a group or team. Studies have proved that the PST programmes has indeed been effective in improving the quality of psychological skills among football players (Gucciardi et al., 2009). Weinberg and Gould (2003) also highlight how certain skills such as goal setting, communicating and handling both success and failure can effectively be applied from the athletic field to the corporate setting. Some sport psychologists also view these mental skills as general life skills (Weinberg & Gould, 2003), which also emphasise the possibility of an effective application of these skills in the music context.

3.3 Mindfulness

Mindfulness training programmes and the amount of research on the value of mindfulness training have increased exponentially in the last two decades (Brown et al., 2007). The research foci on mindfulness have proliferated in critical areas that not only affect the quality of life and performance output, but also introduce radical ways to influence psycho-physical well-being, as well as improve the chances of survival in the multiplicities and accelerating pace and pressures of the 21st century. The positive news and message of most of the research on mindfulness is that mindfulness is coachable - through practice and commitment, mindfulness can be developed and cultivated. Developing sophisticated levels of mindfulness may result in positive ramifications that can flow over to and spread through all the complex life contexts of modern society.

In the mindfulness research landscape, ground-breaking modalities of significant movements can be identified. One of the best-known and researched studies in this field in the last three decades was done by Kabat-Zinn on Mindfulness-based Stress Reduction (MBSR) (Kabat-Zinn et al., 1992). Kabat-Zinn (1982, 2003, 2007, 2008) has made a substantial contribution to the body of knowledge on the topic, providing other researchers in the field with a frame of reference to develop new variations of mindfulness for more specific settings. Mindfulness-based Cognitive Therapy (MBCT), and the Dialectic Behavior Therapy (DBT) have also led to significant research developments in the broader field of mindfulness (Linehan, 1993; Segal et al., 2002).

A mindfulness approach that has specific implications for performing in extremely high pressure situations is the MAC approach. Gardner and Moore's (2007) book *The psychology of enhancing human performance* should be singled out as a significant contribution to and development in the MAC approach with major implications for understanding high pressure performance situations and assisting performers with regard to the quality of their performance and mitigating the detrimental effects of performance anxiety (Gardner & Moore, 2007).

The main focus in mindfulness training, according to Shapiro and Carlson (2009), are to be able to form a clear intention, strengthen an attitude of acceptance and foster openness to all the things and experiences that arise in one's field of awareness. Mindfulness is not just something that should be learned or acquired - Brown and Ryan (2003) and Kabat-Zinn (2003) perceive mindfulness more as an inherent human capacity that governs the potential to be improved and enhanced through the practice and training of mindfulness. Therefore, mindfulness can be

regarded as an existing dormant state that can be enhanced and magnified through proper mindfulness training.

3.3.1 Mindfulness in music

As already indicated (see Section 1.2), there is a dearth of research regarding the employment of mindfulness in the field of music. It seems that mindfulness in the context of music is even less researched than PST in that context. Only two articles were identified in a thorough electronic search using the PsycINFO®, Scopus and EBSCOhost research platforms.

A glimpse of the role of mindfulness in the music context is provided by Langer, Russell and Eisenkraft (2009), who wrote an article on: "Orchestral performance and the footprint of mindfulness." Their research project combines two separate studies exploring the role of mindfulness in playing a piece of music. These researchers used an experimental and control setting and requested a group of musicians to play a piece of music as well as they could, by remembering the finest performance they had ever heard. This music was recorded and they were requested to play the same piece of music by engaging mindfully with the same music, and they were encouraged to play "this piece in the finest manner you can, offering subtle new nuances to your performance" (Langer et al., 2009, p. 127). The goal was to orientate the performers in the present and to actively increase their mindfulness, and to make them more aware of finer nuances in their presentation of the music. Results indicated that the musicians enjoyed the subtle nuances in their own music and that the audiences also rated the mindfully instructed music to be of a better quality.

The second significant article found pertaining to mindfulness in music was published by Lin, Chang, Zemon and Midlarsky (2008), who explored the role of Chan (Zen) meditation on performance anxiety and musical performance quality. They employed an experimental design. The control group, which consisted of 19 participants, was recruited from music conservatories and participated in an eight-week intervention programme. The experimental group received meditational mindfulness practice, whereas the control group maintained normal practise routines. The results indicated that the experimental group was able to deliver a high quality performance even with extremely high levels of anxiety, while the quality of the control group's performances decreased significantly when anxiety levels increased. In the discussion, these researchers argued that the experimental group may have developed improved meta-cognition, which enabled the musicians to detach effectively from their anxious thoughts and feelings and

to perceive these mental states not as a reality, but as passing states. This finding is in line with the work of Gardner and Moore's (2007) MAC approach, which is based on the notion that even in extreme and most uncomfortable emotional states, for example, anxiety, a person who mindfully accepts these temporary states as passing through and not as realities is able to commit to the task at hand and still deliver a quality performance. The findings of Lin et al. (2008) indicate that negative psychological reactions can be counteracted by the mediating role of meta-cognitive skills that can improve self-regulation, enabling a person to have a healthy detachment from passing thoughts and emotions. Gardner and Moore's (2007) research suggests that effective task orientation is still possible, in spite of negative thoughts and feelings that a person might experience before and during the performance. They state: "In essence, although thoughts and emotions are simply passing subjective states, individuals often respond to their thoughts and emotions as though they are realities that need to be judged as good or bad, right or wrong, and acceptable or unacceptable" (Gardner & Moore, 2007, p. 30). The work of Lin et al. (2008) is a good example of possible research options pertaining to the field of mindfulness in relation to music performance.

3.3.2 Mindfulness in sport

Mindfulness training and research in a sport setting has also increased steadily in the last decade. The significant work of Gardner and Moore (2007) in the development and refinement of the MAC approach can be singled out as one of the most important developments in the area of performance enhancement in sport. Eight prominent studies that made use of the MAC approach were reported in the last three years. Six of these studies were conducted in the United States of America, and the remaining two studies were done in France and Singapore respectively. The participants in these studies ranged from elite sport performers to recreational participants. These studies mainly used quantitative research methodologies; only one study opted for a qualitative methodology. The following sport codes were included in these studies focusing on the MAC approach in the broad context of performance enhancement:

- swimming and golf (Bernier et al., 2009);
- long distance running (De Petrillo et al., 2009);
- basketball (Gooding & Gardner, 2009);
- archery and golf (Kaufman, Glass, & Arnkoff, 2009);
- general college athletic endeavours (Kee & Wang, 2008);

- springboard and diving (Schwanhausser, 2009); and
- volleyball and hockey (Wolanin & Schwanhausser, 2010).

The research studies by Bernier et al. (2009) deserve special mention for their illustration of the effectiveness and relevance of the MAC approach to sport. Bernier et al. (2009) describe optimal performance as a flow state. According to the research findings, this flow state bears a striking resemblance to some mindfulness and acceptance states. Their article illustrates how sport performance can be enhanced through the use of a programme based on mindfulness and acceptance (Bernier et al., 2009). The essence of mindfulness can be captured in the notion of having a present moment focus. According to Jackson and Csikszentmihalyi (1999) and Ravizza (2002), such a present moment focus is the essence of any peak performance in sport. This shared characteristic of a present moment focus demonstrates how mindfulness training can optimize and enhance any sport performance.

In a study by Bernier et al. (2009), swimmers with higher levels of mindfulness reported experiencing five out of the nine flow dimensions formulated by Csikszentmihalyi (1990). The five flow dimensions that were increased in the experiences of the swimmers were sense of total control, merging of action and awareness, challenge-skills balance, loss of self-consciousness and time transformation. The implications of these significant findings by Bernier et al. (2009) lead to the deduction that mindfulness training can improve the frequency of the flow experiences of someone who participates in sport. The research of Kee and Wang (2008) corroborates this line of thinking and underlines the importance of mindfulness training as an essential prerequisite for enhancing performance and even activating the vital flow state.

A second research project by Bernier et al. (2009), reported in the same article, was done on golfers. It indicated that sport psychological skills training in combination with mindfulness training can be a potent intervention combination. In this research project, Bernier et al. (2009) used two groups of golfers. One group was exposed to the combination of mindfulness and PST, while the second group only underwent PST. Results indicated that the group that underwent the combined training outperformed the group who were given only PST. The combined training group reported that they all achieved the competition goals that they set out to reach at the beginning of the intervention, improved their skills pertaining to their “attentional awareness, a nonjudgmental, task relevant focus and behavior flexibility” (Bernier et al., 2009, p. 323). Self-regulation in terms of activation control was more effective in a mindful state, and mindfulness was specifically helpful during routines. It increased the golfers’ reaction time towards activation variations. The fact that mindfulness training was successfully combined with

a sport psychological research project raises the possibility of applying this combination of mindfulness and PST in a music setting.

3.4 Psychological Well-being

3.4.1 Psychological well-being in music

As within psychological skills and mindfulness in music, where there was a paucity of research on the topic, the issue of well-being in the context of music appears to have been researched even less than mindfulness in music. A search using PsycINFO®, Scopus and EBSCOhost identified no available research on psychological well-being in the context of music. This is also an indication that a review on the psychological well-being of musicians is not available for any scholar who wants to do research in this area. However, studies on music performance anxiety imply that psychological well-being is not ubiquitous in the music context.

Fehm and Schmidt's (2006) research strongly underlines the debilitating effect of extreme music performance anxiety among musicians. In a study on adolescent musicians, they discovered that one third of the sample (n = 74) were distinctly handicapped by their music performance anxiety. It was alarming that this research reported that a significant number of participants in this group called for support from the teachers, as well as from professionals outside the school setting to assist them in coping with music performance anxiety. Although alcohol and drug abuse were rarely reported, the effects of dysfunctional coping with music performance anxiety and the impact on a musician's overall well-being, cannot be denied (Fehm & Schmidt, 2006).

Kenny and Osborne (2006) argue that young children who start to play a musical instrument in a spontaneous way at a very young age rarely experience the music performance anxiety that older musicians experience. These researchers strike an important nerve in the context of overall well-being in young musicians by asking the following radical question: "How do many of us undergo the transition from Mummy, look at me, aren't I clever? To please don't ask me to perform; I know that I will make a mess of it and embarrass myself" (Kenny & Osborne, 2006, p. 103).

In the same article, Kenny and Osborne (2006) refer to a significant study by Simon and Martens (1979), who did research on 749 boys between the ages of nine and 14, comparing their levels of anxiety in the performance-evaluative contexts of sport, taking academic tests and

musical activities. A disturbing finding of Simon and Martens's (1979) study was that music performance anxiety among boys with regard to solo performances and playing in a band outscored the anxiety levels associated with sport and academic tests. These alarming findings may be an indication that the well-being of young musicians is under threat and the ability of the musician to manage performance anxiety may be crucial to the overall psychological well-being of musicians.

In a literature overview of psychological well-being by Tubiana and Amadio (2009), a direct relation between uncontrollable levels of anxiety and serious mental problems are indicated. Research on music students indicated that 26% thought about suicide, 17% experienced depression and 30% reported problems with nervousness (Young & Hipple, 1996). Research by Brodsky (1996), which is in line with Tubiana and Amadio (2009, p. 136) indicate that "the prevalence of mental health problems could be measured in total stress quotients, which are high in musicians."

In contrast with these findings, which may be related to the psychological well-being of musicians, Clift and Morrison (2011) clearly indicate that participating in singing groups and choirs can have a positive impact on psychological well-being. In their research, they showed that participating in choir music can offer a wide range of social and emotional benefits that may be useful for mental health services.

As in the case of sport, it seems that music participation reveals a duality. On the one hand, it may offer wonderful psychological benefits in circumstances that are conducive to the improvement of psychological well-being, for example, a supportive environment with manageable levels of performance anxiety, where musicians are properly equipped with skills to manage their own music performance anxiety. On the other hand, it may also have a detrimental impact on psychological well-being, specifically in high pressure music performance situations where the performance anxiety is not controlled effectively.

3.4.2 Psychological well-being in sport

In the performance-evaluative contexts (the performing arts, drama and music), it seems that sport is the one performance-evaluative contexts where the relation between physical activity, sport and psychological well-being is well established. As early as 1970, there was general consensus based on research evidence that there is a strong link between moderate exercises,

participation in sport and psychological well-being. On behalf of the American National Institute of Mental Health, the following consensus statements were made:

- psychological fitness can be associated with psychological well-being;
- moderate exercises can be linked to decreased levels of mild anxiety and depression; and
- appropriate exercise can lead to a decrease in stress indicators such as a high heart rate and muscle tension, and to the improvement of the production of hormones that mitigate stress (Morgan & Goldston, 1987).

Review studies that were done over the last few decades have confirmed the positive relation between exercise, sport and psychological well-being (Potgieter, 2006; Weinberg & Gould, 2003).

In line with the dimensions of psychological well-being (autonomy, personal growth, environmental mastery, purpose of life, positive relations and self-acceptance) formulated by Ryff (1989) and measured by the Ryff's Psychological Well-being Scale, Edwards, Ngcobo, Edwards and Palavar (2005) found that hockey players who exercised regularly, as well as runners and health club members, indicated higher levels of psychological well-being than people who exercise irregularly.

In an overview of psychological well-being in sport, Weinberg and Gould (2007) identified numerous psychological benefits from regular exercise in clinical and non-clinical populations. Regular exercise can enhance psychological benefits resulting in improved academic performance, assertiveness, confidence, emotional stability, an internal locus of control and a positive body image. In a clinical population, research has revealed that regular exercise decreases alcohol abuse, anxiety, depression, phobias and even psychotic behaviour (Weinberg & Gould, 2007). This improvement in psychological well-being is ascribed to the mind-body interaction, in other words, the researchers propose that the psychological and physiological mechanisms are the primary mechanism that may have a positive effect on psychological well-being.

Berger and Owen (1998) also confirmed improved psychological well-being among swimming, yoga and fencing participants. Even sport codes such as karate and weight training revealed a positive relation with psychological well-being (Krawczynski & Olszewski, 2000). Non-competitive sports such as dance, yoga, Pilates and Tai Chi that are characterized by slow movements are particularly effective and conducive to psychological well-being (Stelter, 1998,

2000). This positive change in psychological well-being may be due to the slow meditative movement and deep full breathing exercises which are natural forms of improving mental health (Edwards, 2005). An intervention study by Connolly, Quin and Redding (2011) included 55 young female adolescents who were recruited from secondary schools in the United Kingdom and who underwent a contemporary dance intervention programme. The findings indicated a significant improvement not only in physical qualities such as strength and upper body flexibility, but also in the participants' attitude towards dance and their total psychological well-being.

A study by Carrasco, Garcia-Mas and Brustad (2009) used Ryff's (1989) psychological well-being model and corroborated the assumed positive relation between sport and psychological well-being. These researchers argue that possible reasons why sport participation may contribute to psychological well-being include increased social interaction, as well as the intrinsic pleasure, fun and enjoyment that are natural byproducts that flow from sport participation. Similarly, Weinberg and Gould (2007) explain that enhanced feelings of control, competency and self-efficacy, as well as self-concept and self-esteem, may be a result of social interaction and enjoyment. The physiological mechanisms that are identified in the research overview by Weinberg and Gould (2007) include an increase in cerebral blood flow, changes in the neurotransmitters of the brain, increased oxygen to the cerebral tissues of the brain, as well as a reduction in the muscle tension of the body.

An important research project conducted in the South African context on a sample of 293 students between the ages of 20 and 35 at three tertiary institutions in South Africa confirmed the positive link between sport and psychological well-being. Students who participated actively in sport reported significantly lower levels of symptoms of depression, negative affect (emotions), a pessimistic life orientation and somatic symptoms. The active group also indicated positive affect, self-efficacy beliefs and an improved sense of coherence, autonomy and purpose (Malabo, Van Eeden, & Wissing, 2007).

The darker side of sport participation includes problems such as eating disorders (Cogan, 2005), substance abuse (Anshel, 2005), overtraining and burnout (Peterson, 2005), as well as the devastating effects of injuries (Brown, 2005), especially at the level of sport participation. Research also indicated that fitness orientated participants in sport, such as dedicated runners, can suffer from symptoms such as depression, anxiety, tension and irritability if they cannot exercise due to an injury (Little, 1969). It is safe to argue that sport participation under specific conditions may promote salutary effects, but that sport in general will always be associated with

a combination of positives and negatives when it comes to participants in sport's psychological well-being.

In respect of further future research in this area, Lundqvist (2011) points out that a large amount of research pertaining to the field of exercise, sport and psychological well-being is still undercut by a weak theoretical rationale and framework, as well as conceptual ambiguity which makes comparisons of results across different studies very difficult. Some implications of this problem are that it is risky to generalize findings and that the development of a sound theoretical body of knowledge has thus far been hamstrung. To alleviate this problem, Lundqvist (2011) proposes a more integrated conceptual framework with more explicitly defined concepts that may contribute towards a sound, integrated model which may in turn improve consensus among key researchers in this area.

3.5 Music Performance Anxiety

Some significant contributions in the form of scholarly books, including an extensive review on existing research in this area, have been made by Kenny (2011), who is one of the foremost experts on the field of music performance anxiety. A more thorough review of the theoretical framework regarding music performance anxiety has already been provided in Section 2.5. There is no need to attempt to cover all the available literature and research on music performance anxiety, because it is a vast research area and not all the research done in this field is relevant to this study. The research selected for discussion in this section is specifically relevant to this current study. The aim of this literature review is to identify studies that focus specifically on performance anxiety in the context of psychological well-being, and on intervention studies using psychological skills and mindfulness to improve the management of performance anxiety.

It is important to this study to emphasise that music performance anxiety is a serious problem that does not only impair the quality of performance and a performer's psychological well-being, but can even result in the premature termination of a person's music career. The research of Yoshie et al. (2009) on music performance anxiety in skilled pianists indicated that stage fright is a severe problem among pianists. Even among young adolescent musicians, the levels of distress and anxiety can be extreme and can have negative psychological ramifications. Fehm and Schmidt (2006) note that of the 74 adolescent participants they used in their study, almost one third reported that they were distinctly handicapped by their elevated levels of anxiety.

Although the use of drugs and alcohol was rarely reported, most of the participants called for support and help from professionals outside the school to assist them with counselling to be able to cope more effectively with their anxiety problem.

The research of Kenny and Osborne (2006) indicates that music performance anxiety can develop in an early stage, which is crucial if one takes into account that 90% of adult musicians start their musical instruction before the age of 12, and 46% of musicians start their musical career before the age of seven. Although the problem of music performance anxiety in an early stage is acknowledged, it is still relatively unknown how severe the negative impact of the problem of music performance anxiety on young musicians is (Kenny & Osborne, 2006). A research project by Simon and Martens (1979) on the performance-evaluative context of sport, academics and music done on 749 pupils between the ages of nine and 14 revealed concerning levels of performance anxiety. Music performance anxiety levels among the boys that were tested indicated that solo performance on a musical instrument rated the highest performance anxiety scores, compared to anxiety levels in individual sport and academic tests. In terms of group activities (playing in a sport team and playing in a band), the performance anxiety of playing in a band also outscored all the anxiety scores of team sports such as football, hockey, baseball and basketball that were measured (Simon & Martens, 1979). The above-mentioned research highlights the problem of music performance anxiety in all age groups.

Music performance anxiety does not have to be a major problem that can lead to a multitude of psychological ramifications among musicians. Research by Kokotsaki and Davidson (2003) indicates that high levels of performance anxiety can in fact be facilitating for a well-trained and more experienced musician. A quantitative analysis of music performance anxiety among music college singing students reveals that those musicians who put more effort into training and who had more experience performed better than their less experienced counterparts. Performance anxiety is much lower among these advanced musicians, because they used the training to experience some of the anxiety before the actual performance. This indicates how pre-performance anxiety in training sessions can be beneficial for lowering the level of performance anxiety during the actual performance (Kokotsaki & Davidson, 2003).

An important research question for research in this field is to find the most reliable predictors of performance anxiety. Kokotsaki and Davidson (2003) found that gender and trait anxiety are the two most reliable predictors of performance anxiety. They report that females are more anxious than males, taking into account both trait and state anxiety. They also confirm the suggestion in the literature that there is a proportional relationship between the trait and state aspects of

anxiety, which implies that where state anxiety gets higher, trait anxiety increases too, and vice versa. Significant statistical correlations between trait and state anxiety are confirmed in their research. A study by Osborne and Kenny (2008) supports the findings of Kokotsaki and Davidson (2003) regarding the significant predictive value of gender and trait anxiety. The implication of these findings is that higher trait anxiety can be associated with higher state anxiety, and female participants experience higher levels of music performance anxiety than males. Their results also confirmed that females experience more emotional distress than males and therefore have higher levels of music performance anxiety. Interesting research findings by Yoshie et al. (2009) also confirmed that the Competitive State Anxiety Inventory-2R (CSAI-2R) can measure the effect of state anxiety effectively and that the quality of music performance correlates significantly with the CSAI-2R subscales. These findings are consistent with those noted in Sport Psychology.

Yoshie et al.'s (2009) project is important for the current study because they use the CSAI-2, which was originally developed in a sport context by Martens et al. (1990), and they adapt it to the music performance setting. Thus a cross-over from Sport Psychology to the Psychology of Music such as that attempted in the current study is also successfully made and illustrated by Yoshie et al. (2009).

3.6 The Interrelationship between Psychological Skills, Mindfulness, Psychological Well-being and Music Performance Anxiety

The literature reviewed in this section focused specifically on the core aim of this study, namely ascertaining the effect of an intervention that consists of a combination of PST and mindfulness training, with a specific focus on the MAC approach. Only studies that overlap significantly with the current study were selected because of their specific relevance to this study. As previously stated (see Section 1.2), the unique configuration of phenomena in this investigation in a sense required exploratory research, because of the special combination of psychological skills and mindfulness (the MAC approach) in a music context. The rationale and principles of this novel intervention programme on undergraduate music students are explained as part of the methodology set out in Chapter 4. The pioneering elements of this study makes it difficult to compare the study with similar investigations (because there have been none) and it is therefore

necessary to refer to those research projects that come closest to this study to compare, map and discuss the significance of the findings of this study.

The article that overlaps most with the current investigation is an intervention study by Clark and Williamon (2011), who evaluated a mental skills programme for under- and postgraduate music students at a music conservatoire in the United Kingdom. They also employed an experimental research design and the number of research participants is almost the same as that in this study. Clark and Williamon's (2011) article shares a few other significant similarities with this study, for example, their study used almost the same psychological skills, namely goal setting, performance preparation, relaxation strategies, mental rehearsal imagery, focus and concentration, as well as arousal through cognitive restructuring. The main differences between the current study and the research of Clark and Williamon (2011) are that in the current study, the MAC approach is combined with PST, and that the measuring instruments that are used differed completely, except for the measurement of music performance anxiety, where Clark and Williamon (2011) also applied the CSAI-2. Clark and Williamon (2011) also measured psychological skills per se, as well as the effect of an intervention programme on performance anxiety and self-confidence, which was also under investigation in this study. The work by Clark and Williamon (2011) is significant, because it is an excellent example of a study where a spectrum of mental skills is employed and the effect of a programme was determined by a wide variety of psychological tests, inventories and scales, as well as qualitative feedback from the participants. It should be noted that the similarities between the current study and Clark and Williamon's (2011) article are purely accidental (their study was only identified in the ongoing process of the literature search after the proposal for this study had already been accepted by the Postgraduate and Ethics Committee of the University of Pretoria).

Within the framework of mindfulness, the work of Lin et al. (2008) is significant with regard to determining the effect of mindfulness-related training on performance anxiety and music performance quality. As in the current study, Lin et al. (2008) used an experimental group and a control group. They determined the effects of silent illumination meditation training (which can be readily linked to mindfulness training) on music performance anxiety. Lin et al. (2008, p. 149) state: "The attitudes of mindfulness and acceptance were also described by the participants in this study. For example, a jazz pianist described her performance as 'the most relaxed I had been during a solo performance in a long time, despite the fact that I was still incredibly nervous'. This jazz pianist described a state in which she was aware of her feelings during the moment, without getting caught up in the emotional reactions to the situation." This quote indicates clearly that their intervention programme is similar to the MAC approach used in this

study, where even the psychological skills were embedded in the same attitude of mindfulness and acceptance as that described by Lin et al. (2008).

An article by Talbot-Honeck and Orlick (1998) makes a significant contribution to the current study in the sense that it was one of the first studies to represent any cross-over from Sport Psychology to the Psychology of Music. Their study to uncover the essence of excellence in top classical musicians was conducted by determining the mental skills that top classical musicians developed through years of experience. This pioneering research clearly indicated that sport and music performance are comparable performance-evaluative contexts, because both demands optimal performance (for example, in terms of competition, judging situations or even examinations) in front of audiences or spectators. Sport and music both demand fine motor skills where participants and musicians have to concentrate under extreme levels of pressure and have to be able to manage their performance anxiety to deliver optimal performance.

Murphy and Orlick (2006) extended this line of research into drama and professional acting as another closely related performance-evaluative context, and followed the same aim and methodology in determining the main mental skills that professional actors employ in their high performance under pressure situations in acting. Striking resemblances were uncovered between the performance-evaluative contexts of sport, music and professional acting. The interesting tendency of sport psychologists to extend their research into other performance-evaluative contexts is also reinforced by Gould (2002), a leading expert in psychological intervention programmes, who states that Sport Psychology can allow for constructive transference of knowledge and skills in high performance contexts such as music, arts, business and the military.

In the domain of Sport Psychology, research by Edwards and Steyn (2008) overlaps significantly with the current study. Both studies involve intervention programmes that use almost the same psychological skills, namely concentration, arousal control, mental imagery, self-confidence, critical perceptions and motivation. The following measuring instruments were used in both studies, namely Ryff's Psychological Well-being Scale, Bull's Mental Skills Questionnaire, the CSAI-2, the Concentration Grid, the POSQ and the Self-theory Questionnaire. Although Edwards and Steyn's (2008) study comes from a sport context, the similarities and overlap between these two studies are significant. Edwards and Steyn's (2008) article was used as one of the base studies in the development of the protocol for this current study. The success of their research led to the partial modelling of their research in the current research project. The main difference between the two studies lies in the fact that mindfulness

was not included in their study, and it was argued that in keeping the successful psychological skills component and by adding the MAC approach, the impact of the intervention programme may be improved.

A study in the context of sport relevant to the inclusion in the current study of the mindfulness paradigm, with specific reference to the MAC approach, was conducted by Bernier et al. (2009). Their study is relevant to the current study because they employed an intervention programme that consists of a combination of PST and the MAC approach on golfers. This combination was a new marriage between what seemed to be opposing approaches in a sport context. This new configuration was one of the first intervention research projects in the context of sport. The similarity of Bernier et al.'s (2009) study with the current study on undergraduate music students is the fact that the current study may also be the first of its kind where psychological skills, in conjunction with the MAC approach, is employed in a music context.

Both the research of Bernier et al. (2009) and this study forms part of the third wave (generation) of cognitive behavioural approaches that are becoming increasingly visible, not only in mainstream Psychology, but also in performance-evaluative contexts where high performance under pressure is investigated. The following statement by Bernier et al. (2009) captures the essence of a third wave cognitive behavioural approach, which represents an evolution from cognitive control to an approach that is more accepting of mindfulness, and which is currently gaining momentum in research: "The goal of this third wave approach is to teach athletes to accept their cognitions, emotions and sensations and to commit themselves to action, rather than fight against negative thoughts and unpleasant emotions" (Bernier et al., 2009, p. 330).

The tendency to shift steadily to a more mindfulness orientated approach in intervention studies, with a specific focus on the value of mindfulness-moment-by-moment attention in mitigating stress and improving the quality of performance, is also noted by Salmon, Hanneman and Harwood (2010). The meaningful combination of psychological skills and mindfulness training achieved in the work of Bernier et al. (2009) opened up the possibility of using PST in a mindful attitude and state of mind where the skills are in a sense embedded in a total mindful and acceptance mode in the current study. (The rationale for and principles underlying combining the PST and the MAC approaches are explained in more detail in Chapter 4).

Another important relation for this current study is the significant and well-established link between mindfulness and psychological well-being. Research has demonstrated that mindfulness training can lead to improvements in psychological well-being, which has been

noted in several studies (Brown & Ryan, 2003; Carmody & Baer, 2008; Shapiro, Oman, Thoresen, Plante, & Flinders, 2008). An improvement in psychological well-being has also been reported where mindfulness training assisted in the improvement and relief of clinical stress and anxiety (Dobkin & Zhao, 2011; Young & Baime, 2010). A significant amount of research also shows that mindfulness training can provide some relief from depression (Deyo, Wilson, Ong, & Koopman, 2009), and can help in cases of major depression that is characterized by relapse and recurrence (Ma & Teasdale, 2004; Teasdale et al., 2000). Mindfulness training with a specific focus on developing meta-awareness has also been helpful in the prevention of suicidal depression (Hargus, Crane, Barnhofer, & Williams, 2010).

In the available research overviews, the significant impact on psychological well-being has been corroborated by Brown et al. (2007). A meta-analysis was done by Grossman, Niemann, Schmidt and Walach (2004), who applied strict research criteria in their selection of research reports. In terms of their criteria, only 20 reports out of 64 research projects were finally selected for meta-analysis. The criteria that these researchers' employed were that the studies had to cover a wide spectrum of clinical populations, as well as stressed non-clinical groups. They employed standardized measures of mental and physical well-being. Some studies were excluded because of insufficient information on the intervention programme used, inadequate quantitative health evaluations, or poor statistical analysis. Studies where mindfulness was not the central building block of the intervention programme were also left out (Grossman et al., 2004). The overview by Grossman et al. (2004) concluded that MBSR may assist a broad range of individuals to cope with clinical and non-clinical problems.

Another important dimension in the research on mindfulness that is particularly relevant to this study is the claim that mindfulness training can improve general cognitive functioning and attention control (Anderson, Lau, Segal, & Bishop, 2007; Hodgins & Adair, 2010; Zeidan, Johnson, Diamond, David, & Goolkasian, 2010). The prior research stresses the necessity of not only focusing on psychological skills, because there is some evidence that mindfulness, awareness and meta-awareness play a crucial role in the development and cultivation of effective attention and concentration control (Hodgins & Adair, 2010). This research underlines the importance of combining psychological skills and mindfulness training in research projects and of determining the role of mindfulness in respect of psychological skills and vice versa.

To conclude the discussion on the significant relation between mindfulness and psychological well-being, a study by Killingsworth and Gilbert (2010) can be singled out as representing a creative direction for research in this field. In their article *"The wandering mind is an unhappy*

mind", they highlighted the problems of multitasking, and the absence of awareness and attention in everyday activities. Using the social media, they were able to investigate the views of 2,250 adults in the United States of America, and they were able to get answers pertaining to happiness and the quality of mindfulness in everyday activities. Questions such as "how are you feeling now"? and "are you thinking of something other than what you are currently doing?" were asked in this highly technologically driven research project. The data, processed through multilevel regression, revealed that people with wandering minds are less happy, and the study concludes that "the ability to think about what is not happening is a cognitive achievement that comes at an emotional cost" (Killingsworth & Gilbert, 2010, p. 932).

3.7 Summary

The goal of this chapter was to provide an overview of available research that relates to the research topic of this study. Literature pertaining to the phenomena of psychological skills, mindfulness, psychological well-being and music performance anxiety were investigated in the performance-evaluative contexts of music and sport. The effect of PST and mindfulness training on psychological well-being and music performance anxiety were highlighted in this literature overview, which informed the choice of methodology discussed in Chapter 4.

CHAPTER 4:

METHODOLOGY

Music is the art of the prophets, the only art that can calm the agitations of the soul; it is one of the most magnificent and delightful presents God has given us

Martin Luther (cited in Aronson, 2008, p. 105)

4.1 Research Design

A quasi-experimental design was implemented in this study to overcome the problems that might arise from the voluntary selection employed in this study, in which undergraduate music students were invited by the researcher and a lecturer in the Department of Music at the University of Pretoria (which is also the researcher's home university) to volunteer to participate in this study. The reason for adopting the approach of using volunteers was to ensure optimal motivation and elicit full commitment from the participants. The intention was to make sure that the important goals of full engagement and commitment from the experimental group was achieved, because it is crucial for the success of an intervention study of this nature (Shadish, Cook, & Campbell, 2002).

According to Whitley (2001, p. 307), a quasi-experimental design "attempts to achieve naturalism in settings by manipulating an independent variable in a natural setting using existing groups of people as the experimental and control groups." To follow a strict random selection process in this kind of intervention programme may not be feasible, because voluntary attendance of all the sessions by the experimental group is a prerequisite for success in this research. The undergraduate music students' motivation and commitment, as well as their conscientious attitude toward participating in the programme were factors that could play a role in the study, and consequently could affect the post-intervention test results. The aspect of motivation and commitment were, moreover, essential prerequisites for this success of this research, because full commitment and maximum attendance of the intervention sessions were crucial to be able to determine the impact of this intervention programme. Such commitment and attendance were ensured by means of an information session to which all the

undergraduate music students were invited to obtain detailed information on the research project. After the session, an open invitation was issued to the undergraduate music students to become participants in this research project. Once the sample had been finalized and the interventions began, an attendance list was circulated at the end of every session and absentees were followed up on by the researcher to ensure maximum exposure by the experimental group to the intervention programme. Handouts with all the essentials and practical exercises of the intervention sessions were also provided to the absentees and short discussions took place before and after every intervention session to clarify anything participants were uncertain about concerning previous intervention sessions.

4.2 Sampling

A convenience sample of 36 undergraduate music students from the Department of Music at the University of Pretoria was selected for this study by following a voluntary approach, where the students volunteered and chose to be part of the experimental or control group. This methodological approach is therefore a purposeful sampling method, which had to be adopted due to the importance and prerequisite of the participants' motivation and commitment to this intervention programme.

A group of 21 students volunteered to be included in the experimental group, and 15 students chose to be part of the control group. The 21 students who volunteered for the experimental group committed themselves to participate in the intervention programme, because they were willing to comply with all the demands of this intervention programme, such as the amount of time training that they would have to incorporate in their academic and music training programme. The 15 students of the control group were also interested in the intervention programme, but were either not willing or not able to spend so much time on the seven-week intervention programme. However, the control group committed themselves to participate in the control group testing before and after the intervention programme.

The sample was heterogeneous, because it consisted of males, females and students from different ethnic and cultural backgrounds, and ranged from first-year to fourth-year students. The whole spectrum and variety of music art forms were included in this sample. The undergraduate music students achieved a total of 88% attendance of the intervention programme sessions, which is high in comparison with attendance in similar studies (Edwards & Steyn, 2008). The aim of 100% attendance is always an ideal for any intervention programme,

but taking into account the realities and demands that undergraduate music students encounter in their full programme, the 88% attendance can be seen as a successful attendance percentage. The 12% absenteeism over the intervention sessions was compensated for by individual discussions with students who missed an intervention session, as well as by the provision of notes and information on each intervention session in hard copy and electronically.

4.3 Measuring Instruments

A number of questionnaires, inventories and scales were employed to gather the data, which means that a quantitative approach was used in this research. All the measuring instruments employed in this study have been used successfully in the South African context before, which increases the likelihood that these questionnaires, inventories and scales are valid measurement tools. The following psychological measuring instruments were employed in this research project:

- Bull's Mental Skills Questionnaire;
- the Five Facet Mindfulness Questionnaire (FFMQ);
- Ryff's Psychological Well-being Scale;
- the Competitive State Anxiety Inventory-2 (CSAI-2);
- the Perceptions of Success Questionnaire (POSQ);
- the Self-theory Questionnaire;
- the Kenny Music Performance Anxiety Inventory (K-MPAI);
- the Concentration Grid; and
- the Brunel Mood Scale (BRUMS).

The inclusion of these instruments and the characteristics are discussed in more detail below.

Bull's Mental Skills Questionnaire was selected to determine the level of psychological skills before and after the intervention, and to determine whether the psychological skills had improved. This questionnaire was selected as a measuring instrument because no psychological skills questionnaire was available in the field of the Psychology of Music. The FFMQ was selected for this study because it is a representative measurement of mindfulness, and one of the aims of this research was to determine whether mindfulness per se had improved. Ryff's Psychological Well-being Scale is an objective measuring instrument of psychological well-being. The core aim of this study was to determine whether the intervention

programme had a significant impact on the improvement of psychological well-being. The objective quality of this measuring instrument was the determining factor for its inclusion. The CSAI-2 was the measuring instrument of choice in determining the anxiety levels of the undergraduate music students. This inventory has been used in the performance-evaluative contexts of both sport and, music. The flexibility of this instrument was the determining factor for its inclusion. The POSQ and the Self-theory Questionnaire were selected because both questionnaires target the self-mastery dimension which can be associated with psychological well-being. The K-MPAI was included as an additional measuring instrument of performance anxiety, mainly because it was developed specifically for the music context. The Concentration Grid measures any improvement in concentration capacity, which is one of the crucial factors for success in performance, as well as the mitigation of performance anxiety. The BRUMS was included mainly to determine whether significant mood swings occurred during the intervention programme.

The rationale behind the final decision to employ these measuring instruments is the fact that this combination of measuring instruments has all ready been successfully researched in the sport context (Edwards, 2005; Edwards & Steyn, 2008). One of the aims of this study is to determine if a cross-over from the performance-evaluative context of sport can successfully be applied in the performance-evaluative context of music. Another important aim of this study is to determine if a combination of PST and mindfulness can improve psychological well-being of undergraduate music students. The choice of Ryff's Psychological Well-being Scale is therefore evident because the main impact of this study has to be determined. It is also crucial and logical to determine whether the psychological skills and mindfulness per se improved significantly. The inclusion of the two performance anxiety measuring instruments (CSAI-2; K-MPAI) supports the main aim, because according to the literature, there is a relation between psychological well-being and music performance anxiety (Fehm & Schmidt, 2006; Yoshie et al., 2009). The decision to include the Perceptions of Success Questionnaire and the Self-theory Questionnaire was done based on the fact that research on the growth mindset and goal orientation is closely associated with psychological well-being of sport participants in a sport setting (Roberts & Ommundsen, 2007). The meaningfulness of the constructs and the unique interrelation of these constructs that was researched in this research project are explained in more detail in Chapters 2 and 3.

4.3.1 Bull's Mental Skills Questionnaire

Bull's Mental Skills Questionnaire measures a person's capacity to use his or her mental skills. This questionnaire measures the constructs of mental imagery, mental preparation (goal setting), self-confidence, anxiety and worry management, concentration, relaxation and motivation (Bull et al., 1996). These constructs can be explained as follows:

- The construct of mental imagery measures the ability to see mental pictures with the mind's eye (sample item: It is difficult for me to form mental pictures).
- The construct of mental preparation determines the effectiveness of goal setting and analysis of performance (sample item: I usually set goals that I can achieve).
- The construct of self-confidence refers mainly to the level of confidence regarding music performance, as well as a positive attitude towards the performance (sample item: My confidence drains away as competitions draw nearer).
- The construct of anxiety and worry management measures the level of anxiety and worry, as well as the ability to manage anxiety and worry (sample item: I worry that I will disgrace myself in competitions).
- The construct of concentration determines the ability to maintain focus and block out distractions (sample item: My thoughts are often elsewhere during competitions).
- The construct of relaxation measures the ability to relax and to lower arousal levels before and during competitions (sample item: I am able to relax myself before a competition).
- The construct of motivation determines the motivational level, as well as the enjoyment of competition (sample item: I usually feel that I try my hardest) (Bull et al., 1996; Edwards & Steyn, 2011).

The Cronbach alpha levels for the above-mentioned seven subscales were found to be .80, .64, .62, .61, .59, .72, and .72 respectively, which are generally high Cronbach alpha levels (Snauwaert, 2001). In order to ensure high reliability, Cronbach alpha levels must be on an acceptable level and the general limit in the field of Humanities is above r = 0.60 (Crocker, Kowalski, & Graham, 1998). This measuring instrument was recently researched in the South African context, where new norms were determined. These norms correlated closely with international norms (Edwards & Steyn, 2011). The scale has been translated into Afrikaans. The questionnaire itself consists of 28 items that range from 1 *(strongly disagree)* to 6 *(strongly agree)* on a six-point Likert scale (Edwards, 2007). This questionnaire was specifically developed for the sport context, so slight changes were made by replacing the word "sport" with "music performance", which was sufficient to transform the questionnaire for the music context.

The majority of questions refers to performance in general and therefore did not require any alteration.

It was assumed that the similarities of performance between the music- and sport context would mean that these slight changes did not affect the validity of the questionnaire too radically, although this assumption has yet to be tested. The added value of this transfer of the questionnaire from a sport context to the music context is that it allows the possibility of using Bull's Mental Skills Questionnaire in a music performance setting to be tested. However, this assumption will have to be tested on larger samples of music students and will have to be empirically verified. If the Cronbach alpha values for this study prove to be sufficient, the current study can be perceived as a small step in the right direction and it would indicate that further exploration of this option is warranted.

The following changes on the questionnaire were made (indicated by placing the music context in brackets just after the sport context):

- Item 1 – I can rehearse my sport (music) in my mind;
- Item 4 – I can imagine how movement (it feels when I am playing my music instrument) feels; and
- where the word *competition* appeared on the questionnaire, *performance* was added in brackets for the music student.

These changes may have a slight impact on the validity of the questionnaire, but taking into account that no alternative psychological skills questionnaire specifically developed for music students is available, the employment of this questionnaire was the best option available for this study.

4.3.2 The Five Facet Mindfulness Questionnaire (FFMQ)

The FFMQ assesses five factors of a general tendency to achieve a mindful state in daily life, which includes describing, observing and a non-judging approach of one's inner experience (Baer et al., 2008). This questionnaire consists of 39 items rated on a five-point Likert scale that ranges from 1 *(never or rarely)* to 5 *(very often)* or *(always true).* The Cronbach alpha levels are between .72 and .92.

This questionnaire has been researched in a South African clinical context (Kok, Kirsten, & Botha, 2011). It was developed for the general population and for a variety of clinical and normal everyday life settings. The questionnaire measures elements of mindfulness such as observing, describing, acting of awareness, non-judging of inner experience and non-reactivity to inner experience. The five factor structure thus consists of the following:

- The construct of observing, refers to attending to and noticing internal and external stimuli such as cognitions, emotions, sensations, sounds, sights and smells (sample item: I notice the smells and aromas of things).
- The construct of describing looks at the ability to take note of something and mentally labeling these words and stimuli (sample item: I'm good at finding words to describe my feelings).
- The construct of acting of awareness in essence is the ability to attend to one's immediate actions, which can be contrasted with behaviour that is performed automatically and absent-mindedly (sample item: I find myself doing things without paying attention).
- The construct of non-judging of inner experience refers to refraining from any evaluation of one's cognitions, emotions and sensations (sample item: I think some of the emotions are bad or inappropriate and I should not feel them).
- The construct of non-reactivity to inner experience as the ability to allow thoughts and feelings to come and go without being caught up in them and giving too much attention to the thought or emotion (sample item: I perceive my feelings and emotions without having to react to them) (Carmody & Baer, 2008).

This questionnaire has also been used in conjunction with Ryff's Psychological Well-being Scale in a research project where mindfulness was measured in a psychological well-being setting (Carmody & Baer, 2008).

4.3.3 Ryff's Psychological Well-being Scale

Ryff's Psychological Well-being Scale measures six different dimensions of psychological well-being. It has high levels of internal consistency and good Cronbach alpha coefficients for autonomy (.83), personal growth (.85), environmental mastery (.86), purpose in life (.88), positive relations with others (.88) and self-acceptance (.91) (Ryff, 1989; Ryff & Keyes, 1995).

Some previous research conducted in South Africa used Ryff's Psychological Well-being Scale (Edwards, Ngcobo, & Pillay, 2004; Edwards et al., 2005).

The current study employed the condensed version of Ryff's Psychological Well-being Scale, which consists of 18 questions using a six-point Likert scale that ranges from 1 *(strongly disagree)* to 6 *(strongly agree).* The six dimensions can be explained as follows:

- The construct of autonomy refers to being a person who is "self-determining and independent, able to resist social pressure to think and act in certain ways, regulates behavior from within, evaluates self by personal standards" (Ryff & Keyes, 1995, p. 727) (sample item: I have confidence in my opinions, even if they are contrary to the general consensus).
- The construct of personal growth refers to someone who has "a feeling of continued development, sees self as growing and expanding, is open to new experiences, has a sense of realizing his or her potential, sees improvement in self and behavior over time, is charging in ways that reflect more self-knowledge and effectiveness" (Ryff & Keyes, 1995, p. 727) (sample item: I think it is important to have new experiences that challenge how you think about yourself and the world).
- The construct of environmental mastery refers to someone who has "a sense of mastery and competence in managing the environment, controls a complex array of external activities, makes effective use of surrounding opportunities, is able to choose or create contexts suitable to personal needs and values" (Ryff & Keyes, 1995, p. 727) (sample item: In general, I feel I am in charge of the situation in which I live).
- The construct of purpose in life refers to someone who has "goals in life and a sense of directedness, feels there is meaning to present and past life, holds beliefs that give life purpose, has aims and objectives for living" (Ryff & Keyes, 1995, p. 727) (sample item: I live life one day at a time and do not really think about the future).
- The construct of positive relations with others refers to someone who has "warm, satisfying, trusting relationships with others, is concerned about the welfare of others, capable of strong empathy, affection, and intimacy, understands the give and take of human relationships" (Ryff & Keyes, 1995, p. 727) (sample item: People would describe me as a giving person, willing to share my time with others).
- The construct of self-acceptance refers to someone who has "a positive attitude towards the self, acknowledges and accepts multiple aspects of self, including good and bad

qualities, feels positive about past life" (Ryff & Keyes, 1995, p. 727) (sample item: I like most aspects of my personality).

This scale has been interrogated in respect of its objectivity and structure validity to measure psychological well-being. Ryff and Keyes (1995) report that factor analysis provides support for their six-factor model of psychological well-being.

4.3.4 The Competitive State Anxiety Inventory-2 (CSAI-2)

The CSAI-2 measures two different types of anxiety, namely cognitive anxiety and somatic anxiety. It also measures a person's level of self-confidence. This inventory has been employed in a sport and a music context (Clark & Williamon, 2011). The reliability of the CSAI-2's three subscales, namely cognitive anxiety, somatic anxiety and self-confidence, is very high, because their Cronbach alphas range between .79 and .90. as reported in the assessment construction of this inventory (Martens et al., 1990).

This questionnaire consists of 27 items, assessed using a four-point Likert scale with a range from 1 *(not at all)* to 4 *(very much so)*. The three basic constructs can be explained as follows:

- The construct of somatic anxiety refers to physiological anxiety that is displayed in the form of bodily symptoms (sample item: I feel nervous).
- The construct of cognitive anxiety refers to the psychological anxiety displayed through anxious thoughts in the mind (sample item: I am concerned about this competition).
- The construct of self-confidence refers to feeling comfortable, at ease, and secure, as well as a person's overall confidence and optimism towards a specific performance-evaluative situation (sample item: I feel self-confident) (Roberts, Spink, & Pemberton, 1999).

Although this inventory was specifically developed for the sport population, most of the questions refer to a general performance situation and can therefore be converted easily to the music context by changing only two words in the inventory, from *competition* and *championships* to *music performance*. An example of where the CSAI-2 has been successfully employed in an intervention study on musicians is reported by Clark and Williamon (2011), who exposed musicians to a nine-week PST programme, and found significant improvements in a variety of psychological dimensions.

The following changes were made, as indicated by placing the music context in brackets just after the sport context:

- Item 1 – I am concerned about this competition (music competition or performance); and
- Item 7 – I am concerned that I may not do as well in this competition (performance) as I could.

The same argument for the slight conversion from the sport context to the music context applies to measuring anxiety. This inventory has been published in a text-book for general application and use for Sport Psychology scholars and students (Martens et al., 1990).

Part of the aim of doing the current research is exploring new frontiers and taking well-deliberated and calculated risks to uncover more reliable measuring instruments for the music context that can contribute to the overall development of the Psychology of Music (the K-MPAI is the other reliable measuring instrument available for the music context and was also included in this study). Interestingly, the CSAI-2 was the preferred choice to determine the levels and the effects of state anxiety on music performance in another recent study on musicians (Yoshie et al., 2009). This inventory has been widely used in different South African research contexts, although definitive norms for the South African context have not yet been developed (Andrew, Grobbelaar, & Potgieter, 2007; Edwards, 2007).

4.3.5 The Perceptions of Success Questionnaire (POSQ)

The POSQ is a reliable measurement of perceptions, because it assesses both task- and ego orientation. The questionnaire consists of 12 items along a five-point Likert scale, ranging from A (*strongly disagree)* to E *(strongly agree)* (Moran, 2004). There are six questions on task orientation and six questions on ego orientation.

- The construct of task orientation refers to “mastering a skill, feeling competent, doing well in sport (music), having fun, and enjoying the task” (Roberts et al., 1999, p. 119) (sample item: I show clear personal improvement).
- The construct of ego orientation refers to “responses that involve beating someone, doing better than someone else, winning or being the best” (Roberts et al., 1999, p. 119) (sample item: I am clearly superior).

The Cronbach alpha for internal consistency for task orientation is .88 and that for goal orientation is .91, so the scale is valid with a high internal reliability (Roberts, Treasure, & Balague, 1998). This questionnaire was originally developed in an academic setting and has been successfully adapted to the sport setting by Duda (1989, 1993). Roberts et al. (1998) developed a new version of the original Task and Ego Orientation Sport Questionnaire (TEOSQ), renamed as the Perceptions of Success Questionnaire (POSQ), which is employed in this current study. The nature of this questionnaire makes it applicable to almost any performance situation; therefore, no alterations needed to be made on this questionnaire.

This questionnaire has been widely used in the South African context, although definitive norms for this scale have not yet been developed (Edwards & Steyn, 2008; Potgieter & Steyn, 2010; Steenkamp & Steyn, 2002; Steyn, Steenkamp, & Viviers, 1997).

4.3.6 The Self-theory Questionnaire

The Self-theory Questionnaire was originally developed by Dweck (2000). The main goal of this questionnaire is to ascertain whether a musician has a growth mindset or a fixed mindset. This questionnaire has been successfully employed in a variety of life contexts. It has also been successfully used on instrumental music students in America (Smith, 2005). The specific adapted format for music students had Cronbach alpha values above the acceptable norm of .70.

The three- and eight-item Self-theory Questionnaire uses items along a six-point Likert scale that ranges from 1 *(strongly agree)* to 6 *(strongly disagree*) (Dweck, 2000). The correlation coefficient values ranged between 0.83 and 0.92 on two different validation studies on the three- and eight-item questionnaire (Edwards & Steyn, 2008). A study done with 352 participants reported high Cronbach alphas of 0.74 for the entity- and 0.80 for the incremental theory (Biddle, Wang, Chattzisaraitis, & Spray, 2003):

- The construct of the growth mindset is also called the incremental theory, which refers to a mastery orientation where individuals “love learning, they seek challenges, they value effort, and they persist in the face of obstacles” (Dweck, 2000, p. 1) (sample item: No matter who you are you can change your music ability a lot).

- The construct of the fixed mindset is also called the entity theory, which refers to people that "have a certain amount of it (ability) and that's that" (Dweck, 2000, p. 1) (sample item: Your music ability is something about you that you cannot change very much).

This questionnaire has been adapted successfully from one context to another by changing the specific reference to the participant's ability. For example, a simple change was possible for Item 2 – "Even if you try the level you reach in your sport (music) will change very little". This questionnaire has been successfully employed in a variety settings, for example, as an intelligence-, personality-, "kind of person"- and morality scale (Dweck, 2000). This adaptability, as well as the questionnaire's acceptable psychometric properties, makes this a reliable instrument for music students.

This questionnaire has previously been used in research projects in South Africa, but norms have not yet been developed for the South African context (Edwards & Steyn, 2008; Potgieter & Steyn, 2010).

4.3.7 The Kenny Music Performance Anxiety Inventory (K-MPAI)

The K-MPAI was specifically developed to measure music performance anxiety in musicians (Kenny, Davis, & Oates, 2004). The psychometric construction of the K-MPAI was based on the emotional based theory of anxiety developed by Barlow (2000). The K-MPAI instrument uses selected statements (items) from a variety of scales to address the theoretical components, as proposed by Barlow (2000). These theoretical components consist of the evocation of anxious propositions, attentional shift, physiological arousal, as well as memory bias.

The construct of music performance anxiety occurs in the music context and can be referred to as stage fright, which can be defined as "any form of severe anxiety about performance in public" (Steptoe & Fidler, 1987, p. 128) (sample item: Sometimes I feel anxious for no particular reason).

This inventory consists of 26 items along a seven-point Likert scale that ranges from -3 *(strongly disagree)* to 3 *(strongly agree)*. The maximum score that can be obtained on this inventory is 156. The higher the scores, the higher the anxiety levels (Kenny & Osborne, 2006). The Cronbach alpha score was an impressive .94, which is a strong indicator that this inventory is a reliable instrument (Kenny & Osborne, 2006).

4.3.8 The Brunel Mood Scale (BRUMS)

The BRUMS measures the different mood states. It has also been standardized for South African students as the Stellenbosch Mood Scale (STEMS). In other words, the STEMS is a South African version of the BRUMS. The STEMS has also been translated into Afrikaans (Terry, Potgieter, & Fogarty, 2003). The Afrikaans version (STEMS) was not needed, because all the measuring instruments in this current study were originally developed in English, and English was the preferred language of choice of the participants in this study. It measures anger, confusion, depression, fatigue, tension and vigour:

- The construct of anger refers to those mood states that are described by words such as “annoyed”, “bitter”, “angry”, or “bad tempered” (Terry & Lane, 2003, p. 2) (Sample item: annoyed).
- The construct of confusion refers to mood states described by words such as “confused”, “mixed up”, “muddled”, or “uncertain” (Terry & Lane, 2003, p. 2) (sample item: confused).
- The construct of depression refers to mood states described by words such as “depressed”, “downhearted”, “unhappy”, or “miserable” (Terry & Lane, 2003, p. 2) (sample item: depressed).
- The construct of fatigue refers to mood states described by words such as “worn out”, “exhausted”, “sleepy” or “tired” (Terry & Lane, 2003, p. 2) (sample item: worn out).
- The construct of tension refers to mood states described by words such as “panicky”, “anxious”, “worried” or “nervous” (Terry & Lane, 2003, p. 2) (sample item: panicky).
- The construct of vigour refers to mood states described by words such as “lively”, “energetic”, “active” or “alert” (Terry & Lane, 2003, p. 2) (sample item: lively).

All the Cronbach alpha coefficients of the subscales measured are between .76 and .89, which gives this test a high reliability. Confirmatory factor analysis has also supported the factorial validity of this questionnaire (Terry, Lane, Lane, & Keohane, 1999; Terry & Lane, 2003).

Terry and Lane (2003) developed the BRUMS as a shortened version of the Profile of Mood States (POMS) instrument, specifically for a high performance context such as an athletic population. This shortened derivative of the POMS is also suitable for general populations and was not exclusively developed for sport populations. Therefore, no adaption was needed to

make it relevant for the music context. The BRUMS is very useful for musicians, because it measures moods in general and there is no specific reference to the sport context.

This test was employed on a weekly basis with both the experimental- and control group. Therefore, this test did not only form part of the pre- and post-intervention tests, but was also employed on a weekly basis to obtain the fluctuations of mood states on a continuous basis.

4.3.9 The Concentration Grid

The Concentration Grid can be used to measure attention and concentration ability. This instrument consists of numbers that are scrambled, ranging from 0 to 99. It can be used in different ways, for example, a time measurement can be made to see how quickly a participant can tick off the numbers in sequence from 0 up to 99. A time limit can be set (for example, two minutes) where the participant tries to tick off as many numbers as possible starting at 0 and moving to 1, 2, 3 and so on.

The Concentration Grid was also applied on a weekly basis to determine whether participants' concentration abilities improved during the seven-week intervention programme. This Concentration Grid has been used extensively in Eastern Europe (Weinberg & Gould, 2007) and has also been used in similar research on sport people in a South African setting (Edwards & Steyn, 2008).

4.4 Data Collection Procedures

The implementation and evaluation of this intervention programme is usually conducted in four different stages. The first stage is a needs assessment, where the specific area that requires a programme is investigated. Secondly, the planning and procedure involve the formulation and development of a programme. The third stage is the actual running of the intervention programme and determining the outcome of the intervention, which entails a quantitative analysis that reveals the effectiveness of the programme. Lastly, the fourth stage is based on the process evaluation, which focuses on why the programme is successful or not (Potter, 1999).

In line with the stages mentioned above, four specific phases were employed in this research study. The needs assessment (the first phase) indicated that some musicians do not reach their

full potential due to the problem of music performance anxiety. Therefore, music performance anxiety is the target problem that required an intervention programme, which in this case consisted of PST and mindfulness training to mitigate the problem. Taking into account that performance anxiety and psychological well-being are connected, as well as the fact that PST and mindfulness can improve both psychological well-being and music performance anxiety management, it was therefore decided (in the second stage) that PST and mindfulness training are the most appropriate intervention programme for undergraduate music students. This intervention programme was conducted over a seven-week period, as follows:

- One week before the intervention programme started, the first testing session was held.
- Week 1 – An intervention overview and the importance of psychological skills in combination with mindfulness, with a specific focus on concentration as one of the most essential skills.
- Week 2 – The nature of arousal and arousal management.
- Week 3 – A winner's state of mind (basic psychological skills principles and techniques were introduced, as well as an emphasis on the role of awareness).
- Week 4 – The power of perceptions and the crucial role of perceptions in optimal performance.
- Week 5 – The practical applications of mental imagery and the positive effect of goal setting.
- Week 6 – How to combine the PST and the mindfulness (MAC approach).
- Week 7 – A summary, overview and revisiting the key elements of the intervention programme with the final (second) testing session.

In terms of the outcome evaluation (the third stage), the eight measuring instruments discussed above were employed, as well as the Concentration Grid to measure the possible improvements as part of this quantitative approach to reveal whether or not the programme had been efficient in targeting the identified music performance anxiety problem and had achieved an improvement in psychological well-being levels. In addition, the BRUMS and the Concentration Grid were administered at the end of every intervention session to detect possible mood swings during the seven-week programme, as well as an improvement in concentration effectiveness. The fourth stage that entails evaluating the effectiveness and total impact of the intervention programme on the undergraduate music students are discussed in the discussion of results and conclusion in Chapter 5.

According to the programme outline, the following specific phases and time-line phases were identified:

- Phase 1: Recruitment of experimental- and control groups consisting of undergraduate music students (June to July 2011);
- Phase 2: Information session (July 2011);
- Phase 3: Seven-week intervention programme where the undergraduate music students had a one-hour session with the intervention expert. The first testing session (pre-intervention test) was done one week prior to the first intervention session, and the second testing session (post-intervention test) was done just after the seventh intervention session (August to September 2011);
- Phase 4: Processing and interpretation of results (October to November 2011);
- Phase 5: Final presentation, discussion and conclusion of results in the form of a Master's dissertation (April 2012).

4.5 Statistical Analysis

The collected measurements were analysed by means of the IBM Statistical Product and Service Solutions package (SPSS). In order to determine whether the experimental and control groups were the same before training and whether differences in measurements after intervention can be ascribed to the received interventions, the two groups were described and compared in the following ways:

- **descriptive statistics** presented the reader with the basic features of the study and provided an overview of the different research findings;
- a **Cronbach alpha** estimate was calculated to test the reliability of the various questionnaires;
- **Spearman's Rank Correlations** were used to determine whether any statistically significant correlations existed between the subscales of the various questionnaires used during pre-intervention testing;
- the **Mann-Whitney U test** was used to compare the experimental group and control group on all pre-intervention test measurements, in order to determine whether the two groups were similar before intervention;
- after the intervention, the measurements were repeated (post-intervention test), and these two groups were once again compared by means of the **Mann-Whitney U test**;

- to determine whether changes took place from the pre-intervention test measurements to the post-intervention test measurements within groups, the scores within each group (the experimental group and the control group) were compared by means of the **Wilcoxon signed-rank test**; and
- **Friedman's two-way analysis of variance by ranks** was used to investigate whether the measures taken over a seven-week period (six measurements) using the BRUMS and the Concentration Grid were able to detect significant mood swings, and/or any improvement in concentration effectiveness.

These techniques are discussed in more detail in the subsections below.

4.5.1 Descriptive statistics

Descriptive statistics describe respondents in terms of variables or combinations of variables (Tabachnick & Fidell, 1996). Descriptive statistics presented within this study included the number of participants, minimum and maximum scores, mean scores and standard deviations. The mean score is used to describe central tendency, and is computed by adding up all the applicable values and dividing it by the number of cases. The standard deviation shows the relation of the different sets of scores to the mean of the sample.

4.5.2 Inferential statistics

Inferential statistics are used to reach a conclusion about the population from which the sample was drawn (Urden, 2010). The purpose of inferential statistics is to test hypotheses about differences in populations, based on measurements made on a sample of subjects (Tabachnick & Fidell, 1996).

4.5.3 The Mann-Whitney U test for independent samples

The Mann-Whitney U test is a non-parametric test that is used to determine whether two independent samples are equivalent and are drawn from the same single population. In this survey, the experimental and control groups were compared during the pre-intervention test and

the post-intervention test. Ideally, the two groups should be the same during the pre-intervention testing (Tabachnick & Fidell, 1996; Urden, 2010).

4.5.4 The Wilcoxon signed-rank test for related samples

The Wilcoxon signed-rank test is a non-parametric test that can be used to test two related samples or repeated measurements on a single sample. The Wilcoxon signed-rank test involves comparisons of differences between measurements. It is often used to test the difference between scores of data collected before and after an experimental manipulation or intervention (Tabachnick & Fidell, 1996; Urden, 2010).

4.5.5 Friedman's two-way analysis of variance by ranks for related samples

The Friedman test is a non-parametric test that can be used to test for differences between repeated measures of a construct (Tabachnick & Fidell, 1996; Urden, 2010).

4.5.6 Spearman's rank correlation coefficient

Spearman's rank correlation coefficient is a non-parametric measure of the statistical relationship between different variables. Correlations are not an indication of causality, because they only indicate whether or not a relationship between different variables exists and what the nature of that relationship is (Tabachnick & Fidell, 1996; Urden, 2010).

4.6 Rationale for and Principles used in Combining PST and Mindfulness Training

The reason for integrating PST and mindfulness training can be traced back to some problem statements that experts experience in applied performance-evaluative contexts such as sport and music. The main aim of all PST is to create an optimal state of mind. Orlick (1998, p. 122) emphasises the importance of an ideal state of mind as a prerequisite for optimal performance,

and his view that “state of mind is everything” captures the core aim of PST. Therefore, the development and implementation of PST programmes is meant to have an impact on a target group’s or person’s state of mind in such a way that an optimal state of mind for performance can be achieved (Orlick, 1998).

Ravizza (2005) noticed in his consultation work with elite athletes that an optimal state of mind cannot be experienced all the time. Optimal states in performance (also known as being in the zone or in a flow state) are only experienced for 20% of performance time. The question that then arises is what happens to athletes in the 80% of their time when they are not in an optimal state and where they have to work hard to maintain their performance levels. Ravizza (2005) refers to this ability to work hard in spite of unfavourable conditions as the ability to become comfortable being uncomfortable.

This is where the mindfulness component, with specifically referring to the MAC approach, becomes meaningful as an effective approach where an optimal state of mind is not present. The principles in the MAC approach enable a performer to commit fully to the task at hand in spite of not being in an optimal state or even experiencing uncomfortable emotions accompanied by negative thoughts (Gardner & Moore, 2007). The additional ability to be able to engage fully in a task and to commit to high levels of performance in spite of unfavourable conditions or an unsatisfactory state of mind is crucial for athletes and musicians who have to maintain high performance. The MAC approach can therefore be seen as a safety net when a performer has done his or her best with all the psychological skills that are available, but is still unable to reach the optimal state of mind that is necessary for optimal performances.

Another way of explaining the meaningful interaction between PST and mindfulness training is provided by McCluggage’s (1983, p. 69) slogan “don’t make it happen, let it happen.” This statement captures the essence of the art of not trying to control the performance situation, but allowing the performance to unfold spontaneously. The MAC approach represents the mindfulness approach that allows things to unfold and does not interfere in or resist the reality that unfolds. The MAC approach is also echoed by the Gestalt therapy principle, not to ask the *why* question when things happen, but rather to replace the *why* with the *now and how* approach (Perls, 1974). This approach creates freedom of choice to react creatively to the unfolding reality.

The statement “don’t make it happen, let it happen” (McCluggage, 1983, p. 69) may be rephrased in this context to highlight the meaningfulness of combining PST and mindfulness training by stating how *to make it happen* and *to let it happen* at the same time. The PST

dimension represents the active and deliberate employment of available skills and techniques to achieve an optimal state of mind. Therefore, PST can be associated with the *make it happen* approach. At the same time, a performer can be fully aware of his or her state of mind, as well as the performance conditions, and can employ the *let it happen* approach by applying the MAC principles of mindfulness, acceptance and commitment. In applying the combination of PST and mindfulness training, performers will be able to accept their state of mind, as well as the unfolding reality as they employ the psychological skills and techniques that are available to them. The essence of this combination is applying the PST in a mindful way, and these two elements can therefore be seen as two sides of the coin. This creates a virtually foolproof system for a performer that may improve overall mental toughness and build the flexibility of mind needed to react in favourable as well as unfavourable conditions.

The decision to apply the strategy of combining PST and mindfulness training in one integrated intervention programme was reaffirmed by reviewing the research of Bernier et al. (2009) on elite golfers. According to Bernier et al. (2009, p. 330), the combination between PST and mindfulness training represents a third wave in cognitive research: “The goal of this third wave approach is to teach athletes to accept their cognitions, emotions, and sensations and to commit themselves to action, rather than fighting against negative thoughts and unpleasant emotions.” Bernier et al. (2009) also stress the importance of doing PST in a mindful way.

4.7 Detailed Information on Each Intervention Session

Prior to the first intervention, the first pre-intervention test was done, before the students were influenced by any intervention content. The sessions were presented by an intervention expert, who is fully qualified in working with elite sport participants in a variety of sport codes, and other high performance-evaluative contexts such as performing arts, music performance, and the corporate environment. The interventions themselves are discussed in more detail below.

4.7.1 The first intervention session

In the first intervention session, an overview was given to the participants on the importance of psychological skills in combination with mindfulness, with specific reference to the MAC approach. The balance between making things happen through the utilization of psychological

skills and letting things happen through implementing particular mindfulness techniques was explained and used as a primary reference point in every session.

The first psychological skill that was explained is concentration. The intervention expert firstly explained what concentration is and how attraction and fascination can positively influence concentration. Examples of possible distractions and how one can improve one's level of concentration through the appropriate implementation of the three P's of concentration principle were provided. The three P's of concentration are positive focus, process focus and present focus. The negative effects and psychological ramifications of perfectionism were explained and highlighted in this session. The centering technique was explained and the expert demonstrated practically how centering can improve one's level of concentration and how it can also be used as a recovery procedure when concentration disintegrates.

Secondly, it was also explained what mindfulness means and why a wandering mind can lead to an unhappy mind, and why over-thinking can be a major problem in our daily lives. The practical exercises in this session consisted of the centering technique and how to quiet your mind through mindfulness exercises.

In this session the intervention expert reiterated importance of practising the skills that the students were introduced to. The psychological skills training and mindfulness goals of this session were the following:

- Become more aware of how you concentrate and what distracts you when you study and when you practise your music.
- Be more connected with what you are doing at that moment – become more aware when you have a single-minded focus or are in a multi-tasking mode.
- Practise your skills.
- Lose your mind and come to your senses.
- Think less and become more sensory.
- Do not resist the way that things unfold this week.

4.7.2 The second intervention session

The second intervention session was about the nature of arousal and arousal management. Arousal control and the perception of arousal as a facilitating or a debilitating force were explained. Relaxation techniques that may facilitate more effective arousal management were

introduced. It was emphasised that stress is caused by a lack of concentration, and several ways to minimize one's stress levels in a high pressure situation were discussed. The stressor impact of daily hassles was explained, because an increase in daily hassles can sometimes cause more stress than serious life incidences such as sickness or crime. Therefore, if one can manage one's daily stressors better, one can cope with performance stress more effectively.

The mindfulness aspect of this session was explained by means of the "raisin exercise". This exercise entails tasting a raisin by focusing on the intense flavour and texture of the raisin. This exercise helps one to become more focused on the present moment and consequently draws one into a single-minded focus.

The intervention expert explained that arousal management consists of both the psyching up and psyching down (relax) modes. These two modes are essential in a musician's approach to optimal performance and the effective management of music performance anxiety. The possibility of experiencing positive stress (also called eustress) was highlighted and the facilitating power of eustress as opposed to the debilitating effect of distress was emphasised. He also underlined that it is vital to maintain a balance between the green zone (reloading yourself for performance) and the gold zone (the performance domain), and explained why.

Lastly, an introduction to the MAC approach was given. The MAC approach stands for mindfulness, acceptance and commitment. The essence of how to apply the MAC approach in a high performance situation was discussed and explained in the music context. The main aspect that was emphasised in this approach is awareness, because if one is aware one also has the freedom to choose one's behaviour. The practical exercise, which is called the brief centering exercise is specifically prescribed in the MAC approach. The following psychological skills training and mindfulness goals for this week were:

- Be more connected (mindful) of everyday activities; for example, if you eat, just stay with the food, if you shower, do not take your test into the shower - just be riveted to the task at hand.
- Become more aware of your arousal levels during the day - what kinds of situations makes you "stress" and how does it feel when you stress; just notice and give full attention to the symptoms.
- Practise the brief centering exercise at least once a day and start noticing the way you think, and what kinds of emotions are generated by your thinking - just become more aware of your emotional states.

- Read Handout 2 at least three times during the week.

4.7.3 The third intervention session

The third intervention session entailed a discussion of strategies for achieving and maintaining a winner's state of mind. The focus was on how to become comfortable being uncomfortable and on how over-thinking can endanger the quality of performance. The importance of awareness was emphasised again, and how awareness per se can be curative was discussed with the students.

A breathing exercise was conducted that can increase one's level of awareness. It simultaneously illustrated the crucial mindfulness principle of watching or simply witnessing one's own thoughts.

The psychological principles of whatever gets your attention gets you and where the mind goes everything follows were explained and demonstrated in a practical way.

The problem of "choking" was explained as well as how one can implement several techniques that may minimize the probability of experiencing a choking situation was demonstrated. Certain ways to avoid a choking situation include things like the value of over-learning and focusing on the things that one wants versus the things that one does not want was explained.

The advantages of a proactive approach versus a reactive approach were highlighted and the differences between proactive language in comparison with reactive language were illustrated. The importance of verbal expressions and the alteration of verbal expressions can have a dramatic effect on an individual's approach to life. In other words, it was explained why proactive language can be conducive and facilitative to one's performance.

The constructive value of learning from one's mistakes was emphasised, along with the principle that a mistake is only a mistake if you repeat it, otherwise it is time well invested in a learning experience. The critical value of awareness was thoroughly discussed, and the ability to choose your response (behaviour) depends on the quality of one's awareness level. The art of letting things happen and how to find joy in letting go were illustrated in a practical context. Advanced breathing techniques were introduced to the participating undergraduate music students.

The psychological skills training and mindfulness goals for the third intervention session were the following:

- Read through all the notes three times during the week.
- Do the breathing exercise everyday and combine the centering technique with the state of mind technique.
- Be mindful and have a mindful watch on your thoughts and emotions this week.
- Strengthen the winner's state of mind, by focusing on the things you want versus the things that you do not want.
- Be more aware of the choices when you have to choose more appropriate behaviour for the situation at hand.

4.7.4 The fourth intervention session

The fourth intervention session focused on the power of perceptions and the crucial role of perceptions in optimal performance. The session started with different quotes from experts and famous people to illustrate the importance of perceptions and paradigms in life. The statements emphasise the radical impact that a paradigm (and thus perception) switch can have on the way a person perceives, understands and interprets the world around him or her. The principle that perceptions work like filters was explained - if a perception switch is achieved, a new filter replaces the old filter and new information (data) filters into the mind. This perception switch is the pivotal point where reality can be perceived in a totally new and different way.

A practical example of eustress was explained. If a sport participant or a musician interprets and perceives the symptoms of anxiety as symptoms that indicate weakness or an inability to handle stress, the participant in a sense creates distress (unpleasant, choking stress) for him- or herself. Olympians and World Class performers have learned through experience that stress is nothing but blocked excitement, and if the symptoms of stress are perceived as natural and as potential excitement energy that can facilitate optimal performance, a state of eustress (positive stress) can be created.

The differences between the growth mindset and the fixed mindset were explained as two different perceptions of one's own abilities that can pertain to sport-, music-, intelligence-, and personality abilities. The advantages of adopting a growth mindset in terms of long-term motivation was explained and discussed. The disadvantages of a fixed mindset were also

explained. Where the perception of one's own ability refers to the growth- and fixed mindset, the perception of success and failure can be contrasted in the ego- and task orientation. The advantages of adopting a task orientation versus an ego orientation were fully discussed with the participating students.

The confidence scale was introduced to the students as an important principle to manage stress levels and to improve confidence. Seven practical steps to tune into high pressure performance situations were explained and demonstrated in a practical way.

The psychological skills training and mindfulness goals for the fourth intervention session were the following:

- Seek out high performance stress situations where you are challenged and experiment with the approach (seven steps to tune in). Find out what works for you and stay with what feels the most effective for you.
- Become more aware of your own perceptions. Start playing with new perceptions and new words and see how it affects your perception of the world around you.
- Read through Handout 4 at least three times the week.
- Maintain the skills.
- Be mindful in simple actions, such as brushing your teeth, eating breakfast, and taking a shower.

4.7.5 The fifth intervention session

The fifth intervention session focused on the practical applications of mental imagery and the positive effects of goal setting on performance and life in general. The whole spectrum of psychological skills, which includes concentration, stress management, mental imagery and goal setting, is interdependent and the alignment of these natural psychological forces is critical for optimal performance.

Advanced breathing techniques and exercises were introduced to the student and the value of regular abdominal breathing was explained.

A brief overview of the research on the value of mental imagery, as well as goal setting was provided to highlight the importance of these two psychological skills. The practical implications of mental imagery and goal setting were also shared with the students and the fact that the mind

rules the body was practically demonstrated. In terms of goal setting, the golden rule applies - if one does not know what to look for in a specific situation, there is no chance of finding anything unless one has some goal in mind.

The motivational pyramid was explained, showing how the pyramid can influence one's performance and one's life in general. The motivational pyramid includes things such higher purpose, principles, values, mission and vision, motivation, commitment, goals, behaviour and habits. The principle of integrity was highlighted as one of the most important principles for achievement in life. Integrity is a system that does not only incorporate honesty, but also respects promises, and a person with integrity always walks the talk. How integrity can improve one's self-esteem was also discussed.

The problem with over-identification and the ramifications of over-identification were set out. Balance in life was explained and highlighted as a critical principle for psychological well-being.

The following psychological skills training and mindfulness goals were formulated for the week:

- Read carefully through the motivational pyramid contents and write down your own mission statement, and long-term and short-term goals that are in alignment with your personal values, principles and higher purpose of life.
- Practise all the exercises (techniques) contained in Handouts 1 to 4. Do at least one exercise a day.
- Mindfulness: practise single-minded focus in your music training sessions and stay connected with the simple activities (reduce your multi-tasking mode).

4.7.6 The sixth intervention session

The sixth intervention session focused on the integration of all the intervention sessions and a summary was provided on the main essentials of PST and mindfulness training (the MAC approach). The balance between "making it happen" (which is more in line with the PST approach, where the main goal is to create an optimal state of mind through the use of PST techniques) and "letting it happen" (which is more in line with the mindfulness approach, where acceptance and letting things unfold spontaneously) is explained. Both these components are in a sense complementary - whereas most approaches choose only one side, the strategy of this intervention programme was to illustrate that making it happen and letting it happen can be married as co-facilitating psychological realities. The importance of being aware (mindful) and

the critical role of breathing to stay connected with the awareness stream (also called the mind-stream) were explained and practically illustrated in the intervention session. The undergraduate music students were instructed to revise all the previous sessions by reading through the handouts and to cover all the practical goals in the course of the week.

4.7.7 The seventh intervention session

The last (seventh) intervention session was used to revisit all the essential principles and skills and to revise and refresh the participants' memory of the key elements of this intervention programme. Time for questions and requests from the students were provided. Certificates of attendance were handed out to all the undergraduate music students to provide a ceremonious touch to the finalization of the intervention programme. Then, and after a short break, the final testing (post-intervention test) was done.

4.8 Ethics

Ethical clearance and approval for this study was granted by the Post-graduate and Ethics Committee of the Faculty of Humanities at the University of Pretoria (see Appendix B). This study adhered to all the ethical guidelines and requirements of the University of Pretoria.

A comprehensive information letter with detailed information was provided to each undergraduate music student who was a potential participant. During the information session, all the possible queries of the students were addressed and the whole process was explained before a student signed the consent form (see Appendix A). The undergraduate music students were also given the option to withdraw from the study at any juncture during the research process without prejudice. Each student created his or her personal code in order to protect his or her identity and to ensure confidentiality. The raw data in the form of the questionnaires and psychological tests will be safely stored for a period of 15 years. Logistical support inside the Department of Music was provided by one of the lecturers.

4.9 Summary

This chapter focused on the methodology of this research project in respect of the development, implementation and evaluation of a PST and mindfulness intervention programme. The research design was fully explained and relevant information on the measuring instruments, as well as detailed information on the intervention sessions was provided. The results are discussed in the next chapter.

CHAPTER 5:

RESULTS

There is no such thing as failure, there are only results

Anthony Robbins (cited in Aronson, 2008, p.292)

5.1 Objectives

The main objective of the study was to determine the impact of psychological skills and mindfulness training on the psychological well-being of undergraduate music students. The following hypothesis-driven questions provide a more focused explanation and elaboration of the results of this study:

- Can the PST and mindfulness training improve the psychological well-being and reduce the music performance anxiety of undergraduate music students?
- Did the PST and mindfulness training improve psychological skills and mindfulness per se?
- Was the combination of PST and mindfulness meaningful?
- Was the cross-over of knowledge from Sport Psychology to the Psychology of Music effectively achieved?
- Were the correlations between the psychological constructs (subscales) of the pre-intervention test measurements on all the respondents meaningful?

5.2 Results

The results of the analysis are presented in the following order:

- description of the sample;
- list of measuring instruments;
- the Cronbach alpha scores of the different measuring instruments;
- correlations between the different subscales as measured during the pre-intervention testing;
- results per questionnaire, inventory, scale and test that were administered;

- description and differences between the experimental and control groups on the pre-intervention test measurements;
- description and differences between the experimental and control groups on the post-intervention test measurements;
- differences between the pre- and post-intervention test measurements within the experimental group;
- differences between the pre- and post-intervention test measurements within the control group;

- differences between the measurements taken over a six-week period;
- confounding variables: exploring the pre-intervention test data in the sample group;
- summary of results; and
- summary.

5.3 Description of the Sample

A total of 36 respondents participated in the survey. They were assigned to an experimental group (n = 21) and a control group (n = 15) – see Figure 1. All the respondents completed a pre-intervention test, as well as a post-intervention test on the full battery of listed measuring instruments. They also completed a Concentration Grid and the BRUMS once a week over a six-week period.

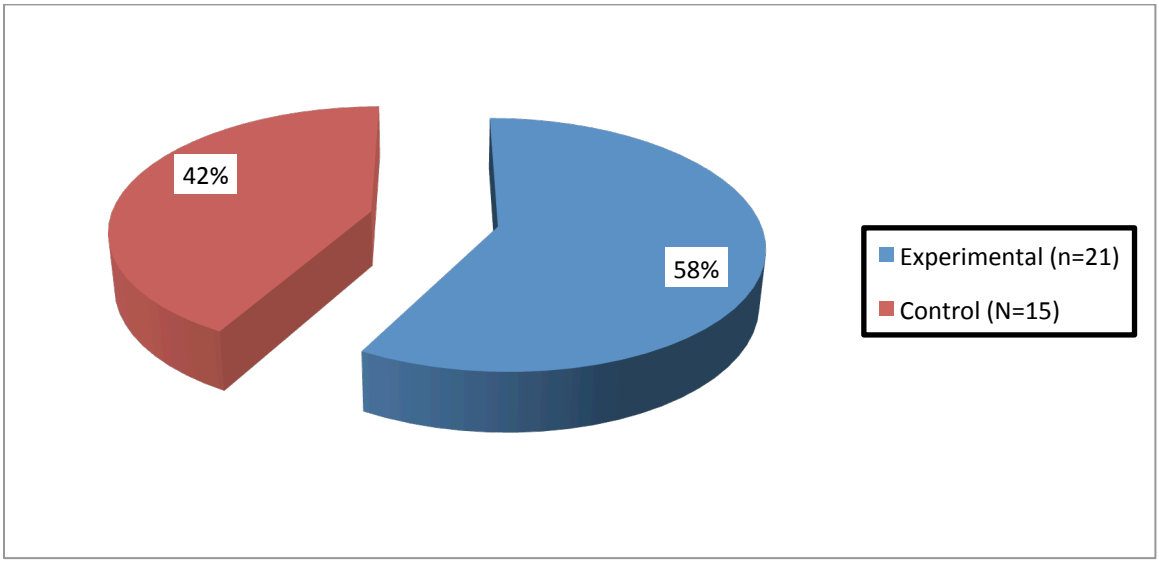


Figure 1. Experimental and Control Group

A total of 15 men (42%) and 21 women (58%) took part in the survey. A third of the respondents (33%) were in their first year of study, and 42% were in their second year. Third-year students constituted 17% of the sample, and 8% of the participants were fourth-year students.

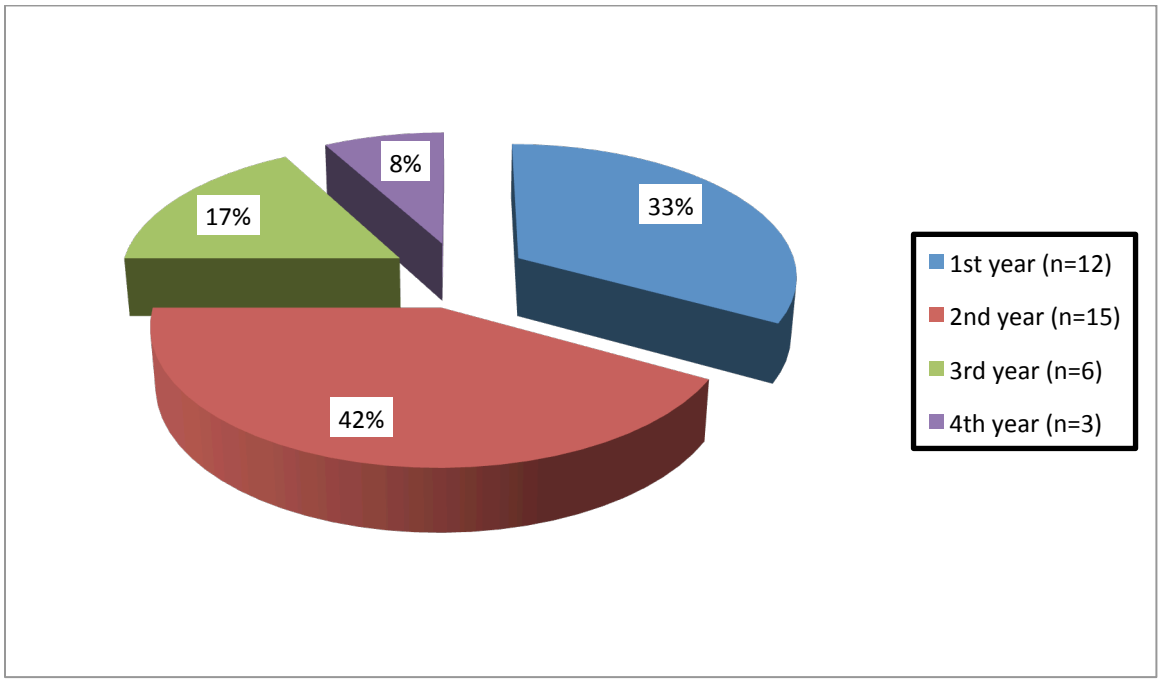


Figure 2. Year of Study

Respondents were asked to indicate what music instruments they play. Everyone indicated at least one instrument. A further 25 respondents listed a second instrument, 12 listed a third instrument and one listed a fourth instrument. Table 1 shows all the instruments listed by the respondents. The majority of respondents (64%) listed piano as their first instrument, followed by 14% that listed voice as their first instrument.

Table 1. List of Instruments

1st instrument	Frequency	Percentage
Piano	23	64
Voice	5	14
Violin	4	11

Flute	2	6
Recorder	1	3
Guitar	1	3
Total	36	100

2nd instrument	Frequency	Percentage
Voice	7	28
Piano	5	20
Organ	3	12
Guitar	3	12
Recorder	2	8
Flute	1	4
Violin	1	4
Trumpet	1	4
Piccolo	1	4
Flute	1	4
Total	25	100

3rd instrument	Frequency	Percentage
Piano	4	33
Cello	4	33
Voice	1	8
Organ	1	8
Drums	1	8
Clarinet	1	8
Total	12	100

4th instrument	Frequency	Percentage
Violin	1	100

When all 73 instruments listed by the respondents were looked at together, the piano was the instrument most often mentioned (43%), followed by voice (18%) and the violin (8%).

Figure 3 shows the incidence of all instruments listed.

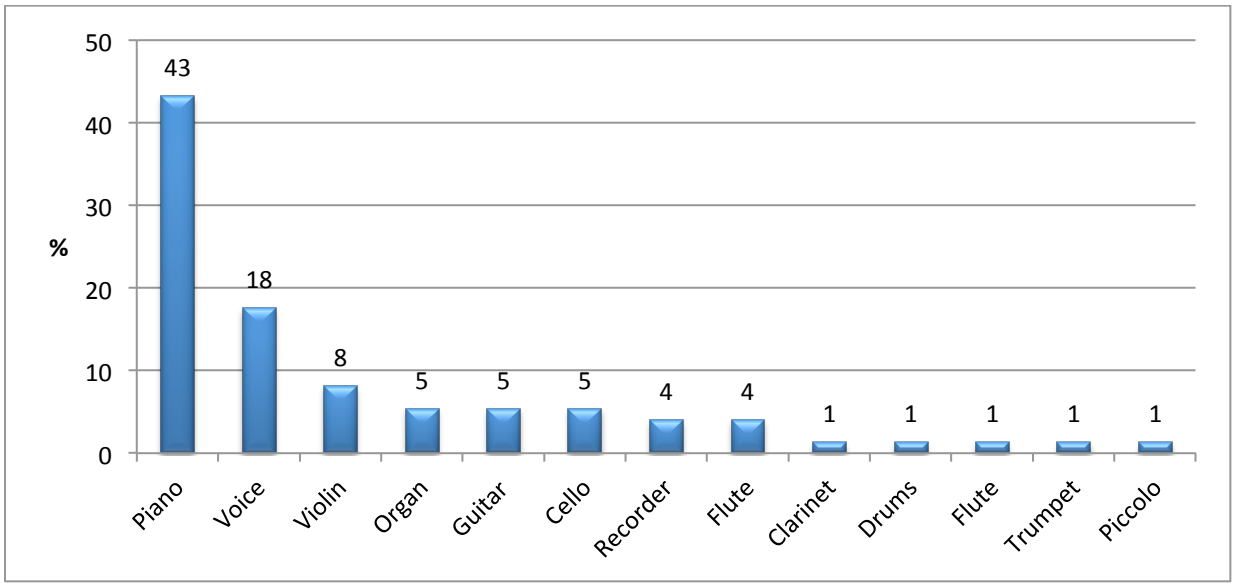


Figure 3. All Instruments Listed

5.4 List of Measuring Instruments

- Bull's Mental Skills Questionnaire measures the following subscales: imagery ability, mental preparation, self-confidence, anxiety and worry management, concentration ability, relaxation ability and motivation. The maximum score that can be obtained on a subscale is 24.
- The Five Facet Mindfulness Questionnaire (FFMQ) measures items relating to the following themes: observe, describe, act with awareness, non-judge and non-react. The maximum score that can be obtained is 40, with the exception of the non-react construct where the maximum score is 35.

- Ryff's Psychological Well-being Scale measures the following constructs: autonomy, positive relationships with others, environmental mastery, personal growth, purpose in life and self-acceptance. The maximum score that can be obtained on a subscale is 18.
- The Competitive State Anxiety Inventory-2 (CSAI-2) measures cognitive state anxiety, somatic state anxiety and state self-confidence. The highest score that a construct can elicit is 36.
- The Perceptions of Success Questionnaire (POSQ) measures ego- and task orientation. The highest score that a respondent can obtain on a subscale is 30.
- The Self-theory Questionnaire reflects a growth- and a fixed mindset. The maximum score that can be obtained on each subscale is 18.
- The Kenny Music Performance Anxiety Inventory (K-MPAI) measures levels of anxiety. The highest score that can be obtained on this instrument is 182.

The following test and scale were administered once a week, over a period of seven weeks:

- The Concentration Grid reflects concentration levels. The maximum count that can be obtained is 100.
- Brunel Mood Scale (BRUMS) consists of the following subscales: anger, confusion, depression, fatigue, tension and vigour. The maximum score per scale is 16.

5.5 Cronbach Alpha Coefficients

Cronbach alpha scores were calculated to evaluate the internal consistency of the difference instruments used within the survey. It should be noted that the sample sizes were very small. Cronbach alpha scores were adequate according to the criterion of Nunnally and Bernstein (1994) and Schmitt (1996) as an acceptable Cronbach alpha.

The closer a Cronbach's alpha coefficient is to 1.0, the greater the internal consistency of the items in the scale. According to Urden (2010), a Cronbach alpha of 0.7 indicates an acceptable level of internal consistency. Literature provides sufficient evidence that the measuring tools are reliable instruments, because of the high Cronbach alpha scores that are reported in the literature. Pertaining to the Cronbach alpha scores of this study, the majority of scales were found to be very reliable.

The following scales have all received an alpha score higher than 0.7 in the current study:

- Bull's Mental Skills Questionnaire: The questionnaire consisted of 28 items (α = 0.912; n = 31).
- The Five Facet Mindfulness Questionnaire: The questionnaire consisted of 39 items (α = 0.843; n = 33).
- Ryff's Psychological Well-being Scale: The questionnaire consisted of 18 items (α = 0.706; n = 36).
- The Perceptions of Success Questionnaire: The questionnaire consisted of 12 items (α = 0.881; n = 34).
- The Kenny Music Performance Anxiety Inventory: The questionnaire consisted of 26 items (α = 0.859; n = 35).
- The Brunel Mood Scale: The questionnaire consisted of 24 items (α = 0.898; n = 35).

The following scales received an alpha score lower than 0.7, with the Self-theory Questionnaire receiving a very low Cronbach's alpha coefficient, indicating the absence of internal consistency in how questions were answered:

- The Competitive State Anxiety Inventory-2: The questionnaire consisted of 27 items (α = 0.695; n = 36).
- The Self-theory Questionnaire: The questionnaire consisted of six items (α = 0.364; n = 36).

5.6 Correlations

Spearman's rank correlation coefficient was used to test whether any significant correlations existed between the different subscales of the various tests, due to the small sample size. Non-parametric statistics were thus used (i.e. Spearman's rank correlation coefficient), instead of parametric statistics such as Pearson's rank correlation coefficient. This was done on the pre-intervention test data of the following measuring instruments:

- Bull's Mental Skills Questionnaire;
- the Five Facet Mindfulness Questionnaire;
- Ryff's Psychological Well-being Scale;
- the Competitive State Anxiety Inventory-2;
- the Perceptions of Success Questionnaire;
- the Self-theory Questionnaire;

- the Kenny Music Performance Anxiety Inventory;
- the Concentration Grid; and
- the Brunel Mood Scale.

The results showed that many of the subscale items of the above-listed measuring instruments correlate with one another. The strength of the correlations has been classified according to the guidelines given by Cohen (1992) and is as follows:

- weak correlations: (r = 0.100 - 0.200);
- moderate correlations: (r = 0.300 – 0.400);
- strong correlations: ($r \geq$ 0.500); and
- very strong correlations: ($r \geq$ 0.600).

In this research report, only very strong correlations ($r \geq 0.600$) are discussed, in other words, correlations were significant at the 1% level of significance. Detailed results can be viewed in Appendix E. The real significance values (i.e. p) are reported and not the cut-off values.

In respect of the items of Bull's Mental Skills Questionnaire, relaxation ability had a very strong positive correlation with self-confidence, which implies that one of these aspects improves, the other will improve as well; if one becomes weaker, the other will also become weaker as well (r = 0.626; p = 0.000).

Self-confidence as measured by the Bull's Mental Skills Questionnaire revealed a strong positive correlation with state self-confidence (CSAI-2) (r = 0.669; p = 0.000). This suggests that these two scales provided a consistent measurement of self-confidence. State self-confidence (CSAI-2) also correlated with relaxation ability (r = 0.713; p = 0.000) and motivation (r = 0.712; p = 0.000). All three these correlations were positive.

Another two items on Bull's Mental Skills Questionnaire displayed high correlations with the cognitive and somatic state anxiety subscales of the CSAI-2:

- anxiety and worry management correlated very strongly with cognitive state anxiety (r = -0.625; p = 0.000); and
- relaxation ability correlated very strongly with somatic state anxiety (r = -0.739; p = 0.000).

In both these cases, the correlations were negative (as expected); if the one item increases or becomes stronger, the other decreases or becomes weaker.

The K-MPAI correlated very strongly with:

- cognitive state anxiety (CSAI-2) (r = 0.625; p = 0.000); and with
- somatic state anxiety (CSAI-2) (r = 0.672; p = 0.000).

Within the BRUMS, the tension scale had a strong negative correlation with the act of awareness (FFMQ) (r = -0.639; p = 0.000). With higher scores on the act of awareness, lower scores can be expected on the tension scale and vice versa. The tension scale also had a strong positive correlation with the CSAI-2 (r = 0.648; p = 0.000). As tension increases, an increase can be expected in anxiety levels. Anger (BRUMS) correlated strongly with confusion (BRUMS) (r = 0.660; p = 0.000) and with depression (BRUMS) (r = 0.706; p = 0.000).

All the above correlations were expected and in line with the findings reported in the existing literature.

5.7 Results per Measuring Instrument

5.7.1 Bull's Mental Skills Questionnaire

5.7.1.1 Experimental and control groups' results on the pre-intervention test measurements

The results for the experimental and control groups on the pre-intervention test measurements using Bull's Mental Skills Questionnaire are set out in Table 2 and Figure 4.

Table 2. Descriptive Statistics: Pre-intervention Test - Bull's Mental Skills Questionnaire

Group		N	Minimum	Maximum	Mean	Std. Deviation
Experimental	Imagery ability	21	8.000	24.000	17.714	4.349
	Mental preparation	21	9.000	24.000	18.381	4.318
	Self-confidence	20	6.000	24.000	14.000	4.757

	Anxiety and worry management	21	4.000	19.000	10.095	4.711
	Concentration ability	19	8.000	24.000	13.316	4.498
	Relaxation ability	21	4.000	24.000	12.857	6.506
	Motivation	21	7.000	23.000	14.667	5.151
Control	Imagery ability	14	13.000	22.000	17.857	2.797
	Mental preparation	15	11.000	23.000	18.267	3.693
	Self-confidence	15	7.000	24.000	15.400	5.054
	Anxiety and worry management	15	6.000	22.000	12.067	5.203
	Concentration ability	14	7.000	22.000	15.357	4.106
	Relaxation ability	15	7.000	23.000	15.067	4.877
	Motivation	15	10.00	23.000	15.533	4.051
		Total N	p-value		Mann-Whitney U	
Mann-Whitney U Test	Imagery ability	35	0.773		138.500	
	Mental preparation	36	0.771		148.500	
	Self-confidence	35	0.375		176.500	
	Anxiety and worry management	36	0.227		195.000	
	Concentration ability	33	0.112		176.500	
	Relaxation ability	36	0.274		191.500	
	Motivation	36	0.652		171.500	

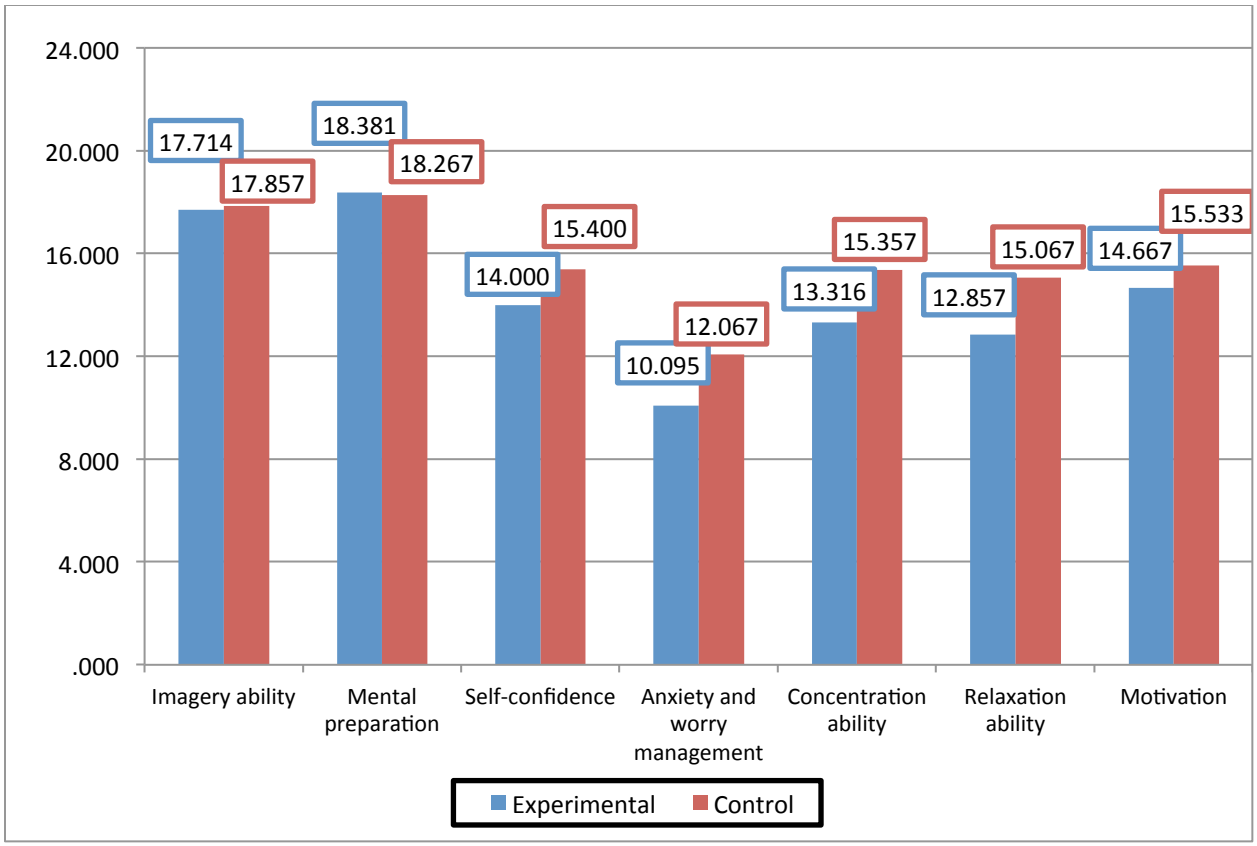


Figure 4. Pre-intervention Test – Bull's Mental Skills Questionnaire

No statistical significant differences were found between the scores of the experimental group and the control group on the Bull's Mental Skills Questionnaire pre-intervention test measurements. It can thus be concluded that, as far as the Bull's Mental Skills Questionnaire measurements are concerned, the two groups were very similar before training.

5.7.1.2 Experimental and control groups' results on post-intervention test measurements

The results for the experimental and control groups on the post-intervention test measurements using Bull's Mental Skills Questionnaire are set out in Table 3 and Figure 5.

Table 3. Descriptive Statistics: Post-intervention Test - Bull's Mental Skills Questionnaire

Group		N	Minimum	Maximum	Mean	Std. Deviation
Experimental	Imagery ability	19	8.000	24.000	18.316	4.230
	Mental preparation	21	12.000	24.000	19.429	3.026
	Self-confidence	21	9.000	24.000	15.571	3.867
	Anxiety and worry management	21	4.000	23.000	13.476	5.400
	Concentration ability	21	6.000	23.000	16.476	5.202
	Relaxation ability	21	5.000	24.000	16.381	4.620
	Motivation	21	11.000	24.000	18.190	3.995
Control	Imagery ability	15	13.000	23.000	18.267	3.261
	Mental preparation	15	10.000	23.000	18.133	3.335
	Self-confidence	15	8.000	20.000	13.600	3.180
	Anxiety and worry management	15	4.000	21.000	12.000	4.736
	Concentration ability	15	10.000	20.000	16.333	2.664
	Relaxation ability	15	9.000	24.000	15.133	3.889
	Motivation	15	11.000	21.000	15.867	2.800
		Total N	p-value		Mann-Whitney U	
Mann-Whitney U Test	Imagery ability	34	0.625		128.500	
	Mental preparation	36	0.206		118.500	
	Self-confidence	36	0.126		110.000	
	Anxiety and worry management	36	0.303		125.500	
	Concentration ability	36	0.499		136.500	
	Relaxation ability	36	0.429		133.000	

	Motivation	36	0.082	103.500

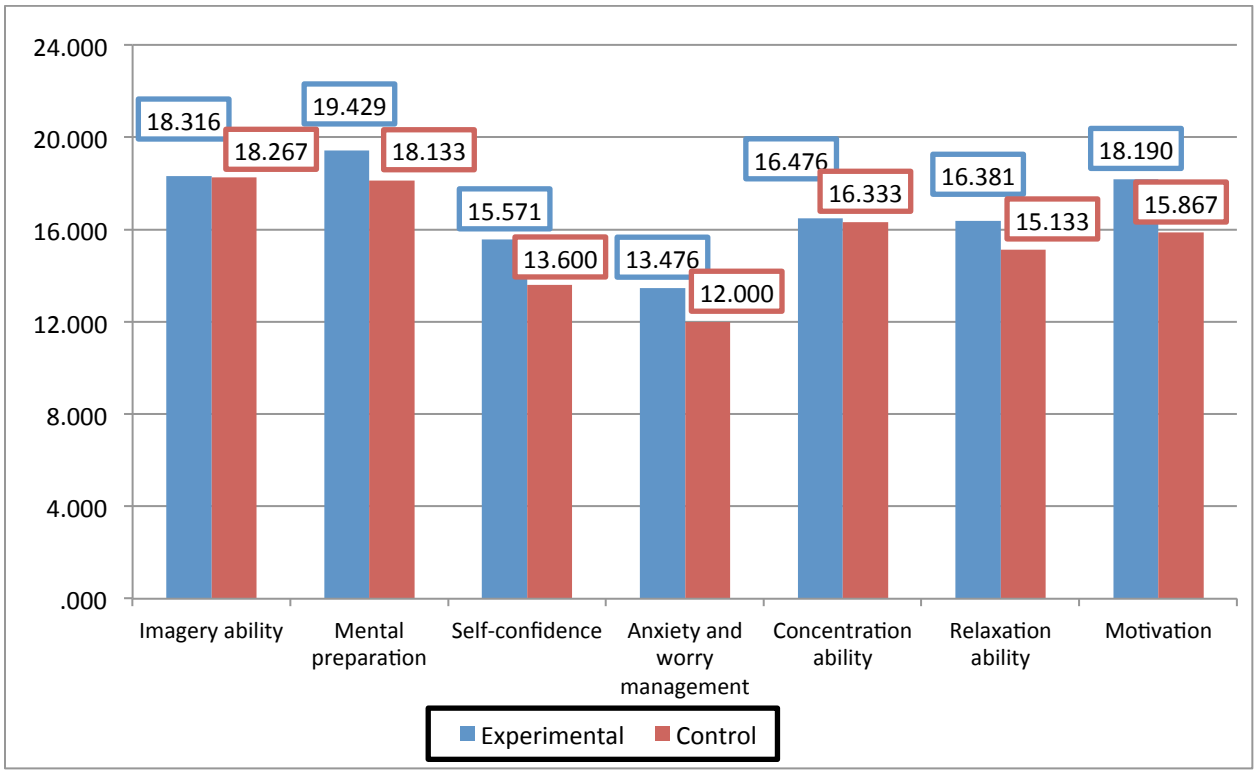


Figure 5. Post-intervention Test - Bull's Mental Skills Questionnaire

As was found during the pre-intervention test measures, there were no significant differences between the experimental and the control group's scores on the Bull's Mental Skills Questionnaire during post-intervention testing.

5.7.1.3 Pre- and post-intervention test measurement scores within the experimental group

There was no significant difference between the pre- and post-intervention test measurement scores for the experimental group on imagery ability or on mental preparation. However, a statistically significant difference was noted between the pre- and post-intervention test measurements of the experimental group on the following:

- Level of self-confidence (p = 0.017): During the post-intervention test, respondents reflected a higher level of self-confidence.

- Anxiety and worry management (p = 0.017): Anxiety and worry management levels had increased after the training (from the pre-intervention test to the post-intervention test measurements).
- Concentration ability (p = 0.002): The experimental group reported higher levels of concentration after the training (in the post-intervention testing).
- Relaxation ability (p = 0.002): Post-intervention test measurements showed higher relaxation ability than the pre-intervention testing measurements did.
- Levels of motivation (p = 0.002): Motivation levels increased from the pre-intervention test to the post-intervention test.

The scores of the experimental group increased significantly from the pre-intervention test measurements to the post-intervention test measurements. The control group, which had not been exposed to the training, reflected stable scores, with no significant changes from the pre-intervention test measurements to the post-intervention test measurements. The total mean score of Bull's Mental Skills Questionnaire increased from 100.6 to 119.8 and revealed a significant positive increase (p = 0.000). The scores are reflected in Figure 6.

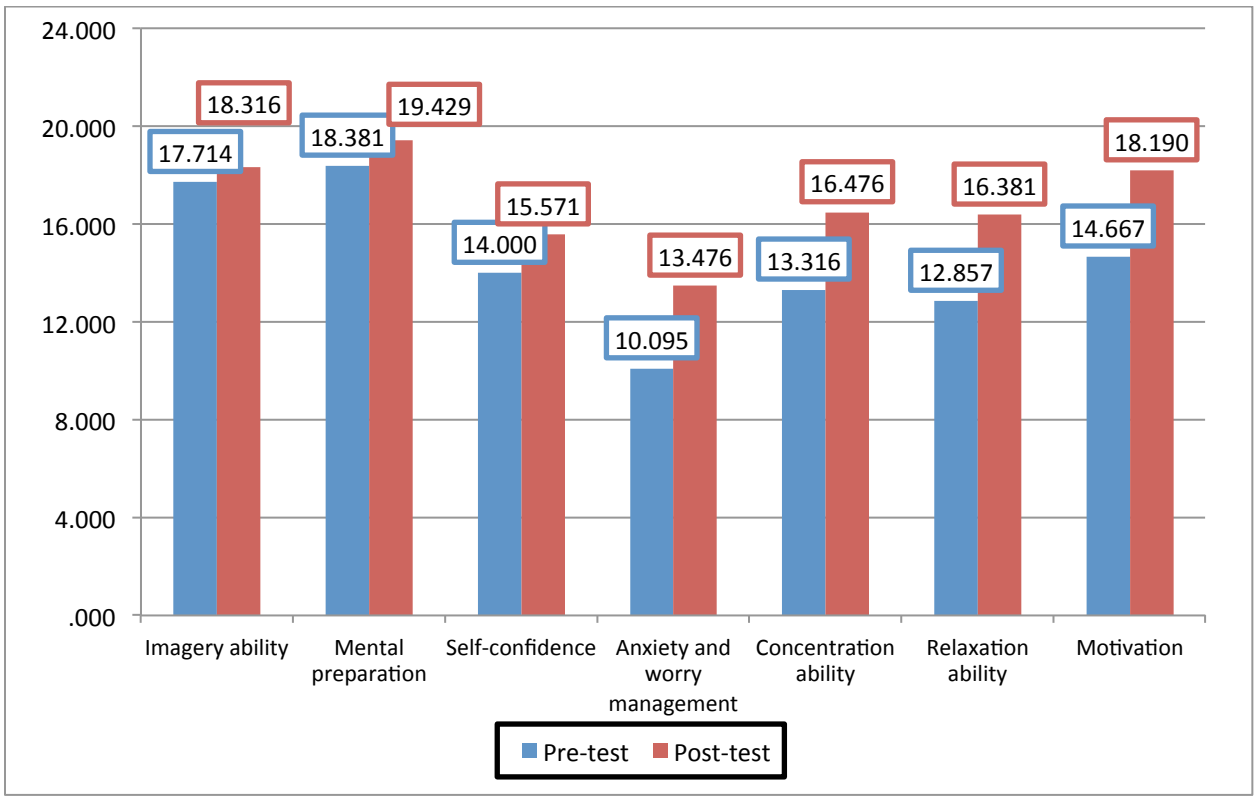


Figure 6. Significant Differences in the Mean Scores of the Experimental Group: Bull's Mental Skills Questionnaire

5.7.1.4 Pre- and post-intervention test measurement scores within the control group

The scores for Bull's Mental Skills Questionnaire stayed stable within the control group from pre- to post-intervention testing. The scores are reflected in Figure 7.

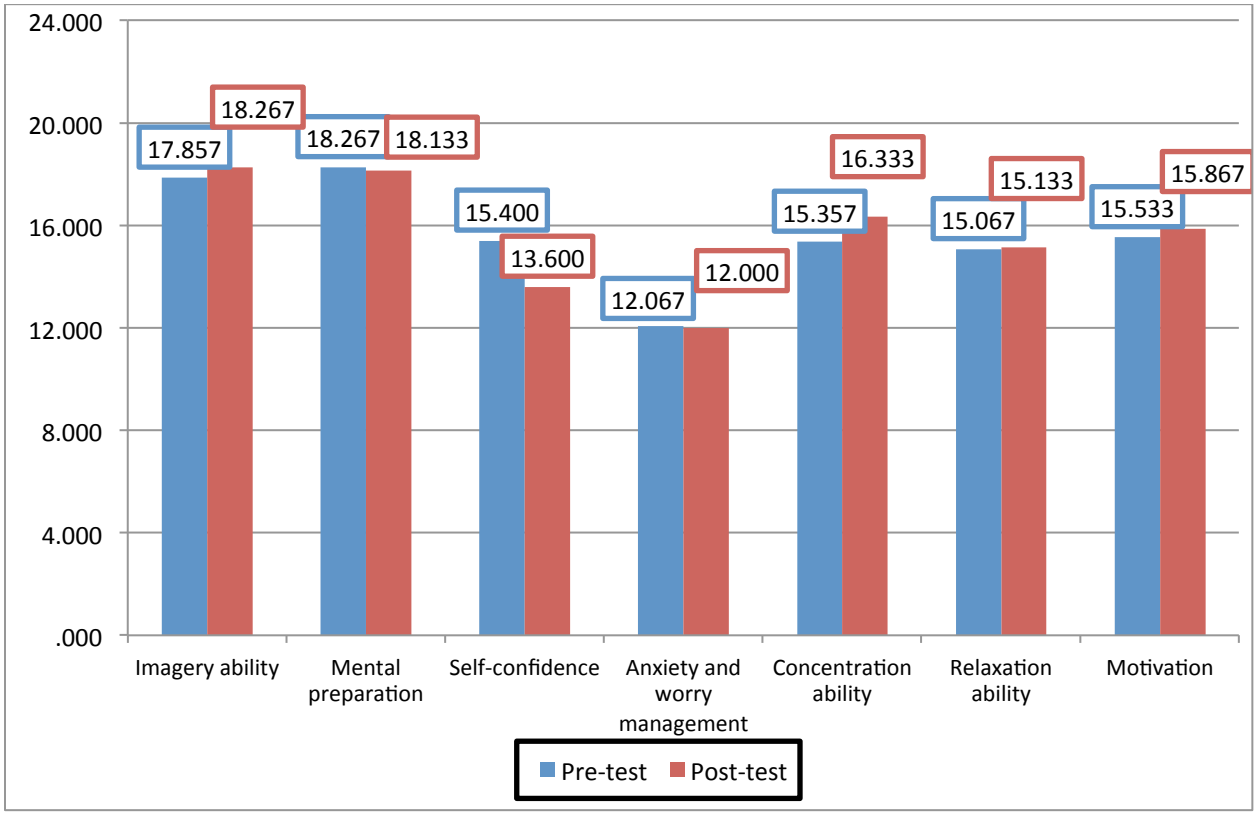


Figure 7. Significant Differences in the Mean Scores of the Control Group: Bull's Mental Skills Questionnaire

5.7.2 The Five Facet Mindfulness Questionnaire (FFMQ)

5.7.2.1 Experimental and control groups' results on the pre-intervention test measurements

The results for the experimental and control groups on the pre-intervention test measurements using the Five Facet Mindfulness Questionnaire are set out in Table 4 and Figure 8.

Table 4. Descriptive Statistics: Pre-intervention Test - Five Facet Mindfulness Questionnaire

Group		N	Minimum	Maximum	Mean	Std. Deviation
Experimental	Observe	20	16.000	35.000	27.050	5.094
	Describe	20	18.000	40.000	28.000	7.108
	Act with awareness	20	13.000	34.000	22.100	5.748
	Non-judge	20	9.000	32.000	21.750	6.592
	Non-react	20	13.000	30.000	20.100	4.278
Control	Observe	14	16.000	37.000	28.500	5.019
	Describe	14	17.000	38.000	27.786	6.290
	Act with awareness	15	14.000	34.000	26.200	6.085
	Non-judge	15	12.000	31.000	23.933	4.803
	Non-react	13	18.000	27.000	21.769	3.140
		Total N	p-value		Mann-Whitney U	
Mann-Whitney U Test	Observe	34	0.410		163.500	
	Describe	34	0.847		134.500	
	Act with awareness	35	0.040		131.000	
	Non-judge	35	0.308		237.000	
	Non-react	33	0.153		164.000	

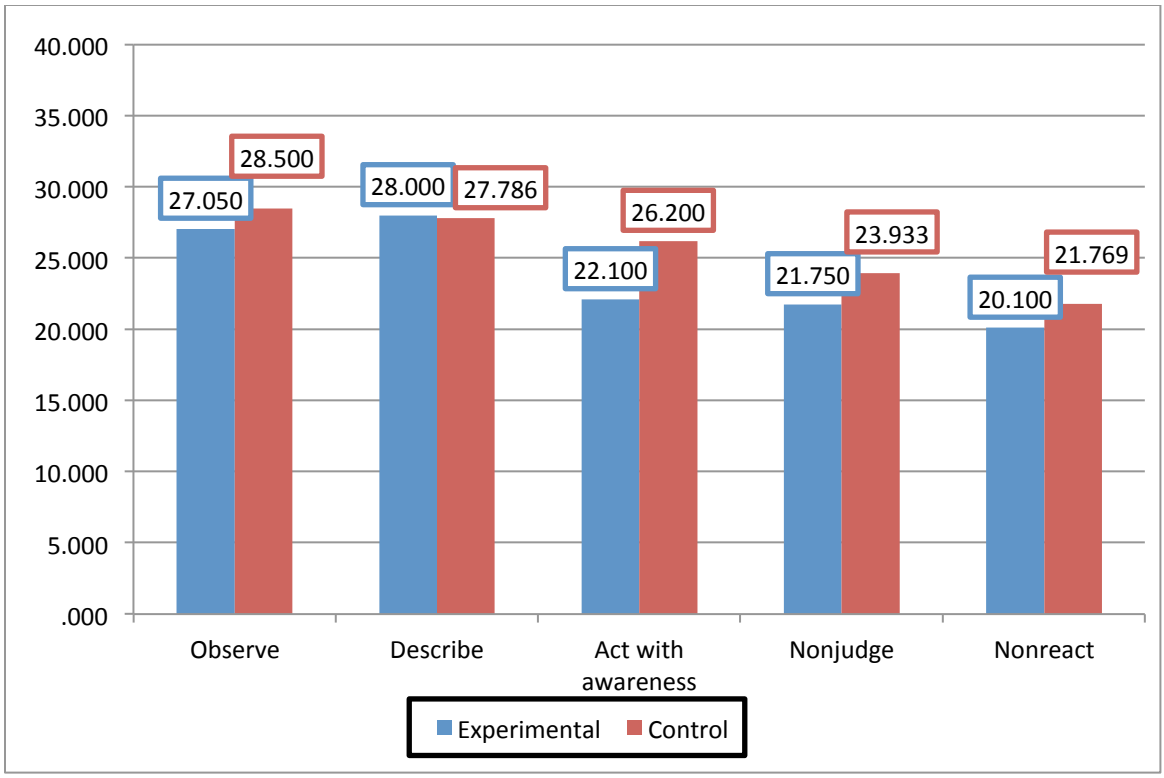


Figure 8. Pre-intervention Test - Five Facet Mindfulness Questionnaire

A statistically significant difference was found between the measurement scores of the experimental and control groups on "act with awareness" during the pre-intervention test (p = 0.040). The experimental group had a significantly lower score than the control group. There were no significant differences between the scores of the two groups on the other factors measured during the pre-intervention test.

5.7.2.2 Experimental and control groups' results on the post-intervention test measurements

The results for the experimental and control groups on the post-intervention test measurements using the Five Facet Mindfulness Questionnaire are set out in Table 5 and Figure 9.

Table 5. Descriptive Statistics: Post-intervention Test - Five Facet Mindfulness Questionnaire

Group		N	Minimum	Maximum	Mean	Std. Deviation
Experimental	Observe	21	17.000	40.000	28.667	5.571
	Describe	21	16.000	40.000	31.143	7.479
	Act with awareness	21	16.000	33.000	25.381	4.822
	Non-judge	21	17.000	39.000	25.714	5.746
	Non-react	21	12.000	27.000	21.048	3.667
Control	Observe	15	10.000	35.000	27.133	6.255
	Describe	15	13.000	39.000	27.400	6.231
	Act with awareness	14	15.000	39.000	26.643	7.642
	Non-judge	15	11.000	35.000	24.133	6.589
	Non-react	15	16.000	28.000	21.267	3.863
		Total N	p-value		Mann-Whitney U	
Mann-Whitney U Test	Observe	36	0.563		139.500	
	Describe	36	0.091		105.000	
	Act with awareness	35	0.438		170.000	
	Non-judge	36	0.574		140.000	
	Non-react	36	0.923		154.500	

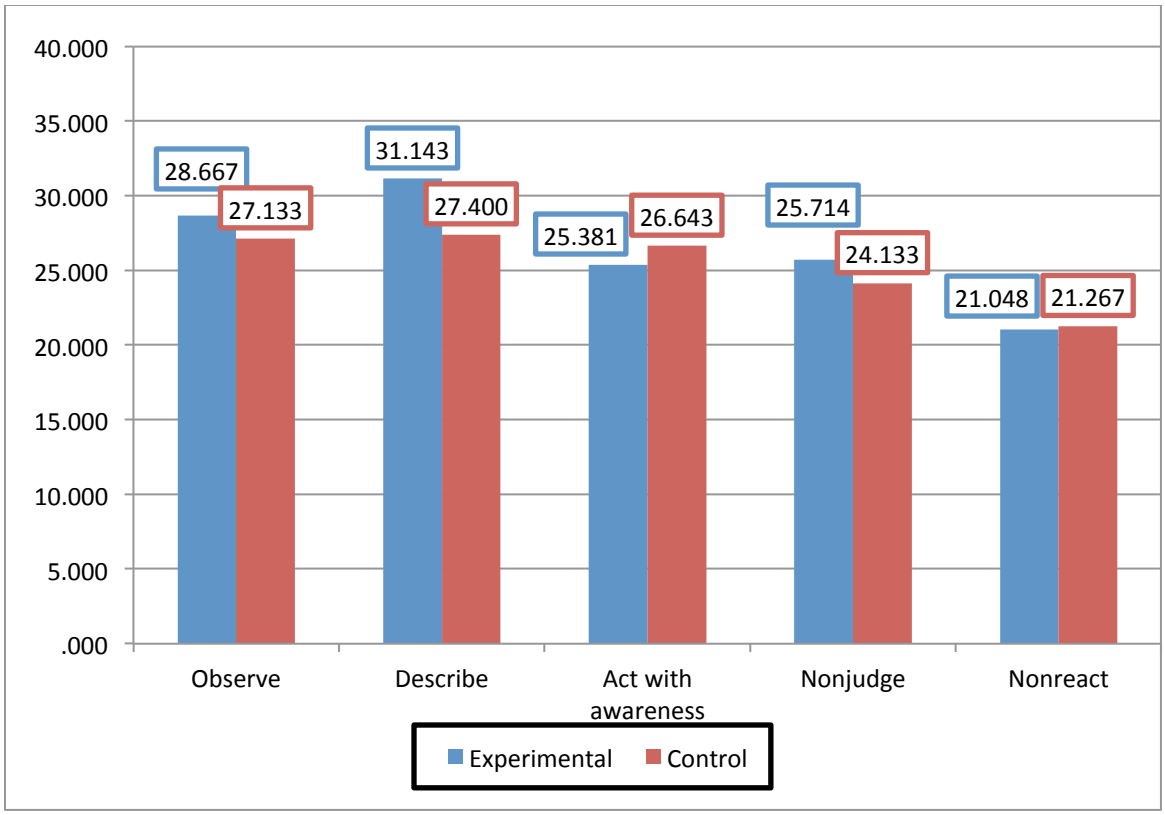


Figure 9. Post-intervention Test - Five Facet Mindfulness Questionnaire

The experimental and control groups did not differ significantly from one another during post-intervention testing on the different measurements of the Five Facet Mindfulness Questionnaire. The significant difference that existed on the "act with awareness" construct during pre-intervention testing was not present during post-intervention testing. The reason for this is the fact that the score on "act with awareness" in the experimental group increased, but not enough for statistical significance.

5.7.2.3 Pre- and post-intervention test measurement scores within the experimental group

The experimental group displayed only two significant changes from pre- to post-intervention testing, namely on the:

- Describe items (p = 0.028): Post-intervention test scores on the "describe items" were higher than pre-intervention test scores.

- Non-judge items (p = 0.011): Non-judge scores were significantly higher in the post-intervention test.

Scores in the control group did not change on the “describe items’ or on the “non-judge items”. The significant increase in scores for the experimental group might be indicative of an effect of the training that the experimental group underwent. An improvement of the total mean score of the Five Facet Mindfulness Questionnaire from 119 to 131.9 indicated a statistical significant improvement (p = 0.038) in the experimental group. The scores are reflected in Figure 10.

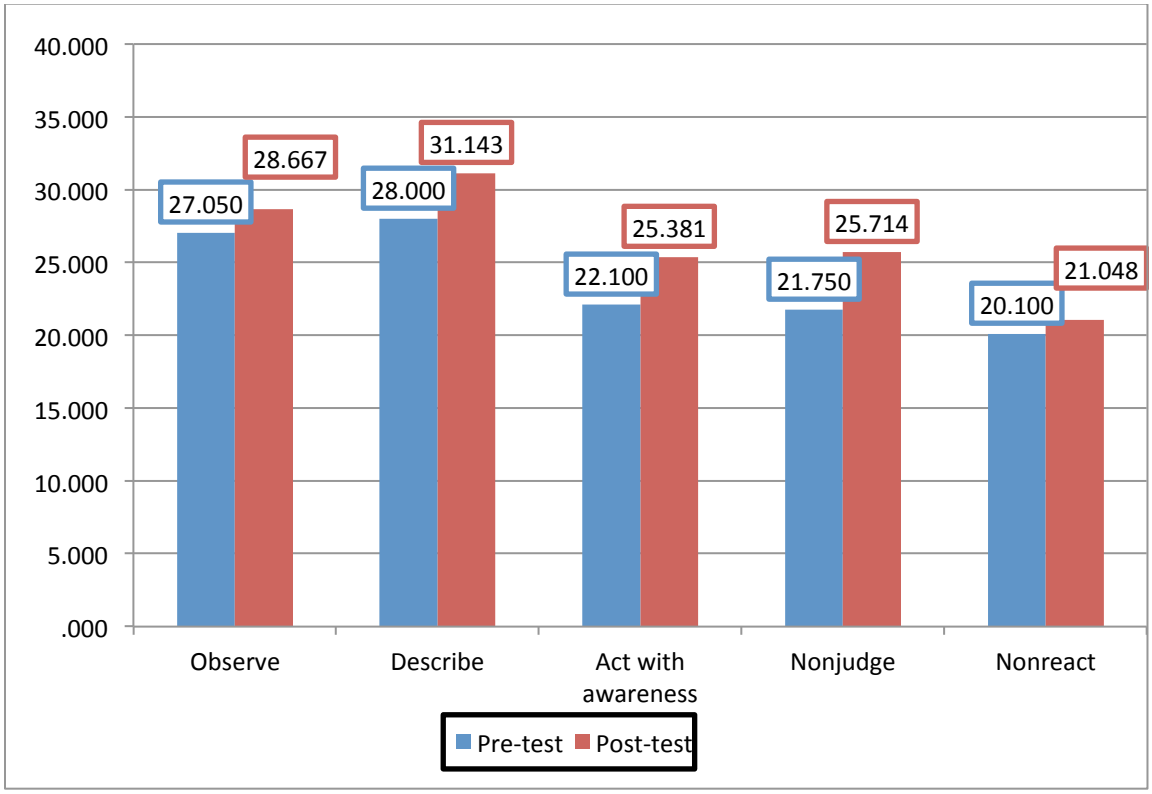


Figure 10. Significant Differences in the Mean Scores of the Experimental Group: Five Facet Mindfulness Questionnaire

5.7.2.4 Pre- and post-intervention test measurement scores within the control group

The Five Facet Mindfulness Questionnaire scores remained in the control group from pre- to post-intervention testing. The scores are reflected in Figure 11.

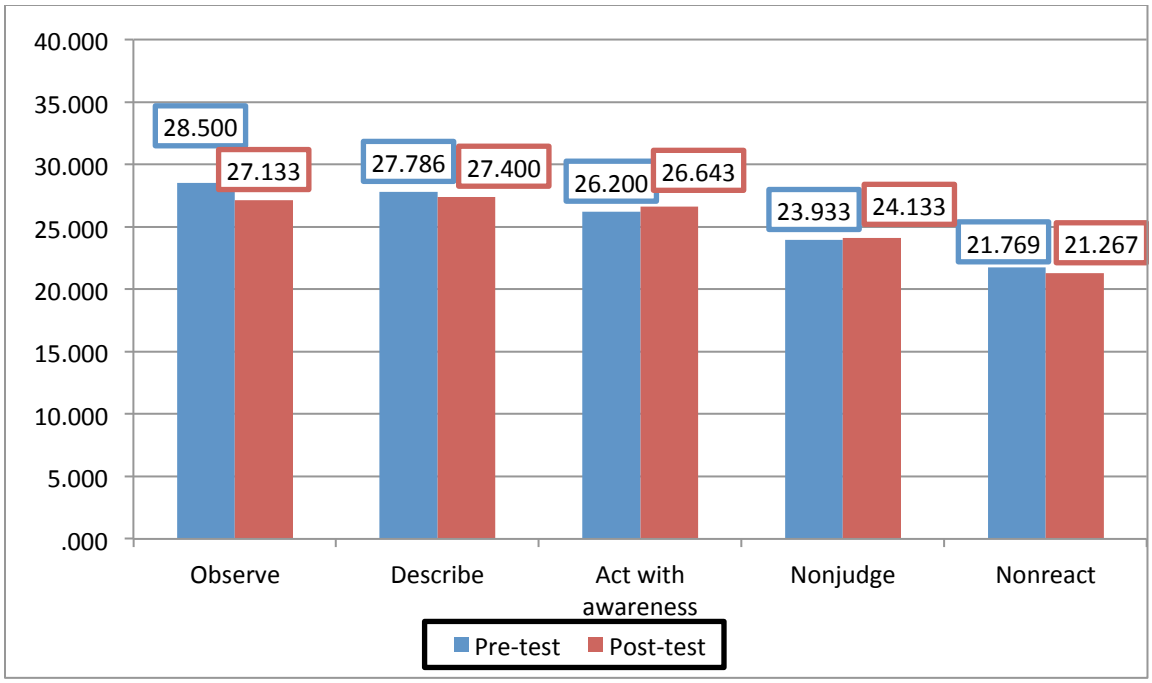


Figure 11. Significant Differences in the Mean Scores of the Control Group: Five Facet Mindfulness Questionnaire

5.7.3 Ryff's Psychological Well-being Scale

5.7.3.1 Experimental and control groups' results on the pre-intervention test measurements

The results for the experimental and control groups on the pre-intervention test measurements using Ryff's Psychological Well-being Scale are set out in Table 6 and Figure 12.

Table 6. Descriptive Statistics: Pre-intervention Test - Ryff's Psychological Well-being Scale

Group		N	Minimum	Maximum	Mean	Std. Deviation
Experimental	Autonomy	21	8.000	18.000	13.619	3.041
	Positive relationships with others	21	4.000	18.000	11.752	3.859
	Environmental mastery	21	3.000	17.000	11.667	3.088

	Personal growth	21	9.000	18.000	15.952	2.269
	Purpose in life	21	8.000	18.000	14.095	3.491
	Self-acceptance	21	5.000	18.000	13.048	3.398
Control	Autonomy	15	8.000	16.000	12.267	2.154
	Positive relationships with others	15	8.000	18.000	15.000	2.854
	Environmental mastery	15	10.000	15.000	12.067	1.792
	Personal growth	15	14.000	18.000	16.600	1.454
	Purpose in life	15	11.000	18.000	15.467	2.232
	Self-acceptance	15	10.000	18.000	13.933	2.282
		Total N	p-value		Mann-Whitney U	
Mann-Whitney U Test	Autonomy	36	0.387		131.000	
	Positive relationships with others	36	0.010		237.000	
	Environmental mastery	36	0.833		164.000	
	Personal growth	36	0.499		178.000	
	Purpose in life	36	0.290		190.000	
	Self-acceptance	36	0.710		169.000	

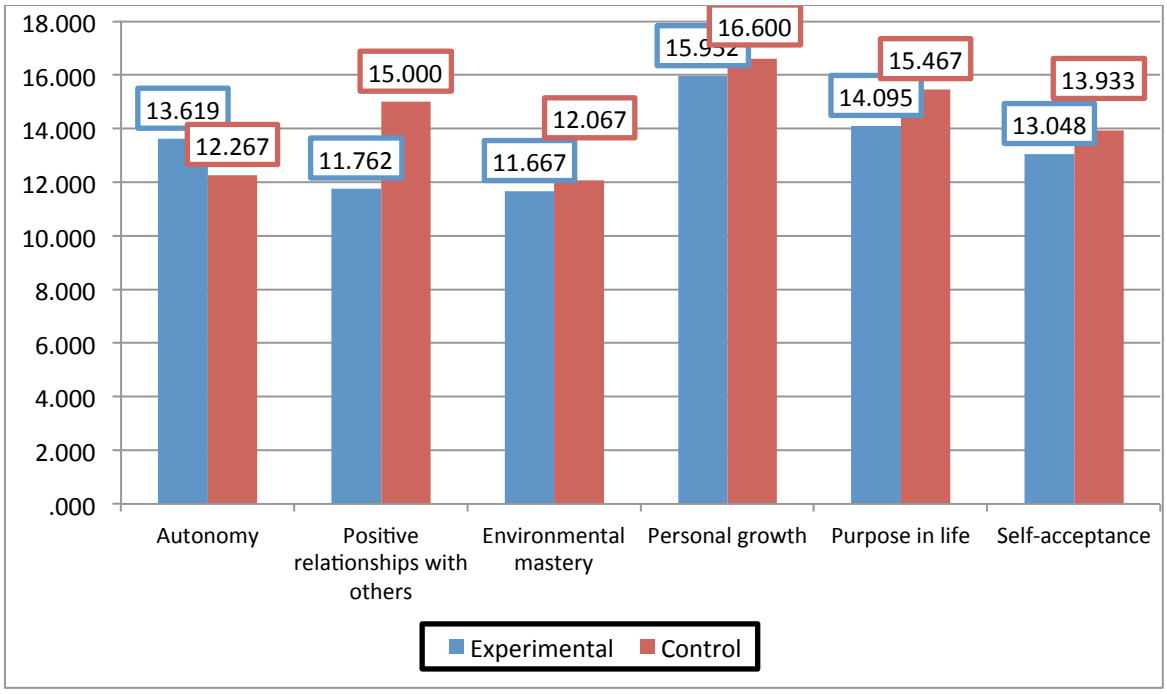


Figure 12. Pre-intervention Test - Ryff's Psychological Well-being Scale

The experimental and control groups differed significantly from one another during the pre-intervention test on measurements for “positive relationships with others” (p = 0.010). The score of the experimental group was significantly lower than the score for the control group. No further differences were found on the other five factors of Ryff’s Psychological Well-being Scale during pre-intervention testing.

5.7.3.2 Experimental and control groups’ results on the post-intervention test measurements

The results for the experimental and control groups on the post-intervention test measurements using Ryff’s Psychological Well-being Scale are set out in Table 7 and Figure 13.

Table 7. Descriptive Statistics: Post-intervention Test - Ryff's Psychological Well-being Scale

Group		N	Minimum	Maximum	Mean	Std. Deviation
Experimental	Autonomy	21	6.000	17.000	13.571	2.856
	Positive relationships with others	21	8.000	17.000	13.095	2.809
	Environmental mastery	21	9.000	16.000	12.571	2.357
	Personal growth	21	10.000	18.000	16.333	2.153
	Purpose in life	21	9.000	18.000	15.143	2.689
	Self-acceptance	21	6.000	18.000	13.952	3.294
Control	Autonomy	15	10.000	16.000	12.933	1.751
	Positive relationships with others	15	10.000	18.000	15.667	2.410
	Environmental mastery	15	6.000	17.000	11.933	3.081
	Personal growth	15	13.000	18.000	15.933	1.792
	Purpose in life	15	10.000	18.000	14.733	2.434
	Self-acceptance	15	8.000	18.000	13.333	3.177
		Total N	p-value		Mann-Whitney U	
Mann-Whitney U Test	Autonomy	36	0.217		119.500	
	Positive relationships with others	36	0.009		238.500	
	Environmental mastery	36	0.487		136.000	
	Personal growth	36	0.275		124.500	
	Purpose in life	36	0.558		139.500	
	Self-acceptance	36	0.583		140.500	

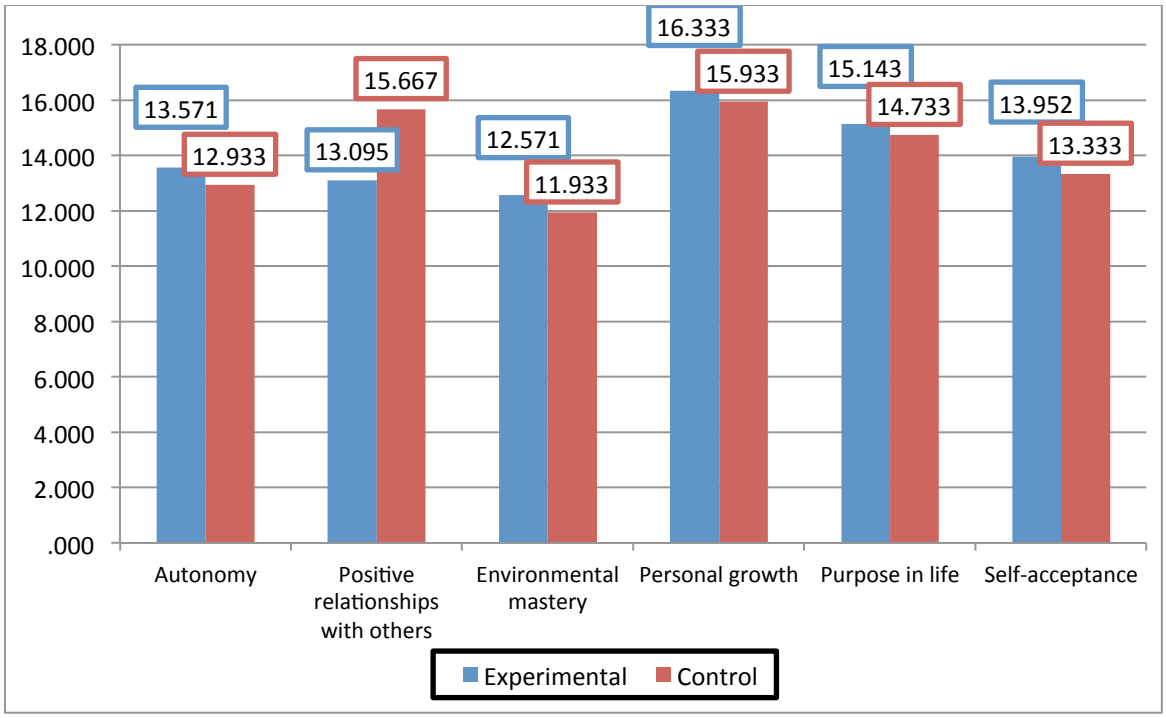


Figure 13. Post-intervention Test - Ryff's Psychological Well-being Scale

As during the pre-intervention test, the post-intervention test measures for the experimental and control groups differed significantly on “positive relationships with others” (p = 0.009), with the experimental group obtaining the lower score.

5.7.3.3 *Pre- and post-intervention test measurement scores within the experimental group*

Only one significant change was found between the pre- and post-intervention test measurement scores for the experimental group on the factors of Ryff’s Psychological Well-being Scale, namely “positive relationships with others” (p = 0.020) in the post-intervention test; the respondents in the experimental group obtained significantly higher scores than during the pre-intervention test (see Figure 12). However, the positive shift in the total mean score of Ryff’s Psychological Well-being Scale from 80.1 to 84.7 revealed a positive statistical significant shift in the psychological well-being of the experimental group (p = 0.026).

No significant differences were found on the other five items of this test. There were no significant differences between the scores of the control group in the pre-intervention test measurements and those in the post-intervention test measurements.

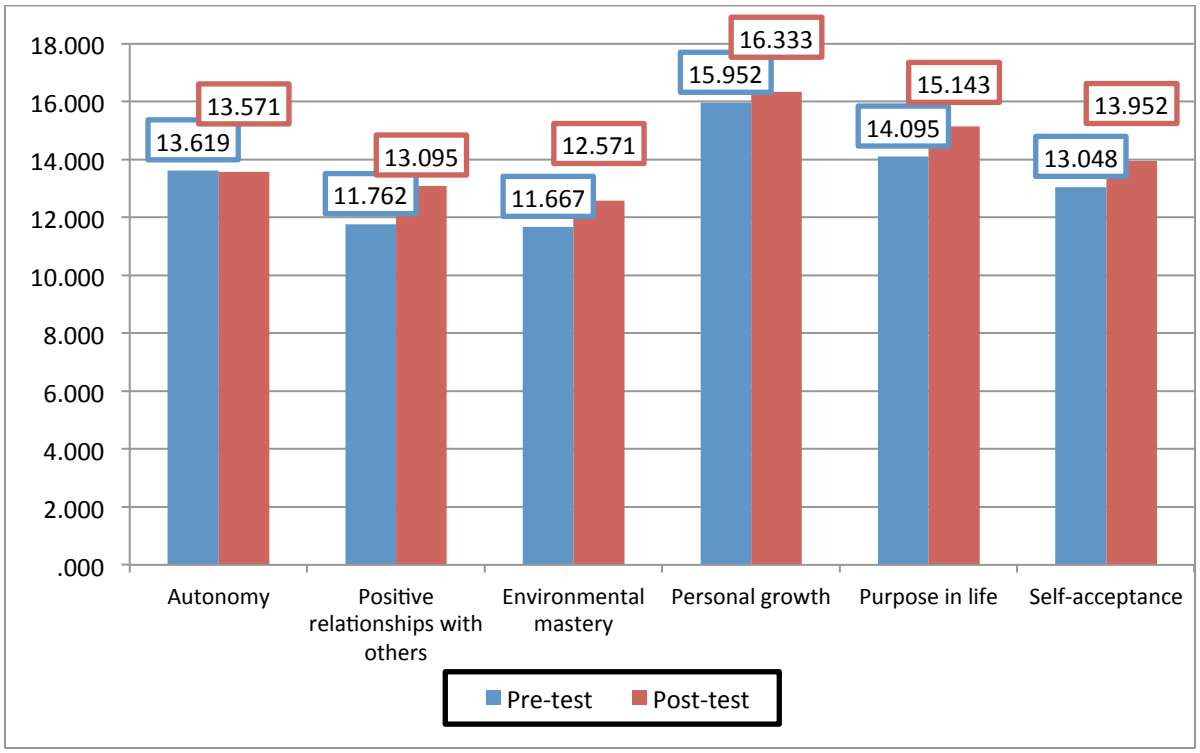


Figure 14. Significant Differences in the Mean Scores of the Experimental Group: Ryff's Psychological Well-being Scale

5.7.3.4 Pre- and post-intervention test measurement scores within the control group

The scores for Ryff's Psychological Well-being Scale stayed stable within the control group from pre- to post-intervention testing. The scores are reflected in Figure 15.

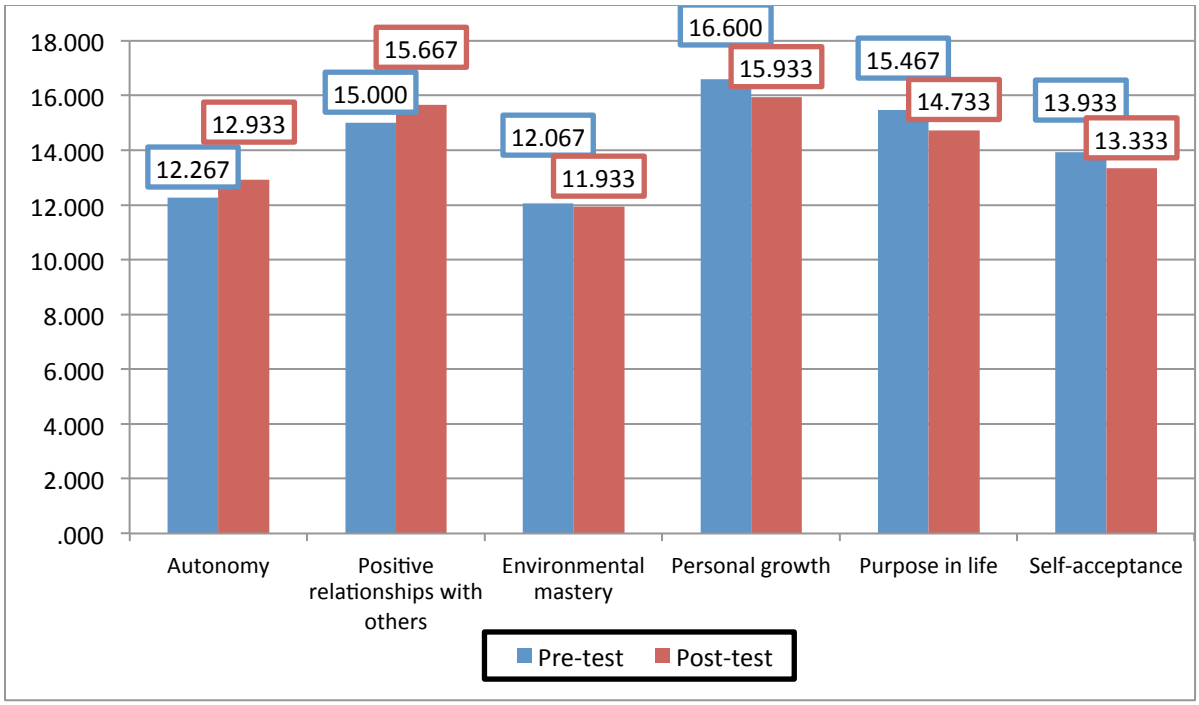


Figure 15. Significant Differences in the Mean Scores of the Control Group: Ryff's Psychological Well-being Scale

5.7.4 The Competitive State Anxiety Inventory-2 (CSAI-2)

5.7.4.1 Experimental and control groups' results on the pre-intervention test measurements

The results for the experimental and control groups on the pre-intervention test measurements using the Competitive State Anxiety Inventory-2 are set out in Table 8 and Figure 16.

Table 8. Descriptive Statistics: Pre-intervention Test - Competitive State Anxiety Inventory-2

Group		N	Minimum	Maximum	Mean	Std. Deviation
Experimental	Cognitive state anxiety	21	15.000	33.000	25.619	5.962
	Somatic state anxiety	21	13.000	35.000	25.524	7.672
	State self-confidence	21	10.000	34.000	21.286	7.695

Control	Cognitive state anxiety	15	19.000	32.000	26.933	3.826
	Somatic state anxiety	15	12.000	35.000	22.933	6.787
	State self-confidence	15	13.000	32.000	21.333	5.260

		Total N	p-value	Mann-Whitney U
Mann-Whitney U Test	Cognitive state anxiety	36	0.664	171.000
	Somatic state anxiety	36	0.274	123.500
	State self-confidence	36	0.834	164.000

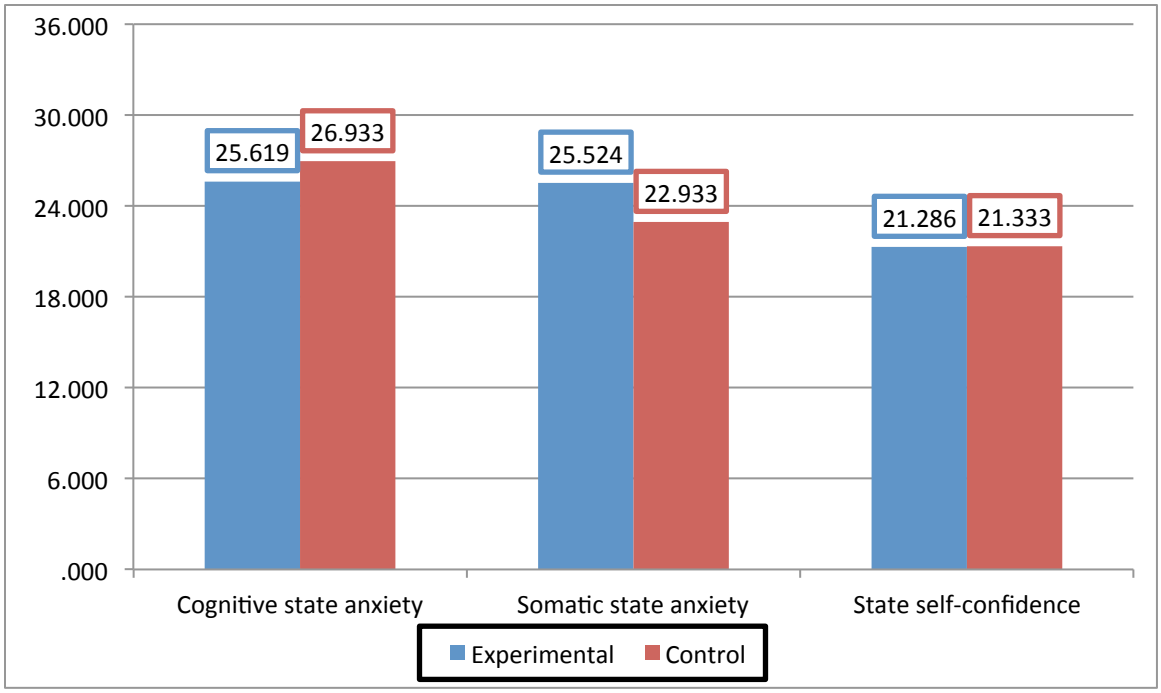


Figure 16. Pre-intervention Test - Competitive State Anxiety Inventory-2

The scores of the experimental and control group were not significantly different during the pre-intervention test using the Competitive State Anxiety Inventory-2 measurements. It can thus be concluded that the two groups were more or less similar before the interventions.

5.7.4.2 Experimental and control groups' results on the post-intervention test measurements

The results for the experimental and control groups on the post-intervention test measurements using the Competitive State Anxiety Inventory-2 are set out in Table 9 and Figure 17.

Table 9. Descriptive Statistics: Post-intervention Test - Competitive State Anxiety Inventory-2

Group		N	Minimum	Maximum	Mean	Std. Deviation
Experimental	Cognitive state anxiety	21	11.000	34.000	21.762	5.558
	Somatic state anxiety	21	13.000	35.000	20.857	6.770
	State self-confidence	21	14.000	36.000	24.143	6.429
Control	Cognitive state anxiety	12	18.000	30.000	24.417	3.777
	Somatic state anxiety	14	12.000	34.000	22.143	6.286
	State self-confidence	13	14.000	30.000	21.231	3.919
		Total N	p-value		Mann-Whitney U	
Mann-Whitney U Test	Cognitive state anxiety	33	0.111		168.500	
	Somatic state anxiety	35	0.489		167.500	
	State self-confidence	34	0.126		93.500	

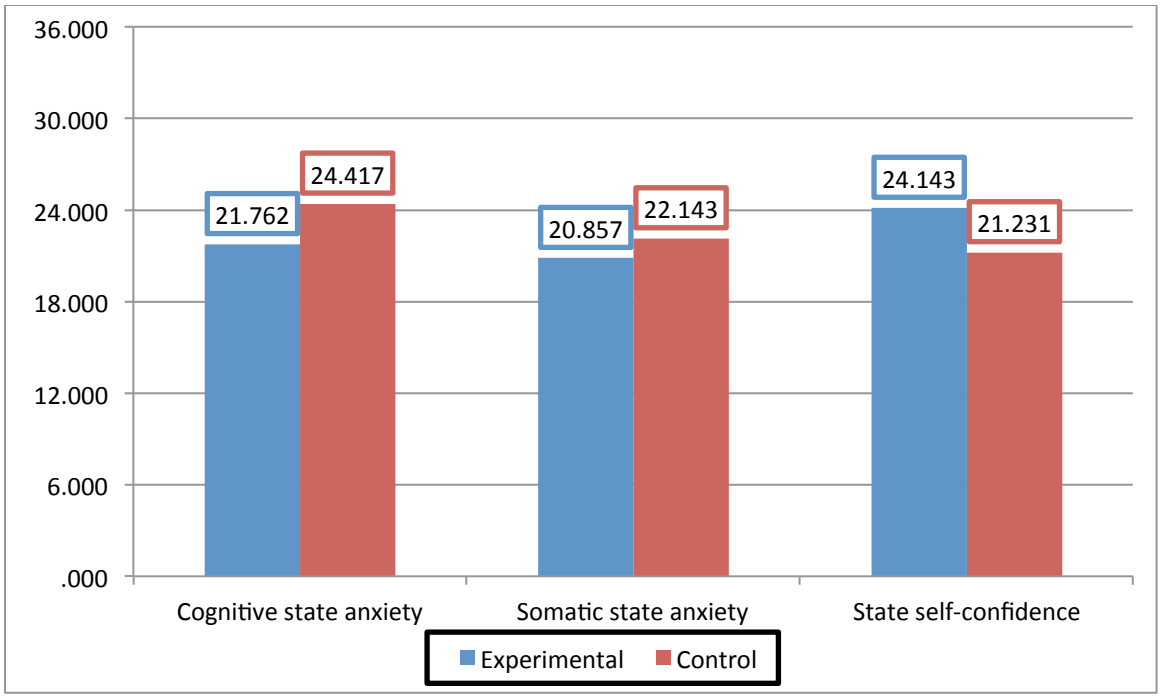


Figure 17. Post-intervention Test - Competitive State Anxiety Inventory-2

As during pre-intervention testing, the scores of the experimental and control group were not significantly different during the post-intervention test using the Competitive State Anxiety Inventory-2.

5.7.4.3 Pre- and post-intervention test measurement scores within the experimental group

The experimental group displayed significant differences between pre-intervention test and post-intervention test scores on all three factors of the CSAI-2 (see Figure 18):

- Cognitive state anxiety (p = 0.012): Levels of cognitive state anxiety were lower after the intervention.
- Somatic state anxiety (p = 0.003): Somatic state anxiety decreased from pre-intervention testing to post-intervention testing.
- State self-confidence (p = 0.045): Self-confidence levels increased significantly from pre- to post-intervention testing.

After the intervention, the experimental group seemed to have significantly lower anxiety levels, with higher self-confidence levels. The control group, which did not undergo any intervention, did not display any significant changes in scores. According to these measurements, it seems as if the intervention had the desired effect on the respondents.

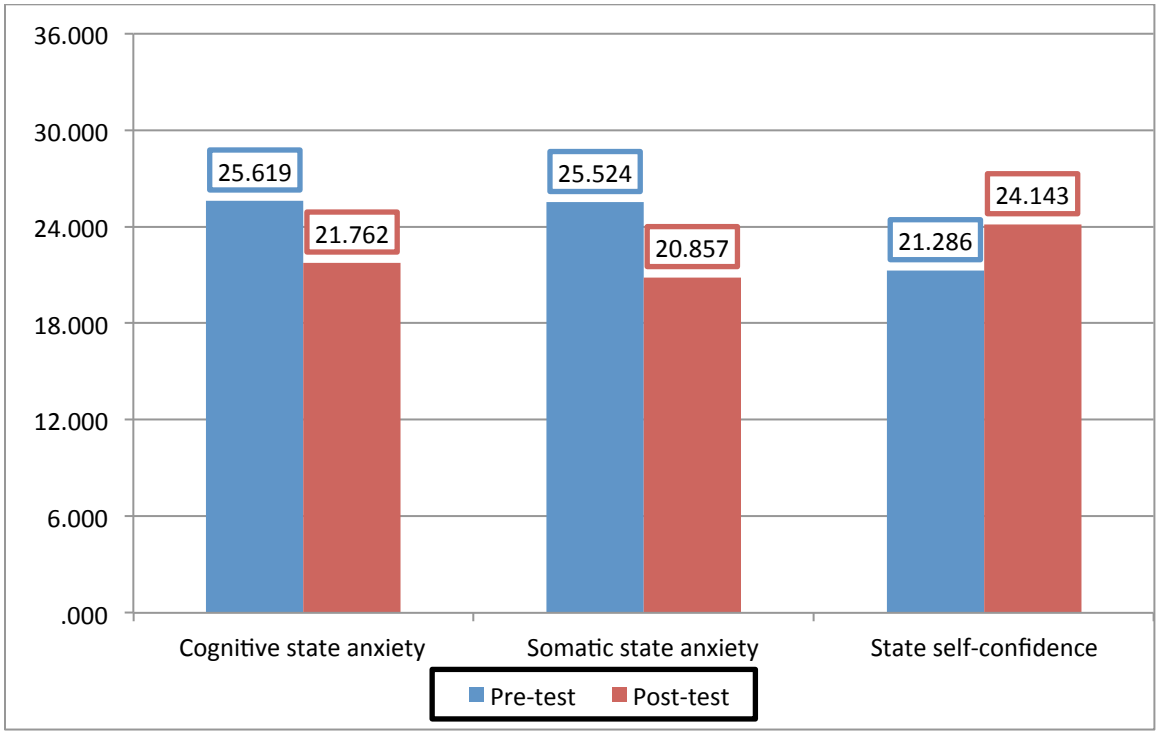


Figure 18. Significant Differences in the Mean Scores of the Experimental Group: Competitive State Anxiety Inventory-2

5.7.4.4 Pre- and post-intervention test measurement scores within the control group

The scores for the Competitive State Anxiety Inventory-2 stayed stable for the control group from pre- to post-intervention testing. The scores are reflected in Figure 19.

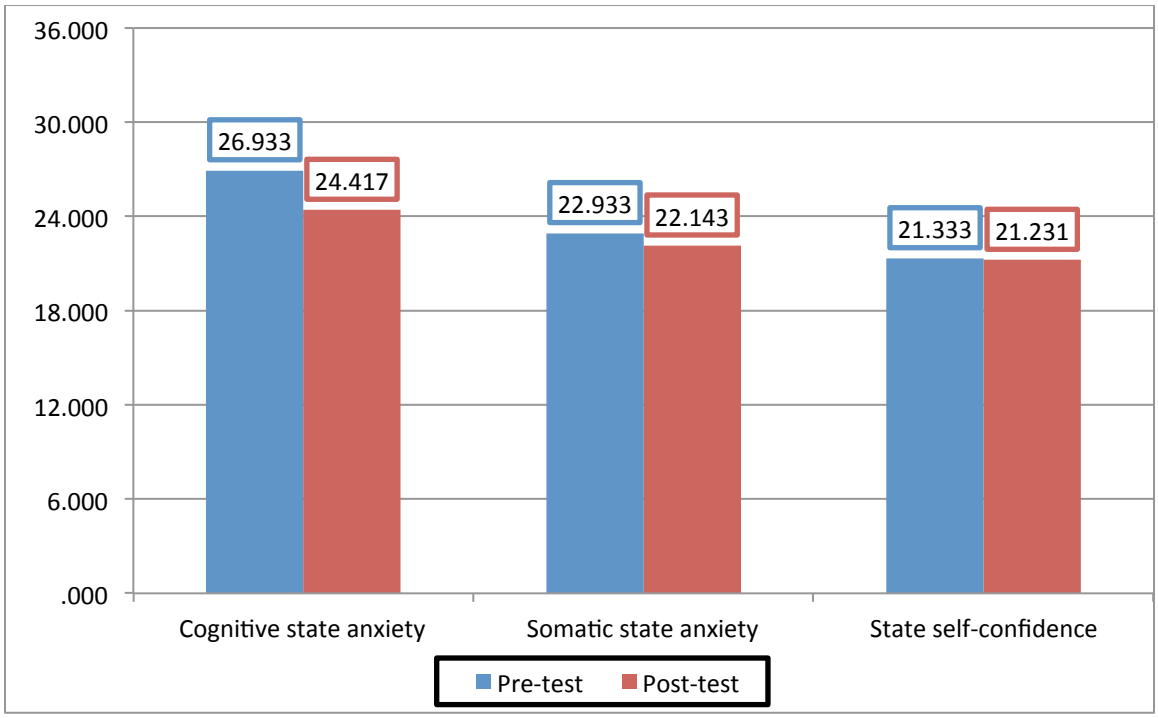


Figure 19. Significant Differences in the Mean Scores of the Control Group: Competitive State Anxiety Inventory-2

5.7.5 The Perceptions of Success Questionnaire (POSQ)

5.7.5.1 Experimental and control groups' results on the pre-intervention test measurements

The results for the experimental and control groups on the pre-intervention test measurements using the Perceptions of Success Questionnaire are set out in Table 10 and Figure 20.

Table 10. Descriptive Statistics: Pre-intervention Test - Perceptions of Success Questionnaire

Group		N	Minimum	Maximum	Mean	Std. Deviation
Experimental	Ego	21	6.000	30.000	18.238	8.455
	Task	21	17.000	30.000	26.952	3.905
Control	Ego	14	10.000	23.000	16.857	4.365

	Task	14	16.000	30.000	25.000	3.883
		Total N	p-value		Mann-Whitney U	
Mann-Whitney U Test	Ego	35	0.589		131.000	
	Task	35	0.070		94.000	

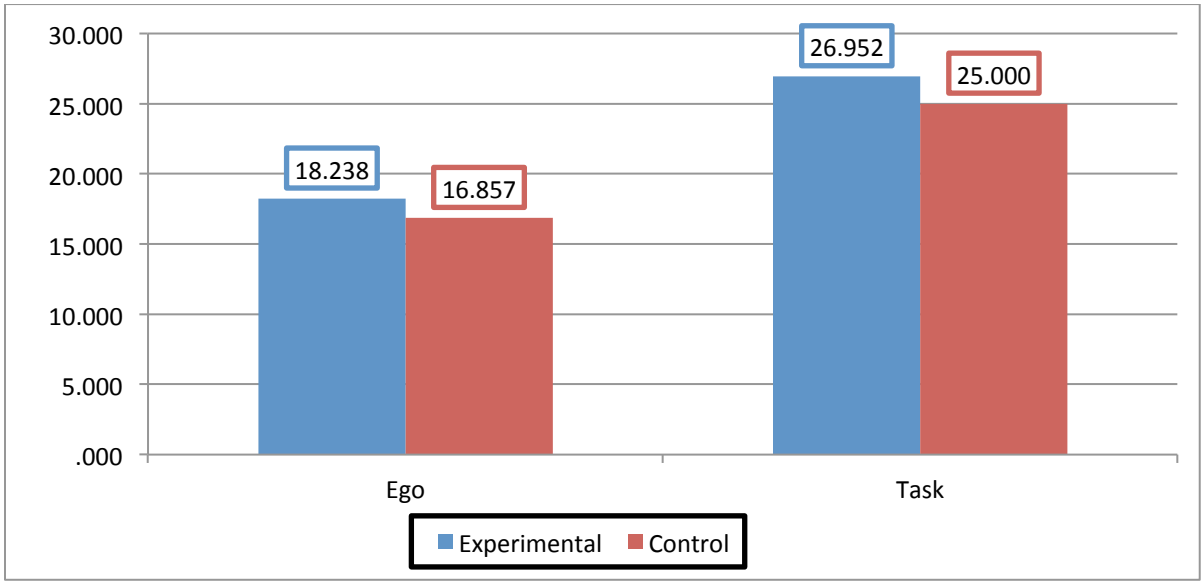


Figure 20. Pre-intervention Test - Perceptions of Success Questionnaire

No significant differences were noted between the experimental and control groups on the ego and task constructs, as measured with the Perceptions of Success Questionnaire during pre-intervention testing.

5.7.5.2 Experimental and control groups' results on the post-intervention test measurements

The results for the experimental and control groups on the post-intervention test measurements using the Perceptions of Success Questionnaire are set out in Table 11 and Figure 21.

Table 11. Descriptive Statistics: Post-intervention Test - Perceptions of Success Questionnaire

Group		N	Minimum	Maximum	Mean	Std. Deviation
Experimental	Ego	21	6.000	30.000	17.619	7.736
	Task	21	19.000	30.000	27.095	3.081
Control	Ego	13	7.000	24.000	17.231	5.819
	Task	14	23.000	30.000	26.857	2.598
		Total N	p-value		Mann-Whitney U	
Mann-Whitney U Test	Ego	34	0.915		133.500	
	Task	35	0.954		131.500	

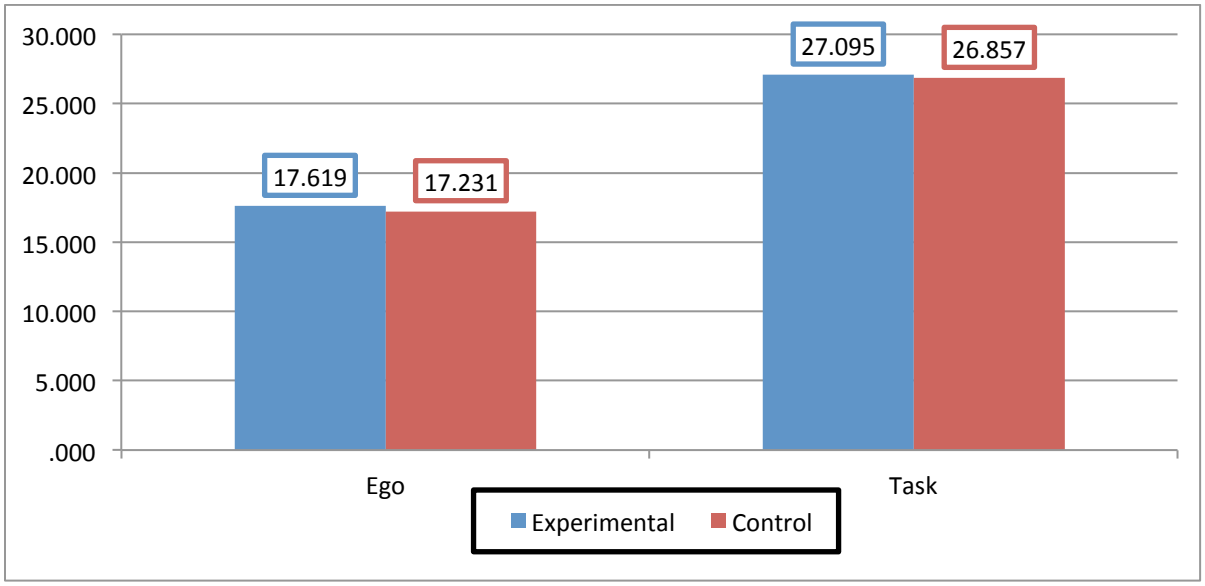


Figure 21. Post-intervention Test - Perceptions of Success Questionnaire

The experimental and control group did not differ significantly on the Perceptions of Success Questionnaire scores during post-intervention testing.

5.7.5.3 *Pre- and post-intervention test measurement scores within the experimental group*

The scores of the experimental group did not display any significant changes in pre- to post-intervention testing on the Perceptions of Success Questionnaire. The scores are reflected in Figure 22.

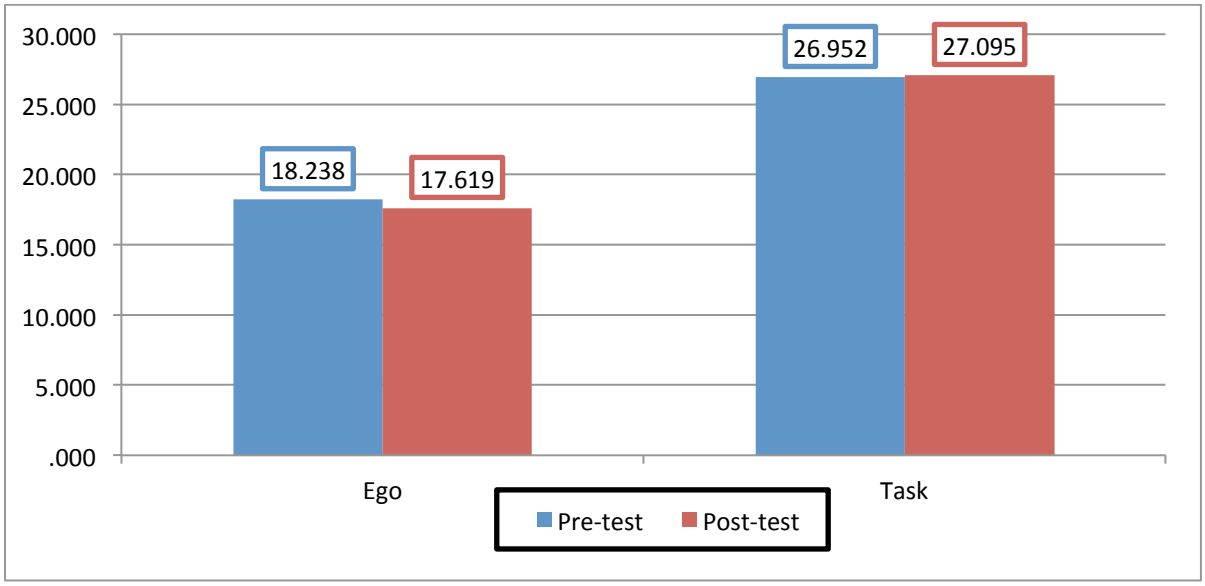


Figure 22. Significant Differences in the Mean Scores of the Experimental Group: Perceptions of Success Questionnaire

5.7.5.4 *Pre- and post-intervention test measurement scores within the control group*

The Perceptions of Success Questionnaire stayed stable for the control group from pre- to post-intervention testing. The scores are reflected in Figure 23.

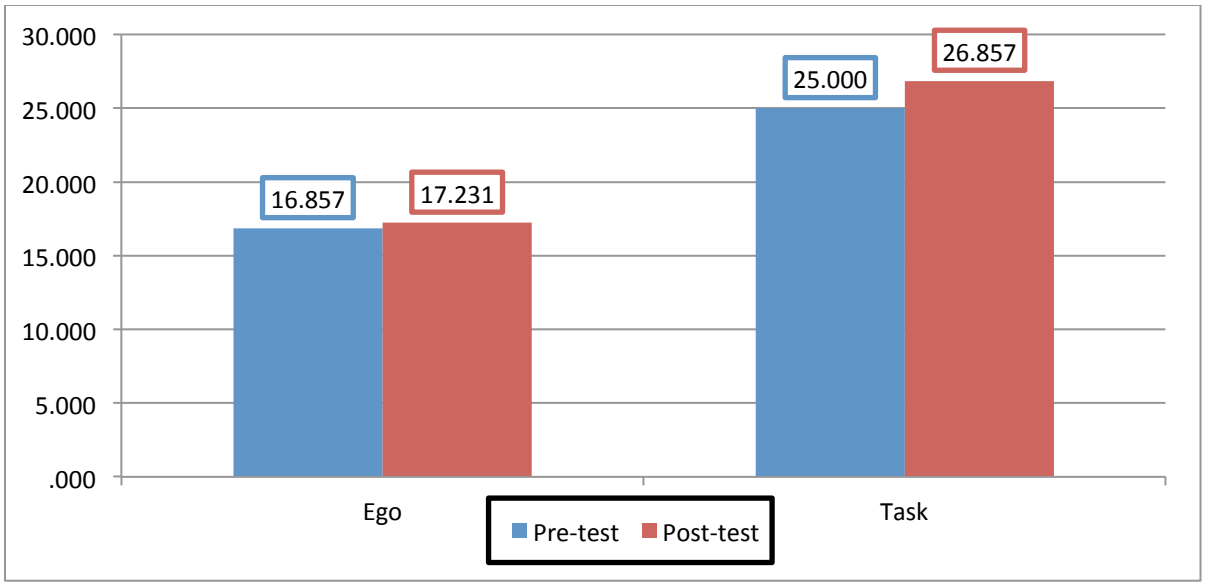


Figure 23. Significant Differences in the Mean Scores of the Control Group: Perceptions of Success Questionnaire

5.7.6 The Self-theory Questionnaire

5.7.6.1 Experimental and control groups' results on the pre-intervention test measurements

The results for the experimental and control groups on the pre-intervention test measurements using the Self-theory Questionnaire are set out in Table 12 and Figure 24.

Table 12. Descriptive Statistics: Pre-intervention Test - Self-theory Questionnaire

Group		N	Minimum	Maximum	Mean	Std. Deviation
Experimental	Growth mindset	21	11.000	18.000	15.905	1.895
	Fixed mindset	21	4.000	14.000	8.000	2.074
Control	Growth mindset	15	14.000	18.000	16.933	1.580
	Fixed mindset	15	3.000	13.000	7.533	2.748
		Total N	p-value		Mann-Whitney U	

Mann-Whitney U Test	Growth mindset	36	0.056	215.000
	Fixed mindset	36	0.166	139.000

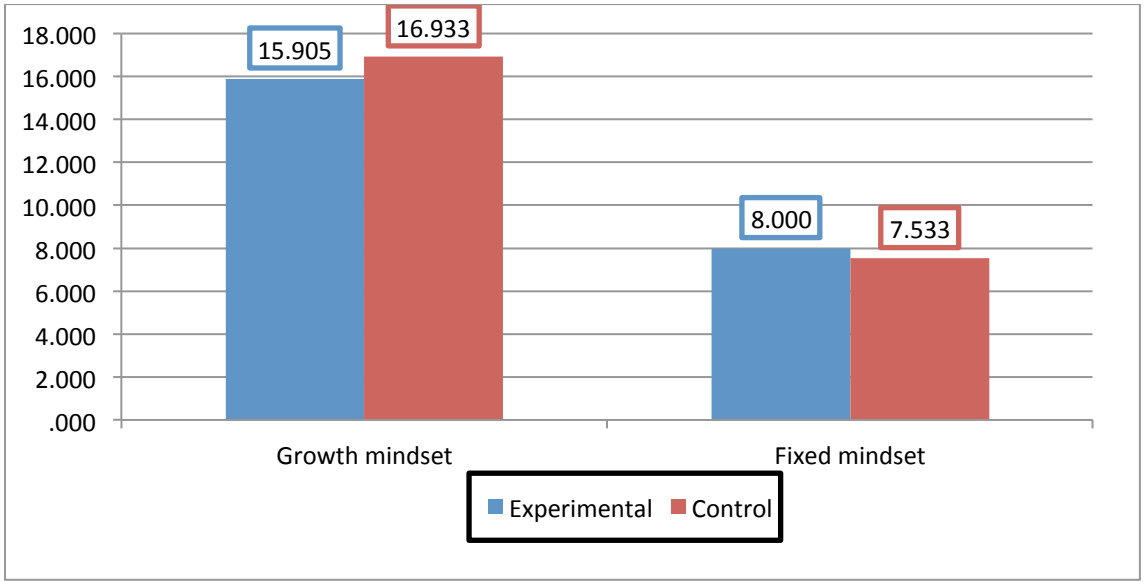


Figure 24. Pre-intervention Test - Self-theory Questionnaire

No significant differences existed between the experimental and the control group during pre-intervention testing on the Self-theory Questionnaire. The two groups can thus be regarded as similar prior to intervention.

5.7.6.2 Experimental and control groups' results on the post-intervention test measurements

The results for the experimental and control groups on the post-intervention test measurements using the Self-theory Questionnaire are set out in Table 13 and Figure 25.

Table 13. Descriptive Statistics: Post-intervention Test - Self-theory Questionnaire

Group		N	Minimum	Maximum	Mean	Std. Deviation
Experimental	Growth mindset	21	14.000	18.000	17.048	1.396
	Fixed mindset	21	3.000	11.000	6.381	1.802
Control	Growth mindset	14	15.000	18.000	17.000	1.240
	Fixed mindset	14	3.000	10.000	6.214	2.007
		Total N	p-value		Mann-Whitney U	
Mann-Whitney U Test	Growth mindset	35	0.694		136.500	
	Fixed mindset	35	0.746		137.500	

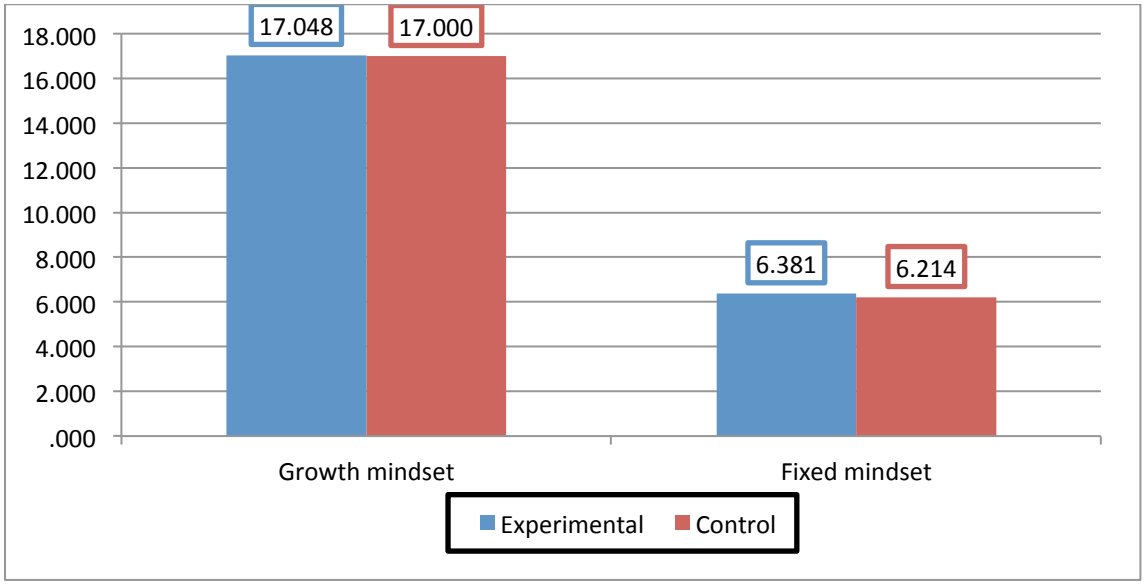


Figure 25. Post-intervention Test - Self-theory Questionnaire

There were no significant differences in the scores of the experimental and control groups using the Self-theory Questionnaire in the post-intervention testing.

5.7.6.3 *Pre- and post-intervention test measurement scores within the experimental group*

The pre- and post-intervention test scores of the experimental group on the Self-theory Questionnaire differed significantly from one another (see Figure 26):

- Growth mindset (p = 0.027): The growth mindset became stronger after the intervention.
- Fixed mindset (p = 0.001): The fixed mindset decreased significantly from pre- to post-intervention testing.

The control group also changed regarding the fixed mindset scores, with scores decreasing significantly from pre- to post-intervention testing (see Figure 26).

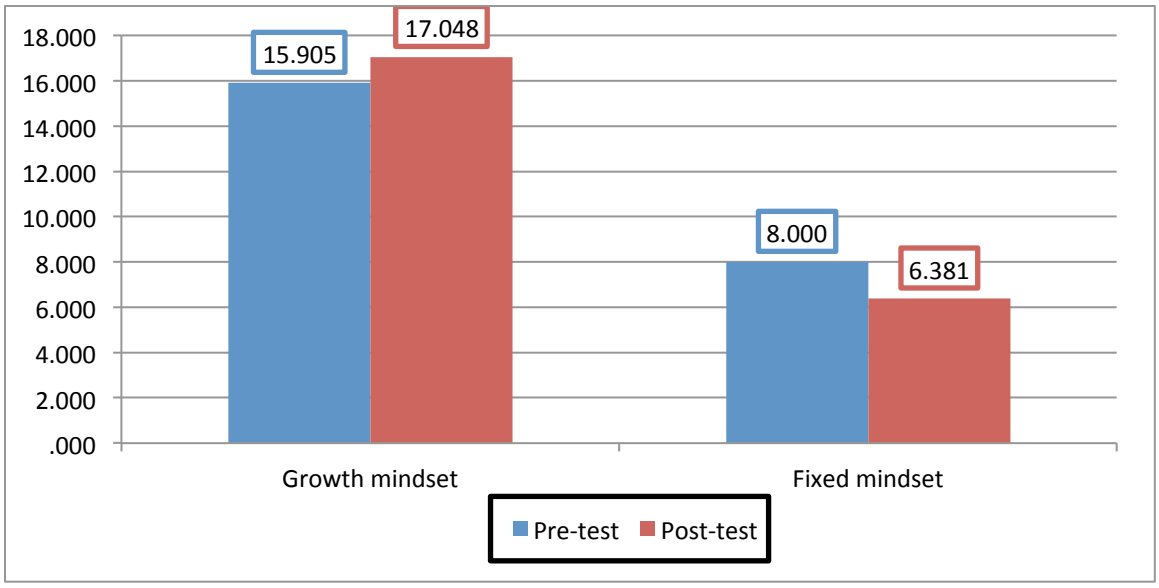


Figure 26. Significant Differences in the Mean Scores of the Experimental Group: Self-theory Questionnaire

5.7.6.4 *Pre- and post-intervention test measurement scores within the control group*

For the control group, there was one significant change from pre- to post-intervention testing, namely that fixed mindset (p = 0.028) decreased significantly from pre- to post-intervention testing.

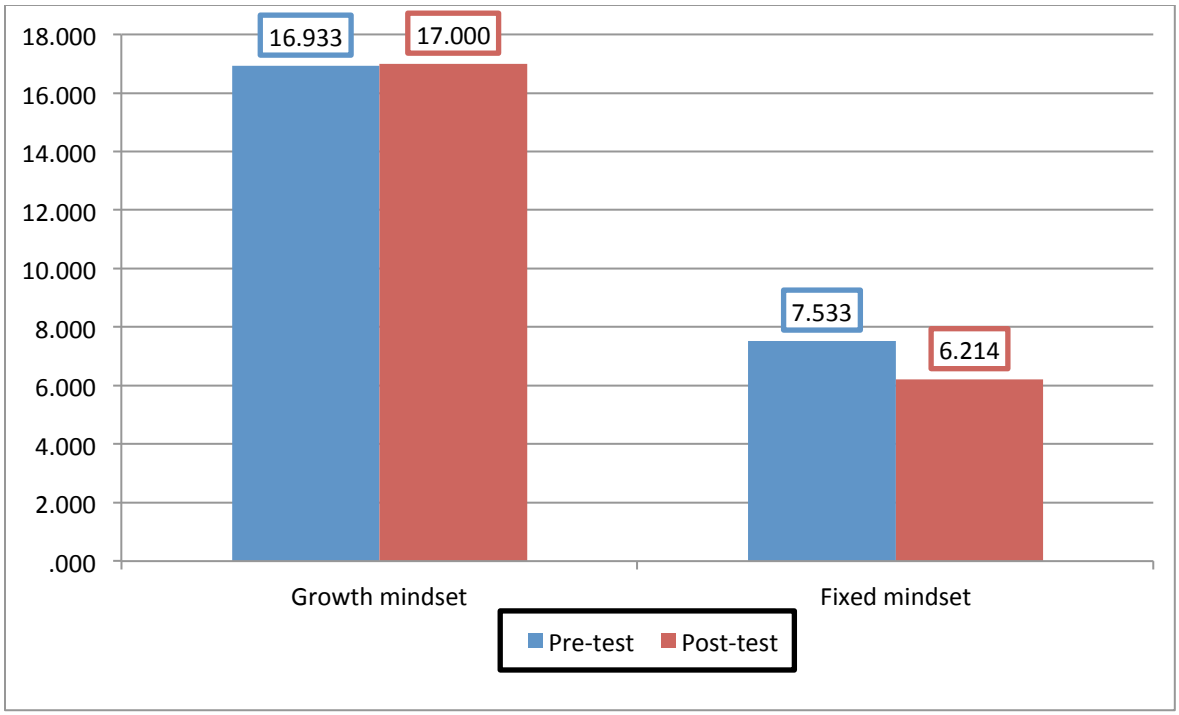


Figure 27. Significant Differences in the Mean Scores of the Control Group: Self-theory Questionnaire

5.7.7 The Kenny Music Performance Anxiety Inventory (K-MPAI)

5.7.7.1 Experimental and control groups' results on the pre-intervention test measurements

The results for the experimental and control groups on the pre-intervention test measurements using the Kenny Music Performance Anxiety Inventory are set out in Table 14 and Figure 28.

Table 14. Descriptive Statistics: Pre-intervention Test - Kenny Music Performance Anxiety Inventory

Group		N	Minimum	Maximum	Mean	Std. Deviation
Experimental	Anxiety Inventory	20	34.000	136.000	94.750	25.125
Control	Anxiety Inventory	15	61.000	126.000	86.000	18.358

		Total N	p-value	Mann-Whitney U
Mann-Whitney U Test	Anxiety Inventory	35	0.166	108.500

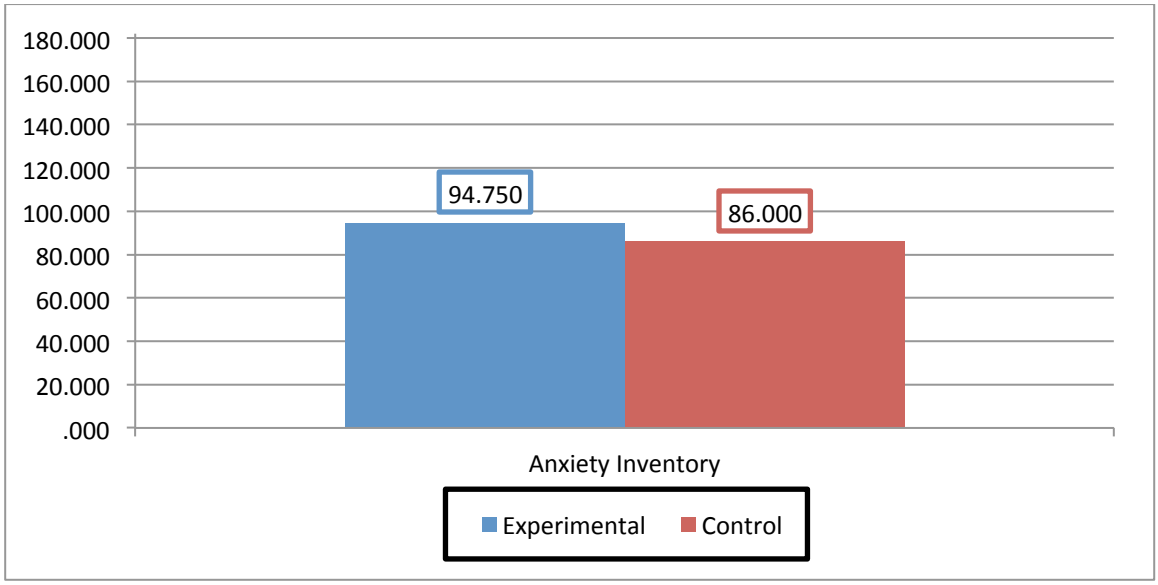


Figure 28. Pre-intervention Test - Kenny Music Performance Anxiety Inventory

The experimental and control groups were similar on the Kenny Music Performance Anxiety Inventory during pre-intervention testing.

5.7.7.2 Experimental and control groups' results on the post-intervention test measurements

The results for the experimental and control groups on the post-intervention test measurements using the Kenny Music Performance Anxiety Inventory are set out in Table 15 and Figure 29.

Table 15. Descriptive Statistics: Post-intervention Test - Kenny Music Performance Anxiety Inventory

Group		N	Minimum	Maximum	Mean	Std. Deviation
Experimental	Anxiety Inventory	19	40.000	136.000	86.947	24.932
Control	Anxiety Inventory	12	63.000	108.000	88.917	17.438
		Total N	p-value		Mann-Whitney U	
Mann-Whitney U Test	Anxiety Inventory	31	0.543		129.000	

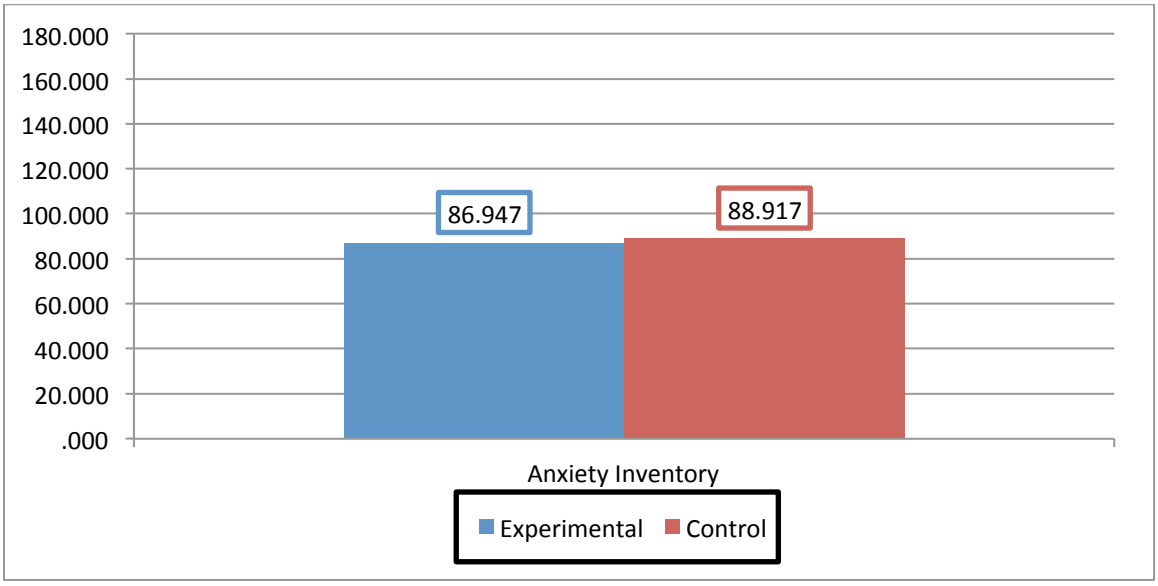


Figure 29. Post-intervention Test - Kenny Music Performance Anxiety Inventory

As during the pre-intervention testing, the Kenny Music Performance Anxiety Inventory scores of the experimental and control groups did not differ significantly from one another during post-intervention testing.

5.7.7.3 *Pre- and post-intervention test measurement scores within the experimental group*

The experimental group did not display any significant change in their anxiety score from pre- to post-intervention testing. However, a noticeable decrease in the mean score (4%) from the pre- to the post-intervention test is a movement in the right direction. The scores are reflected in Figure 30.

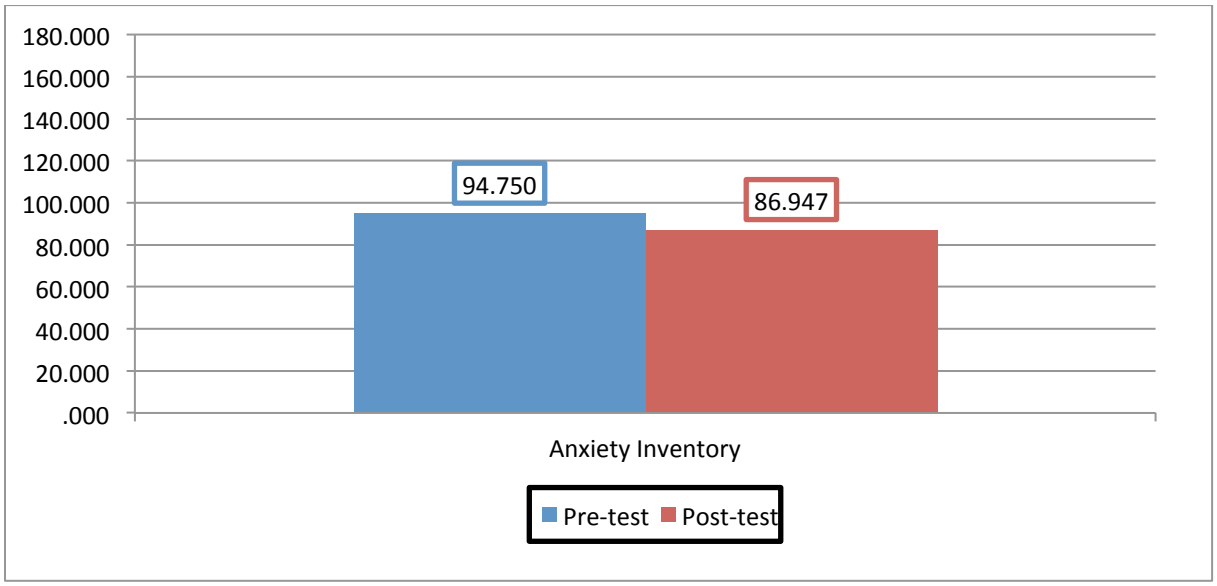


Figure 30. Significant Differences in the Mean Scores of the Experimental Group: Kenny Music Performance Anxiety Inventory

5.7.7.4 *Pre- and post-intervention test measurement scores within the control group*

The Kenny Music Performance Anxiety Inventory scores stayed stable for the control group from pre- to post-intervention testing. The scores are reflected in Figure 31.

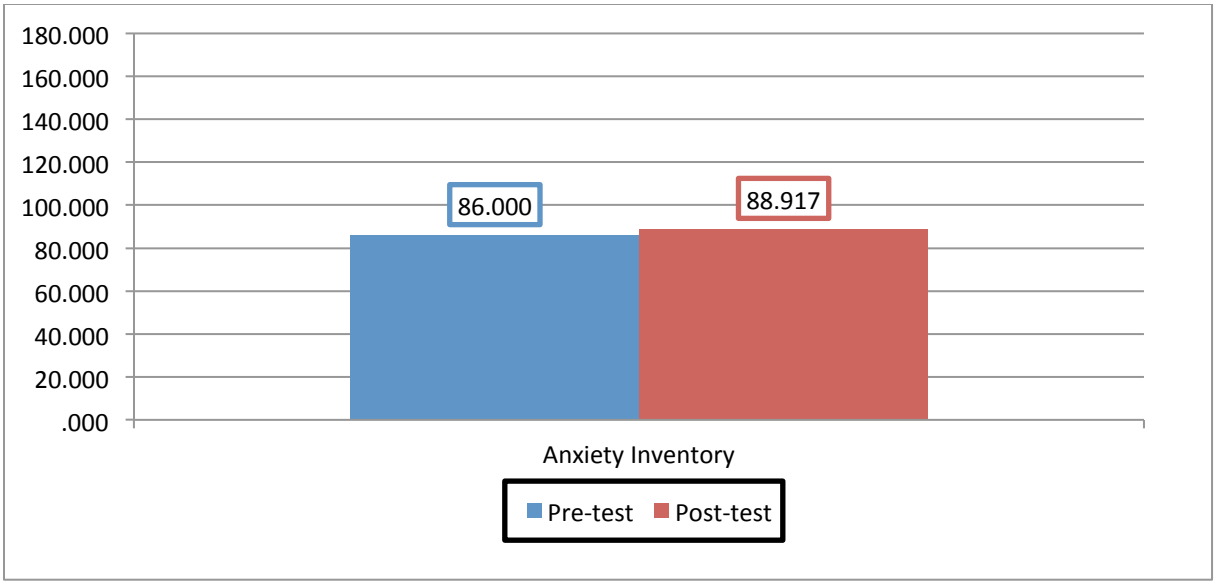


Figure 31. Significant Differences in the Mean Scores of the Control Group: Kenny Music Performance Anxiety Inventory

5.8 Measurements taken over a six-week period

5.8.1 The Concentration Grid

5.8.1.1 Experimental and control groups' results per week

The results for the experimental and control groups on the Concentration Grid are set out in Table 16 and Figure 32.

Table 16. Descriptive Statistics: Concentration Grid

Group		N	Minimum	Maximum	Mean	Std. Deviation
Experimental	Concentration score: Week 1	21	9.000	30.000	19.238	6.300
	Concentration score: Week 2	20	12.000	25.000	18.300	3.854
	Concentration score:	19	8.000	31.000	19.369	5.629

	Week 3					
	Concentration score: Week 4	18	6.000	30.000	18.500	7.139
	Concentration score: Week 5	19	9.000	30.000	18.842	6.336
	Concentration score: Week 6	16	11.000	23.000	18.375	4.395
Control	Concentration score: Week 1	15	8.000	30.000	20.667	6.779
	Concentration score: Week 2	15	6.000	32.000	20.733	7.573
	Concentration score: Week 3	15	12.000	30.000	22.467	5.890
	Concentration score: Week 4	12	2.000	39.000	20.250	9.037
	Concentration score: Week 5	15	11.000	40.000	26.000	8.255
	Concentration score: Week 6	13	1.000	33.000	21.538	7.501

		Total N	p-value	Mann-Whitney U
Mann-Whitney U Test	Concentration score: Week 1	36	0.479	179.500
	Concentration score: Week 2	35	0.132	195.000
	Concentration score: Week 3	34	0.186	180.500
	Concentration score: Week 4	30	0.949	109.500
	Concentration score: Week 5	34	0.016	212.000
	Concentration score: Week 6	29	0.040	150.500

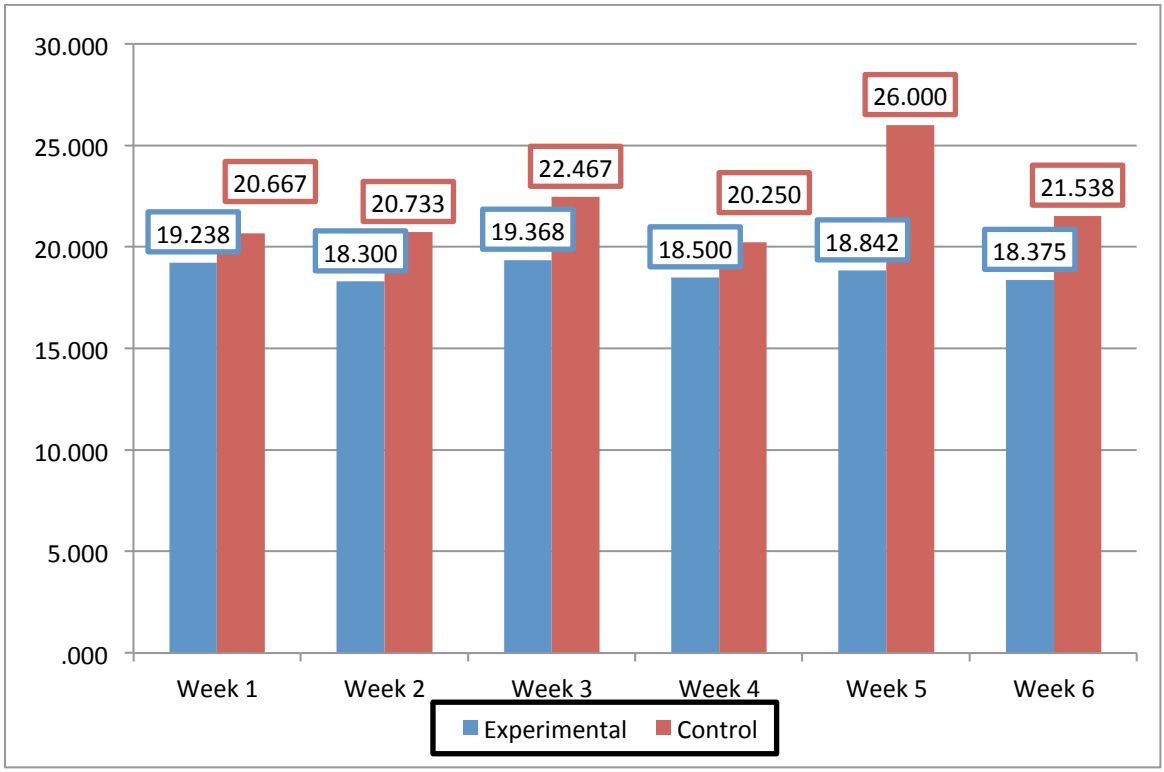


Figure 32. Weekly Data – Concentration Grid

The concentration levels of the experimental and control groups differed significantly from one another during Week 5 (p = 0.016) and Week 6 (p = 0.040) of the measurements. In both weeks, the control group obtained higher concentration scores than the experimental group.

5.8.1.2 Measurements over the six weeks for the experimental and control groups

In respect of the Concentration Grid scores for each group, no significant changes took place. The Concentration Grid scores did not change significantly for either the experimental group or the control group over the period under review. It does not seem as if the intervention had a significant impact on concentration ability, as measured by the Concentration Grid, as indicated in Figure 32 (above).

5.8.2 The Brunel Mood Scale (BRUMS)

5.8.2.1 Experimental and control groups' results per week – Anger

The results for the experimental and control groups on the Brunel Mood Scale – Anger dimension are set out in Table 17 and Figure 33.

Table 17. Descriptive Statistics: Brunel Mood Scale - Anger

Group		N	Minimum	Maximum	Mean	Std. Deviation
Experimental	Week 1	21	.000	10.000	3.333	3.554
	Week 2	20	.000	10.000	2.300	3.511
	Week 3	19	.000	7.000	1.632	2.216
	Week 4	17	.000	9.000	2.294	3.177
	Week 5	19	.000	13.000	2.158	3.877
	Week 6	16	.000	10.000	1.625	3.304
Control	Week 1	14	.000	3.000	.786	1.122
	Week 2	15	.000	2.000	.867	.834
	Week 3	15	.000	3.000	.667	1.047
	Week 4	12	.000	4.000	.667	1.155
	Week 5	15	.000	6.000	.600	1.595
	Week 6	13	.000	7.000	1.231	2.166
		Total N	p-value		Mann-Whitney U	
Mann-Whitney U Test	Week 1	35	0.035		87.000	
	Week 2	35	0.916		147.000	
	Week 3	34	0.206		109.500	
	Week 4	29	0.248		78.000	
	Week 5	34	0.150		108.000	

	Week 6	29	0.697	96.000

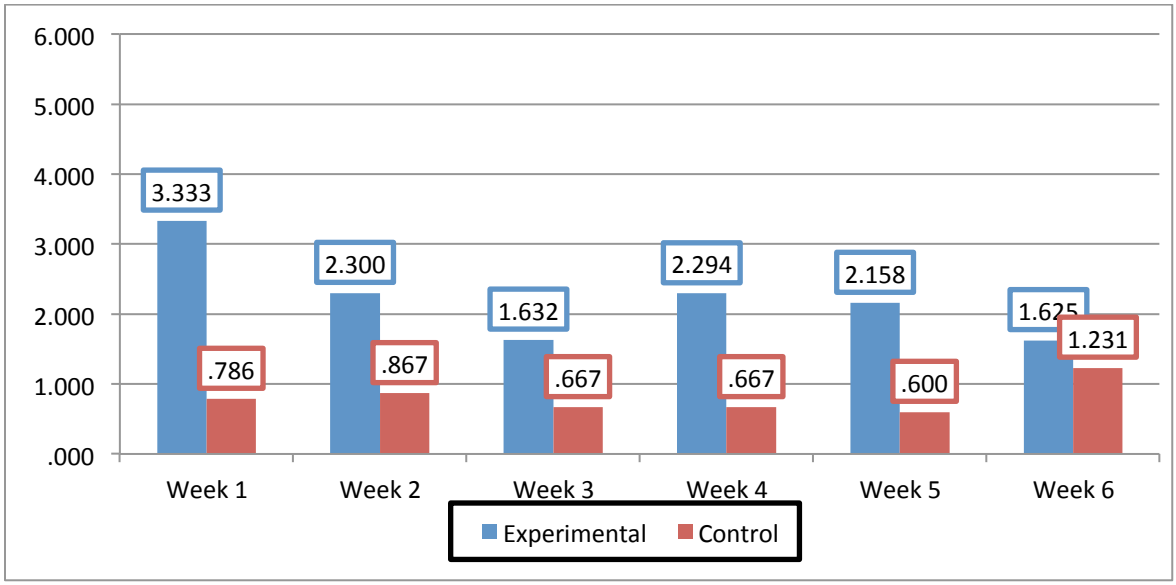


Figure 33. Brunel Mood Scale – Anger

Relatively low mean levels of anger were recorded by the BRUMS. During Week 1, the experimental group showed significantly higher levels of anger than the control group (p = 0.035). Although the experimental group continued to reflect a slightly higher anger score than the control group during Week 2 to Week 6, it was not significantly higher. An interesting trend was noticeable in the experimental group from Week 1, which was the pre-intervention test compared to Week 6, which was the post-intervention test. The mean anger score was reduced from 3.333 to 1.625, which was a meaningful trend in the data.

5.8.2.2 Experimental and control groups' results per week – Confusion

The results for the experimental and control groups on the Brunel Mood Scale – Confusion dimension are set out in Table 18 and Figure 34.

Table 18. Descriptive Statistics: Brunel Mood Scale - Confusion

Group		N	Minimum	Maximum	Mean	Std. Deviation
Experimental	Week 1	21	.000	14.000	4.667	4.408
	Week 2	20	.000	9.000	3.100	3.370
	Week 3	19	.000	10.000	2.789	3.155
	Week 4	17	.000	14.000	2.471	4.403
	Week 5	18	.000	10.000	1.722	2.986
	Week 6	16	.000	10.000	1.938	3.605
Control	Week 1	14	.000	9.000	3.071	3.050
	Week 2	15	.000	12.000	3.267	3.788
	Week 3	15	.000	5.000	1.733	2.017
	Week 4	12	.000	5.000	2.083	1.975
	Week 5	15	.000	4.000	.933	1.534
	Week 6	13	.000	8.000	1.692	2.359
		Total N	p-value		Mann-Whitney U	
Mann-Whitney U Test	Week 1	35	0.376		121.000	
	Week 2	35	0.836		156.000	
	Week 3	34	0.485		123.000	
	Week 4	29	0.352		122.000	
	Week 5	33	0.525		119.500	
	Week 6	29	0.446		119.500	

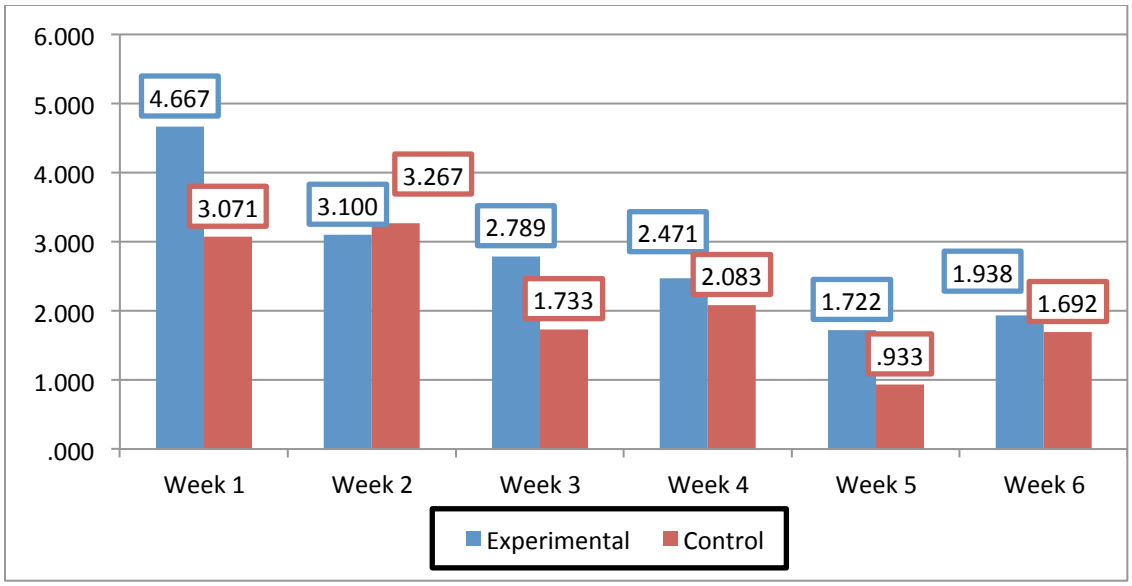


Figure 34. Brunel Mood Scale – Confusion

The experimental and control groups did not differ significantly from one another over the six weeks in terms of their scores on confusion. However, a meaningful shift took place from the pre- to the post-intervention measurement of confusion within the experimental group. The mean confusion score of the experimental group was reduced from 4.667 to 1.938, which revealed a statistical significant improvement (p = 0.039).

5.8.2.3 Experimental and control groups' results per week – Depression

The results for the experimental and control groups on the Brunel Mood Scale – Depression dimension are set out in Table 19 and Figure 35.

Table 19. Descriptive Statistics: Brunel Mood Scale - Depression

Group		N	Minimum	Maximum	Mean	Std. Deviation
Experimental	Week 1	21	.000	12.000	3.476	3.188
	Week 2	20	.000	14.000	2.900	4.266
	Week 3	19	.000	5.000	1.737	1.790

	Week 4	18	.000	14.000	3.111	4.241
	Week 5	19	.000	16.000	2.105	4.122
	Week 6	16	.000	12.000	2.938	4.219
Control	Week 1	14	.000	6.000	.500	1.605
	Week 2	15	.000	10.000	1.467	2.748
	Week 3	15	.000	3.000	.533	1.125
	Week 4	12	.000	3.000	.500	1.168
	Week 5	15	.000	3.000	.533	.990
	Week 6	13	.000	7.000	.923	1.935

		Total N	p-value	Mann-Whitney U
Mann-Whitney U Test	Week 1	35	0.000	33.500
	Week 2	35	0.374	125.000
	Week 3	34	0.020	81.500
	Week 4	30	0.013	54.000
	Week 5	34	0.280	116.000
	Week 6	29	0.184	76.000

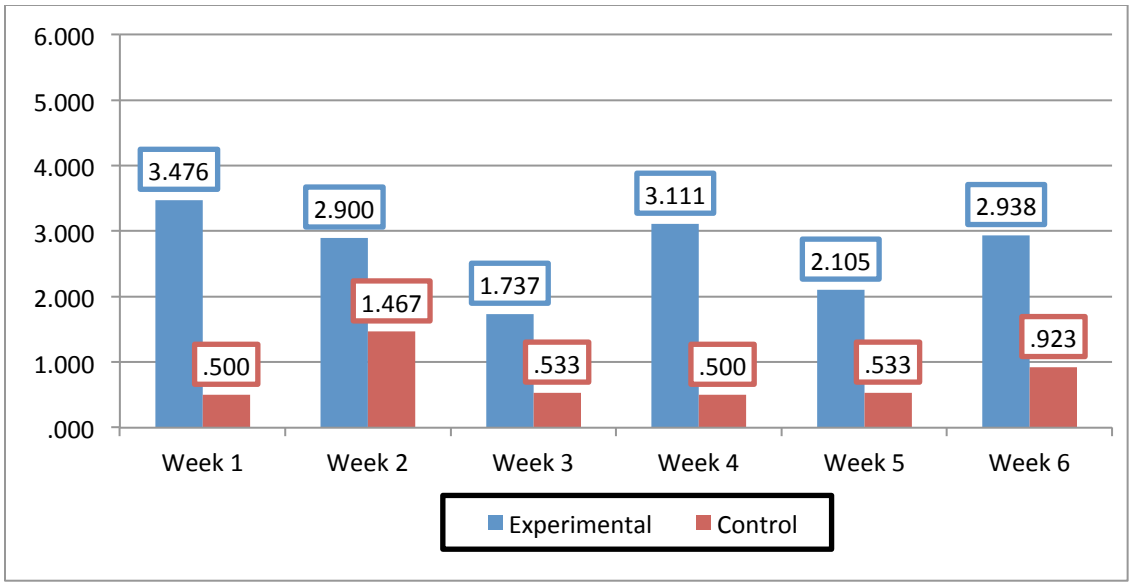


Figure 35. Brunel Mood Scale – Depression

There was a significant difference in the measured levels of depression of the experimental and control groups during Week 1 (p = 0.000), Week 3 (p = 0.020) and Week 4 (p = 0.013). The experimental group showed higher levels of depression than the control group. No significant trend was noticed in the experimental group from the pre- to the post-intervention measurement of depression.

5.8.2.4 Experimental and control groups' results per week – Fatigue

The results for the experimental and control groups on the Brunel Mood Scale – Fatigue dimension are set out in Table 20 and Figure 36.

Table 20. Descriptive Statistics: Brunel Mood Scale - Fatigue

Group		N	Minimum	Maximum	Mean	Std. Deviation
Experimental	Week 1	21	2.000	14.000	6.524	3.203
	Week 2	20	2.000	13.000	7.000	3.756
	Week 3	19	1.000	12.000	7.158	4.018

	Week 4	18	.000	16.000	5.611	4.046
	Week 5	19	.000	16.000	5.947	4.352
	Week 6	16	.000	12.000	5.875	4.225
Control	Week 1	14	.000	8.000	2.929	2.464
	Week 2	15	.000	16.000	4.733	4.682
	Week 3	15	.000	14.000	3.733	3.863
	Week 4	12	.000	16.000	6.083	5.401
	Week 5	15	.000	8.000	2.133	2.669
	Week 6	13	.000	12.000	3.077	3.707

		Total N	p-value	Mann-Whitney U
Mann-Whitney U Test	Week 1	35	0.001	52.500
	Week 2	35	0.085	98.500
	Week 3	34	0.019	75.000
	Week 4	30	0.915	110.500
	Week 5	34	0.005	62.500
	Week 6	29	0.052	60.000

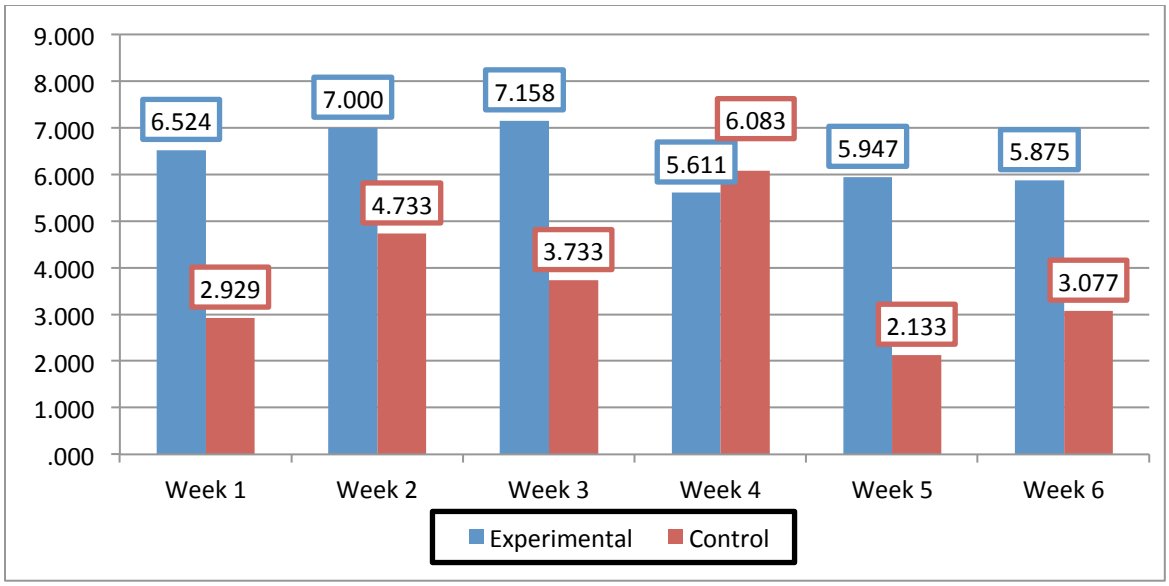


Figure 36. Brunel Mood Scale – Fatigue

The experimental group and the control group differed significantly from one another in Week 1 (p = 0.001), Week 3 (p = 0.019) and Week 4 (p = 0.005) as far as their fatigue levels were concerned. The experimental group showed significantly higher levels of fatigue than the control group.

5.8.2.5 Experimental and control groups' results per week – Tension

The results for the experimental and control groups on the Brunel Mood Scale – Tension dimension are set out in Table 21 and Figure 37.

Table 21. Descriptive Statistics: Brunel Mood Scale - Tension

Group		N	Minimum	Maximum	Mean	Std. Deviation
Experimental	Week 1	21	.000	15.000	5.476	4.697
	Week 2	20	.000	12.000	4.850	4.475
	Week 3	19	.000	10.000	4.105	3.494
	Week 4	18	.000	10.000	3.833	3.204
	Week 5	19	.000	9.000	3.158	3.219

	Week 6	16	.000	10.000	3.313	3.497
Control	Week 1	14	.000	10.000	3.643	3.054
	Week 2	14	1.000	9.000	4.929	2.814
	Week 3	15	.000	10.000	3.333	3.039
	Week 4	12	.000	9.000	2.917	2.575
	Week 5	15	.000	5.000	2.400	1.920
	Week 6	13	.000	7.000	2.385	2.103

		Total N	p-value	Mann-Whitney U
Mann-Whitney U Test	Week 1	35	0.326	118.000
	Week 2	34	0.660	152.500
	Week 3	34	0.564	126.000
	Week 4	30	0.481	91.500
	Week 5	34	0.721	132.000
	Week 6	29	0.807	98.5000

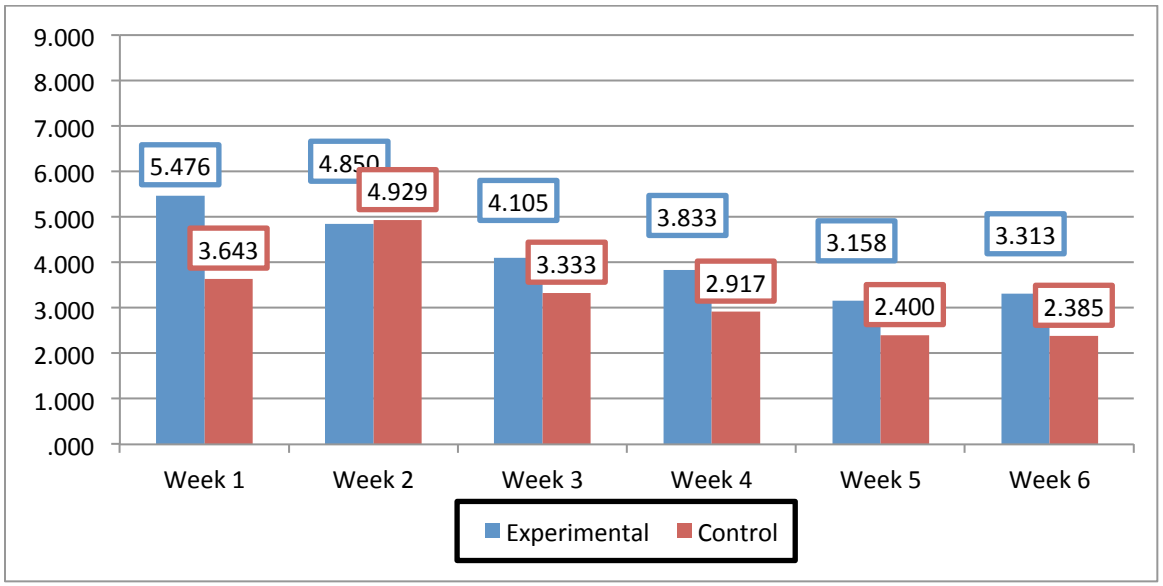


Figure 37. Brunel Mood Scale – Tension

There were no significant differences in the tension measurements of the experimental and control groups over the six weeks. However, the reduction of tension in the experimental group from a mean score of 5.476 to 3.313 was also a noticeable trend in a positive direction.

5.8.2.6 Experimental and control groups' results per week – Vigour

The results for the experimental and control groups on the Brunel Mood Scale – Vigour dimension are set out in Table 22 and Figure 38.

Table 22. Descriptive Statistics: Brunel Mood Scale - Vigour

Group		N	Minimum	Maximum	Mean	Std. Deviation
Experimental	Week 1	21	.000	12.000	7.571	2.908
	Week 2	20	1.000	12.000	6.200	2.949
	Week 3	19	1.000	11.000	7.526	2.932
	Week 4	17	.000	10.000	5.059	3.288
	Week 5	19	.000	15.000	5.158	3.716
	Week 6	16	.000	14.000	4.938	3.678
Control	Week 1	14	4.000	15.000	8.929	3.362
	Week 2	15	.000	12.000	6.067	4.114
	Week 3	15	3.000	12.000	7.600	2.772
	Week 4	12	.000	10.000	5.750	3.696
	Week 5	15	2.000	12.000	6.267	3.011
	Week 6	13	1.000	12.000	4.846	3.288
		Total N	p-value		Mann-Whitney U	
Mann-Whitney U	Week 1	35	0.425		170.500	
	Week 2	35	0.920		147.000	

Test	Week 3	34	0.917	139.500
	Week 4	29	0.491	117.500
	Week 5	34	0.249	175.500
	Week 6	29	0.965	103.000

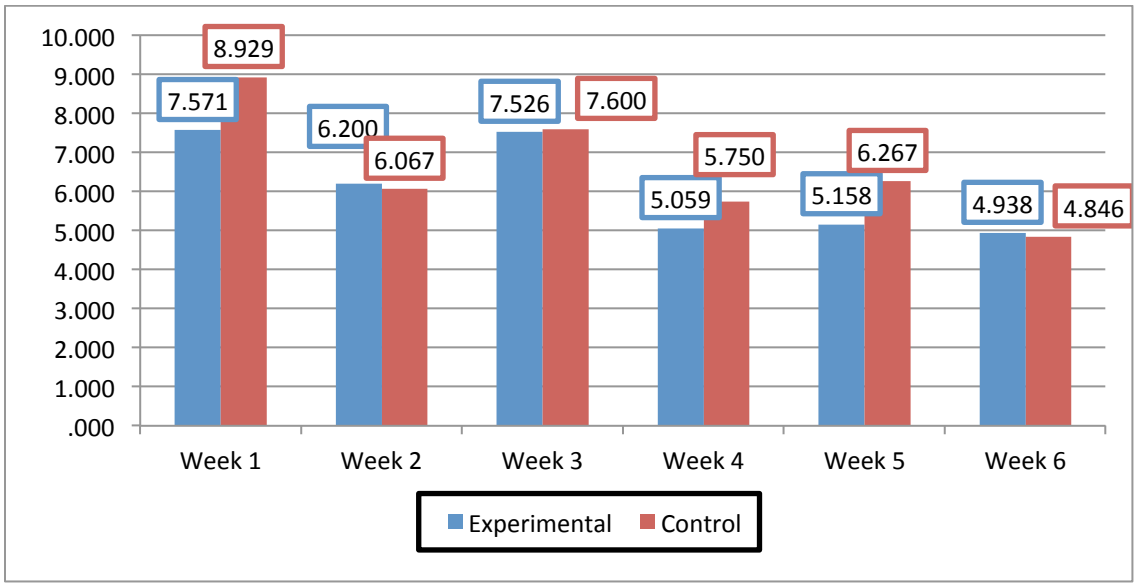


Figure 38. Brunel Mood Scale – Vigour

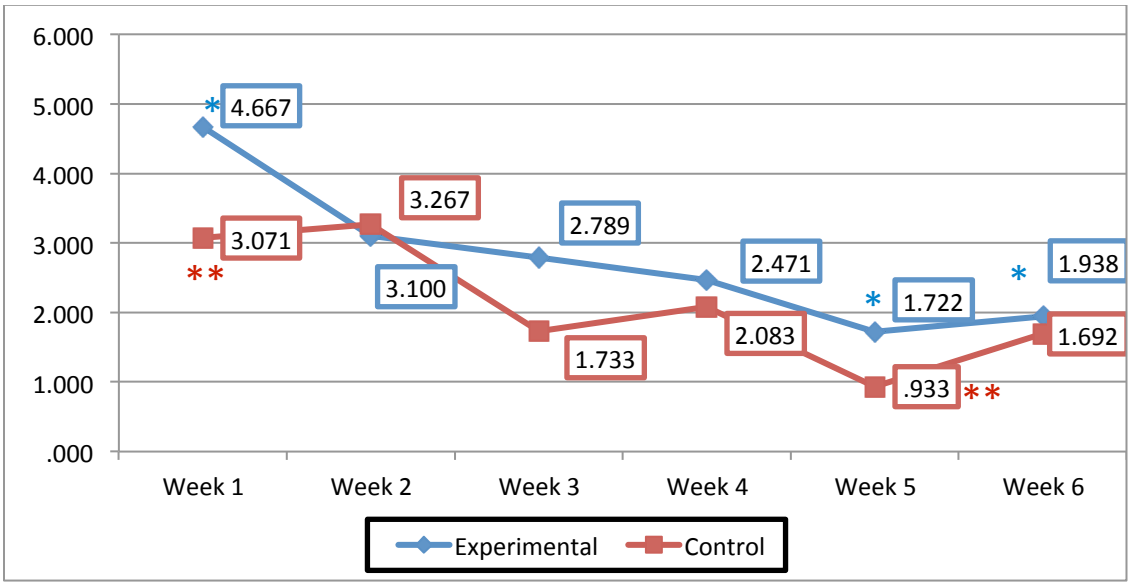
The experimental and control groups did not differ significantly from one another on their vigour measurements over the six weeks.

5.8.2.7 Measurements over the six weeks in the experimental and control groups

Neither the experimental group nor the control group showed any significant changes in their anger, depression or fatigue scores over the six-weeks period under review (see Figure 39).

However, confusion scores changed significantly within the experimental group (p = 0.024), as well as within the control group (p = 0.039). This was determined with the Friedman's two-way analysis of variance by ranks. Within the experimental group, the confusion scores of Week 5 and of Week 6 were significantly lower than the confusion score of Week 1. Within the control

group, the score of Week 5 is significantly lower than the confusion scores of Week 1 and Week 2 (see Figure 39).



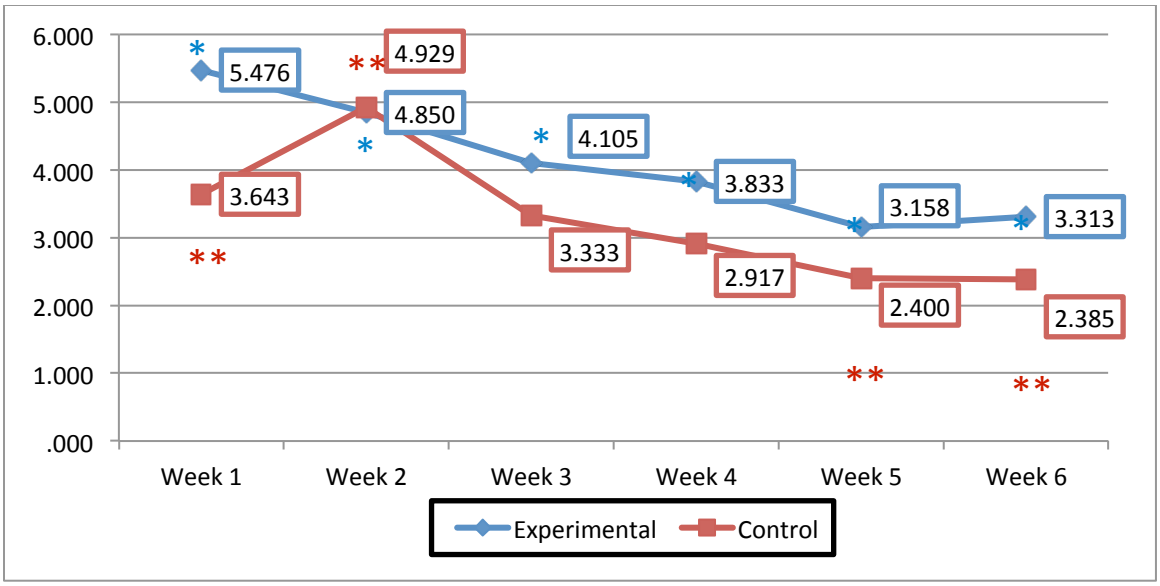
Note:

* Experimental group: The score of Week 1 differed significantly from the score of Week 5; the score of Week 1 differed significantly from the score of Week 6.

** Control group: The score of Week 1 differed significantly from the score of Week 5; the score of Week 2 differed significantly from the score of Week 5.

Figure 39. Brunel Mood Scale – Confusion: Changes within Experimental and Control Groups

The tension scores changed significantly within the control group over the measured six weeks (p = 0.006). The tension score obtained during Week 2 was significantly higher than that recorded in Week 1. The tension scores again dropped significantly during Week 5 and Week 6. No significant changes were present for the experimental group (see Figure 40).



Note:

** Control group: The score of Week 2 was significantly higher than the score of Week 1. Scores of Weeks 5 and 6 were significantly lower than the score of Week 2.

* Experimental group: The scores of Week 1 and Week 3 differed significantly from the score of Weeks 4, 5 and 6; the score of Week 2 differed significantly from the score of Week 6.

Figure 40. Brunel Mood Scale – Tension: Changes within Experimental and Control Groups

The experimental group displayed significant changes in scores on vigour over the six-week period (p = 0.001). The scores of Week 4, Week 5 and Week 6 were significantly lower than the scores obtained in Week 1 and Week 3. The score of Week 6 was also significantly lower than the score for Week 2 (see Figure 40).

5.9 Confounding Variables: Exploring Pre-intervention Test Data in the Sample Group

The confounding variables of gender, musical instrument and year of study are explored in detail in the following sections:

5.9.1 Gender

Three statistically significant differences were found between the measurements for men and women respondents:

- The Five Facet Mindfulness Questionnaire: Non-react items (p = 0.011).
  On the "non-react" items in the Five Facet Mindfulness Questionnaire, it was found that men had a significantly higher score than women (see Figure 42).

- Ryff's Psychological Well-being Scale: Positive relationships with others (p = 0.021).
  Women respondents had a significantly higher average score on "positive relationships with others" than the men respondents (see Figure 43).

- Concentration Grid: First measurement (p = 0.017).
  Women had a significantly higher concentration score than men respondents (see Figure 48).

5.9.1.1 Male and female groups' results – Bull's Mental Skills Questionnaire

The results for the male and female groups on the Bull's Mental Skills Questionnaire are set out in Table 23 and Figure 41.

Table 23. Descriptive Statistics: Bull's Mental Skills Questionnaire: Gender

Group		N	Minimum	Maximum	Mean	Std. Deviation
Male	Imagery ability	15	8.000	24.000	18.467	4.121
	Mental preparation	15	9.000	24.000	18.667	4.546
	Self-confidence	15	10.000	24.000	16.200	4.930
	Anxiety and worry management	15	4.000	20.000	11.867	5.276
	Concentration ability	14	8.000	24.000	15.929	4.358
	Relaxation ability	15	4.000	24.000	15.400	7.089
	Motivation	15	7.000	23.000	16.267	4.727
Female	Imagery ability	20	8.000	22.000	17.250	3.477
	Mental preparation	21	11.000	23.000	18.095	3.686
	Self-confidence	20	6.000	24.000	13.400	4.569

	Anxiety and worry management	21	4.000	22.000	10.238	4.710
	Concentration ability	19	7.000	22.000	12.895	4.053
	Relaxation ability	21	5.000	22.000	12.619	4.748
	Motivation	21	7.000	23.000	14.143	4.552

		Total N	p-value	Mann-Whitney U
Mann-Whitney U Test	Imagery ability	35	0.298	119.000
	Mental preparation	36	0.498	136.500
	Self-confidence	35	0.186	110.500
	Anxiety and worry management	36	0.318	126.500
	Concentration ability	33	0.055	80.500
	Relaxation ability	36	0.193	117.000
	Motivation	36	0.139	111.500

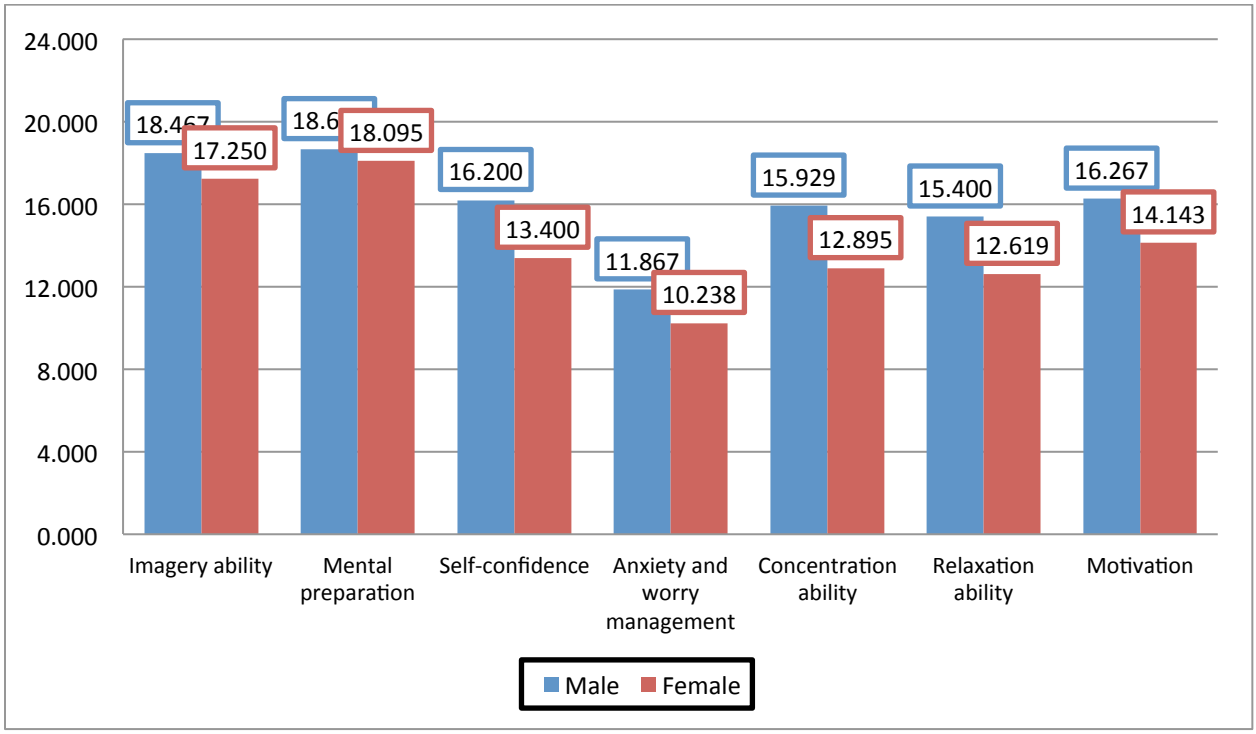


Figure 41. Bull's Mental Skills Questionnaire: Gender

5.9.1.2 Male and female groups' results – Five Facet Mindfulness Questionnaire

The results for the male and female groups on the Five Facet Mindfulness Questionnaire are set out in Table 24 and Figure 42.

Table 24. Descriptive Statistics: Five Facet Mindfulness Questionnaire: Gender

Group		N	Minimum	Maximum	Mean	Std. Deviation
Male	Observe	14	24.000	34.000	27.714	2.812
	Describe	14	18.000	40.000	25.857	6.780
	Act with Awareness	14	13.000	34.000	23.500	6.768
	Nonjudge	14	19.000	31.000	20.857	5.749
	Nonreact	14	13.000	30.000	22.786	4.492
Female	Observe	20	16.000	37.000	27.600	6.218
	Describe	20	17.000	39.000	29.350	6.393
	Act with Awareness	21	15.000	34.000	24.095	5.881
	Nonjudge	21	12.000	32.000	23.905	5.838
	Nonreact	19	15.000	24.000	19.263	2.642
		Total N	p-value		Mann-Whitney U	
Mann-Whitney U Test	Observe	34	0.599		155.000	
	Describe	34	0.131		183.000	
	Act with Awareness	35	0.749		156.500	
	Nonjudge	35	0.121		193.000	
	Nonreact	33	0.011		64.000	

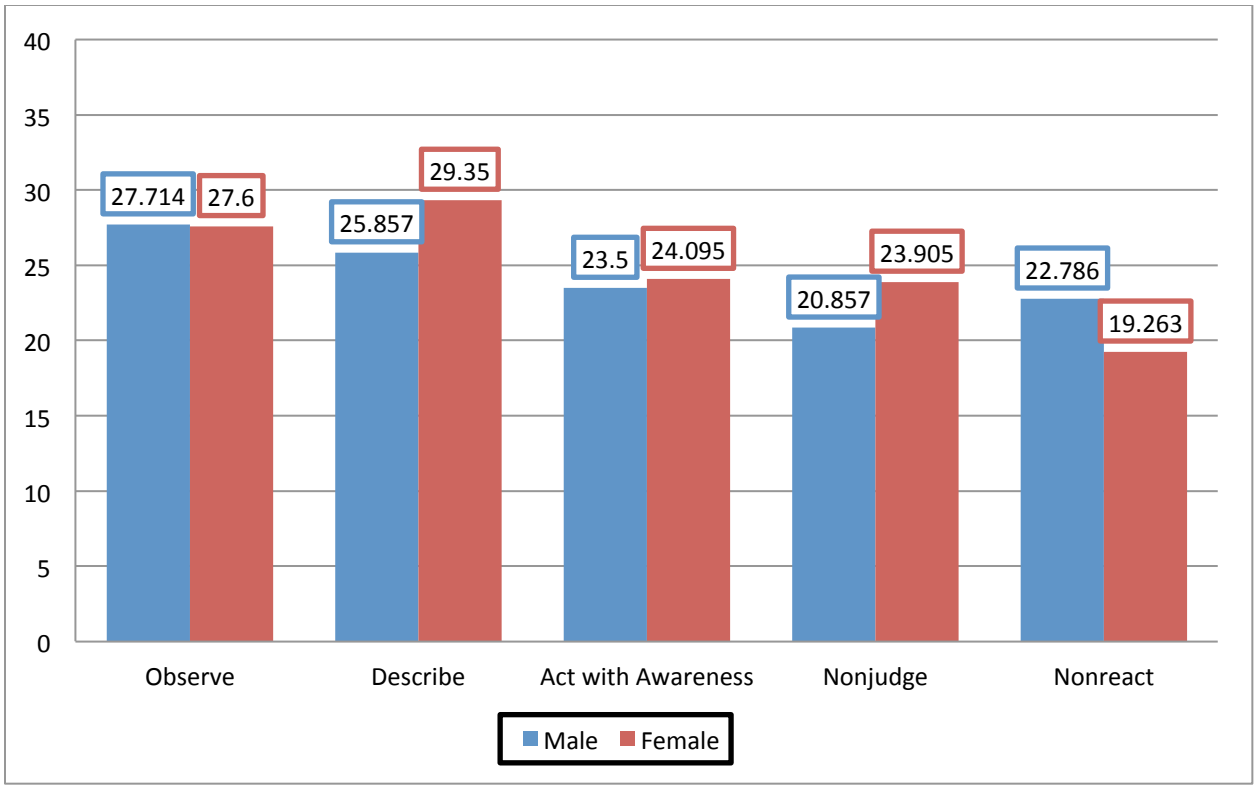


Figure 42. Five Facet Mindfulness Questionnaire: Gender

5.9.1.3 Male and female groups' results – Ryff's Psychological Well-being Scale

The results for the male and female groups on the Ryff's Psychological Well-being Scale are set out in Table 25 and Figure 43.

Table 25. Descriptive Statistics: Ryff's Psychological Well-being Scale: Gender

Group		N	Minimum	Maximum	Mean	Std. Deviation
Male	Autonomy	15	8.000	18.000	13.867	2.972
	Positive relationships with others	15	4.000	17.000	11.467	3.777
	Environmental mastery	15	9.000	17.000	11.667	2.225
	Personal growth	15	9.000	18.000	15.867	2.531

	Purpose in life	15	8.000	18.000	13.867	3.583
	Self acceptance	15	9.000	18.000	13.800	2.624
Female	Autonomy	21	8.000	17.000	12.476	2.502
	Positive relationships with others	21	7.000	18.000	14.286	3.422
	Environmental mastery	21	3.000	15.000	11.952	2.889
	Personal growth	21	14.000	18.000	16.476	1.470
	Purpose in life	21	8.000	18.000	15.238	2.586
	Self acceptance	21	5.000	18.000	13.143	3.244

		Total N	p-value	Mann-Whitney U
Mann-Whitney U Test	Autonomy	36	0.160	114.500
	Positive relationships with others	36	0.021	229.000
	Environmental mastery	36	0.243	193.500
	Personal growth	36	0.754	167.000
	Purpose in life	36	0.286	191.500
	Self acceptance	36	0.639	143.000

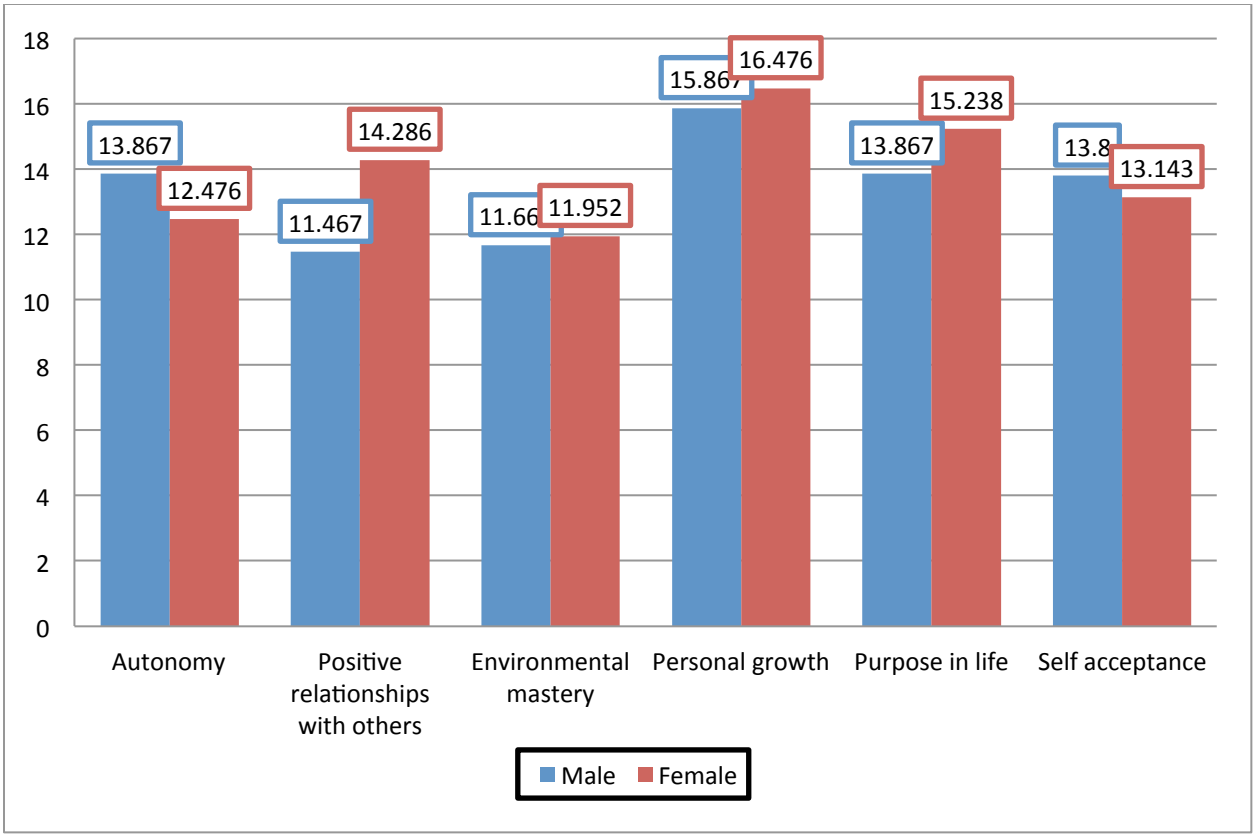


Figure 43. Ryff's Psychological Well-being Scale: Gender

5.9.1.4 Male and female groups' results – Competitive State Anxiety Inventory-2

The results for the male and female groups on the Competitive State Anxiety Inventory-2 are set out in Table 26 and Figure 44.

Table 26. Descriptive Statistics: Competitive State Anxiety Inventory-2: Gender

Group		N	Minimum	Maximum	Mean	Std. Deviation
Male	Cognitive state anxiety	15	15.00	33.000	24.533	5.938
	Somatic state anxiety	15	12.000	35.000	22.133	17.863
	State self-confidence	15	14.000	34.000	23.933	7.391
Female	Cognitive state anxiety	21	19.000	33.000	27.333	4.293
	Somatic state anxiety	21	14.000	35.000	26.095	6.624

	State self-confidence	21	10.000	28.000	19.429	5.608
		Total N	p-value		Mann-Whitney U	
Mann-Whitney U Test	Cognitive state anxiety	36	0.197		197.500	
	Somatic state anxiety	36	0.112		207.000	
	State self-confidence	36	0.077		102.500	

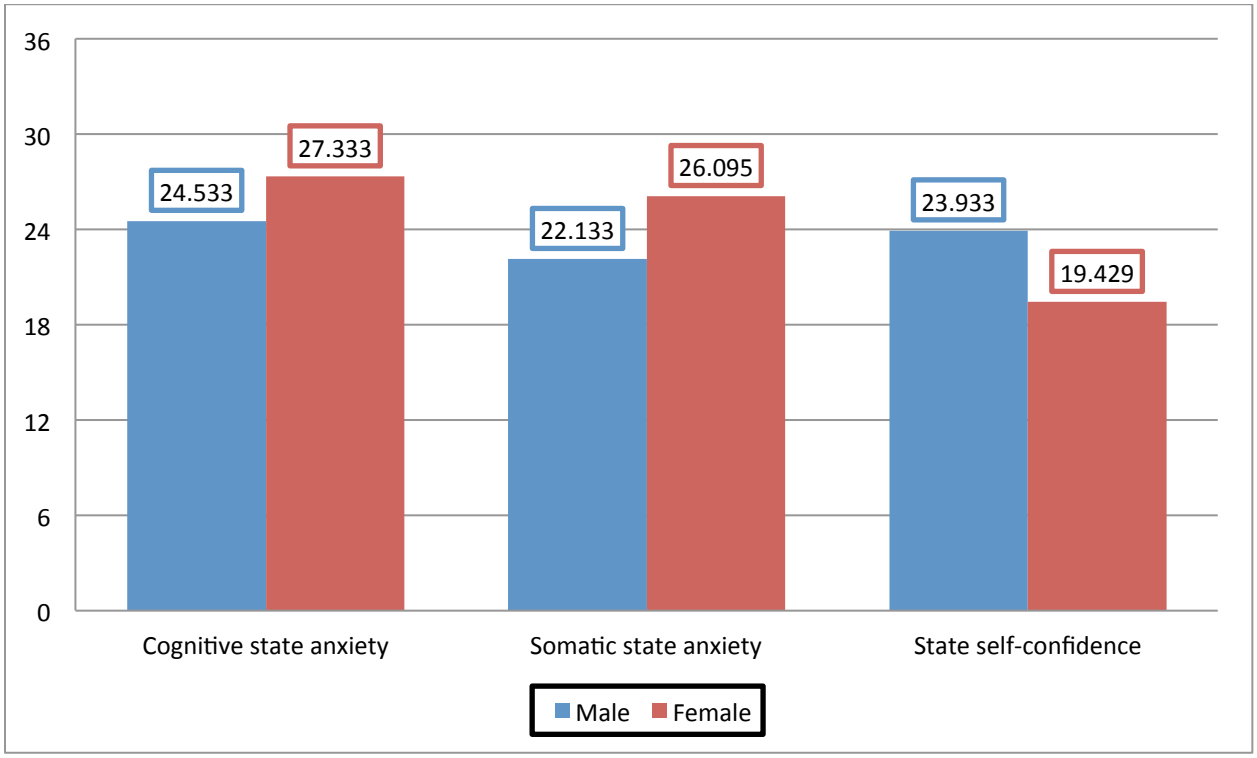


Figure 44. Competitive State Anxiety Inventory-2: Gender

5.9.1.5 Male and female groups' results – Perceptions of Success Questionnaire

The results for the male and female groups on the Perceptions of Success Questionnaire are set out in Table 27 and Figure 45.

Table 27. Descriptive Statistics: Perceptions of Success Questionnaire: Gender

Group		N	Minimum	Maximum	Mean	Std. Deviation
Male	Ego	15	6.00	30.000	19.333	6.307
	Task	15	22.000	30.000	27.000	3.251
Female	Ego	20	6.000	30.000	16.000	7.269
	Task	20	16.000	30.000	25.550	4.394
		Total N	p-value		Mann-Whitney U	
Mann-Whitney U Test	Ego	35	0.077		97.000	
	Task	35	0.370		123.500	

Figure 45. Perceptions of Success Questionnaire: Gender

5.9.1.6 Male and female groups' results – Self-theory Questionnaire

The results for the male and female groups on the Self-theory Questionnaire are set out in Table 28 and Figure 46.

Table 28. Descriptive Statistics: Self-theory Questionnaire: Gender

Group		N	Minimum	Maximum	Mean	Std. Deviation
Male	Growth mindset	15	12.00	18.000	16.133	1.846
	Fixed mindset	15	4.000	10.000	7.733	1.624
Female	Growth mindset	21	11.000	18.000	16.476	1.833
	Fixed mindset	21	3.000	14.000	7.857	2.797
		Total N	p-value		Mann-Whitney U	
Mann-Whitney U Test	Growth mindset	36	0.445		180.500	
	Fixed mindset	36	0.935		155.000	

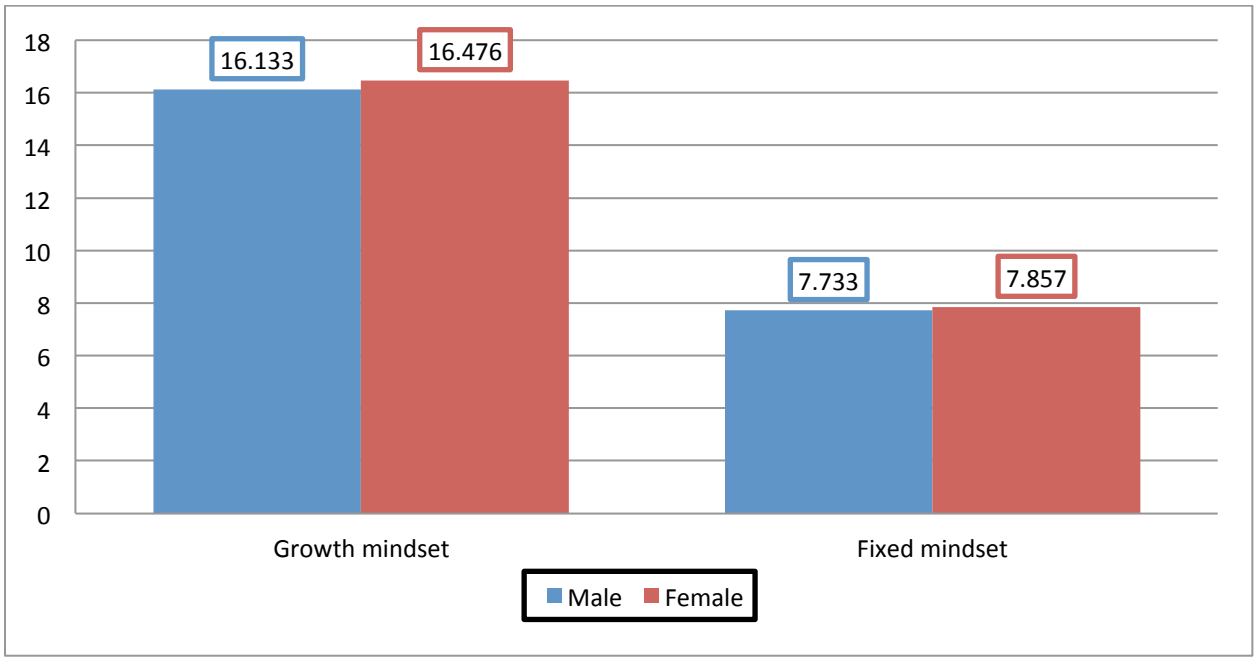


Figure 46. Self-theory Questionnaire: Gender

5.9.1.7 *Male and female groups' results – Kenny Music Performance Anxiety Inventory*

The results for the male and female groups on the Kenny Music Performance Anxiety Inventory are set out in Table 29 and Figure 47.

Table 29. Descriptive Statistics: Kenny Music Performance Anxiety Inventory: Gender

Group		N	Minimum	Maximum	Mean	Std. Deviation
Male	Anxiety Inventory	14	34.000	119.000	84.929	23.814
Female	Anxiety Inventory	21	64.000	136.000	95.048	21.371
		Total N	p-value		Mann-Whitney U	
Mann-Whitney U Test	Anxiety Inventory	35	0.320		176.500	

Figure 47. Kenny Music Performance Anxiety Inventory: Gender

5.9.1.8 Male and female groups' results – Concentration Grid

The results for the male and female groups on the Concentration Grid are set out in Table 30 and Figure 48.

Table 30. Descriptive Statistics: Concentration Grid: Gender

Group		N	Minimum	Maximum	Mean	Std. Deviation
Male	Score	15	8.000	28.000	16.667	6.184
Female	Score	21	14.000	30.000	22.095	5.752
		Total N	p-value		Mann-Whitney U	
Mann-Whitney U Test	Score	36	0.017		231.500	

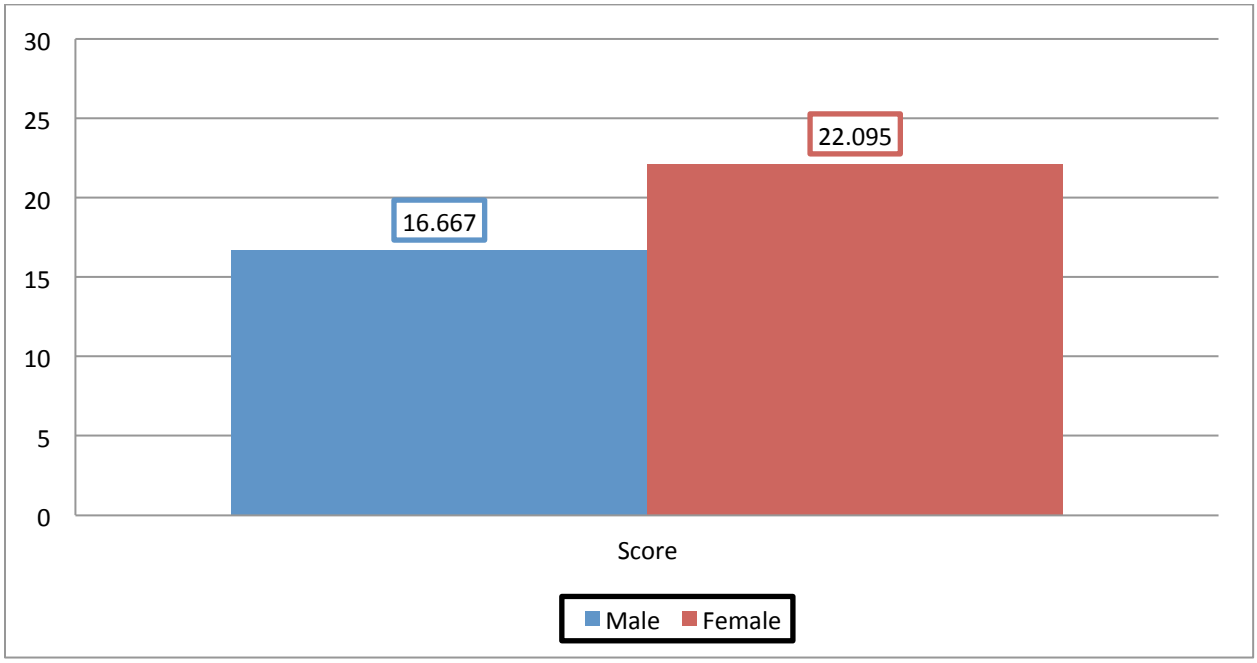


Figure 48. Concentration Grid: Gender

5.9.1.9 Male and female groups' results – The Brunel Mood Scale

The results for the male and female groups on The Brunel Mood Scale are set out in Table 31 and Figure 49.

Table 31. Descriptive Statistics: Brunel Mood Scale: Gender

Group		N	Minimum	Maximum	Mean	Std. Deviation
Male	Anger	14	.000	10.000	3.500	3.917
	Confusion	14	.000	12.000	4.000	4.038
	Depression	14	.000	10.000	3.071	3.099
	Fatigue	14	1.000	10.000	5.071	2.758
	Tension	14	.000	15.000	4.143	4.185
	Vigour	14	6.000	12.000	8.857	1.955
Female	Anger	21	.000	8.000	1.524	2.135
	Confusion	21	.000	14.000	4.048	3.993
	Depression	21	.000	12.000	1.762	2.930
	Fatigue	21	.000	14.000	5.095	3.832
	Tension	21	.000	14.000	5.143	4.210
	Vigour	21	.000	15.000	7.619	3.667
		Total N	p-value		Mann-Whitney U	
Mann-Whitney U Test	Anger	35	0.187		109.500	
	Confusion	35	0.892		151.000	
	Depression	35	0.078		96.500	
	Fatigue	35	0.786		139.000	
	Tension	35	0.477		168.000	
	Vigour	35	0.149		104.500	

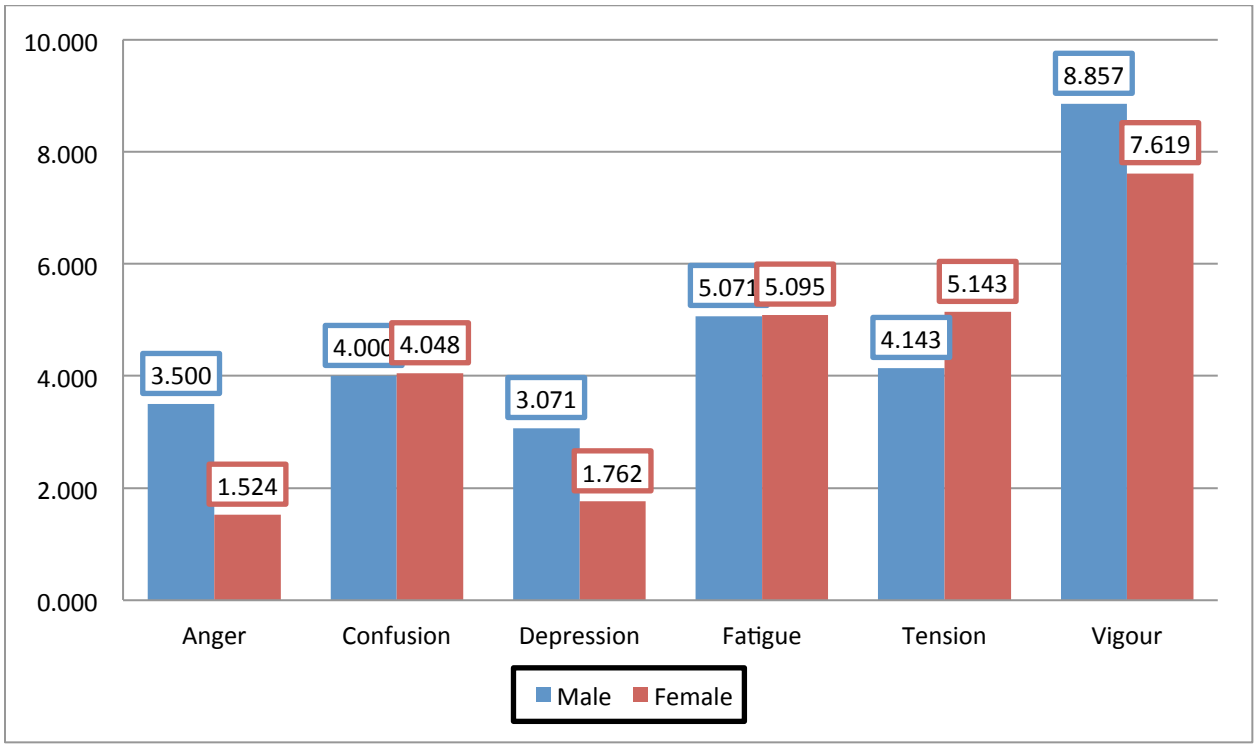


Figure 49. Brunel Mood Scale: Gender

5.9.2 Musical Instruments

Seven statistically significant differences were found between students with piano as a first instrument, compared to the rest of the students (voice, violin, flute, recorder and guitar as first instrument):

- the Five Facet Mindfulness Questionnaire: Act with awareness (p = 0.010).
  Respondents with piano as first instrument had a significantly lower score on acting with awareness than respondents with other first instruments (see Figure 51).
- the Perceptions of Success Questionnaire: Task (p = 0.019).
  Respondents with piano as their first instrument had a significantly higher task score than the rest of the respondents (see Figure 54).
- the Kenny Music Performance Anxiety Inventory: (p = 0.046).
  The average score of students with piano as their first instrument on the Kenny Performance Anxiety Inventory was significantly higher than the score of the rest of the respondents (see Figure 56).

- Brunel Mood Scale
  - Anger: (p = 0.007).
  - Depression: (p = 0.004).
  - Fatigue: (p = 0.017).
  - Tension: (p = 0.026).

Students with piano as their first instruments had a significantly higher score than the rest on anger, depression, fatigue and tension (see Figure 58).

5.9.2.1 Voice, violin, flute, recorder, guitar and piano groups' results – Bull's Mental Skills Questionnaire

The results for the voice, violin, flute, recorder, guitar and piano groups on the Bull's Mental Skills Questionnaire are set out in Table 32 and Figure 50.

Table 32. Descriptive Statistics: Bull's Mental Skills Questionnaire: Instrument

Group		N	Minimum	Maximum	Mean	Std. Deviation
Voice, Violin, Flute, Recorder, Guitar	Imagery ability	12	8.00	22.00	17.500	4.101
	Mental preparation	13	9.000	23.000	17.923	4.821
	Self-confidence	13	7.000	24.000	15.000	4.672
	Anxiety and worry management	13	6.000	20.000	11.692	4.441
	Concentration ability	11	10.000	22.000	16.091	3.780
	Relaxation ability	13	7.000	22.000	14.846	4.355
	Motivation	13	7.000	23.000	16.154	4.651
Piano	Imagery ability	23	8.000	24.000	17.913	3.654
	Mental preparation	23	11.000	24.000	18.565	3.578

	Self-confidence	22	6.000	24.000	14.364	5.066
	Anxiety and worry management	23	4.000	22.000	10.478	5.255
	Concentration ability	22	7.000	24.000	13.227	4.439
	Relaxation ability	23	4.000	24.000	13.174	6.644
	Motivation	23	7.000	23.000	14.391	4.678

		Total N	p-value	Mann-Whitney U
Mann-Whitney U Test	Imagery ability	35	0.944	140.000
	Mental preparation	36	0.868	154.500
	Self-confidence	35	0.631	129.000
	Anxiety and worry management	36	0.330	120.000
	Concentration ability	33	0.055	71.000
	Relaxation ability	36	0.338	120.500
	Motivation	36	0.283	117.000

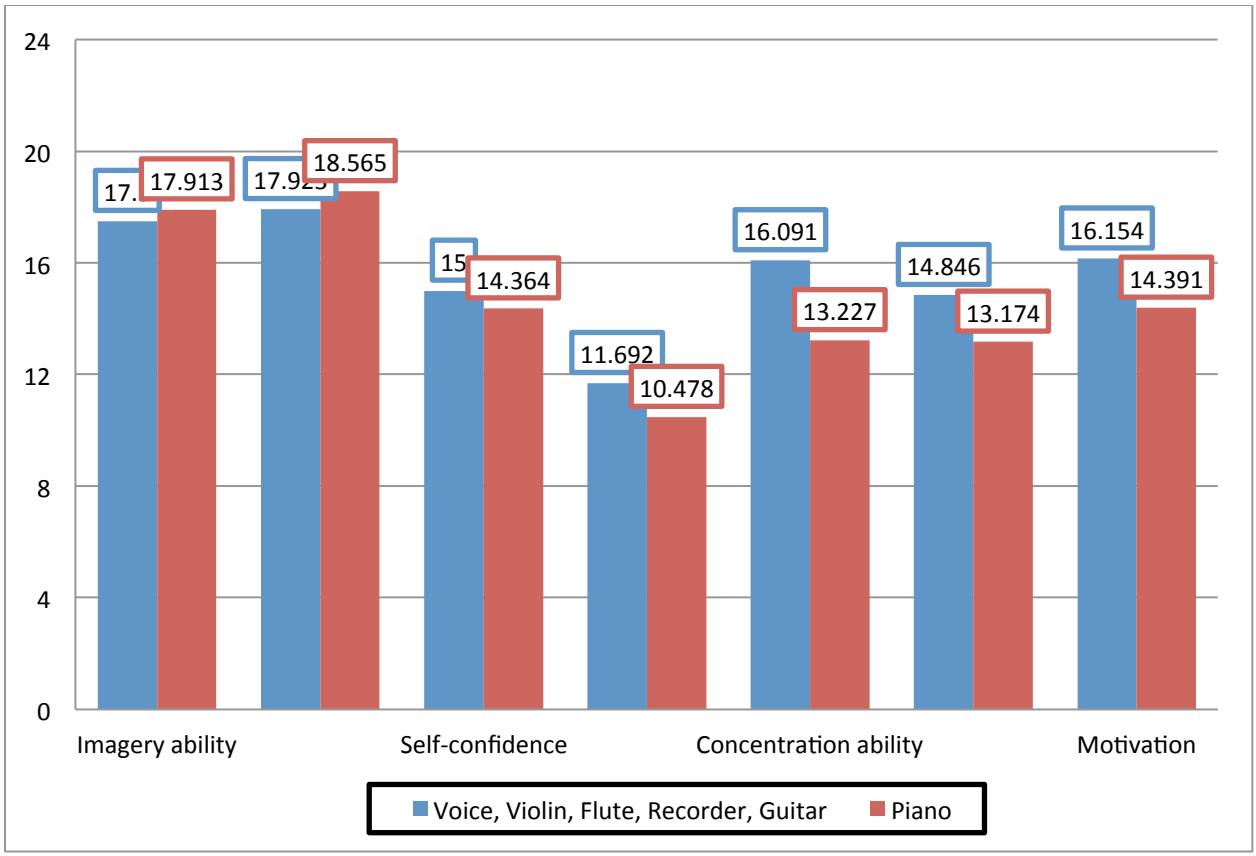


Figure 50. Bull's Mental Skills Questionnaire: Instrument

5.9.2.2 *Voice, violin, flute, recorder, guitar and piano groups' results – Five Factor Mindfulness Questionnaire*

The results for the voice, violin, flute, recorder, guitar and piano groups on the Five Factor Mindfulness Questionnaire are set out in Table 33 and Figure 51.

Table 33. Descriptive Statistics: Five Factor Mindfulness Questionnaire: Instrument

Group		N	Minimum	Maximum	Mean	Std. Deviation
Voice, Violin, Flute,	Observe	12	16.00	37.000	28.333	5.449
	Describe	12	17.000	37.000	28.333	5.087

Recorder, Guitar	Act with Awareness	13	18.000	34.000	27.308	5.297
	Nonjudge	13	12.000	32.000	23.462	5.237
	Nonreact	11	18.000	27.000	21.818	2.676
Piano	Observe	22	16.000	34.000	27.273	4.891
	Describe	22	18.000	40.000	27.682	7.517
	Act with Awareness	22	13.000	34.000	21.818	5.803
	Nonjudge	22	9.000	32.000	22.227	6.345
	Nonreact	22	13.000	30.000	20.227	4.352

		Total N	p-value	Mann-Whitney U
Mann-Whitney U Test	Observe	34	0.600	117.500
	Describe	34	0.800	125.000
	Act with Awareness	35	0.010	68.000
	Nonjudge	35	0.707	132.000
	Nonreact	33	0.129	81.500

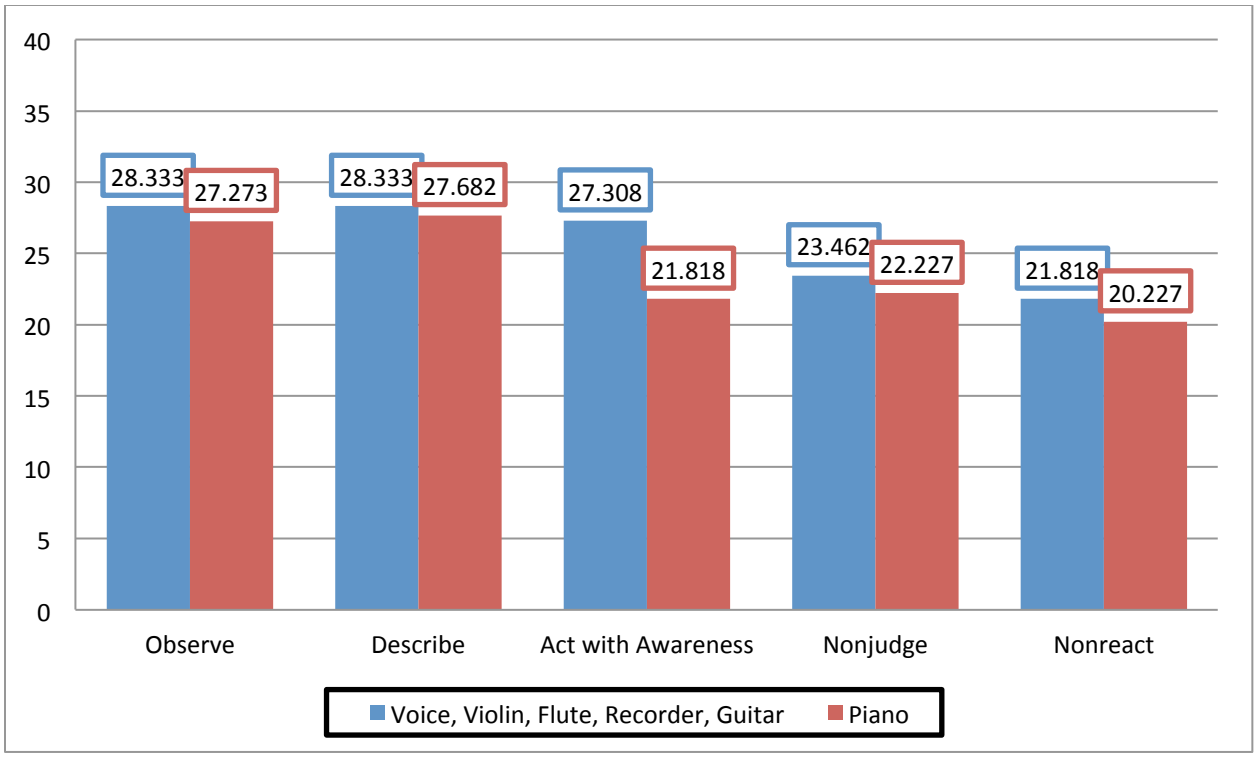


Figure 51. Five Facet Mindfulness Questionnaire: Instrument

5.9.2.3 *Voice, violin, flute, recorder, guitar and piano groups' results – Ryff's Psychological Well-being Scale*

The results for the voice, violin, flute, recorder, guitar and piano groups on the Ryff's Psychological Well-being Scale are set out in Table 34 and Figure 52.

Table 34. Descriptive Statistics: Ryff's Psychological Well-being Scale: Instrument

Group		N	Minimum	Maximum	Mean	Std. Deviation
Voice, Violin, Flute, Recorder, Guitar	Autonomy	13	8.000	18.000	12.692	2.562
	Positive relationships with others	13	8.000	18.000	14.308	3.224
	Environmental mastery	13	9.000	15.000	11.769	2.006

	Personal growth	13	14.000	18.000	16.154	1.405
	Purpose in life	13	11.000	18.000	15.385	2.180
	Self acceptance	13	10.000	18.000	13.538	2.331
Piano	Autonomy	23	8.000	18.000	13.261	2.895
	Positive relationships with others	23	4.000	18.000	12.435	3.986
	Environmental mastery	23	3.000	17.000	11.870	2.927
	Personal growth	23	9.000	18.000	16.261	2.260
	Purpose in life	23	8.000	18.000	14.261	3.453
	Self acceptance	23	5.000	18.000	13.348	3.338

		Total N	p-value	Mann-Whitney U
Mann-Whitney U Test	Autonomy	36	0.763	158.500
	Positive relationships with others	36	0.159	107.000
	Environmental mastery	36	0.641	163.500
	Personal growth	36	0.407	174.000
	Purpose in life	36	0.472	128.000
	Self acceptance	36	0.855	155.000

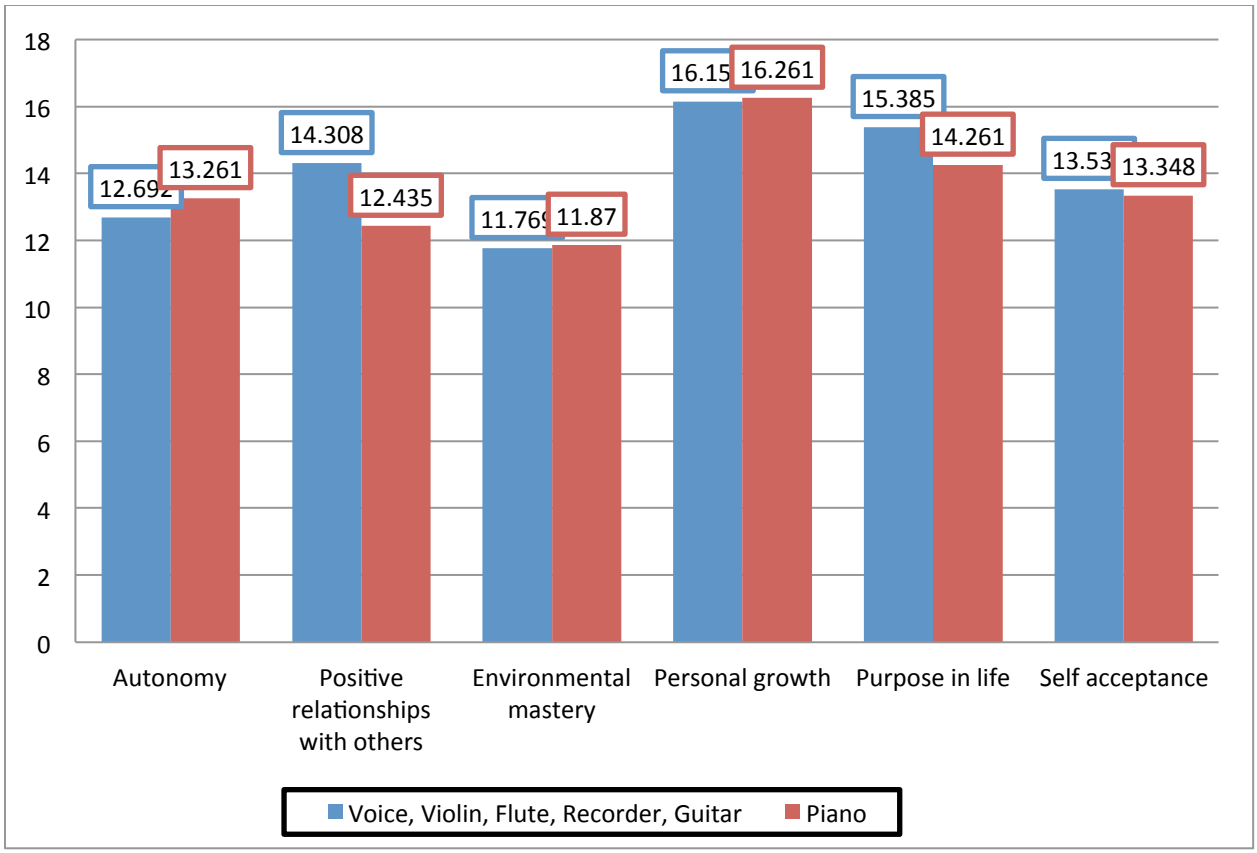


Figure 52. Ryff's Psychological Well-being Scale: Instrument

5.9.2.4 Voice, violin, flute, recorder, guitar and piano groups' results – Competitive State Anxiety Inventory-2

The results for the voice, violin, flute, recorder, guitar and piano groups on the Competitive State Anxiety Inventory-2 are set out in Table 35 and Figure 53.

Table 35. Descriptive Statistics: Competitive State Anxiety Inventory-2: Instrument

Group		N	Minimum	Maximum	Mean	Std. Deviation
Voice, Violin, Flute,	Cognitive state anxiety	13	18.00	32.000	25.077	4.405
	Somatic state anxiety	13	14.000	31.000	21.769	5.002

Recorder, Guitar	State self-confidence	13	13.000	32.000	22.000	5.244
Piano	Cognitive state anxiety	23	15.000	33.000	26.783	5.534
	Somatic state anxiety	23	12.000	35.000	25.957	8.076
	State self-confidence	23	10.000	34.000	20.913	7.482

		Total N	p-value	Mann-Whitney U
Mann-Whitney U Test	Cognitive state anxiety	36	0.221	186.500
	Somatic state anxiety	36	0.083	202.000
	State self-confidence	36	0.563	132.000

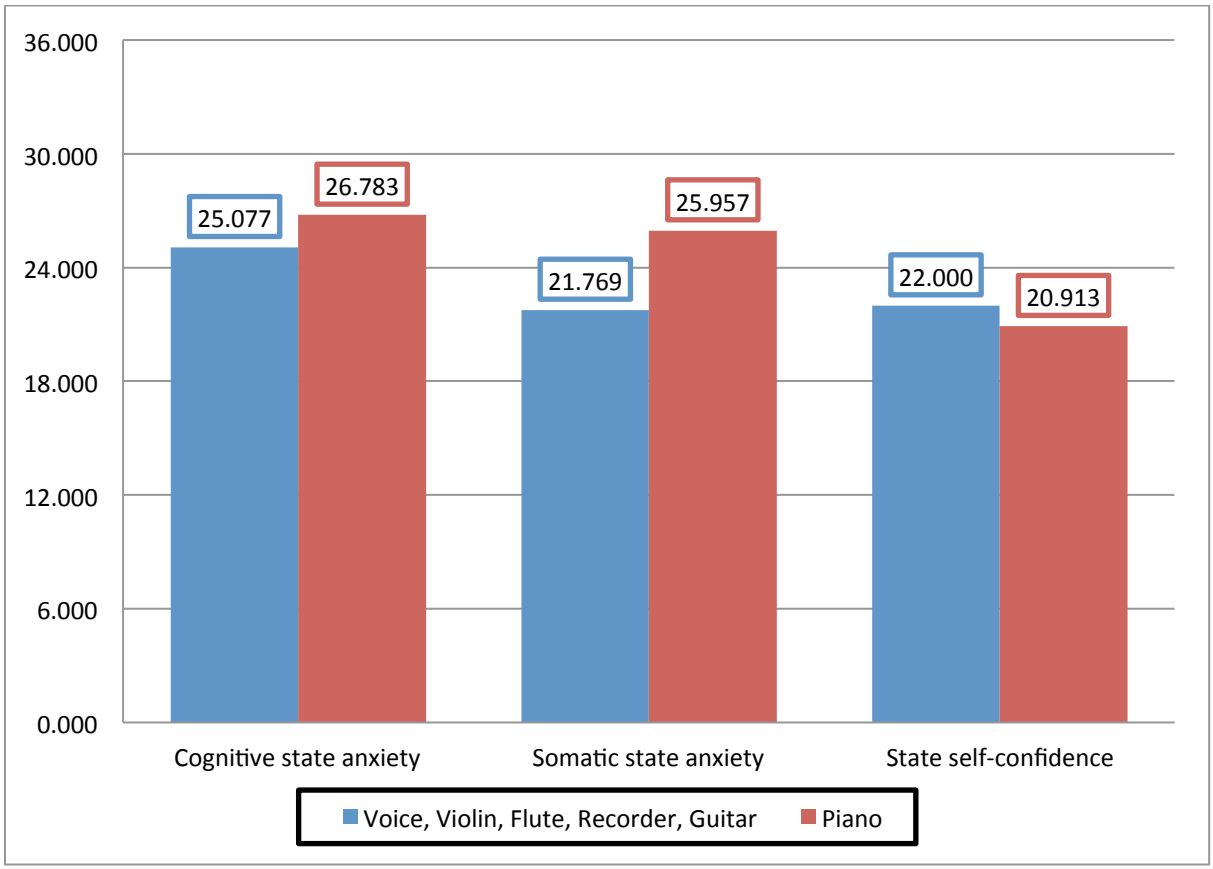


Figure 53. Competitive State Anxiety Inventory-2: Instrument

5.9.2.5 Voice, violin, flute, recorder, guitar and piano groups' results – Perceptions of Success Questionnaire

The results for the voice, violin, flute, recorder, guitar and piano groups on the Perceptions of Success Questionnaire are set out in Table 36 and Figure 54.

Table 36. Descriptive Statistics: Perceptions of Success Questionnaire: Instrument

Group		N	Minimum	Maximum	Mean	Std. Deviation
Voice, Violin, Flute, Recorder, Guitar	Ego	12	6.000	23.000	18.833	5.305
	Task	12	16.000	30.000	24.250	3.934
Piano	Ego	23	6.000	30.000	18.652	7.749
	Task	23	17.000	30.000	27.174	3.663
		Total N	p-value		Mann-Whitney U	
Mann-Whitney U Test	Ego	35	0.280		169.000	
	Task	35	0.019		204.500	

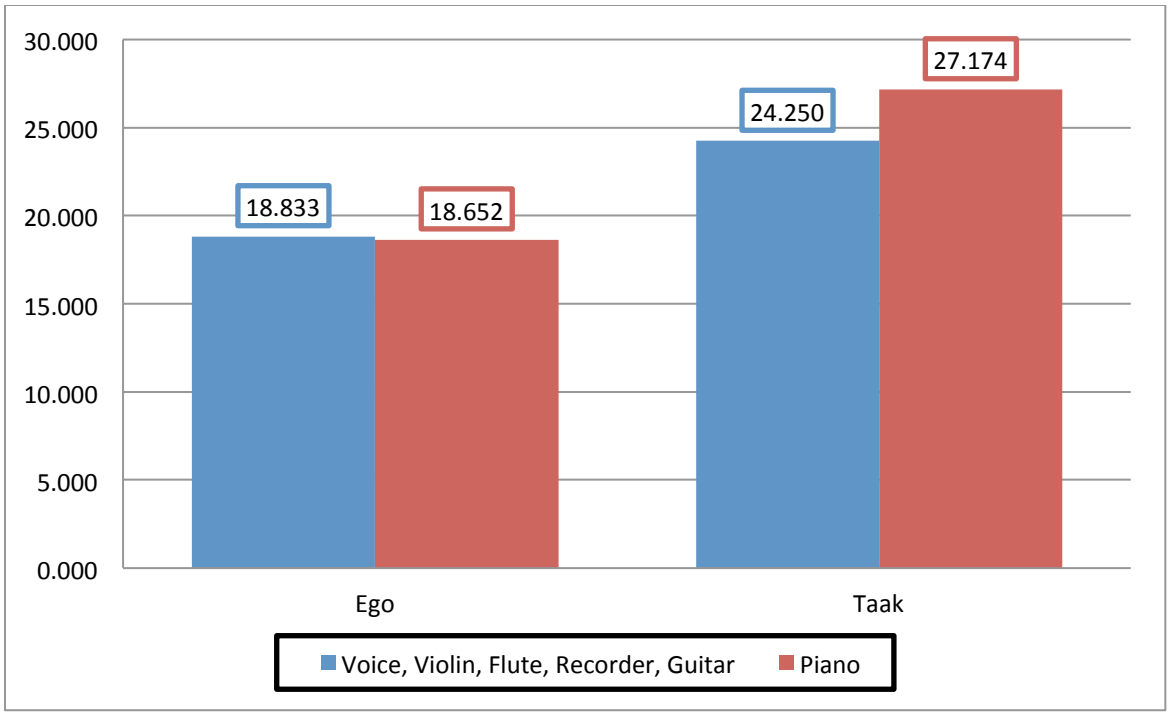


Figure 54. Perceptions of Success Questionnaire: Instrument

5.9.2.6 Voice, violin, flute, recorder, guitar and piano groups' results – Self-theory Questionnaire

The results for the voice, violin, flute, recorder, guitar and piano groups on the Self-theory Questionnaire are set out in Table 37 and Figure 55.

Table 37. Descriptive Statistics: Self-theory Questionnaire: Instrument

Group		N	Minimum	Maximum	Mean	Std. Deviation
Voice, Violin, Flute, Recorder, Guitar	Growth mindset	13	14.000	18.000	16.846	1.519
	Fixed mindset	13	5.000	13.000	7.923	2.431
Piano	Growth mindset	23	11.000	18.000	16.043	1.941
	Fixed mindset	23	3.000	14.000	7.739	2.359

		Total N	p-value	Mann-Whitney U
Mann-Whitney U Test	Growth mindset	36	0.178	110.000
	Fixed mindset	36	0.907	153.000

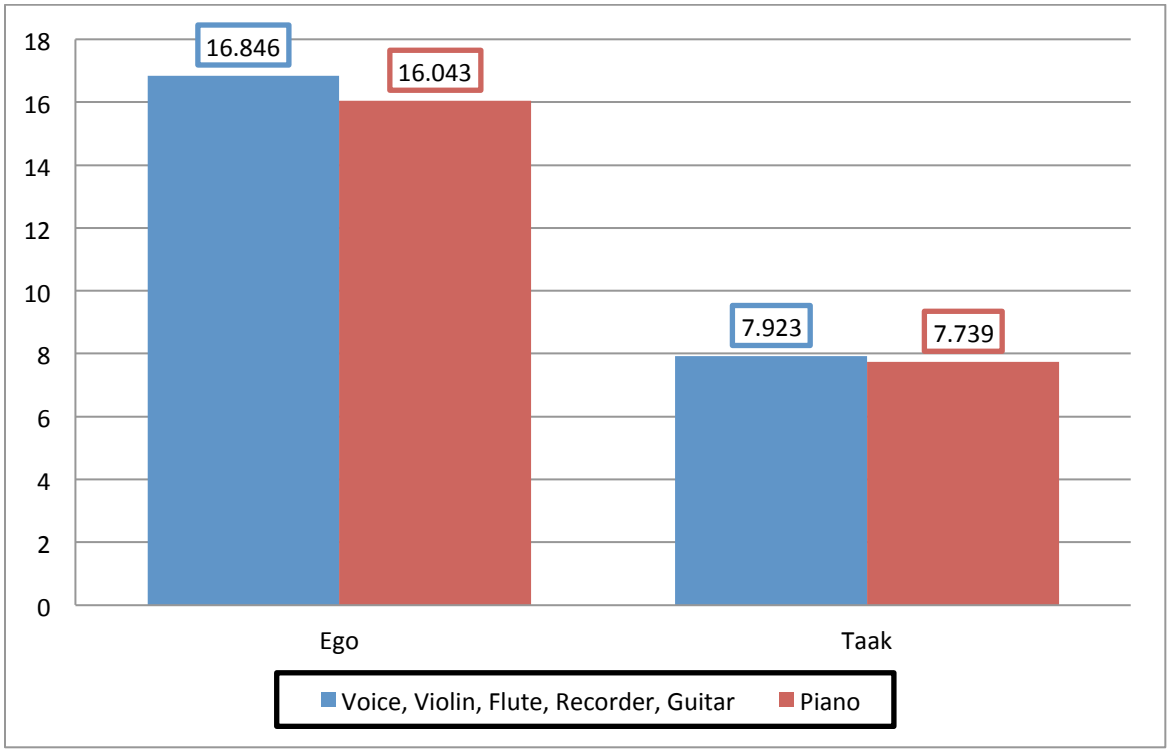


Figure 55. Self-theory Questionnaire: Instrument

5.9.2.7 Voice, violin, flute, recorder, guitar and piano groups' results – Kenny Music Performance Anxiety Inventory

The results for the voice, violin, flute, recorder, guitar and piano groups on the Kenny Music Performance Anxiety Inventory are set out in Table 38 and Figure 56.

Table 38. Descriptive Statistics: Kenny Music Performance Anxiety Inventory: Instrument

Group		N	Minimum	Maximum	Mean	Std. Deviation
Voice, Violin, Flute, Recorder, Guitar	Anxiety Inventory	13	65.000	110.000	82.077	13.573
Piano	Anxiety Inventory	22	34.000	136.000	96.273	25.364
		Total N	p-value		Mann-Whitney U	
Mann-Whitney U Test	Anxiety Inventory	35	0.046		201.500	

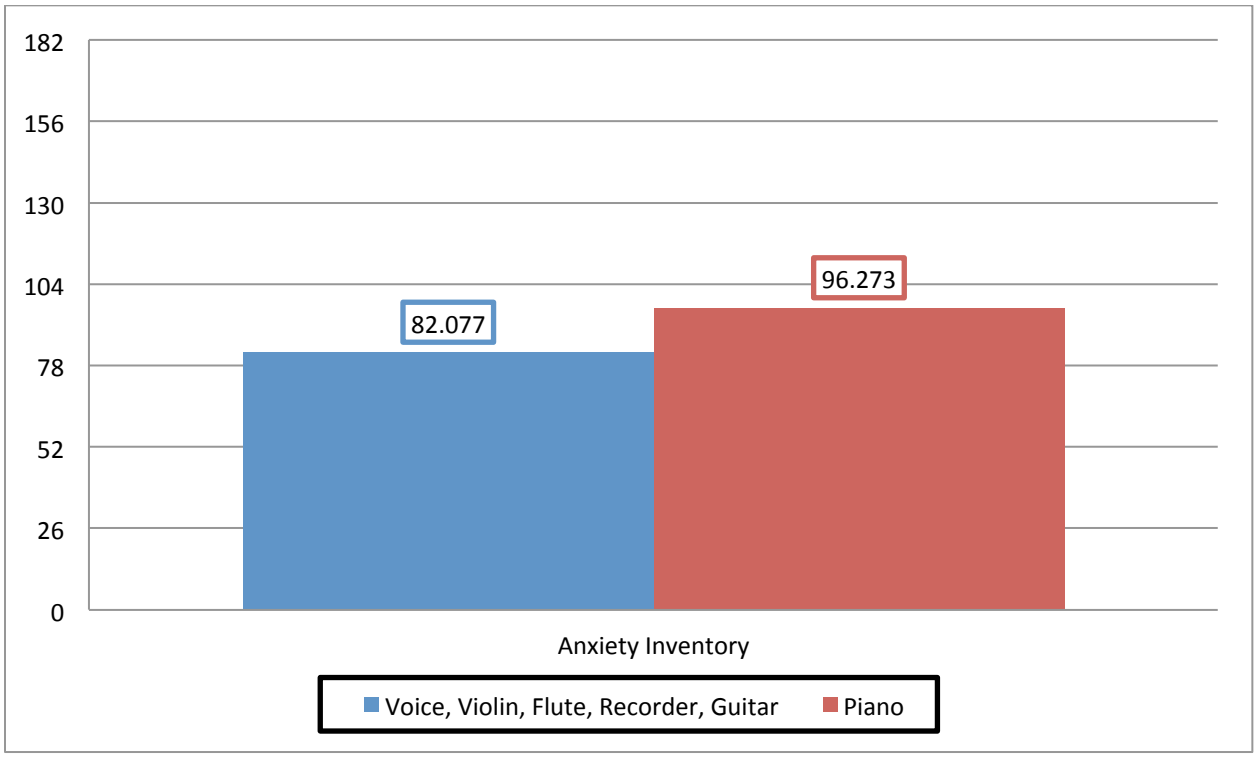


Figure 56. Kenny Music Performance Anxiety Inventory: Instrument

5.9.2.8 *Voice, violin, flute, recorder, guitar and piano groups' results – Concentration Grid*

The results for the voice, violin, flute, recorder, guitar and piano groups on the Kenny Music Performance Anxiety Inventory are set out in Table 39 and Figure 57.

Table 39. Descriptive Statistics: Concentration Grid: Instrument

Group		N	Minimum	Maximum	Mean	Std. Deviation
Voice, Violin, Flute, Recorder, Guitar	Score	13	8.000	30.000	20.923	7.029
Piano	Score	23	9.000	30.000	19.217	6.171
		Total N	p-value		Mann-Whitney U	
Mann-Whitney U Test	Score	36	0.428		125.500	

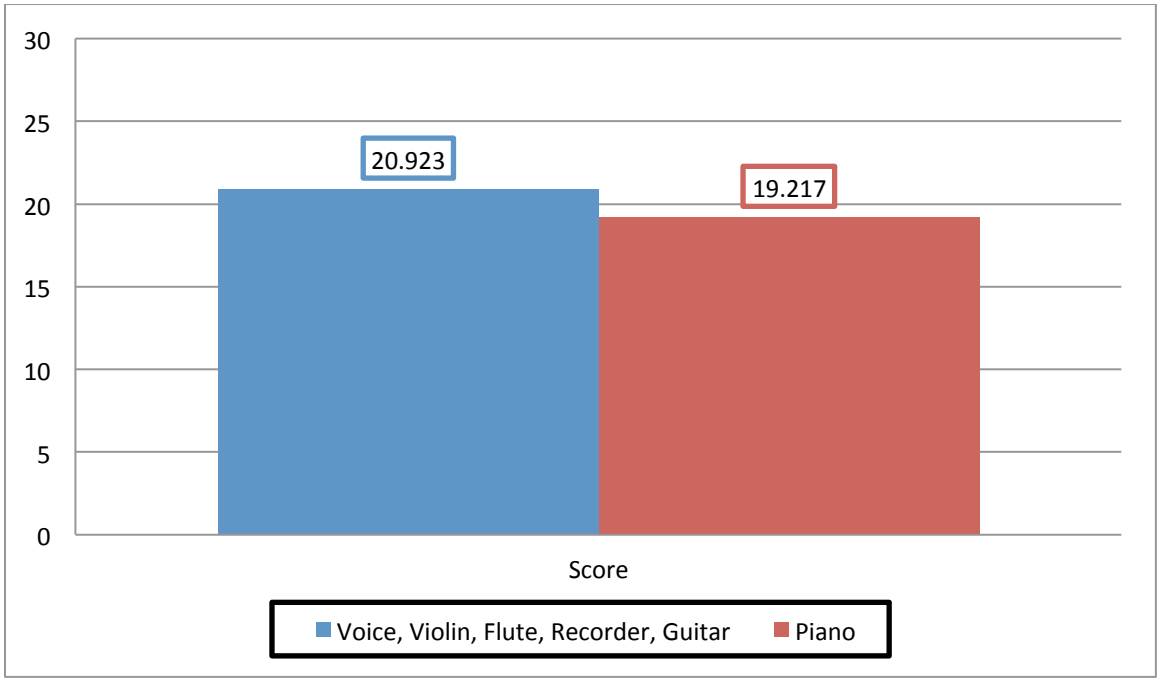


Figure 57. Concentration Grid: Instrument

5.9.2.9 *Voice, violin, flute, recorder, guitar and piano groups' results – The Brunel Mood Scale*

The results for the voice, violin, flute, recorder, guitar and piano groups on The Brunel Mood Scale are set out in Table 40 and Figure 58.

Table 40. Descriptive Statistics: Brunel Mood Scale: Instrument

Group		N	Minimum	Maximum	Mean	Std. Deviation
Voice, Violin, Flute, Recorder, Guitar	Anger	13	.000	3.000	.615	1.120
	Confusion	13	.000	9.000	2.769	3.269
	Depression	13	.000	6.000	.769	1.690
	Fatigue	13	.000	8.000	3.308	2.393
	Tension	13	.000	8.000	2.615	2.399
	Vigour	13	4.000	15.000	8.077	3.148
Piano	Anger	22	.000	10.000	3.318	3.441
	Confusion	22	.000	14.000	4.773	4.196
	Depression	22	.000	12.000	3.182	3.304
	Fatigue	22	.000	14.000	6.136	3.509
	Tension	22	.000	15.000	6.000	4.514
	Vigour	22	.000	14.000	8.136	3.181
		Total N	p-value		Mann-Whitney U	
Mann-Whitney U Test	Anger	35	0.007		218.000	
	Confusion	35	0.147		185.000	
	Depression	35	0.004		223.500	
	Fatigue	35	0.017		212.500	
	Tension	35	0.026		208.000	

	Vigour	35	0.459	164.500

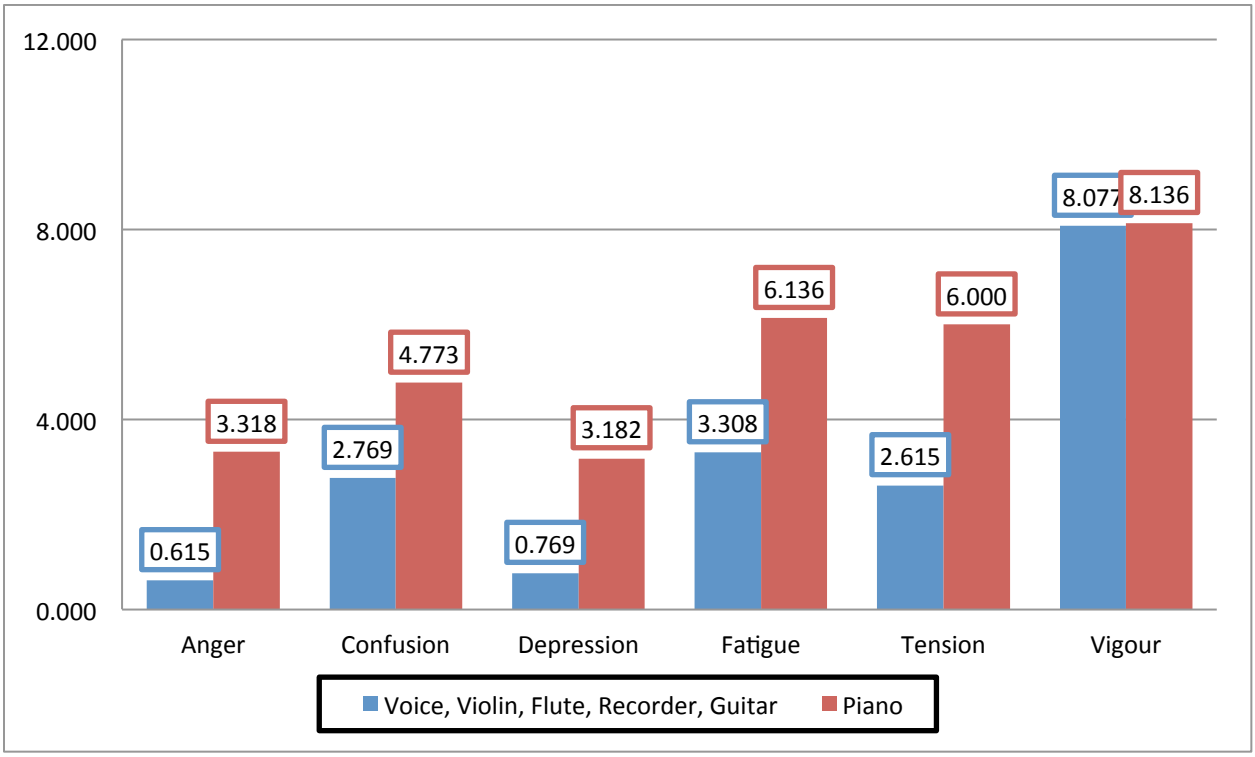


Figure 58. Brunel Mood Scale: Instrument

5.9.3 Year of Study

When taking the years of study into consideration, four significant differences were found:

- Bull's Mental Skills Questionnaire: Relaxation ability (p = 0.017).
  Second-year students' average score on their "relaxation ability" was significantly higher than that of third- and fourth-year students (see Figure 59).
- Ryff's Psychological Well-being Scale: Purpose in life (p = 0.010).
  First-year students had a significantly lower "purpose in life" score (see Figure 61).
- The Competitive State Anxiety Inventory-2:
  - Somatic state anxiety (p = 0.006).
    Second-year students had a significantly lower average score on somatic state anxiety than first-, third- or fourth-year students.
  - State self-confidence (p = 0.031).

Second-year students had a significantly higher self-confidence score than third- or fourth-year students (see Figure 62).

5.9.3.1 First-year, second-year and third- and fourth-year groups' results – Bull's Mental Skills Questionnaire

The results for the first-year, second-year and third- and fourth-year groups on the Bull's Mental Skills Questionnaire are set out in Table 41 and Figure 59.

Table 41. Descriptive Statistics: Bull's Mental Skills Questionnaire: Year of Study

Group		N	Minimum	Maximum	Mean	Std. Deviation
1st Year	Imagery ability	12	13.000	22.000	17.500	2.354
	Mental preparation	12	11.000	22.000	17.083	3.800
	Self-confidence	11	9.000	22.000	13.273	4.173
	Anxiety and worry management	12	6.000	17.000	9.667	3.749
	Concentration ability	10	8.000	17.000	11.700	2.945
	Relaxation ability	12	4.000	23.000	11.833	6.379
	Motivation	12	9.000	23.000	14.917	4.440
2nd Year	Imagery ability	15	8.000	24.000	18.000	4.358
	Mental preparation	15	9.000	24.000	19.133	4.068
	Self-confidence	15	7.000	24.000	15.733	4.589
	Anxiety and worry management	15	4.000	19.000	11.800	4.074
	Concentration ability	14	10.000	24.000	15.929	4.214
	Relaxation ability	15	10.000	24.000	16.933	4.366
	Motivation	15	7.000	23.000	15.933	4.963

3rd and 4th Year	Imagery ability	8	8.000	22.000	17.750	4.652
	Mental preparation	9	11.000	24.000	18.667	4.242
	Self-confidence	9	6.000	24.000	14.333	6.082
	Anxiety and worry management	9	4.000	22.000	11.111	7.4068
	Concentration ability	9	7.000	22.000	14.222	5.044
	Relaxation ability	9	5.000	23.000	11.111	5.577
	Motivation	9	8.000	21.000	13.667	4.690
		Total N	Test statistics	Degrees of freedom	p-value	
Kruskal-Wallis Test	Imagery ability	35	0.495	2	0.781	
	Mental preparation	36	2.030	2	0.362	
	Self-confidence	35	2.843	2	0.241	
	Anxiety and worry management	36	1.773	2	0.412	
	Concentration ability	33	5.352	2	0.069	
	Relaxation ability	36	8.147	2	0.017	
	Motivation	36	1.073	2	0.585	

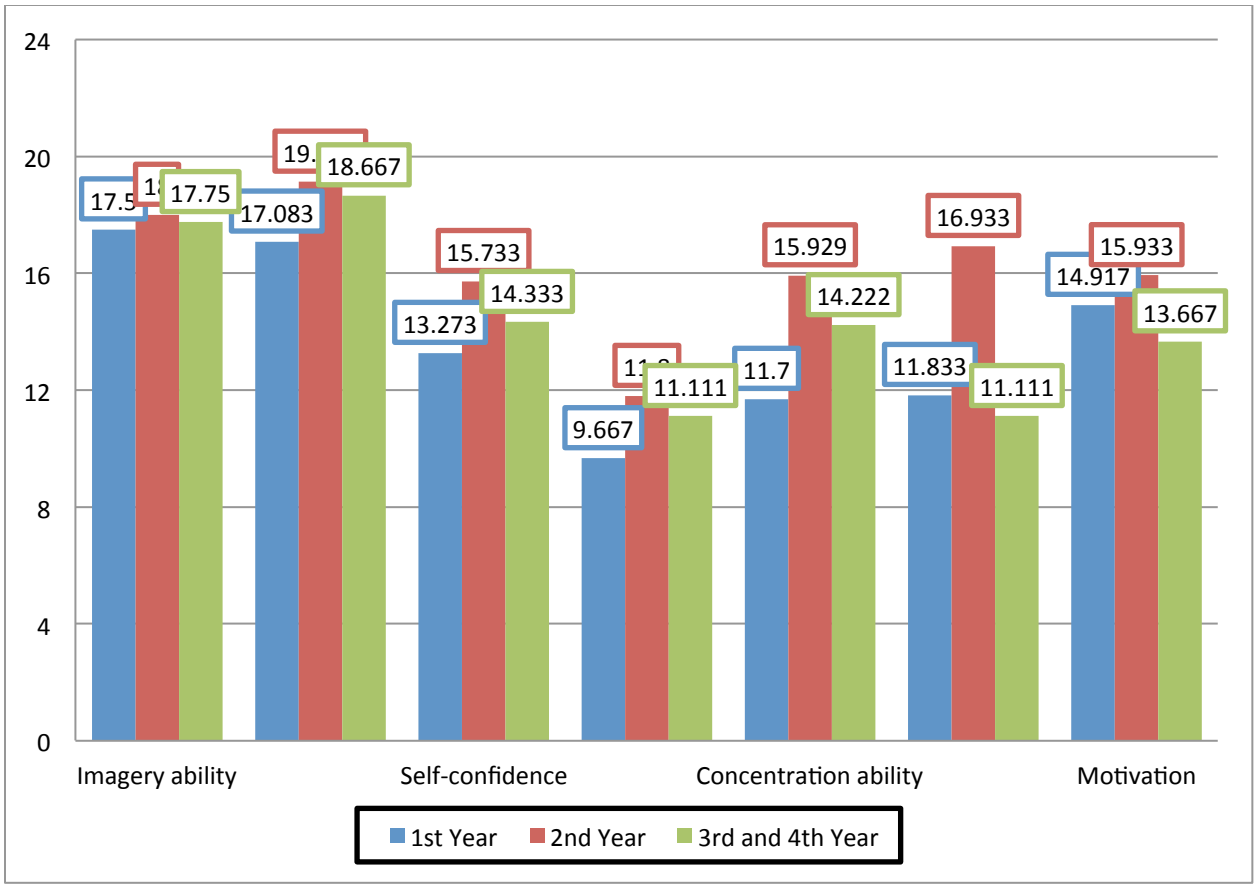


Figure 59. Bull's Mental Skills Questionnaire: Year of Study

5.9.3.2 First-year, second-year and third- and fourth-year groups' results – Five Factor Mindfulness Questionnaire

The results for the first-year, second-year and third- and fourth-year groups on the Five Factor Mindfulness Questionnaire are set out in Table 42 and Figure 60.

Table 42. Descriptive Statistics: Five Factor Mindfulness Questionnaire: Year of Study

Group		N	Minimum	Maximum	Mean	Std. Deviation
1st Year	Observe	12	16.000	34.000	27.333	4.830
	Describe	12	18.000	40.000	26.750	8.258

	Act with Awareness	12	14.000	27.000	20.917	4.440
	Nonjudge	12	13.000	32.000	22.167	6.278
	Nonreact	12	15.000	30.000	21.167	4.281
2nd Year	Observe	14	16.000	37.000	27.929	6.132
	Describe	13	19.000	37.000	30.154	4.487
	Act with Awareness	14	13.000	34.000	26.286	6.341
	Nonjudge	14	17.000	32.000	24.714	4.778
	Nonreact	13	17.000	26.000	20.692	3.119
3rd and 4th Year	Observe	8	22.000	32.000	27.625	3.583
	Describe	9	17.000	38.000	26.222	6.851
	Act with Awareness	9	13.000	34.000	24.000	6.745
	Nonjudge	9	9.000	31.000	20.222	6.553
	Nonreact	8	13.000	27.000	20.250	4.862

		Total N	Test statistics	Degrees of freedom	p-value
Kruskal-Wallis Test	Observe	34	0.266	2	0.876
	Describe	34	2.717	2	00257
	Act with Awareness	35	5.287	2	0.071
	Nonjudge	35	3.447	2	0.178
	Nonreact	33	0.077	2	0.962

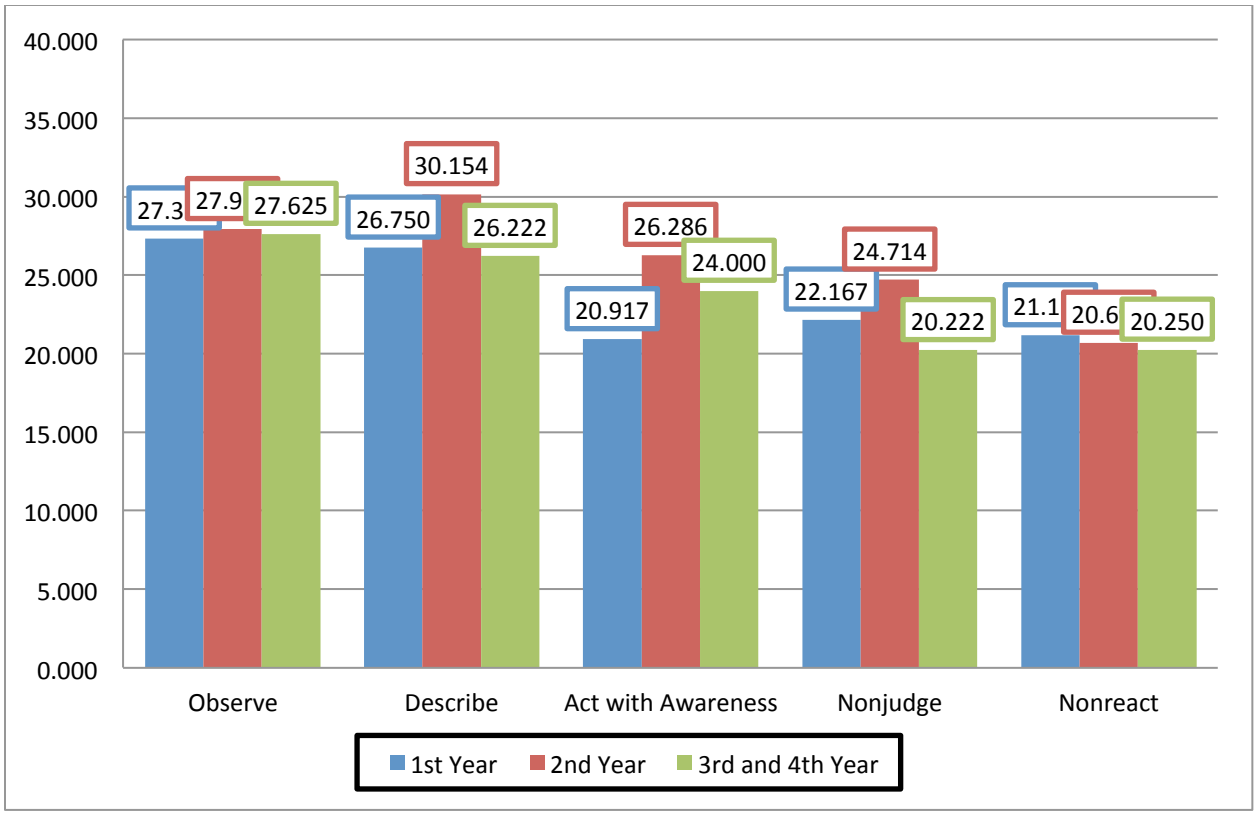


Figure 60. Five Factor Mindfulness Questionnaire: Year of Study

5.9.3.3 First-year, second-year and third- and fourth-year groups' results – Ryff's Psychological Well-being Scale

The results for the first-year, second-year and third- and fourth-year groups on the Ryff's Psychological Well-being Scale are set out in Table 43 and Figure 61.

Table 43. Descriptive Statistics: Ryff's Psychological Well-being Scale: Year of Study

Group		N	Minimum	Maximum	Mean	Std. Deviation
1st Year	Autonomy	12	8.000	18.000	13.583	2.678
	Positive relationships with others	12	7.000	17.000	12.750	3.816
	Environmental mastery	12	7.000	15.000	11.500	2.236

	Personal growth	12	9.000	18.000	15.667	2.902
	Purpose in life	12	8.000	18.000	12.583	3.028
	Self acceptance	12	11.000	18.000	14.167	2.124
2nd Year	Autonomy	15	11.000	18.000	13.733	2.250
	Positive relationships with others	15	7.000	18.000	13.333	3.415
	Environmental mastery	15	3.000	17.000	12.200	3.299
	Personal growth	15	14.000	18.000	16.600	1.242
	Purpose in life	15	8.000	18.000	15.733	2.737
	Self acceptance	15	9.000	18.000	13.667	2.768
3rd and 4th Year	Autonomy	9	8.000	18.000	11.222	3.073
	Positive relationships with others	9	4.000	18.000	13.222	4.711
	Environmental mastery	9	9.000	14.000	11.667	1.802
	Personal growth	9	14.000	18.000	16.333	1.414
	Purpose in life	9	11.000	18.000	15.667	2.397
	Self acceptance	9	5.000	17.000	12.000	4.000

		Total N	Test statistics	Degrees of freedom	p-value
Kruskal-Wallis Test	Autonomy	36	5.839	2	0.054
	Positive relationships with others	36	0.311	2	0.856
	Environmental mastery	36	1.481	2	0.477
	Personal growth	36	0.184	2	0.912
	Purpose in life	36	9.134	2	0.010
	Self acceptance	36	1.672	2	0.434

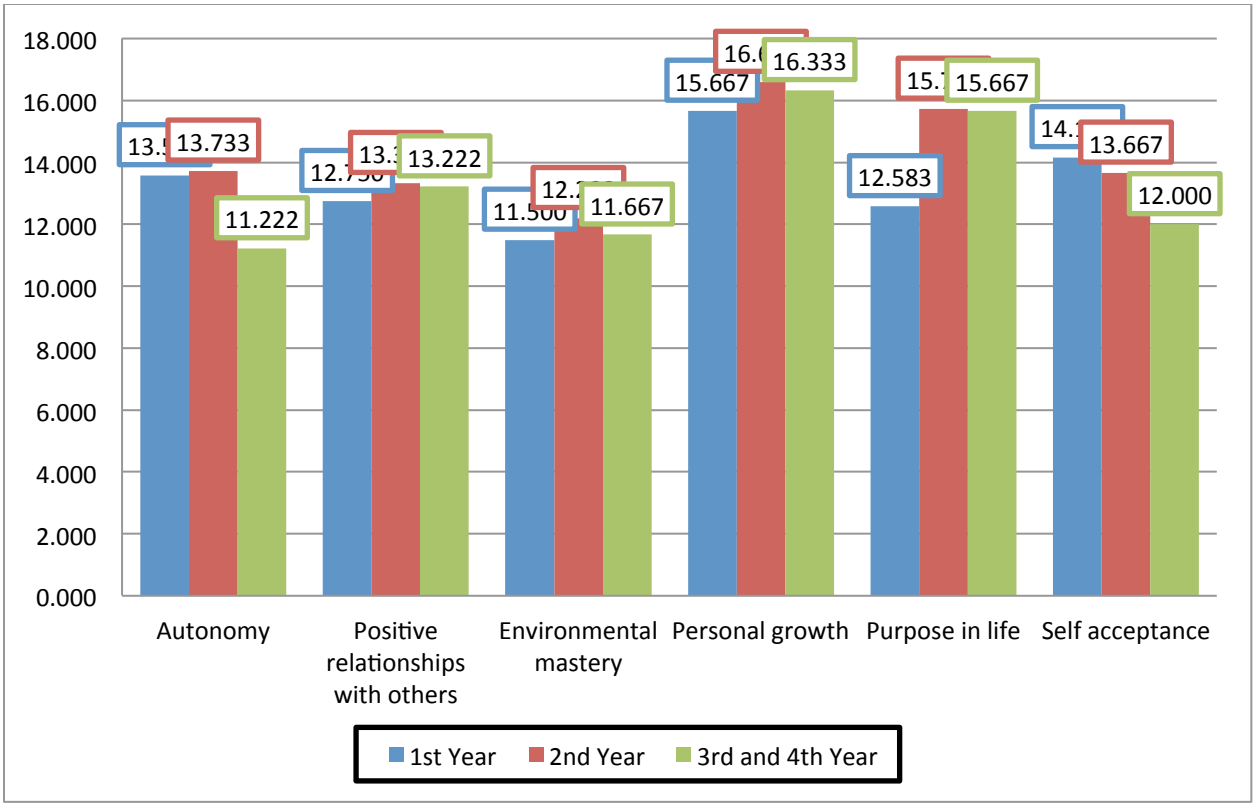


Figure 61. Ryff's Psychological Well-being Scale: Year of Study

5.9.3.4 First-year, second-year and third- and fourth-year groups' results – Competitive State Anxiety Inventory-2

The results for the first-year, second-year and third- and fourth-year groups on the Competitive State Anxiety Inventory-2 are set out in Table 44 and Figure 62.

Table 44. Descriptive Statistics: Competitive State Anxiety Inventory-2: Year of Study

Group		N	Minimum	Maximum	Mean	Std. Deviation
1st Year	Cognitive state anxiety	12	16.000	33.000	26.750	5.626
	Somatic state anxiety	12	14.000	35.000	27.167	6.506
	State self-confidence	12	10.000	34.000	19.917	7.102
2nd Year	Cognitive state anxiety	15	15.000	32.000	25.200	5.171

	Somatic state anxiety	15	13.000	29.000	19.800	5.226
	State self-confidence	15	14.000	34.000	24.667	6.031
3rd and 4th Year	Cognitive state anxiety	9	19.000	33.000	27.000	4.795
	Somatic state anxiety	9	12.000	35.000	28.556	7.650
	State self-confidence	9	10.000	27.000	17.556	4.850
		Total N	Test statistics	Degrees of freedom	p-value	
Kruskal-Wallis Test	Cognitive state anxiety	36	1.003	2	0.605	
	Somatic state anxiety	36	10.312	2	0.006	
	State self-confidence	36	6.977	2	0.031	

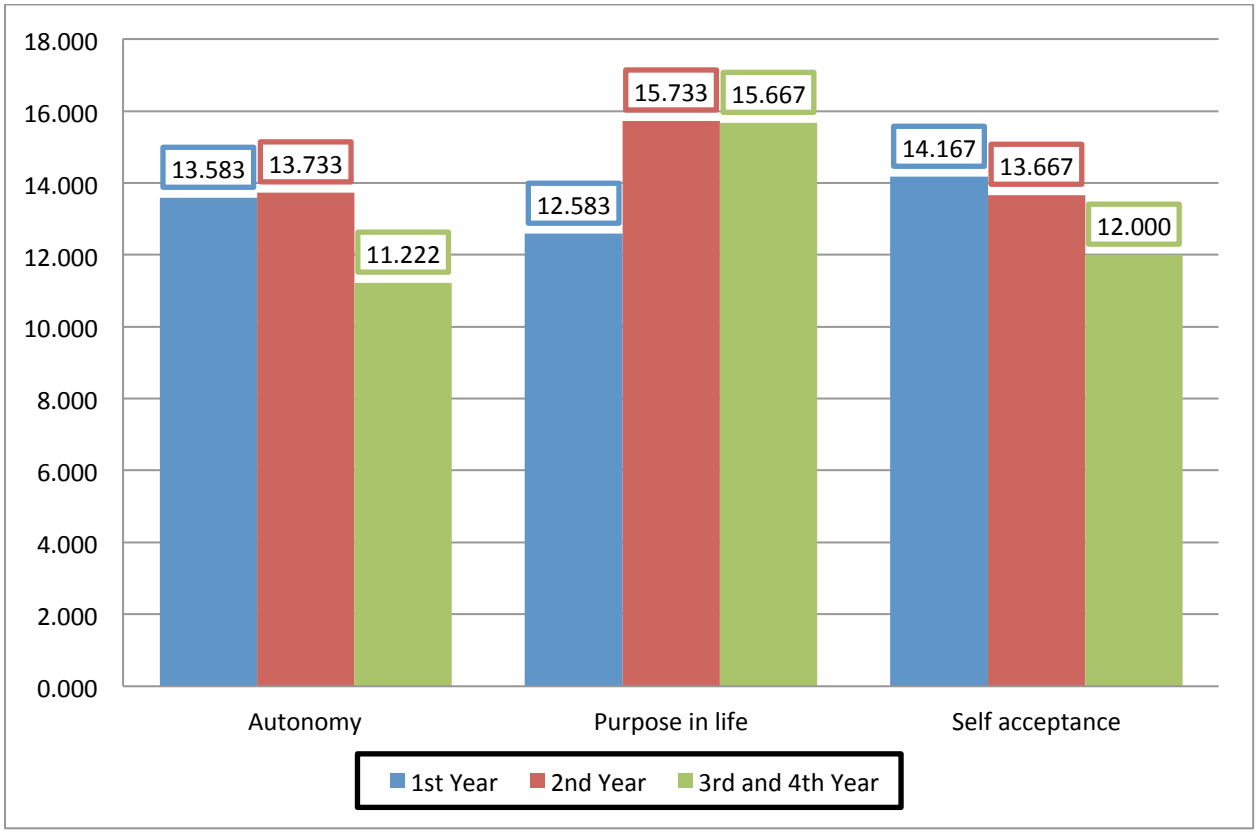


Figure 62. Competitive State Anxiety Inventory-2: Year of Study

5.9.3.5 First-year, second-year and third- and fourth-year groups' results – Perceptions of Success Questionnaire

The results for the first-year, second-year and third- and fourth-year groups on the Perceptions of Success Questionnaire are set out in Table 45 and Figure 63.

Table 45. Descriptive Statistics: Perceptions of Success Questionnaire: Year of Study

Group		N	Minimum	Maximum	Mean	Std. Deviation
1st Year	Ego	11	6.000	28.000	16.727	7.417
	Task	12	17.000	30.000	26.417	4.679
2nd Year	Ego	15	6.000	30.000	18.267	7.610
	Task	14	16.000	30.000	25.786	3.662
3rd and 4th Year	Ego	9	10.000	30.000	17.889	6.293
	Task	9	20.000	30.000	26.444	3.778
		Total N	Test statistics	Degrees of freedom	p-value	
Kruskal Wallis Test	Ego	35	0.315	2	0.854	
	Task	35	0.933	2	0.627	

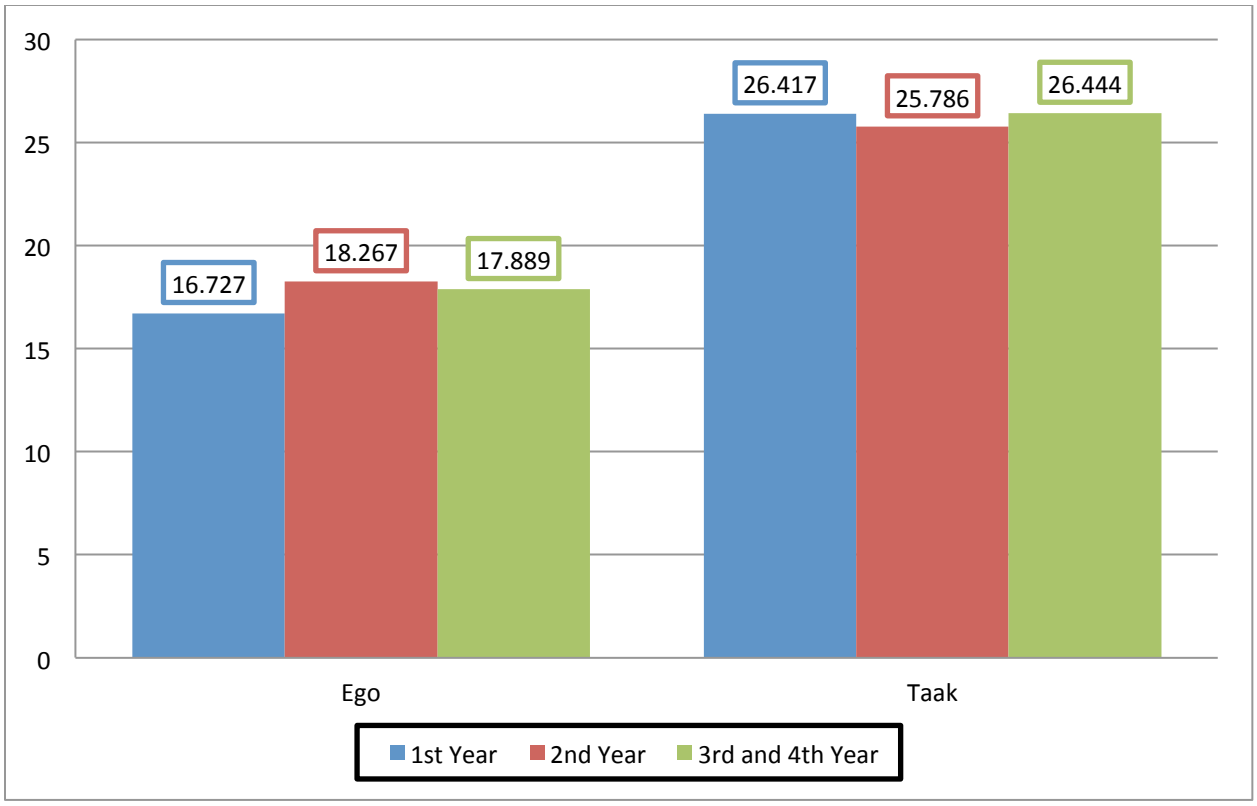


Figure 63. Perceptions of Success Questionnaire: Year of Study

5.9.3.6 *First-year, second-year and third- and fourth-year groups' results – Self-theory Questionnaire*

The results for the first-year, second-year and third- and fourth-year groups on the Self-theory Questionnaire are set out in Table 46 and Figure 64.

Table 46. Descriptive Statistics: Self-theory Questionnaire: Year of Study

Group		N	Minimum	Maximum	Mean	Std. Deviation
1st Year	Growth mindset	12	14.000	18.000	16.417	1.564
	Fixed mindset	12	5.000	14.000	8.583	2.151
2nd Year	Growth mindset	15	12.000	18.000	16.533	1.684
	Fixed mindset	15	4.000	10.000	7.333	1.838

3rd and 4th Year	Growth mindset	9	11.000	18.000	15.889	2.420
	Fixed mindset	9	3.000	13.000	7.556	3.244
		Total N	Test statistics	Degrees of freedom	p-value	
Kruskal Wallis Test	Growth mindset	36	0.336	2	0.845	
	Fixed mindset	36	2.146	2	0.342	

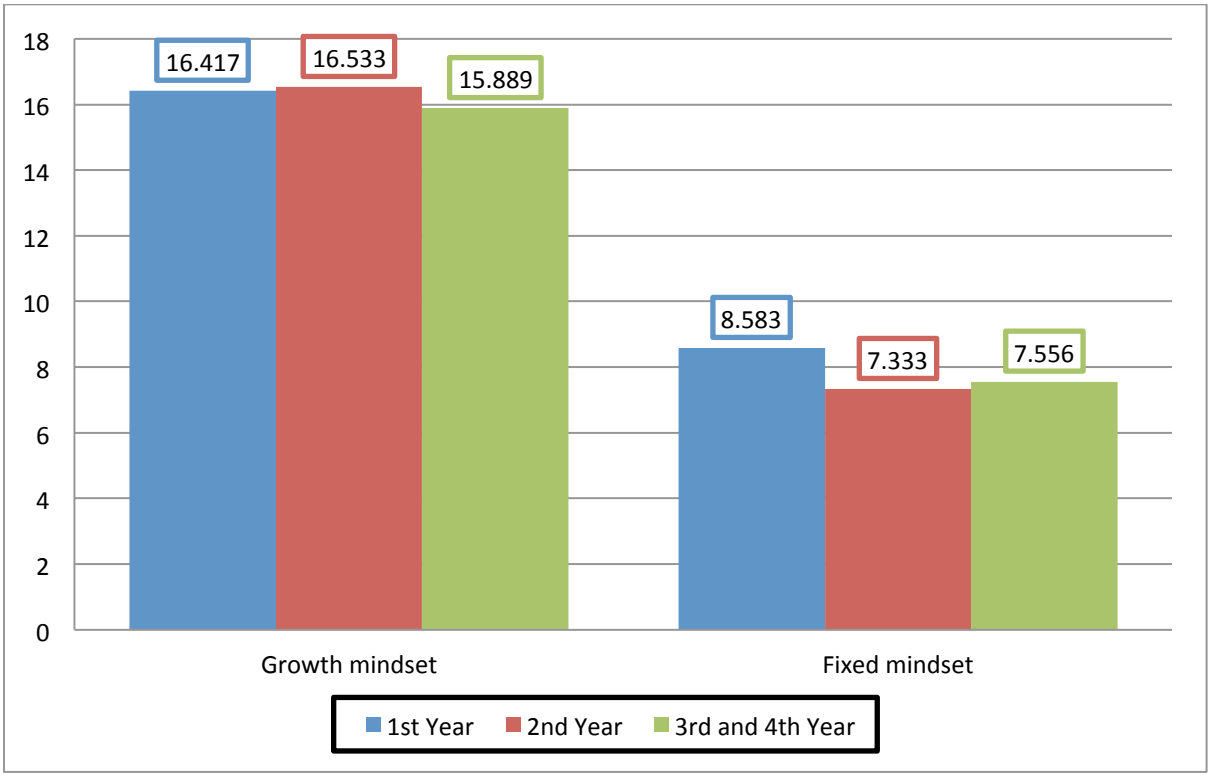


Figure 64. Self-theory Questionnaire: Year of Study

5.9.3.7 First-year, second-year and third- and fourth-year groups' results – Kenny Music Performance Anxiety Inventory

The results for the first-year, second-year and third- and fourth-year groups on the Kenny Music Performance Anxiety Inventory are set out in Table 47 and Figure 65.

Table 47. Descriptive Statistics: Kenny Music Performance Anxiety Inventory: Year of Study

Group		N	Minimum	Maximum	Mean	Std. Deviation
1st Year	Anxiety Inventory	11	69.000	115.000	94.818	16.551
2nd Year	Anxiety Inventory	15	34.000	119.000	81.267	20.516
3rd and 4th Year	Anxiety Inventory	9	61.000	136.000	102.556	27.276
		Total N	Test statistics	Degrees of freedom	p-value	
Kruskal Wallis Test	Anxiety Inventory	35	4.901	2	0.086	

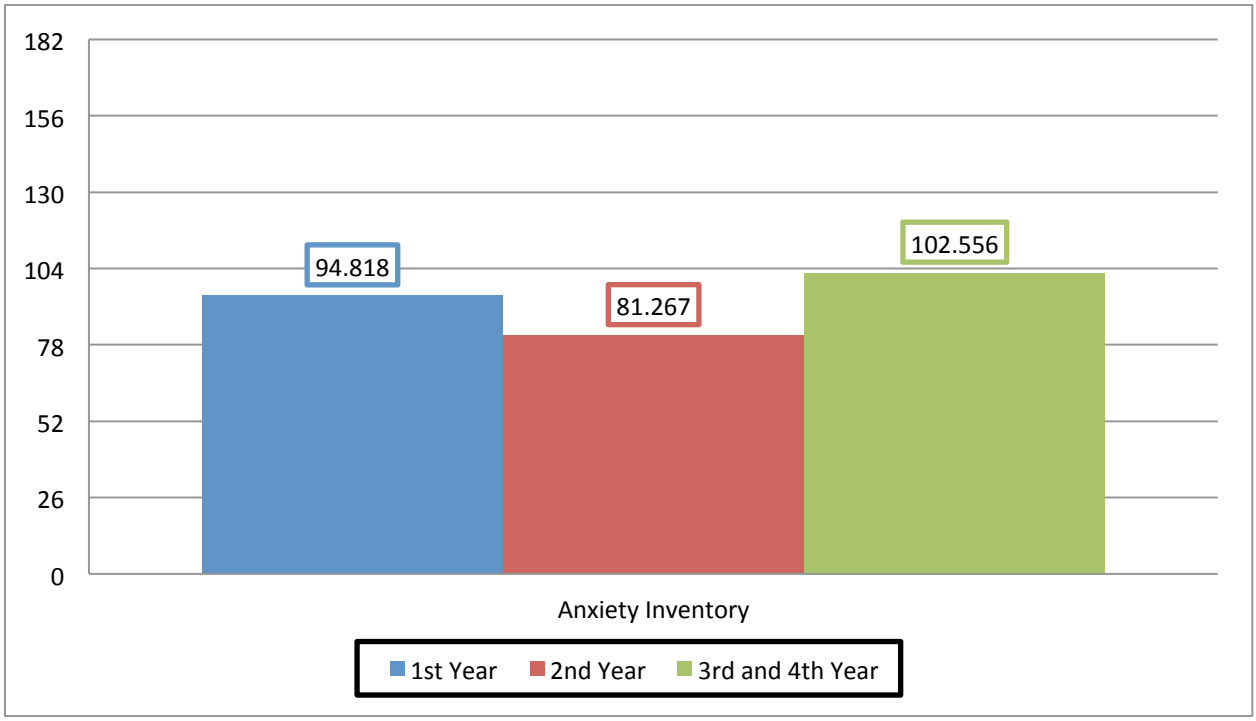


Figure 65. Kenny Music Performance Anxiety Inventory: Year of Study

5.9.3.8 *First-year, second-year and third- and fourth-year groups' results – Concentration Grid*

The results for the first-year, second-year and third- and fourth-year groups on the Concentration Grid are set out in Table 48 and Figure 66.

Table 48. Descriptive Statistics: Concentration Grid: Year of Study

Group		N	Minimum	Maximum	Mean	Std. Deviation
1st Year	Score	12	9.000	30.000	20.667	6.429
2nd Year	Score	15	12.000	30.000	19.600	6.379
3rd and 4th Year	Score	9	8.000	28.000	19.111	7.219
		Total N	Test statistics	Degrees of freedom	p-value	
Kruskal Wallis Test	Score	36	0.369	2	0.831	

Figure 66. Concentration Grid: Year of Study

5.9.3.9 *First-year, second-year and third- and fourth-year groups' results – Brunel Mood Scale*

The results for the first-year, second-year and third- and fourth-year groups on the Brunel Mood Scale are set out in Table 48 and Figure 66.

Table 49. Descriptive Statistics: Brunel Mood Scale: Year of Study

Group		N	Minimum	Maximum	Mean	Std. Deviation
1st Year	Anger	12	.000	10.000	3.333	3.393
	Confusion	12	.000	14.000	5.750	4.575
	Depression	12	.000	9.000	3.000	2.449
	Fatigue	12	.000	14.000	6.750	3.545
	Tension	12	.000	14.000	5.583	3.752
	Vigour	12	4.000	11.000	8.167	2.037
2nd Year	Anger	15	.000	6.000	1.400	1.992
	Confusion	15	.000	12.000	2.933	3.731
	Depression	15	.000	12.000	2.267	3.899
	Fatigue	15	.000	10.000	4.533	3.313
	Tension	15	.000	11.000	3.133	3.377
	Vigour	15	.000	15.000	7.867	3.248
3rd and 4th Year	Anger	8	.000	10.000	2.500	4.070
	Confusion	8	1.000	8.000	3.500	2.672
	Depression	8	.000	4.000	1.250	1.581
	Fatigue	8	1.000	8.000	3.625	2.559
	Tension	8	1.000	15.000	6.500	5.398
	Vigour	8	2.000	14.000	8.500	4.407

		Total N	Test statistics	Degrees of freedom	p-value
Kruskal-Wallis Test	Anger	35	2.853	2	0.240
	Confusion	35	3.607	2	0.165
	Depression	35	4.085	2	0.130
	Fatigue	35	5.200	2	0.074
	Tension	35	4.476	2	0.107
	Vigour	35	0.207	2	0.902

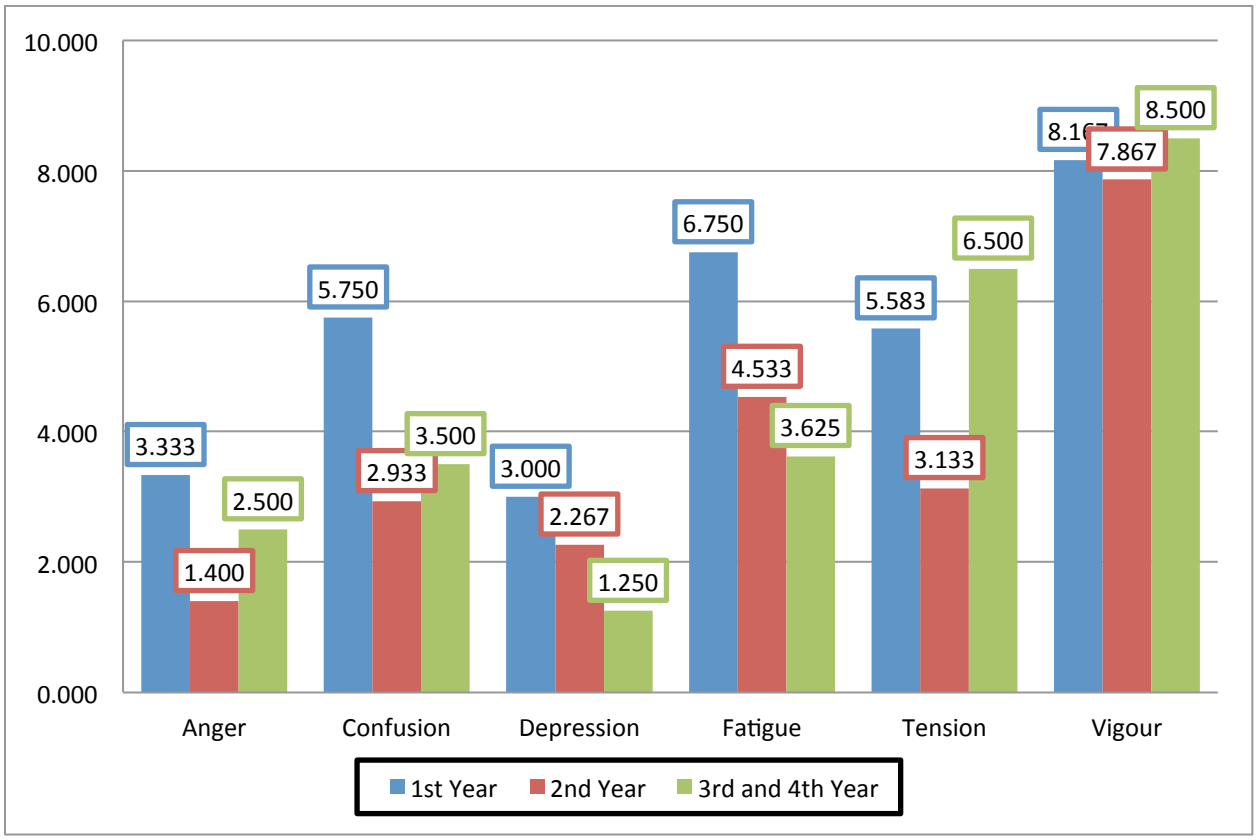


Figure 67. Brunel Mood Scale: Year of Study

5.10 Summary of Results

The main objective of the study was to determine the impact of psychological skills and mindfulness training on the psychological well-being of undergraduate music students. A total of 36 respondents participated in the study, divided into an experimental group (n = 21) and a control group (n = 15). A quasi-experimental design was implemented in this research, because a voluntary selection method was employed in order to secure optimal motivation and commitment from the experimental group in terms of maximum attendance of intervention sessions. All the respondents completed a pre-intervention test and a post-intervention test on a battery of measuring instruments.

5.10.1 Results on the measuring instruments

The majority of measuring instruments used within this survey were found to be very reliable. The only questionnaire that received a very low Cronbach alpha score was the Self-theory Questionnaire. However, previous research with the Self-theory Questionnaire with larger samples achieved adequate Cronbach alpha scores.

Scores for all the respondents in the pre-intervention test phase of the research showed that many of the subscale items of the different measuring instruments correlated significantly, according to the Spearman's rank correlation coefficient. As expected, relaxation ability (Bull's Mental Skills Questionnaire) revealed a very strong positive correlation with self-confidence (Bull's Mental Skills Questionnaire). The Bull's Mental Skills Questionnaire's measurement of self-confidence also displayed a strong correlation with state self-confidence as measured by the Competitive State Anxiety Inventory-2. State self-confidence also correlates significantly with relaxation ability and motivation as measured by the Bull's Mental Skills Questionnaire. The very strong negative correlation between anxiety and worry management (Bull's Mental Skills Questionnaire) and cognitive state anxiety (Competitive State Anxiety Inventory-2) provides some evidence for the proposition that the ability to manage stress and worries can be associated with low levels of state anxiety. Further support for the argument that high anxiety and relaxation ability are incompatible is the fact that relaxation ability (Bull's Mental Skills Questionnaire) revealed a very strong negative correlation with somatic state anxiety (Competitive State Anxiety Inventory-2). The very strong correlation between the Kenny Music Performance Anxiety Inventory with cognitive- and somatic state anxiety as measured by the Competitive State Anxiety Inventory-2 was as expected.

On the following five measuring instruments, no statistically significant differences were found between the scores of the experimental groups and the control groups during pre-intervention testing, implying that two groups were almost similar before the intervention:

- Bull's Mental Skills Questionnaire;
- the Competitive State Anxiety Inventory-2;
- the Perceptions of Success Questionnaire;
- the Self-theory Questionnaire; and
- the Kenny Music Performance Anxiety Inventory.

Only two differences were found on attributes within the different pre-intervention test measures, implying that the experimental and control groups were not similar in this regard:

- the Five Facet Mindfulness Questionnaire: Act with awareness; and
- Ryff's Psychological Well-being Scale: Positive relationships with others.

Taking into account that there are a total of 33 subscales involved in this intervention study and that only two of these subscales differed in the pre-intervention test, is an indication of the homogenous nature of the experimental and control group together. However, when the confounding variables were considered in the pre-intervention test data, gender as confounding variable indicated three differences among the subscales. Musical instruments revealed seven differences among the different subscales and when year of study is taken into account four significant differences were found.

On the following measuring instruments, no statistically significant differences were found between the scores of the experimental groups and the control groups during post-intervention testing:

- Bull's Mental Skills Questionnaire;
- the Five Facet Mindfulness Questionnaire;
- the Competitive State Anxiety Inventory-2;
- the Perceptions of Success Questionnaire;
- the Self-theory Questionnaire; and
- the Kenny Music Performance Anxiety Inventory.

Only one difference was found during post-intervention testing, namely with regard to Ryff's Psychological Well-being Scale: Positive relationships with others.

On the Brunel Mood Scale, the first week of measurements can be seen as the pre-intervention test. On the confusion, tension and vigour scales, no statistically significant differences were found between the scores of the experimental groups and the control groups.

The experimental and control groups did, however, differ on the anger, depression and fatigue scales:

Within the experimental group, the following statistical significant changes in the measured scores were reported.

- **Bull's Mental Skills Questionnaire:** In the experimental group, a statistically significant difference was found between the pre- and post-intervention test scores on five of the seven subscales of the Bull's Mental Skills Questionnaire (level of self-confidence, anxiety and worry management, concentration ability, relaxation ability and levels of motivation). It seems as if the intervention that the respondents underwent assisted in improving the above-listed skills, as scores increased from the pre-intervention test measurements to post-intervention test measurements. The control group, which was not exposed to the intervention, reflected stable scores, with no significant changes in scores. It can thus be concluded that the changes within the experimental group can be a result of the intervention that the undergraduate music students underwent. The significant improvement in the total score was meaningful.
- **The Five Facet Mindfulness Questionnaire:** The experimental group displayed two significant changes from pre- to post-intervention testing, on "describe items" and "non-judge items". On both these subscales, scores increased, implying that these skills were stronger after the intervention than before the intervention. Scores within the control group did not change on the "describe items" or on the "non-judge items". The significant increase in scores for the experimental group might be indicative of an effect of the intervention that the experimental group underwent. The statistical significant shift on the improvement of the total score of the Five Facet Mindfulness Questionnaire indicates a positive shift in mindfulness.
- **Ryff's Psychological Well-being Scale:** The only significant change found between the pre- and post-intervention test measurement scores of the experimental group on the Ryff's Psychological Well-being factors was on "positive relationships with others". In the

post-intervention test, respondents obtained significantly higher scores than in the pre-intervention test. No significant differences were found on the other five items of this scale. Apart from the one construct (positive relationships with others), it does not seem as if the intervention had a major effect on the aspects measured by Ryff's Psychological Well-being Scale. There were no significant differences between the scores in the pre-intervention test measurements and post-intervention test scores of the control group. However, the improvement of the total score of Ryff's Psychological Well-being Scale is statistically significant and an indication that well-being in general has improved among the experimental group.

- **The Competitive State Anxiety Inventory-2:** The experimental group displayed significant differences between the pre-intervention test and post-intervention test scores on all three factors of the Competitive State Anxiety Inventory-2. Levels of cognitive state anxiety and somatic state anxiety decreased from the pre- to post-intervention testing. Self-confidence levels increased significantly from the pre- to post-intervention testing. The control group, which did not undergo any interventions, did not display any significant changes in their scores. According to these measurements, it seems as if the intervention had the desired effect on the respondents.
- **The Perceptions of Success Questionnaire:** The Perceptions of Success Questionnaire scores stayed stable in both the experimental and the control groups from pre- to post-intervention testing. It does not seem as if the intervention had any significant effect on the aspects measured by the Perceptions of Success Questionnaire.
- **The Self-theory Questionnaire:** The pre- and post-intervention test scores of the experimental group on the Self-theory Questionnaire differed significantly from one another. Their growth mindset became stronger between the pre- and post-intervention testing, and their fixed mindset decreased significantly between the pre- and post-intervention testing. However, the fixed mindset scores decreased significantly between the pre- and post-intervention testing for the control group. It is thus not clear whether the intervention that the experimental group underwent caused the decline in their scores on the fixed mindset. One can, however, argue that the intervention had some effect, taking into consideration that in the experimental group the growth mindset increased, and the fixed mindset decreased.
- **The Kenny Music Performance Anxiety Inventory:** The scores of the Kenny Music Performance Inventory stayed stable in the experimental and control groups according to the pre- and post-intervention testing. There was a slight decrease in the mean scores (pre-intervention test 94.8 to post-intervention test 86.9), which indicates a slight

improvement in the anxiety score of the respondents. Although this improvement is not statistically significant, it is an indication that the movement was in the right direction and that there was a slight improvement in the anxiety scores as measured by the Kenny Music Performance Anxiety Inventory. If this slight movement of improvement in the anxiety score is taken into account in the light of the very significant improvement in the cognitive and somatic anxiety scores as measured by the Competitive State Anxiety Inventory-2, it indicates an alignment of the total improvements of anxiety scores.

- **The Concentration Grid:** The Concentration Grid scores did not change significantly within the experimental group or the control group over the six-week period under review. It does not seem as if the intervention had a significant impact on concentration ability, as measured by the Concentration Grid.
- **The Brunel Mood Scale:** Neither the experimental group nor the control group showed any significant changes in their scores regarding anger, depression or fatigue over the six-week period under review. Some significant changes were found on the confusion scores for the experimental group, as well as for the control group. For the experimental group, the confusion scores of Week 5 and Week 6 were significantly lower than the confusion score of Week 1. Scores also changed in the control group, so it is not clear whether the intervention caused the decline in scores in the experimental group. Tension scores stayed stable in the experimental group, but changed significantly in the control group over the six-weeks, with lower scores during Week 5 and Week 6. The experimental group displayed significant changes in scores on vigour over the six-week period, with lower scores towards the last measurements. The control group did not display any significant changes. However, a very interesting trend is revealed when the measurements of Week 1 on the Brunel Mood Scale is considered as the pre-intervention test and Week 6 as the post-intervention test, a positive trend in the data can be detected when the mean scores of anger, confusion and tension improved meaningfully in the experimental group.

5.10.2 Confounding variables in the pre-intervention test data

An analysis was done to determine whether gender, first musical instruments or study years had an influence on factor scores. The demographics were as follows:

- Gender: A total of 36 respondents participated, of whom 15 (42%) were men and 21

were women (58%).

- Year of study: First-year students, second-year students, and third- and fourth-year students (grouped together) were compared. A third of the respondents (33%) were in their first year of study, with 42% in their second year. Third-year students formed part of 17% of the sample, with 8% fourth-year students.
- First musical instrument: Students with piano as their first instrument were compared to the rest. The majority of respondents (64%) listed piano as their first instrument.

Few significant differences occurred, implying that the groups were, in general, similar on most of their factor scores.

Statistically significant differences were found in the following:

- **Gender**
  - On the "non-react" items of the Five Facet Mindfulness Questionnaire, it was found that men students had a significantly higher score than women students ($p = 0.011$).
  - On Ryff's Psychological Well-being Scale, women respondents had a significantly higher average score on the factor measuring "positive relationships with others" ($p = 0.021$).
  - Women students had a significantly higher concentration score than men respondents ($p = 0.017$).

- **Instrument**
  - On the Five Facet Mindfulness Questionnaire, respondents with piano as their first instrument had a significantly lower score on "act with awareness" than respondents with other first instruments ($p = 0.010$).
  - Respondents with piano as their first instrument had a significantly higher task score on the Perceptions of Success Questionnaire than the rest of the respondents ($p = 0.019$).
  - The average score of students with piano as their first instrument on the Kenny Performance Anxiety Inventory was significantly higher than that of the rest of the respondents ($p = 0.046$).
  - Students with piano as their first instruments had a significantly higher score than the rest on anger ($p = 0.007$), depression ($p = 0.004$), fatigue ($p = 0.017$) and tension ($p = 0.026$).

- **Year of study**
  - Bull's Mental Skills Questionnaire: Second-year students differed significantly from third- and fourth-year students on their "relaxation ability", with second-year students having a higher average score (p = 0.017).
  - First-year students had a significantly lower "purpose in life" score on Ryff's Psychological Well-being Scale (p = 0.010).
  - Competitive State Anxiety Inventory-2:
    a. Second-year students had a significantly lower average score on somatic state anxiety than first- or third- and fourth-year students (p = 0.006).
    b. Second-year students had a significantly higher self-confidence score than third- and fourth-year students (p = 0.031).

5.11 Summary

The results of the intervention programme were provided in this chapter. In Chapter 6 the results are analysed and discussed, and a conclusion to the study is provided.

CHAPTER 6:

DISCUSSION AND CONCLUSION

The cello is like a beautiful woman who has not grown older, but younger with time, more slender, more supple, more graceful

Pablo Casals (cited in Aronson, 2008, p. 104)

6.1 Introduction

This chapter focuses on the discussion of the results, highlights the strengths and limitations of this study and comes to a conclusion on the effectiveness of the intervention programme that was employed in this study. Recommendations for future research are also provided.

6.2 Discussion of Results

To organise the discussion of the results, the hypothesis-driven questions are used to determine whether the intervention programme was successful and to place this study in context in the existing research pertaining to the field of study.

- **Can PST and mindfulness training improve the psychological well-being and reduce the music performance anxiety of undergraduate music students?**

Only on the subscale "positive relationships with others" in the experimental group was there a statistically significant improvement between the pre- and post-intervention test measurements on Ryff's Psychological Well-being Scale. Although there were positive shifts in the right direction on the subscales "environmental mastery", "personal growth" and "self-acceptance", the changes were not significant enough in terms of statistical criteria. However, what is important is the significant shift from the pre-intervention test to post-intervention test on the total score (p = 0.026) of Ryff's Psychological Well-being Scale. This finding is in line with the research of Edwards and Steyn (2008), who used almost the same spectrum of psychological skills in their intervention programme for young sport participants. Ryff's Psychological Well-being Scale was also employed in both of these studies. Edwards and Steyn (2008) also conducted qualitative interviews with Sport Psychology experts and emphasised the relationship between psychological skills and psychological well-being as interrelated concepts. The experts

argued that psychological skills are a natural part of life and that skills training can improve performance in a specific situation, as well as psychological well-being in general.

Taking into account that there was a significant improvement in the experimental group on five of the seven psychological skills measured by Bull's Mental Skills Questionnaire (level of self-confidence, anxiety and worry management, concentration ability, relaxation ability and levels of motivation), the possibility that an improvement in respect of the psychological skills level may have a positive relation to and effect on well-being cannot be ruled out.

The link between mindfulness training and psychological well-being is fairly well-established in the available literature on mindfulness. Research has demonstrated that mindfulness training can lead to improvements in psychological well-being and has been noted in many studies (Carmody & Baer, 2008; Shapiro et al., 2008; Shapiro, Brown, Thoresen, & Plante, 2011; Weinstein, Brown, & Ryan, 2009). It is therefore not unreasonable to follow the same argument as in the case of psychological skills, namely that the improvement of mindfulness per se is significant, in the sense that improvements in mindfulness can be associated with increased levels of psychological well-being.

Another significant finding that indirectly confirms that there may have been a positive shift in the psychological well-being of the experimental group is the fact that there was a statistically significant improvement in the growth mindset in the experimental group from the pre- to the post-intervention test measurements. The growth mindset has become stronger from the pre- to the post-intervention testing and the fixed mindset has decreased significantly in the same time. This finding may be associated with improvements in psychological well-being in view of a significant study by Roberts and Ommundsen (2007), which links a self-mastery orientation (which is closely linked to the growth mindset, according to the work of Dweck, 2005) with psychological well-being. Almost 20 years of research on goal orientation and self-mastery are summarised in the following comment:

> "When participants perceive mastery criteria to be operative in the sport context, motivation is optimized, participants are invested in the task, persist longer, performance satisfaction and enjoyment are enhanced, peer relationships are fostered, cheating is lessened, burnout and dropout are reduces and athletes feel more positively about themselves" (Roberts & Ommundsen, 2007, p. 168).

The significant improvement in the experimental group on the Competitive State Anxiety Invertory-2 may be another indicator that there was a positive shift in the psychological well-being of the experimental group. Self-confidence levels increased significantly between the pre- and post-intervention testing measurements. This finding is in line with the research of Clark and Williamon (2011), who used almost the same spectrum of psychological skills in their intervention programme, as well as the CSAI-2, which was also employed in the current study. Clark and Williamon (2011) reported significant improvements in self-efficacy because of the psychological skills training and argued that these improved levels of self-efficacy can be linked to improved control of performance anxiety. According to Oyan (2006), that conducted an extensive literature review of the role that mindfulness can play in mitigating the performance debilitating effects of music performance anxiety, Oyan (2006) came to the conclusion that mindfulness training can play a significant role in a musician's ability to properly manage performance anxiety during performance.

The significant improvement of cognitive- and somatic anxiety in this study differs from Clark and Williamon's (2011) results. The measurements of the CSAI-2 in the current study suggest that the significant improvement in the reduction of cognitive- and somatic anxiety may be linked to positive shifts in psychological well-being. The reason for this argument is the tendency in mindfulness research to see the concepts of stress and anxiety management as being in an inverse relationship with psychological well-being. For example, article titles such as "Mindfulness-based stress reduction and health benefits. A meta-analysis" (Grossman et al., 2004) and "A multi-method examination of the effects of mindfulness on stress attribution, coping, and emotional well-being" (Weinstein et al., 2009) suggest that improved levels of managing stress and anxiety can be associated with higher levels of psychological well-being (Brown & Ryan, 2003; Dobkin & Zhao, 2011; Weinstein et al., 2009; Young & Baime, 2010).

There was an improvement in the mean score on music performance anxiety as measured by the Kenny Music Performance Anxiety Inventory. The mean score improved in the experimental group from 94.8 to 86.9 (a 4% improvement), but the improvement did not meet the criteria for statistical significance. However, there was some movement in the right direction, and the positive correlation between the cognitive- and somatic anxiety as measured by the CSAI-2 and the K-MPAI is an indication that the measurements are of high quality and that the movement in the experimental group was in the right direction.

Mood states in general can also be classified as one of the indirect indicators of psychological well-being for the obvious reason that negative mood states can be associated with psychological problems such as persistent or chronic depression, aggression and confusion (Barlow & Durand, 2005). A statistically significant improvement in the confusion mood scale from Week 1 to Weeks 5 and 6 indicated that confusion among the experimental group decreased significantly. The same trend was also determined in the anger and tension mood scales, which can be seen as a meaningful shift in the positive direction in terms of moods among the experimental group.

To answer the hypothesis-driven question of whether the intervention programme had a positive impact on the participants' psychological well-being and improved music performance anxiety, it can be stated that "positive relationships with others" as an important component of psychological well-being improved significantly. The fact that the total score of Ryff's Psychological Well-being Scale improved significantly can be seen as meaningful. This improvement in psychological well-being is also supported by indirect indicators of well-being, such as statistically significant improvements in the psychological skills levels, mindfulness, growth mindset, self-confidence and cognitive- and somatic anxiety, as well as the confusion mood scale. Specifically the improvement on the cognitive- and somatic anxiety as measured by the Competitive State Anxiety Inventory-2 is a strong indication that the intervention programme had a significant impact on the levels of music performance anxiety of the experimental group. In terms of psychological well-being, it can be concluded that the PST and mindfulness intervention programme was effective and that positive shifts in psychological well-being were revealed. However, psychological well-being may be a very stable psychological phenomenon that cannot be significantly altered after a seven-week intervention programme and, as in the case of mindfulness, developing and cultivating psychological well-being may only be achieved over a longer period (Ryff, 1989).

- **Did the PST and mindfulness training improve psychological skills and mindfulness per se?**

In the experimental group, a statistically significant difference was found between the pre- and post-intervention test scores on five of the seven subscales of Bull's Mental Skills Questionnaire (level of self-confidence, anxiety and worry management, concentration ability, relaxation ability and levels of motivation), as well as on the total score (p = 0.000). The control group's scores were stable, with no significant changes between the pre- and post-intervention tests. This significant shift in the improvement on five of the seven subscales is a strong indication that the

intervention programme was effective. There was also a notable increase on “imagery ability” and “mental preparation”, but the difference did not meet the statistical criteria for significance. This finding is in line with the results reported by Clark and Williamon (2011) regarding their research on undergraduate and postgraduate music students from a music conservatoire in the United Kingdom. Their research is the closest match to the current research in terms of the research design, the spectrum of psychological skills in the intervention programme, as well as individual aspects of measuring instruments. The fact that psychological skills per se improved in both these studies support the claim that PST per se can improve the effectiveness of the psychological skills involved. From the performance-evaluative context of sport, there is stronger evidence in the available research that PST by itself can improve the efficiency of the psychological skills that form part of the intervention programme (Edwards, 2007; Weinberg & Gould, 2007; Weinberg & Williams, 2006).

The experimental group displayed two significant changes from pre- to post-intervention testing in the subscales “describe items” and “non-judge items” as measured by the Five Facet Mindfulness Questionnaire. A statistically significant improvement in the total score (p = 0.038) (all the subscales combined) is a clear indication that there was a positive shift in the mindfulness levels of the undergraduate music students. These changes are meaningful, because the control group that received no intervention displayed no significant changes on “describe items” and “non-judge items”. The implication of the fact that these mindfulness dimensions were stronger after the intervention programme can be an indication that the mindfulness training with a specific focus on the MAC approach contributed to this improvement. This finding is in line with that of a number of mindfulness intervention research projects that mindfulness training can improve mindfulness (Anderson et al., 2007; Carmody & Baer, 2008; Chambers, Lo, & Allen, 2008).

Taking into account the differences between Bull’s Mental Skills Questionnaire and the Five Facet Mindfulness Questionnaire, it seems that the intervention programme favoured the psychological skills in comparison with the mindfulness if the amount of significant changes in the two scales is compared. It is also reported in the literature that these psychological skills can be acquired in a shorter time than mindfulness (Weinberg & Williams, 2006). The acquisition of mindfulness in everyday life, as well as the ability to employ mindfulness in a high performance setting may take a little bit longer to master than psychological skills. According to Kabat-Zinn (2007, 2008), the process of becoming mindful and acquiring the ability to harvest all the

positive reverberations of mindfulness in all life contexts may take time, and there is no quick solution on the difficult road of learning to live a quality mindful life.

The unique combination of PST and mindfulness training in this intervention programme makes it difficult to pinpoint which of the two components was responsible for these significant changes in the experimental group. A complicating factor is the fact that mindfulness training can also have a significant impact on the improvement on cognitive abilities, such as the skills involved in this intervention programme (Anderson et al., 2007; Hodgins & Adair, 2010; Zeidan et al., 2010). It also opens up the possibility that PST can reinforce some mindfulness elements during training. However, mutual reinforcement and cross-pollination between PST and mindfulness cannot be ruled out completely, although no proof of either can be provided in this study.

- **Was the combination of PST and mindfulness meaningful?**

Taking all the measuring instruments into account, 12 of the subscales that were measured improved significantly from the pre-intervention test to the post-intervention test in the experimental group. The implication of the fact that such a substantial number of subscales showed significant shifts in the desired direction provides sufficient evidence that something meaningful happened during the intervention programme and that the combination of PST and mindfulness training with a specific focus on the MAC approach had a positive impact on the experimental group.

By contrast, for the control group, all 12 of these subscales had reflected stable scores with no significant changes from the pre- to the post-intervention test except on the Self-theory Questionnaire, where the control group somehow improved as significantly in the growth mindset as in the experimental group. This unexpected shift in the improvement of the growth mindset cannot be fully explained. One may hypothesize that the undergraduate music students are a close-knit group and that the perception switch from the fixed mindset to the growth mindset may have been discussed among the students and that a culture shift may have taken place in most of the undergraduate music student group.

The positive results achieved suggest that the combination of PST and mindfulness training is an effective combination. This conclusion corroborates the findings of Bernier et al. (2009), who claim that they effectively combined PST and mindfulness with a specific focus on the MAC approach in an effective intervention programme for professional golfers. According to Bernier et al. (2009), this combination is a recent trend in cognitive behavioural research that is

becoming increasingly visible in the research landscape of mainstream Psychology, as well as in research in the performance-evaluative contexts where high performance under pressure is investigated. This research forms part of a third wave research approach in an effort to improve the effectiveness and quality of PST (cognitive training) in conjunction with mindfulness training, particularly where acceptance and commitment form an integral part of the high performance context.

- **Was the cross-over of knowledge from Sport Psychology to the Psychology of Music effectively achieved?**

Moderate success was achieved in this study based on the fact that there were statistically significant changes on 12 important psychological constructs (subscales). The intervention protocols employed in this study were originally developed in a Sport Psychology context and focus specifically on the intervention expertise of Orlick (1998) and Ravizza (2005).

The intervention expert used in this study primarily works with clients in a sport setting and had previous experience with clients from different performance-evaluative contexts such as public speaking, dance and music. Another factor that may have contributed to the partial success of this cross-over is the close collaboration between the intervention expert and a lecturer in the Department of Music who specializes in the Psychology of Music. Constant discussions between the intervention expert and the lecturer before and after the intervention sessions assisted with the fine tuning of the content of the interventions with the main aim of optimizing the relevance of the intervention programme.

Although the intervention programme was responsible for a significant shift in terms of the psychological constructs, there is always ample room for improvement, and the possibility of other successful cross-overs from the music to the sport context cannot be ruled out. Bull's Mental Skills Questionnaire was initially developed and standardized for sport populations. With minor adjustments in this research, significant improvement on the psychological skills have been reported and the high Cronbach alpha scores are an indication that this measuring instrument shows promise and may even be standardized using larger music populations. The Competitive State Anxiety Inventory-2 was extensively used on sport populations and the minor adjustments did not seem to affect the quality of measuring the music performance anxiety of the undergraduate music students. The very high correlation between the K-MPAI and the CSAI-2, as well as the adequate Cronbach alpha scores are an indication that the CSAI-2 can be used in other performance-evaluative contexts such as music, drama and other performing

arts. If a scientifically tested successful intervention programme can be initiated in a music context, then cross-pollination back from music to sport can also be achieved, as well as cross-pollination among all the performance-evaluative contexts.

- **Were the correlations between the psychological constructs (subscales) of the pre-intervention test measurements on all the respondents meaningful?**

In this study only the very strongest correlations ($r \geq 0.6$) that were all significant at the 1% level of significance were selected for discussion (see Appendix E).

Among the items in Bull's Mental Skills Questionnaire "relaxation ability" revealed a very strong positive relation with "self-confidence". The implication of this strong correlation is that if one of these psychological constructs (relaxation ability) improves, the other psychological construct (self-confidence) will also improve and if one becomes weaker, the other one will also become weaker.

A meaningful correlation between self-confidence as measured by Bull's Mental Skills Questionnaire and self-confidence as measured by the CSAI-2 suggests that these two subscales provide a consistent measurement of self-confidence. Both these self-confidence measurements correlated very strongly with relaxation ability ($r = 0.713$; $p = 0.00$), which implies that the confident undergraduate music students are much more relaxed in a music performance situation. In an overview of studies on peak performances in sport, the characteristic of self-confidence is always accompanied by feelings of control and effective management of arousal levels (Garfield & Bennett, 1984; Krane & Williams, 2006). The very high correlation between self-confidence (CSAI-2) and motivation (Bull's Mental Skills Questionnaire) is also in line with research on peak performances in sport (Krane & Williams, 2006).

Two important correlations between Bull's Mental Skills Questionnaire and the CSAI-2 suggest that the measuring instruments are measuring accurately the psychological constructs that they are intended to measure. Anxiety and worry management correlate negatively with cognitive state anxiety ($r = -0.625$; $p = 0.00$), and relaxation ability correlates very strongly with somatic state anxiety ($r = -0.739$; $p = 0.00$). This implies, that if one of these psychological constructs improves (anxiety and worry management), the other psychological constructs (cognitive- and somatic state anxiety) will decrease or become weaker. This correlation is in line with the results of research on peak performance, as well as cognitive intervention techniques that build

confidence in the sport context (Krane & Williams, 2006; Zinsser, Bunker, & Williams, 2006). All these above correlations were expected and in alignment with existing literature. These very significant correlations are very promising and provide support for the quality of the measuring instruments that were employed in this study.

6.3 Confounding Variables

In terms of the measuring instruments that were employed in this study, most of the measuring instrument subscales indicated that the experimental and control groups were almost similar in the pre-intervention test. Only two differences were found on the measurement subscales between the experimental and control groups, implying that the experimental and control groups were not similar in terms of “act of awareness” (Five Factor Mindfulness Questionnaire) and “positive relationships with others” (Ryff’s Psychological Well-being Scale). Taking the large number of subscales involved in this study, it can be stated that the pre-intervention tests revealed a rather homogeneous group. However, in most of the experimental design studies there are the possibility that other confounding variables may influence the findings of a study. However, Whitley (2001) warns that confounds might sometimes slip in during a study and the best research route to take is to try to avoid the possibilities of confounds as best as possible.

In this study, the confounding variables that may affect the outcome of this study were identified as natural confounds as termed by Whitley (2001). These natural confounds are usually indicated as demographic characteristics such as sex, age or ethnicity. The possibility that these natural confounds may have influenced the differences found on the dependent variable may not be ignored (Whitley, 2001), but the confounding variables in this study were not extensive enough to nullify the positive results of this intervention programme.

It is possible that the confounding variables that were identified in this study may be natural trends in larger populations. For example, it is interesting to note that the gender difference in terms of music performance anxiety that was detected in this study was also found in larger music performance populations. Kokotsaki and Davidson (2003) found that gender and trait anxiety are two most reliable predictors of performance anxiety and that females are more prone to anxiety than males in general. Osborne and Kenny (2008) confirmed this trend among male and female musicians in larger research samples. It is therefore crucial for this current research project to determine the degree of differences among the confounding variables that

were involved in this study. In conclusion, the positive findings cannot be neutralized by the existence of the confounding variables identified in this study.

6.4 Strengths of this Study

This intervention programme met the basic statistical requirements for a study of this nature. The sample of 36 undergraduate music students that were involved in this study compares favourably with samples in other international published research that made use of a similar research methodology. The fact that the pre-intervention test scores showed no significant differences between the scores of the experimental and control groups is an indication that the two groups were very similar before the intervention programme. Thus the significant changes on 12 important subscales in the post-intervention test measurements are a strong indicator that the intervention programme had a moderate effect on the experimental group. The high Cronbach alpha scores, as well as the strong correlations between the different subscales of the measuring instruments are an indication of the reliability of the measuring instruments. Taking all the previous statements into account, it seems that the intervention programme met most of the basic statistical requirements of this study.

A second strength of this research is the fact that PST and mindfulness were combined in the intervention programme. This combination may be a strength and a weakness at the same time. Although moderate success was achieved in terms of significant changes on the subscales of the experimental group, it also creates a problem in determining whether the changes should be attributed to the PST or the mindfulness training. It can only be stated that the combination in this research resulted in moderate success in terms of the positive changes in the experimental group.

A third strength of this research can be the successful cross-over of knowledge, protocols and measuring instruments from the context of sport to the context of music. This cross-over was necessitated by the lack of research on this topic in the Psychology of Music. Sport Psychology as a sister discipline in a performance-evaluative context proved to be helpful in providing additional relevant research to compare and map this research in the research landscape.

6.5 Limitations of this Study

The first limitation of this study is that the contact time with the undergraduate music students of one hour per week may have been too short to achieve the full impact of what was initially intended with the intervention programme. Specifically, the mindfulness exercises prescribed by the MAC approach were introduced to the undergraduate music students, but there was not enough time to revise and practise these crucial techniques until they became automatic so that the undergraduate music students can include these techniques in their daily routines and even pre-performance routines. Better results might also have been achieved if the intervention programme had stretched over a longer period of, say, nine to 10 weeks. This longer period would have been helpful in establishing the new techniques and routines as a natural part of their approach to a high performance situation. Due to their full programme and the academic demands on the undergraduate music students, these problems were a given, and were part and parcel of the research reality that the researcher had to contend with.

The primary focus of this research was on psychological well-being and music performance anxiety. This intervention programme may have had a very positive effect on the quality of the undergraduate music student's performances. It is always difficult to measure the quality of performance, but this study could have made use of qualitative self-reports to determine the impact of this intervention programme on the quality of the participants' music performances. The qualitative component of self-reports could have provided additional data on the performance outcomes, as well as assisted future research of this nature in order to refine protocols and to improve the relevance of the intervention programme. This essential feedback could provide valuable information to enable a more customized approach to the music context.

6.6 Recommendations for Future Research

The new trend in cognitive research, and specifically research pertaining to training in respect of psychological skills, is to incorporate a more mindful approach in intervention programmes. According to Bernier et al. (2009), this shift towards a more mindful approach is part of a recent trend called the third wave approach, which is identified by the fact that the participants are trained specifically to accept their cognitions, emotions and sensations, and in spite of the uncomfortable thoughts and emotions, able to commit to a higher level of performance. This may be the future direction of PST intervention programmes that aim to teach psychological skills in a mindful way and setting. The psychological skills are in a sense embedded in the

foundation of mindfulness training. Salmon et al. (2010) corroborate this tendency towards the third wave of research, which is also noticeable in recent Sport Psychology research.

Closer research cooperation and the possibility of cross-pollination between different performance-evaluative contexts such as sport, music, dance, drama and other performing art forms must deliberately be sought in future research. In the current research, the cross-over from Sport Psychology to the Psychology of Music achieved moderate success and the possibility was mooted that valuable advances in research in the Psychology of Music can be effectively transferred to sport and other performance-evaluative contexts. Valuable research information can be generated if such research cross-pollination can be continued in future research by means of responsible comparisons between the different performance-evaluative contexts, where the differences and similarities can be highlighted without falling into the generalization trap of equating the different performance-evaluative contexts.

Another essential research area in the Psychology of Music that requires more research is the psychological well-being of musicians of different ages. The electronic research platforms revealed a dearth of available research in this area. Proper surveys on larger populations of specifically younger musicians (at the primary-, secondary- and tertiary levels) need to be conducted - the availability of quality measuring instruments such as Ryff's Psychological Well-being Scale can provide valuable information in this area.

6.7 Conclusion

Accepting the research risk of taking a leap into the unknown provided a reasonable pay-off in this study in terms of the moderate success in achieving the six aims of this study. As indicated in Chapter 1, this study was novel in many ways, because of the vacuum regarding research in the music context on this specific configuration of key concepts. Most of the research information available is either on PST or on mindfulness, and has mostly been gleaned in the sport arena, as few studies on PST and mindfulness have been reported in the music context thus far. Thus this study pioneers the combination of PST and mindfulness in one intervention programme in music. The statistically significant changes achieved on 12 important subscales indicate that moderate success was achieved in this research and that the intervention programme had a positive impact on the psychological well-being and music performance anxiety of the participating undergraduate music students. The intervention programme consisting of PST and mindfulness training also assisted in a significant improvement of

psychological skills per se and a noticeable shift in the quality of mindfulness of the undergraduate music students. This unique intervention research programme can therefore provide a useful frame of reference for future research in this area.

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FAKULTEIT GEESTESWETENSKAPPE

FACULTY OF HUMANITIES

Departement Sielkunde

Department of Psychology

APPENDIX A:

Participant Information and Consent Letter

Dear Participant

MA Psychology: The impact of psychological skills and mindfulness training on the psychological well-being of undergraduate music students

It would be wonderful if you can take part in this exciting research project, in order to evaluate the effect of psychological skills training (PST) and mindfulness-based stress reduction (MBSR) training on music performance anxiety and the overall psychological well-being of the undergraduate music student.

This research will be conducted by Magritt Steyn and is guided by my study leader Prof David Maree.

Herewith is important information considering the research project:

- This intervention program will take place over a period of seven weeks, which will consist of a one hour session per week at the Department of Music at the University of Pretoria. Before the commencement of the seven week intervention program, a thorough information session that will also consist of the first round of psychological testing will be done as a pre-intervention phase. Another testing session will be done directly after the completion of the last intervention session. A follow-up testing session will also be done three months after the intervention program.
- Several questionnaires and tests will be employed to gather all the necessary data. The following questionnaires and tests will be employed: Bull's Mental Skills Questionnaire; Five-factor Mindfulness Questionnaire (FFMQ); Ryff's Psychological Well-being Scale; Brunel Mood Scale (BRUMS); Competitive State Anxiety Inventory-2 (CSAI-2); Perceptions of Success Questionnaire (POQS) and Self-theory Questionnaire.

- A time-line of the duration of participation is the following: Firstly, the information session as well as the first testing session will take place in March 2011. Secondly, the seven week intervention program will be implemented during the months of April to May 2011 and the second testing session will take place at the end of May 2011, after the completion of the intervention program. Lastly, the follow-up testing session will be August 2011, three months after the completion of the intervention program.
- Risks, discomforts or disadvantages are not likely to manifest during the intervention program, because recent research has indicated that PST may have a significant impact on lowering performance anxiety and improving the overall management of performance anxiety.
- It is very important to mention that the participation in this research project will not hinder your class attendance in any way, because these intervention sessions will be arranged beforehand.
- The participation in this research project is voluntary and therefore, it is the participant's right to withdraw from this research project at any juncture.
- Participation is completely confidential. The results will be reported in a group context. The data may be used for future research, but no names will be revealed. Confidentiality of the participant is an important aspect in this research project, because it ensures anonymity of the student.
- It is also important to note that the research results may also be used by follow-up research in the future. The research data will be stored in the Department of Psychology for a time period of 15 years.
- If you have any questions or queries, you are very welcome to contact the researcher (Magritt Steyn) on cellphone or via e-mail. The researcher's cell phone number is 084 675 3751 and e-mail address is mmhsteyn@gmail.com or Dr Panebianco-Warrens at clorinda.panebianco-warrens@up.ac.za.

Thank you

_____

Magritt Steyn Date

(mmhsteyn@gmail.com)

Cellphone 084 675 3751

_____

Study Leader Study Leader Signature Date

_____

Participant Name Participant Name Signature Date

APPENDIX B :

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Humanities
Research Ethics Committee

10 May 2011

Dear Prof Marchetti-Mercer

Project:	**The impact of psychological skills and mindfulness training on the psychological well-being of undergraduate music students**
Researcher:	**MH Steyn**
Supervisor:	**Prof D Maree**
Department:	**Psychology**
Reference number:	**25033779**

I have pleasure in informing you that the Registrar and Student Dean have formally given approval for the above study to be conducted at the University of Pretoria. Please note that this approval is based on the assumption that the research will be carried out along the lines laid out in the proposal. Should your actual research depart significantly from the proposed research, it will be necessary to apply for a new research approval and ethical clearance.

The Committee requests you to convey this approval to the researcher.

We wish you success with the project.

Sincerely

Prof John Sharp
Chair: Research Ethics Committee
Faculty of Humanities
UNIVERSITY OF PRETORIA
e-mail: john.sharp@up.ac.za

APPENDIX C :

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

FACULTY OF HUMANITIES
DEPARTMENT of MUSIC

TEL (012) 420-3747 (*Secretary*)
FAX (012) 420-2248

PRETORIA, 0002, SOUTH AFRICA

Re Permission for research in the Department of Music

Permission is given for the research project *Psychological skills training, mindfulness and psychological well-being amongst undergraduate music students* under the supervision of Prof. Ben Steyn and Dr Clorinda Panebianco-Warrens to be conducted at the department over a period of a few months during the first semester 2011. The project hypothesizes that the experimental music group involved in Psychological Skills Training and Mindfulness Based Stress Reduction Training will demonstrate an improvement in psychological skills, mindfulness, well-being and performance anxiety in comparison with a control group. The control group will be given the same training after the collection of the first data set so that both groups will benefit from the training. I give permission for the music students involved in the project to make use of the time allotted for Seminar on Tuesdays 13.30-14.30 for the duration of the project.

Yours

Prof. Wim Viljoen

APPENDIX D: BIOGRAPHICAL INFORMATION

Participant code: _____

Gender: _____

Population group: _____

Year of study: _____

Music instrument (s): _____

Years of practicing instrument: _____

Highest level (exams, grades, competition) of participation: _____

The measuring instruments that were used in this study are not included in this dissertation, due to copy right laws.

APPENDIX E:

Spearman's Correlations

Correlations between Bull's Mental Skills Questionnaire, Five Facet Mindfulness Questionnaire, Ryff's Psychological Well-being Scale, Competitive State Anxiety Inventory-2, Perceptions of Success Questionnaire, Self-Theory Questionnaire, Kenny Music Performance Anxiety Inventory, Concentration Grid and the Brunel Mood Scale.

				Bull's Mental Skills						
				Imagery ability	Mental preparation	Self-confidence	Anxiety and worry management	Concentration ability	Relaxation ability	Motivation
Spearman's rho	Bull's Mental Skills	Imagery ability	C	1.000	.317	**.397***	.075	.313	**.385***	**.560****
			S	.	.064	**.020**	.669	.081	**.022**	**.000**
			N	35	35	**34**	35	32	**35**	**35**
		Mental preparation	C	.317	1.000	**.502****	.008	.222	.241	**.511****
			S	.064	.	**.002**	.963	.214	.157	**.001**
			N	35	36	**35**	36	33	36	**36**
		Self-confidence	C	**.397***	**.502****	**1.000**	**.504****	**.466****	**.626****	**.594****
			S	**.020**	**.002**	**.**	**.002**	**.007**	**.000**	**.000**
			N	**34**	**35**	**35**	**35**	**32**	**35**	**35**
		Anxiety and worry manage	C	.075	.008	**.504****	**1.000**	.299	**.443****	.190
			S	.669	.963	**.002**	**.**	.091	**.007**	.266
			N	35	36	**35**	**36**	33	**36**	36
		Concentration ability	C	.313	.222	**.466****	.299	1.000	**.474****	.380*
			S	.081	.214	**.007**	.091	.	**.005**	.029
			N	32	33	**32**	33	33	**33**	33
		Relaxation ability	C	**.385***	.241	**.626****	.443**	.474**	1.000	.476**
			S	**.022**	.157	**.000**	.007	.005	.	.003
			N	**35**	36	**35**	36	33	36	36
		Motivation	C	**.560****	**.511****	**.594****	.190	.380*	.476**	1.000
			S	**.000**	**.001**	**.000**	.266	.029	.003	.
			N	**35**	**36**	**35**	36	33	36	36

	Five Factor Mindfulness	Observe	C	.135	**.445****	**.406***	.138	-.036	.254	.312
			S	.447	**.008**	**.019**	.437	.848	.148	.072
			N	34	**34**	**33**	34	31	34	34
		Describe	C	-.040	**.376***	**.436***	.192	-.107	.280	.048
			S	.824	**.028**	**.011**	.278	.568	.109	.788
			N	33	**34**	**33**	34	31	34	34
		Act with awarenes ss	C	.010	.205	**.372***	**.539****	**.599****	**.350***	.104
			S	.954	.238	**.030**	**.001**	**.000**	**.039**	.552
			N	34	35	**34**	**35**	**32**	**35**	35
		Nonjudg e	C	-.046	.074	.090	.321	-.032	.002	-.027
			S	.798	.673	.612	.060	.863	.990	.876
			N	34	35	34	35	32	35	35
		Nonreact	C	-.123	.010	**.399***	**.486****	**.406***	.317	.328
			S	.496	.954	**.024**	**.004**	**.026**	.072	.062
			N	33	33	**32**	**33**	**30**	33	33
	Ryff's Psychological Well-being	Autonom y	C	.000	.180	.291	-.007	.312	.216	.175
			S	.999	.293	.089	.966	.077	.205	.308
			N	35	36	35	36	33	36	36
		Positive relations hips with others	C	-.011	.070	-.193	.097	-.097	-.128	.039
			S	.949	.684	.268	.573	.590	.458	.820
			N	35	36	35	36	33	36	36
		Environm ental mastery	C	.143	**.506****	.217	.271	.041	.124	.178
			S	.413	**.002**	.210	.110	.819	.473	.299
			N	35	**36**	35	36	33	36	36
		Personal growth	C	.285	**.469****	.230	.062	.134	.295	.220
			S	.096	**.004**	.184	.720	.458	.081	.197
			N	35	**36**	35	36	33	36	36
		Purpose in life	C	.034	.161	**.408***	.274	.300	**.370***	.110
			S	.845	.350	**.015**	.106	.090	**.026**	.522
			N	35	36	**35**	36	33	**36**	36
		Self-acceptan ce	C	.024	**.463****	.306	.170	.083	-.126	.297
			S	.892	**.004**	.074	.320	.645	.464	.078
			N	35	**36**	35	36	33	36	36
	Competitive State Anxiety	Cognitive state anxiety	C	-.258	.029	-.309	**-.625****	**-.537****	**-.343***	-.298
			S	.135	.867	.071	**.000**	**.001**	**.041**	.077
			N	35	36	35	**36**	**33**	**36**	36
		Somatic state anxiety	C	-.172	-.125	**-.489****	**-.455****	**-.568****	**-.739****	-.308
			S	.323	.468	**.003**	**.005**	**.001**	**.000**	.067
			N	35	36	**35**	**36**	**33**	**36**	36

	State self-confidence	C	**.508****	**.479****	**.669****	.284	**.402***	**.713****	**.712****
		S	**.002**	**.003**	**.000**	.093	**.020**	**.000**	**.000**
		N	**35**	**36**	**35**	36	**33**	**36**	**36**
Perceptions of Success	Ego	C	**.345***	.044	**.403***	.018	.154	.294	.252
		S	**.046**	.802	**.018**	.920	.392	.087	.145
		N	**34**	35	**34**	35	33	35	35
	Task	C	.272	**.404***	.273	.039	.115	.162	.325
		S	.120	**.016**	.118	.822	.530	.351	.057
		N	34	**35**	34	35	32	35	35
Self-theory	Growth mindset	C	-.013	.128	.280	.268	.095	.086	**.340***
		S	.943	.456	.104	.113	.599	.616	**.042**
		N	35	36	35	36	33	36	**36**
	Fixed mindset	C	.187	-.099	-.333	-.210	-.145	-.263	.171
		S	.282	.567	.051	.220	.421	.121	.319
		N	35	36	35	36	33	36	36
Kenny	Anxiety Inventory	C	-.195	-.249	**-.588****	**-.580****	**-.571****	**-.473****	**-.450****
		S	.269	.150	**.000**	**.000**	**.001**	**.004**	**.007**
		N	34	35	**34**	**35**	**33**	**35**	**35**
Grid	Concentration score: Week 1	C	.054	-.145	-.187	.031	-.122	-.005	-.010
		S	.757	.400	.283	.857	.499	.977	.952
		N	35	36	35	36	33	36	36
Brunel Mood Scale	Anger: Week 1	C	-.148	-.065	-.189	**-.339***	-.219	-.176	-.108
		S	.403	.710	.284	**.046**	.228	.312	.536
		N	34	35	34	**35**	32	35	35
	Confusion: Week 1 Brunel	C	-.175	-.155	-.113	-.332	-.346	-.196	-.131
		S	.323	.375	.526	.051	.052	.258	.453
		N	34	35	34	35	32	35	35
	Depression: Week 1	C	-.057	-.094	-.275	-.308	-.329	-.166	-.204
		S	.750	.591	.115	.072	.066	.340	.239
		N	34	35	34	35	32	35	35
	Fatique: Week 1	C	-.073	-.035	-.284	-.107	**-.499****	-.145	-.236
		S	.680	.842	.103	.540	**.004**	.407	.173
		N	34	35	34	35	**32**	35	35
	Tension: Week 1	C	-.141	-.138	-.262	**-.395***	**-.566****	-.303	-.218
		S	.426	.429	.135	**.019**	**.001**	.077	.208
		N	34	35	34	**35**	**32**	35	35
	Vigour: Week 1	C	.203	.096	**.366***	.250	.044	.030	**.465****
		S	.250	.584	**.033**	.148	.813	.864	**.005**
		N	34	35	**34**	35	32	35	**35**

Definition of symbols:
C – Cs
S – S

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

- Weak correlations: (r=0.1 - 0.2)
- Moderate correlations: (r=0.3 – 0.4)
- Strong correlations: r = 0.5
- Very strong correlations: r ≥ 0.6

Correlations between Five Factor Mindfulness, Ryff's Psychological well-being and Competitive State Anxiety, Perceptions of Success, Self-Theory, Kenny, Grid and Brunel Mood Scale.

				Five Factor Mindfulness					Ryff's Psychological Well-being					
				Observe	Describe	Act with awareness	Nonjudge	Nonreact	Autonomy	Positive relationships with others	Environmental mastery	Personal growth	Purpose in life	Self-acceptance
Spearman's rho	Five Factor Mindfulness	Observe	C	1.000	**.445****	-.079	.049	.018	.234	-.017	.074	**.432***	.047	.098
			S	.	**.009**	.658	.783	.919	.183	.925	.677	**.011**	.794	.581
			N	34	**33**	34	34	33	34	34	34	**34**	34	34
		Describe	C	**.445****	1.000	.159	.232	-.019	.245	-.003	.271	**.429***	.262	.110
			S	**.009**	.	.370	.186	.915	.163	.987	.120	**.011**	.134	.536
			N	**33**	34	34	34	33	34	34	34	**34**	34	34
		Act with awarene	C	-.079	.159	1.000	.290	**.365***	-.127	.191	.297	.025	.313	.132
			S	.658	.370	.	.091	**.037**	.468	.271	.083	.887	.067	.450
			N	34	34	35	35	**33**	35	35	35	35	35	35
		Nonjudge	C	.049	.232	.290	1.000	.014	.029	.223	.180	.178	.186	.310
			S	.783	.186	.091	.	.939	.870	.198	.302	.308	.284	.070
			N	34	34	35	35	33	35	35	35	35	35	35
		Nonreact	C	.018	-.019	**.365***	.014	1.000	.018	-.046	.109	-.138	-.059	-.024
			S	.919	.915	**.037**	.939	.	.923	.801	.545	.442	.744	.895
			N	33	33	**33**	33	33	33	33	33	33	33	33
	gic	A u t	C	.234	.245	-.127	.029	.018	1.000	-.265	-.220	**.409**	.245	**.330***

			S	.183	.163	.468	.870	.923	.	.118	.197	**.013***	.151	**.049**
			N	34	34	35	35	33	36	36	36	**36**	36	**36**
		Positive relations	C	-.017	-.003	.191	.223	-.046	-.265	1.000	**.395***	.237	.053	.275
			S	.925	.987	.271	.198	.801	.118	.	**.017**	.165	.760	.105
			N	34	34	35	35	33	36	36	**36**	36	36	36
		Environmental	C	.074	.271	.297	.180	.109	-.220	**.395***	1.000	.218	.046	**.347***
			S	.677	.120	.083	.302	.545	.197	**.017**	.	.202	.790	**.038**
			N	34	34	35	35	33	36	**36**	36	36	36	**36**
		Personal growth	C	**.432***	**.429***	.025	.178	-.138	**.409***	.237	.218	1.000	.233	.244
			S	**.011**	**.011**	.887	.308	.442	**.013**	.165	.202	.	.172	.152
			N	**34**	**34**	35	35	33	**36**	36	36	36	36	36
		Purpose in life	C	.047	.262	.313	.186	-.059	.245	.053	.046	.233	1.000	-.007
			S	.794	.134	.067	.284	.744	.151	.760	.790	.172	.	.969
			N	34	34	35	35	33	36	36	36	36	36	36
		Self-acceptance	C	.098	.110	.132	.310	-.024	**.330***	.275	**.347***	.244	-.007	1.000
			S	.581	.536	.450	.070	.895	**.049**	.105	**.038**	.152	.969	.
			N	34	34	35	35	33	**36**	36	**36**	36	36	36
	Competitive State Anxiety	Cognitive state anxiety	C	.224	.030	**-.516****	-.128	**-.529****	.024	-.057	-.157	.196	-.145	-.004
			S	.202	.867	**.001**	.465	**.002**	.890	.739	.359	.253	.400	.981
			N	34	34	**35**	35	**33**	36	36	36	36	36	36
		Somatic state anxiety	C	.127	-.113	**-.561****	-.031	**-.527****	-.182	.068	-.073	.048	-.298	.037
			S	.475	.523	**.000**	.858	**.002**	.289	.695	.672	.781	.077	.832
			N	34	34	**35**	35	**33**	36	36	36	36	36	36
		State self-confidence	C	.155	**.414***	.262	.011	.288	.186	-.043	.306	.210	.288	.204
			S	.382	**.015**	.128	.952	.104	.278	.801	.069	.219	.088	.233
			N	34	**34**	35	35	33	36	36	36	36	36	36
	Perceptions of Success	Ego	C	.163	-.008	-.186	.040	.018	.165	**-.541****	-.268	-.024	.150	-.007
			S	.364	.964	.292	.822	.922	.342	**.001**	.120	.892	.388	.970
			N	33	33	34	34	32	35	**35**	35	35	35	35
		Task	C	.262	.149	-.130	-.221	.003	.053	-.258	**.353***	.181	-.089	.172
			S	.141	.409	.464	.210	.986	.764	.134	**.038**	.298	.611	.322
			N	33	33	34	34	32	35	35	**35**	35	35	35
	Self-theory	Growth mindset	C	.213	.275	-.005	.278	.112	.325	.323	.147	**.417***	.144	**.480***
			S	.227	.116	.976	.106	.534	.053	.055	.394	**.011**	.402	**.003**
			N	34	34	35	35	33	36	36	36	**36**	36	**36**

		Fixed mindset	C	.021	-.020	-.330	-.191	-.138	-.005	.183	-.061	.090	-.191	-.057
			S	.905	.909	.053	.271	.443	.978	.286	.726	.603	.264	.741
			N	34	34	35	35	33	36	36	36	36	36	36
	Kenny	Anxiety Inventory	C	.058	-.165	**-.566****	-.263	**-.584****	-.273	-.221	-.274	-.134	**-.334***	**-.409***
			S	.749	.357	**.000**	.132	**.000**	.112	.203	.112	.443	**.050**	**.015**
			N	33	33	**34**	34	**32**	35	35	35	35	**35**	**35**
	Grid	Concentration	C	.197	.078	.008	.127	-.020	-.061	.255	.219	.142	-.031	-.110
			S	.264	.660	.965	.468	.914	.724	.133	.200	.410	.855	.523
			N	34	34	35	35	33	36	36	36	36	36	36
	Brunel Mood Scale	Anger: Week 1	C	.071	.042	**-.430***	-.308	-.227	.051	**-.348***	-.286	-.044	-.247	-.232
			S	.695	.817	**.011**	.076	.211	.770	**.040**	.096	.803	.152	.179
			N	33	33	**34**	34	32	35	**35**	35	35	35	35
		Confusion: Week 1	C	.174	.038	**-.479****	-.116	-.216	.086	-.439**	-.479**	-.052	-.225	-.291
			S	.333	.836	**.004**	.512	.235	.624	.008	.004	.766	.195	.090
			N	33	33	**34**	34	32	35	35	35	35	35	35
		Depression: Week 1	C	-.054	.041	-.332	-.221	-.267	.047	-.520**	-.367*	-.108	**-.380***	-.272
			S	.765	.823	.055	.208	.139	.789	.001	.030	.536	**.024**	.114
			N	33	33	34	34	32	35	35	35	35	**35**	35
		Fatique: Week 1	C	-.039	.078	**-.405***	.002	-.117	-.013	-.240	.014	-.118	-.377*	-.155
			S	.829	.667	**.017**	.990	.525	.941	.164	.938	.501	.026	.373
			N	33	33	**34**	34	32	35	35	35	35	35	35
		Tension: Week 1	C	.285	.091	**-.639****	-.302	**-.355***	-.175	-.045	-.240	.018	-.260	-.324
			S	.108	.613	**.000**	.083	**.046**	.315	.796	.165	.917	.131	.058
			N	33	33	**34**	34	**32**	35	35	35	35	35	35
		Vigour: Week 1	C	.162	-.032	-.191	.034	.330	.059	-.003	.159	.183	.001	.232
			S	.369	.859	.279	.849	.065	.734	.986	.362	.293	.993	.180
			N	33	33	34	34	32	35	35	35	35	35	35

Correlations between CSAI-2, POSQ, Self-Theory Questionnaire, K-MPAI, Concentration Grid and BRUMS

				Competitive State Anxiety			Perceptions of Success		Self-Theory		Kenny	Grid
				Cognitive state anxiety	Somatic state anxiety	State self-confidence	Ego	Task	Growth mindset	Fixed mindset	Anxiety Inventory	Concentration score: Week 1
Spearman's rho	Competitive State Anxiety	Cognitive state anxiety	C	1.000	**.537****	-.324	-.045	-.087	.042	.017	**.625****	-.086
			S	.	**.001**	.054	.798	.619	.808	.923	**.000**	.616
			N	36	**36**	36	35	35	36	36	**35**	36
		Somatic state anxiety	C	**.537****	1.000	**-.595****	-.147	.025	-.011	.272	**.672****	.142
			S	**.001**	.	**.000**	.401	.889	.950	.108	**.000**	.409
			N	**36**	36	**36**	35	35	36	36	**35**	36
		State self-confidence	C	-.324	**-.595****	1.000	**.372***	.321	.172	.089	**-.543****	-.173
			S	.054	**.000**	.	**.028**	.060	.315	.605	**.001**	.314
			N	36	**36**	36	**35**	35	36	36	**35**	36
	Perceptions of Success	Ego	C	-.045	-.147	**.372***	1.000	.335	-.093	-.020	.003	-.301
			S	.798	.401	**.028**	.	.053	.595	.910	.987	.079
			N	35	35	**35**	35	34	35	35	34	35
		Task	C	-.087	.025	.321	.335	1.000	.054	.046	-.001	-.068
			S	.619	.889	.060	.053	.	.757	.791	.996	.700
			N	35	35	35	34	35	35	35	34	35
	Self-theory	Growth mindset	C	.042	-.011	.172	-.093	.054	1.000	.032	-.307	.097
			S	.808	.950	.315	.595	.757	.	.854	.073	.575
			N	36	36	36	35	35	36	36	35	36
		Fixed mindset	C	.017	.272	.089	-.020	.046	.032	1.000	.069	.077
			S	.923	.108	.605	.910	.791	.854	.	.695	.656
			N	36	36	36	35	35	36	36	35	36
	Kenny	Anxiety Inventory	C	**.625****	**.672****	**-.543****	.003	-.001	-.307	.069	1.000	.211
			S	**.000**	**.000**	**.001**	.987	.996	.073	.695	.	.225
			N	**35**	**35**	**35**	34	34	35	35	35	35
	Grid	Concentration score:	C	-.086	.142	-.173	-.301	-.068	.097	.077	.211	1.000
			S	.616	.409	.314	.079	.700	.575	.656	.225	.
			N	36	36	36	35	35	36	36	35	36
	Brunel Mood Scale	Anger: Week	C	.278	.288	-.070	.206	.272	-.293	.275	**.473****	-.096
			S	.106	.094	.689	.241	.120	.088	.110	**.005**	.581

			N	35	35	35	34	34	35	35	**34**	35
		Confusion: Week 1 Brunel	C	**.449****	.256	-.227	.192	.063	.018	.059	**.532****	-.067
			S	**.007**	.138	.190	.277	.725	.919	.738	**.001**	.702
			N	**35**	35	35	34	34	35	35	**34**	35
		Depression: Week 1	C	.162	.185	-.134	.112	.195	**-.461****	.129	**.471****	-.160
			S	.353	.287	.444	.528	.268	**.005**	.462	**.005**	.360
			N	35	35	35	34	34	**35**	35	**34**	35
		Fatigue: Week 1	C	.006	.134	-.091	.090	.301	-.301	.139	.265	-.017
			S	.972	.444	.604	.614	.084	.078	.426	.130	.923
			N	35	35	35	34	34	35	35	34	35
		Tension: Week 1	C	**.563****	**.484****	-.290	-.039	.090	-.123	.079	**.648****	.005
			S	**.000**	**.003**	.091	.827	.613	.480	.652	**.000**	.979
			N	**35**	**35**	35	34	34	35	35	**34**	35
		Vigour: Week 1	C	.038	.078	.264	.223	.243	**.452****	.273	-.107	.115
			S	.830	.656	.126	.205	.166	**.006**	.112	.546	.509
			N	35	35	35	34	34	**35**	35	34	35

BRUMS correlations

				Brunel Mood Scale					
				Anger: Week 1	Confusion: Week 1	Depression: Week 1	Fatique: Week 1	Tension: Week 1	Vigour: Week 1
Spearman's rho	Brunel Mood Scale	Anger: Week 1	C	1.000	**.660****	**.706****	**.394***	**.562****	.047
			S	.	**.000**	**.000**	**.019**	**.000**	.790
			N	35	**35**	**35**	**35**	**35**	35
		Confusion: Week 1 Brunel	C	**.660****	1.000	**.505****	**.369***	**.591****	.065
			S	**.000**	.	**.002**	**.029**	**.000**	.712
			N	**35**	35	**35**	**35**	**35**	35
		Depression: Week 1	C	**.706****	**.505****	1.000	**.589****	**.486****	-.175
			S	**.000**	**.002**	.	**.000**	**.003**	.315
			N	**35**	**35**	35	**35**	**35**	35
		Fatique: Week 1	C	**.394***	**.369***	**.589****	1.000	.233	-.229
			S	**.019**	**.029**	**.000**	.	.178	.186
			N	**35**	**35**	**35**	35	35	35
		Tension: Week 1	C	**.562****	**.591****	**.486****	.233	1.000	.068

			S	**.000**	**.000**	**.003**	.178	.	.699
			N	**35**	**35**	**35**	35	35	35
		Vigour: Week 1	C	.047	.065	-.175	-.229	.068	1.000
			S	.790	.712	.315	.186	.699	.
			N	35	35	35	35	35	35