An Investigation into the Motivation of South African Orchestral Musicians Studying at Tertiary Level

by
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Declaration

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Abstract

The conductor of an orchestra or ensemble plays an important role in the motivation of orchestral musicians. It is commonly known that musicians in orchestras work in highly pressured environments which could take its toll on them mentally and physically. As a conductor, I wanted to understand the motivational levels of orchestral players studying at tertiary institutions in South Africa from the perspective of the Self-Determination Theory.

Knowing the *level* of motivation experienced by musicians, could assist the conductor in creating strategies to efficiently and positively influence the orchestra. There have been previous studies into the stress and motivational aspects musicians experience during their transitions from school level through to the professional stage, however, none consider the South African context. Thus, additional studies are required to understand the orchestral environment within in this specific context, as well as to provide a structured methodology that the conductor could use in order to understand and positively influence the motivation of their orchestra.

This study evaluated the motivation of musicians (N=53) through the lens of the Self-Determination Theory, not only to describe whether the musicians are motivated, but to indicate the quality and internalisation of the motivation they are experiencing. A quantitative study was done by means of a survey consisting of 65 questions, synthesised through two mini-theories of the Self-Determination Theory, namely the Basic Psychological Needs Theory, and the Organismic Integration Theory. The survey was distributed to students from five South African universities with active symphony orchestras, or comparable ensembles.

Statistical results show that musicians do experience intrinsic motivation more than extrinsic motivation within the orchestral environment, however, the intrinsic motivation experienced is negatively affected during final stages within the course of the undergraduate degree, indicating that motivation becomes more extrinsically driven at critical stages.

Opsomming

Die dirigent van ’n orkes of ensemble speel ’n baie belangrike rol in die motivering van orkesmusikante. Dit is algemeen bekend dat orkesmusikante in geweldige spanningsvolle omgewings werk, wat direkte nagevolge vir hul fisiese- en geestesgesondheid kan hê. As dirigent, wou ek verstaan wat die motiveringsvlakke van tersiêre musiekstudente in Suid-Afrika is, deur middel van die “Self-Determination Theory”.

’n Deeglike begrip van die motiveringsvlakke wat deur musikante ervaar word, kan die dirigent help om strategieë te ontwikkel wat die orkes op positiewe en effektiewe maniere kan beïnvloed. Daar is bestaande navorsing oor die vlakke van stres en motivering wat musikante deurlopend tydens hul loopbane ervaar, vanaf skoolvlak tot en met professionele uitvoeringsvlak, maar bestaande studies verwys nie na die Suid-Afrikaanse konteks nie. Daar is dus ’n behoefte aan bykomende navorsing om die orkestriële omgewing binne hierdie spesifieke konteks te verstaan, sowel as om ’n metodologie te ontwikkel wat deur die dirigent gebruik kan word om hul orkes se motiveringsvlakke te verstaan en positief te kan beïnvloed.

Hierdie studie het die “Self-Determination Theory” as ’n lens aangewend om die motiveringsvlakke van musikante (N=53) te evalueer. Die studie het veral gefokus op die kwaliteit en internalisering van die motivering wat musikante ervaar. ’n Kwantitatiewe studie is gedoen wat bestaan het uit ’n opname van 65 vrae, saamgestel uit twee mini-teorieë van die “Self-Determination Theory”, naamlik, die “Basic Psychological Needs Theory”, en die “Organismic Integration Theory”. Die opname is versprei onder studente aan vyf Suid-Afrikaanse universiteite wat aktiewe simfonieorkeste of vergelykbare ensembles het.

Statistiese resultate wys dat die musikante meer intrinsieke as ekstrinsieke motiversingsvlakke binne die orkestriële omgewing ervaar, maar dat hul intrinsieke motiveringsvlakke negatief beïnvloed word tydens die finale tydperk van die voorgraadse program. Die uitslae het aangedui dat die musikante meer neig na ekstrinsieke motiveringsvlakke op kritieke stadiums van hul opleiding.

Acknowledgements

I would first like to thank my supervisor Miss Danell Herbst. She consistently supported and inspired me, steering me in the right direction, and proving to me that writing a thesis of any kind is much more difficult than conducting a Mahler symphony.

To Prof. Martin Kidd and Dr. Paul Evans, for guiding me through my research with their incredible knowledge in statistics and educational psychology, you were both highly ($P<0.01$) in my research.

To all the orchestral musicians who participated in this research, you are the reason why I do what I love, and your assistance helped considerably in this research. Your contributions are the Tierce de Picardie in this otherwise imperfectly cadenced world.

And last but not least, to my wife, Louié, for supporting me in the highs and lows of this research process, for believing in me, and mostly instructing me that I am not allowed to not finish this now, so I finished it now.

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LIST OF ACRONYMS

- ACR - Autonomy, Competence, Relatedness
- ANOVA - (**AN**alysis **O**f **Va**riance)
- BPN - Basic Psychological Needs
- BPNT - Basic Psychological Needs Theory
- CET - Cognitive Evaluation Theory
- COT - Causality Orientation Theory
- EM - Extrinsic Motivation
- GCT - Goal Contents Theory
- IM - Intrinsic Motivation
- LCQ - Learning Climate Questionnaire
- NMU - Nelson Mandela University
- NWU - North-West University
- OIT - Organismic Integration Theory
- RMT - Relationship Motivation Theory
- SDT - Self-Determination Theory
- SRQ - Self-Regulation Questionnaire
- SU - Stellenbosch University
- UFS - University of the Free State
- UP - University of Pretoria

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CHAPTER 1

INTRODUCTION TO THE STUDY

1.1 BACKGROUND

Conductors are responsible for leading an orchestra musically and technically. Their knowledge and technique must be of such a level that musicians are encouraged to perform at their utmost capabilities. Conductors have significant influence on the way an orchestra works and sounds.

I have been involved in conducting and teaching music to all age groups[1], and have made certain observations regarding the fluctuating levels of motivation in orchestral musicians. To me, this is most perceptible in the first year of tertiary studies where students undergo significant lifestyle changes that influence them as musicians, and as people. I have experienced first-hand at rehearsals and competitions that by changing only the conductor, a different sound is obtained from the same orchestra. I have observed that, within the musicians' environment, a lack of motivation often emerges due to the various impacts on this environment, as well as the influences on them as people.

Very little research has been found on this subject, with the closest research rather focusing more on the pre-tertiary and/or professional setting[2]. Upon commencing tertiary studies, the vast array of changes to the students' immediate environment can be overwhelming. Some of these challenges include; leaving one's childhood home, being responsible for one's own actions and well-being, and facing a new climate where one's peers are now one's direct career competitors, to name a few. The music environment is often seen as *get-tough-or-get-out*, and this could be a possible explanation as to why this specific area hasn't been studied as thoroughly. The few studies[3] that have addressed the issue of motivation in tertiary level music students have only been made in general and do not focus on the orchestral environment setting.

This thesis will explore the motivational levels of orchestral musicians currently studying at South African tertiary institutions. The aim is to evaluate their motivational status to develop

[1] Primary and secondary school levels, tertiary institution level as well as amateur and professional orchestras.

[2] Ascenso, Williamon & Perkins (2016); Daniel (2006); Hager & Johnsson (2007); Kenny (2014); Schatt (2013)

[3] Bright (2006); Burt-Perkins (2009); Evans & Bonneville-Roussy (2015); Evans, McPherson, & Davidson (2013); Renwick (2008)

strategies that conductors can employ to address those levels, however those strategies will only be developed with further research.

1.2 RESEARCH PROBLEM

South Africa does not currently have a sustainable orchestral environment. Burdukova (2010:65) identified several factors that created stressful and uncertain situations for musicians, such as when the government withdrew state funding, resulting in the disbanding of several orchestras in the country, or when financial mismanagement nearly resulted in the Johannesburg Philharmonic Orchestra to face liquidation (SABC Digital News, 2014). To lose one's job in this manner, or to be exposed to such vulnerable situations such as these, can be extremely demotivating for musicians, but also for those wishing to pursue a career as an orchestral musician.

Besides the challenges which could be faced when entering a full-time position, tertiary students wishing to pursue a career in an orchestra also have various obstacles to overcome. They enter a highly contested field due to the limited vacancies available, restricted lines of succession in terms of junior orchestras through to professional levels, as well as the many internal challenges faced by students. These various factors could cause, or have already caused demotivation amongst tertiary level orchestral players in South Africa.

It is my observation as a researcher that demotivation is widely spread among South African music students. To investigate whether or not my subjective perspective holds some objective value I studied a group of tertiary students and applied Deci and Ryan's Self-Determination Theory (SDT) to understand the motivational levels of orchestral musicians.

This led to the following **main question**:

- What are the motivational levels of orchestral musicians studying at tertiary level in South Africa as interpreted through the Self-Determination Theory?

From there objectives were created in order to assist in determining an answer for the main research question. The main objective of this study is to examine the motivation of South African orchestral musicians studying at tertiary level through the lens of SDT. With that in mind, the specific objectives of this study were set as follows:

- Define motivation as interpreted through the Self-Determination Theory.
- Describe the Basic Psychological Needs Theory.
- Discuss the Organismic Integration Theory (OIT).

  - Explore the various loci of causality as observed on the continuum of Self-Determination with reference to OIT.
- Determine the 'experience of' and the 'support for' the Basic Psychological Needs.
- Investigate how the Self-Determination Theory can determine the types of motivation regulations experienced by the orchestral musicians.

1.3 RESEARCH DESIGN AND METHODOLOGY

The research design is a survey which was conducted using online questionnaires. Mouton (2001:152) defines surveys as "studies that are usually quantitative in nature and which aim to provide a broad overview of a representative sample of large population." The choice of research design is therefore justified, as this research focused on *extrinsic motivation* within a large quantity of students. This empirical study is quantitative in nature and analysed numeric data to provide a broad overview of the statistical findings. As research in SDT is mainly quantitative in nature (as seen in SDT studies), researchers have "developed many questionnaires to assess different constructs contained within the theory" (SDT, 2017).

In the questionnaire, participants (N=53) rated their general level of motivation in the orchestral environment as well as how they unconsciously perceive the application of SDT in this environment. The questions were measured with a 7-point Likert scale. The mini-theories that were applied are the Organismic Integration Theory (OIT), as it "addresses the process of internalisation of various extrinsic motives" (Ryan 2009:1) and Basic Psychological Needs Theory (BPNT), as "the impact of any behaviour or event on well-being is largely a function of its relations with need satisfaction." (Ryan 2009:1).

The SDT website (2017) includes several questionnaire templates which apply to the various avenues of research into SDT. For this study, the questionnaire is based on the Self-Regulation Questionnaire (SRQ). The format of the SRQ was originally introduced by Ryan and Connell (1989), and its main function is to "assess domain-specific individual differences in the types of motivation or regulation" (SDT, 2017). The questionnaire was structured with reference to the SRQ-Mus questionnaire Evans and Bonneville-Roussy (2015) constructed for their research. I have been in correspondence with Dr Evans, regarding SRQ-Mus, and how best to structure the questionnaire for optimal use.

The focus group is orchestral musicians studying at South African tertiary institutions with active symphonic orchestras. The questionnaire was set up using SUNSurvey[4], and then distributed through email. Students from Stellenbosch University were invited via email after permission by DESC was granted, whilst students from other institutions were invited through invitational email after institutional permission was granted.

After the data was collected, it was processed with the help of Prof. Martin Kidd from Stellenbosch University's Centre of Statistical Consultation who offers consultation and training on statistical data. Prof. Kidd consulted on the best methods to process and analyse the data to provide the best results.

1.4 CHAPTER OUTLINE

Chapter 1 provides a broad overview on the background of the study, the rationale behind the research idea and how the study plans to take place and conclude.

In **Chapter 2**, I explore the various areas of the orchestral environment, the musicians in this environment, and the lens through which I studied their motivation, namely the Self-Determination Theory. I establish why the orchestral environment as area of focus is important to the continued growth of the musical environment, as well as why the musicians in this environment are critical to this study. From there I analyse the primary research device in studying motivation, in order to provide a concrete understanding as to why the Self-Determination Theory is the optimal tool in deciphering the motivation of orchestral players.

After the literature review of Chapter 2, I explain the specific methods and approaches I used in order to study the specific phenomenon in **Chapter 3**. I present the various concepts of research methodology and design, defining what the most optimal choice for this study is in the context of this research, and then I delve into the specific tools I utilised to carry out the research, and how they are tailored specifically for the target sample. I conclude the chapter with an outline of all the limitations faced with the completion of this research.

In **Chapter 4**, I present the findings of my study into the motivation of tertiary level orchestral musicians in South Africa. I analyse the orchestral environment measuring how musicians perceive their needs being supported in this environment, as well as how they experienced these needs within this environment. I then analyse what type of motivation the

[4] Stellenbosch University's Survey tool.

various year groups of musicians experienced on average. I lastly compare the findings of the needs support vs. thwarting with the types of motivation experienced by the musicians.

The thesis concludes in **Chapter 5**, where an overview of the findings is given and discussed, followed by the answering of the research question and objectives, and ended with final remarks and recommendations.

CHAPTER 2

LITERATURE STUDY

Motivation does not only play an integral part within the field of classical music, but in all disciplines and all facets of life. Studies on motivation have been essential to the understanding of many social structures, from business to everyday life, in order to effectively manage the people in a set environment. The development of musicians has been studied widely, from their initial training to their final days at postgraduate level, on topics such as mental[5] and physical[6] health, and now more recently on motivation[7]. What lacks in the decade's worth of research is the necessary South African context.

As can be seen below in Figure 1, this chapter will explore three key areas specifically focused within the several environmental layers of music. The first area is understanding the lens of SDT and its application as analytical framework; then viewing the dynamic environment of orchestral musicians with several influential variables to be considered in this environment; and finally inspecting the interactions between conductors and orchestral musicians, whilst considering the developmental background leading up to the orchestral approach by both parties. Figure 2 indicates the outline for this chapter.

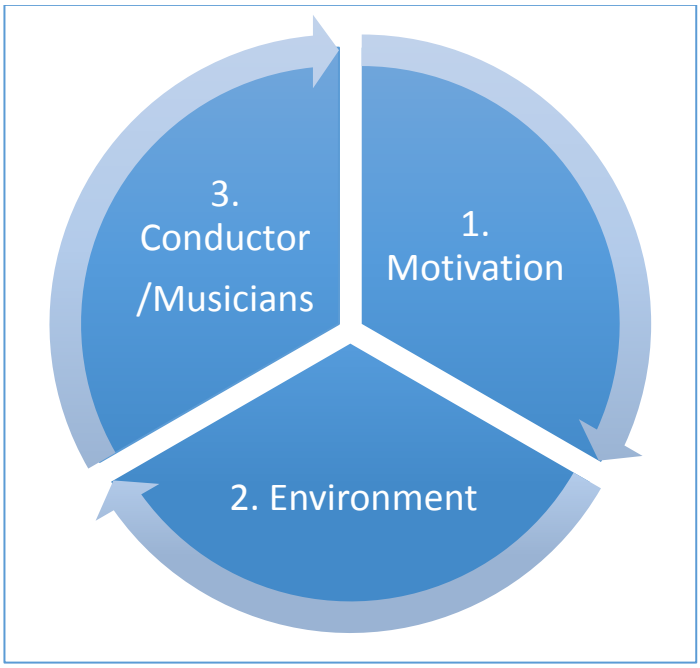

Figure 1 - Chapter 2 Outline

[5] Kenny, *et al.*, 2014; Ascenso, *et al.*, 2017
[6] Van der Walt, 2006; Andersen, *et al.*, 2013
[7] Evans, 2015; Evans & Bonneville-Roussy, 2015

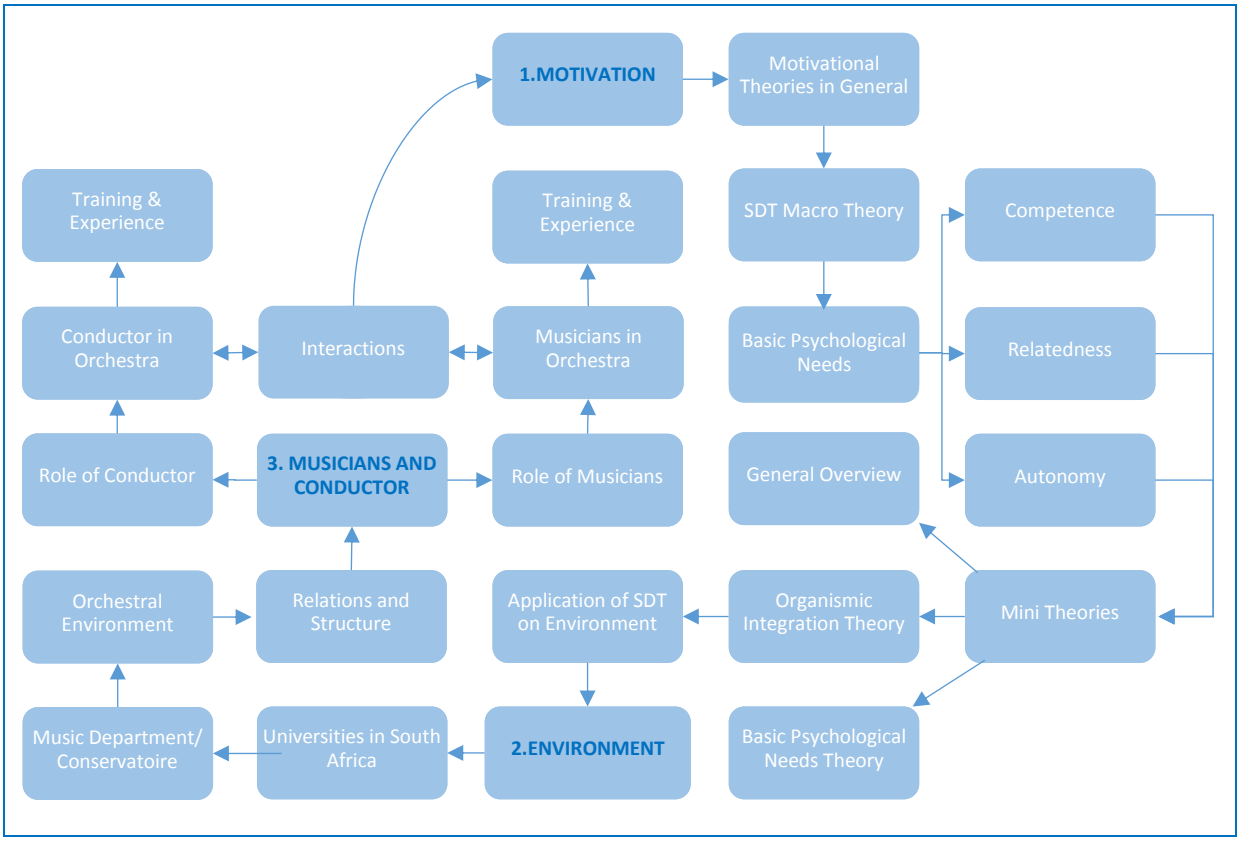

Figure 2 - Chapter 2 Breakdown

The following four sections will cover three key areas of the study. Subchapters 2.1 and 2.2 will focus on motivation, with the former providing an overview on the development of motivational psychology over the last century whilst the latter focus on the positive psychology field of the Self-Determination Theory. Subchapter 2.3 explores the orchestral environment, viewing the structures and relations of and between all the musicians there within. Chapter 2 ends in 2.4 with an investigation into the role, training, and experiences of the musicians and conductors, as well as how their interactions influence one another. Sub-chapters 2.1-3 all lead up to sub-chapter 2.4, which is a part of this cycle, but also the central point of this chapter.

2.1 MOTIVATION

The focal point of any process which we attempt is essentially run through motivation, and since the early 1900s, there has been an entire field of research that has endeavoured to best describe how it works. Simply put, to be motivated is *to be moved*, as stated by Ryan and Deci (2000:54). The study of motivation has evolved considerably within the field of psychology over the last century, but the philosophical study of psychology can be attributed

to various ancient civilisations. This subchapter will explore the historical development into the psychological study of motivation.

In recent times, there have been two major schools of thought in terms of the psychological study of motivation, that of behavioural associationist theory, and that of psychoanalytic theory. The former originated through John Watson who wrote an article called *Psychology as the behaviourist views it* (1913:158-167), hypothesising that behaviour is a learned reaction upon one's environment, and that psychology should be seen as a science which can be described using quantifiable data. The theory bases all its interpretations on observable behaviour, as opposed to internal considerations such as emotion.

The opposing theory originated through the work of Freud (1920:248), who posited that inner tension can be cured by making their unconscious thoughts and motivation conscious. This process opposes that of Watson's, as the focus is on the inner workings of a person, and not the observable behaviours. Their work however does have the combined view that all behaviours, thoughts and actions are executed in order to be stimulated or to reduce internal tension. These actions are seen to be driven by primal forces as set out in Maslow's Hierarchy of Needs from his article *A Theory of Human Motivation* (1943:394)[8].

The Self-Determination Theory (SDT) settles itself in between the views of behavioural and psychoanalytic psychology by defining itself as a meta-theory with an organismic dialectic approach (SDT, 2017). Motivational studies within music education have borrowed a great deal from various psychological theories in order to understand the phenomenon better. Some of the adopted research perspectives include, *expectancy-value theory* (Wigfield *et al.*, 1997; McPherson & McCormick, 1999; Lowe, 2011), *self-efficacy* (Nielsen, 2004; McPherson & McCormick, 2006; Hendricks, 2014), *attribution theory* (Asmus, 1986a, 1986b; Legette, 1998), and *identity development* (Davidson & Burland, 2006; Hargreaves & Marshall, 2003; Hargreaves, Macdonald, & Miell, 2012; Evans & McPherson, 2015).

Music education researchers have now also turned to SDT for its versatility in application and for its framework that can explain a wide range of behaviours in considerable breadth. The effectiveness of SDT is in its ability to already include features of the aforementioned theories in its own theory. An example would be self-efficacy, which can be seen as a component of competence, which in SDT is seen as a basic psychological need.

[8] Although there are more current versions of these sources, the original sources by Freud (1920) and Maslow (1943) were used in order to correctly refer to the train of thought from that period.

The study of motivation in music has occurred on all educational levels (De Bezenac & Swindells, 2009; Young, 2005), but it is at tertiary level where the most autonomous actions occur. Here students are more in control of their progress, and it is under these conditions within the South African context that motivation needs to be studied.

Music has enjoyed a rising importance in research, especially areas not focusing on the music, but rather the people behind the creation thereof. The close-knit structure of the professional orchestra[9] has been a popular topic often delved into to understand the inner workings of a profession which for the last few centuries has gone relatively unchanged. The motivation of these groups can be equated to that of sport, as they are people who perform physical tasks as a group. Their work is based on years of preparation and practice, and understandably, when a poor performance is delivered, motivation of the players is affected.

At tertiary level, the management of students is especially important. For the first time, students are completely focusing on their music rather than in combination with other school subjects. Above and beyond this new freedom to work on music, students must now absorb all the pressures that come with adult life. This is evident as similar studies have been done on the pressures of this environment with tertiary level musicians[10] as with their professional counterparts. The study of motivation in music is essential, emphasised by the interest that has already been shown in this area. The use of SDT to analyse motivation has been proven to be versatile and effective in that it has already been applied to so many environments such as sport, business, education, and recently virtual environments and video games. SDT will also be applied as a new lens for studying the orchestral environment in this thesis.

2.2 OVERVIEW OF SELF-DETERMINATION THEORY

The pioneers and co-developers of the SDT, Richard M. Ryan and Edward L. Deci, have over 70 years of combined experience in psychology and motivation. Together they developed SDT, which is an internationally researched theory of human motivation, personality development, and well-being. This subchapter will explore the evolution of SDT, with focus on the specific features that make up the theory, and further discussions on the mini-theories that were applied in this research.

[9] Brodsky, 2006; Hager & Johnsson, 2007; Kenny, *et al.*, 2012; Kenny, *et al.*, 2013; Kenny & Ackermann, 2015; Ascenso, *et al.*, 2017
[10] De Bezenac & Swindells, 2009; Gavin, 2012; Croom, 2015; Evans & Bonneville-Roussy, 2015

SDT works with the assumption that people are "active organisms" (SDT, 2017) that "have natural, innate, and constructive tendencies to develop an ever more elaborated and unified sense of self" (Ryan, 2004:6), however these tendencies do not happen naturally under all conditions. Instead, these tendencies require "specific supports and nutriments from one's social environment" which are known in SDT as the three *Basic Psychological Needs* (Ryan, 2009:1). Thus, the meta-theory is seen as an interaction (dialectic) between the active organism (the individual) and the social context (the environment) that SDT uses as the basis to predict behaviour and development (SDT, 2017).

Ryan and Deci (2000b:74) define a psychological need as "an energising state that, if satisfied, conduces toward health and well-being but, if not satisfied, contributes to pathology and ill-being." These three basic psychological needs are Autonomy, Competence, and Relatedness. It is posited that for true *intrinsic motivation* to occur or to be maintained, all of the basic psychological needs must be met to some extent.

With the evolution of SDT, six mini-theories[11,12] have also stemmed from the main theory, which relate to specific phenomena. The mini-theories in SDT are linked together as they all still share in the organismic and dialectical assumptions, as well as involving the concept of the basic psychological needs (Deci & Ryan, 2002:9). Deci and Ryan (2002:9) state that the specifications of each of the mini-theories were developed through inductive processes, where hypotheses were derived from observing phenomena and constructing mini-theories to account for them.

The first two mini-theories, the Cognitive Evalutation Theory (CET) and Organismic Integration Theory (OIT), see motivation as either stemming from internal (intrinsic) forces or external sources. *Intrinsic Motivation* (IM) is an important label within the research of SDT. Deci and Ryan (1980:40) believe there is an inner motivational construct that is also a propellant as opposed to the primary based drives. Their view is supported by other diverse areas of psychology more recent to that time, such as *cognitive development* (Piaget, 1952; 1971), *social motivation* (McClelland, *et al.*, 1953; McClelland, 1985), and *expectancy theory* (Atkinson, 1964; Bandura, 1986).

[11] The mini-theories will be discussed further in 2.2.3

[12] At the time Deci and Ryan wrote their *Handbook of Self-Determination Research* (2002), they had four mini-theories, but these have since expanded to six (SDT, 2017).

2.2.1 Intrinsic and Extrinsic Motivation

IM is most simply defined as motivation that is not driven by external forces (Deci & Ryan, 1980:41). Early studies into IM have focused on two main approaches, namely the incongruity theories and the competence and/or self-determination theories.

Incongruity theory suggests that people are intrinsically motivated to perform tasks, exhibit behaviours or engage with stimuli that are partially discrepant from their normal circumstances/current standard (Berlyne, 1978; Deci & Ryan, 1980; Dember & Earl, 1957; Hunt, 1965; McClelland *et al.*, 1953; Piaget, 1952; Walker, 1973). An example of this would be to give a music student who just finished a grade I practical music examination, a piece of grade II music. The student's grade I level of playing is their internal standard, and because the grade II piece is moderately discrepant from their internal standard, they would be intrinsically motivated to engage with the new piece of music. However, giving this student a piece that is grade V in level, is entirely above their internal standard and would dissuade the student completely. The work of Hunt (1965) stated that "for effective functioning, organisms need an optimal amount of psychological incongruity between an internal standard and a stimulus event." (Deci & Ryan, 1980:40-41)

The concept of competence has been investigated by various individuals such as White (1959), Bandura (1977), DeCharms (1968), and Deci (1975). White (1959:307) saw competence as a person's ability to effectively deal with their environment. Their motivation is driven by the need to attain or prove their competence when dealing with situations in their environment. Bandura (1977:79) proposed efficacy as a reason for behavioural change, he stated that people would only engage with behaviours if their expectations are that they can do behaviours efficaciously. DeCharms (1968:46) however asserted that people's motivation came from the need to feel like they are the primary causal agents of their actions, meaning they need to view themselves as the originators of their actions and behaviours rather than being controlled by external forces.

Deci's earlier research came to the conclusion that intrinsically motivated behaviours came from the people's need to feel competent *and* self-determined (Deci & Ryan, 2000:233). As stated before, IM occurs without the influence of external forces, however IM concerns activities or tasks that people find interesting, and by engaging with these activities/tasks, people will experience the fulfilment of needs. These novel activities were referred to as "optimal stimulus properties" by Berlyne (1971) and as "optimal challenges"

(Csikszentmihalyi, 1975; Deci, 1975; Danner & Lonky, 1981). The active engagement with optimal challenges will only occur when the nutriments for need fulfilment are present, but people will only stay interested in these activities depending on the degree to which these needs are satisfied during the activity (Deci & Ryan, 2000:261). This active engagement with an optimal challenge is however not done in order to fulfil needs satisfaction, as this behaviour would no longer then be categorised as IM. Deci and Ryan (2000:233) summarised this by stating that "intrinsically motivated behaviours are those that are freely engaged out of interest without the necessity of separable consequences, and, to be maintained, they require satisfaction of the needs for autonomy and competence."

The study of the SDT is set to specifically examine situations that facilitate IM rather than undermine it. Ryan and Deci (2000a:58) are of the opinion that IM is of "inherent organismic propensity", and rather than being caused, is catalysed when "individuals are in conditions that conduce toward its expression." Ryan and Deci (2000b:70) found that social-contextual events (such as positive feedback, or rewards) were conducive towards feelings of competence which ultimately support IM. Studies (Fisher, 1978; Ryan, 1982) have however found that experiencing competence will not enhance IM unless accompanied by a feeling of autonomy, or by an internal perceived locus of causality.

Deci (1975:100) suggested that intrinsically motivated behaviours are the prototype for self-determined activities. Studies done by Deci showed that when extrinsic rewards (such as monetary rewards) were introduced for intrinsically interesting activities, people felt that they were led by the reward rather than the activity. This shifted "the perceived locus of causality for the behaviour from internal to external." Deci and Ryan (1980:67) linked earlier experiments where positive feedback as opposed to no feedback enhanced IM (Boggiano & Ruble, 1979; Deci, 1971), and that negative feedback decreased IM relative to no feedback (Deci & Cascio, 1972). These findings highlighted that events such as positive feedback provided the satisfaction of the need for competence. The two basic psychological needs, *autonomy* and *competence* are both proven to be important influencers of IM, however there is a third, *relatedness*, that completes the complement (Deci & Ryan, 2000:235).

Deci and Ryan (1980:49) established that when an activity becomes "instrumental for a reward rather than being the reward itself", the source of motivation, or perceived locus of causality shifts from internal to external. Thus, extrinsic motivation (EM) is defined in order to explain behaviours done rather for praise or reward, or in avoidance of criticism or punishment (Deci & Ryan, 1985; Kasser, 2002).

Vallerand and Ratelle (2002:42) defined EM as referring to a "broad array of behaviours having in common the fact that activities are engaged in not for reasons inherent in them, but for instrumental reasons." Expanded research on EM created further typologies where some types of "extrinsically motivated behaviours involve self-determination and choice" (Deci & Ryan, 1985, 1991; Vallerand & Ratelle, 2002). IM has been continuously contrasted to EM as they "relate negatively" to one another (Deci & Ryan, 2002:14-15), as well as that EM, in the form of working toward a goal, is considered "nonautonomous", as it tends to undermine IM (Deci, *et al.*, 1999:627). However, the research of Deci and Ryan (2000:15) has found that it is possible to be "autonomously extrinsically motivated", and that this occurs through a process called internalisation, which is encouraged with the help of one's basic psychological needs.

2.2.2 Basic Psychological Needs

Deci and Ryan (2000:229) identify basic psychological needs as "innate psychological nutriments that are essential for ongoing psychological growth, integrity, and well-being." This is based on the views of Hull and Murray, with the former viewing needs as innate, organismic necessities rather than acquired motives (Hull, 1943:57-59), and the latter viewing needs at the psychological rather than the physiological level (Murray, 1938:54-129).

The Basic Psychological Needs (BPN) are a fundamental feature within the entire theory. The theory contends that humans have an innate set of psychological needs, and that these needs are all of equal importance in order for psychological health to flourish (Deci & Ryan, 2002:6-7). Through interactions with the social environment, these needs are either fulfilled, leading to growth and psychological well-being, or they are thwarted, leading to psychological ill-being (Deci & Ryan, 2002:6). SDT considers these needs to be innate and universal – that is, a fundamental aspect of the human psyche – as opposed to being acquired from the social or cultural environment (Vansteenkiste & Ryan, 2013:3-4). The three needs posited are: competence, relatedness, and autonomy (Evans, 2015:67-71).

2.2.2.1 Competence

The need for competence relates to a desire to be effective in one's skills, abilities, and interactions in the social environment (Deci & Ryan, 2000; Elliot, *et al.*, 2002). Elliot *et al.* (2002:381) believe it evolved in humans to provide the adaptive advantage of being able to

develop skills for negotiating and manipulating their environments in order to avoid danger, hunt for and locate food, and find shelter.

Competence support plays a role in internalisation. Competence support can manifest itself in positive feedback, after which Deci and Ryan (2000:234-235) explain that this can then increase IM. The opposite can also occur, where negative feedback thwarts the process of internalisation.

Perceiving competence within the music environment is vital for the continuation thereof amongst students, but this is only achieved when feedback occurs, specifically positive feedback. Achieving competence on a musical instrument takes consistent time and practice over a long period of time considering that the challenges set before musicians increase incrementally. If the task is to perform music that is overly discrepant from the level of the musician, they will either fail in their attempt or withdraw. Positive does not only mean generic praise, but also includes constructive criticism, and acknowledging goals and progress towards these goals.

Support in competence can be experienced through complimenting or providing positive feedback, or acknowledging improvement in the execution of tasks completed. Whilst openly emphasising someone's shortcomings or discouraging some from performing a task are examples of thwarting the competence of others (Rocchi, *et al.*, 2016:2).

2.2.2.2 Relatedness

People depend on the formation of close bonds with others in complex social networks (Deci & Ryan, 2002:7). Relatedness is not a need for an outcome to be obtained from or with others (e.g., sex, friendship); rather, it is the need to feel close and connected with feelings of inclusion and acceptance by others (Baumeister & Leary, 1995; Deci & Ryan, 2000; Kupers *et al*, 2015). Relatedness plays a role in internalisation as people will internalise the values and norms of the groups they belong to, or feel they strongly relate to (Deci & Ryan, 2000:235).

Environments that are supportive of relatedness are those that provide warmth and the ability to connect with others in mutually beneficial ways. Music learning tends to occur in the context of many social relationships, including with teachers, parents, other family members, and various groups of peers. Therefore, the need for relatedness within the context of music education may be particularly salient. Showing warmth to someone or interest in an activity

would be examples of relatedness support, whilst ignoring someone or excluding people from opportunities are examples of relatedness being thwarted (Rocchi *et al.*, 2016:2).

2.2.2.3 Autonomy

Perhaps the most important basic psychological need is autonomy, as it entails experiencing a sense of "integrated self-regulation" and "volition" (Deci & Ryan, 2000:231). It is only through autonomy that a person can truly experience IM in the purest form. Kupers *et al.* (2015:2-3) referred to it as "self-initiating" behaviour. Relatedness is important in order to connect with the activity or with the environment around it, whilst competence is important with regards to IM and in performing a task, however IM will only be enhanced when the person receiving the praise or feedback feels responsible for it, thereby being the self-chosen reason why the task was commended (Deci & Ryan, 2000:239).

When autonomy is perceived in an environment, the choices made and behaviours exhibited are experienced as self-inhibited, which ultimately mean that no external influences contributed to the execution of the action. An example of autonomy support would be in providing choices or acknowledging someone else's perspectives, whilst autonomy thwarting would include making demands or intimidating someone with strong language (Rocchi *et al.*, 2016:2).

2.2.3 Mini-Theories

Through the continued development of SDT, several mini-theories have originated that focus on various aspects of motivation and personality functioning. These mini-theories focus on specific aspects of motivation within a specific framework, whilst still considering the broader context in which the motivation occurs. The research will be viewed through two of these mini-theories.

2.2.3.1 Overview of Mini-Theories

The first mini-theory is the *Cognitive Evaluation Theory* (CET), which concerns *IM*. This mini-theory studies motivation that is based on the satisfactions of behaving "for its own sake." (SDT, 2017). CET was presented by Deci and Ryan (1985) to specify "the factors in social contexts that produce variability in intrinsic motivation" (Deci & Ryan, 2000a:58). The theory suggests that the needs for competence and autonomy are integral to the support for intrinsic motivation (Deci & Ryan, 2002:11).

The second mini-theory is the *Causality Orientation Theory* (COT). This theory "describes individual differences in people's tendencies to orient toward environments and regulate behaviour in various ways" (SDT, 2017). This person's orientation to an environment is based on whether they are autonomy-orientated, control-orientated, or impersonally orientated (Deci & Ryan, 2002:20-22). With the autonomy-orientation, a person orients themselves "to what interests them and acts with congruence", whilst with the control-orientation, a person "regulates their behaviour by orientating to social controls and reward contingencies (Ryan, 2009:2). When impersonally-orientated, a person "focuses on their lack of personal control or competence" (Ryan, 2009:2).

The next mini-theory is *Goal Contents Theory* (GCT), which "grows out of the distinctions between intrinsic and extrinsic goals and their impact on motivation and wellness" (SDT, 2017). Research by Kasser & Ryan (1996) showed that extrinsic goals such as fame or materialism do not effectively enhance need satisfaction, which means that even after successfully satisfying these needs, well-being will not be fostered. In contrast however, intrinsic goals such as intimate relationships or contributing to one's community are conducive to need satisfaction, and therefore facilitate wellness (Kasser & Ryan, 1996:286).

Relationships Motivation Theory (RMT), the fourth mini-theory, is concerned with these and other relationships, and posits that some amount of such interactions is not only desirable for most people but is in fact essential for their adjustment and well-being because the relationships provide satisfaction of the need for relatedness (SDT, 2017).

The fifth and sixth mini theories are the *Organismic Integration Theory* (OIT), which specifically concerns external motivation, and the *Basic Psychological Needs Theory* (BPNT) which elaborates on the concept of evolved psychological needs and their relations to psychological health and well-being (SDT, 2017). These are the lenses through which the various aspects of the study will be viewed through. OIT and BPNT will be discussed further in 2.2.3.2 and 2.2.3.3 respectively, as they fulfil a larger role within this research.

2.2.3.2 Basic Psychological Needs Theory (BPNT)

Within the music environment, all three needs are held in high regard, as they all contribute to the well-being of the musicians' overall development. BPNT elaborates on the concept of evolved psychological needs and their relations to psychological health and well-being (Deci & Ryan, 2002:22). BPNT argues that "psychological well-being and optimal functioning is predicated on autonomy, competence, and relatedness" (SDT, 2017).

To qualify, a need must be a motivating force that has a direct relation to well-being, where the presence or absence, support or thwarting of this need will severely impact well-being (Deci & Ryan, 2002:22). The theory argues that all three needs are essential and that if any is neglected there will be distinct functional costs. Basic needs are universal aspects of functioning, therefore BPNT refers to cross-developmental and cross-cultural settings for validation and refinements.

2.2.3.3 Organismic Integration Theory (OIT)

OIT addresses the topic of EM in its various "forms, with their properties, determinants, and consequences" (SDT, 2017). EM focuses on the behaviours that are driven through extrinsic sources. OIT highlights support for autonomy and relatedness as critical to internalisation (Deci & Ryan, 2002:15). There are different types of motivation, all varying in degrees of internalisation. Internalisation in SDT refers to the various degrees to which a person incorporates values, goals, or believes systems as their own (SDT, 2017).

There are four distinct degrees of internalisation, namely external regulation, introjection regulation, identification regulation, and integration regulation. These subtypes of EM are seen as falling along a continuum of *Internalisation*. The more internalised the EM, the more autonomous the person will be when enacting the behaviours (Deci & Ryan, 2002:14-15).

OIT is further concerned with social contexts that enhance or forestall internalisation – that is, the factors that contribute toward people either resisting, partially adopting, or deeply internalising values, goals, or belief systems. OIT particularly highlights support for autonomy and relatedness as critical to internalisation (Deci & Ryan, 2002:15).

As CET concerns IM, OIT refers to the various levels of EM. These various levels of motivation are set on a continuum referred to as the Self-Determination Continuum (see Figure 3). The continuum explains the findings that the more internalised the motivation is, the more autonomous and self-determined the actions will be (SDT, 2017). OIT specifically studies the four regulatory styles of, namely *External, Introjected, Identified* and *Integrated.*

The Self-Determination Continuum Showing Types of Motivation With Their Regulatory Styles, Loci of Causality, and Corresponding Music Processes

Behaviour	Nonself-Determined					Self-Determined
Motivation	Amotivation	Extrinsic Motivation				Intrinsic Motivation
Regulatory Styles	Non-Regulation	External Regulation	Introjected Regulation	Identified Regulation	Integrated Regulation	Intrinsic Regulation
Perceived Locus of Causality	Impersonal	External	Somewhat External	Somewhat Internal	Internal	Internal
Relevant Regulatory Processes	Nonintentional, Non-valuing, Incompetence, Lack of Control	Compliance, External Rewards and Punishments	Self-Control, Ego-Involvement, Internal Rewards and punishments	Personal Importance, Conscious Valuing	Congruence, Awareness, Synthesis With Self	Interest, Enjoyment, Inherent Satisfaction
Music Relevant Behaviours	"I don't want to practise." "Practising seems pointless, I'm not a good musician anyway." "I don't understand why I should bother practising"	"I will get in trouble if I don't do it." "I chose music because I excelled in it" "I practise because the conductor said to."	"I practise because I am supposed to." "I will feel proud if I can practise." "I will feel bad if I don't practise." "My section will think I am a good musician if I practise."	"It is important for me to practise." "I don't enjoy practising but I can see that it will help me to learn this difficult piece." "It is important to my section that I practise."	"I know that if I want to become a professional musician one day, I need to practise a lot." "I practise because music is the most important thing to me."	"I enjoy playing my favourite pieces." "When I play my instrument, I lose track of time and get lost in the moment." "I love playing my instrument."

Figure 3 - Self-Determination Continuum[13]

OIT has been chosen as one of the primary lenses to view the interactions between conductor and musicians because their interactions are all external. The manner in which the conductor leads as well as the manner in which the orchestra reacts has a continuous effect on the further reactions between both parties. To understand the interactions between people, it is important to understand the construct of the continuum.

Behaviour is the first title on the continuum's first column, and refers to the degree to which motivation is self-determined. When no motivation occurs, one would say that there is no motivation determined. From there onwards, the strength to which an action is self-determined increases. Self-determined refers to situations where actions are performed or behaviours are exhibited without any external influences (Ryan & Connell, 1989:749).

Regulatory styles refer to various levels of internalisation as set out on the continuum. The three levels of motivation are: *Amotivation – Extrinsic Motivation – Internal Motivation.* They are subsequently further divided into the specific regulatory styles. Whereas external

[13] Originally from Ryan and Connel (1989), and adapted by Evans & Bonneville-Roussy (2015) and myself.

and internal motivations differentiate between the source and strength of the motivational influences, *Amotivation* is defined as "the state of lacking the intention to act" (Deci & Ryan, 2002:17). The next group is *External Motivation*, which is divided into four regulatory styles, all differing in functionality. The main characteristic of this second group is what defines it as well as *Intrinsic Motivation*, in that the intention to act is persuaded and supported by outside influences, whereas with *Intrinsic Motivation*, the intention to act is self-determined (Deci & Ryan, 2002:17).

Through the work of DeCharms (1968) and Heider (1958), the *Perceived Locus of Causality* was conceptualised. Their work differentiated on the perceived source of motivation as stemming either from an external or internal locus. These loci were further expanded as can be seen in Figure 3, ranging from impersonal in the *Amotivation* column, to more internal in the *Intrinsic Motivation* column.

With the development of the theory, the loci were defined with *Relevant Regulatory Processes* that could further describe the various facets of the regulation. Evans (2015) took these relevant regulatory styles and conceptualised explanations that were relevant to the music environment. I then modified these styles as to relate specifically to the orchestral environment for the purpose of this thesis. An overview has been provided on the three motivational groups, with a further explanation detailing the concept of amotivation.

The following group is *Extrinsic Motivation*, which is split into four regulatory styles. The first of these styles is *External Regulation*. The regulatory processes used to define it are examples such as: Compliance, External Rewards and Punishments. Within the music environment, this could be compared with statements such as "I will get in trouble if I don't do it" or "I chose music because I excelled in it".

The second extrinsic regulation is *Introjected Regulation*, which concerns regulatory processes such as: Self-Control, Ego-Involvement, Internal rewards and punishments. The biggest distinguishing factor with this regulatory style as opposed to *External Regulation* is the differentiating between internal and external rewards and punishments. Here the onus to produce or get punished moves from the external to the internal. Examples of music relevant behaviours include "I will feel good if I practice" or "I practice because I am supposed to".

The third extrinsic regulation is *Identified Regulation*, which concerns regulatory processes such as: Personal importance and Conscious valuing. With this regulation, the person incorporates activities or behaviours with their own goals, and works on them regardless of

whether they are enjoyed or not. Examples of music relevant behaviours include "I don't enjoy practicing but I can see that it will help me to learn this difficult piece".

The final extrinsic regulation is *Integrated Regulation,* which concerns regulatory processes such as: Awareness, Synthesis with Self. Here the concept of goals and doing something in order to attain something important to you, shifts to values, and doing something as it aligns with who you want to be as a person. Examples of music relevant behaviours include "I know that if I want to become a professional musician I need to practice a lot".

The final regulation is *Intrinsic Motivation*, which concerns regulatory processes such as: Interest, Enjoyment, Inherent Satisfaction. Within this regulatory style, no outside impetus is required for a person to perform a task or exhibit a behaviour, all their actions are self-determined. An example of a music relevant behaviour is "When I play my instrument, I lose track of time and get lost in the moment".

The process of internalisation is important for understanding the rationale behind the actions and behaviours exhibited by people within the framework of SDT, as this enables the observer the opportunity to comprehend what their sentiment is towards their behaviours. Understanding how the presence or absence of certain psychological needs influence the actions and behaviours of others, could be instrumental in creating frameworks that would motivate people to perform in a more self-determined way.

2.3 THE DYNAMIC ORCHESTRAL ENVIRONMENT

The aiding of motivation hangs heavily on the environment, as it plays a critical role in the facilitation or thwarting of internalisation. This process is especially difficult when a large part of the environment, if not the entire environment, is discrepant from one's previous experiences. This subchapter will focus on the orchestral environment and the musicians within it. It will explore the structure of this environment, discussing the various roles the musicians could have; as well as the rankings and relations experienced in the orchestral environment, in order to call attention to the social context of the environment.

2.3.1 Entering Tertiary Education

The tertiary environment is the first major change in a young musician's life. The transition to higher education, as opposed to the move from primary to secondary school, carries with it a move to a less controlled environment (Lowe & Cook, 2003:53). Tertiary institutions often impede motivation rather than facilitate it, especially for students entering an arena in life

where a lot more freedom is complimented with higher expectance of results. This is especially important when considering factors that are of the individuals' own control, such as time management (Smith, 2002:93) and the importance of creation and maintenance of new supportive peer networks (Lowe & Cook, 2003:76).

Students applying for tertiary education in music often do so with the vision of becoming an international performer. In this vision of a 'musotopia', the aspiration of an international career often turns into disillusionment, as has been studied by Bennett (2007:6), who found that ultimately performance is reduced to a very small part of a musician's career and income, with teaching taking over 50%.

Bennett's (2007:1) data found that the definition of a musician as 'someone who performs' is no longer accurate, and should rather be "someone who practises within the profession of music". These changing viewpoints and approaches are important aspects that need to be addressed early and effectively in the commencement of tertiary education, along with attending to the personal development and growth of a musician.

Students who pursue tertiary education often come from environments where they were perceived as performing at a high level, however, the transition to tertiary level when comparisons are made to other players often causes anxiety and feelings of incompetence (Pitts, 2002:87). There have been several studies[14] on the transition into tertiary education from secondary, as well as studies[15] into why students end up discontinuing their studies. These studies are all of the general opinion that motivation is instrumental in supporting or thwarting their needs to continue with their studies.

2.3.1.1 Music Department/Conservatoire

Surviving the initial socio-environmental changes experienced at university are not the first challenges faced by a tertiary level musician. The music student's admission process consists of further challenges in the form of an audition and auxiliary written tests, in addition to what is expected from students applying for degrees in other departments and faculties within a university. Admission to a specific university degree in South Africa is based on the specific subjects taken at secondary school level, with the level of these subjects relatively close to the subsequent level encountered on first year level, whereas with music this is not the case.

[14] Pitts, 2002; Marland, 2003; Burt & Mills, 2006; Bright, 2006; Burland & Pitts, 2007; Lebler, *et al.*, 2009; Thawabieh & Qaisy, 2012
[15] Gavin, 2012; Evans, *et al.*, 2013; Lorenzo Socorro, *et al*., 2016

Music grades range from grade I-VIII[16], followed by certificate and then diploma levels through external examination bodies such as UNISA, ABRSM and Trinity Music[17]. South African schools primarily aim for a grade V music level in practical and music theory by the end of the grade 12 year as is similar to external examination bodies. However, South African universities' admission requirements[18] expect students to be on a practical playing level of grade VII and a theory level of Grade V for admission to their respective BMus programs. This means that there is a significant discrepancy between the level a student is expected to be at when they finish school and obtain a matric certificate with the aim of gaining access to a university, and the admission requirements of that university. The reality is that students who wish to pursue a career in music are expected to perform at a level two grades above the required level for matriculation, a phenomenon which does not occur in other degrees.

For students, this discrepancy is often the first pitfall as they realise that their matric subject level is not adequate enough for the elevated expectation and outcomes at university level. Below, Table 1 indicates the respective practical and theoretical requirements for the universities participating in this study.

Table 1 - Music Practical and Theory requirements for Universities in South Africa

	Practical Requirement	Theory Requirement
End of Matric[19]	Grade V	Grade V
Nelson Mandela University	Grade VI	No specified requirement
North-West University	Grade VII	Grade V
University of the Free State	Grade VII	Grade V
University of Pretoria	Grade VII	Grade V
University of Stellenbosch	Grade VII	Grade V

Besides the obvious incremented requirements for playing, the focus at university is now different from those at secondary schooling level. In the South African schooling system's Further Education and Training Phase (Departement van Basiese Onderwys, 2011:7), learners are required to take at least seven subjects, a first and second language, life

[16] External music examination bodies all have standard levels for practical music examinations from Grade I-VIII, followed by certificate and diploma degrees.
[17] ABRSM, 2017; Unisa Directorate of Music, 2017; Trinity College, 2017
[18] Nelson Mandela Metropolitan University, 2017; North-West University, 2017; University of the Free State, 2017; University of Pretoria, 2017; Stellenbosch University, 2017
[19] Departement van Basiese Onderwys, 2011:64
South African primary schools have 7 grades (gr. 1-7), whilst secondary schools have 5 (gr. 8-12).

orientation, mathematics or mathematic literacy, and then three subjects of which music is one of the options. So statistically music moved from 1/7th of the focus to the complete focus of the studies with the exception of one or two extra subjects depending on the university's curriculum.

Music in school is primarily divided into three broad segments; practical, theory, and aural, whereas at university level, those subjects are divided into smaller subjects. Universities require that students' first year of studies consists of at least 120 credits, and that these credits consist of various fundamental, core and elective subjects[20]. At SU for example, the first year of BMus studies consists of at least seven core subjects, as well as fundamental subjects such as Information Skills and the option of several elective subjects such as a foreign language, which are often compulsory (Stellenbosch University, 2017). Universities such as UP and NMU for example, concentrate their elective subjects on musically orientated subjects, such as second instruments or ensemble playing, whereas these are compulsory subsidiary subjects based on one's core subjects at SU.

The upped dosage in music exposure may prove overwhelming if not balanced with other healthy activities. This is not always possible however, as in order to achieve goals, a great deal of time needs to be put into all the facets of one's music studies. This is especially difficult when some of one's primary subjects are further divided, such as practical. For some instrumentalists, one can be part of ensembles that can take up to 15 hours of one's week, which excludes the preparation time spent for these ensembles or any other practicing requirements such as solo playing, chamber music, or orchestra practising and rehearsals.

As mentioned previously, there have been several investigations into the motivation levels of music students, professional musicians, the environment in which they have to operate. However, none of them have focused on the motivations of the musicians from the view point of the conductor, nor how conductors could possibly influence these motivations within the orchestral environment.

[20] Fundamental modules equip students with various skills and techniques in order to operate functionally in the academic sphere, an example of this is UP's *Academic Literacy* module. Core modules create the main body of the curricula for each year group, these modules include a student's practical, theory, and musicology modules. Elective modules are various auxiliary modules which are selected in order to complete the required 120 credits quota for the first year of studies. An example of elective modules are NMU's *Keyboard Skills*.

2.3.2 Orchestral Environment

The orchestral environment[21] is a small nucleus of interrelations, all with varying degrees of freedom and responsibility. The way several interactions take place or what position a student is allocated can already have an influence on the student before they even sit down for rehearsal/concert. This is also what makes the complete interaction between the musician and conductor important, because the conductor should be able to move the musician past any thwarted mind-set they arrive with.

Brodsky (2006:687) studied the orchestral environment, and found that most previous studies[22] focused predominantly on the stressful components of orchestral life-styles. The collective research found that there were primarily six sources of stress, some of which are; social tensions, the physical and creative environment, and being subordinate to a conductor. These aspects are especially important as they all are highly influential to the satisfaction of basic psychological needs.

Research has shown that students benefit highly in environments that support autonomy (Reeve, 2002:183). The research shows that (1) autonomously-motivated students thrive in educational settings; and (2) students benefit when teachers support their autonomy[23].

2.3.2.1 Structure

Humans experience several interactions throughout a day, and within these interactions various events occur. The manner in which the interactions occur are based on the relation between the two parties. Within a structured group in a fixed environment, the relations become a web of interrelations that serve different functions but are still constantly present. In Figure 4 below, one can see the nucleus of a musician's interrelations within their orchestral environment. The layers of the musician's interrelations can be seen as moving from the outer layer of the music department, to the orchestra, and deeper to the very centre, the musician. The various layers of the 'onion' also relate to other positions, all of which carry a varying degree of responsibility.

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[21] This section is informed by my personal observations and experiences as an active orchestral musician and conductor.
[22] Parasuraman & Nachman, 1987; Parasuraman & Purohit, 2000; Steptoe, 2001; Sternbach, 1993a, 1993b, 1995
[23] Miserandino, 1996; Ryan & Grolnick, 1986; Ryan & Connell, 1989; Boggiano, Main, & Katz, 1988; Vallerand & Bissonette, 1992; Boggiano *et al.*, 1993; Williams *et al.*, 1994; Patrick *et al.*, 1993; Deci, Nezlek, & Sheinman, 1981; Flink *et al.*, 1990; Vallerand *et al.*, 1997.

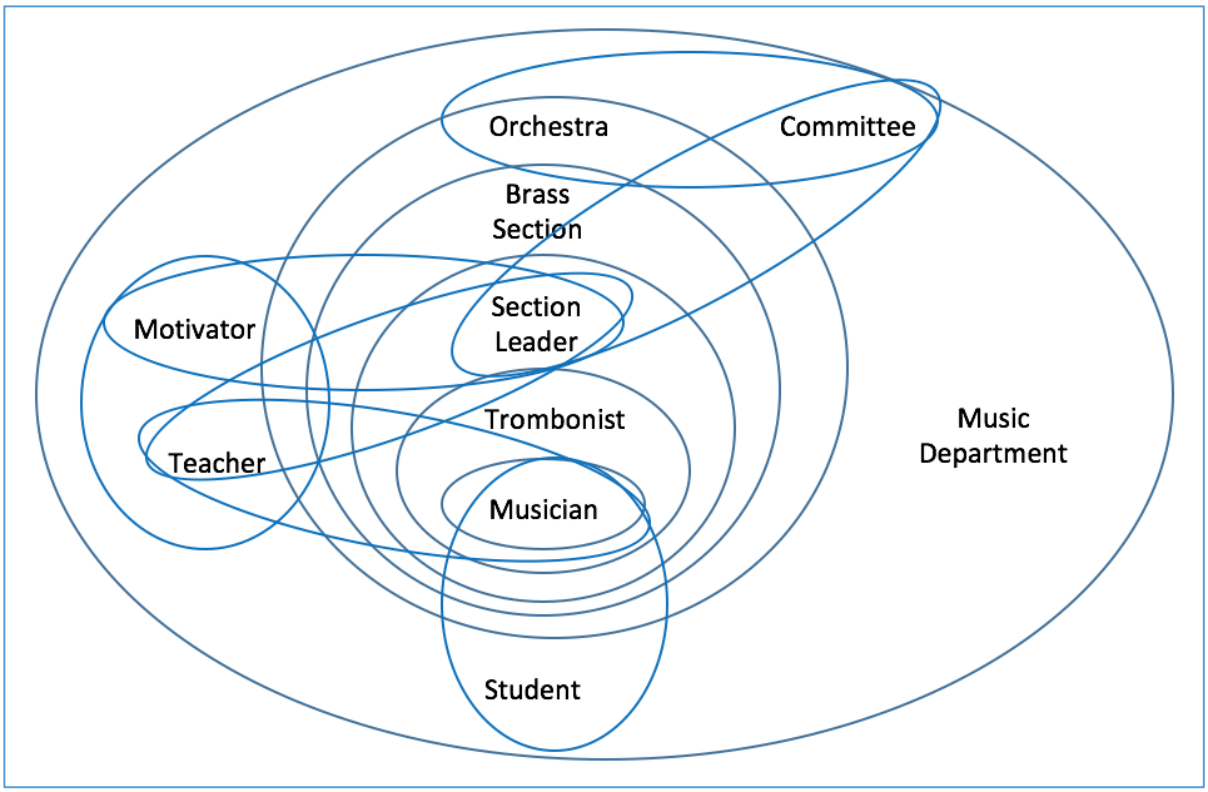

Figure 4 - Musicians Interrelations

The orchestra, and practice thereof, is a group activity performed by a set of highly competent individual musicians. This onion above is an example of an orchestral trombonist who is the leader of the low brass section, also a teacher or motivator of sorts, and a committee member that carries some sort of leadership responsibilities. In some respects, he has superiors, whose requests and demands he is to be obedient to, and in other instances he is the commanding player within a group that is obedient to him.

In all these instances, the working structure of one player being acquiescent to a more senior player's requests or commands within the orchestral environment should structurally work, as it exists in all other work environments, however, rarely in any other profession are these relations challenged more on a seasonal basis than in the orchestral environment.

2.3.2.2 Ranking

Before acquiring a position, musicians, like any other professions, have to undergo several interviews and/or auditions in order to secure their positions for the year. In some extreme cases, musicians have to re-audition in order to protect the position they had earned before. This entire process creates a competitive atmosphere which almost never dies down, at least not in the professional environment.

At South African tertiary institutions, auditions generally take place at the beginning of the academic year which is in February. Unlike in the professional sphere, all positions in tertiary institutions' orchestras are made available for contention each year, which opens the door for upsets and disappointments. Generally, these auditions only take place once a year, so if a demotion occurred for example, this can have a severe influence on the manner on the specific person's demeanour to the orchestra activity, as well as the manner in which they behave towards the member who now holds the desired position.

As expressed earlier, the practice of orchestral music is a group activity played by highly competent individual players, the trick as a conductor is not only to make them want to play the music and want to play for you, which is an incredibly difficult task in itself, but to also want to play for each other, which is even more difficult to achieve under competitive circumstances.

2.3.3 Relations

The interrelations in the orchestra are an essential part of the functioning of the orchestra, regardless of how good the quality of the gears in the machine are, they can only work if they are able to interlock effectively. Being able to objectively see what does and does not works, is what can make a good conductor. However, being able to effect positive change after perceiving these findings is what can make a good conductor improve considerably in their interactions with the musicians.

2.4 MUSICIANS AND THE CONDUCTOR

The relationship between the orchestra and conductor can often be a very distant and impersonal one, due to the evolution of many facets of a conductor's lifestyle. With the development of technologies, such as communications and transport has evolved to an extent where one can be on several continents within the space of two days. Initially conductors were restricted to one orchestra and that is how it remained, but with the evolution of technology sought-after conductors could be hired by two or more orchestras, and so the life of the travelling conductor originated. This subchapter will view the evolution of the conductor along with the musicians, and how their separate paths of development affect each other when interacting within the orchestral environment.

In modern times the greatest orchestras are able to contract the best conductors, flying them from across the world on a weekly basis. On one hand the orchestra and the conductor can

find this to be a daunting task. For one, the orchestra needs to assimilate to a new style of direction whilst absorbing the vision and thought process of the conductor. On the other hand, the conductor has to draw in the orchestra, convincing them that whatever they as conductors are doing, is musically and technically the best and most effective way of performing these works. What is not always considered or anticipated is that these orchestral musicians do come with their own personal situations within the orchestral environment, and it can fall to these once-off conductors to deal with these situations during rehearsals and/or performances.

2.4.1 Role of Musicians

The conductor is often referred to as the most important musician in the room, but he does not make a sound. Instead of playing an inanimate object, the conductor's instrument is an orchestra consisting of living beings all with their own set of complex omnifarous emotions.

2.4.1.1 Training and Experience

All classical musicians generally follow two routes of training/education; primary and secondary music education. The former relates to everything directly relating to performing music. This includes learning to play an instrument, learning the intricate workings of music theory, and developing their own aural capabilities in order to effectively play their instrument in a group context. The latter refers to all matters that influence how music-making originated and evolved. This includes the research into music history, and learning about other art forms and their influence from and on music. From these initial paths, musicians start to specialise in certain areas, such as performer, research, educator and so forth.

2.4.2 Role of Conductor

From the inception of this role, the post originated in order to lead a group of musicians in order to bring complete coordination of all players and singers (Yarbrough, 1975:134). The role originated and evolved from various springs, from hand gestures for Gregorian chants, staff stomping to continuo playing. The conductor was created not only to keep the time, but to lead the ensemble musically.

The role Jean-Baptiste Lully (1632-1687) played in music history is often considered the origins of the modern conducting practice. Lully enforced a high level of discipline in the

orchestra, commanding that bowings and the execution of ornaments were exactly the same. This dictatorial leadership style won the admiration and wide imitation from many future conductors (Burkholder, *et al.*, 2010:360).

18th Century conductors would conduct from leading instruments, such as the harpsichord or first violin, where their gestures would be clear to the rest of the ensemble (Burkholder, *et al.*, 2010:635). It was only with Louis Spohr (1784-1859) that the baton was first used in a rehearsal with the London Philharmonic (Ibid, 2010:635). From there other musicians such as Carl Maria von Weber and Felix Mendelssohn emulated Spohr, establishing the role of the 'master interpreter' and exploiting the Romantic cult of the individual (Ibid, 2010:635).

The evolution of the conductor resulted in the respectful title given to the best conductors, *maestro*, which translates to *master*. A master is something a conductor needs to be in every sense of the word. Conductors are there to mould the musician's sound from their very first note in rehearsal to the last note in the concert. Bringing musicality, they have to be able to understand the highest level of playing; understand the inner workings of the score to the highest possible level; understand the context in which the music was conceived; as well as being able to effectively combine their various levels of knowledge in order to lead. The accumulation of all this knowledge can take a lifetime, and it is this lengthy process that can often dissuade young conductors.

A conductor, as the leader of a group, is effective in their ability to lead when exhibiting certain attributes. Various studies into leadership theory have found that the following attributes translate into an effective transformational leader: Charisma[24], Enthusiasm[25], Vision[26], Empowering[27], and Encouragement[28]. Armstrong and Armstrong (1996:25) describe transformational leadership as "a process that elevates the leader and group (conductor and students) to a higher plane of motivation…"

Whether conductors want to be or not, they are often the role models for their students as persons and as musicians. Due to rehearsal requirements, musicians often spend more time with these educators than any other educator, and this setting provides an opportunity to be of notable impact on these musicians, whether positive or negative (Armstrong & Armstrong,

[24] Bass, 1985
[25] Stogdill, 1974
[26] Kouzes & Posner, 1987
[27] Hersey & Blanchard, 1988
[28] Kouzes & Posner, 1987

1996:23). A study conducted by Booth (1997:212) supports this, with findings stating that students rated their teachers as more important than their own reading and thinking.

2.4.2.1 Training and Experience

There is no set formula to becoming a conductor, but there is an unwritten requirement: to know everything. Some orchestras would have played the most popular orchestral pieces several times in their lifetime, sometimes more than once per year, or even more than once in a day or week when also considering touring situations. Regardless of circumstances, the most experienced orchestral players would know the most popular pieces back to front, and would also have a very specific way of playing it themselves. Yet, a conductor, regardless of age or experience, must be able to stand in front of an orchestra and still be able to teach them something. For conductors to want to perform works by Debussy, they must understand the artistic movement of impressionism, or to perform a work by Shostakovich they must understand the workings of the Soviet Regime in order to understand the mind-set of the composer.

Their training is exactly the same as any other orchestral musicians' initial training; they learn to play an instrument, learn music theory, research music history and develop their aural abilities, but with further study it is not restricted to just these primary focuses. Further instruction often encourages all musicians to learn about any and all other art forms, as they have historically always influenced one another. Where the path of the conductor starts to deviate is in the physical training of their gestures. Conductors are taught basic gestures that indicate tempo, dynamics as well as emotion, but the skill comes from being able to communicate all of this and more in as concise and precise a manner as possible. Caricatures drawn of Gustav Mahler by Hans Schließmann were assimilated by conductors in order to replicate them in front of an orchestra as he was perceived as a very proficient and expressive conductor (Burkholder, *et al.*, 2010:744) An example of these caricatures can be seen below in Figure 5[29].

[29] De La Grange, 1979

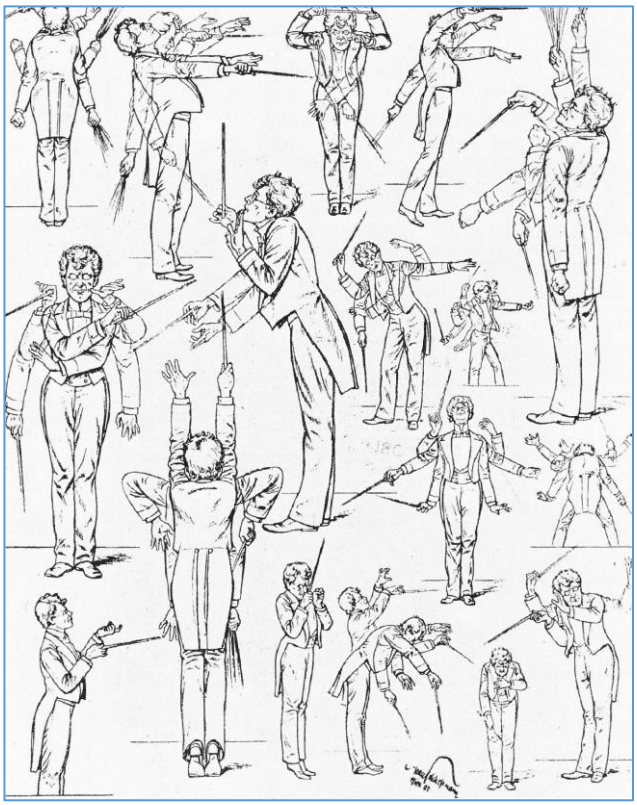

Figure 5 - Caricatures of Mahler by Schließmann

The second major skill that needs to be developed is the anticipation of problems, problems with the score or parts, problems with their player ability and especially problems with the instruments. Anticipating any possible hurdles that could occur with the parts is almost a prerequisite when studying the score. Problems that can occur in rehearsals or performances regarding player-ability are a bit easier to anticipate as the level of the orchestra will normally be communicated to the conductor before the programme is selected and finalised. The most difficult problems to anticipate are those in the rehearsal or performance that could occur due to the construct of the instrument. Some passages in the clarinet could be difficult due to the area in their range where the *break* occurs, or when there is writing for basses to play the low C, but they do not have the low C extension attachment in order to play that note. The ability to anticipate any problem and work around it before or when it happens is a critical skill learnt by conductors.

2.4.3 Interactions

Interaction is perhaps one of the most, if not the most important stimulus a human being can have towards quenching their mental health needs. There is so much happening during interactions between two or more parties that can either positively and/or negatively impact a person. In open conversation, there is no formal or scripted direction in which the

conversation must move, but in something such as an orchestral rehearsal there is a general direction which can be retraced several times.

In open conversation, the opening topic generally dictates where the conversation moves, as the end of the initial topic can redirect to the start of a new topic, without being bound to a single idea. This open-endedness can pave the way for a multitude of emotions experienced, as key notes in the conversation could trigger ideas, memories or reactions from either individual in the conversation, whether they are actively taking part or passively listening to it.

In the orchestral environment, interactions are scripted to an extent: The orchestra warms up their instruments and tunes them, the conductor walks in, polite greetings are made and then the most important spontaneous, yet scripted event takes place, the moment the musicians and conductor start to rehearse. Any orchestral work is like a conversation, there is generally a question followed by an answer, and so forth, and it is the task of all musicians to bring out this conversation, but it is through the interactions between conductor and musicians that the conversation becomes music – becomes more than notes on a piece of manuscript. In his series of lectures, "The Unanswered Question", Leonard Bernstein (1976:79) describes music as a language that only exists in the poetic form, the musical prose does not exist, or at most can be equated to mundane scales and arpeggios. Bernstein (1976:79) postulated that music, just like poetry, consists of imagery and figurative expression. A conductor must interpret the poetry of each composition and bring its message to the orchestra, using all his leadership and musicality to mould a multitude of musicians' sounds into a single message.

2.4.3.1 The Conductor in the Orchestra

Interaction is a process of perpetual reciprocity, through which the conversation of music can take place without spoken dialogue or words. It is the task of the conductor not only to communicate the basic roadmap of the work played, but also to communicate the finer details, ideas, and suggestions of the work, all without uttering a word. The art of conducting lies in being able to clearly and efficiently communicate to the orchestra during rehearsals what one's intention is with a piece, down to the most minute detail of interpretation. If done correctly, the orchestra will be able to follow effortlessly any extra direction given to them by the conductor.

2.4.3.2 *The Musicians in the Orchestra*

Musicians naturally have the most difficult task in the orchestral environment, namely, to physically play the music. The musicians feed off the influence and support of their colleagues, but their main external inlet of motivation comes from the conductor.

2.4.3.3 *Interactions between Both Parties*

This interaction between orchestra and conductor is not a one-way channel, as there is a continuous exchange between the musicians and the conductor on stage. Musicians have a tendency toward a desire to please, their goal is to achieve the best possible form of the music, as well to realise the imagery intended by the conductor. When a conductor's gesture is accepted and performed by the orchestra, the orchestra meets the conductor's needs of relatedness and competence, and they are reciprocated by the same needs being met for being able to fulfil those needs.

Figure 6 below illustrates the exchange taking place between conductor and orchestra, but illustrates only one instance of exchange. The transference of motivation can take place between the musicians playing, and exchanges can also take place between the members of the audience as well as the musicians on stage. This transference, if achieved, can result in a perpetual exchange of needs satisfaction which only benefits everyone.

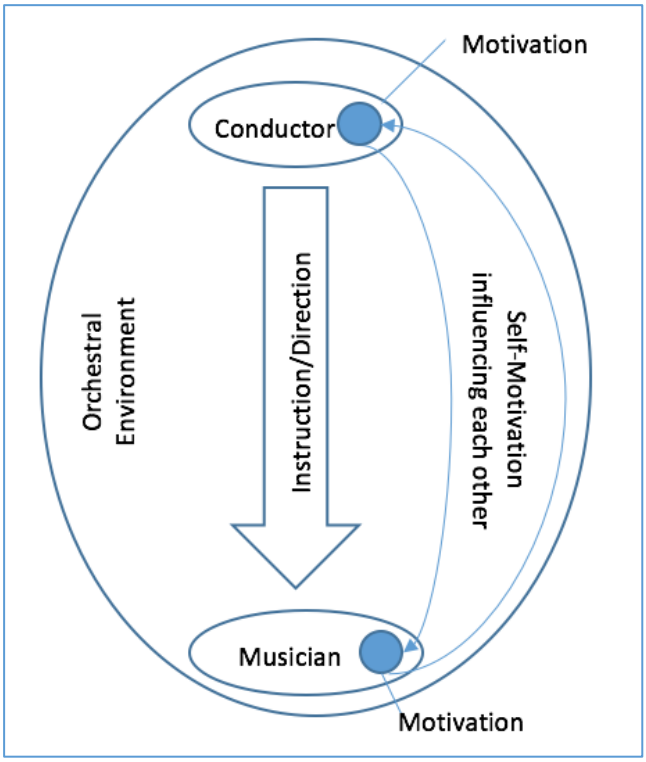

Figure 6 - Transference of Motivation

The concept of perceived locus of causality was initially introduced by Heider (1958) when he studied interpersonal perception, and how one deduces the motives and intentions of others (Ryan & Connell, 1989:749). Heider (1958:82-84) distinguished between *personal causation*, of which intention is the critical feature, and *impersonal causation*, in which environments, independent of the person's intentions, produce a given effect. In SDT these phenomena translate to IM and EM.

With further extension of Heider's phenomenal analysis by researchers (DeCharms, 1968; Deci & Ryan, 1985) has resulted in a wider distinction between the various perceived loci of causality. This has developed and overlapped with theories on internalisation (Ryan, 1995:403-405). Furthermore, it was found that autonomy plays perhaps the largest role in motivation. This is because Ryan *et al.* (1985:16) recognised that "the more internalised a value or regulation is, the more it is experienced as autonomous or as subjectively located closer to the self". Within the orchestral environment, the influence between the members of the orchestra, as well as between orchestra and conductor, can affect the internalisation of motivation.

The various degrees of internalisations have become known as regulatory styles. SDT proposes that, like IM, internalisation is an active, natural process wherein individuals attempt to transform socially sanctioned customs or conventions into personally endorsed values and self-regulations (Ryan, 1995:405). Figure 3 displays the various degrees of internalisation, or regulatory styles, from amotivation to intrinsic motivation. These regulatory styles all define various regulatory processes or behaviours:

Deci and Ryan (200:237) state that IM and well-internalised EM are the "bases for autonomous or self-determined behaviour", but in contrast, behaviour would be considered "controlled or non-self-determined to the extent that people feel pressured to do it". The lowest regulatory form representing the latter group is referred to as *Non-Regulation. Non-Regulation,* or amotivation specifically refers to behaviours where no motivation occurs in performing an action. According to SDT, people are likely to be amotivated when they lack either a sense of efficacy or a sense of control with respect to a desired outcome – that is, when they are not able to regulate themselves with respect to a behaviour (Pelletier, *et al.*, 1999:2486). An example of this in a music context could be "practicing seems useless, I'm not a good musician."

External Regulation is the only regulation recognised in Operant theory, which was pioneered by B. F. Skinner (1958). With this regulation, people's behaviours are solely externally controlled by external consequences, such as a tangible reward or avoiding punishment (Deci & Ryan, 2000:236). This regulation has been extensively studied as it is the regulation that most often thwarts the sustaining or creation of IM (Deci, *et al.*, 1999:658-659). In SDT, external regulation is considered controlling, and externally regulated behaviours are predicted to be contingency dependent in that they show poor maintenance and transfer once contingencies are withdrawn (Deci & Ryan, 1985:130-132). An example of this in a music context could be "I practice because the conductor said I have to."

Whereas with external regulation the control of behaviour comes from contingent consequences that are administered by others, with *introjected regulation* the contingent consequences are administered by the individuals to themselves (Deci & Ryan, 2000:236). Introjection represents only a partial internalisation, and is often manifested as ego involvements (Ryan, 1982), public self-consciousness (Plant & Ryan, 1985), or false self-ascriptions (Kuhl & Kazén, 1994). Here, the person's self-regulation is either driven by feelings such as pride or guilt. An example of this in a music context could be "I will feel good (or bad) if I practice."

With *Identified Regulation*, people recognise, understand and accept the underlying value of certain behaviours. By identifying with and accepting the value of a behaviour, the more internalised the behaviour will become, which will result in the person participating in this behaviour of their own volition (Deci & Ryan, 2000:236). It is important to note that this is still considered external as it is not part of a person's beliefs or value system as can be seen in integrated regulation. An example of this in a music context could be "I don't enjoy practicing, but I can see that it will help me in learning this difficult piece."

Deci and Ryan (2000:236) see *Integrated Regulation* as "the fullest, most complete form of internalisation of EM, for it not only involves identifying with the importance of behaviours but also integrating those identifications with other aspects of the self." With integrated regulation, the behaviours exhibited are seen to combine with the person's goals and innate value system (Pelletier, Tuson, & Haddad, 1997:416; Ryan, 1995:95). In this regulation, what was initially external regulation will have been fully transformed into self-regulation, and the result is self-determined *extrinsic* motivation. An example of this in a music context could be "I know that if I want to become a professional musician, I need to practice."

The final tier on the continuum of self-determination is *Intrinsic Regulation*, where any external regulations have been completely internalised and are autonomously performed out of the person's own volition (Deci & Ryan, 2000:237). An example of this in a music context could be "I love to play my instrument."

This chapter covered three key areas of the study, namely Motivation and the Self-Determination Theory, The Dynamic Orchestral Environment, and the Musicians and the Conductor within the orchestral environment. With the help of figure 2, the breakdown of chapter was clearly stated. This chapter expanded on the study of motivation as a branch of psychology, what the basic components of SDT are, the challenges faced in young musicians entering the tertiary level environment and how their interactions with one another and with the conductor plays a possible role in the influencing of motivation.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

This chapter explains how this research was conducted, and why the specific method was chosen. A brief description of the hypothesis is provided, followed by a description of the employed empirical research approach used; then the research design (Survey) and methodology (Questionnaire) from which statistical data was derived, is explained. An explanation of how standardised SDT questionnaires were chosen and adapted for the purpose of this study, which statistical analysis methods were chosen and employed, the chapter concludes with an explanation of the limitations faced in this research.

3.1 RESEARCH HYPOTHESIS

The research hypothesises that the tertiary level orchestral musicians in South Africa are primarily extrinsically motivated, and that very few musicians come close to being intrinsically motivated. I have observed that musicians' intrinsic motivation decreases as they progress with their studies, with extrinsic motivation increasing in order to provide a balance. Variables studied in this research were the three BPNs (Autonomy, Competence, Relatedness), how the musicians experienced these in their orchestral environment, whether they experienced support for them, and where their perceived loci of causality lie.

3.2 QUANTITATIVE RESEARCH

Quantitative is defined as "of, relating to, or involving the measurement of quantity or amount" (Merriam-Webster, n.d.). In quantitative research, statistics are generated through the use of surveys based on quantitative data (Stellenbosch University Libguides, 2017). The research in this study is empirical in nature as it solely relies on primary data gathered through surveys.

The primary source of data will be derived from online questionnaires. As research in SDT is mainly quantitative in nature (as seen on the SDT website), researchers have "developed many questionnaires to assess different constructs contained within the theory" (SDT, 2017). Research in SDT has come up with several standardised questionnaires, based on the specific aspects of the theory, which can be adapted to apply to almost any discipline. Work from previous research was combined and synthesised in order to create the questionnaire for the purpose of this research.

Quantitative data is applicable to this study as it can accurately translate the information provided by the participants into statistical data. The questionnaire consisted almost entirely of closed-ended questions, which were then analysed using ANOVAs. The variables measured were also compared to one another, and it was found that the variables that have strong relations within the SDT sphere do here as well. An example would be that relations between amotivation and the support for the three BPNs all measured negatively, meaning that amotivation is weak when support for any of the BPNs were present.

The study used a deductive approach, making use of an existing theory (SDT) as point of departure. Babbie (2016:24) stated that this approach is applicable when testing whether a specific theory is "valid" under certain "circumstances", especially if there is sufficient literature available.

3.3 RESEARCH DESIGN

The research was conducted as a survey of motivation. Merriam-Webster (n.d.) broadly defines survey as "to query (someone) in order to collect data for the analysis of some aspect of a group or area". Surveys are used in research where people, whether in a group or as individuals, are the primary unit of measurement (Babbie, 2016:247). The use of a survey is optimal when the population being studied is too large to be observed directly. In the setting of this research where musicians from across the country are being studied as individuals within the orchestral environment, the use of survey as research design is an appropriate choice.

This research specifically used analytical surveys, which, through gathering primary and empirical data, tested the hypothesis stated in Chapter 3.1. The survey was presented through an online platform in the form of a structured questionnaire. The results were analysed and presented using descriptive and inferential statistics. Some of the strengths of the survey design are in the potential to generalise a population by getting a large quantity of answers from a broad representative sample set. The flexibility in the construction of the questionnaire combined with the availability of standardised tests, provides considerable flexibility in one's analyses coupled with the backup of previous research confirming the reliability and validity of one's design (Mouton, 2001:153; Babbie, 2016:146-150.

A survey as a research design also has some weaknesses. Limitations included high refusal rates and high incidence of non-response. These weaknesses are most prevalent when a representative figure such as the researcher is not present during participation, or when

invitations to participation are sent online and they are just ignored. Babbie (2016:280) makes a critical statement, in that surveys cannot measure social context, only the individuals within the context/environment.

3.4 RESEARCH METHODOLOGY

This section refers to the final data collection process and the methods implemented to realise this process. After I was granted ethical clearance[30] by the University of Stellenbosch, South African universities were approached in order to acquire institutional permission for participation[31]. Once institutional permission was granted by five of the six universities approached[32], questionnaires were sent to the various heads/managers/liaisons of each consenting university's orchestra, from where the questionnaires were then distributed to all qualifying participants.

According to Babbie (2016:262) survey questionnaires are generally completed in three ways: self-administered questionnaires, surveys administered by during face-to-face interviews, and telephonically. The last two options are no viable in the case of this research, as direct communications and the researcher is not allowed.

In the questionnaire, the first section consisted of five questions, asking for consent to participate in the study as well as questions relating to studies for statistical purposes. Participants would not be able to continue to the next questions if they selected ***No*** on the consent question in the first section. These questions included which university[33] students come from, as well as in which year of studies they were. The following three sections asked participants to rate their general level of motivation in the orchestral environment as well as how they perceived the application of SDT in this environment. These questions were based on the Self-Regulation Questionnaires from the SDT website and the work by Standage *et al.* (2005) and Evans and Bonneville-Roussy (2015).

The questions were measured with a 7-point Likert scale, where the scale ranges from definitely disagree (1) to definitely agree (7). The mini-theories that were applied are OIT, as it "addresses the process of internalisation of various extrinsic motives" (Ryan 2009:1); and BPNT, as "the impact of any behaviour or event on well-being is largely a function of its

[30] Addendum B
[31] Addendums C - G
[32] The University of Cape Town chose not to participate in this research.
[33] This question was asked for statistical purposes only.

relations with need satisfaction" (Ryan 2009:1). The measurement instrument that was used can be viewed in Addendum A.

According to Mouton (2001:56) research methodology "Focuses on the research process and the kind of tools and procedures to be used", whereas research design "focusses on the end product: What kind of study is being planned and what kind of result is aimed for?" Therefore my research design is a survey type, and I aim to gather quantitative data. The method I will be using to collect data is an online questionnaire. Thus questionnaire is both my method and methodology.

Various statistical methods were used to process and present the data, but this will be elaborated on in section 3.6.

3.5 DATA COLLECTION

The data collection process consisted of three phases; creating and preparing the questionnaire for distribution, distributing the questionnaire to all participants via their respective liaisons, and finally exporting all data collected for processing.

3.5.1 Role of Researcher

My role as the researcher with regards to the collection of the data started with acquiring the respective clearances and permissions from all the universities, followed by constructing the questionnaire on the SUNSurvey platform. This phase is seen as preparatory steps before the actual data collection process began. During the second phase of the data collection process, the primary task was in distributing the questionnaire to the identified representative individuals who would then send the questionnaire on to the members of the orchestras they are representing.

The ethical clearance[34] granted by the University of Stellenbosch stipulated that I may not come in direct contact (verbal or written) with any of the possible research participants with regards to this specific research. This stipulation in the ethical clearance was a prerequisite in all the institutional permissions granted by the various participating universities, which created a need for representative liaisons between myself and all possible participants from the various universities partaking in this research.

[34] Addendum B

The final phase of the data collection process was the swiftest. The data collected during the active period[35] was stored automatically on the SUNSurvey system. As soon as that period had ended, the data was exported and processed by Prof. Kidd from the Centre for Statistical Consultations. Within this period, regular email communication took place between myself and Prof. Kidd, regarding the type of data required.

3.5.2 Description of Participants

The sample demographic targeted for this research thesis were tertiary level orchestral musicians, currently studying at any of South Africa's Universities[36] that have an active symphonic orchestra, or any comparable ensemble. No other criteria other than being a student and full-time member in the university's orchestra were required in order to participate in this study.

3.5.3 Survey

The data collected from the questionnaires can be divided into two groups, the first five questions enquired on aspects such as the participant's level at university as well as which university they were from[37]. In the second group of questions, several aspects pertaining to SDT were investigated. All the questions from the second group were measured using a 7-point Likert Scale, ranging from 1 (Strongly Disagree) to 7 (Strongly Agree). The use of the 7-Point Likert Scale was used as research has shown that participants can discern more effectively between options and give more accurate answers. It has been shown in research that the finer the utilisation scale is, the more reliable the measurement will be (Cronbach, 1950:22).

The SUNSurvey system was used for the creation of questionnaire type research. The system is developed by *Checkbox Survey, Inc.*, and is implemented by the University of Stellenbosch as their primary survey creator for research. The university is able to import email lists based on the researcher's needs as well as export the data into formats which can be easily processed and mined by their consultants at the Centre for Statistical Consultations.

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[35] The active period refers to the time frame in which the questionnaire was active and open for respondents to participate in.

[36] The universities that took part in this study were: Stellenbosch University, Nelson Mandela University, University of the Free State, North-West University, and University of Pretoria. The University of Cape Town was initially approached as it falls under the above group, but they chose not to participate in this research.

[37] The latter question was only asked for statistical purposes.

The questionnaire had 65 questions in total, 5 of the questions related to the students' university position, followed by 60 questions, all measuring various aspects of the sub-theories OIT and BPNT. The 60 SDT questions are split up into 3 sections: 24 questions investigating support for autonomy (15), competence (4) and relatedness (5) in the orchestral environment; 16 questions investigating the experience of autonomy (6), competence (5), and relatedness (5) in the orchestral environment; and 20 questions investigating the various motivational regulations experienced in the orchestral environment (4 questions per each of the 5 regulations).

The questionnaire was made available from 24 August 2017 at 12:55 to 30 September 2017 23:59. Access to the survey was granted via an authorised link on an invitational email that was sent to the managers/personnel/liaisons in charge of their respective universities' orchestras, who then distributed the invitational email to the members of the various orchestras.

3.6 DATA ANALYSIS

The University of Stellenbosch's Centre for Statistical Consultation was approached with regards to assisting in the processing and mining of all the data collected for this research. The primary statistics consultant was Prof. Martin Kidd. The questionnaires were analysed through the standardised methods of calculating the scores of the different sections. The participants' responses were recorded on the SUNSurvey system, after which they were exported and processed by Prof. Kidd.

Each variable of the questionnaire (Ex. *Support for Competence*) is measured by a number of items (four in this case). In the case of *Support for Competence*, because the four questions are all investigating the same scale, there has to be a correlation between the questions. This correlation is tested through the use of Cronbach's Alpha, which is a measure of internal consistency.

Each item investigated was then plotted as a histogram, indicating the distribution of answers according to the 7-Point Likert Scale. The histograms also included boxplots, which indicates the median, and variance between the answers. Further, correlations were drawn between all the items investigated in the questionnaire using the Pearson product-moment correlation coefficient. A biplot was created in order to indicate the coefficients' relations to the principal

components. Finally, the results of all the components were compared between the 5 year groups, and plotted using the ANOVA[38] method.

3.6.1 Application of Self-Determination Theory

The study was viewed through two SDT lenses, namely OIT and BPNT. OIT was used as the hypothesis posits that all the students find themselves to be extrinsically motivated rather than intrinsically motivated. The study will compare the scores for the various regulations by each year group and compared in order to view the general progression of the various loci of causality.

The study of the various regulations would subsequently provide clarification on what the level of their motivations was. BPNT was used in order to see whether the needs in the environment were being met. The questionnaire investigates the experience of the three basic psychological needs in the orchestral environment; the support for the three BPNs in the orchestral environment; and determines what external motivation is experienced in the orchestral environment. In the case of the latter, the questionnaire's data can also reflect if any of the participants are intrinsically motivated or even amotivated.

3.6.2 Ethical Considerations

As part of the research requirements, ethical clearance must be acquired in order to safeguard the "dignity, rights, safety, and well-being of all actual or potential participants" of all research conducted at Stellenbosch University (Division of Research Development: Research integrity and ethics, 2017). For this research, ethical clearance was requested on 06 July 2017 (SU project number MUS-2017-0526-373), and granted on 18 July 2017[39]. The study was classified as low risk, as all intended participants for this research were consenting adults and none of their personal and/or identifying particulars were required.

3.7 RELIABILITY AND VALIDITY

It is important to do reliability and validity studies in one's data collection in order to assert that one's data is appropriate for use in one's research as well as to confirm that the data itself is acceptable. Data is measured for reliability in order to suggest that the same data would

[38] ANOVA, which stands for Analysis Of Variance, is a "Method of analysis in which cases under study are combined into groups representing an independent variable, and the extent to which the groups differ from one another is analysed in terms of some dependent variable." Babbie (2016:475)
[39] See Addendum B for Ethical Clearance

have been collected each time in repeated observations of the same phenomenon (Babbie, 2016:146). Reliability should not be confused with validity, as validity is used as measurement to see that the data accurately reflects the concept it is intended to measure (Ibid, 2016:146). Data must be valid and reliable for the use in research.

There are several measures and precautions which were taken in order to guarantee the reliability and validity of this study. Knowing the possible pitfalls of one's chosen research design aids in resolving them, as plans or contingencies can be made to avoid them (Mouton, 2001:150; Babbie, 2009:279). According to Babbie (2016:279-280) survey research generally scores strongly in reliability but low in validity. Some reasons for this involve the artificiality of the survey format, as it cannot be verified who takes part in the questionnaire, or whether their views are valid. This issue was circumnavigated by appointing liaisons who forward the questionnaire only to those individuals who qualify for this research.

Babbie (2016:148) suggests that in order to strengthen the validity of the research one requires standardised "question sets", large samples, and distance between the researcher and the participants. The questions used in this questionnaire are based on the Self-Regulation Questionnaires used by SDT when researching EM. The sample is not large, but in the context of the size of the variable ensembles to the size of the sample, it can be justified. The final guarantee is that no communications occurred between myself and participants, as the invitation to participate was distributed either through the SUNSurvey mailing system or through the liaisons.

Reliability and validity tests were done on all the questions asked in the questionnaire. Response bias was tested by asking some questions in a positive light and some in a negative light. An example of a positive stance is S2Q1A08: "We feel we trust our conductor", and some in negative - S2Q1A12: "We do not feel good about the way the conductor speaks to us". The negatively positioned questions were then reversed (as can be seen in Table 5) in order to check that questions are still answered the same. Based on that, we were able to see that the participants did not answer more positively or negatively when questions were set in a certain manner.

3.8 LIMITATIONS

The shortcomings of the study can be summarised as follows:

- Limitations of the research are in line with that of the choice of research strategy. The use of a survey as data collection method can often be hampered by participation, especially when used in the form of a voluntary online questionnaire. In total, only 53 students (N) participated, of which only 48 completely finished filling in the questionnaire in its entirety.
- This study will not be carried out in the long term, as it is not a longitudinal study. The questionnaire was only administered once, meaning that it will not be able to continuously monitor the changes in motivation of the orchestral players over a longer term.
- Students were under no obligation to take part in the survey, which could have result in a low number of participants.
- Concerns for students when receiving email, especially from senders foreign to their university, could be emails such as spam email or phishing. If an email server reads through email and deems it as too generic, it could mistake it for spam and automatically divert it to a spam folder in the email client, rather than to the inbox folder. The other concern is phishing, an online hacking technique which steals information through the façade of an email the user would recognise, such as a banking client.
- The study does not account for other possible factors other than lack of SDT support, which may lead to less pure results. Examples may include circumstances at home, or factors that may influence general motivation outside the orchestral environment. Although some of these may link with SDT, none of the questions are aimed directly at those other factors.
- All conductors have different approaches when it comes to their respective orchestras, and this would affect the ACR of the musicians in those orchestras. This study however, can be seen as a pilot study, and the current purpose thereof is not to expose the influence of certain conductors on musicians in the country, but rather to establish an overall understanding of the musicians in the country. It is for this reason that some results may seem slightly dispersed.

This chapter started with a description of the various facets of this research, including the research hypothesis, design, and methodology. Then, the methods for data collection and analysis were declared, with special focus on the construction of the measurement tool and the statistical methods used for analysing the empirical data collected. This chapter end with an insight into how reliability and validity of the data collected could and was insured, followed by the restrictions and limitations experienced during the research process.

CHAPTER 4

RESULTS

This chapter sets out to exhibit fully the processed results of all data collected. An overview of the sample profile is provided and discussed. Then each subchapter starts with a reliability analysis of the data applicable to that subchapter, followed by a boxplot for each item. The correlations between the variables are then presented followed by the discussion of the aforementioned results.

The first step taken with the data was to create a reliability analysis between the variables measuring a single element. The reliability of all variables in a group was measured using Cronbach's Alpha, a coefficient of reliability and/or consistency. The measurement results in a value between -1 and +1. The higher the value, the more consistent and reliable the set of questions are. Values of 0.7 and up are considered acceptable, whilst values smaller than 0.5 are generally regarded as unacceptable. Figures 7 to 16 and Tables 2 to 4 indicate analysis done for all eleven question groups. Each subchapter will begin with the table presenting the findings of the reliability analysis.

4.1 SAMPLE PROFILE

In this study, 53 participants (N) from five participating universities took part. Preceding the collection of the data, institutional permission was requested and granted from these participating universities. Figure 7 indicates the spread of participants, with 72% participants studying at Stellenbosch University, and the rest from the other invited institutions. No students from the University of the Free State nor Nelson Mandela University took part in the research.

An 'Other' option was provided if a student's university did not appear as one of the options provided in the dropdown list, followed by a space where they could clarify from what institution they were from. One student selected the 'Other' option, but then clarified that they were from North-West University. This means they probably did not see the option for NWU on the dropdown list. It brings up the total of participants from NWU to 9.

Figure 8 indicates the spread of the students across the academic levels, with the majority of the students being undergraduates (N=45; 85%) in their second year of studies (N=15; 28%). Later comparisons between the year groups include all four undergraduate years and then all

postgraduate students as a fifth group. It must be noted that some music degrees such as the BA-Music degree only consist of three years, which could account for the lower number of final year students.

Students were encouraged to take part in this study, but it was clearly stated that at no time is participation obligated. They were also notified that they may withdraw from this study at any time.

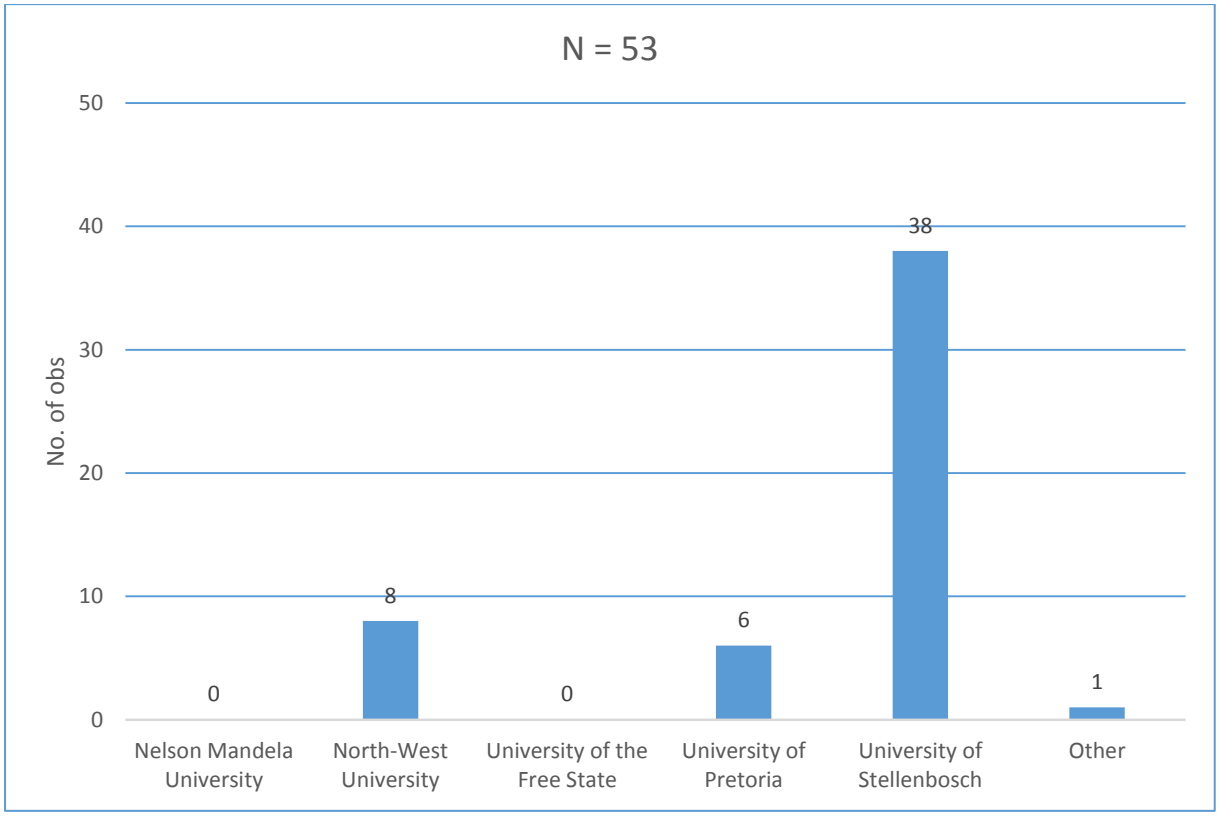

Figure 7 - University Participation

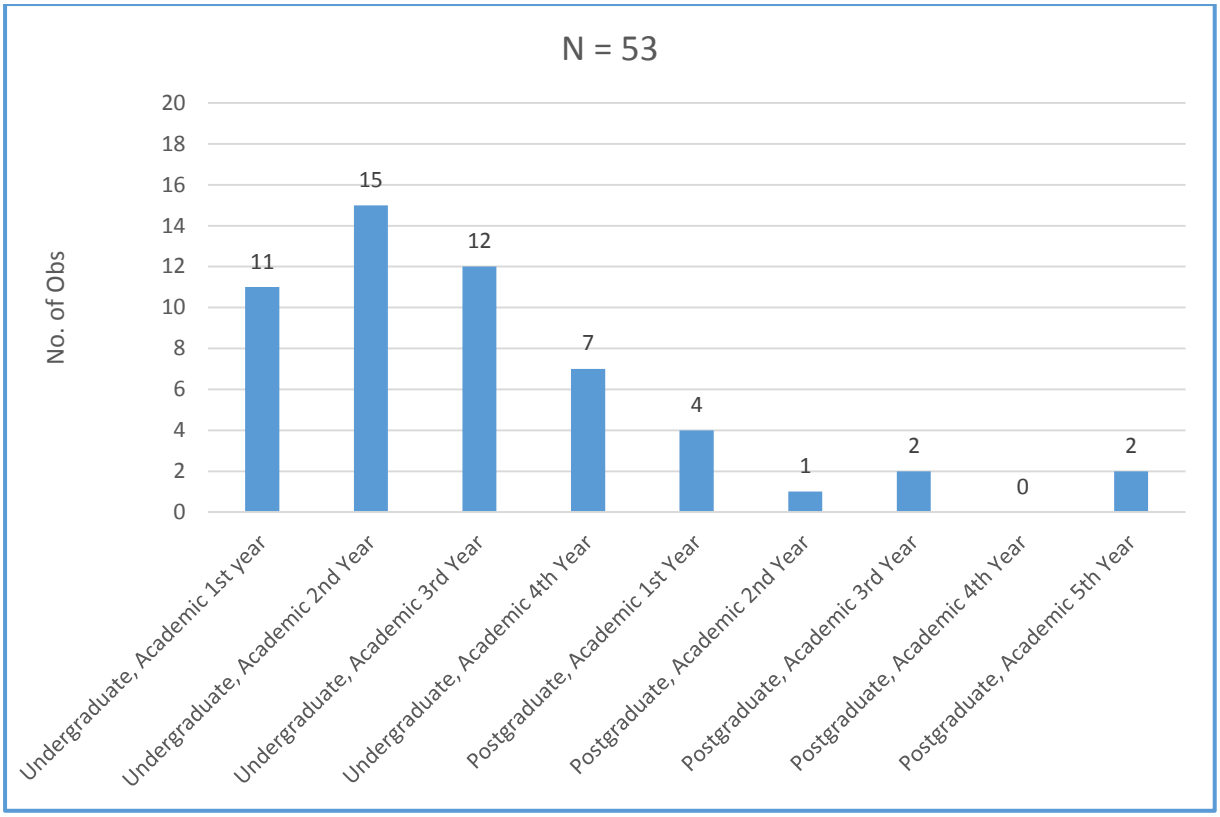

Figure 8 - Participant Distribution

4.2 BASIC PSYCHOLOGICAL NEEDS

The research assessed the degree to which students perceive support for, as well as the experience of their autonomy, competence and relatedness. The scales used to measure the various items were based on the research of Standage, Duda and Ntoumanis (2005) and the subsequent research of Evans and Bonneville-Roussy (2015).

4.2.1 Reliability Analysis

Reliability analysis was performed on all the items measured, and grouped into the variables they measured. The internal consistency between the items were then assessed using Cronbach's alpha. The full results of the reliability analysis can be seen on Addendum H. A summary of the variable is provided in each table, as well as a detailed breakdown of all the various elements. Some of the elements measure the impact on the standardised alpha if that item was to be removed from the calculations.

Correlations were also drawn between all 11 variables measured in order to draw empirical relationships between them. The Pearson rank-order correlation coefficient as well as the Spearman rank correlation coefficient were used in order to indicate the correlations.

The Pearson rank-order correlation coefficient can be defined as the covariance[40] of the two variables divided by the product of their standard deviations[41] (Babbie, 2016:455-456). Covariance is used to show that the values or items in a variable tend together in either a positive or negative direction and standard deviation indicates whether the data is spread close or far from one another. The result of the of the Pearson correlation is used to indicate how well they are related. A correlation +1 and -1 indicate a perfect positive and perfect negative relationship, whilst a result closer to 0 indicate no real relationship. The p-value is used to indicate whether the correlation between the two variables measured is significant. A value of 0.01 and less indicates that the relationship between the variables is highly significant, while anything higher indicates an insignificant relationship dispersal.

The Spearman rank correlation coefficient is similar to the Pearson correlation coefficient, but is the nonparametric version thereof, no assumptions are made about the underlying distribution of the data. Parametric tests make assumptions about a population's parameters (ex. The mean and standard deviation), whereas nonparametric tests do not. As with the Pearson correlation coefficient, a result of +1 and -1 indicates a perfect positive and negative relationship, whilst a result of 0 indicates no relationship. The results for the Spearman p-value indicate the same as mentioned in the previous paragraph.

4.2.2 Support for Autonomy, Competence, and Relatedness

Three scales were used to assess the support for the three basic psychological needs. To assess support for autonomy, a Music-modified version of the Learning Climate Questionnaire [LCQ] (Williams & Deci, 1996) was utilised. The work by Williams & Deci (1996) and Black & Deci (2000) on medical sciences and organic chemistry respectively on college level has supported the internal reliability of the LCQ and the presence of a single autonomy support factor (15 items). To assess competence support, four items were used, whilst relatedness support was measured with 5 items.

Responses to all items were preceded by the words 'In orchestra,…', and were measured on a 7-point Likert scale, ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Example items are: '…the conductor shows confidence in our abilities to do well in rehearsals/concerts' (support for autonomy), '…the conductor helps us to improve' (support

[40] Covariance refers to how much two variables vary together, whereas variance tells you how one variable varies.
[41] Standard deviation is a measure of distribution around the mean, explaining how the data is spread out (Babbie, 2016:421).

for competence), and '…the conductor has respect for us' (support for relatedness). Scores from these three subscales indicated to all variables referring to needs support.

The reliability analysis on autonomy, competence, and relatedness resulted in alphas of 0.97, 0.89, and 0.92 respectively. All yielded high results, with autonomy resulting in the highest alpha, due to it having the most items testing its variables, whilst competence had the lowest number of items for the variable. Correlations between the three variables also presented highly positive results, as can be seen below in table 2, which is an extract from Addendum J.

Table 2 - Support for ACR Correlations

	Correlations between 'Support for ACR' Variables						
	Variable 1	Variable 2	Pearson	Pearson p-val	Spearman	Spearman p-val	# cases
1	Support for Autonomy	Support for Competence	0.91	<0.01	0.90	<0.01	53
2	Support for Autonomy	Support for Relatedness	0.93	<0.01	0.93	<0.01	53
3	Support for Competence	Support for Relatedness	0.93	<0.01	0.90	<0.01	53

On average, the participants rated Support for Relatedness the highest, with a mean result of 4.917, followed by Competence (4.8443) and Autonomy (4.3887). In the 7-point Likert system used for the data collection, 4 represented *neutral*, with 1 being *highly disagree* and 7 *highly agree*. This puts in context that the feelings toward Relatedness within the orchestra is relatively positive, but bordering close to neutral. The 25%-75% outliers for all three averaged around 3.9-5.9, meaning that the centre 50% of the participants all chose on average 4 or higher in the questions investigating support for ACR in the questionnaire.

Overlaying the results on top of one another provides a new perspective. Figure 9 below combines the 3 'support for' histograms on Addendum I, as well as trend line averages for the results. The results clearly show that support for relatedness, and competence especially, had particularly positive results with the highest peaks suddenly appearing from around 4 and up. The trend line average for support for autonomy however, shows that there is a more dispersed result set, indicating an unclear understanding as to how support for autonomy is truly experienced within the orchestral environment.

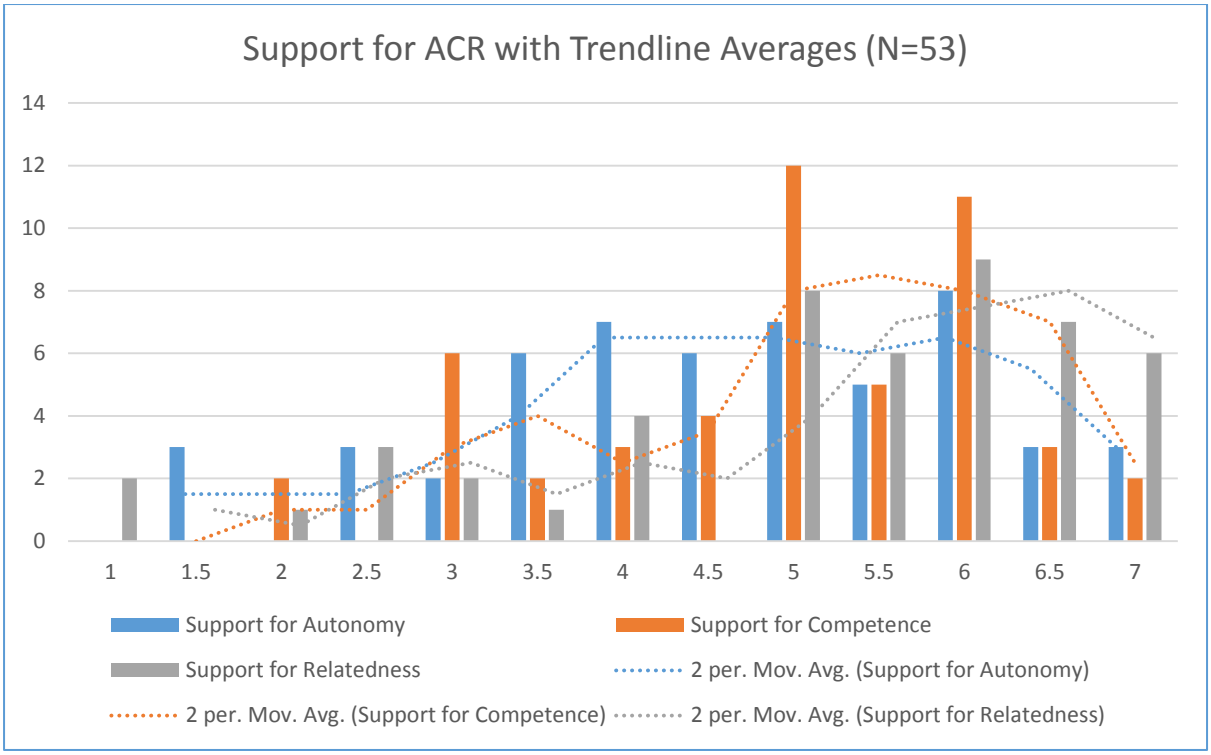

Figure 9 - Support for ACR

4.2.3 Experience of Autonomy, Competence, and Relatedness

Three scales were used to assess the experience of three basic psychological needs. Sixteen items were used to assess experience of ACR. Most of the items used in these scales were based on previous work with British children (Standage, *et al.*, 2003). Responses to all items were preceded by the words 'In orchestra, …', and were measured on a 7-point Likert scale, ranging from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*). Example items are: '…I feel that I do orchestra because I want to' (experience of autonomy), '…I am satisfied with my performance in orchestra' (experience of competence), and '…I feel supported by the other students in orchestra' (experience of relatedness). Scores from these three subscales indicated to all variables referring to needs support. Correlations between the three variables also presented positive results, as can be seen below in table 3, which is an extract from Addendum J.

Table 3 - Experience of ACR Correlations

	Correlations between 'Experience of ACR' Variables						
	Variable 1	Variable 2	Pearson	Pearson p-val	Spearman	Spearman p-val	# cases
1	Experience of Autonomy	Experience of Competence	0.63	<0.01	0.61	<0.01	50
2	Experience of Autonomy	Experience of Relatedness	0.74	<0.01	0.74	<0.01	50
3	Experience of Competence	Experience of Relatedness	0.59	<0.01	0.59	<0.01	50

The correlations between the various needs experienced in the environment were lower, but still exhibited moderate uphill linear relationships. The correlation between Autonomy and Relatedness however exhibited a stronger uphill linear relationship. This could indicate that the relationships with competence yield lower correlations, signifying that there are extremely diverse levels of competence experienced within the orchestral environment.

The discrepancy could be due to the educational background of these students, who might feel that what they are tasked to do within the orchestral environment is too discrepant from their current abilities. This low correlation is interesting however when viewing the results of the items measuring the variable *experience of competence.*

As can be seen in Addendum I, the results of the variable *experience of competence* yielded the highest median of 5 (Autonomy=4.33; Relatedness=4.6), but also the highest mean of 4.716 (A=4.12; R=4.52). This indicates that competence was in fact the need most positively experienced within the orchestral environment, and that autonomy and relatedness were less experienced, resulting in a better correlation between those variables. Figure 10 serves as a combined graph detailing the various results of the histograms in Addendum I. As can be seen below in this Figure, the peaks occur a lot closer to each other, with autonomy and relatedness clearly peaking whilst competence has a relatively flat peak. This difference corroborates the lowered correlations experienced by the students. The trend lines in this graph present show the general body of this graph, detailing where the questions relating to ACR received more results. Whereas *experience of competence* received a broader area of answers, the sharper trend line peaks of *experience of autonomy* and *relatedness* results indicate answers that were a lot more uniform between the participants.

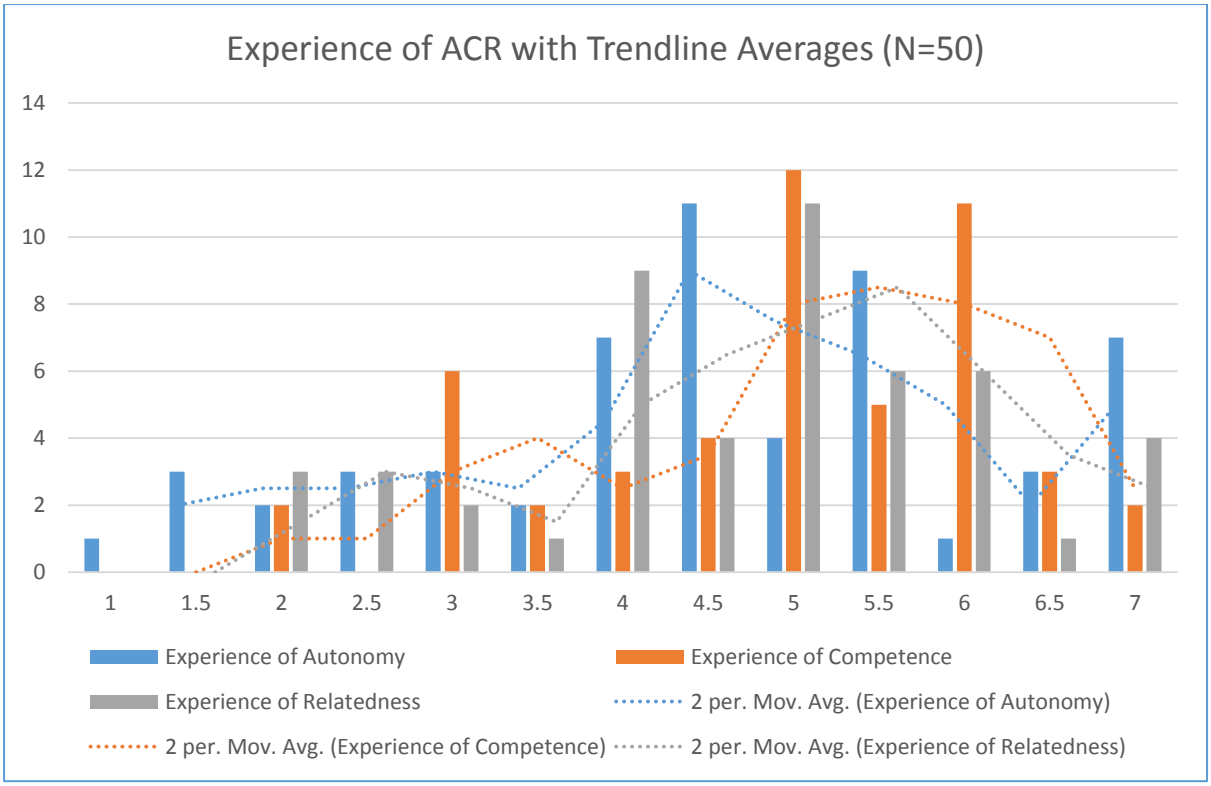

Figure 10 - Experience of ACR

4.3 ORGANISMIC INTEGRATION THEORY

In this subchapter, the research assesses the degree to which students agreed with the various items measuring the various regulatory styles. In these questions, items that would have measured integrated regulation, the highest extrinsic regulation, were omitted. Previous research determined that it is too difficult to get proper empirical differences between integrated and intrinsic, thus it is left out (Ryan & Connell, 1989; Evans & Bonneville-Roussy, 2015). The scales used to measure the various items were based on the research of Standage, Duda and Ntoumanis (2005) and the subsequent research of Evans and Bonneville-Roussy (2015).

4.3.1 Reliability Analysis

The same reliability analyses were performed on all the items measuring variables of OIT as in the previous subchapter on the ACR variables. The internal consistency between the items were then assessed using Cronbach's alpha. The full results of the reliability analysis can be seen on Addendum H. A summary of the variable is provided in each table, as well as a detailed breakdown of all the various elements. Some of the elements measure the impact on the standardised alpha if that item was to be removed from the calculations.

As further stated in 4.2.1, Correlations were also drawn between all 11 variables measured in order to draw empirical relationships between them. The Pearson rank-order correlation coefficient as well as the Spearman rank correlation coefficient were used in order to indicate the correlations.

4.3.2 External Regulation

External regulation refers to regulatory process whereby one acts in order to be compliant, receive *external* rewards or avoid *externally* administered punishment. The results for this variable were overall low as can be seen below in Figure 11, with a mean of 3.0365 (N=48), however in the 75th to 100th percentile, participants measured between 4.5-7, meaning that a quarter of the participants averaged positively. Upon further inspection, it was found that 1st year undergraduate students measured the highest in this regulatory style. This could be due to the remnants of secondary school environment, where less autonomous behaviours were exhibited due to strict rules and sanctions that come with this environment.

The graph below displays the various means of each year group, with each year of the undergraduates a single element, and then all postgraduate students combined to create a fifth group. The highest mean is undoubtedly the 4.47 by the first-year undergraduate students, which as stated, could be due to the strict discipline of their secondary schooling years. The rise to 3.32 in the final year of undergraduate studies could be an indication towards the increasing pressures that accompany the completion of their degree, knowing that if they do not finish the degree, they will have failed (sanction).

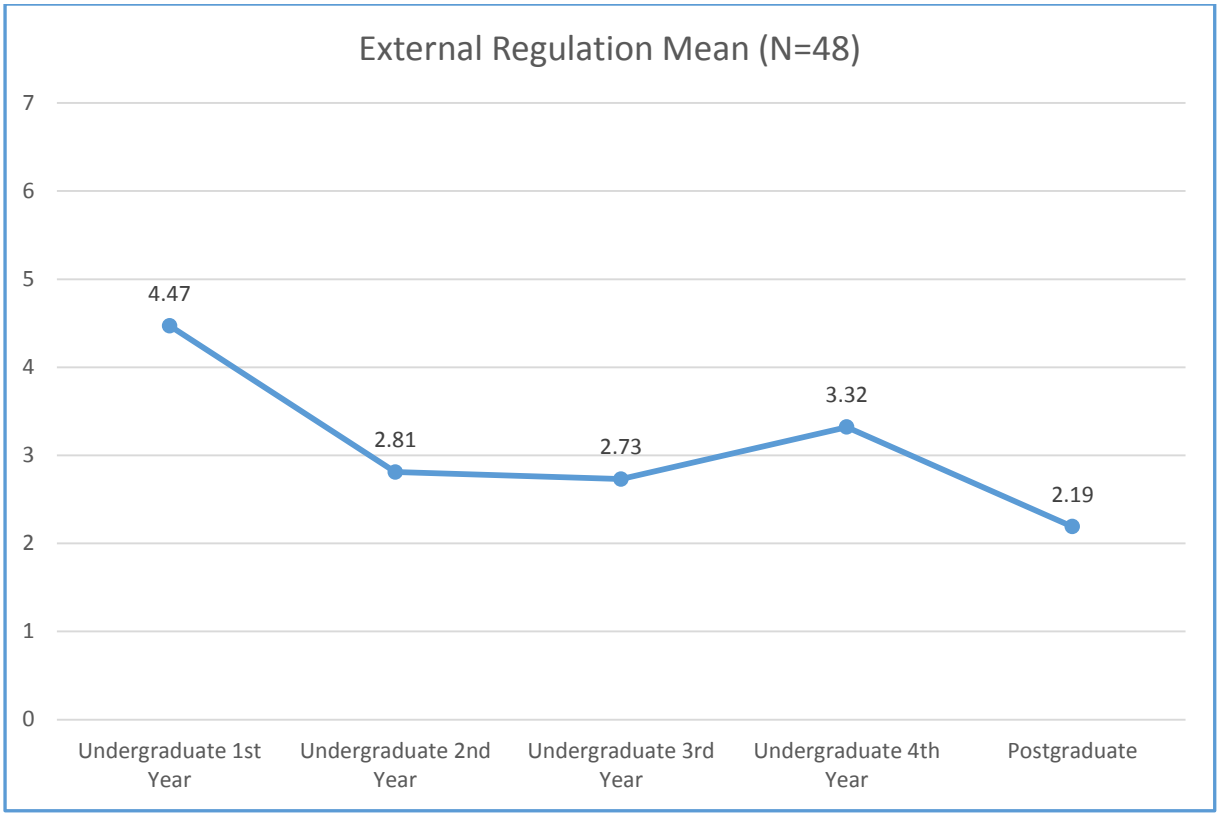

Figure 11 - External Regulation Mean

4.3.3 Introjected Regulation

External regulation refers to the regulatory process whereby one acts due to self-control, ego-involvement, or towards receiving *internal* rewards or to avoid *internally* administered punishments. The results for this variable were overall lower than *External Regulation*, as can be seen below in Figure 12, with a mean of 2.7865 (N=48), with the 25th to 75th percentile measuring between 2.0-3.75, meaning that section of students measured negatively.

The graph below displays the various means of each year group for introjected regulation. The highest mean is the 1st years' 3.09, which is closely followed by the 3rd years' 3.06. The results for all five groups are below the neutral line of 4, which indicates that the participants on average all felt that they disagreed with this regulatory style more than they agreed. The general downhill or negative trend indicates that the students align less and less with this regulatory process as they progress with their degree.

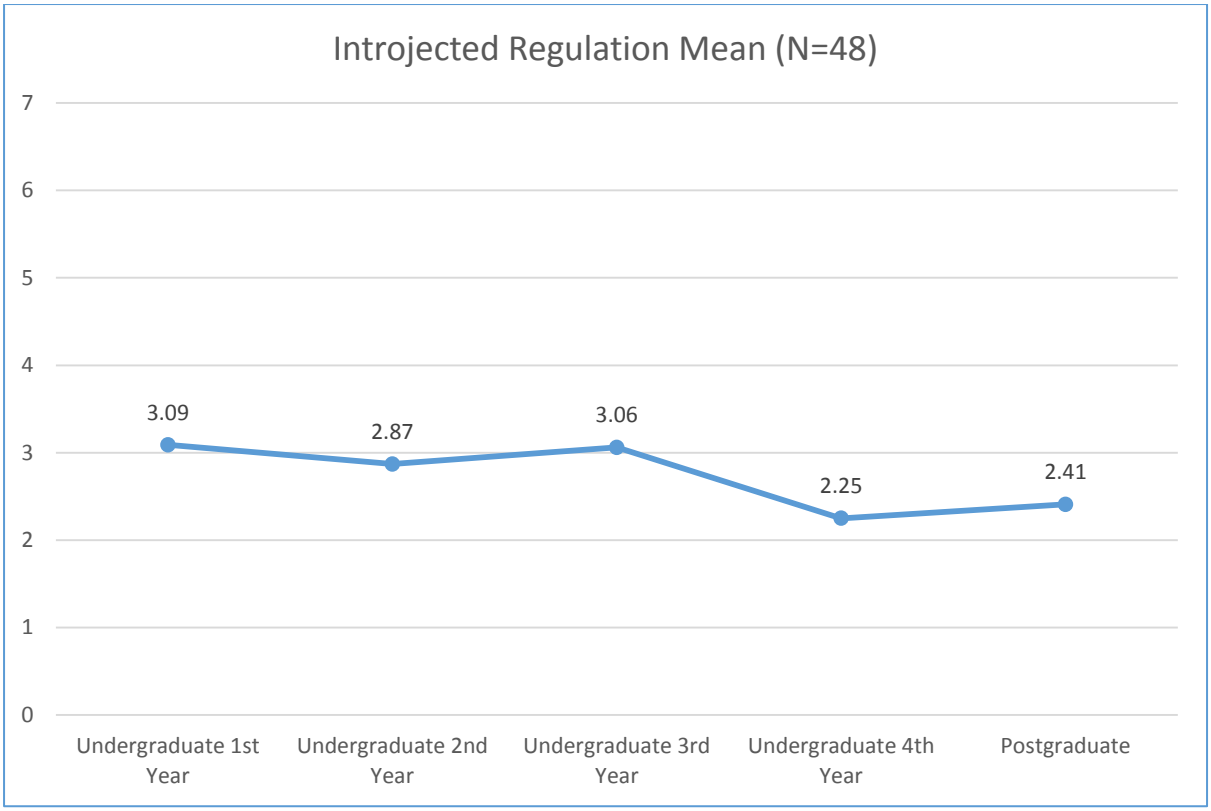

Figure 12 - Introjected Regulation Mean

Ego involvement could be involved within the slight upward curves to 3rd year as well as to the postgraduate years as these years signify the times during the respective degrees when students are able to specialise in a specific direction. This could mean all the actions taken could occur due to slight ego-involvement or internal rewards.

4.3.4 Identified Regulation

Identified regulation refers to regulatory processes whereby the actions taken by students are out of personal importance, and where the value of the action is seen. The results for this variable were overall high, as can be seen below in Figure 13, with a mean of 5.02 (N=48), with the 25th to 75th percentile measuring between 4.0-6.375, meaning that ¾ of students measured positively for this regulation.

The graph below displays the various means of each year group for identified regulation. The highest mean is by the postgraduates with a 5.69. The results for all five groups are above the neutral line of 4, which indicates that the participants on average all felt that they agreed with this regulatory style, however the 4th years encountered a considerable dip. The severe decline affected the average increase, as identified regulation in students increased on average of 1.72 without the 4th year mean, and only 1.243 with it.

This sudden decrease coincides with the increase of External Regulation for 4th years, which supports the notion that the effort put in to complete their degree is done more to complete the degree (and subsequently avoid failing) rather than performing tasks within the environment because of the value the activity holds for the student. The trend dramatically jumps back after the 4th year to postgraduate studies, which further supports the notion that 4th years experienced a difficult time with an end goal of just wanting to complete their studies.

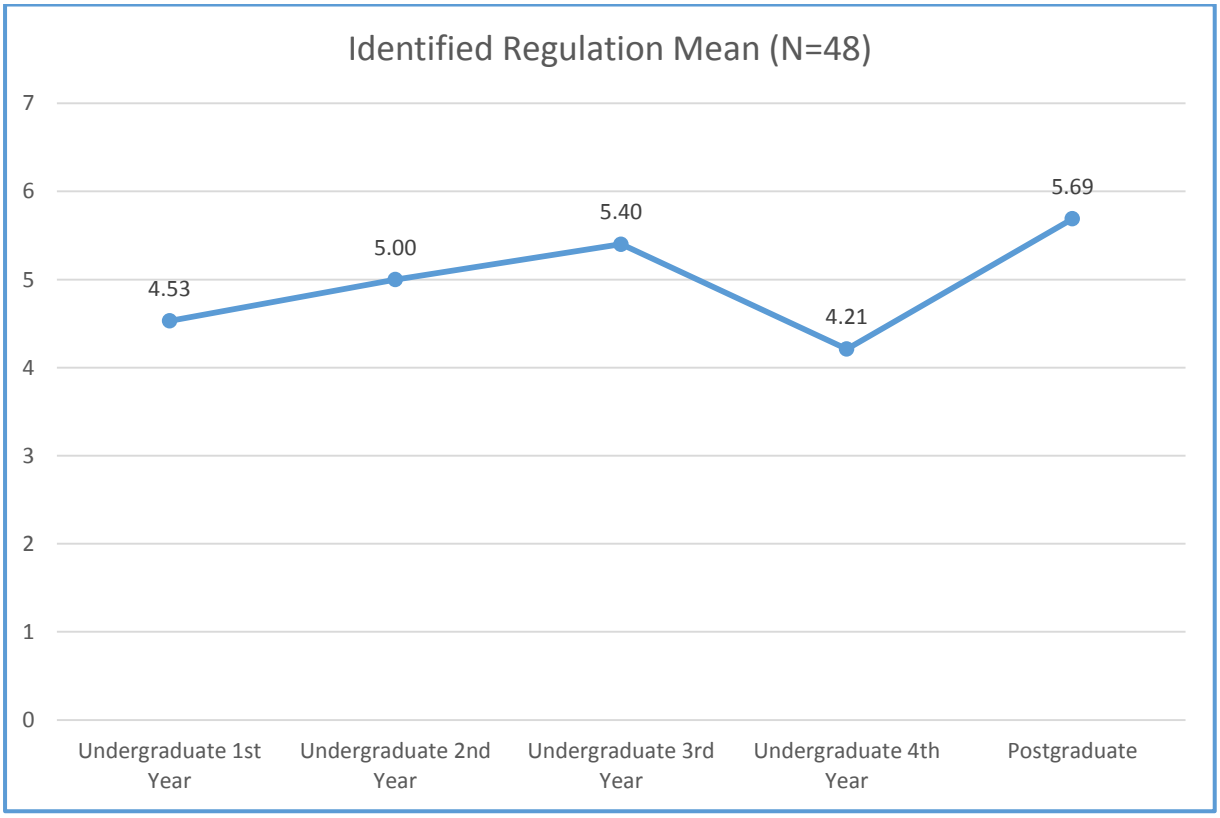

Figure 13 - Identified Regulation Mean

4.3.5 Intrinsic Regulation

Intrinsic regulation refers to regulatory processes whereby the actions taken by students are done purely for the enjoyment of the activity and the inherent satisfaction gained from an activity. The results for this variable were surprisingly the highest, as can be seen below in Figure 14, with a mean of 5.3385 (N=48), with the 25th to 75th percentile measuring between 4.0-6.75, with just over a ¼ of students (14 out of 48) measuring below the neutral line of 4.

The graph below displays the various means of each year group for intrinsic regulation. The highest mean is undoubtedly again by the postgraduates with a 6.25. The results for all five groups are above the neutral line of 4, which indicates that the participants on average all felt

that they agreed with this regulatory style. The 4th years however, display a severe dip which again gestures towards the hypothesis that students' external motivation played a larger role than that of the three regulatory styles above it (introjected, identified, and intrinsic).

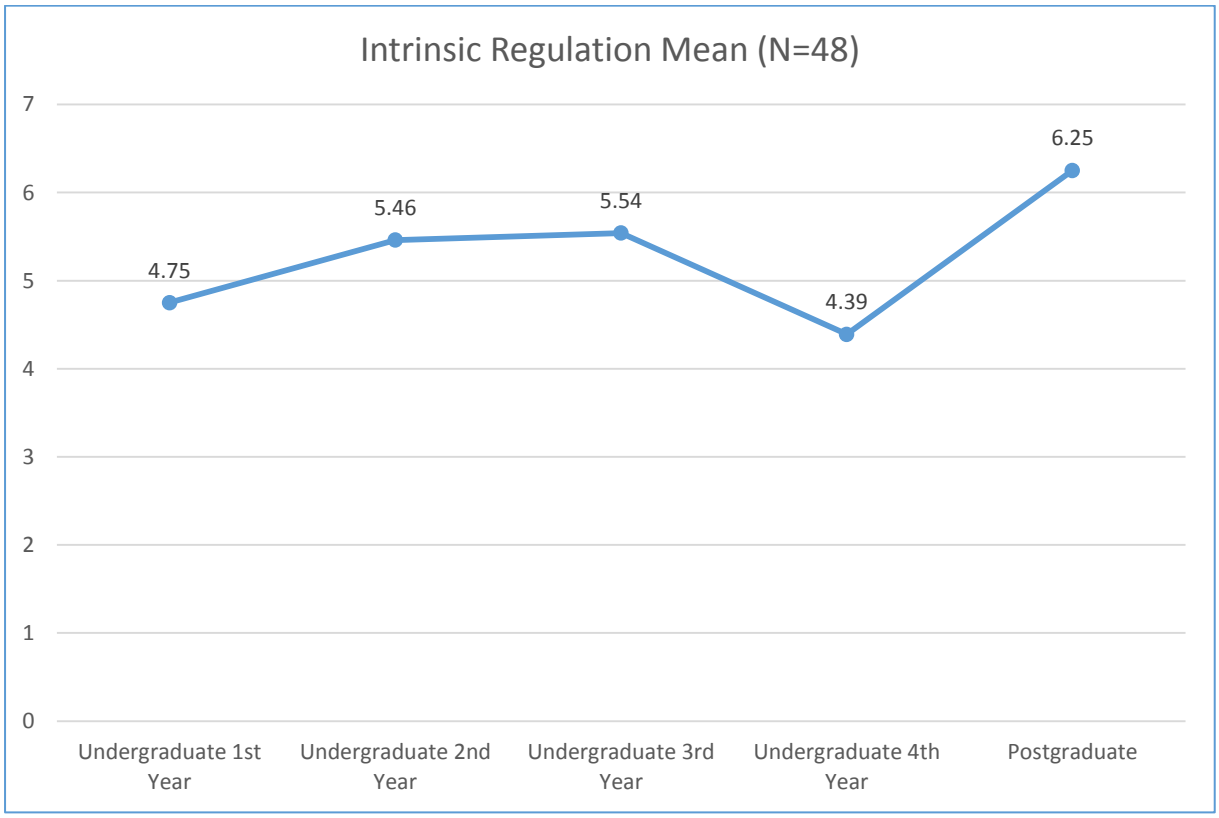

Figure 14 - Intrinsic Regulation Mean

The overall health of the scale indicates that the students truly experienced positive amounts of intrinsic motivation during the time of testing. The results so far also show trend lines moving in opposite directions, indicating that when the more intrinsic regulatory styles (identified and intrinsic) move in a certain direction, the more external regulations (external and introjected move in the opposite direction, which substantiates the reverse correlations found in Addendum J.

4.3.6 Amotivation and Integrated Regulation

One of the main objectives of this research thesis is to prove whether or not students are primarily extrinsically motivated or not. The results in 4.3.2-5 indicate an indirect relationship towards the two 'extrinsic' regulatory styles and the two 'intrinsic' regulatory styles. What has not been discussed so far is whether motivation is continuously present, or whether there is an absence of motivation, or amotivation, amongst the students.

As stated earlier at the beginning of 4.2, specific items that would have investigated Integrated Regulation were purposefully left out of this research, as it was found in previous research that it is too difficult to get proper empirical differences between integrated and intrinsic regulation. For the purpose of this research we will therefore not consider Integrated Regulation further as a present regulatory style.

Amotivation refers to the regulatory process whereby no form of motivation is present whatsoever. The results for this variable were overall lower than *External Regulation*, as can be seen below in Figure 15, with a mean of 2.0625 (N=48), with only 3 participants averaging above the neutral line of 4.

The graph below displays the various means of each year group for amotivation. The highest mean is the 4th year's 2.54, which is closely followed by the 1st year's 2.34. The results for all five groups are well below the neutral line of 4, which indicates that the participants on average all felt that they disagreed with this regulatory style more than agreed. The general downhill or negative trend indicates that the students align less and less with this regulatory process as they progress with their degree. The postgraduates are understandably the lowest result, which supports the drastic increase in identified and intrinsic regulation for the same group.

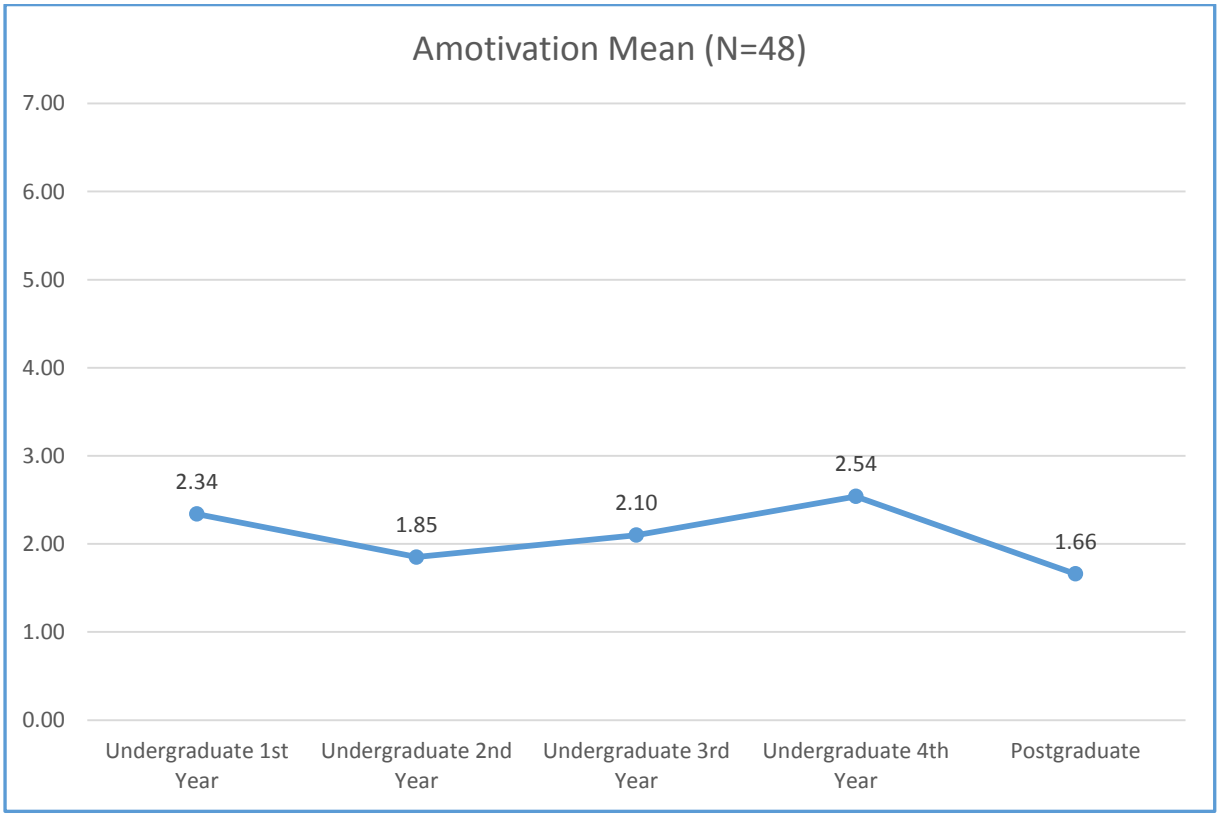

Figure 15 - Amotivation Mean

The regulatory style of amotivation is associated with characteristics such as nonintentional actions, or displaying non-valuing in the activity being performed or incompetence in the execution thereof. According to the results above however, there seems to be a general decline in the presence of amotivation within the orchestral environment, possibly suggesting that elements within the environment are creating a nurturing effect, and subsequently the growth of the orchestral musicians.

4.3.7 Experience of Motivation

The PLOC scales devised by Goudas, Biddle, and Fox (1994:456-457) were used to assess the motivational regulations, which were based on the work on PLOC by Ryan and Connell (1989). Goudas, *et al.* (1994) utilised the Academic Motivation Scale by Vallerand, Pelletier, Blais, Brière, Senécal, Vallières (1992) in order to create their own subscales to measure the various regulations. Participants were asked to respond to the items using the stem, 'I take part in orchestra…'. Example items (four for each subscale) are 'because orchestra is fun' (intrinsic motivation), 'because it is important for me to do well in orchestra' (identified regulation), 'because I'll feel bad about myself if I didn't' (introjected regulation), 'because I'll get into trouble if I don't' (external regulation), and 'but I really don't know why' (amotivation). Responses were made on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Support for the psychometric properties of this scale has emerged in previous work with British school children (Goudas *et al.*, 1994; Ntoumanis, 2001).

Results across the five year-groups for each regulation showed a general increase in intrinsically orientated motivation and a decrease in extrinsically orientated motivation, with the low results of amotivation progressively getting lower. Below is a graph with the compiled results of the 5 regulatory styles.

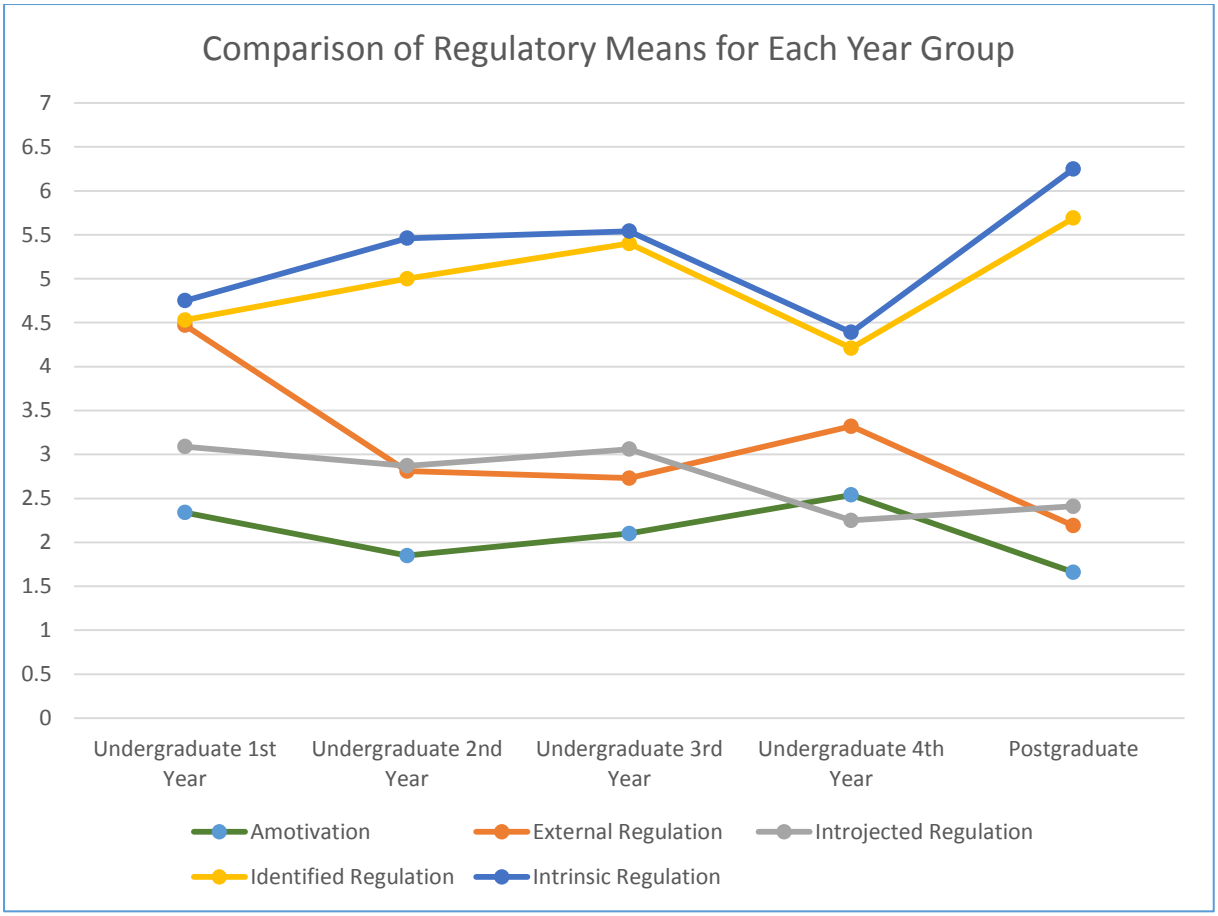

Figure 16 - Comparison of Regulatory Means for Each Year Group

The combined graph now clearly exhibits the relationships between the intrinsic and extrinsically driven regulatory styles. The most concerning stage of the degree is the 4th and final year of the undergraduate BMus degree, where an incredibly adverse change occurs in what is up until that point quite a predictable progression. The interpretation of the graph above would have been drastically different were it not for the presence of the postgraduates' entries. The general direction of motivation would have indicated that the students, from the 2nd year onwards, would have experienced a steady decline in intrinsic motivation and an increase in more extrinsically motivated behaviours.

4.4 ORGANISMIC INTEGRATION THEORY AND BASIC PSYCHOLOGICAL NEEDS THEORY

As stated before, the fulfilment of the basic psychological needs can impact the effectiveness in which a person interacts with their environment. Correlations amongst the Support for ACR variables has been done where high correlations were found, whereas the correlations on the Experience for ACR were a bit lower due to the experience of competence peaking

differently to the experience of autonomy and relatedness. Below is table 4, which is an extract from Addendum J where one can now see the correlations between the 'support for' and 'experience of' variables.

Table 4 - Correlations between 'Support for' and 'Experience of' Variables

	Correlations between 'Support for ACR' and 'Experience of ACR' Variables						
	Variable 1	Variable 2	Pearson	Pearson p-val	Spearman	Spearman p-val	# cases
1	Support for Autonomy	Experience of Competence	0.48	<0.01	0.48	<0.01	50
2	Support for Autonomy	Experience of Relatedness	0.56	<0.01	0.55	<0.01	50
3	Support for Autonomy	Experience of Autonomy	0.69	<0.01	0.67	<0.01	50
4	Support for Competence	Experience of Competence	0.53	<0.01	0.55	<0.01	50
5	Support for Competence	Experience of Relatedness	0.48	<0.01	0.46	<0.01	50
6	Support for Competence	Experience of Autonomy	0.65	<0.01	0.62	<0.01	50
7	Support for Relatedness	Experience of Competence	0.52	<0.01	0.53	<0.01	50
8	Support for Relatedness	Experience of Relatedness	0.53	<0.01	0.51	<0.01	50
9	Support for Relatedness	Experience of Autonomy	0.69	<0.01	0.66	<0.01	50

As found in 4.2.3, the experience of ACR variables displayed a much lower correlation rate than the support for ACR variables in 4.2.2. These low correlations can be visually explained with the biplot in Addendum K. The biplot displays the relations between the variables measured, with variables moving in the relatively same direction resulting in correlations close to +1, and those moving strongly in opposite directions close to -1. Results close to zero are denoted as moving at right angles from one another.

The biplot shows the *experience of ACR* variables moving close to the same direction as one another, whilst the *support for ACR* variables are even closer in directions. These two sets of variables do not however move in the same general direction, with table above showing there is a weak to moderate uphill trend between the 6 variables. This indicates that although the musicians experienced a strong support of their basic psychological needs, it does not necessarily mean that they experienced these needs in their environment. An example would be: according to row 1 of table 4, a conductor giving the musician the freedom to perform their solo as they wish, but this does not mean the musician experienced the competence to perform with such freedom.

Findings in 4.3.7 suggested that musicians were predominantly more intrinsically motivated than extrinsically, but that in the 1st and final year of undergraduate studies, the musicians experience a severe dip in intrinsic motivation. Possible reasons were posited as to why their intrinsic motivation were so low or fell so drastically. The Levels LSD test results found in Addendum L compare all the various regulatory styles between the various year groups, in order to create a clearer picture of the relations between them.

4.5 OTHER FINDINGS

Perhaps the most distinctive finding is the 'fourth year dip'. With the exception of *introjected regulation*, all the regulations exhibited a sudden change in trajectory. *Intrinsic* and *identified regulation* fell to their record lowest position, whilst *external regulation* and *amotivation* made their way up to the mid-point of 4. The results are similar to that of the first year, with the difference of a much higher seated *external regulation*. As is explained in 4.3.2, the reason for *external regulation's* high average in first year could be due to the discipline carried over from the secondary schooling environment.

Although discipline is required to complete an academic degree, the dip is not explained by a sudden reappearance of discipline, but rather the fear of failure. The overall pressures of completing work at a higher level, and the preparation for the final examinations could be seen as reasons why the musicians' *extrinsic regulations* increased so much. The lowered average for the *intrinsic regulations* could indicate that the stress of completing the degree took away the inherent satisfaction which was evidently growing before fourth year, and that the perceived locus of causality was primarily driven from extrinsic sources.

What is perhaps most emphatic is the postgraduate averages, which emphasise the tension of the final year by bouncing back onto the trajectory it was originally on. If the final year averages were to be removed from Figure 13, one would notice that all the averages would have continued moving in quite natural curvatures. This supports the impact that the stress of the environment and requirements have on this current year group.

This chapter announced the findings of the data acquired during the data collection process. Starting with the sample profile, a breakdown was provided on the various participants that took part in this research study, with the majority of them coming from Stellenbosch University. Then the results applicable to the two mini-theories used as lenses in this research, namely BPNT and OIT are explored, starting with reliability analyses, followed by

discussion on the statistical data. This chapter concluded with a comparative view of the two mini-theories' results, after which other findings were acknowledged.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

This study originated due to a concern for the health of classical music within the South African environment. It was felt that the musicians studying now towards their degrees at institutions across the nation were experiencing lowered levels of motivation, and that this could influence the health of the music environment. The sole focus was on orchestral musicians currently studying at South African tertiary institutions, as one can assume that these are the potential educators for future students, and that without intrinsic motivation this cycle could and would slowly decay.

In Chapter 2, this thesis explored the orchestral environment through the lens of the Self-Determination Theory, considering the effect of the interactions between conductors and musicians on the quality of motivation they experience. The material provided great insight into the inner workings of the orchestra as well as the stresses musicians undergo on their path to becoming professionals in orchestral arena. In Chapter 3 the thesis established how the study was to be executed, examining the research design and methodology to be used as well as how the data was to be collected and processed. The chapter clarified what difficulties were experienced and how they were dealt with. The penultimate Chapter 4 presented all the findings of the data that was processed and generated through various statistical methods. The presentation of the data was driven by the main research question and accompanying objectives set out at the beginning of this thesis

The main research question for this thesis was: What are the motivational levels of orchestral musicians studying at tertiary level in South Africa as interpreted through the Self-Determination Theory? To answer this question, objectives were created for this study which could assist in answering the question. They are the following:

- Define motivation as interpreted through the Self-Determination Theory.
- Describe the Basic Psychological Needs Theory.
- Discuss the Organismic Integration Theory (OIT).
    - Explore the various loci of causality as observed on the continuum of Self-Determination with reference to OIT.
- Determine the ‘experience of’ and the ‘support for’ the Basic Psychological Needs.

- Investigate how the Self-Determination Theory can determine the types of motivation regulations experienced by the orchestral musicians.

The first objective was to define motivation as interpreted through SDT. With the development of motivational studies in the 20th century, Ryan and Deci combined several pre-existing theories from the work of Freud and Watson. They wanted to account for the discrepant viewpoints of the psychoanalytic theories as opposed to the behaviourist theories. They continued to develop on the assumption that people are "active organisms (SDT, 2017)" that "have natural, innate, and constructive tendencies to develop an ever more elaborated and unified sense of self" (Ryan, 2004). They found that these tendencies do not occur naturally, and that these tendencies require "specific supports and nutriments from one's social environment", which are known in SDT as the three *Basic Psychological Needs* (Ryan, 2009:1). These needs are now known as Autonomy, Competence, and Relatedness.

Through their research, they constructed the meta-theory of SDT as an interaction (dialectic) between the active organism (the individual) and the social context (the environment) in order to predict behaviour and development (SDT, 2017). Therefore, within the framework of this meta-theory one could define motivation as the influences to perform a task within the context of one's environment.

The next objectives were to describe and discuss the two mini-theories that were applied to the construction of the measurement tool, as well as to discuss the different perceived loci of causality. The first of the two mini-theories implemented was the *Basic Psychological Needs Theory*, as it aimed to understand the effect that the presence or absence of the basic nutriments would have on the internalisation of motivation. Secondly, the *Organismic Integration Theory* was used as it concerns EM. In order to prove the hypothesis that musicians were primarily extrinsically motivated, the mini-theory was examined and utilised in the survey questionnaire. The *Perceived Locus of Causality* was subsequently studied in order to understand the regulatory behaviours a person would exhibit.

The explanation and clarification of what OIT and BPNT are, as well as their applicable function in this research assisted heavily in the last two objectives of this research. The two objectives in question each wanted to know how SDT can serve as lens to explore the aspects of BPNT and OIT in order to clarify whether the theory was effective in finding what the motivation of the musicians are.

Through the use of the Self-Determination Theory, a survey questionnaire was constructed with which one could measure various facets of the orchestral environment, and how they could be conducive or unfavourable to the support and experience of the musicians' basic psychological needs. Questions were also asked that would investigate their inclination towards various regulatory styles, in order to establish what types of motivation the musicians are experiencing.

The musicians measured their perception of how their basic psychological needs were being met, as well as how they experienced these needs in their environment. Both tests provided positive results overall, with *competence* doing extremely well in the variables testing support for-, and experience of competence respectively. This indicated that musicians perceived that the environment was conducive towards experiencing competence in what they are doing, as well as receiving affirmation and praise for what they are doing.

Support for relatedness rated quite high, signifying the understood connection in the orchestral environment. However, experience of relatedness measured closer to 4, which could be an indication that although they relate to activities they are taking part in (rehearsal/performances), they don't relate as much to the experience of the activity. This could be an indication that there is manner of un-relatedness to the music played in the orchestra. This is understandable as the sample set ranges from first year undergraduate students to postgraduate final years, which would suggest that some works are a bit above some students' maturity level and perhaps above their abilities as well.

The most troublesome results were from those variables measuring support for, and experience of autonomy. With the measured variables for competence and relatedness, the findings both posted high results. With Autonomy however, the result set for both the support for-, and experience of- variables presented quite widely spaced out results, with the averages just barely making it on to the positive side of 4, which was the neutral line.

This indicates that autonomy was not well supported, nor was it well experienced within the orchestral environment. This could be a result of the relationship the musicians experience with the conductor, where the latter makes all the decisions regarding what happens in this orchestral environment. This is understandable due to the nature of the relationship between the conductor and musicians. What these results also suggest, is that there is a strong possibility that musicians do not experience freedom within their own actions, in the sense

that their behaviour is not an expression of the self, but rather falling into line with their peers.

After the motivational nutriments were discussed, findings on the various regulatory styles were presented, from external to intrinsic. The results indicated that regardless of the academic level of the students, they were always primarily intrinsically motivated. Intrinsic and Identified regulation were always above the neutral, exhibiting positive results. A good deal of External regulation was experienced in the first year, but to a smaller extent later on in the degree.

The findings indicate that the students did experience a considerable amount of external regulation in their environment, possibly due to the disciplined environment of secondary school, or due to the fact that they were on a relatively high-performance level in school, for which they normally received high praise. The findings would suggest that the students would become less and less dependent on this type of motivation as they continuously measure themselves against those around them, resulting in less frequent praises and compliments.

In the students' second and third year of their undergraduate studies, the results all seemed to move systematically in a certain direction, whether upwards or downwards, but in the final year of undergraduate studies, this trajectory turned around completely and severely. This phenomenon could be described as the collapse of the intrinsic motivation for this year group. It must however be seen in context of the calendar, as this questionnaire was administered during the 2nd semester of the academic year in South Africa, meaning that the final year students were in their final semester of their undergraduate degree.

As identified earlier in Chapter 4, this severe dip in motivation could be attributed to the pressures and stress experienced within in the final weeks of the BMus degree. The response in motivation regulations experienced by the postgraduate group emphasises the difficulty experienced within the final year group. Their regulations experienced by the postgraduates appear back on the trajectory originally plotted by the 2nd and 3rd year groups.

The combination of Figure 13 in 4.3.7 with the findings 4.2.2-3, perhaps divulges the most important information gathered from this research. 1 – Orchestral musicians are not being autonomously supported within the orchestral environment, nor are they experiencing autonomy as they should. The blame for this cannot be solely put on the shoulders of the conductor, although they do play a significant part in it. Within the orchestral environment

context, autonomy should not be confused with the concept of independence[42], as one can act out any requested action or behaviour, as long as said action or behaviour is congruently endorsed by the self.

The conductor can provide autonomy support with gestures as simple as doing without doing, where conductors can 'stop' conducting in order to allow the musician to freely express themselves, whilst still actively being with them within the work. Other options could be to actively engage with the musicians regarding musical aspects of the work being rehearsed, and allowing the musicians to engage in the decision-making process rather than barking out orders like a 20th century musical dictator.

The second piece of important information unearthed was that final year BMus students are struggling. Although at no time do any of the more extrinsic regulatory styles overtake the neutral line of 4, nor do the intrinsic regulatory styles go below the line, these levels do show worrying signs for the fourth-year undergraduate students. Figure 17 below presents an averaged direction of motivation. This was calculated by averaging out the four[43] extrinsic and intrinsic regulation averages, moving the scale so that 0 is the mid-point and -3 and 3 are the extreme points, as well as using Ryan and Connell's (1980:760) Relative Autonomy Index (RAI=2× Intrinsic + Identified - Introjected - 2 × Extrinsic). By doing so, we are able to see the strength exhibited by the various extrinsic and intrinsic regulation groups, with a positive result indicating a more intrinsic motivation, and a negative result a more extrinsic motivation. This figure unequivocally demonstrates the strength of the EM, accompanied by the weakness of the intrinsic motivation in the fourth-year students.

[42] Which means not relying on external sources or influences.
[43] Amotivation is left out of this calculation as it is seen as void of any intention to act.

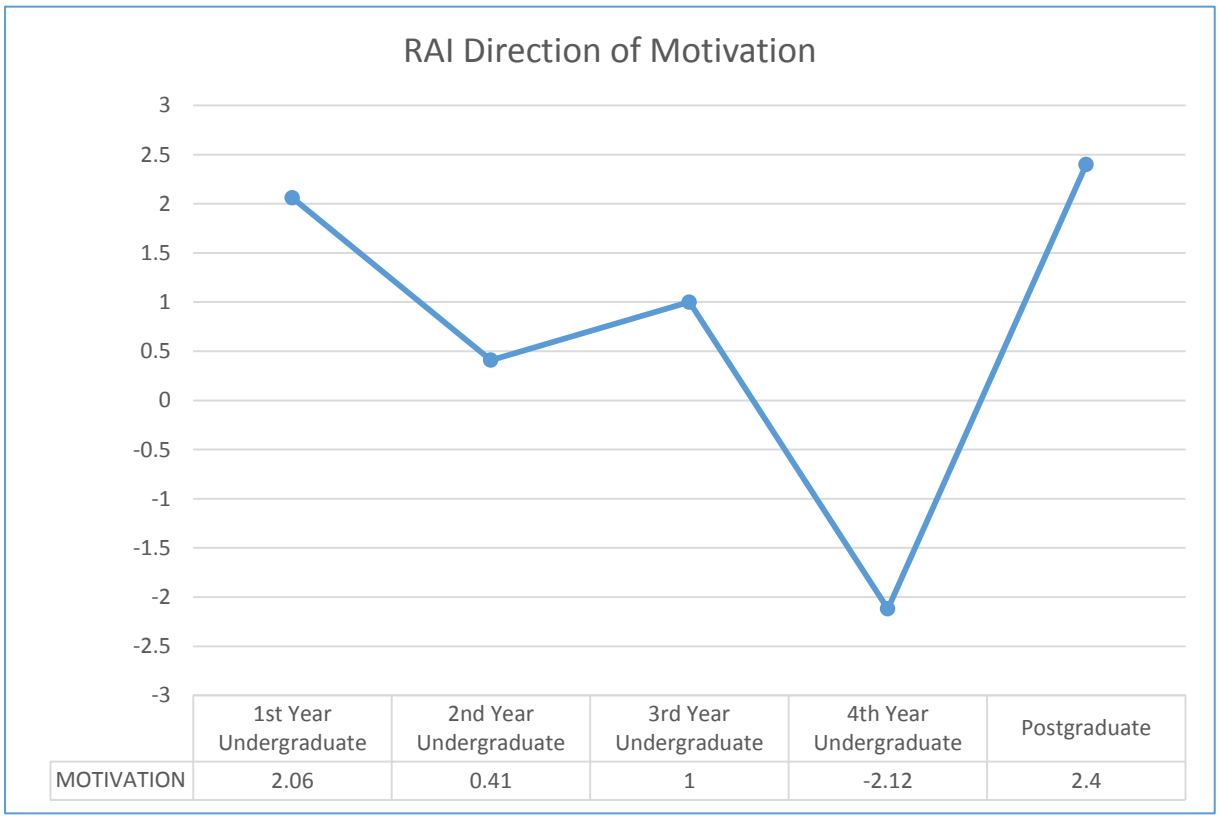

Figure 17 - RAI Direction of Motivation

In an attempt to prove that orchestral musicians currently studying at South African tertiary institutions were primary extrinsically motivated, the hypothesis was pleasantly disproven. The research question was: *What are the motivational levels of orchestral musicians studying at tertiary level in South Africa as interpreted through the Self-Determination* Theory?

The result set clearly indicated that musicians are in fact much more intrinsically motivated than originally anticipated. It tested how they perceived basic psychological needs in theory environment, whether experienced support for these needs, as well as how they experienced various regulations of motivation. It was found that musicians predominantly experienced their needs being met and supported in their environment, and also felt intrinsically motivated in their behaviours and actions. However, the result set also indicated lower than expected results for the experience of and support for autonomy, an element that should be investigated further as it is integral in the internalisation process.

From the perspective of the conductor in South Africa, these findings would be a pleasant surprise as they indicate that the musicians currently busy with their studies are doing well, except for autonomy. This however is an opportunity for conductors as they should aim to find ways to create environments which are much more conducive to the support for-, and the experience of autonomy.

Considering the findings revealed through this study, it could be thought that musicians are intrinsically motivated and that all is well. However, the amount of research that has gone into musicians before could indicate that more research into this phenomenon is possibly required as a concrete answer has not been presented as yet.

It is important to note the importance of the South African context within this research. This research is working on building a platform with which to better view the orchestral environment within the South African context. By combining and comparing the findings of this research with similar research done abroad would dilute the significance of the findings.

This study could benefit from being implemented as a longitudinal study, and studied under the scope of the entire Self-Determination Theory. The value of such a longitudinal study would be in understanding the orchestral experience within the South African context, ultimately designing strategies for improving its value, which in turn may enhance the well-being of musicians in South Africa, and assist the development of musicians and conductors alike. There is opportunity to expand on this study, coupled with the possible creation and implementation of strategies that could assist conductors in motivating the musicians in their orchestras. I would therefore recommend that this thesis be broadened through further research.

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ADDENDUM A - QUESTIONNAIRE

Section 1 (S1) Landing Page Questions

Alias	Question
S1Q1	Do you agree to participate in this study?
S1Q2	Which university are you a part of?
S1Q3	If you selected other in the previous question, please state what institution as well as what orchestra you are a part of.
S1Q4	Are you currently undergraduate or postgraduate?
S1Q5	In what year of your studies are you currently in?

Section 2 (S2) Support for A-C-R

S2Q1 Support for Autonomy

*In orchestra...

Alias	Question	R.O.G.
S2Q1A01	We feel that the conductor provides us with choices and options.	17
S2Q1A02	We feel understood by our conductor.	7
S2Q1A03	We are able to be open with our conductor during rehearsals.	1
S2Q1A04	The conductor shows confidence in our abilities to do well in rehearsals/concerts.	9
S2Q1A05	We feel that our conductor accepts us.	5
S2Q1A06	The conductor makes sure we really understand the goals of the music and what we need to do.	24
S2Q1A07	The conductor encourages us to ask questions.	22
S2Q1A08	We feel we trust our conductor.	2
S2Q1A09	The conductor answers our questions fully and carefully.	20
S2Q1A10	The conductor handles our emotions very well.	19
S2Q1A11	We feel that our conductor cares about us as people.	13
S2Q1A12	We do not feel good about the way the conductor talks to us.	10
S2Q1A13	The conductor tries to understand how we see things before suggesting new ways to do things.	18
S2Q1A14	We feel we are able to share our feelings with the conductor.	14
S2Q1A15	The conductor listens to how we would like to do things.	15

S2Q2 Support for Competence

In orchestra...

Alias	Question	R.O.G.
S2Q2C01	The conductor helps us to improve.	6
S2Q2C02	The conductor makes us feel like we are good at music.	4
S2Q2C03	We feel that the conductor likes us to do well.	21
S2Q2C04	The conductor makes us feel like we are able to perform the music in rehearsal.	3

S2Q3 Support for Relatedness

In orchestra...

Alias	Question	R.O.G.
S2Q3R01	The conductor supports us.	16
S2Q3R02	The conductor encourages us to work together during rehearsal.	8
S2Q3R03	The conductor has respect for us.	11
S2Q3R04	The conductor is interested in us.	23
S2Q3R05	We feel that the conductor is friendly towards us.	12

Section 3 (S3) A-C-R

S3Q1 Autonomy

Alias	Question	R.O.G.
S3Q1A01	In orchestra, I can decide which activities I want to practice.	9
S3Q1A02	In orchestra, I have a say regarding what skills I want to practice.	12
S3Q1A03	In orchestra, I feel that I do orchestra because I want to.	2
S3Q1A04	In orchestra, I have to force myself to do the rehearsals.	1
S3Q1A05	In orchestra, I feel a certain freedom of action.	11
S3Q1A06	In orchestra, I have some choice in what I want to do.	8

S3Q2 Competence

Alias	Question	R.O.G.
S3Q2C01	I think I am quite good at orchestra.	14
S3Q2C02	I am satisfied with my performance in orchestra.	7
S3Q2C03	When I have participated in orchestra for a while, I feel quite competent.	5
S3Q2C04	I am pretty skilled at orchestra.	3
S3Q2C05	I do not do very well in orchestra.	16

S3Q3 Relatedness

Alias	Question	R.O.G.
S3Q3R01	I feel supported by the other students in orchestra.	10
S3Q3R02	I feel understood by the other students in orchestra.	15
S3Q3R03	I feel listened to by the other students in orchestra.	6
S3Q3R04	I feel valued by the other students in orchestra.	4
S3Q3R05	I feel safe with the other students in orchestra.	13

Section 4 (S4) Motivation

*I take part in orchestra because…

S4Q1 Intrinsic motivation

Alias	Question	R.O.G.
S4Q1M01	Because orchestra is fun.	10
S4Q1M02	Because I enjoy learning new skills.	18
S4Q1M03	Because orchestra is exciting.	11
S4Q1M04	Because orchestra is very fulfilling.	13

S4Q2 Identified regulation

Alias	Question	R.O.G.
S4Q2M01	Because I want to improve in orchestral music.	4
S4Q2M02	Because it is important for me to do well in orchestra.	19
S4Q2M03	Because I want to be successful in the orchestral environment.	1
S4Q2M04	Because It is important for me to achieve something in orchestra.	20

S4Q3 Introjected regulation

Alias	Question	R.O.G.
S4Q3M01	Because I want the conductor to think I'm a good student.	9
S4Q3M02	Because I would feel bad about myself if I didn't.	15
S4Q3M03	Because I want the other students to think I'm skilful.	7
S4Q3M04	Because it bothers me when I don't.	16

S4Q4 External regulation

Alias	Question	R.O.G.
S4Q4M01	Because I will get into trouble if I don't.	3
S4Q4M02	Because that is what I'm supposed to do.	6
S4Q4M03	So that the conductor won't yell at me.	5
S4Q4M04	Because that is the rule.	12

S4Q5 Amotivation

Alias	Question	R.O.G.
S4Q5M01	But I don't really know why.	2
S4Q5M02	But I don't see why we should have orchestra.	14
S4Q5M03	But I really feel I'm wasting my time in orchestra.	17
S4Q5M04	But I can't see what I'm getting out of orchestra.	8

ADDENDUM B - UNIVERSITY OF STELLENBOSCH ETHICAL CLEARANCE

UNIVERSITEIT STELLENBOSCH UNIVERSITY

APPROVED WITH STIPULATIONS
REC Humanities New Application Form

18 July 2017

Project number: MUS-2017-0526-373

Project title: A Quantitative Study on the Motivation of South African Orchestral Musicians Studying at Tertiary Level

Dear Mr Reghardt Kuhn

Your REC Humanities New Application Form submitted on 18 July 2017 was reviewed by the REC: Humanities and approved with stipulations.

Ethics approval period: 18 July 2017 - 17 July 2020

REC STIPULATION:

The researcher may proceed with the envisaged research provided that the following stipulations, relevant to the approval of the project are adhered to.

1. INSTITUTIONAL PERMISSION

The researcher is reminded that institutional permission is required from all participating institutions, including Stellenbosch University. The researcher should submit copies of proof of permission to the REC as they are obtained.

Please take note of the General Investigator Responsibilities attached to this letter. You may commence with your research after complying fully with these guidelines.

If the researcher deviates in any way from the proposal approved by the REC: Humanities, the researcher must notify the REC of these changes.

Please use your SU project number (MUS-2017-0526-373) on any documents or correspondence with the REC concerning your project.

Please note that the REC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

FOR CONTINUATION OF PROJECTS AFTER REC APPROVAL PERIOD

Please note that a progress report should be submitted to the Research Ethics Committee: Humanities before the approval period has expired if a continuation of ethics approval is required. The Committee will then consider the continuation of the project for a further year (if necessary)

Included Documents:

Document Type	File Name	Date	Version
Research Protocol/Proposal	01 Kuhn R Research Proposal June 2017	06/07/2017	
Informed Consent Form	03 SU HUMANITIES_Consent template_electronic survey_ Kuhn R	06/07/2017	
Data collection tool	02 R KUHN Data Collection Instrument - Questionnaire	06/07/2017	
Request for permission	04 Application Letters	06/07/2017	

If you have any questions or need further help, please contact the REC office at cgraham@sun.ac.za.

Sincerely,

Clarissa Graham

REC Coordinator: Research Ethics Committee: Human Research (Humanities)

National Health Research Ethics Committee (NHREC) registration number: REC-050411-032.
The Research Ethics Committee: Humanities complies with the SA National Health Act No.61 2003 as it pertains to health research. In addition, this committee abides by the ethical norms and principles for research established by the Declaration of Helsinki (2013) and the Department of Health Guidelines for Ethical Research: Principles Structures and Processes (2nd Ed.) 2015. *Annually a number of projects may be selected randomly for an external audit.*

Investigator Responsibilities

Protection of Human Research Participants

Some of the general responsibilities investigators have when conducting research involving human participants are listed below:

1.Conducting the Research. You are responsible for making sure that the research is conducted according to the REC approved research protocol. You are also responsible for the actions of all your co-investigators and research staff involved with this research. You must also ensure that the research is conducted within the standards of your field of research.

2.Participant Enrollment. You may not recruit or enroll participants prior to the REC approval date or after the expiration date of REC approval. All recruitment materials for any form of media must be approved by the REC prior to their use.

3.Informed Consent. You are responsible for obtaining and documenting effective informed consent using **only** the REC-approved consent documents/process, and for ensuring that no human participants are involved in research prior to obtaining their informed consent. Please give all participants copies of the signed informed consent documents. Keep the originals in your secured research files for at least five (5) years.

4.Continuing Review. The REC must review and approve all REC-approved research proposals at intervals appropriate to the degree of risk but not less than once per year. There is **no grace period.** Prior to the date on which the REC approval of the research expires, **it is your responsibility to submit the progress report in a timely fashion to ensure a lapse in REC approval does not occur.** If REC approval of your research lapses, you must stop new participant enrollment, and contact the REC office immediately.

5.Amendments and Changes. If you wish to amend or change any aspect of your research (such as research design, interventions or procedures, participant population, informed consent document, instruments, surveys or recruiting material), you must submit the amendment to the REC for review using the current Amendment Form. You **may not initiate** any amendments or changes to your research without first obtaining written REC review and approval. The **only exception** is when it is necessary to eliminate apparent immediate hazards to participants and the REC should be immediately informed of this necessity.

6.Adverse or Unanticipated Events. Any serious adverse events, participant complaints, and all unanticipated problems that involve risks to participants or others, as well as any research related injuries, occurring at this institution or at other performance sites must be reported to Malene Fouche within **five (5) days** of discovery of the incident. You must also report any instances of serious or continuing problems, or non-compliance with the RECs requirements for protecting human research participants. The only exception to this policy is that the death of a research participant must be reported in accordance with the Stellenbosch University Research Ethics Committee Standard Operating Procedures. All reportable events should be submitted to the REC using the Serious Adverse Event Report Form.

7.Research Record Keeping. You must keep the following research related records, at a minimum, in a secure location for a minimum of five years: the REC approved research proposal and all amendments; all informed consent documents; recruiting materials; continuing review reports; adverse or unanticipated events; and all correspondence from the REC

8.Provision of Counselling or emergency support. When a dedicated counsellor or psychologist provides support to a participant without prior REC review and approval, to the extent permitted by law, such activities will not be recognised as research nor the data used in support of research. Such cases should be indicated in the progress report or final report.

9.Final reports. When you have completed (no further participant enrollment, interactions or interventions) or stopped work on your research, you must submit a Final Report to the REC.

10.On-Site Evaluations, Inspections, or Audits. If you are notified that your research will be reviewed or audited by the sponsor or any other external agency or any internal group, you must inform the REC immediately of the impending audit/evaluation.

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ADDENDUM C - NELSON MANDEL UNIVERISTY INSTITUTIONAL PERMISSION

INSTITUTIONAL PERMISSION LETTER

INSTITUTION NAME & ADDRESS: STELLENBOSCH UNIVERSITY

INSTITUTION CONTACT PERSON: Danell Herbst (supervisor)

INSTITUTION CONTACT NUMBER: 079 219 4501

INSTITUTION EMAIL ADDRESS: danellherbst@sun.ac.za

TITLE OF RESEARCH PROJECT: A Quantitative Study on the Motivation of South African Orchestral Musicians Studying at Tertiary Level

ETHICS APPLICATION REFERENCE NUMBER: MUS-2017-0526-373

RESEARCHER: Reghardt Kühn

DEPT NAME & ADDRESS: Department of Music, Corner of Neethling & Victoria Street

CONTACT NUMBER: 084 209 6213

EMAIL ADDRESS: 16006879@sun.ac.za

Dear Reghard Kuhn

We have reviewed your request to conduct a research project involving data related to the motivation of orchestral musicians at tertiary level. You have permission to utilize the data for this project as define in your "Project Proposal".

The following stipulations should be observed:

[none]

Sincerely,

Name: Prof Erik Albertyn

Who warrants that he/she is duly authorised to sign on behalf of Nelson Mandela University Music Department

Position: HoD

Date: 11-08-2017

Signature:

ADDENDUM D - NORTH-WEST UNIVERSITY INSTITUTIONAL PERMISSION

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT

Private Bag X1290, Potchefstroom
South Africa 2520

Tel: 018 299-4900
Fax: 018 299-4910
Web: http://www.nwu.ac.za

Department of Research Support
Tel: 0182852015
Email: 22987770@nwu.ac.za

30 August 2017

INSTITUTIONAL PERMISSION LETTER

INSTITUTION NAME & ADDRESS: STELLENBOSCH UNIVERSITY

INSTITUTION CONTACT PERSON: Danell Herbst (supervisor)

INSTITUTION CONTACT NUMBER: 079 219 4501

INSTITUTION EMAIL ADDRESS: danellherbst@sun.ac.za

TITLE OF RESEARCH PROJECT: A Quantitative Study on the Motivation of South African Orchestral Musicians Studying at Tertiary Level

ETHICS APPLICATION REFERENCE NUMBER: MUS-2017-0526-373

RESEARCHER: Reghardt Kühn

DEPT NAME & ADDRESS: Department of Music, Corner of Neethling & Victoria Street

CONTACT NUMBER: 084 209 6213

EMAIL ADDRESS: 16006879@sun.ac.za

Dear **Mr R Kuhn**

We have reviewed your request to conduct a research project involving data related to **tertiary level orchestral musicians within the NWU School of Music.** You have permission to utilize the data for this project as define in your "Project Proposal".

The following stipulations should be observed:

- *The assistance in the **distribution** of the questionnaire by the **orchestra's management structures** should be viewed on a strictly **voluntary** basis, and such management structures can under no circumstances be held responsible for any failures that may occur during the distribution process.*

Yours sincerely,

Ms Anneke Stols **Date:** 30/08/2017

Who warrants that he/she is duly authorised to sign on behalf of the **North-West University Research Data Gatekeeper Committee (NWU-RDGC).**

Position: Research Ethics Support Officer

Original details: (22987770) C:\Users\22987770\Desktop\RDGC\NWU-RDGC Institutional Permission - R Kuhn.docm
30 August 2017

UNIVERSITY OF THE FREE STATE
UNIVERSITEIT VAN DIE VRYSTAAT
YUNIVESITHI YA FREISTATA

UFS·UV
HUMANITIES
GEESTESWETENSKAPPE
ODEION SCHOOL OF MUSIC
ODEION SKOOL VIR MUSIEK

ADDENDUM E - UNIVERSITY OF THE FREE STATE INSTITUTIONAL PERMISSION

INSTITUTIONAL PERMISSION LETTER

INSTITUTION NAME & ADDRESS: STELLENBOSCH UNIVERSITY

INSTITUTION CONTACT PERSON: Danell Herbst (supervisor)

INSTITUTION CONTACT NUMBER: 079 219 4501

INSTITUTION EMAIL ADDRESS: danellherbst@sun.ac.za

TITLE OF RESEARCH PROJECT: A Quantitative Study on the Motivation of South African Orchestral Musicians Studying at Tertiary Level

ETHICS APPLICATION REFERENCE NUMBER: MUS-2017-0526-373

RESEARCHER: Reghardt Kühn

DEPT NAME & ADDRESS: Department of Music, Corner of Neethling & Victoria Street

CONTACT NUMBER: 084 209 6213

EMAIL ADDRESS: 16006879@sun.ac.za

Dear **Reghardt Kühn**

We have reviewed your request to conduct a research project involving data related to **the Odeion School of Music.** You have permission to utilize the data for this project as define in your "Project Proposal".

The following stipulations should be observed:

- ***Not applicable***

Sincerely,
Name: Dr Jan Beukes

Who warrants that he/she is duly authorised to sign on behalf of **Odeion School of Music**

Position: Artistic and Operational Head

Date: 3 August 2017

Signature:

205 Nelson Mandela Drive/Rylaan
Park West/Parkwes
Bloemfontein 9301
South Africa/Suid Afrika

P.O. Box/Posbus 339
Bloemfontein 9300
South Africa/Suid Afrika
T: +27(0)51 401 9111
www.ufs.ac.za

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ADDENDUM F - UNIVERSITY OF PRETORIA INSTITUTIONAL PERMISISON

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

INSTITUTIONAL PERMISSION LETTER

INSTITUTION NAME & ADDRESS: STELLENBOSCH UNIVERSITY

INSTITUTION CONTACT PERSON: Danell Herbst (supervisor)

INSTITUTION CONTACT NUMBER: 079 219 4501

INSTITUTION EMAIL ADDRESS: danellherbst@sun.ac.za

TITLE OF RESEARCH PROJECT: A Quantitative Study on the Motivation of South African Orchestral Musicians Studying at Tertiary Level

ETHICS APPLICATION REFERENCE NUMBER: MUS-2017-0526-373

RESEARCHER: Reghardt Kühn

DEPT NAME & ADDRESS: Department of Music, Corner of Neethling & Victoria Street

CONTACT NUMBER: 084 209 6213

EMAIL ADDRESS: 16006879@sun.ac.za

Dear Reghardt Kühn

We have reviewed your request to conduct a research project involving data related to the Department of UP Arts at the University of Pretoria. You have permission to utilize the data for this project as define in your "Project Proposal".

The following stipulations should be observed:

- N/A

Sincerely,

Name: Prof Theo van Wyk

Who warrants that he/she is duly authorised to sign on behalf of the University of Pretoria

Position: Head of Department

Date: 17 August 2017

Signature:

ADDENDUM G - UNIVERSITY OF STELLENBOSCH INSTITUTIONAL PERMISSION

UNIVERSITEIT • STELLENBOSCH • UNIVERSITY
jou kennisvennoot • your knowledge partner

INSTITUTIONAL PERMISSION:

AGREEMENT ON USE OF PERSONAL INFORMATION IN RESEARCH

Name of Researcher: Reghardt Kuhn

Name of Research Project: A Quantitative Study on the Motivation of South African Orchestral Musicians Studying at Tertiary Level

Service Desk ID: IRPSD 564

Date of Issue: 14 August 2017

You have received institutional permission to proceed with this project as stipulated in the institutional permission application and within the conditions set out in this agreement.

1 WHAT THIS AGREEMENT IS ABOUT	
What is POPI?	1.1 POPI is the Protection of Personal Information Act 4 of 2013. 1.2 POPI regulates the entire information life cycle from collection, through use and storage and even the destruction of personal information.
Why is this important to us?	1.3 Even though POPI is important, it is not the primary motivation for this agreement. The privacy of our students and employees are important to us. We want to ensure that no research project poses any risks to their privacy. 1.4 However, you are required to familiarise yourself with, and comply with POPI in its entirety.
What is considered to be personal information?	1.5 'Personal information' means information relating to an identifiable, living, individual or company, including, but not limited to: 1.5.1 information relating to the race, gender, sex, pregnancy, marital status, national, ethnic or social origin, colour, sexual orientation, age, physical or mental health, well-being, disability, religion, conscience, belief, culture, language and birth of the person; 1.5.2 information relating to the education or the medical, financial, criminal or employment history of the person;

	1.5.3 any identifying number, symbol, e-mail address, physical address, telephone number, location information, online identifier or other particular assignment to the person; 1.5.4 the biometric information of the person; 1.5.5 the personal opinions, views or preferences of the person; 1.5.6 correspondence sent by the person that is implicitly or explicitly of a private or confidential nature or further correspondence that would reveal the contents of the original correspondence; 1.5.7 the views or opinions of another individual about the person; and 1.5.8 the name of the person if it appears with other personal information relating to the person or if the disclosure of the name itself would reveal information about the person.
Some personal information is more sensitive.	1.6 Some personal information is considered to be sensitive either because: 1.6.1 POPI has classified it as sensitive; 1.6.2 if the information is disclosed it can be used to defraud someone; or 1.6.3 the disclosure of the information will be embarrassing for the research subject. 1.7 The following personal information is considered particularly sensitive: 1.7.1 Religious or philosophical beliefs; 1.7.2 race or ethnic origin; 1.7.3 trade union membership; 1.7.4 political persuasion; 1.7.5 health and health related documentation such as medical scheme documentation; 1.7.6 sex life; 1.7.7 biometric information; 1.7.8 criminal behaviour; 1.7.9 personal information of children under the age of 18; 1.7.10 financial information such as banking details, details relating to financial

	products such as insurance, pension funds or other investments. 1.8 You maymake use of this type of information, but must take extra care to ensure that you comply with the rest of the rules in this document.
2 COMMITMENT TO ETHICAL AND LEGAL RESEARCH PRACTICES	
You must commit to the use of ethical and legal research practices.	2.1 You must obtain ethical clearance before commencing with this study. 2.2 You commit to only employing ethical and legal research practices.
You must protect the privacy of your research subjects.	2.3 You undertake to protect the privacy of the research subjects throughout the project.
3 RESEARCH SUBJECT PARTICIPATION	
Personal information of identifiable research subjects must not be used without their consent.	3.1 Unless you have obtained a specific exemption for your research project, consent must be obtained in writing from the research subject, before their personal information is gathered.
Research subjects must be able to withdraw from the research project.	3.2 Research subjects must always be able to withdraw from the research project (without any negative consequences) and to insist that you destroy their personal information.
Consent must be specific and informed.	3.3 Unless you have obtained a specific exemption for your research project, the consent must be specific and informed. Before giving consent, the research subject must be informed in writing of: 3.3.1 The purpose of the research, 3.3.2 what personal information about them will be collected (particularly sensitive personal information), 3.3.3 how the personal information will be collected (if not directly from them), 3.3.4 the specific purposes for which the personal information will be used, 3.3.5 what participation will entail (i.e. what the research subject will have to do), 3.3.6 whether the supply of the personal information is voluntary or mandatory for purposes of the research project,

	3.3.7 who the personal information will be shared with, 3.3.8 how the personal information will be published, 3.3.9 the risks to participation (if any), 3.3.10 their rights to access, correct or object to the use of their personal information, 3.3.11 their right to withdraw from the research project, and 3.3.12 how these rights can be exercised.
Consent must be voluntary.	3.4 Participation in the research project must always be voluntary. You must never pressure or coerce research subjects into participating and persons who choose not to participate must not be penalised.
Using the personal information of children?	3.5 A child is anybody under the age of 18. 3.6 Unless you have obtained a specific exemption in writing for your research project, you must obtain 3.6.1 the consent of the child's parent or guardian, and 3.6.2 if the child is over the age of 7, the assent of the child, before collecting the child's information.
Research subjects have a right to access.	3.7 Research subjects have the right to access their personal information, obtain confirmation of what information is in your possession and who had access to the information. It is strongly recommended that you keep detailed records of access to the information.
Research subjects have a right to object.	3.8 Research subjects have the right to object to the use of their personal information. 3.9 Once they have objected, you are not permitted to use the personal information until the dispute has been resolved.
4 COLLECTING PERSONAL INFORMATION	
Only collect what is necessary.	4.1 You must not collect unnecessary or irrelevant personal information from research subjects.
Only collect accurate personal information.	4.2 You have an obligation to ensure that the personal information you collect is accurate. Particularly when you are collecting it from a source other than the

	research subject. 4.3 If you have any reason to doubt the quality of the personal information you must verify or validate the personal information before you use it.
5 USING PERSONAL INFORMATION	
Only use the personal information for the purpose for which you collected it.	5.1 Only use the personal information for the purpose for which you collected it. 5.2 If your research project requires you to use the personal information for a materially different purpose than the one communicated to the research subject, you must inform the research subjects and Stellenbosch University of this and give participants the option to withdraw from the research project.
Be careful when you share personal information.	5.3 Never share personal information with third parties without making sure that they will also follow these rules. 5.4 Always conclude a non-disclosure agreement with the third parties. 5.5 Ensure that you transfer the personal information securely.
Personal information must be anonymous whenever possible.	5.6 If the research subject's identity is not relevant for the aims of the research project, the personal information must not be identifiable. In other words, the personal information must be anonymous (de-identified).
Pseudonyms must be used whenever possible.	5.7 If the research subject's identity is relevant for the aims of the research project or is required to co-ordinate, for example, interviews, names and other identifiers such as ID or student numbers must be collected and stored separately from the rest of the research data and research publications. In other words, only you must be able to identify the research subject.
Publication of research	5.8 The identity of your research subjects should not be revealed in any publication. 5.9 In the event that your research project requires that the identity of your research subjects must be revealed, you must apply for an exemption from this rule.
6 SECURING PERSONAL INFORMATION	
You are responsible for the confidentiality and security of the personal information	6.1 Information must always be handled in the strictest confidence. 6.2 You must ensure the integrity and security of the information in your possession or under your control by taking appropriate and reasonable technical and

	organisational measures to prevent: 6.2.1 Loss of, damage to or unauthorised destruction of information; and 6.2.2 unlawful access to or processing of information. 6.3 This means that you must take reasonable measures to: 6.3.1 Identify all reasonably foreseeable internal and external risks to personal information in your possession or under your control; 6.3.2 establish and maintain appropriate safeguards against the risks identified; 6.3.3 regularly verify that the safeguards are effectively implemented; and 6.3.4 ensure that the safeguards are continually updated in response to new risks or deficiencies in previously implemented safeguards.
Sensitive personal information requires extra care.	6.4 You will be expected to implement additional controls in order to secure sensitive personal information.
Are you sending any personal information overseas?	6.5 If you are sending personal information overseas, you have to make sure that: 6.5.1 The information will be protected by the laws of that country; 6.5.2 the company or institution to who you are sending have agreed to keep the information confidential, secure and to not use it for any other purpose; or 6.5.3 get the specific and informed consent of the research subject to send the information to a country which does not have data protection laws.
Be careful when you use cloud storage.	6.6 Be careful when storing personal information in a cloud. Many clouds are hosted on servers outside of South Africa in countries that do not protect personal information to the same extent as South Africa. The primary example of this is the United States. 6.7 It is strongly recommended that you use hosting companies who house their servers in South Africa. 6.8 If this is not possible, you must ensure that the hosting company agrees to protect the personal information to the same extent as South Africa.
7 RETENTION AND DESTRUCTION OF PERSONAL INFORMATION	
You are not entitled to retain personal information when	7.1 Personal information must not be retained beyond the purpose of the research project, unless you have a legal or other justification for retaining the information.

you no longer need it for the purposes of the research project.	
If personal information is retained, you must make sure it remains confidential.	7.2 If you do need to retain the personal information, you must assess whether: 7.2.1 The records can be de-identified; and/or whether 7.2.2 you have to keep all the personal information. 7.3 You must ensure that the personal information which you retain remains confidential, secure and is only used for the purposes for which it was collected.
8 INFORMATION BREACH PROCEDURE	
In the event of an information breach you must notify us immediately.	8.1 If there are reasonable grounds to believe that the personal information in your possession or under your control has been accessed by any unauthorised person or has been disclosed, you must notify us immediately. 8.2 We will notify the research subjects in order to enable them to take measures to contain the impact of the breach.
This is the procedure you must follow.	8.3 You must follow the following procedure: 8.3.1 Contact the Division for Institutional Research and Planning at 021 808 9385 and permission@sun.ac.za; 8.3.2 you will then be required to complete the information breach report form which is attached as Annexure A. 8.4 You are required to inform us of a information breach within 24 hours. Ensure that you have access to the required information.
9 MONITORING	
You may be audited.	9.1 We reserve the right to audit your research practices to assess whether you are complying with this agreement. 9.2 You are required to give your full co-operation during the auditing process. 9.3 We may also request to review: 9.3.1 Forms (or other information gathering methods) and notifications to research subjects, as referred to in clause 3;

	9.3.2 non-disclosure agreements with third parties with whom the personal information is being shared, as referred to in clause 5.4; 9.3.3 agreements with foreign companies or institutes with whom the personal information is being shared, as referred to in clause 6.5.
10 CHANGES TO RESEARCH	
You need to notify us if any aspect of your collection or use of personal information changes.	10.1 You must notify us in writing if any aspect of your collection or use of personal information changes (e.g. such as your research methodology, recruitment strategy or the purpose for which you use the research). 10.2 We may review and require amendments to the proposed changes to ensure compliance with this agreement. 10.3 The notification must be sent to permission@sun.ac.za.
11 CONSEQUENCES OF BREACH	
What are the consequences of breaching this agreement?	11.1 If you do not comply with this agreement, we may take disciplinary action or report such a breach to your home institute. 11.2 You may be found guilty of research misconduct and may be censured in accordance with Stellenbosch University or your home institute's disciplinary code.
You may have to compensate us in the event of any legal action.	11.3 Non-compliance with this agreement could also lead to claims against Stellenbosch University in terms of POPI and/or other laws. 11.4 Unless you are employed by or studying at Stellenbosch University, you indemnify Stellenbosch University against any claims (including all legal fees) from research subjects or any regulatory authority which are the result of your research project. You may also be held liable for the harm to our reputation should there be an information breach as a result of your non-compliance with this agreement.
12 CONTACT US	
Please contact us if you have any questions.	Should you have any questions relating to this agreement you should contact permission@sun.ac.za.

ADDENDUM H - RELIABILITY ANALYSIS RESULTS

Table 5 - Reliability Analysis - Support for Autonomy

Support for Autonomy						
	Cronbach's Alpha and 95% Cl: 0.97(0.95, 0.98) Summary for Scale: Mean=65.8302 Std.Dv.=22.1817 Valid N:53 Standardised alpha 0.97					
Variable	Mean if deleted	Var. If deleted	StDv. If deleted	Itm-Totl Correl.	Squared Multp. R	Alpha if deleted
S2Q1A01	62.23	426.78	20.66	0.67	0.67	0.97
S2Q1A02	61.42	418.09	20.45	0.86	0.85	0.96
S2Q1A03	61.57	410.89	20.27	0.89	0.87	0.96
S2Q1A04	61.04	419.28	20.48	0.86	0.84	0.96
S2Q1A05	61.19	418.23	20.45	0.83	0.86	0.96
S2Q1A06	60.70	425.15	20.62	0.79	0.78	0.96
S2Q1A07	61.70	426.70	20.66	0.79	0.82	0.96
S2Q1A08	60.92	419.13	20.47	0.83	0.81	0.96
S2Q1A09	61.23	418.51	20.46	0.84	0.80	0.96
S2Q1A10	61.94	417.45	20.43	0.80	0.86	0.96
S2Q1A11	61.04	421.51	20.53	0.80	0.79	0.96
S2Q1A12(reversed)	61.08	435.65	20.87	0.63	0.57	0.97
S2Q1A13	61.58	419.90	20.49	0.77	0.85	0.96
S2Q1A14	62.26	423.21	20.57	0.81	0.81	0.96
S2Q1A15	61.74	422.35	20.55	0.81	0.78	0.96

Table 6 - Reliability Analysis - Support for Competence

Support for Competence						
	Cronbach's Alpha and 95% Cl: 0.89(0.82, 0.94) Summary for Scale: Mean=19.3774 Std.Dv.=6.18070 Valid N:53 Standardised alpha 0.89					
Variable	Mean if deleted	Var. If deleted	StDv. If deleted	Itm-Totl Correl.	Squared Multp. R	Alpha if deleted
S2Q2CO1	14.42	20.92	4.57	0.82	0.69	0.84
S2Q2CO2	14.92	23.16	4.81	0.75	0.65	0.87
S2Q2CO3	13.94	22.51	4.74	0.69	0.55	0.89
S2Q2CO4	14.85	20.73	4.55	0.81	0.69	0.85

Table 7 - Reliability Analysis - Support for Relatedness

Support for Relatedness						
	Cronbach's Alpha and 95% Cl: 0.92(0.86, 0.95) Summary for Scale: Mean=24.5849 Std.Dv.=7.84816 Valid N:53 Standardised alpha 0.92					
Variable	Mean if deleted	Var. If deleted	StDv. If deleted	Itm-Totl Correl.	Squared Multp. R	Alpha if deleted
S2Q3R01	19.87	37.25	6.10	0.85	0.74	0.89
S2Q3R02	19.21	42.84	6.55	0.69	0.52	0.92
S2Q3R03	19.75	37.32	6.11	0.86	0.82	0.89
S2Q3R04	19.95	39.87	6.31	0.76	0.6	0.91
S2Q3R05	19.53	39.91	6.32	0.82	0.75	0.90

Table 8 - Reliability Analysis - Experience of Autonomy

Experience of Autonomy						
	Cronbach's Alpha and 95% Cl: 0.89(0.82, 0.93) Summary for Scale: Mean=24.7200 Std.Dv.=8.71555 Valid N:50 Standardised alpha 0.90					
Variable	Mean if deleted	Var. If deleted	StDv. If deleted	Itm-Totl Correl.	Squared Multp. R	Alpha if deleted
S3Q1A01	21.30	52.77	7.26	0.78	0.84	0.86
S3Q1A02	21.18	53.43	7.31	0.73	0.78	0.87
S3Q1A03	19.74	48.47	6.96	0.73	0.58	0.87
S3Q1A04(reversed)	19.82	57.27	7.57	0.48	0.31	0.91
S3Q1A05	20.40	51.96	7.21	0.78	0.64	0.86
S3Q1A06	21.16	53.09	7.29	0.80	0.71	0.86

Table 9 - Reliability Analysis - Experience of Competence

Experience of Competence						
	Cronbach's Alpha and 95% Cl: 0.85(0.76, 0.91) Summary for Scale: Mean=23.5800 Std.Dv.=6.11151 Valid N:50 Standardised alpha 0.86					
Variable	Mean if deleted	Var. If deleted	StDv. If deleted	Itm-Totl Correl.	Squared Multp. R	Alpha if deleted
S3Q2C01	19.20	22.60	4.75	0.82	0.74	0.78
S3Q2C02	18.86	23.52	4.85	0.78	0.67	0.79
S3Q2C03	18.54	26.61	5.16	0.52	0.34	0.86
S3Q2C04	19.18	23.47	4.84	0.79	0.66	0.79
S3Q2C05(reversed)	18.54	25.25	5.02	0.48	0.28	0.88

Table 10 - Reliability Analysis - Experience of Relatedness

Experience of Relatedness						
	Cronbach's Alpha and 95% Cl: 0.89(0.82, 0.93) Summary for Scale: Mean=22.6000 Std.Dv.=6.54030 Valid N:50 Standardised alpha 0.89					
Variable	Mean if deleted	Var. If deleted	StDv. If deleted	Itm-Totl Correl.	Squared Multp. R	Alpha if deleted
S3Q3R01	17.88	28.31	5.32	0.74	0.60	0.87
S3Q3R02	18.36	26.15	5.11	0.81	0.68	0.85
S3Q3R03	18.04	26.84	5.18	0.75	0.60	0.87
S3Q3R04	18.24	26.46	5.14	0.74	0.58	0.87
S3Q3R05	17.88	29.99	5.48	0.66	0.48	0.89

Table 11 - Reliability Analysis - Intrinsic Regulation

Intrinsic Regulation						
	Cronbach's Alpha and 95% Cl: 0.93(0.90, 0.94) Summary for Scale: Mean=21.3542 Std.Dv.=6.28571 Valid N:48 Standardised alpha 0.93					
Variable	Mean if deleted	Var. If deleted	StDv. If deleted	Itm-Totl Correl.	Squared Multp. R	Alpha if deleted
S4Q1M01	16.08	21.53	4.64	0.87	0.83	0.90
S4Q1M02	15.73	26.61	5.16	0.69	0.56	0.96
S4Q1M03	16.19	19.11	4.37	0.92	0.86	0.88
S4Q1M04	16.06	21.77	4.67	0.91	0.85	0.89

Table 12 - Reliability Analysis - Identified Regulation

Identified Regulation						
	Cronbach's Alpha and 95% Cl: 0.89(0.82, 0.94) Summary for Scale: Mean=20.0833 Std.Dv.=6.29702 Valid N:48 Standardised alpha 0.89					
Variable	Mean if deleted	Var. If deleted	StDv. If deleted	Itm-Totl Correl.	Squared Multp. R	Alpha if deleted
S4Q2M01	14.75	22.52	4.75	0.79	0.72	0.85
S4Q2M02	15.21	22.29	4.72	0.83	0.73	0.84
S4Q2M03	14.81	21.15	4.60	0.78	0.72	0.86
S4Q2M04	15.48	24.85	4.95	0.66	0.59	9.00

Table 13 - Reliability Analysis - Introjected Regulation

Introjected Regulation						
	Cronbach's Alpha and 95% Cl: 0.89(0.82, 0.93) Summary for Scale: Mean=11.1458 Std.Dv.=4.04277 Valid N:48 Standardised alpha 0.51					
Variable	Mean if deleted	Var. If deleted	StDv. If deleted	Itm-Totl Correl.	Squared Multp. R	Alpha if deleted
S4Q3M01	8.56	9.62	3.10	0.39	0.33	0.33
S4Q3M02	8.60	12.45	3.53	0.11	0.01	0.57
S4Q3M03	9.06	9.68	3.11	0.47	0.36	0.27
S4Q3M04	7.21	10.29	3.21	0.23	0.06	0.49

Table 14 - Reliability Analysis - External Regulation

External Regulation						
	Cronbach's Alpha and 95% Cl: 0.90(0.63, 0.94) Summary for Scale: Mean=12.1458 Std.Dv.=7.68804 Valid N:48 Standardised alpha 0.90					
Variable	Mean if deleted	Var. If deleted	StDv. If deleted	Itm-Totl Correl.	Squared Multp. R	Alpha if deleted
S4Q4M01	9.27	30.36	5.51	0.83	0.73	0.84
S4Q4M02	8.50	35.58	5.97	0.70	0.50	0.89
S4Q4M03	9.58	36.87	6.07	0.76	0.61	0.88
S4Q4M04	9.08	31.87	5.97	0.81	0.68	0.85

Table 15 - Reliability Analysis - Amotivation

Amotivation						
	Cronbach's Alpha and 95% Cl: 0.80(0.63, 0.89) Summary for Scale: Mean=8.25000 Std.Dv.=4.48401 Valid N:48 Standardised alpha 0.81					
Variable	Mean if deleted	Var. If deleted	StDv. If deleted	Itm-Totl Correl.	Squared Multp. R	Alpha if deleted
S4Q5M01	6.17	13.06	3.61	0.51	0.32	0.80
S4Q5M02	6.63	13.73	3.71	0.62	0.41	0.76
S4Q5M03	5.69	8.63	2.94	0.75	0.63	0.69
S4Q5M04	6.27	11.82	3.44	0.65	0.55	0.73

ADDENDUM I - HISTOGRAM RESULTS

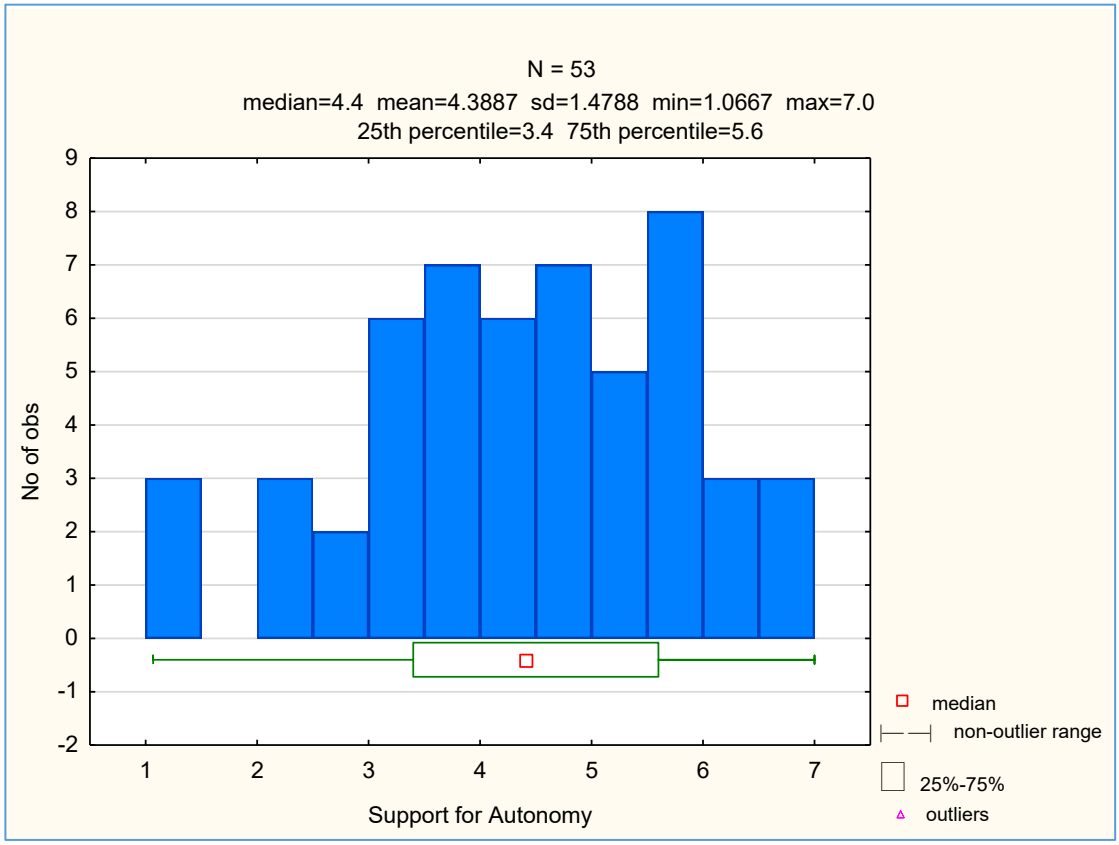

Figure 18 - Support for Autonomy

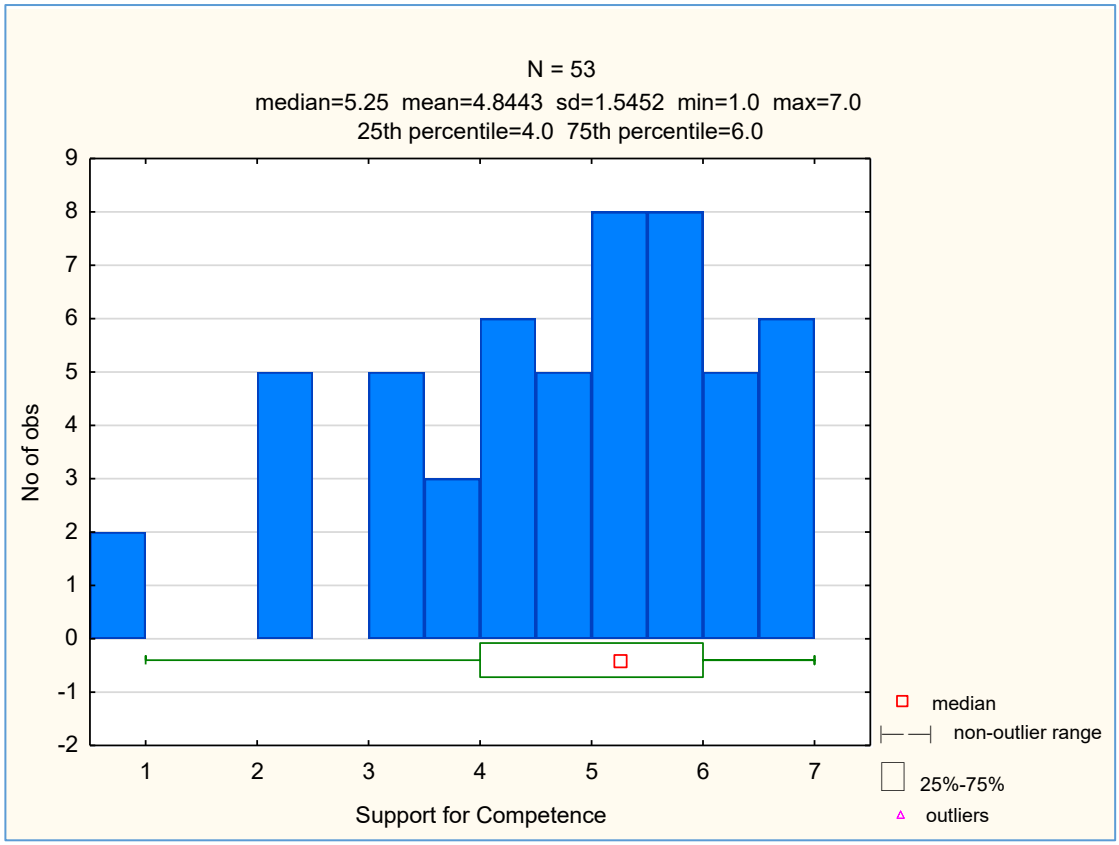

Figure 19 - Support for Competence

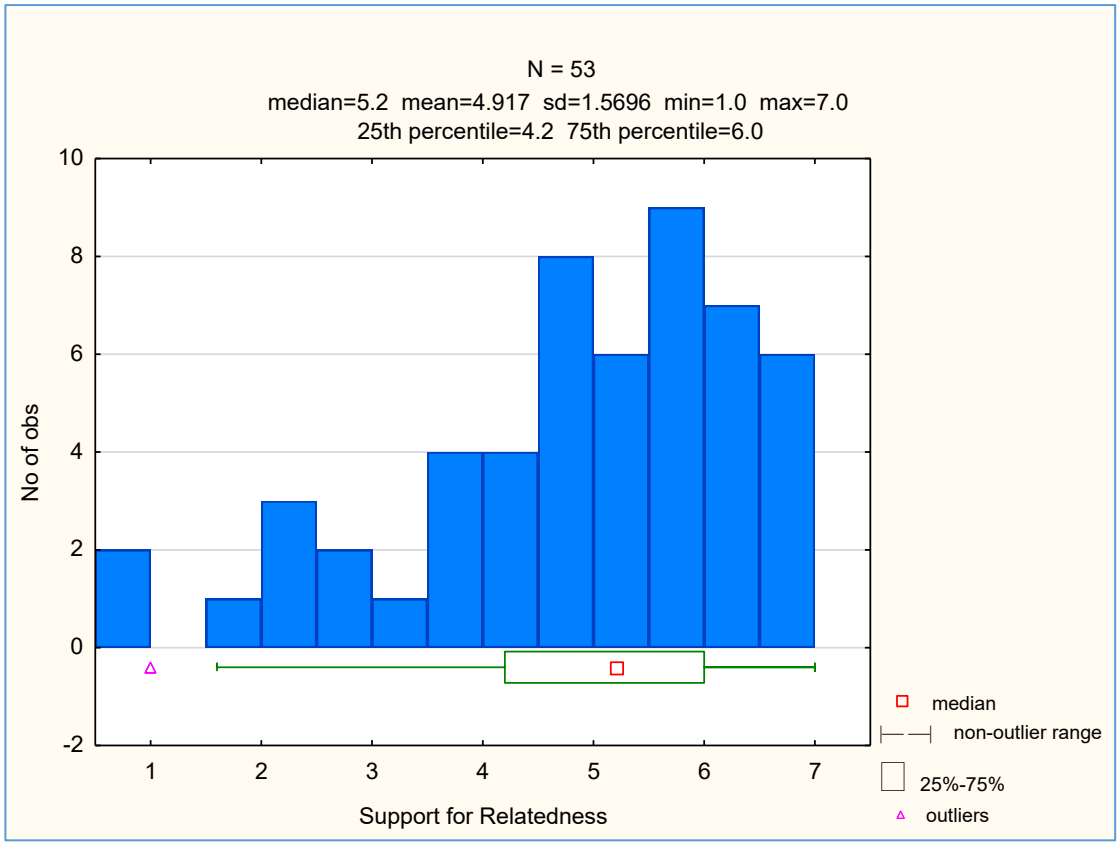

Figure 20 - Support for Relatedness

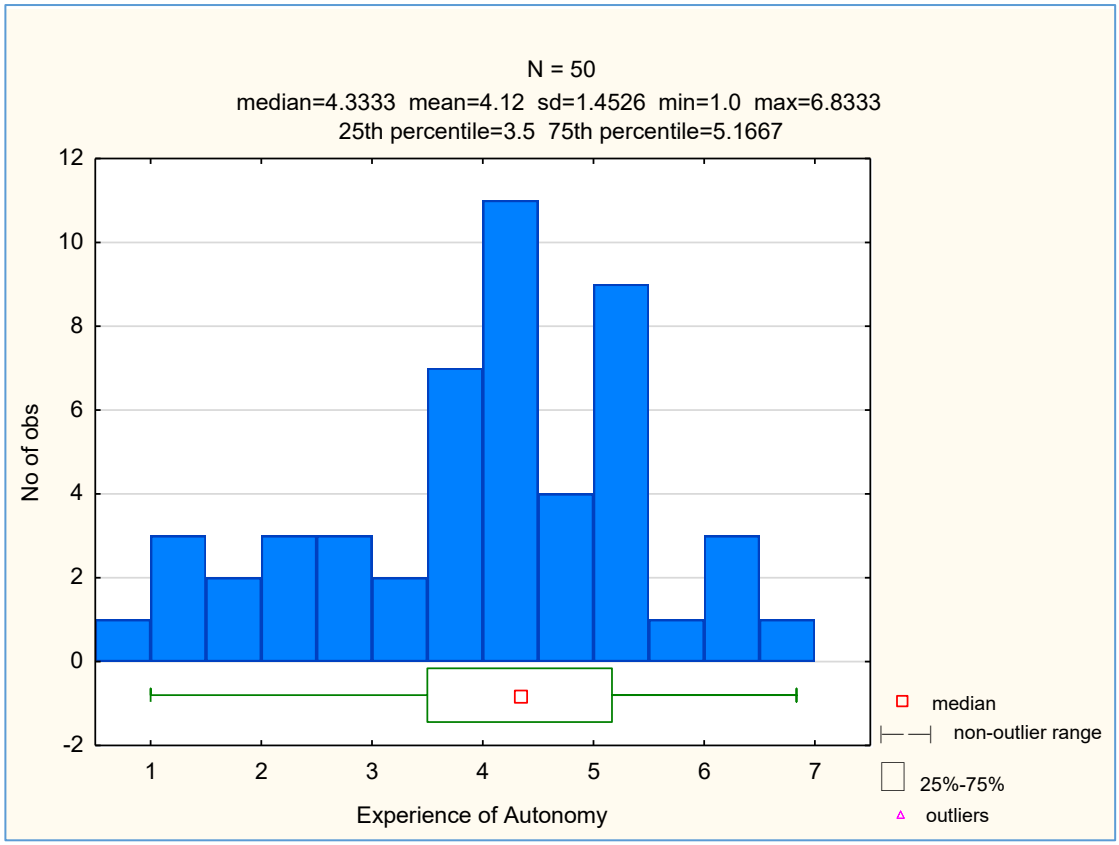

Figure 21 - Experience of Autonomy

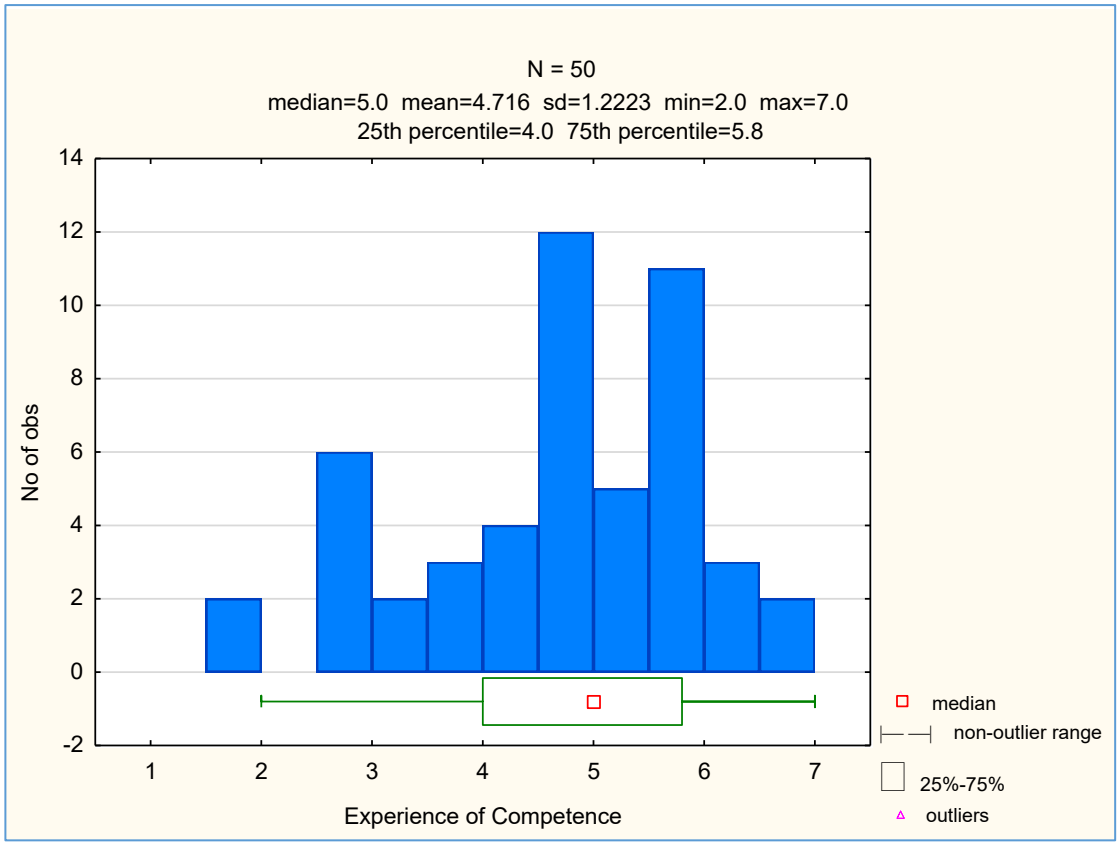

Figure 22 - Experience of Competence

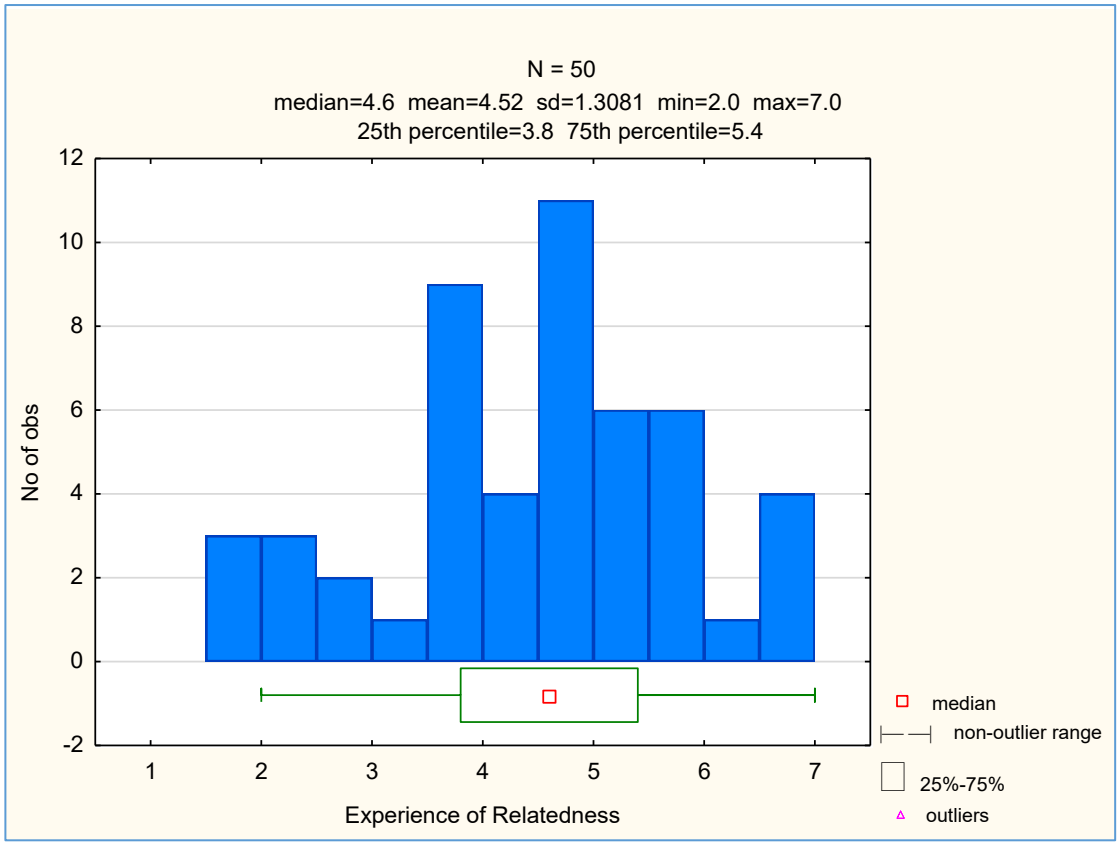

Figure 23 - Experience of Relatedness

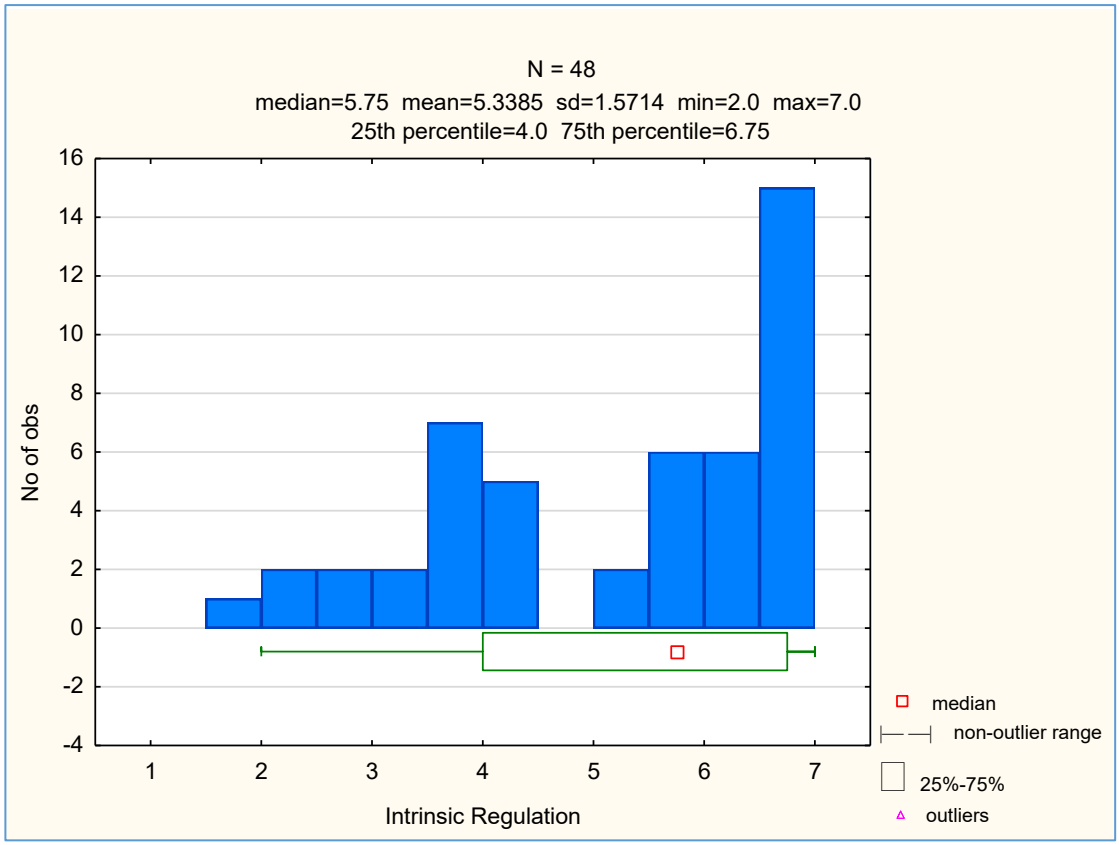

Figure 24 - Intrinsic Regulation

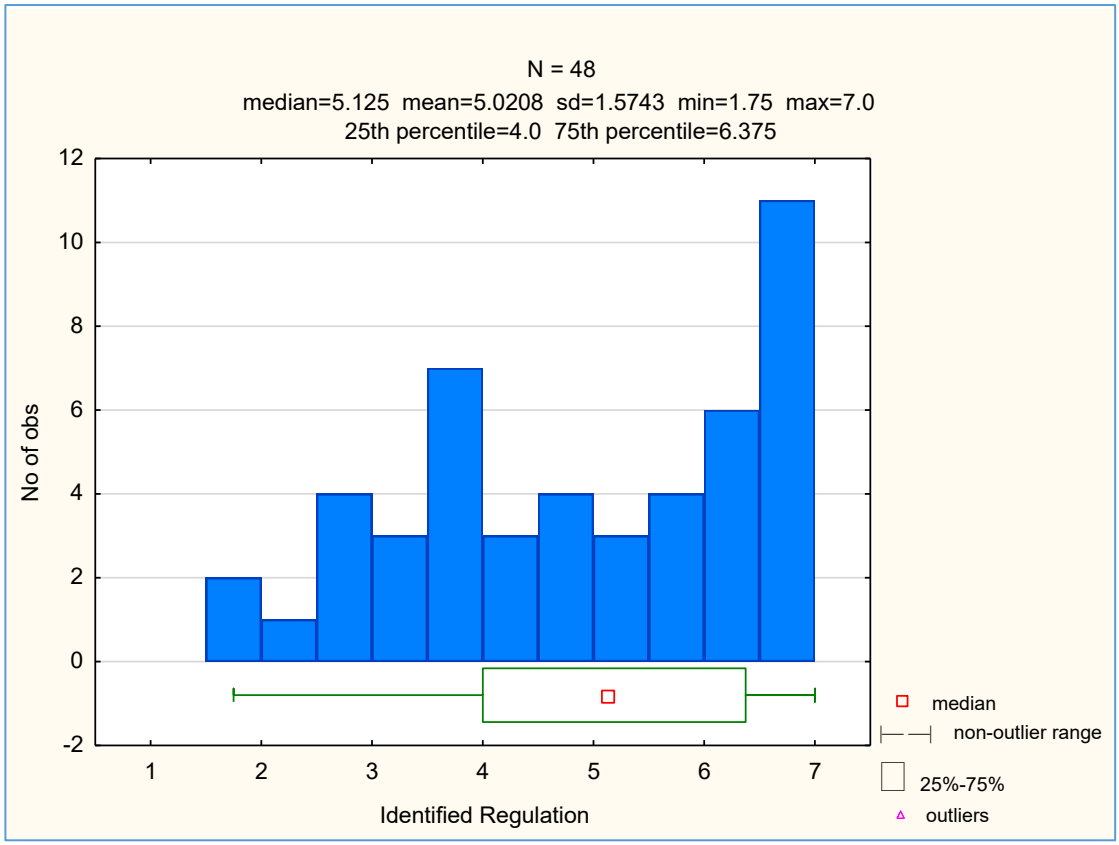

Figure 25 - Identified Regulation

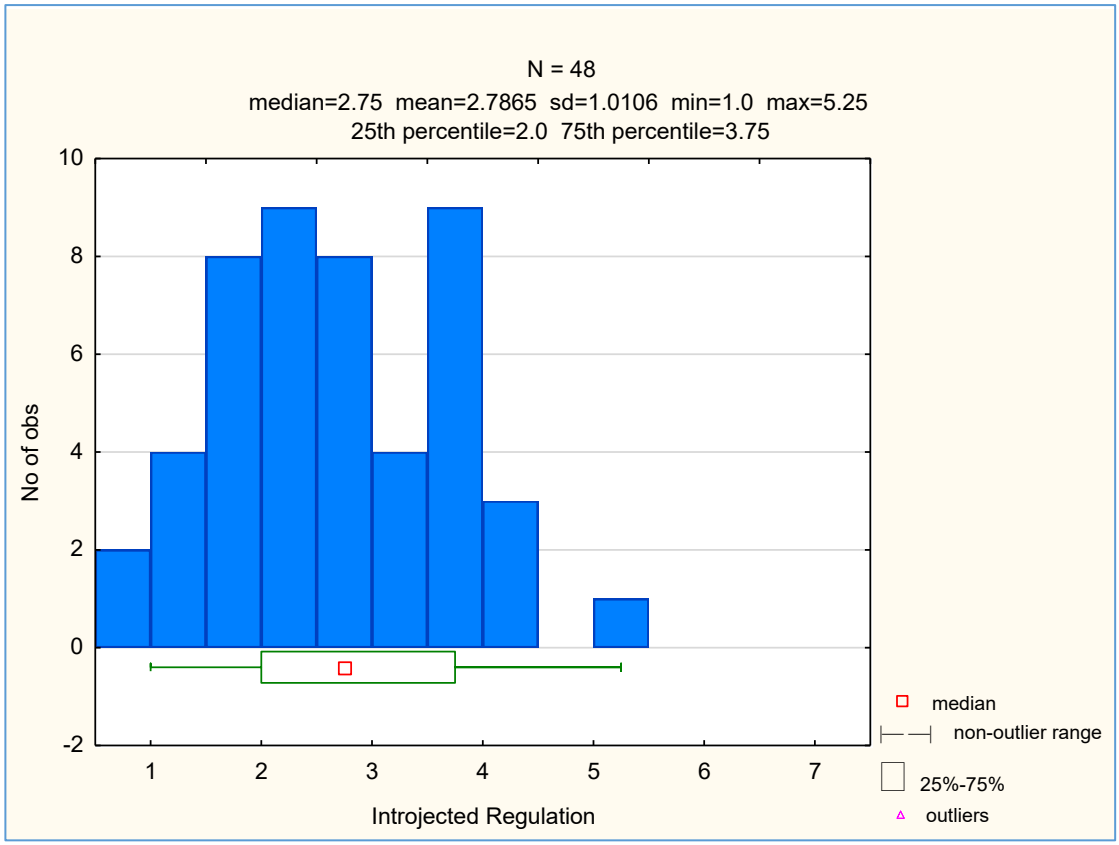

Figure 26 - Introjected Regulation

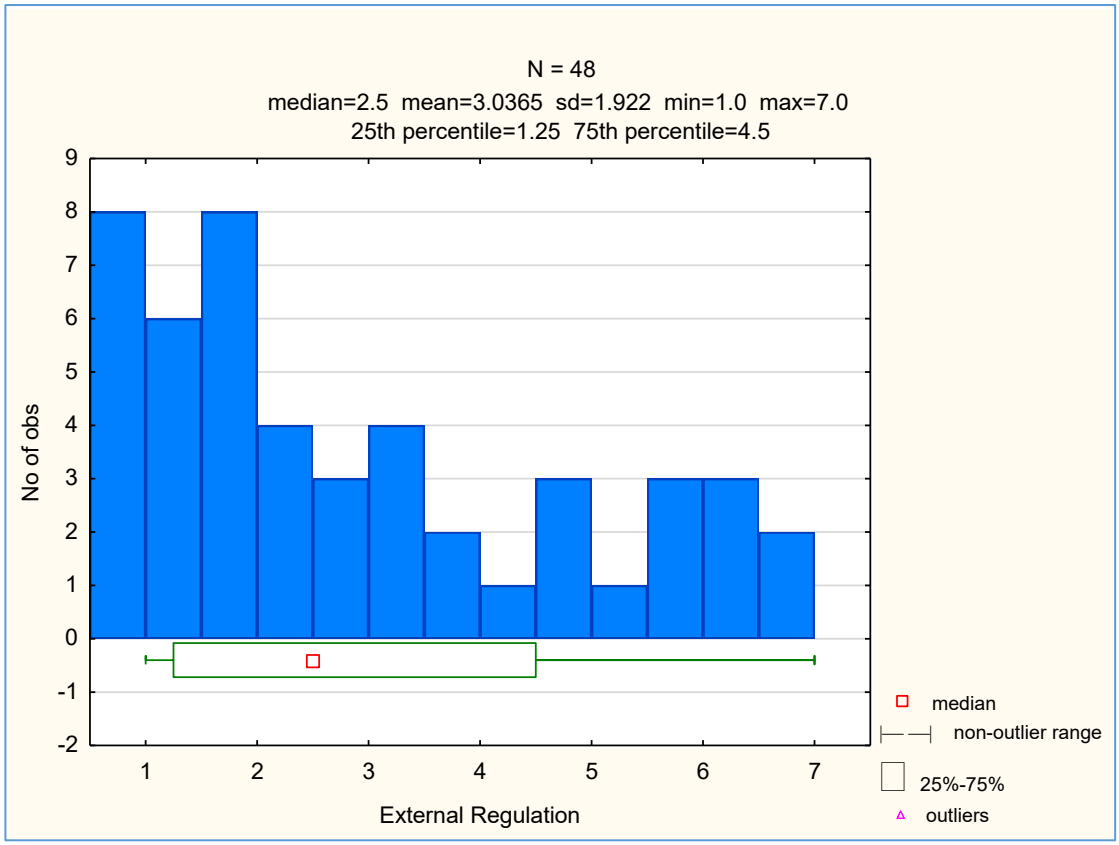

Figure 27 - External Regulation

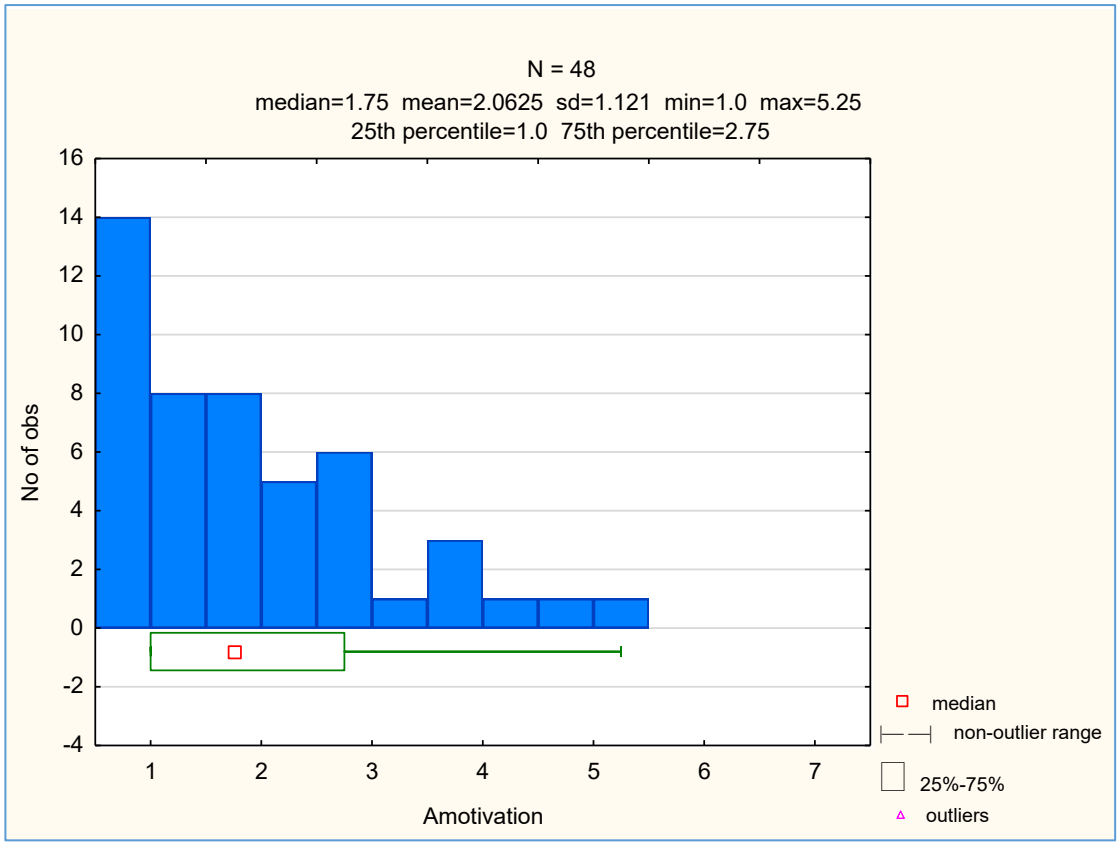

Figure 28 - Amotivation

ADDENDUM J - CORRELATIONS RESULTS

	Correlations between Variables						
	Variable 1	Variable 2	Pearson	Pearson p-val	Spearman	Spearman p-val	# cases
1	Support for Autonomy	Support for Competence	0.91	<0.01	0.90	<0.01	53
2	Support for Autonomy	Support for Relatedness	0.93	<0.01	0.93	<0.01	53
3	Support for Autonomy	Experience of Competence	0.48	<0.01	0.48	<0.01	50
4	Support for Autonomy	Experience of Relatedness	0.56	<0.01	0.55	<0.01	50
5	Support for Autonomy	Experience of Autonomy	0.69	<0.01	0.67	<0.01	50
6	Support for Autonomy	Introjected Regulation	0.04	0.81	0.04	0.80	48
7	Support for Autonomy	Amotivation	-0.27	0.06	-0.28	0.06	48
8	Support for Autonomy	External Regulation	-0.43	<0.01	-0.42	<0.01	48
9	Support for Autonomy	Intrinsic Regulation	0.48	<0.01	0.48	<0.01	48
10	Support for Autonomy	Identified Regulation	0.37	<0.01	0.41	<0.01	48
11	Support for Competence	Support for Relatedness	0.93	<0.01	0.90	<0.01	53
12	Support for Competence	Experience of Competence	0.53	<0.01	0.55	<0.01	50
13	Support for Competence	Experience of Relatedness	0.48	<0.01	0.46	<0.01	50
14	Support for Competence	Experience of Autonomy	0.65	<0.01	0.62	<0.01	50
15	Support for Competence	Introjected Regulation	0.07	0.62	0.05	0.74	48
16	Support for Competence	Amotivation	-0.36	0.01	-0.31	0.03	48
17	Support for Competence	External Regulation	-0.42	<0.01	-0.42	<0.01	48
18	Support for Competence	Intrinsic Regulation	0.49	<0.01	0.45	<0.01	48
19	Support for Competence	Identified Regulation	0.38	<0.01	0.39	<0.01	48
20	Support for Relatedness	Experience of Competence	0.52	<0.01	0.53	<0.01	50
21	Support for Relatedness	Experience of Relatedness	0.53	<0.01	0.51	<0.01	50

	Variable 1	Variable 2	Pearson	Pearson p-val	Spearman	Spearman p-val	# cases
22	Support for Relatedness	Experience of Autonomy	0.69	<0.01	0.66	<0.01	50
23	Support for Relatedness	Introjected Regulation	0.07	0.65	0.01	0.97	48
24	Support for Relatedness	Amotivation	-0.38	<0.01	-0.37	0.01	48
25	Support for Relatedness	External Regulation	-0.46	<0.01	-0.46	<0.01	48
26	Support for Relatedness	Intrinsic Regulation	0.55	<0.01	0.54	<0.01	48
27	Support for Relatedness	Identified Regulation	0.40	<0.01	0.42	<0.01	48
28	Experience of Competence	Experience of Relatedness	0.59	<0.01	0.59	<0.01	50
29	Experience of Competence	Experience of Autonomy	0.63	<0.01	0.61	<0.01	50
30	Experience of Competence	Introjected Regulation	-0.08	0.59	-0.07	0.63	48
31	Experience of Competence	Amotivation	-0.30	0.04	-0.31	0.03	48
32	Experience of Competence	External Regulation	-0.40	<0.01	-0.42	<0.01	48
33	Experience of Competence	Intrinsic Regulation	0.58	<0.01	0.51	<0.01	48
34	Experience of Competence	Identified Regulation	0.47	<0.01	0.49	<0.01	48
35	Experience of Relatedness	Experience of Autonomy	0.74	<0.01	0.74	<0.01	50
36	Experience of Relatedness	Introjected Regulation	-0.05	0.71	-0.02	0.89	48
37	Experience of Relatedness	Amotivation	-0.35	0.01	-0.30	0.04	48
38	Experience of Relatedness	External Regulation	-0.38	<0.01	-0.34	0.02	48
39	Experience of Relatedness	Intrinsic Regulation	0.55	<0.01	0.60	<0.01	48
40	Experience of Relatedness	Identified Regulation	0.45	<0.01	0.49	<0.01	48
41	Experience of Autonomy	Introjected Regulation	-0.10	0.48	-0.09	0.54	48
42	Experience of Autonomy	Amotivation	-0.52	<0.01	-0.38	<0.01	48
43	Experience of Autonomy	External Regulation	-0.71	<0.01	-0.61	<0.01	48
44	Experience of Autonomy	Intrinsic Regulation	0.78	<0.01	0.76	<0.01	48

	Variable 1	Variable 2	Pearson	Pearson p-val	Spearman	Spearman p-val	# cases
45	Experience of Autonomy	Identified Regulation	0.52	<0.01	0.44	<0.01	48
46	Introjected Regulation	Amotivation	0.07	0.63	0.06	0.67	48
47	Introjected Regulation	External Regulation	0.45	<0.01	0.51	<0.01	48
48	Introjected Regulation	Intrinsic Regulation	0.03	0.84	0.02	0.90	48
49	Introjected Regulation	Identified Regulation	0.22	0.13	0.25	0.08	48
50	Amotivation	External Regulation	0.59	<0.01	0.49	<0.01	48
51	Amotivation	Intrinsic Regulation	-0.65	<0.01	-0.60	<0.01	48
52	Amotivation	Identified Regulation	-0.60	<0.01	-0.66	<0.01	48
53	External Regulation	Intrinsic Regulation	-0.61	<0.01	-0.55	<0.01	48
54	External Regulation	Identified Regulation	-0.29	0.04	-0.24	0.10	48
55	Intrinsic Regulation	Identified Regulation	0.69	<0.01	0.65	<0.01	48

ADDENDUM K - BIPLOT

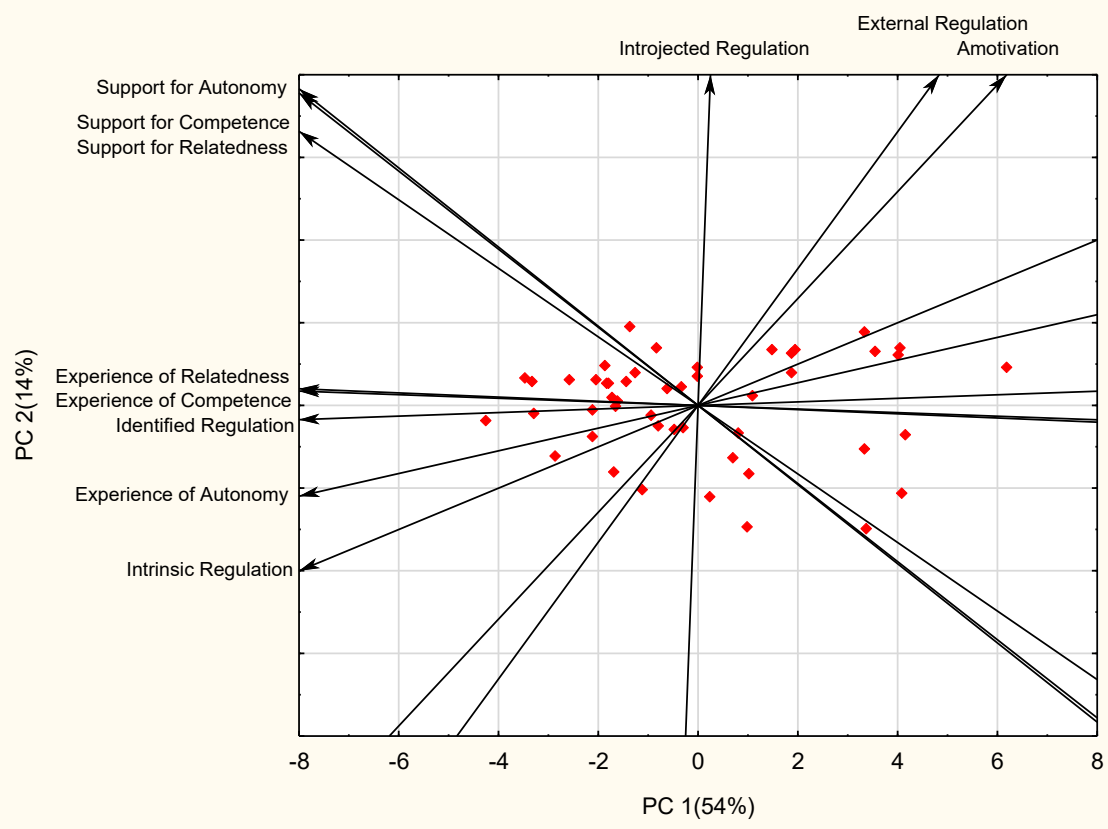

Figure 29 - Scatterplot

ADDENDUM L - LEVELS

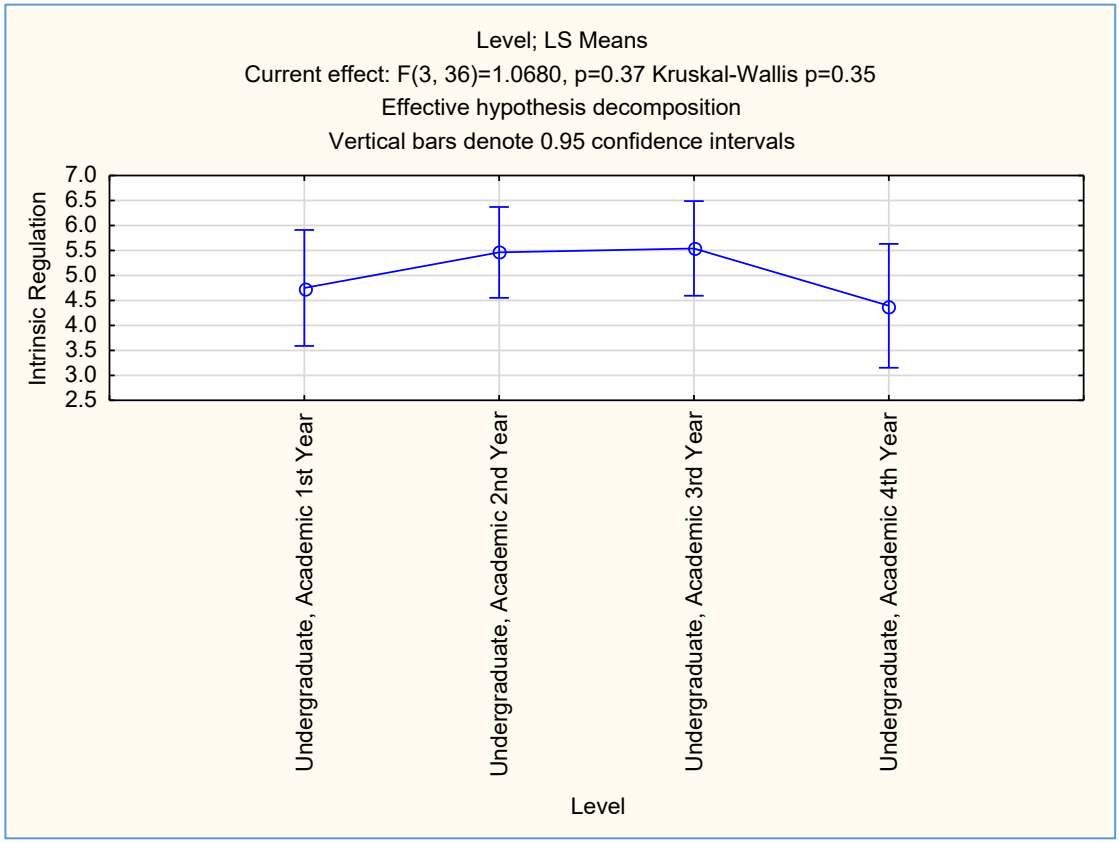

Figure 30 - Original Intrinsic Regulation Mean

Table 16 - Descriptive Statistics of Intrinsic Regulation Year Group Means

Effect	Descriptive Statistics of Intrinsic Regulation			
	Level of Factor	N	Intrinsic Regulation Mean	Intrinsic Regulation Std.Dev.
Level	Undergraduate, Academic 1st Year	8	4.75	1.81
Level	Undergraduate, Academic 2nd Year	13	5.46	1.36
Level	Undergraduate, Academic 3rd Year	12	5.54	1.56
Level	Undergraduate, Academic 4th Year	7	4.39	1.94
Level	Postgraduate	8	6.25	0.88

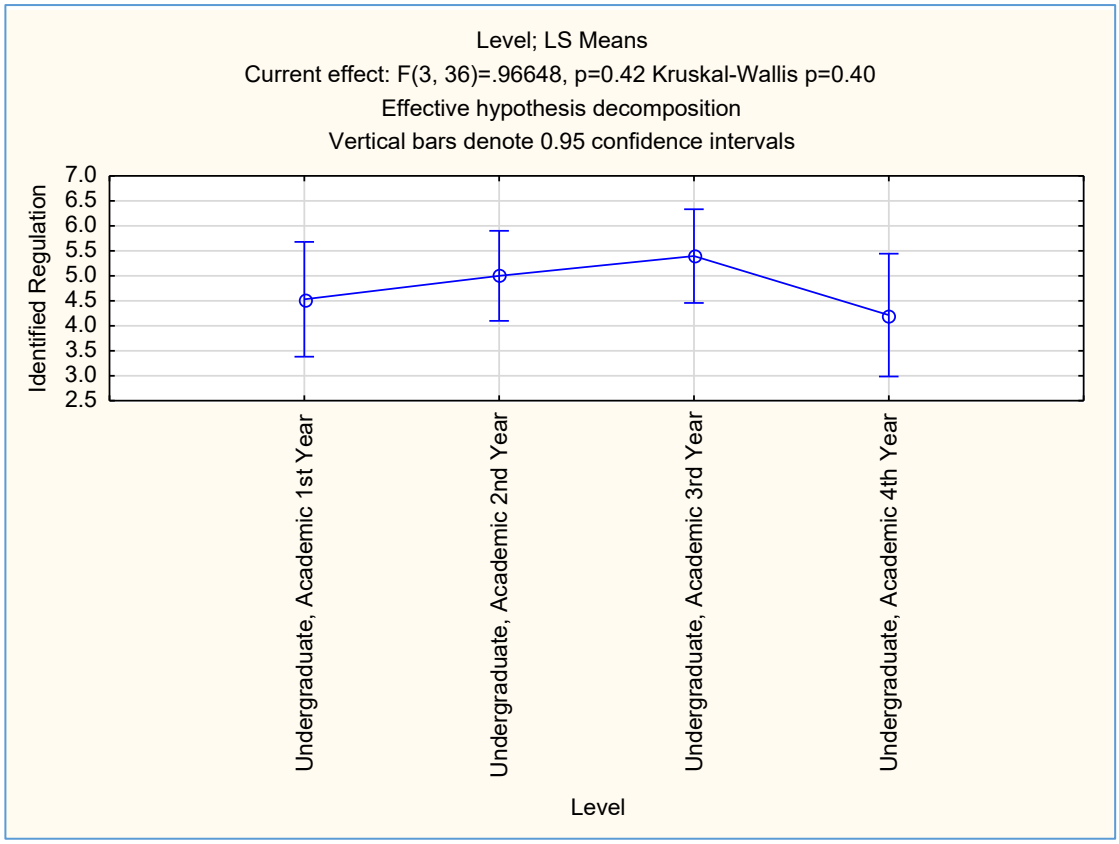

Figure 31 - Original Identified Regulation Mean

Table 17 - Descriptive Statistics of Identified Regulation Year Group Means

Effect	Descriptive Statistics of Identified Regulation			
	Level of Factor	N	Identified Regulation Mean	Identified Regulation Std.Dev.
Level	Undergraduate, Academic 1st Year	8	4.53	1.12
Level	Undergraduate, Academic 2nd Year	13	5.00	1.87
Level	Undergraduate, Academic 3rd Year	12	5.40	1.38
Level	Undergraduate, Academic 4th Year	7	4.21	1.87
Level	Postgraduate	8	5.69	1.32

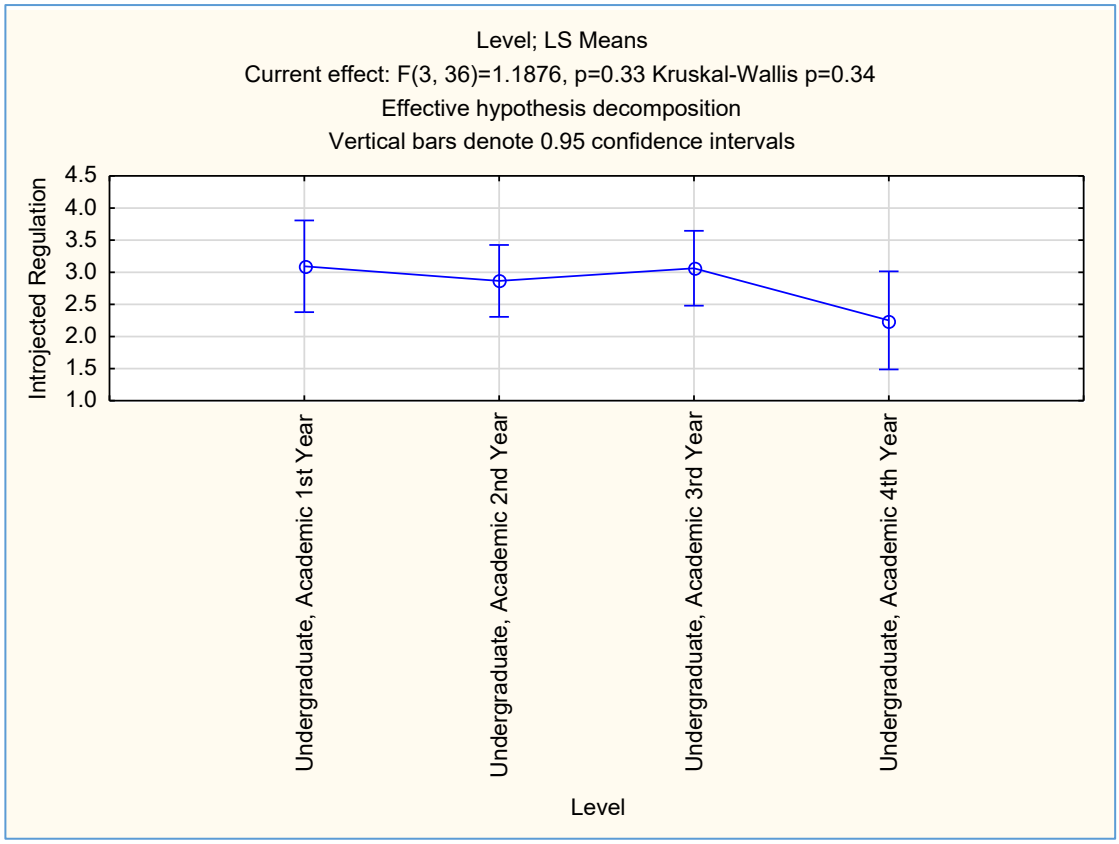

Figure 32 - Original Introjected Regulation Mean

Table 18 - Descriptive Statistics of Introjected Regulation Year Group Means

Effect	Descriptive Statistics of Introjected Regulation			
	Level of Factor	N	Introjected Regulation Mean	Introjected Regulation Std.Dev.
Level	Undergraduate, Academic 1st Year	8	3.09	1.41
Level	Undergraduate, Academic 2nd Year	13	2.87	0.93
Level	Undergraduate, Academic 3rd Year	12	3.06	0.83
Level	Undergraduate, Academic 4th Year	7	2.25	0.80
Level	Postgraduate	8	2.41	1.03

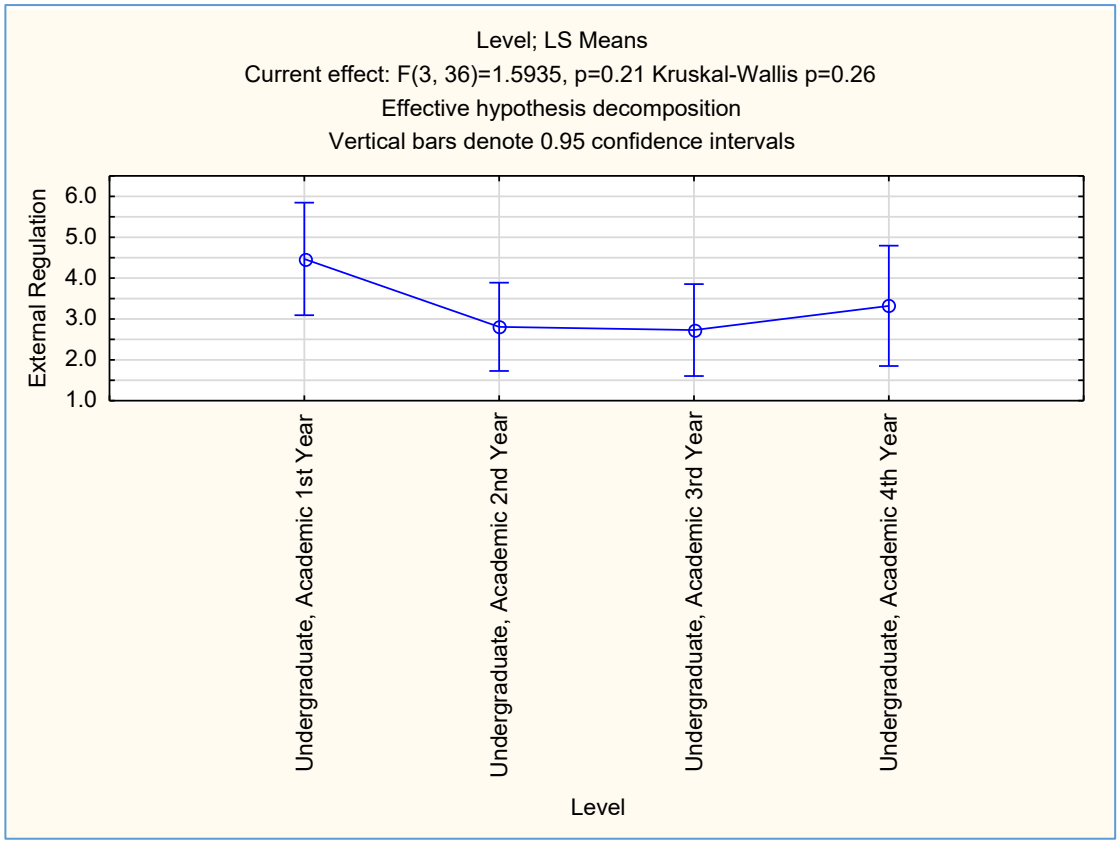

Figure 33 - Original External Regulation Mean

Table 19 - Descriptive Statistics of External Regulation Year Group Means

Effect	Descriptive Statistics of External Regulation			
	Level of Factor	N	External Regulation Mean	External Regulation Std.Dev.
Level	Undergraduate, Academic 1st Year	8	4.47	2.15
Level	Undergraduate, Academic 2nd Year	13	2.81	1.65
Level	Undergraduate, Academic 3rd Year	12	2.73	1.47
Level	Undergraduate, Academic 4th Year	7	3.32	2.70
Level	Postgraduate	8	2.19	1.52

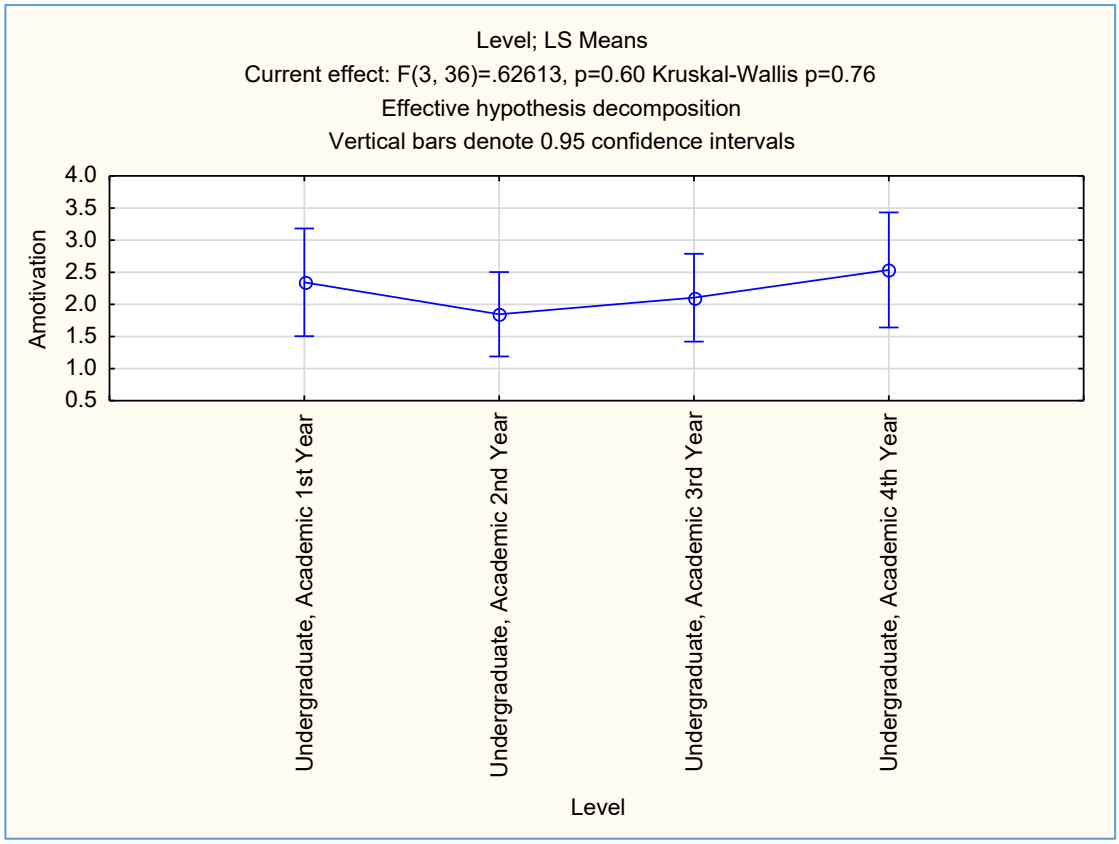

Figure 34 - Original Amotivation Mean

Table 20 - Descriptive Statistics of Amotivation Year Group Means

Effect	Descriptive Statistics of Amotivation			
	Level of Factor	N	Amotivation Mean	Amotivation Std.Dev.
Level	Undergraduate, Academic 1st Year	8	2.34	1.25
Level	Undergraduate, Academic 2nd Year	13	1.85	0.84
Level	Undergraduate, Academic 3rd Year	12	2.10	1.23
Level	Undergraduate, Academic 4th Year	7	2.54	1.48
Level	Postgraduate	8	1.66	0.91