

Measuring resilience, happiness and sense of coherence of teachers in rural schools

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**Measuring resilience, happiness and sense of coherence
of teachers in rural schools**

by

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**MAGISTER EDUCATIONIS
(Educational Psychology)**

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ABSTRACT

Measuring resilience, happiness and sense of coherence of teachers in rural schools

Supervisor : Prof. Liesel Ebersöhn
Co-Supervisors : Prof. Ronél Ferriera and Dr. Vanessa Scherman
Degree : Magister Educationis (Educational Psychology)

The purpose of this study is to describe and explore the happiness, sense of coherence and resilience of rural teachers from a positive psychology framework where positive and healthy adaptation is emphasized. This study forms part of the dissemination phase of a longitudinal study known as STAR (Supportive Teachers Assets and Resilience). Completed questionnaires by twelve rural teachers in STAR schools (2 primary and 1 secondary) in rural Mpumalanga were purposively sampled as data sources for secondary analysis. The measures included the Oxford Happiness Questionnaire (OHQ), Resilience Scale (RS-14) and the Orientation to Life Questionnaire (SOC-13). Results are presented as descriptive and non-parametric statistics.

Results indicated that teachers possess High Moderate to High levels of happiness, Moderate to High Moderate sense of coherence, and High Moderate to high levels of resilience. There was no significant relationship between happiness, sense of coherence and resilience. No significant differences were observed between levels of happiness, sense of coherence and resilience of teachers in (Pre- STAR intervention and post- STAR intervention); nor with regards to gender. Theorizing the findings of this study within the theoretical framework of positive psychology indicates that despite significant risk and adversity, teachers are able to demonstrate positive psychological constructs in the form of happiness (extraversion, kindness, humor, sense of purpose, aesthetic appreciation, locus of control, positive affect, self-efficacy, physical health and self-esteem), sense of coherence (comprehensibility, manageability and meaning) and resilience (self-reliance, having a purposeful and meaningful life, equanimity, perseverance and existential aloneness).

KEY CONCEPTS

• Teachers	• Sense of coherence happiness
• Rural schools	• Protective resources
• Resilience	• Positive psychology
• Adaptive coping	

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CHAPTER 1

INTRODUCTION, BACKGROUND, PROBLEM STATEMENT AND GENERAL ORIENTATION

1.1 BACKGROUND AND CONTEXT OF STUDY

This study forms part of a longitudinal study known as STAR (Supportive Teachers, Assets and Resilience intervention). In STAR Ebersöhn and Ferreira (2012) investigated the supposition that, following an asset-based intervention, teachers are able to use schools as links to other protective resources to adapt to adversity. That is, teachers can promote resilience by using schools as safe environments to buffer against adversity.

This study forms part of the dissemination research phase of STAR. For the dissemination research phase teachers who had participated in STAR were trained as STAR facilitators. These facilitator-teachers then trained other teachers in STAR. Before the peer-facilitated training, two STAR cohorts (one urban, one rural) from six additional schools (3 urban, 3 rural) completed measures: the Oxford Happiness Questionnaire (OHQ) (Hills & Argyle, 2002), the Orientation to Life Questionnaire (SOC-13) (Antonovsky, 1996), and the 14-Item Resilience Scale (RS-14) (Wagnild, 2011) to investigate differences and similarities amongst teachers before and after their STAR participation. Teachers who had participated in STAR would also have been involved in implementing STAR and in promoting resilience in their schools. Teachers who had not been peer-trained in STAR would not have had STAR-related knowledge to provide support in high-risk schools. The rural secondary school and one of the primary schools that took part in STAR is depicted below.



Photograph 1.1: Rural secondary school (School 1)



Photograph 1.2: Rural primary school (School 3)

In this study, I analysed measures completed by teachers ($n=12$) in the rural school cohort (two primary schools and one secondary school). These rural schools are all situated in the same rural school district in Mpumalanga. I thus purposively sampled completed measures for secondary data analysis in order to describe the resilience, happiness and sense of coherence of rural teachers within the framework of positive psychology. I thus used the completed measures to determine whether intrapersonal positive resources are present within the context of significant adversity and risk (Eloff, Eloff, Ebersöhn & Viljoen, 2007). This study aims to contribute to the knowledge of teachers' resilience (Theron & Engelbrecht, 2012) in rural schools by using a positive psychology perspective (Ferreira & Ebersöhn, 2011).

1.2 INTRODUCTION AND RATIONALE

With the emergence of positive psychology in recent years psychology has progressed and shifted away from a medical and deficit oriented disease model. Within positive psychology the notion is to understand and promote the factors that enable individuals, groups, organizations and communities to flourish, display positive emotions, develop strengths and move towards optimal well-being (Seligman, 2009). In this study, within the framework of positive psychology, the emphasis is on measuring the extent to which the positive psychological constructs of teachers in rural schools are present to facilitate adaptive coping (Skinner & Zimmer-Gembeck's, 2011) (resilience) with adversity. Adversity within teaching, especially in rural schools, is well documented, as discussed below.

Dearmont and Larson (2002), and Theron (2010) propose that research findings regarding the well-being of teachers in developing countries, such as South Africa indicate that rural teachers face more challenging living and working conditions than urban teachers. For

instance, rural teachers are often subject to social and professional isolation, a lack of material resources, as well as communities with a high prevalence of HIV/AIDS. Research on teaching related adversities have been focused largely on urban school teachers, few have reported on the stress and adversities and the means through which rural school teachers cope with such adversity (Gloria, Faulk & Steinhardt, 2012).

A significant amount of research (Balfour, Mitchell & Moletsane, 2008; Loots, Ebersöhn, Ferreira & Eloff, 2012; Engelbrecht, Oswald, Swart & Eloff, 2003) has been conducted regarding the adversities that teachers face in South Africa. However, very little research has been done on exploring to what extent teachers employ *resilience* (adaptive coping processes) to effectively address adversities encountered within a *rural setting* (Theron & Engelbrecht, 2012).

If rural school teachers are to thrive, given their limited resources and their environmental challenges, then resilience needs to form a critical part of this study. A sound understanding of resilience (the adaptive coping process by which individuals achieve positive adaptive functioning in the face of adversity) may reveal specific protective resources and mechanisms through which teachers operate. Being able to identify and possibly effectively use such protective resources and mechanisms may potentially provide benefits in future intervention efforts (Hines, Merdinger & Wyatt, 2005).

Consequently, as I mentioned, during the STAR dissemination research phase, three completed protocols of measures (RS-14, OHQ, SOC-13) were purposively selected to provide insight into the extent to which rural teachers make use of adaptive coping processes to address the daily adversities they face in their environment. Adaptive coping processes were measured as (1) *resilience outcomes* (Resilience scale), (2) *as internal protective resources (positive affect)*, namely happiness (Oxford Happiness Questionnaire), and (3) *as transaction-ecological process-links to protective resources* (Orientation to Life Questionnaire).

1.3 PURPOSE AND PROBLEM STATEMENT

The purpose of this study was to describe (Babbie, 2005; Cohen, Manion & Morrison, 2007) the resilience of teachers in three rural schools within a positive psychology framework. This was done by means of a secondary data analysis of existing quantitative data. Quantitative protocols of three completed measures (RS-14, OHQ, SOC-13) in STAR were purposively selected to determine the extent to which positive psychology is reflected in the resilience of teachers in rural schools.

1.4 RESEARCH QUESTIONS

Based on the discussion above, the following primary research question was formulated:

To what extent do teachers from rural schools demonstrate happiness, a sense of coherence and to what extent are they resilient?

To be able to address the primary research question, the following secondary research questions were formulated:

- To what extent are teachers from rural schools happy?
- To what extent do teachers from rural schools have a sense of coherence?
- To what extent are teachers from rural schools resilient?
- Is there a significant relationship that exists between resilience, happiness and sense of coherence among rural school teachers?
- To what extent do teachers' participation in an intervention impact on their ability to demonstrate happiness, sense of coherence and resilience?
- To what extent does gender impact on the happiness, sense of coherence and resilience of teachers in rural schools?

The following hypothesis was formulated for the research question (To what extent do teachers' participation in an intervention impact on their ability to demonstrate happiness, sense of coherence and resilient?):

❖ **Null hypothesis (H0)**

Teachers affiliated to different rural schools indicate similar levels of happiness, sense of coherence and resilience.

❖ **Alternative hypothesis (H1)**

Teachers affiliated to different rural schools indicate different levels of happiness, sense of coherence and resilience.

This hypothesis was formulated in order to determine possible differences that may exist in levels of resilience, happiness and sense of coherence in teachers from the three different schools, as some of them had already participated in the STAR intervention.

1.5 CLARIFICATION OF KEY CONCEPTS

This section provides a brief summary of the definitions that relate to the key concepts of this study. Chapters 2 and 3 of this dissertation provide more detailed discussions of these concepts.

1.5.1 SECONDARY DATA ANALYSIS

Kilkelly and Horgan (2011) as well as Neuman (2007) state that secondary data analysis is the re-analysis of previously collected survey data or other information. As opposed to primary research data (e.g. experiments, surveys, content analysis), the focus is on analysing, rather than collecting, data. Secondary data analysis is cost effective, it permits comparisons across groups or time, it facilitates replication and it allows new issues to be addressed. Original data (RS-14, SOC-13 and OHQ) were collected during the STAR intervention and were used in this study to address a new research problem.

1.5.2 NONPARAMETRIC STATISTICS

When using nonparametric statistics no assumption is made about the functional form of the joint distribution. The only assumption made about the observations is that they are independent and that they are identically distributed from an arbitrary continuous distribution. As a result, nonparametric statistics is also called distribution free statistics (Higgins, 2004). This form of statistics was used due to the small sample of the study (n=12). Nonparametric statistics also allows for hypothesis testing¹.

1.5.3 RESILIENCE

Within this study resilience is understood as adaptive coping processes (Skinner & Zimmer-Gembeck, 2011)². Positive psychology outcomes, such as happiness (Seligman, 2002), sense of coherence (Antonovsky, 1996) and resilience are investigated as research as an outcome and trait (Wagnild, 2011). Adaptive coping processes imply that available resources are used to manage the impact of adversity. In Ungar's work (2008) resilience also implies the capacity to navigate to available internal and external resources (psychological, social, cultural or physical) and to negotiate access to these resources. Such resources are then used for positive adaptation, which suggests a transactional and dynamic interaction between the resources (internal and external) and the risk factors that modify the effects of adversity. Based on this definition, resilience is measured *both as a process*, using sense of coherence (SOC-13), and *as an outcome*, which is measured using the Resilience scale (RS-14) and positive affect (OHQ) discussed below.

¹A sample size of 30 is required in order to perform hypothesis testing within parametric statistics.

²Resilience as adaptive coping process is discussed more fully in Chapter 2.

1.5.4 HAPPINESS AND POSITIVE EMOTIONS

From a positive psychology perspective, one of the internal protective resources that may be part of resilience is positive affect (Peterson, Park & Seligman, 2005), specifically happiness (Seligman, 2002). Tugade and Fredrickson (2004) state that the usefulness of positive emotions includes the buffering effect they have on stress. Positive emotions also facilitate positive reappraisal, problem-focused coping, as well as the infusion of ordinary experiences with positive meanings. Therefore positive emotions have positive adaptive significance. In this study happiness is measured by the Oxford Happiness Questionnaire (OHQ).

1.5.5 SENSE OF COHERENCE

In this study I use sense of coherence as a way to measure the transactional-ecological processes of resilience. Antonovsky (1996) suggests that sense of coherence is an important component of a person's health and overall well-being. Sense of coherence is identified as a relatively stable dispositional orientation that is comprised of the concepts of comprehensibility (able to be rational, predictable, structured and understandable), manageability (in that adequate and sufficient resources are perceived to be available to help resolve difficulties as they arise), as well as meaningfulness (the demands created by adversity are seen as challenges and are worthy of engagement). More recently sense of coherence has been conceptualized as a flexible and adaptive dispositional orientation that facilitates effective coping with adversity (Van der Colff & Rothmann, 2009; Surtees, Wainright & Khaw, 2006). The Orientation to Life Questionnaire (SOC-13) is used to examine sense of coherence in this study.

1.5.6 TEACHERS AND ADVERSITY

Teaching is regarded as a stressful profession. Teachers are expected to deal with a vast array of challenges, both personally and professionally. It is accepted that teaching within a rural school presents complex and taxing challenges. Resources available to rural teachers are also scarce and the prevalence of HIV/AIDS in the rural areas of South Africa contributes to an already significantly adverse environment (Sewell, 2001; Theron & Engelbrecht, 2012).

1.5.7 RURAL SCHOOLS

In South Africa, rural schools (Dearmont & Larson, 2002; Ebersöhn & Maree, 2012; Loots, *et al.*, 2012) in South Africa are schools that are situated in rural locations. Rural schools are

therefore characterized by rurality (Balfour *et al.*, 2008; Ebersöhn & Ferreira, 2012) as risk where teachers are expected to manage disease, poor literacy levels of learners and a general lack of resources. Resources necessary for community well-being, in the form of infrastructure, are often under-developed and scarce, if not lacking.

1.6 OVERVIEW OF RESEARCH DESIGN AND METHODOLOGY

In this section I introduce the quantitative research design used in this study, in the form of secondary data analysis. The theoretical framework of the study and the statistical analysis techniques used are indicated. Figure 1.1 provides a visual overview of the research process. A full description of the research process is presented in Chapter 3.

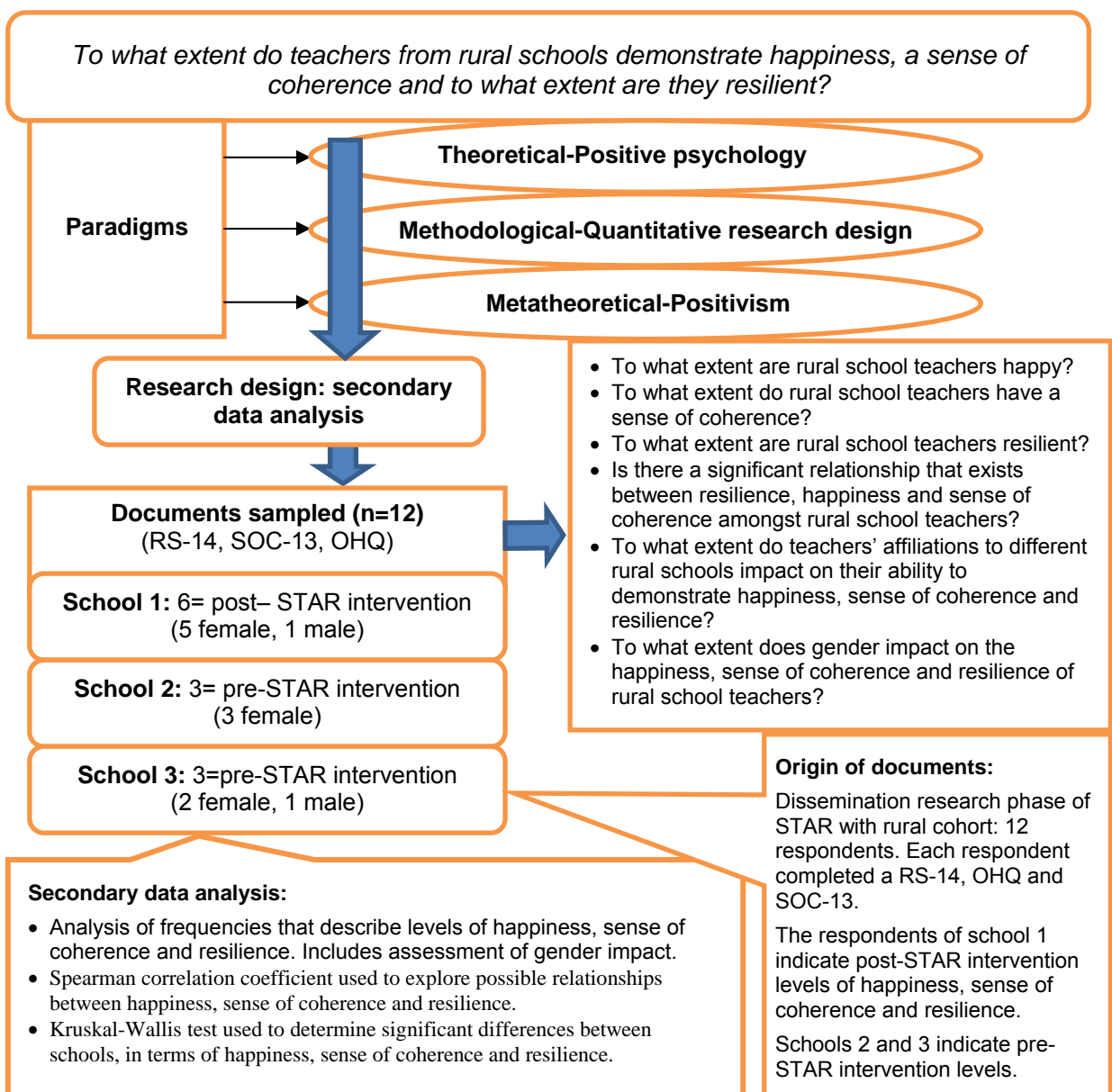


Figure 1.1: Overview of research design and methodology

1.7 ETHICAL CONSIDERATIONS

Kilkelly and Horgan (2011) as well as Babbie (2005) state that when considering secondary data analysis, the researcher should be certain that the original data generation process was performed ethically. Creswell (2009) agrees and states that the question of whether consent was obtained in the original study is critical, especially where sensitive data are involved. When handling sensitive data the researcher should be mindful of preserving the anonymity and privacy of the original respondents. Furthermore, the dissemination of the data should also be performed ethically (Kilkelly & Horgan, 2011). In Chapter 3 the full sample of the study is presented, but no personal details are divulged. Additional ethical considerations that guided the study are discussed in Chapter 3.

1.8 OUTLINE OF CHAPTERS

Chapter 1: Introduction, background, problem statement and general orientation

Chapter 1 is an introductory chapter, which provides an overview of the research context, key concepts and the methodology of the study. It briefly describes the relevant research questions and the techniques used to address these questions.

Chapter 2: Literature review

Chapter 2 presents a review of the literature relevant to this study. It starts with the development of literature relating to resilience, happiness and sense of coherence. It also discusses the working and living environments of rural teachers. The theoretical framework of positive psychology and its applicability to the study is examined as well.

Chapter 3: Research design and methodology

Chapter 3 presents the research processes used in this study. It discusses the selected design and methodological perspective, as well the appropriateness of the research design for this study.

Chapter 4: Research results and discussion of results

Chapter 4 contains the statistical analysis of the three different instruments that were purposively sampled. The statistical outputs are described and graphically represented and the results of the analyses are discussed.

Chapter 5: Findings, conclusions and recommendations

Chapter 5 contains the findings of the research, as well as the potential contributions and limitations of this study. It also includes recommendations for future research.

1.9 CONCLUSION

The aim of this study was to discover and describe the levels of happiness, sense of coherence and resilience of teachers in rural schools. These constructs were quantitatively examined to produce empirical data that may provide an insight regarding the extent to which these constructs prevail in rural school teachers.

Chapter 2 provides a literature review of resilience and coping with stress, and also the possible effects that a sense of coherence and happiness have on adaptive coping.

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CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This study focuses on the resilience of teachers in rural schools from a framework of positive psychology. In this chapter I examine the development of the construct resilience with particular focus on the context in which it developed, namely the evolution of psychology where human strengths have become the focus of contemporary psychology. In conjunction with resilience, I also elaborate on additional internal resources in the form of happiness, and a sense of coherence as a resource to understand transactional-ecological processes of resilience. In this way I wish to use existing knowledge to show that I understand resilience as both a process and outcome and with varied strengths (protective resources) buffering and mediating the impact of chronic adversity (as is present in rural schools).

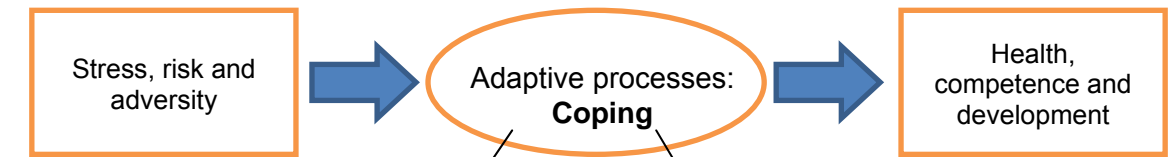
The concepts of happiness and sense of coherence are further discussed from Section 2.2.4 onwards. Stress, risk and coping are discussed within the context of teaching in a rural school in Section 2.3. The chapter culminates in the presentation of the theoretical framework in Section 2.5.

2.2 STRESS, COPING AND RESILIENCE

In this study I am informed by Skinner and Zimmer-Gembeck's (2011) thinking that resilience implies adaptive coping processes. In Figure 2.1 I present their thinking where coping is regarded as an adaptive process that could possibly mediate the impact of adversity. Based on the chronic and cumulative nature of adversity in South Africa, this developmental time perspective of adaptive coping (resilience) mirrors the ecology within which positive psychology constructs of teachers were studied.

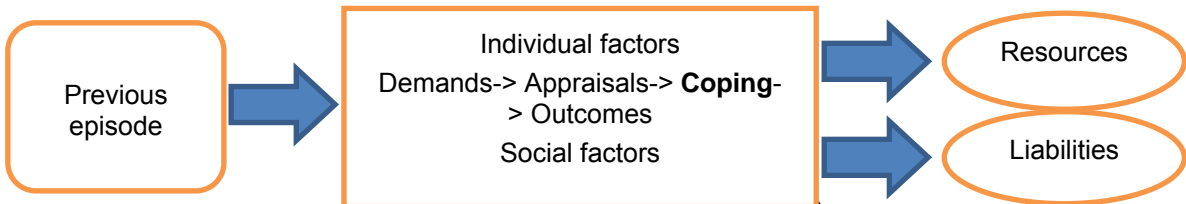
Consequently the next section focuses on coping with stress. Literature on coping processes, risk factors and coping strategies are also included.

Coping as an adaptive process (Resilience)



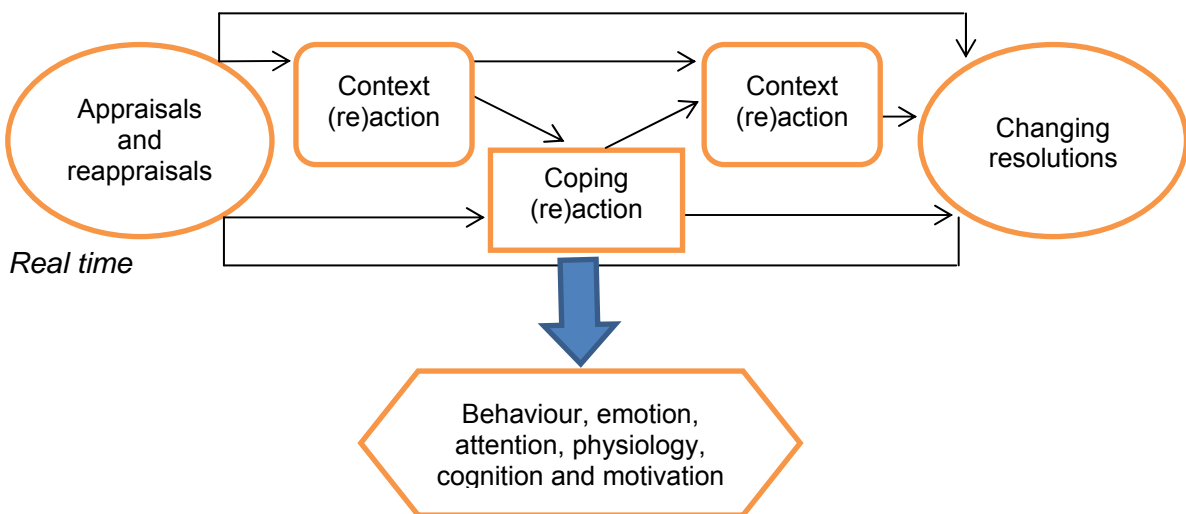
Developmental time

Coping as an episodic process



Episodic time

Coping as an interactional process



Real time

Figure 2.1: Coping processes (Adapted from Skinner & Zimmer-Gembeck, 2011)

2.2.1 COPING WITH STRESS

Research relating to the negative effects of stress on physical and mental vitality, along with well-being and resilience in the face of stress, has dominated recent literature on psychological well-being. The negative impact and outcome of stress has been established and is well documented, and the research pertaining to psychological aspect of well-being and resilience is following suit (Roth & Cohen, 1986; Folkman, 2011). The contemporary focus on processes that may mediate the impact of stress, maintain well-being, as well as

foster positive adaptation, this focus has been influenced by positive psychology (Seligman & Csikszentmihalyi, 2000). The recognition of human capacity to cope with stress in the face of adversity, as well as the recognition of the role that positive emotions play in managing the stress process, is well documented (Folkman, 2011; Fredrickson, 1998).

Hobfoll (2011) states that coping does not occur in a vacuum, but rather within a system comprised of social contexts, friends, family and communities (as cited in Folkman, 2011). It is evident that context and environmental influences play a significant role in the adoption and effectiveness of certain coping strategies. Therefore a systemic approach to coping can better explain the interactions and transactions of the coping process.

A systemic approach includes a large number of transactional components, such as the nature of the stressor, as well as its severity and controllability, the context in which the encounter between the system and stressor takes place, the appraisal of what is at stake, as well as which personal and social resources are available to address the stressor (Skinner & Zimmer-Gembeck, 2011). Coping can be regarded as an adaptive process that buffers the effects of risk or adversity on the development of competence. Therefore coping can be seen as a proximal function, or builder of development, within the context of adversity. Coping also presents episodic meaning when individual stressful encounters that occur in real time are shaped by the actions of social systems, as well as subsystems (physiology, emotion, cognition, behaviour and motivation) that determine specific individual reactions. Such a multilevel approach is valuable when considering coping in relation to resilience, which according to Skinner and Zimmer-Gembeck (2011) takes place at a higher level.

A crucial component of the processes illustrated above (Figure 2.1) is that of perceived control or subjective control (locus of control, confidence, perceived competence and self-efficacy) which plays a significant role when a person addresses stressful life events (Skinner & Zimmer-Gembeck, 2011). Subjective control supports the development of mastery-orientated coping throughout a person's lifespan. Subjective control refers to *action regulation*, which implies efforts aimed at mobilizing, managing and directing physiology, emotions, behaviour, attention and cognition in response to stress (Skinner & Zimmer-Gembeck, 2011). Action regulation therefore effectively identifies and accesses available internal resources to address the relevant demands. Action regulation is regarded as one of the most prolific resources for overcoming barriers associated with stress (Lazarus & Folkman, 1984; Taylor, 2007). Perceived control results in salutogenic effects that have been documented in studies of people from their early childhood until their late adulthood (Skinner & Zimmer-Gembeck, 2011). It is believed that perceived control may in turn influence the reactions and adaptation to stress. Therefore, different levels of perceived

control may imply variations in terms of coping processes and abilities. Different levels of perceived control are determined by personal and social resources (perceived control structures or social support structures). These resources influence different coping strategies that contribute to physical, psychological and social functioning (Folkman & Moskowitz, 2004). External social support structures expand the repertoire of resources accessed. Control is a valuable element in the range of coping responses, which include problem solving behaviour, help-seeking, and accommodation (Skinner & Zimmer-Gembeck, 2011).

The study of daily encounters with stress, with a focus on stressful events and interactions with stress, may provide value to research relating to stress and resilience and coping mechanisms. Daily stress experiences may contribute either to the growth of vulnerabilities or lifelong coping resources. Although many coping responses take place within an individual context, it is important to be cognizant of the greater system, within which every individual is inherently embedded. This implies a transactional coping system perspective (Skinner & Zimmer-Gembeck, 2011), where multi-level components interact and constitute the coping process. A process approach (Lazarus & Folkman, 1984) assumes specific coping strategies for particular situations. This approach is guided by the appraisal of the situation and is therefore flexible, conscious and responsive to situational options. A process-oriented strategy also includes problem- and emotion-focused strategies, thereby enabling the individual to manage the situation effectively and also to regulate his or her emotional state to function effectively, despite significant risk (Folkman, 2011).

Five basic coping strategies are highlighted among a plethora of coping strategies that have been researched. These are:

1. Problem-solving, which is comprised of instrumental action (behavioural component);
2. Cognitive processes (contingency planning), and motivation (the ability to persevere);
3. Support seeking consists of establishing emotional, cognitive and behavioural support from others;
4. Avoidance is another strategy, mainly in the form of denial, as opposed to distraction, which includes positive actions and behaviours to manage stress;
5. Positive cognitive restructuring is the last of the five strategies. This involves reinterpreting stressful situations, whereby potential positive facets and outcomes are explored (Folkman, 2011).

The effective identification and utilization of internal as well as external resources is critical for effective coping to take place and is characteristic of someone who can be described as

resilient. Coutu (2002) states that, in general, individuals who are resilient possess certain personal characteristics, including the use of effective coping strategies, a firm grasp of reality, a deep meaningful belief system, as well as the ability to improvise. Furthermore, resilient individuals are characteristically aware of and control of their emotions, and they have an optimistic view of the future (Masten, 2001; Coutu, 2002). These characteristics typically provide an individual with resources to cope with everyday challenges and to be resilient.

2.2.2 RISK FACTORS AND STRESS

When considering the various definitions of resilience, it is important to acknowledge the existence of adaptation related to experiencing significant risk as a result of adversities and negative life events. Contributing to the notion that resilience occurs in the presence of adversity Ungar (2005; 2008), as well as Rutter (2007) and Theron (2011), state that without risk there is no resilience, but rather health of a different order.

Masten (2001) mentions that in many cases risk is based on predictors of undesirable outcomes, drawn from evidence that the status or condition is statistically associated with a higher probability of a negative outcome in the future. Many risk factors, such as low socioeconomic status and exposure to maltreatment or violence, are well established statistical indicators of subsequent developmental problems.

Risk factors can be understood as negative components that increase the probability of negative outcomes. Risk factors are by nature cumulative and the total combined impact of these factors can be regarded as cumulative risk (Masten & Reed, 2005; Ebersöhn & Maree, 2006). The probability of negative outcomes increases with cumulative risk and is proportional to less resilience being prevalent (Masten & Reed, 2005). Maree & Ebersöhn (2012) state that a risk factor is an assessable trait within a group of individuals and their context, which predicts a negative outcome in the future based on a specific outcome criterion. When adopting a resilience perspective, individuals are regarded as vulnerable to multiple risk factors because they serve as barriers to resilience (Ebersöhn & Ferreira, 2011). Risk factors that hold specific relevance to this study, namely the factors that contribute to the significant risk experienced by teachers in rural schools, are discussed in depth in Section 2.3.3.

2.2.3 RESILIENCE AS AN ADAPTIVE COPING PROCESS AND POSITIVE ADAPTATION OUTCOMES

The coping concepts introduced by Skinner and Zimmer-Gembeck (as cited in Folkman, 2011) provide an integrative framework, as illustrated in Figure 2.1, for conceptualizing

adaptation processes related to stress (Zautra & Reich, 2011). Folkman (2011) states that the existing literature indicates the importance of a stable personality. Trait variables, such as social networking abilities, as well as basic socioeconomic features, such as education and income, may influence the outcome of coping with stress. Other schools of thought suggest that adopting a process approach may provide more insight into resilience. Resilience processes are those that enable the successful resolution of stressful situations. Resilience can best be understood as a product of positive adaptive functioning in the presence of adversity, which indicates that resilience can be seen as an outcome (Zautra & Reich, 2011). Various variables make up individual resilience. It is however important to note that resilience should be viewed as more than just the absence of a distress reaction to unfortunate life circumstances. It should be examined in terms of its complexity, which entails optimism. Positive emotions are believed to provide adaptive benefits in the coping process (Fredrickson, 2001; Ong, Bergeman, Bisconti & Wallace, 2006). The role and importance of these emotions is examined further in Section 2.2.5.5.

It is critical that researchers and practitioners understand that every environment consists of a complex array of potential assets, risks, protections and dangers. Within the resilience framework, successful prevention and intervention programmes direct attention beyond deficits in need of restorative attention to the strengths and potential assets in the individual, family and community. Resilience is operationalized in relation to culturally prescribed expectations of normative behaviour. Therefore, it is important to clarify the ways in which adversity and competence vary across different ecological and cultural contexts. Programmes that incorporate culturally congruent values, norms and resources will be more readily accepted, used, and integrated into the community structure. A resilience framework encourages researchers and practitioners not to speak on behalf of disadvantaged individuals and families, but to facilitate the power of these groups and communities to speak for themselves (Linley, 2004).

Zautra and Reich (as cited in Folkman, 2011) highlight two primary features in formulating a contemporary definition of resilience, namely *recovery* that happens quickly and thoroughly, as well as *sustainability*. As suggested by Zautra and Reich (as cited in Folkman, 2011) there is often a covert or internal outcome that is not always noted, namely *growth*. This culminates in the following definition of resilience suggested by Masten and Wright (2010, as cited in Folkman, 2011, p. 175): 'Human resilience refers to the processes or patterns of positive adaptation and development in the context of significant threats to an individual's life or function'. In addition to this definition, Theron, Mitchell and Smith, (2011) state that positive adaption is contextual, and is therefore influenced by cultures, different social groups and developmental stages that warrant the consideration of ecologies.

While the various definitions of resilience differ somewhat, they share some fundamental similarities, including balance (having a coherent and balanced perspective of reality), adaption (being able to positively and effectively deal with risk), competence (demonstrating skills that will facilitate healthy coping), determination (demonstrating commitment to a certain cause), as well as optimism and acceptance (having a positive outlook on life and being able to comprehend and accept the challenges an individual may face). More recent definitions also include physiological stress responses and psycho-biological allostasis (achieving stability through physiological or behavioural regulation) (Wagnild, 2011). In order to comprehensively conceptualize resilience, a process-oriented lens is crucial.

Bronfenbrenner and Crouter (1983) recommend the use of social ecology models (or person process-context models) to study the relationship of contextual risk and protective factors, intervening processes, individual characteristics and how they impact on resilience. Rutter (1987) is of the opinion that resilience implies processes rather than static factors. Rutter (2006) argues for the need to differentiate between protective factors (such as IQ or temperament), which are likely to be 'a given' in an individual's life, and protective mechanisms (such as coping style) which may be developed. He states that protective mechanisms are generated through successful engagements with adversity. Leonard and Burns (1999) suggest that the development of protective mechanisms is associated with key turning points in an individual's life, as the negotiation of these turning points can alter developmental trajectories from risk to protective pathways. Zimmerman (2004) agrees, stating that both risk and protective factors can result in a positive outcome, alternately they can help reduce or avoid a negative outcome.

Ungar (2005, p. 10) states that resilience should be viewed as the 'outcomes from negotiations between individuals and their environments from the resources available to define themselves as healthy regardless of conditions of adversity'. Rutter (2006, p. 12) conceptualizes resilience as an 'interactive concept that refers to a relative resistance to environmental risk experiences, or the overcoming of stress or adversity'. Resilience thus differs from traditional concepts of risk and protection in its focus on individual variations in response to comparable experiences.

Protective mechanisms that are processes at the interface of individuals and their environments are critical for the prediction of positive outcomes (Ungar, 2005). This ecological view of resilience implies a contextual approach that is supported by Folkman (2011), who states that a Person x Environment (P x E) model is essential if resilience is to be contextualized and effectively understood.

Ebersöhn (2012) proposes *Relationship-Resourced Resilience (RRR)* as a lens through which to view resilience in educational settings that are characterized by limited resources. This approach regards resilience as the process that is ecologically immersed in connected systems. Systemic disruptions are therefore regarded as stressors and risk factors for a system. In this context, ecological disruptions can indicate the need for a system to adapt. Resilience is the result of the system's ability to adapt and mediate risk.

Adopting a resilience perspective assumes that, where risk is prevalent, protective resources may also be present. Therefore, in order to bounce back from adversity, various resilience-promoting resources become part of a transactional process, thereby indicating that resilience is both an outcome and a process (Ebersöhn, 2012). Zimmerman (2004) agrees and identifies a key requirement of resilience as the presence of both risks and protective factors that may either bring about a positive outcome, or reduce or avoid a negative outcome. Protective resources, if accessed, can be used to foster resilience. This process would be harder to initiate in a rural setting, where resources are scarce. Resources can be embedded at an individual level (personal strengths), family level (joint income and employment), or at a broader level, which includes schools (knowledge and expertise, buildings), community (services and institutions) and societal resources (policies and governance). Such relational protective resources, also known as ecosystemic factors, will interact dynamically and not only serve as buffers against risk (Theron *et al.*, 2011). They will also provide accessibility to capacity and serve as a foundational support for systemic strength (Ebersöhn, 2012). This multi-layered dynamic transactional process between resources indicates that resilience is an ecological phenomenon (Ebersöhn & Ferreira, 2011).

2.2.4 RESILIENCE THROUGH A POSITIVE PSYCHOLOGY LENS

Hegney, Buikstra, Baker, Rogers-Clark, Pearce, Ross and Watson-Luke (2007) proposes that the resiliency framework should incorporate the multiple factors influential in the development of resilience. Within this framework, six major constructs are specified, of which four are domains of influence and two are transactional points between two domains. The four domains of influence are: (1) chronic stressors or challenges, (2) the external environmental context, (3) internal self-characteristics and (4) their outcome. The two points of transactional processes are: (1) the confluence between the environment and (2) the individual.

Positive psychology provides an alternative framework to examine (rural) teachers who strive for positive outcomes within a context of significant risk. According to Duckworth (2005), Gable (2005) and Seligman, Steen, Park and Peterson (2005), positive psychology

is the scientific study of positive emotions and positive individual traits, as well as the institutions that facilitate their development. Positive psychology advocates that people who carry psychological burdens care more about their lives than merely the relief of their challenges. Accordingly, troubled people want more satisfaction, contentment and joy, and not just less sadness and worry. They want to build their strengths and not just correct their weaknesses. They want to derive meaning and purpose from their lives. These states do not come about automatically when challenges are removed. Furthermore, the fostering of positive emotions and the building of character may help alleviate suffering and destroy its roots. According to positive psychology, positive functioning and adaptation is not assumed in the absence of unhappiness. Rather, it recognizes the importance of the sound understanding of people's strengths, as well as their potential for growth and for developing coping patterns (Antonovsky, 1987; Seligman & Csikszentmihayli, 2000, Strümpfer; 1995).

Seligman and Csikszentmihayli (2000) state that positive psychology can be understood in terms of various domains, including subjective contentment, well-being and valued experiences (that occurred in the past). Hope and optimism (for the future) and flow and happiness (in the present) constitute the other domains. At an individual level the focus falls on personal traits, which include courage, interpersonal skills, future mindedness and perseverance. Group level characteristics include civic virtues and institutions that promote responsibility, altruism and work ethic.

Pioneers in the systematic study of resilience believe that an understanding of naturally occurring resilience will inform interventions and policies aimed at fostering successful resilience development in children growing up with risk or adversity. Prevention scientists and advocates of a positive approach to psychology have adopted the resilience framework for its potential to foster positive developmental outcomes in disadvantaged children, families and communities (Linley, 2004).

Psychofortology aims to examine the origin of psychological strength. It emphasizes the study of human strength and virtue, with the purpose of understanding and facilitating positive outcomes (Eloff & Ebersöhn, 2004; Wissing & Van Eden, 2002). A resilience framework offers a powerful tool for realizing the goals of positive psychology through research and practice, because it justifies prior calls for wellness enhancement and competence promotion. Resilience describes patterns of positive adaptation that reflect the normative operation of fundamental developmental processes under non-normative conditions. The enduring impact of adversity on development is mediated by disruptions in basic adaptation systems; therefore interventions must aim to protect, restore, redirect and reactivate such systems. Based on a comprehensive science of adaptation and development, the resilience framework transcends pathology-focused models to promote

basic adaptation systems and to enable individuals achieve positive outcomes (Linley, 2004; Condly & Billing, 2006). This framework makes provision for the unique characteristics of rural school teachers that require consideration. These characteristics include cultural and environmental issues that may affect rural teachers' sense of resilience.

2.2.5 POSITIVE ADAPTATION AND RESILIENCE

2.2.5.1 Introduction

The concept of resilience goes beyond the sum of assets versus risk factors. Rather, it incorporates the adaptational processes and mechanisms that combine assets and risk factors in a cumulative interactional process (Egeland, Carlson & Sroufe, 1993). The aim of positive psychology is to identify and foster factors that enable individuals, communities and societies to flourish (Seligman & Csikszentmihalyi, 2000). Positive emotions play a central role in this process and they serve as indicators of flourishing and coping. The balance of negative and positive emotions strongly influences the judgments individuals make regarding their subjective well-being (Diener, 1984). Therefore positive emotions are examined along with other protective resources in the form of happiness and a sense of coherence.

De Villiers (2009) describes coping as the efforts individuals make to manage situations they have appraised as potentially harmful or stressful. The ability to cope with stressors is dependent on the coping resources available, both internal and external to the individual. These can be defined as stable traits of the individual, or as lying within the practical and physical environment as well as the emotional and social environment in which an individual functions (Cowley & Billings, 1999; De Villiers, 2009). Masten (2006) suggests that amongst the most important resiliency factors and stress processing abilities is the individual's initial appraisal of an event and its emotional meaning, and an individual's ability to sufficiently regulate his or her emotions and arousal to initiate problem solving and coping behaviours.

The ability to cope with multiple stressors is crucial if rural teachers are to thrive in the face of significant adversities (Ebersöhn, 2011). The available resources that can be utilized to cope effectively can be in the form of either internal or external protective resources. Several protective resources that facilitate coping can be identified, namely a strong sense of coherence and a strong level of happiness and optimism. These resources are discussed in the sections that follow.

2.2.5.2 Sense of coherence

Antonovsky (1987, as cited in Van der Colff & Rothmann, 2009), suggest that sense of coherence is similar to resilience, in that it refers to how people manage their lives despite high levels of stress. Sense of coherence is an important component when considering positive life outcomes such as health, effective coping and well-being. Antonovsky (1996) developed the construct as a means of anticipating positive responses to stressful life events, similar to those encountered by rural teachers within an environment of cumulative risk. Sense of coherence can be regarded as a dynamic concept constituted by set beliefs that life is comprehensible, manageable, as well as meaningful. Rothmann (2003, p. 27) states: 'a strong sense of coherence should enable an individual to apply a wide variety of coping strategies effectively'. This is done by using resources within the individual's or others' control, thereby avoiding a negative outcome.

Comprehensibility refers to the degree to which an individual regards certain stimuli from both the internal and external environment as clear, consistent, structured and ordered. Manageability relates to an individual's perception of the available resources, both internal and external, that are suitable to meet the demands experienced at any given time (Antonovsky, 1996). Meaningfulness is viewed as the most important component of sense of coherence. It determines the measure of energy that a person possesses to enable the individual to sustain the other two components and, as a result, the overall sense of coherence (Antonovsky, 1996). A related element, *General Resistance Resources* (GRR), is a collective term for characteristics such as intelligence, coping strategies, commitment, cultural stability and preventative health orientation (Eriksson & Lindström, 2005).

Therefore, sense of coherence can be viewed as a flexible and adaptive dispositional orientation that enables successful coping with adverse experiences. A strong sense of coherence is related to general well-being (Van der Colff & Rothmann, 2009; Surtees *et al.*, 2006). A strong sense of coherence is negatively related to measures of negative affectivity, such as anxiety, neuroticism and work stress. A strong sense of coherence is also related to competence, life satisfaction and general well-being (Coetzee & Viviers, 2006).

Geyer (1997) believes that individuals can be seen as fully developed to manage stress if they possess a high number of the characteristics described by Antonovsky (1987). These characteristics enable individuals to effectively identify and access internal as well as external resources that facilitate the management of stress and thereby promote positive outcomes (Lootse *et al.*, 2012). Stressful situations, previously appraised as dangerous, unmanageable or uncontrollable, are now viewed as a challenge and an opportunity for an

individual to use his or her strengths. With each instance of success the individual's sense of coherence will strengthen and develop further (Antonovsky, 1987).

2.2.5.3 Happiness

Lyubomirsky, Dickerhoof, Boehm and Sheldon (2011) state that most people strive for happiness. Seligman (2002) states that when a new conceptual framework for positive psychology was being conceived, with well-being and happiness being the desired outcomes of positive psychology,³ the notion of happiness was examined and classified into three categories. These are: (1) positive emotion (the pleasant life) that consists of feelings of pleasure, joy and love, (2) engagement (the engaged life) which is a state characterized by a complete absorption of an individual within an activity where there is not necessarily an emotional component, and (3) purpose (the meaningful life), a form of happiness which is attained when individuals are able to recognize their highest strengths and then use them to serve something that is believed to be larger than themselves (Seligman, 2002, Seligman, Ernst, Gillham, Reivich & Linkins, 2009).

The measurement of these aspects is possible through the consideration of three independent variables, namely subjective, biological and functional variables. The subjective variable holds special relevance to this study, as high measures of this variable indicate a sense of durability, hardiness and a strong sense of optimism, which are all factors related to resilience (Seligman *et al.*, 2009). Maltby, Day and Barber (2005) present the difference between hedonic well-being and incidental well-being, which is constituted by a short-term evaluation of present day subjective well-being as a balance within positive and negative effects. Eudaimonic well-being refers to long-term psychological well-being that results from the engagement with individual developmental and existential challenges, as well as meaning and self-reflection.

Happiness as a phenomenon is an important area for researchers of subjective well-being (SWB) and positive psychology, as suggested by Seligman and Csikszentmihalyi (2000) as well as Sheldon (2004) (as cited in Sheldon, Boehm & Lyubomirsky, 2009). Behavioural genetics research indicates that there may be a genetically determined set point for SWB to which individuals are bound and may return over time. This implies that SWB is the result of a homeostatic process that resists deviations away from a pre-determined baseline. Based on this notion, the development of strengths and engagement in practices emphasized by positive psychology researchers can have no lasting effect on people's state of mind (Sheldon *et al.*, 2009).

³I use "happiness" and "well-being" interchangeably as soft, overarching terms to describe the goals of the whole positive psychology enterprise' (Seligman, 2002).

2.2.5.4 Subjective well-being

Well-being entails desirable virtues and qualities that are worthy of pursuit and it provides a benchmark for understanding the human state of mind. It provides a baseline for the assessment of psychopathology and it provides a guide for clinical work by helping to determine the direction that individuals might move in to alleviate distress and find fulfilment (Christopher, 1999).

Diener (1984) states that existing literature on subjective well-being includes a wide range of terms such as positive affect, morale, happiness and satisfaction. Subjective well-being is constituted by two main tenets, according to Christopher (1999), namely judgments about life satisfaction, and affective balance (the extent to which the level of positive affect outweighs the level of negative affect). Life satisfaction depends on a person's global assessment of a good life and the quality of that life according to subjective criteria. Affective balance is the principle that most closely resembles the definition of happiness. It suggests that a person is experiencing more positive affect than negative affect. Subjective well-being constitutes the cognitive and affective conclusions individuals draw when evaluating their lives (Diener, 1984).

Fredrickson (2004) states that positive affect and positive emotions will enable individuals to develop broadened mindsets. These broadened mindsets promote and foster the discovery of novel and creative actions, ideas and social relationships. These will in turn strengthen personal resources that range from physical to intellectual resources, as well as psychological resources that contribute to the individual's overall sense of resilience.

2.2.5.5 Positive emotions

According to Fredrickson and Losada (2005) the broaden-and-build theory asserts that positive emotions may widen the array of thoughts and actions that facilitate generativity, and behavioural flexibility, which ultimately supports resilience. Broadened mindsets will in turn contribute long-term adaptive value as broadening aids in the establishment of enduring personal resources, coping strategies and environmental knowledge.

Traditional perspectives state that positive emotions indicate current well-being and health. However, the broaden-and-build theory (Fredrickson & Losada, 2005) suggests that positive emotions will produce future health and well-being. This theory assumes that positive emotions accumulate and are built over time, with the cumulative effect resulting in individuals becoming healthier, more socially integrated, knowledgeable, and ultimately resilient. Therefore, by broadening people's mindsets and enhancing their psychological

resources, their ability for attaining flourishing mental health is significantly enhanced (Fredrickson & Losada, 2005).

Evidence (Fredrickson 2001) suggests that positive emotions may promote individual discrepancies in resilience. In conceptualizing psychological resilience as an enduring personal resource, this theory predicts that the experiences of positive emotions might possibly, over time, build psychological resilience and not just reflect it. Therefore, by enhancing this psychological resource, the effect can result in the augmentation of individual coping resources and subsequent emotional well-being.

For the purpose of this study, the broaden-and-build theory may be the connecting thread. It links happiness (the main positive emotion being examined) and the ability to have a significant and lasting effect on the broadening of personal and environmental resources. These factors are related to being able to comprehend and manage one's environment to ultimately attain the outcome of being resilient and having a sense of coherence.

2.2.6 RESILIENCE IN THE WORKPLACE

Edwards and Cooper (1988) advocate the term occupational eustress, which is conceptualized as a positive psychological response to a stressor, as indicated by the presence of positive psychological states, where stress provides challenges that motivate individuals (Schreuder & Coetzee, 2006). Eustress reflects the extent to which cognitive appraisal of a situation is seen to benefit or enhance an individual's well-being. Lazarus and Folkman (1984), as well as Skinner and Brewer (2002), state that eustress (constructive and healthy outcomes of pressure) can be linked to life satisfaction, as it indicates the presence of a positive psychological state. Therefore, if life satisfaction is intertwined with eustress and eustress has a positive link with the use of task-focused coping, it can be expected that life satisfaction will have a positive relationship with task-focused coping strategies. This, according to Schreuder and Coetzee (2006), will enhance resilience that is defined as a pattern of psychological activity characterized by strong motivation in the face of considerable demands, as well as behaviour that is goal-directed and that illustrates coping and rebounding of the accompanying emotions and cognitions.

The development of resilience in teachers that work in an environment of risk and adversity requires that teachers are able to find better ways to respond to stress positively. One possible way of developing resilience could be through teachers seeing challenges or adversities as opportunities for self-growth, by connecting with others, building communities and restoring a sense of caring and compassion in teaching (Ebersöhn & Eloff, as cited in Wood, Ntoate & Theron, 2012).

2.2.7 MEASURING RESILIENCE

Masten (2001, p.228) proposes that resilience refers to ‘a class of phenomena characterized by good outcomes in spite of serious threats to adaption or development’, and that research on resilience should aim to understand the processes that account for such positive outcomes. Resilience is an inferential and contextual construct that requires two critical judgments.

The first judgment entails the inference relating to a threat to an individual. Individuals cannot be considered resilient if they have not come across a threat that could negatively impact on their development. As such a past or current threat that is judged to have the potential to derail normative development is needed. The second judgment relates to the criterion by which the quality of adaption or developmental outcome is assessed as ‘good’. However, much controversy still exists about how resilience should be defined and by which standards (Masten, 2001). Kumpfer (1999) adds additional dilemmas related to the research and measurement of resilience against the backdrop of a lack of agreement on the operationalization of resilience concepts and culturally unbiased definitions of successful outcomes that indicate resilience

As resilience in itself can never be directly observed or measured (Luther, 2003), researchers face significant challenges in the conceptualization and development of standardized units to measure resilience (Ungar, 2008). Wagnild (2011) highlights the current intellectual debate surrounding resilience as a state versus a trait. Personality traits are inborn and differentiate individuals from one another. They contribute to habitual patterns of cognition and emotion that influence an individual’s behaviour. Behaviour also results from an individual’s interaction with the environment and can be regarded as a dynamic process. Resilience can develop at any time during an individual’s lifespan and may vary from context to context within the environment (Wagnild, 2011). Therefore, if resilience is a trait, then a person’s reaction to life’s adversities is dependent on and limited by the person’s inherited ability to be resilient. On the other hand, Rutter (as cited in Wagnild, 2011), states that resilience cannot be a personality trait and that an individual becomes resilient only in the presence of adversities. Furthermore, in terms of resilience research, it would be reductionist to conceptualize resilience as only a state or a trait.

It is believed that an individual’s resilience can be strengthened by fostering personal positive characteristics as well as by enhancing the individuals’ ability to effectively manage, comprehend and make sense of the environment. Wagnild (2011), identified five underlying characteristics that form the foundation of resilience and the measurement thereof. These characteristics are listed in Table 2.1.

Table 2.1: The resilience core (Wagnild, 2011)

Characteristic	Explanation of characteristic
A purposeful life	This is regarded as the most crucial aspect of resilience, as it provides the foundation for other characteristics. Life without purpose is regarded as futile and aimless. Purpose provides the driving force in an individual's life.
Perseverance	Perseverance constitutes the determination to keep going, despite adversities, discouragement and disappointment. Resilience is the ability to 'bounce back' and this requires perseverance.
Equanimity	Equanimity refers to an individual's view of life. It can either be skewed, where the individual exclusively focuses on disappointments, or it can be a healthy, balanced perspective. Equanimity refers to this balance and harmony. Resilient individuals learn to avoid extreme responses and remain balanced.
Self-reliance	Self-reliance refers to an individual's clear understanding of his or her capabilities, competencies and limitations. Self-reliant individuals learn from interactions with adversities they have encountered in the environment and they develop problem solving skills from such experiences.
Existential aloneness	Existential aloneness is the ability to live with oneself and it is an extension of self-reliance. Being existentially alone does not imply denying the importance of shared experiences, nor does it detract from the importance of close relationships. Rather, it emphasizes the willingness to accept oneself.

According to Wagnild (2011) these characteristics constitute an individual's 'resilience core', which is an estimate of a person's capacity to respond to adversity. This response not only entails bouncing back, but also that an individual learns and grows stronger after the experience, which leads to positive adaption. The response depends on the strength of the individual's resilience core. A strong resilience core results in positive outcomes.

The cross-cultural measurement of resilience is also an important factor to consider when reflecting on the context of this study, that is rural schools in the Mpumalanga Province. This is especially important, as it has been demonstrated how the conceptualization of resilience has evolved from personal characteristics to dynamic context-bound transactions between and individual and the environment (Theron & Theron, 2010).

Ungar (2005) adds that, in order to understand resilience, one has to consider cultural, social and structural influences. Positive outcomes associated with resilience, such as healthy coping and adaption behaviours, may vary across cultures (Ungar, 2008). Ungar (2008) indicates that it can be useful to examine context-bound ideas and definitions of resilience. Ungar (2008) reports the findings from the International Resilience Project, namely that there are seven universal tensions that have to be effectively navigated in order to demonstrate resilience. According to Ungar (2008) individuals' ability to negotiate for resources to be utilized in culturally meaningful ways is an indication of resilience. These universal tensions are summarized in Table 2.2.

Table 2.2: Tensions to be navigated for resilience

Tension	Explanation
Access to material resources	This includes nourishment, clothing and housing, as well as financial, educational and medical resources.
Access to supportive relationships	Relationships with family members, peers and community members.
Developing a desirable personal identity	Having and fostering a personal and collective sense of purpose. Accurate self-appraisal of one's own strengths and weaknesses, objectives, values and beliefs.
Experience of personal power and control	The experience of being able to influence one's social and physical environment to access internal health resources.
Adherence to cultural traditions	Being aware of one's own cultural practices and belief systems and actualizing them.
Experience of social justice	An experience of how meaning is made in relation to one's role in a given community.
Experience of a sense of cohesion	Balancing personal interests with the interests of the greater community and feeling part of something larger than oneself.

2.3 ADVERSITY AND RURAL EDUCATION

2.3.1 INTRODUCTION

The next section describes the context of the study by presenting an array of challenges that rural schools as institutions face, as well as the direct challenges that account for the adversity that rural teachers face.

2.3.2 ADVERSITY AND RURAL EDUCATION

Sewell (2001) and McEwan (1999) report high levels of stress and burnout in school teachers, which negatively impacts their job performance and overall feeling of well-being. However, whereas in the past most relevant studies focused on urban school teachers, few reported on the stress and adversities of rural school teachers. De Villiers (2009) states that stress is considered to be the product of an imbalance between environmental demands and individual capabilities. Stress can affect teachers' job satisfaction, as well as their overall quality of teaching. Stress can also result in mental and physical illness and impair the working relationship between teachers and students.

Rural environments are characterized by diverse geographic, population density and behavioural patterns, as well as the available opportunities and socioeconomic status of citizens. For the majority of rural residents, their social, professional and personal lives overlap. This often leads to communities sharing unique values and characteristics, but it

also means that resources, if available, need to be effectively distributed and shared. The shortages of resources can lead to stress and may place a community at risk (Larson & Dearthmont, 2002).

Loots *et al.*, (2012) state that risk includes stressors, challenges, as well as barriers to wellness. In South Africa within rural communities, a variety of risks often exist, which gives rise to 'cumulative risk', as explained above. This implies that during any given time, teachers who work in rural schools may be confronted with a variety of challenges, such as HIV & AIDS (Loots *et al.*, 2012). Additional risk factors in South Africa include poverty, unemployment, gender discrimination and illiteracy (Maree & Ebersöhn, 2012).

The absence of basic school resources and infrastructure (such as textbooks, a library, blackboards, electricity, sanitary services and water) makes a teacher's task extremely challenging (Hines *et al.*, 2005). In rural schools the lack of basic resources and infrastructure is often exacerbated. When experienced in conjunction with the risk factors mentioned above, the teachers are exposed to significant stress. Rural school teachers sometimes need to teach in a multigrade environment that is classrooms where learners are heterogeneous in age and ability. McEwan (1999) emphasizes that teaching in such environments requires greater training and preparation outside the classroom than standard pedagogy. Rural school teachers therefore face unique adversities that have to be addressed in ways other than monetary compensation, as the mere provision of financial resources will not necessarily enable rural school teachers to thrive in their specific settings.

Brown, Howcroft and Jacobs (2009) state that teaching has become one of the most stressful professions in recent years, both at international and national levels. Furthermore, it has become apparent that international research on teachers' stress and coping strategies is extensive. However, minimal research has been conducted in South Africa on teachers' coping strategies and resilience. Teacher stress, according to Engelbrecht *et al.* (2003), is described as a complex process that involves an interaction between the teacher and the environment, which includes a stressor and a response. Bester and Swanepoel (2000) define a stressor as a factor that influences a person. It can originate from within the individual or the environment, where meaning is assigned to the experience that is viewed as a threat or a challenge. This indicates that teachers' perceptions of threats or challenges in the working environment are important, as well as their perceived ability to cope with a challenging situation (Engelbrecht *et al.*, 2003).

Photograph 2.1 below shows the scarce resource environment in which rural teachers teach. Note the untarred roads, and people traveling on foot, which is characteristic of rural schools.



Photograph 2.1: School 1: Rural secondary school (Ebersöhn & Ferreira, 2012)

2.3.3 RISK FACTORS IN RURAL EDUCATION

McEwan (1999) states that research on the teaching profession in developing countries indicates that rural areas present more onerous living and working conditions than urban areas. For instance, rural teachers are often subject to social and professional isolation, risks relating to personal safety and challenging living and working conditions. It can be argued that rural schools and students are typically worse off than their urban counterparts throughout the developing world. Rural schools may have a substandard infrastructure and a lack of basic services, such as toilets or running water. A key disadvantage is the poor teaching quality of many rural teachers, due to the fact that many of them have not had access to formal schooling, higher education or training. McEwan (1999) suggests that rural schools attract teachers with lower levels of formal education, experience and subject knowledge, when compared to urban schools.

Page, Ebersöhn and Rogan (2006) state that the socioeconomic impact of HIV/AIDS in South Africa is threatening the well-being of children who are at increased risk of malnutrition, illness, abuse, sexual exploitation, homelessness and reduced access to education and health care. Psychological problems stemming from their challenging life circumstances may manifest in the classroom in the form of limited concentration spans, increased anxiety, depression and trauma. These problems will make teaching and learning significantly harder. Gu and Day (as cited in Wood *et al.*, 2012) state that teachers in South Africa are severely challenged by the need to provide care and support to orphans and vulnerable children, as these children have urgent additional needs over and above required learning. Due to the challenges associated with the HIV/AIDS pandemic, many educators feel that they are professionally required to respond to the needs of the children, but that they are not professionally trained for this role (Wood *et al.*, 2012).

The national policy on HIV/AIDS proposed by Professor Kader Asmal suggests that schools have a responsibility to provide information and support to HIV/AIDS challenged communities. This policy places schools close to the epicentre of support made available by the government for communities that struggle with HIV/AIDS related problems (Ferreira, Ebersöhn & Odendaal, 2010).

Booth (2009) and Noble (2009) propose that a school is like any other organization that thrives in optimal conditions. Such conditions include quality relationships between teachers and teachers, teachers and students, as well as office staff and parents. In order for good relationships to occur it is critical that teachers demonstrate positive behaviour to build hope and self-belief in students and also to create conditions where teaching and learning can thrive.

2.3.4 RURALITY AS RISK

Typically, ideas of rural living and rurality are concerned with space, isolation, community, poverty, disease, neglect, backwardness, marginalization, de-population, conservatism, racism, resettlement, corruption, entropy and exclusion (Balfour *et al.*, 2008). Rurality is seldom conceptualized as dynamic. It is shaped by a large collection of systems and individuals and as a set of preferences that are value independent of urban influences (Balfour *et al.*, 2008; Ebersöhn, 2011).

A key aspect of constructing a theoretical understanding of rurality for teachers is to understand their perceptions of the teaching-in-a-rural-community experience, their past experiences and local community views of rural experiences (Appelton, 1998). The sense of community and a collective identity can influence the resilience of rural teachers in a positive manner.

2.3.5 SOUTH AFRICA AND POVERTY

Poverty is a fundamental problem in social and economic terms, and it is a significant threat to well-being. Findings from the Living Conditions Survey 2008/2009 (Statistics SA, 2009) indicate that 55.1% of those living in rural areas in South Africa were financially poor, and that 54.6% of all people living in Mpumalanga were financially poor. Therefore, in an environment already characterized by significant risk, such as a rural school, the effect of poverty can be devastating on the effective functioning not only of the school but also the community as a whole.

Coetzee and Viviers (2006) state that, due to the changing economy, organizations around the world are changing. One of the main changes is the increase in competition.

Organizations are increasingly under pressure to do more with less and to be more flexible, in order to cope with the limitations of available resources.

Ebersöhn (2011) states that the competition for resources is even more extreme in rural settings where there is limited access to water, electricity and sanitation. Regarding rural schools, there is also limited access to libraries and books, information technology and specialized science laboratory equipment. This competition highlights the need and importance for positive adaptation of rural teachers. HIV/AIDS poses another significant challenge to teachers and should not be underestimated: over 17 000 teachers in South Africa have revealed that they are HIV positive. HIV prevalence rates are higher among rural teachers (McEwan, 1999). HIV creates an additional strain on the resilience of teachers and their ability to positively adjust to adversity (Theron, 2012). Given the vast array of adversities facing rural school teachers, promoting a sense of resilience appears to be a critical factor if rural teachers are to effectively cope and possibly thrive.

Photograph 2.2 below illustrates the isolated location in which a rural school is situated, compounding the competition and need for resources. Note the isolated location.



Photograph 2.2: Rural secondary school (Ebersöhn & Ferreira, 2012)

2.3.6 THE SOUTH AFRICAN EDUCATION SYSTEM AND TRANSFORMATION

The political changes in South Africa over the past 20 (Engelbrecht, Green, Naicker & Engelbrecht, 1999) years have affected education in a profound way. Many who encounter change often view it as a crisis (Engelbrecht *et al.*, 1999). One of the political changes was the creation of a new constitution, which is grounded in the principles of democracy, respect and dignity for all, as well as equity and non-discrimination (Engelbrecht, 2001). Landsberg, Kruger and Nel (2005) indicate that social structures have also undergone significant changes. Many of these changes have resulted in a negative impact on communal life, education and socioeconomic progress. Factors such as poverty, lack of proper health care, insecure living conditions and the disintegration of family units have resulted in the loss of

morals and values, which in turn has resulted in increased crime, violence, corruption, the high prevalence of HIV/AIDS and other social problems.

Schools do not function in isolation from economic, political and social development forces. Rather, they serve as a reflection of the developments that alter society. Teachers and other staff that work at schools are citizens of local communities and society, therefore the society's values, beliefs and priorities will influence their lives and their work at schools (Landsberg *et al.*, 2005).

2.4 RESILIENCE AND RURAL EDUCATION

2.4.1 INTRODUCTION

Hudson (2008) proposes certain factors that need to be considered in order to predict the potential of a teacher to thrive in a rural setting. These factors include personal characteristics, personal background and educational experiences that may enable a teacher to cope in a rural setting. Resilience, according to Ebersöhn (2011), is a critical factor when considering the probability of teachers thriving in the face of adversity. Matters relating to resilience in rural education are discussed in the next section.

2.4.2 PROTECTIVE FACTORS AND RURAL EDUCATION

Protective factors include a range of internal resources known as signature strengths. These factors may present in the form of growth, generativity, goodness and resilience, which contribute to the individual's flourishing (Ebersöhn, 2011). Ebersöhn (2011) further states that external protective resources in rural areas are mainly constituted by community capacity. These protective resources may be in the forms of a safe public environment, competent schools pro-social organisations, as well as family capacity. The latter pertains to the quality of relationships between family members and the existence of a well organised home environment. Protective factors support adaptive processes and thereby promote the incidence of positive outcomes. Protective factors are the opposite of risk factors (Maree & Ebersöhn, 2012).

In their report on families in Mpumalanga, Makiwane, Makoae, Botsis and Vawda (2012) state that people living in rural areas often make use of external resources in the form of *neighbour's support* to cope with stress. This coping mechanism may be an indication of geographical location being both a risk factor (where breadwinners are located in urban areas, far away from families) and a protective resource (where neighbours are in close proximity and are therefore able to assist in stress situations). *Family occasions*, most commonly in the form of funerals (especially for deaths related to the high rates of

HIV/AIDS), are regarded as binding experiences when family members come together. Churches offer support and care in times of crises and they are therefore also regarded as a valuable support resource. *Inter-generational care*, which is characterized by a reciprocal relationship of grandparents caring for their grandchildren and grandchildren caring for grandparents, is another significant support resource in rural areas.

Focusing more on the school setting, Flessa (2007) suggests a sense of *collective efficacy* can arise among teachers when they share experiences. Collective efficacy is comprised of optimism and high morale. It is operationalized by bringing together teachers' skills, knowledge and personal history in ways that positively influence the sense of community in schools.

In addition to the above-mentioned resources, the facilitation of learning in schools has also been identified as a critical factor for promoting the well-being of children in rural schools. This facilitation is characterized by schools that encourage family and community involvement. They also offer extracurricular activities, life skill programmes and an environment that promotes high academic standards and mutual respect (Ebersöhn, 2011). Such resources may support the process of resilience. These factors highlight the critical role that schools can play as a protective resource in rural education.

2.4.3 TEACHER HAPPINESS, SENSE OF COHERENCE AND RESILIENCE

Teachers' stress can be defined as conditions of negative affects, such as frustration and anxiety, which are perceived by teachers as a threat to their psychological or physical well-being. Stress is experienced as a result of teachers' perceptions of demands and an inability and difficulty in meeting such demands, often stemming from a lack of effective coping resources (Sewell, 2001).

Hudson (2008) proposes that there are certain factors that need to be considered in order to predict the potential for a teacher to thrive in a rural school setting, including personal characteristics and background, as well as educational experiences that may enable them to cope within rural settings. The investigation of such factors can indicate a teacher's resilience and coping mechanisms that sustain the teacher and enables the individual to thrive rather than just survive in the profession (Beltman, Mansfield & Price, 2011). According to Ebersöhn (2011) resilience is a critical factor when considering the potential of teachers to thrive in the face of adversity (Hines *et al.*, 2005). This provides some insight into the unique and sometimes challenging context in which rural teachers operate.

In defining resilience as reciprocal culturally congruent transactions between individuals and their social ecologies, the individual is no longer considered to be solely responsible for

being resilient when life is challenging (Ungar, 2011). Therefore, in order for a teacher to become more resilient in a context characterized by risk factors such as HIV/AIDS, the individual needs to develop intra- and inter-personal skills to effectively access the protective resources available in the environment. At the same time his or her ecology needs to support teacher transactions towards resilience. The transactions that encourage resilience generally underpin the everyday human systems of attachment, competence, positive meaning making, intelligent problem solving and self-regulation, as stated by Theron and Engelbrecht (2011).

The development of resilience in teachers within risk contexts, such as HIV /AIDS, involves teachers finding better ways to respond in a positive manner to the many adversities they face. One possible way of developing resilience is for teachers to view challenges and adversities as opportunities for self-growth. Teachers can connect with others and build a community, thereby restoring a sense of caring and compassion in teaching (Ebersöhn & Eloff, as cited in Wood *et al.*, 2012). Bobek (2002) suggests several resources that are important in the development of resilience among teachers, such as: personal ownership, sense of humour, sense of accomplishment, significant relationships, competence and skill. Furthermore, it is important to acknowledge the role of positive emotions when examining teachers' resilience.

Positive psychology divides happiness into three categories, namely *the Pleasant life*, *the Engaged life* and *the Meaningful life* (Seligman *et al.*, 2009). Seligman *et al.* (2009) argue that skills for happiness should be taught in schools. They suggest that positive emotions, resilience and meaning should be part of formal schooling. Cohn, Fredrickson, Brown, Mikels and Conway (2009) suggest that positive emotions, such as happiness, will increase life satisfaction as well as resilience. This manifests not because the individual feels better, but rather because the individual develops better resources for better living. The presence of positive emotions in an environment characterized by significant risk can also serve as an indication of resilience (Loots *et al.*, 2012). A sense of coherence is a fundamental resource for being able to choose an appropriate coping strategy and being able to enhance one's response repertoire.

Loots *et al.* (2012) propose that teachers, within the context of sense of coherence, will respond positively when confronted by barriers in their school-community contexts. Coherence can be achieved by effectively organizing and using their available internal and external coping resources. Such a response to stress is regarded as eustress and can be viewed as an indicator of resilience.

2.5 THEORETICAL FRAMEWORK

Positive psychology and the salutogenic paradigm has altered the way that both pathology and health is understood. It is characterized by a move away from attempting to explain illness. Instead, it focuses on understanding health and the origins of health (Seligman, 2002). This evolution has resulted in a growing interest in positive psychological constructs, such as resilience, happiness and a sense of coherence. These constructs form the focus of this study. Contextually this framework is appropriate for this study, as it emphasizes and examines positive coping mechanisms that rural teachers can possibly use during resilience processes, as opposed to the negative effects of being situated in an at-risk environment. This framework assumes that there are strengths and resources within the individual as well as in the environment. This study examines the ability of teachers in rural schools to effectively manage, comprehend and make sense of the available resources, both internal and external, that will enable them to be resilient. The process of accessing these resources and mobilizing them effectively indicates positive adaptation to their adverse environment. The ability to cope and adapt resourcefully, as well as being able to experience positive emotions, indicates the overall process of resilience. This framework does not examine pathology or aim to outline possible pathways of maladaptive coping associated with adversity and stress.

As a psychological concept stress has traditionally been associated with hardship and adversity (Lazarus & Folkman 1984). In recent times stress has been described and characterized by individuals as their experience of tension, pressure and anxiety. Processes that contribute to the promotion and maintenance of well-being during stressful situations have been popular topics of research over the last few decades. Positive psychology recognizes the strength of human capacity and provides an increased awareness of the benefits of positive emotions and their role in the stress process (Folkman, 2011).

McGowan, Gardner and Fletcher (2006) states that positive psychology aims to take individuals from a neutral state to a state of well-being, instead of adopting traditional measures that attempt to take an individual from a point of hardship and dysfunction to a neutral state. The emphasis is placed on the recognition of constructs relating to the positive and beneficial outcomes of effective stress management and well-being (McGowan *et al.*, 2006). This move to positive outcomes thinking can be related to the salutogenic paradigm. Although Antonovsky (1979) was the first to coin the phrase 'salutogenesis', this paradigm has been evident since Super made the distinction between physiology and psychopathology (Super, 1955), as well as when Maslow (1954) introduced the concept of self-actualization (Strümpfer, 1995).

The new paradigm of human adaptation is characterized by a focus on the positive, both conceptually and empirically. The move away from a focus on pathology, mental illness, risk factors and social problems has enabled new and refreshing conceptualizations and measurements of the strengths of people and their societies, rather than focusing solely on their weaknesses. Resilience is arguably the most valuable of these strengths (Folkman, 2011). Folkman (2011) states that the move away from a disease model of stress and coping to a more integrative model of positive influences for coping represents a crucial shift in researchers' understanding of how individuals adapt to and grow in their environment. This new paradigm has created stress and coping approaches within a framework that illustrates the degree to which personal strengths and other psycho-social resources contribute to the prediction of resilience, regardless of the numerous risks and vulnerabilities identified within an individual and the given environment.

Lazarus and Folkman (1984) state that moderate levels of stress and pressure can be advantageous for performance. The potential positive outcome that can be achieved as a result of stress is termed eustress, as opposed to distress, which entails a negative psychological response to a stressor and is reflected by a negative psychological state (Nelson & Simmons, 2003). Antonovsky (1996) argues that stress and stressful situations form part of daily existence that may at times lead to a positive outcome. Stressors often lead to psychological stress and tension. Stress is mediated by an individual's personal and internal reaction and responses to stressors. The effects of stress can either be debilitating, neutral or beneficial, depending on the individual's ability to manage a given situation (Antonovsky, 1987). Antonovsky's main aim in his research was to comprehend the complexities associated with how a system manages to survive the stress of daily living and to function effectively despite adversities. As a result Antonovsky (1987) developed the *Sense of Coherence (SOC)* construct, which explains the successful coping with an array of life stressors and the subsequent move towards health.

Folkman and Moskowitz (2004) note the awareness of positive emotion in the stress process. This awareness has been fuelled by a growing interest in positive emotions among researchers and a trend in psychology to focus on positive traits and concepts. This has provided a new avenue for resilience research. A number of studies show that positive emotions can occur with relatively high frequency, even in very stressful contexts Ong *et al.* (2006).

Examining levels of happiness in teachers may possibly provide an insight as to how and whether happiness contributes to their levels of resilience. Studying happiness also enables research within a positive psychology framework.

Cohn *et al.* (2009) suggests that positive emotions, such as happiness, increases life satisfaction as well as resilience. This manifests not because the individual feels better, but because the person develops better resources for living a better life.

2.6 CONCLUSION

In this chapter I described resilience as a widely researched and dynamic concept. Constructs and concepts, such as happiness and a sense of coherence, play a significant role in the process of producing the positive outcomes of negotiating and navigating a path through adversity, by using internal and external resources, and using those resources effectively, and in so doing developing resilience. Positive psychology provides a platform for new perspectives on human functioning that may enable one to examine the impact and significance of human strengths. The application of these perspectives to a rural school setting can provide valuable insights into the well-being and overall functioning of teachers who brave the inherent adversities of rural areas.

In the next chapter I discuss the research design and methodology in terms of its appropriateness for this study. I examine the study sample as well as the statistical techniques used for the study.

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CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

The purpose of this study was to describe the resilience of teachers in three South African rural schools within a positive psychology framework. For this purpose I conducted a non-experimental, descriptive and analytical mode of inquiry, in the form of a secondary data analysis that was adopted from a quantitative framework. As part of the STAR project quantitative measures were purposefully selected to determine the extent to which teachers' resilience reflects the resilience indicators discussed in the relevant literature.

This study addresses the following research questions: (1) *To what extent are teachers from rural schools happy?* (2) *To what extent do teachers from rural schools have a sense of coherence?* (3) *To what extent are teachers from rural schools resilient?* Furthermore, relationships between the constructs of happiness, sense of coherence and resilience are explored in the second research question: (4) *Is there a significant relationship that exists between resilience, happiness and sense of coherence among rural school teachers?* The possibility of obtaining dissimilar results from the different schools is examined in the third research question: (5) *To what extent do teachers' participation in an intervention impact on their ability to demonstrate happiness, sense of coherence and resilience?* Lastly the effect of gender was also explored: (6) *To what extent does gender impact on the happiness, sense of coherence and resilience of teachers in rural schools?*

In this chapter I describe the research methodology I used. I discuss the purpose of the study and describe my selected paradigmatic perspectives. I define the research design and methodological strategies, as well as their strengths and weaknesses. I also explain ethical considerations and present some arguments regarding the validity and reliability of the data.

3.2 BACKGROUND OF EXISTING DATA: STAR DATA GENERATION

Teachers (12 respondents in total) from three rural schools in Mpumalanga were included in the STAR project, based on their availability and willingness to participate. It is important to note that measures from School one (six respondents) reflect post-STAR intervention levels of resilience, as these teachers have been participating in the STAR project since 2004. The measures from Schools two (three respondents) and three (three respondents) reflect

pre-STAR intervention levels of resilience, as they had not yet participated in the STAR project (they joined the project in 2010) at the time of completing the measures. I incorporated purposive (Mouton, 1996) and convenience (Maree, 2007) sampling methods to ensure that all respondents complied with the main research criteria, namely that they are teachers and live in a rural area. Measures were completed at a community centre in Mpumalanga. Ebersöhn and Ferreira administered the measures. Refer to Appendix 2 for an example of the battery. Each item was read out aloud to respondents. Respondents then answered individually.

3.3 RESEARCH QUESTIONS

The next section presents the research questions addressed by this study.

❖ **Question 1:**

To what extent are teachers from rural schools happy?

❖ **Question 2:**

To what extent do teachers from rural schools have a sense of coherence?

❖ **Question 3:**

To what extent are teachers from rural schools resilient?

❖ **Question 4:**

Is there a significant relationship that exists between resilience, happiness and sense of coherence?

❖ **Question 5:**

To what extent do teachers' participation in an intervention impact on their ability to demonstrate happiness, sense of coherence and resilient?

In order to address the fifth research question, the following hypothesis was formulated in order to test for statistical differences:

❖ **Null hypothesis (H0)**

Teachers' participation status in an intervention indicates similar levels of happiness, sense of coherence and resilience.

❖ **Alternative hypothesis (H1)**

Teachers' participation status in an intervention indicates different levels of happiness, sense of coherence and resilience.

❖ **Question 6:**

To what extent does gender impact on the happiness, sense of coherence and resilience of rural school teachers?

The results of each question are presented and discussed in the next chapter.

3.4 PARADIGMATIC PERSPECTIVES

I used positivism to ground the study and undertook secondary data analysis of administered STAR-measures.

3.4.1 METATHEORETICAL PARADIGM: POSITIVISM

Positivism assumes the ontological position that social reality is external to people, and that human nature is determined by this reality (Cohen *et al.*, 2007). Knowledge of this kind can be obtained by relying on defined concepts (as found in the relevant literature), and their associated measurements. In this way, data are supposed to represent an aspect of some part of reality. Only those aspects that can be measured are regarded as relevant to this research (Blaikie, 2007).

The quantitative paradigm is based on these fundamental assumptions of positivism that are mentioned above. Science in this paradigm is characterized by empirical research, with the positivist paradigm adopting the position that all phenomena can be formulated into empirical quantities that represent the truth (Sale, Lohfeld & Brazil, 2002). Based on the nature of this study, with the emphasis on measuring specific variables related to the resilience of rural school teachers, I regard positivism as a suitable metatheoretical paradigm (Babbie, 2005). The philosophy resonates with the focus of the study, namely to establish whether or not the resilience of rural teachers possibly reflects some of the principles of positive psychology, and whether or not any general variables or characteristics exist that can be applied to the larger population of rural teachers in South Africa.

Neuman (2007) states that positivism is based on the idea of determinism, meaning that human behaviour is determined by causal laws over which humans have little control. Determinism implies that events have causes, and that events are determined by circumstances. Positivism is based on the belief that causal links can be uncovered and understood with good science (Cohen *et al.*, 2007). Determinism eliminates the element of free will in respondents. Free will enables people to construct their own social meanings, which are created by the material conditions, cultural context and historical conditions in which they find themselves.

As positivism implies a common and universal reality, it may limit the understanding of contextual influences. Positivism can be regarded as mechanistic and reductionist, in that it negates the influence of inner experience, choice and individuality. Positivism views the universe as a machine rather than a living organism, which has a depersonalizing effect (Cohen *et al.*, 2007). On the other hand this paradigm allows for the systematic and objective use of numerical data (Neuman, 2007) in this study to obtain findings that may possibly contribute to a better understanding of rural teachers' resilience, happiness and sense of coherence.

3.3.2 METHODOLOGICAL PARADIGM: QUANTITATIVE APPROACH

The quantitative paradigm assumes that scientific explanation is nomothetic and is therefore based on universal laws. This approach seeks to objectively measure the social world (Poggenpoel, Myburgh & Van der Linde, 2001). Research incorporating this approach is usually characterized by the researcher imposing a system upon a phenomenon from the outside. The researcher does not interact with the phenomenon under investigation (Mouton, 1996).

Methodologically this study follows a quantitative approach, which implies a systematic and objective process. Numerical data from a selected sub-group of a population was used to generalize the findings to the greater population being studied (Maree, 2007; Neuman 2007). The goal of quantitative research is to describe trends or to explain the relationship between variables. The researcher asks specific, narrow research questions or formulates hypotheses about variables that can be measured (Maree, 2007). This study is directed at describing the phenomenon of resilience within a specific context. It does not aim to generate universal laws that can be applied across an entire population.

Creswell (2009) states that quantitative research assumes that social facts exist in an objective reality which is different to the beliefs of individuals. This approach seeks to explain the causes of changes in social environments where such changes are measured using objective measures and quantitative analysis. Ontologically the quantitative paradigm posits that there is one objective reality that exists outside of human perception. Epistemologically, the researcher and the participants are independent from one another as the reality is not co-constructed as it would be within a qualitative paradigm. This enables the researcher to study a phenomenon without affecting it or being affected by it. The main aim is to measure, describe and analyse possible causal relationships between variables within a value-free framework (Sale *et al.*, 2002).

Mouton (2001) and Neuman (2007) state that when one adopts a quantitative approach important issues need to be considered, including the quantification of constructs. The quantitative researcher believes that the best way to measure properties of phenomena is through quantitative measurement that is by assigning numbers to the perceived qualities of things. It is important to note that quantitative measurement is a deductive process. It involves taking a construct (i.e. resilience) and then developing a measure (instrument) to observe it empirically.

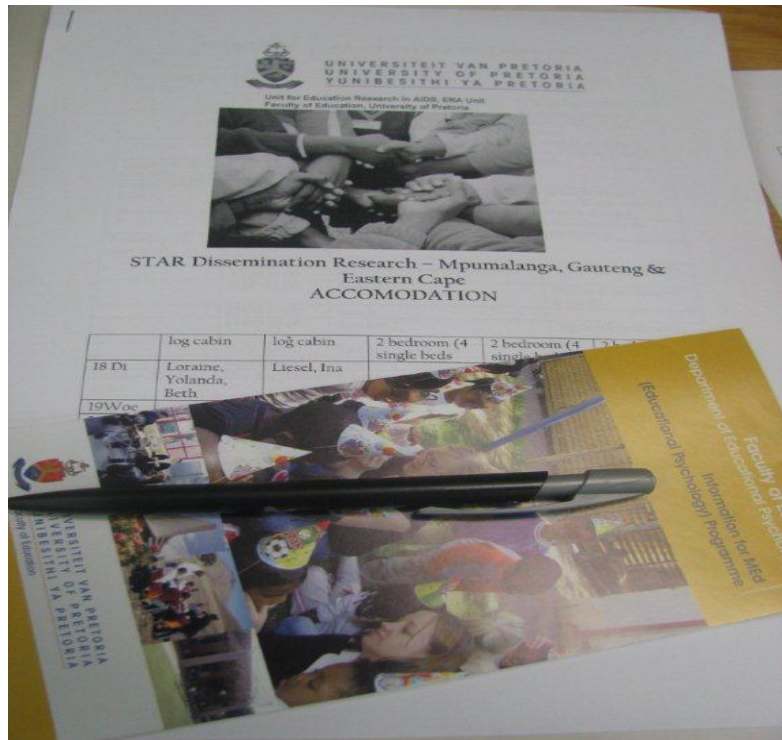
The quantitative approach enables a researcher to incorporate statistical techniques and to present significant relationships between variables. Identifying such relationships, which would otherwise potentially go unnoticed, is also the aim of this study. In addition, a quantitative approach allows for the object under study to be unaffected by the researcher, as the quantitative approach assumes that true knowledge is independent from the researcher (Hathaway, 1995).

Although the quantitative approach is grounded in scientific inquiry, there are certain factors that the instruments used in this study cannot address, such as the development of resilience as a process, as well as being able to observe how an individual demonstrates resilience within his or her given environment. Even though these are potential limitations, a reasonable assumption is possible once the potential relationships between the various positive outcomes have been examined. Such relationships may provide an insight into other factors that may influence the demonstration of resilience (Kashdan, 2004; Hathaway, 1995).

Other limitations of the quantitative approach include that it does not accommodate multiple participant meanings or realities, and that it does not represent the social and historical constructions of a certain context in which respondents are situated (Creswell, 2009). However, this paradigm allowed me to establish to what extent the participating teachers displayed the indicators of resilience.

3.4 RESEARCH DESIGN

I used a quantitative, secondary data analysis to analyse statistical data derived from three different instruments completed by twelve teachers from three different schools. These instruments were purposively sampled. The data were obtained from the STAR project (Ebersöhn & Ferreira, 2011). Levels of happiness, sense of coherence and resilience were established by examining the measures included for the STAR dissemination phase (Appendix 2). Photograph 3.1 is an example of the booklets used that contained the selected measures.



Photograph 3.1: STAR dissemination research phase booklet of measures

The measures were selected for the STAR dissemination phase as their combined interpretation could potentially provide insight into the resilience of teachers in schools in ecologies of chronic adversity. I summarize the research process in Figure 3.1, indicating the steps I followed from formulating research questions through to the stage of obtaining the findings and making recommendations.

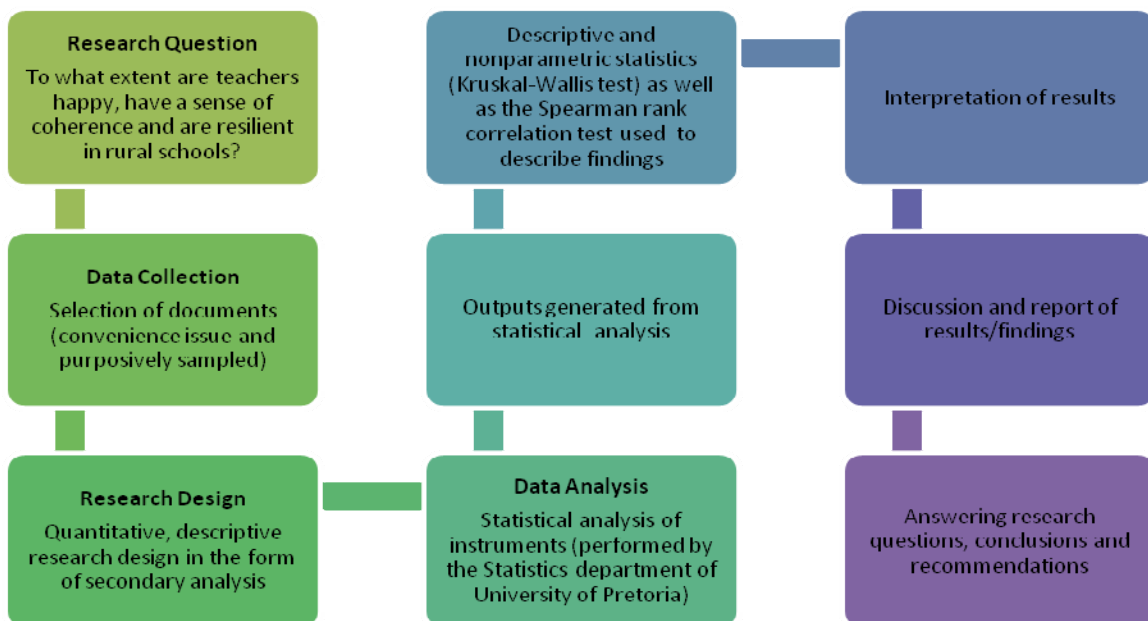


Figure 3.1: Quantitative research process followed in the study

Secondary analysis creates the possibility of pursuing one's particular social research interest. Secondary analysis is the practice of analyzing data that have already been gathered by someone else, often for a different purpose. As a research method, it allows for comparisons across groups. It holds specific advantages in the form of saving both time and money and it avoids unnecessary duplication of research effort. Secondary analysis also enables the researcher to build on previous research (Babbie, 2005; Mouton, 1996, Neuman, 2005).

Glass (1976) as well as Neuman (2007) state that secondary analysis is the re-analysis of previously collected survey data or other information for the purpose of answering initial research questions with better statistical techniques, or answering new questions with old data. For the purpose of this study, I analysed secondary data that I sampled from three schools that formed part of STAR, as discussed in more detail below.

As opposed to primary research data (e.g. experiments, surveys, content analysis), the focus of this study is on analysing rather than collecting data. Secondary analysis is an important feature of research and evaluation. Although a possible limitation of working with documents rather than participants exists, secondary data analysis aims at deriving statistically relevant information rather than qualitatively relevant information. In many instances secondary analysis is performed to establish whether or not old data is still valid (Babbie, 2005; Mouton, 1996).

An important potential pitfall of secondary analysis to guard against is the fallacy of concreteness. This may occur when someone gives a false impression of accuracy by quoting statistics in greater detail than warranted (Neuman, 2007). I avoided this possibility by interpreting the results tentatively and by being mindful of the context in which the data were collected.

3.5 SELECTION OF DOCUMENTS

I purposively sampled three measures of the rural cohort study of teachers in the STAR project. Purposive sampling is used in situations where a specific purpose guides the sampling (Maree, 2007) and an expert's judgment was used to select cases. In purposive sampling the researcher never knows whether or not the selected cases represent the population. An example of where this sampling measure works well is when a researcher is less concerned about generalizing to the population but rather focuses on gaining a deep understanding of a specific phenomenon, as is the case in this research project.

My selected sample of respondents was based on convenience and the fact that all respondents are teachers from rural schools in the STAR dissemination research phase.

Thirty-six questionnaires were sampled and analysed (twelve teachers, from three different schools. Each teacher completed one Resilience Scale (RS-14), one Oxford Happiness Questionnaire (OHQ) and one Orientation to Life Questionnaire (SOC). From the three schools, six teachers from school number one completed the questionnaires, three from school number two, and three from school number three. As only a small number of respondents were included in the study sample the possibility exists that the respondents may not be representative of all rural teachers in South Africa.

Table 3.1 represents the full sample (one RS-14, SCO-13 and OHQ per respondent) of the study. The table is categorized according to school, gender as well as the intervention status. This table will be presented again in the next chapter with the results of each measure included.

Table 3.1: Arrangement of respondents according to school, gender and intervention status

N=12	School	School type	Intervention status	Gender
Respondent 1	1	Secondary	post-intervention	F
Respondent 2	1	Secondary	post-intervention	M
Respondent 3	1	Secondary	post-intervention	M
Respondent 4	1	Secondary	post-intervention	F
Respondent 5	1	Secondary	post-intervention	F
Respondent 6	1	Secondary	post-intervention	F
Respondent 7	2	Primary	pre-intervention	F
Respondent 8	2	Primary	pre-intervention	F
Respondent 9	2	Primary	pre-intervention	F
Respondent10	3	Primary	pre-intervention	F
Respondent11	3	Primary	pre-intervention	F
Respondent12	3	Primary	pre-intervention	M

3.6 DATA ANALYSIS

Maree (2007) regards 'descriptive statistics' as a collective term for a number of statistical methods that are used to organize and summarize data in a meaningful way. Descriptive statistics is concerned with the description and/or summary of data obtained for a group of individuals (Huysamen, 1976). Descriptive statistics are used to potentially improve the researcher's understanding of the properties the data.

Neuman (2007) and Cohen *et al.* (2007) state that statistics in the social sciences represents a branch of applied mathematics used to manipulate and summarize the features of numbers that represent data from a research project. Descriptive statistics describe the numerical data that have been collected. The data can be categorized by means of a number of variables, including univariate, bivariate or multivariate (for one, two and three or more variables). De Vos, Strydom, Fouche and Delport (2002) add that descriptive research in a quantitative design can enable a researcher to explore specific details of a situation, social setting or relationship.

I used descriptive statistics (Maree, 2007; Salkind 2011) to derive values from the three selected measures, to determine to what extent the participating teachers were happy, demonstrated a sense of coherence and were resilient at the time when they completed the questionnaires. This was done by plotting the scaled scores onto figures (see Section 4.2.1) to indicate the relevant levels of happiness, sense of coherence, and resilience. The means of the three measures were derived statistically to determine the average levels of happiness, sense of coherence and resilience. This was done by statistically establishing the mean (Huysamen, 1976) of the scores (arithmetic average), where the aggregate of the scores was divided by the number of scores. The three measures were then plotted against each other to demonstrate the overall average scores attained by the respondents.

The means of the three measures were correlated using the Spearman rank order correlation test (Huysamen, 1976), which allows for the investigation of linear relationships between two or more sets of data. This method was used due to the small study sample. The results are represented in Section 4.2.2, which shows the correlations between the mean scores of RS-14, OHQ, and SOC.

Regarding interpretation, this study relies on data measures obtained from only twelve teachers, thereby implying sample limitations. For example, the findings cannot be generalized, as the number of observations is too small. In addition, non-probability sampling was employed and the results have limited applicability to other populations. The measuring instruments were developed using a multifactorial approach. This may influence the statistical data analysis of the concepts, as factor analytical procedures generally identify sources of common variance at the expense of unique variance (Boyle, 1995). It would be difficult to establish whether a large level of variability exists, as there are only twelve observations.

3.7 NONPARAMETRIC STATISTICS

Due to the small sample and the related limitations, I used nonparametric statistics in this study. Frequencies, the Kruskal-Wallis test and Spearman's rank correlation test were used to analyse the research data. Frequencies were used to address the first three research questions (*To what extent are teachers from rural school happy? To what extent do teachers from rural schools have a sense of coherence? To what extent are teachers from rural schools resilient?*). Clustering and patterns are described in Chapter 4. I used the Spearman rank correlation test to examine whether or not one set of results correlates statistically with another and to address the fourth research question (*Is there a significant relationship that exists between happiness, sense of coherence and resilience of rural school teachers?*). I used the Kruskal-Wallis test to determine if there is a significant difference between two or more nominal variables and to address the fifth research question (*To what extent do teachers' participation in an intervention impact on their ability to demonstrate happiness, sense of coherence and resilience?*) (Cohen *et al.*, 2007).

I also used the Kruskal-Wallis test to test the variance of the three measures' median scores. I regard the Kruskal-Wallis test to be appropriate for comparing the three groups. Utts and Heckard (2011) state that this test is used to compare medians. It is based on the comparison of the relative rankings or sizes of data in observed samples⁴. It is therefore known as a rank test.

In order to explore whether a statistically significant relationship exists between the three internal coping strategies, I examined the Spearman correlation coefficients. Correlation indicates an empirical relationship between two or more variables. Although correlation does not indicate causality it is one criterion of causality. The Spearman correlation coefficient served to uncover what relationships, if any, can be statistically presented (Babbie, 2005).

Values were ranked in a total data set of N observations from lowest to highest, where the lowest is represented by $=1$, and the highest by $=N$. The ranks of the values were averaged for each of the three groups in this study. The test statistic measured the variation of the average ranks of the groups. If the majority of the small data values were in one particular group, that group was assumed to have a lower average rank than the other groups (Utts & Heckard, 2011; Welman & Kruger, 2001).

Higgins (2004) states that a nonparametric model of statistics requires no assumption to be made about the functional form of a joint distribution. This nonparametric model assumes

⁴The Kruskal-Wallis test is only used if there are three or more independent samples (Bless & Kathuria, 1993). This study contained three samples.

that observations are independent variables that are identically distributed along from an arbitrary continuous distribution. Therefore, nonparametric statistics is also referred to as distribution free statistics; this implies that no parameters exist in a nonparametric model. Parametric assumptions are reasonable if the researcher knows previous insight into the underlying distributions, however this is seldom the case. Incorporating parametric statistics in such instances can provide skewed or even inaccurate results.

Bless and Kathuria (1993) state that for nonparametric tests assumptions about the shape of distributions, the variance homogeneity and the interval scale of measurement are not required. Such distribution-free tests are used in situations where measurements are made on a nominal, or ordinal, scale on which data are ranked according to various categories. However, because these tests are distribution-free (and by implication non-sensitive to any property of distribution) when nonparametric tests compare two or more populations they do not provide precise information with respect to the criteria that determine whether populations are the same (H_0) or significantly different (H_1). Thus it cannot be inferred, as in parametric tests, from the rejection of the null hypothesis that the means of populations are different, or even that the mean of one population is larger than the mean of another.

Nonparametric tests only evaluate whether or not the populations are in fact significantly different. Populations can be different in a number of ways: in variability, central tendency and also in properties such as skewness or kurtosis. This is the fundamental difference between the testing of hypotheses by parametric and nonparametric tests (Bless & Kathuria, 1993; Higgins, 2004).

Bless and Kathuria (1993) as well as Higgins (2004) state that nonparametric tests are easy to calculate and are therefore convenient and not time consuming. Formulae used by these tests are simple in comparison to their parametric counterparts. Nonparametric tests can be satisfactorily applied to small samples. The most significant advantage of employing nonparametric tests is that stringent assumptions are not required. However, one significant limitation is that nonparametric tests do not use all the information contained in the data. They are therefore not as robust as parametric tests. In situations where some assumptions cannot be satisfied, nonparametric tests provide a viable option. They can enable a researcher to test the significance of differences without assumptions. The lack of test robustness does not significantly impact on this study, as it does not attempt to uncover and generalize all of the findings to a wider population. It only attempts to provide a deeper understanding of the results provided by the selected measures, as well as to understand the significances and differences of the selected samples.

3.8 RIGOUR OF MEASURES

The integrity of the data collected in this study may potentially be problematic, due to the fact that the questions were read to the participants when administering the questionnaires. This was done in an attempt to ensure that the participants clearly understood what was being asked. However, this created the dilemma of whether or not the participants understood the questions well enough to answer truthfully. Furthermore, even though the answer scales were written on flip charts for further clarification, these attempts at clarification may not have been enough to ensure that the process was fully understood by all participants.

Stead and Watson (2006) state that where measures are Western-based, people from different cultural and ethnic groups may understand questions differently. Therefore, it is critical that the data collected in this study are interpreted with sensitivity regarding cross-nationality and cross-cultural influences, as the measures have not been standardized for the South African context. This approach is aligned with some of the principles of cross-cultural psychology proposed by Byrne, Oakland, Leong, Van de Vijver, Hambleton, Cheung and Bartram (2009) and Kim, Park and Park (2000), namely that culture has a significant effect on human behaviour. Cross-cultural psychology demands insight and the consideration of barriers to measurements in general, and that equivalence for measures across diverse populations should be attempted. These principles were kept in mind throughout the research process and when applying the instruments to the particular context of the study. The study does not attempt to establish the reliability and validity of the measures. Rather, the researcher has been mindful of the rigour of the instruments.

3.8.1 QUALITY ASSURANCE OF QUANTITATIVE DATA

Secondary data cannot be regarded as problem free simply because a reliable source collected the information (Neuman, 2007). The objective process of analysing data is critical to ensure that the results derived from the inquiry are reliable. This was done by employing the expertise of the University of Pretoria's Statistics department. Validity of the results has been ensured by not using the analysis results selectively, which would enable the falsification of results (Neuman, 2007).

3.8.2 RELIABILITY

Reliability refers to how consistent a measurement is (Foxcroft & Roodt, 2006). Reliability can vary in scale from minimal consistency of measurements to almost perfect and accurate test-retest repeatability of results. The majority of psychological measures' reliability of

measurement range somewhere along this continuum. In terms of psychological measures, reliability is an ethical issue that needs careful consideration. It would be unethical to make assumptions and reach conclusions that are based on results of inquiries that are not repeatable and are therefore not reliable (Creswell, 2009).

Kline (2000) as well as Foxcroft and Roodt (2006) state that internal consistency and reliability reflect the extent to which each item of a test measures the same variable. It is important that the internal consistencies of a measure are above the criterion of 0.7. A measure should not be used with an internal consistency lower than 0.7 unless the validity of the measure is very high.

3.8.3 VALIDITY

A measure's validity is determined by the extent that inferences made from the results are meaningful and useful. Validity serves as an indication of how adequately and accurately a test can measure the characteristic or construct it was designed to measure (Creswell, 2009; Foxcroft & Roodt, 2006). Validity is not a fundamental property of a measure. Foxcroft and Roodt (2006) state that a psychological measure is valid for a specific purpose, which in this instance is the measurement of resilience, happiness and sense of coherence. Therefore, the validity of a measure presents a clear indication of the usefulness of that specific measure (Kline, 2000). The results produced by the instruments sampled have not been analysed selectively to bias the findings. Rather, all results have been considered and interpreted keeping the validity of the measures in mind.

This study did not aim to evaluate the reliability and validity of the selected measures in a South African context, as the sample size is too small. The study rather attempts to use the measures to explore and describe the phenomenon of resilience in rural school teachers.

3.8.4 RIGOUR AND DESCRIPTION OF INSTRUMENTS EMPLOYED

All three measures (RS-14, SOC and OHQ) used in this study indicate sufficient reliability. They all have an internal consistency of above 0.7. Although these measures have not been standardized according to South African norms, some of the measures were used cross-culturally. However, the interpretations of the results of these measures in this study are tentative.

In the following section I discuss the rigour, and background of the measures that I selected for the purpose of this study.

3.8.4.1 Oxford Happiness Questionnaire (OHQ) (Appendix 2)

Hills and Argyle (2002, as cited in Kashdan, 2004) developed the 29-item Oxford Happiness Questionnaire (OHQ) as an 'improved instrument' to assess subjective well-being (SWB). The original measure, the Oxford Happiness Inventory (OHI), was mainly used in the Department of Experimental Psychology of the University of Oxford during the late 1980s (Hills & Argyle, 2002). However, the inventory was quite lengthy, hence the shorter Oxford Happiness Questionnaire was developed. The main constructs which are measured by the OHQ include extraversion, kindness, humour, sense of purpose, aesthetic appreciation, locus of control, positive affect, self-efficacy, physical health and self-esteem (Kashdan, 2004).

Half of the items on the questionnaire are negatively worded and the other half positively. The reasoning behind this, according to the developers (Hills & Argyle, 2002), was to reduce the chance of 'contextual and compliant answers'. The OHQ aims to measure eudaimonic happiness (which is discussed in Section 2.2.6.3), and it measures global happiness over a long period of time (Maltby *et al.*, 2005). The calculation of the OHQ scores requires that some of the items be reversed. The sum of all the items is then calculated and the total divided by 29 to get an average happiness score. According to Wright (2008), Hills and Argyle (2002) the scores obtained on the OHQ can be interpreted as follows:

- 1-2: Not happy, little to no positive affect
- 2-3: Somewhat unhappy
- 3-4: Neither happy or unhappy
- 4: Average level of happiness
- 4-5: More happy than unhappy
- 5-6: Very happy, experiences benefits of feeling good, i.e. Good health
- 6: Too happy

Even though the OHQ and the OHI were found to be reliable and valid in measuring happiness (Hills & Argyle, 2002), one should note is that no studies pertaining to the validity and reliability of the OHQ have been undertaken in the South African context. Argyle, Martin and Crossland (1989) report an internal reliability of 0.9 using Cronbach's alpha, and a seven-week test-retest reliability of 0.78 (Liaghatdar, Jafari, Abedi & Fatemeh, 2008). In cross-cultural studies Hills and Argyle (2002) examined the reliability and validity of the English version of the Oxford Happiness Inventory among students in the United Kingdom, United States of America, Australia and Canada and found an alpha coefficient between 0.89 and 0.9 (Liaghatdar *et al.*, 2008).

According to Liaghatdar *et al.* (2008) the construct validity of the OHQ was developed based on the hypothesized components of happiness, namely the frequency of positive affect, high levels of satisfaction over an extended period of time, and the absence of negative feelings in the form of anxiety or depression. Hills and Argyle (2002) also report acceptable construct validity of the OHQ by providing data on correlations with other self-report scales of personality traits, human strengths and SWB (Kashdan, 2004).

3.8.4.2 The Orientation to Life Questionnaire (SOC-13) (Appendix 2)

Sense of coherence (SOC) indicates a person's view of life and an ability to adapt and respond to stressful situations by drawing upon internal and external resources, and by making use of effective coping mechanisms (Antonovsky, 1996; Eriksson & Lindström, 2005). Antonovsky (1996) is of the opinion that the stronger the three constructs of SOC (namely management, comprehension and meaning) are reflected in individuals, the healthier they will be. Antonovsky (1996) believes that these three constructs would provide a person with the capacity to assess and understand difficult situations. The person with a strong SOC would also be able to draw meaning from such situations, and most importantly be able to move in a health promoting direction (Eriksson & Lindström, 2005).

To be able to measure these constructs Antonovsky (1996) developed the Orientation to Life Questionnaire (OLQ). Manageability is assessed by items 3, 5, 10 and 13, Comprehension by items 2, 6, 8, 9 and 11 and meaning by items 1, 4, 7 and 12. The 13-item questionnaire used in this study has been proved psychometrically sound and cross culturally fair (Eriksson & Lindström, 2005). Eriksson and Lindström (2005) state that the Cronbach alpha values in 127 studies (using the short version of the questionnaire) range from 0.70 to 0.92, and that the test-retest correlation shows stability with ranges from 0.69 to 0.78 (one year). After 10 years of use the SOC seems to be comparatively stable, but not as stable as Antonovsky initially assumed, as the SOC ranges tend to increase with age. The factorial structure of the SOC is multi-dimensional rather than one-dimensional. The SOC predicts a positive outcome in a long-term study, although divergent findings have been reported (Eriksson & Lindström, 2005).

Antonovsky (1996) assumed that the individual's SOC will have stabilized by adulthood, but it will fluctuate marginally thereafter. In Antonovsky's study (Eriksson & Lindström, 2005) test-retest reliability of the scales ranged from 0.92 (one week) to 0.65 (three weeks), 0.93 (one month) and 0.77 (six months).

According to Eriksson and Lindström (2005) SOC is not a stable trait and it tends to increase with age. In a recent study by Naaldenberg, Tobi, Van den Esker and Vaandrager

(2011), the validity and reliability of the 13-item version of the OLQ was confirmed. In a study conducted in a South African organization, it was found that employees with a strong SOC coped with work related stressors. In a study by Eriksson and Lindström (2005) validity was examined by evaluating face validity, construct validity, criterion validity and predictive validity of the SOC-13. The study was conducted in the form of a review of 458 scientific publications and 13 doctoral theses. The study found that the SOC-13 scale is a reliable and valid measure and that it is cross-culturally applicable when measuring how individuals manage stressful situations and maintain their well-being.

3.8.4.3 The 14-item resilience scale (RS-14) (Appendix 2)

Many measurement scales have been developed and utilized for the study of resilience in Western countries. These include the Brief Resilience scale (BRS) (Sinclair & Wallston, 2004), Connor-Davidson Resilience Scale (CDRISC) (Connor & Davidson, 2003), Baruth Protective Factors Inventory (BPFI) (Baruth & Carroll, 2002), Resilience Scale for Adults (RSA) (Friborg, Hjemdal, Rosenvinge & Martinussen, 2003) and the Wagnild and Young Resilience Scale (RS-14) (Wagnild, 2009). The RS-14 is one of the most widely used resilience measures globally. Additional benefits include its applicability to age groups ranging from adolescents to the elderly, and that the constructs focus on positive psychological qualities rather than deficits (Abiolo & Udofia, 2011).

Wagnild (2011) believes that five defining characteristics constitute a conceptual framework of resilience: self-reliance, having a purposeful and meaningful life, equanimity, perseverance and existential aloneness. During the construction of the RS-14, items were selected that reflect generally accepted definitions of resilience. The RS-14 uses a Likert scale to rate individuals' evaluation of the items. A high score, i.e. 7, indicates high resilience and a low score, i.e. 1, reflects a lower level of resilience. Items 1, 5, 7, 12 and 14 measure self-reliance, items 2, 9 and 13 measure purposeful life, items 3 and 10 measure equanimity, items 6 and 8 measure perseverance and items 4 and 11 measure existential aloneness.

The original resilience scale was based on a 1987 qualitative study of mostly older women who had successfully adapted following a major stressful life event. This measure was standardized for middle class participants with an average age of 36, who are well educated with university degrees (Wagnild, 2011). To date no research has validated the resilience scale measures in the South African context. However, studies performed by Abiolo and Udofia (2011) and Nishi, Uehara and Matsuoka (2010), examined the reliability and validity of the RS-14 in Japan and Nigeria. They found high degrees of internal consistencies, high test-retest reliability and relatively low concurrent validity. The level of concurrent validity

presents the extent to which the results of a measure accurately determine an individual's present position regarding a specific category of measurement. A measure with demonstrated concurrent validity provides a shortcut for obtaining information that might otherwise require the extended investment of professional time (Foxcroft & Roodt, 2005). A low level of concurrent validity may be due to resilience being part of a process of development. The RS-14 only measures outcomes, not processes over time (Wagnild, 2011).

The Cronbach's alpha reliability coefficient for the RS-14 ranges from 0.85 to 0.94 and the internal consistency is strong, ranging from 0.91 to 0.94 (Wagnild, 2011). The RS-14 has been found to have moderate to high correlations related to the Health Promoting Lifestyle Profile, which is a reliable and valid measure of health promoting behaviours (Wagnild, 2011). Items from the Health Promoting Lifestyle Profile were used to document convergent and discriminant validity of the resilience scale in a sample of middle-aged to older adults.

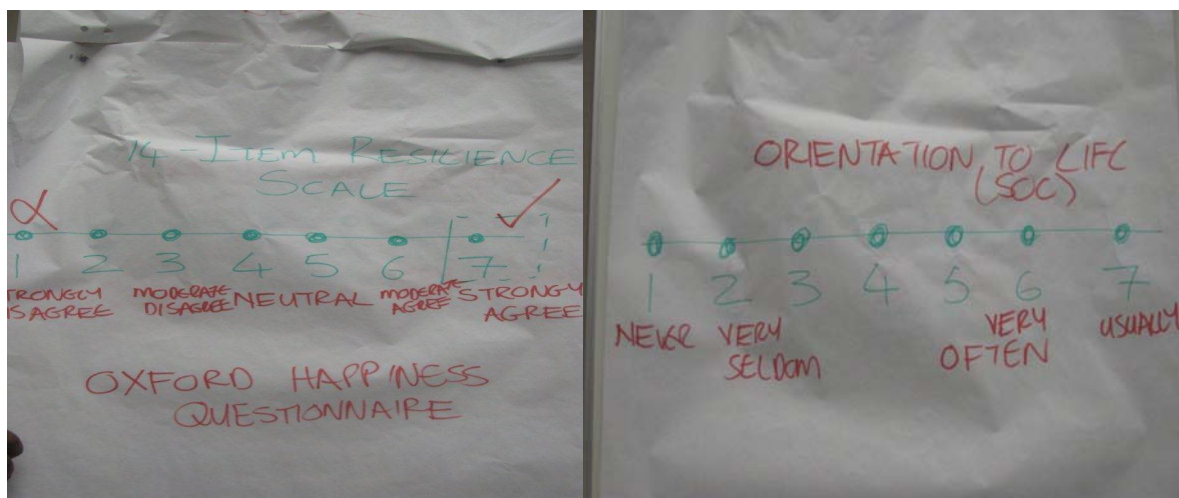
3.9 ETHICAL CONSIDERATIONS

Teachers at the selected schools were first made aware of the STAR project, and were then invited to join the study. The teachers who volunteered were informed of the research process. Issues of trust were discussed by the researchers, the most important issues being the potential risks and benefits of volunteering for the project. The teachers were encouraged to ask questions relating to clarification of the project and its objectives to ensure that potential participants were aware of the project's objectives. This process is depicted in photograph 3.2.



Photograph 3.2: Ferreira facilitating the completion of STAR measures (Ebersöhn & Ferreira, 2012)

An informed consent process took place and the willing participants completed informed consent forms that outlined the project, possible risks or inconveniences, as well as the rights of the participants during their participation in the project. It was ensured that potential participants understood everything that was included in the informed consent process to avoid a potential language barrier, as the mother tongue of most of the respondents is Siswati. After filling in the informed consent forms, each teacher completed a Resilience Scale (RS-14) (Appendix 2), Orientation to Life Questionnaire (SOC) (Appendix 2) and an Oxford Happiness Questionnaire Short Form (OHQ) (Appendix 2). In order to avoid any confusion with regard to the measures, the scales and completion of the scales were presented visually as indicated by photograph 3.3.



Photograph 3.3: Each scale of the various measures were visually explained to participants

Allen (2008) posits that all research levies a cost on society and on participants, even if they only contribute their time. It follows that no research is justified if neither society as a whole nor the participants benefit from it. An important factor to consider is that research is only ethically justifiable if it has scientific merit, in terms of the reliability of results. The research methodology also needs to be appropriate and the study feasible. If these conditions are not met, the research should not proceed, because it is not justified and it will be a waste of societal resources. There are important ethical guidelines that need to be considered when starting a research project. These guidelines may be compromised when researching secondary data, so the researcher should ensure that the ethical requirements are met.

Babbie (2005) presents ethical guidelines and states that informed consent, anonymity, confidentiality and privacy are important guidelines that should be understood and applied within one's research to ensure good practice and to protect the interests of the respondents. In addition to the above-mentioned ethical principles, non-maleficence,

beneficence and human dignity were adhered to in this study. These principles were upheld by maintaining privacy and confidentiality in the aggregation of the data. Also, the intention was to provide benefits to the respondents by conducting research that may enrich their understanding of their challenges (Cohen *et al.*, 2007).

Creswell (2009) states that secondary data analysis implies certain ethical considerations when contemplating a research design. The question of whether consent was obtained in the original study is critical, especially where sensitive data is involved. Given that it is not usually feasible to seek consent after a study has been completed, a professional judgment may have to be made about whether or not the re-use of data could violate the contract between the research respondents and the primary researchers. In this study, I addressed this concern by consulting with the original project researchers at the University of Pretoria (Ebersöhn, personal communication, February, 2012) and confirmed that the teachers from the three rural schools were included in the STAR project based on their availability and willingness to participate.

3.10 SUMMARY

In this chapter I discussed the selected metatheoretical and methodological paradigms in terms of their suitability to this study and I described their related strengths and challenges. I discussed the selected research design, the selection of existing data and the analysis process, as well as the ethical considerations that guided me during the study. I also addressed the reliability and validity of the selected measures within a rural South African context. I highlighted the sensitivity issues and that the interpretation of the research results will be tentative.

The next chapter presents the results of study. Graphic illustrations depict the statistical results that were obtained through the analysis of the three selected measures.

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CHAPTER 4

RESEARCH RESULTS AND DISCUSSION OF RESULTS

4.1 INTRODUCTION

In Chapter 3 I presented the methodological process of the research. The paradigmatic perspectives (namely a quantitative approach situated within the positivist paradigm) that were selected for this study are described in detail in Section 3.3. The suitability of the research design, in the form of secondary data analysis, was presented in Section 3.6 and the ethical implications of secondary data analysis were discussed in Section 3.10. Section 3.7 discussed the rigour of the measures, by examining their reliability, validity and suitability for the South African context. Additional ethical matters, as well as the background of existing data, were discussed in Section 3.2. In Section 3.7 the data analysis was presented and nonparametric statistics, as well as their application to this study, were discussed. Each statistical tool's usefulness and its alignment with the specific research question were also addressed.

In this chapter I present the results obtained from the quantitative data analysis of the measures selected and analysed. The findings of the first three research question are presented in Sections 4.2.1.1 to 4.2.1.3, the analysis of the fourth research question in Section 4.2.2, and the fifth research question is analysed in Section 4.2.3. I have also graphically represented the different statistical techniques that were used to address each specific research question.

❖ **Question 1:**

To what extent do teachers in rural schools demonstrate happiness?

❖ **Question 2:**

To what extent do teachers in rural schools demonstrate a sense of coherence?

❖ **Question 3:**

To what extent do teachers in rural schools demonstrate resilience?

The first three research questions examine the quantitative scores obtained by the respondents in each of the three selected measures (RS-14, SOC-13 and OHQ). These scores have been processed and presented in the form of various descriptive statistics in order to summarize the data and provide an overall picture.

❖ **Question 4:**

Is there a significant relationship that exists between resilience, happiness and sense of coherence among rural school teachers?

The literature consulted in Chapter 2 indicates that a possible relationship may exist between happiness, sense of coherence and resilience. This provides the basis of inquiry for the next research question.

❖ **Question 5:**

To what extent do teachers' participation in an intervention impact on their ability to demonstrate happiness, a sense of coherence and resilience?

As there are more than two groups, the Kruskal-Wallis test was deemed appropriate to address this question. This test enables the assessment of potential differences between the three groups (Wilson & Mclean, 2011).

Considering that the measures from school 1 indicate post-intervention levels of resilience, and that the measures from schools 2 and 3 indicate pre-intervention levels of resilience, the possible influence of affiliations to different schools on the scores was examined in the next research question.

The following hypothesis is tested by examining the differences between the groups in question 5:

❖ **Null hypothesis (H0)**

Teachers' participation status in an intervention indicates similar levels happiness, sense of coherence and resilience.

The null hypothesis implies no difference between the selected groups (namely schools 1, 2 and 3). The alternative hypothesis proposes a relationship between the variables, and by implication a difference between the groups (Wilson & Mclean, 2011).

❖ **Alternative hypothesis (H1)**

Teachers' participation status in an intervention indicates different levels of happiness, sense of coherence and resilience.

❖ **Question 6:**

To what extent does gender impact on the happiness, sense of coherence and resilience of teachers in rural schools?

Considering that the respondents consisted of female and male teachers, the possible impact of gender on the measures was also investigated. The results of question 1-3 are used to address question 6. The frequencies are described according to gender.

4.2 RESULTS OF THE QUANTITATIVE ANALYSIS

In this section, I provide an overview of the results that I obtained following a quantitative, statistical analysis of the three selected measures. I made use of secondary data analysis (pre-existing data) of the 14-Item Resilience Scale RS-14, the Orientation to Life Questionnaire (OLQ) and the Oxford Happiness Questionnaire (OHQ) to establish whether or not rural teachers are happy, demonstrate a sense of coherence and are ultimately resilient.

Questions 1, 2, 3, and 6 are described in terms of frequency, as well as the mean scores of the three selected measures. Question 4 is addressed through a correlational analysis provided by the Spearman correlation coefficient, where a p-value greater than 0.05 was deemed significant. The Kruskal-Wallis one way test for variance is used to examine question five. The critical Z values were 2.13 for overall alpha of .10 (*), and 2.39 for overall alpha of .05 (**).

The first step included analysing the three test measures. This was done by producing a set of raw data from which overall scores could be calculated for each respondent per measure. These results were then tabulated and converted to scale scores to produce frequencies (see Figures 4.1, 4.2 and 4.3) according to the categories of each measure. The results of the sampled documents are then described according to the frequencies depicted. These figures were derived from document DO1-R1 (Appendix 3).

4.2.1 DESCRIPTIVE STATISTICS

This section aims to address the first research question: *To what extent do teachers in rural schools demonstrate happiness, a sense of coherence and resilience?* To address this question, three secondary questions were formulated to effectively examine the three constructs. The questions are:

- *To what extent do teachers in rural schools demonstrate happiness?*
- *To what extent do teachers in rural schools demonstrate a sense of coherence?*
- *To what extent do teachers in rural schools demonstrate resilience?*

The results of the above-mentioned secondary questions are derived from document DO1-R1 (Appendix 3).

4.2.1.1 Extent of rural teachers' happiness (OHQ)

This section aims to present the scaled categories of the OHQ, and also the frequencies revealed by examining the raw data of the OHQ completed by the participants.

The OHQ assesses a number of constructs which Hills and Argyle (2002) believed constitutes happiness. These constructs include extraversion, kindness, humor, sense of purpose, aesthetic appreciation, locus of control, positive affect, self-efficacy, physical health, self-esteem and subjective well-being (Hills & Argyle, 2002; Kashdan, 2004). Table 4.1 shows the happiness categories presented by the OHQ.

Table 4.1: Happiness categories according to the OHQ

Happiness Category						
	Not happy	Somewhat unhappy	Not particularly happy or unhappy	Rather happy (Average level of happiness)	Very happy	Too happy
Happiness Scores	1 - >2	2< - >3	3< - >4	4< - >5	5< - >6	<6

Table 4.2 provides an indication of the mean score per item indicated. The sum of the means indicates the mean value of the overall OHQ scores, which is 154.1667.

The sum of the items in the OHQ is calculated by adding the scores of all of the items. The scores are then divided by 29 to get an average happiness score. The 29 items are arranged on a Likert scale that ranges from 1 to 6. Twelve items are reversed when scored as they are negatively worded. The maximum score that can be attained is 174; which is then divided by 29 to get a result of 6, which indicates the category 'Too happy'.

Table 4.2: Mean, median and standard deviation of the OHQ measures (n=12)

Measure					
	M	Me	SD	Sum of means	SD (Sum of means)
OHQ	5.3161	5.3621	0.3771	154.1667	10.9365

Figure 4.1 illustrates the distribution of frequencies that were observed when the scores of the OHQ were analysed.

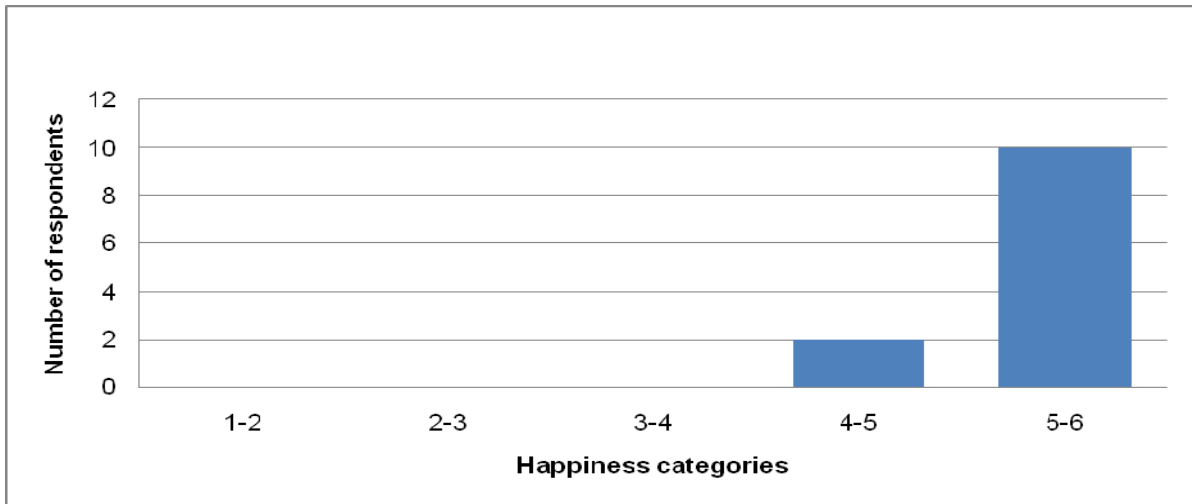


Figure 4.1: Oxford Happiness Questionnaire frequencies

The frequencies are grouped toward the right hand side of the horizontal axis, with the curve trailing off on the lower end (Huysamen, 1976, Cohen *et al.*, 2007).

The respondents' results indicate that 16% of the respondents are *rather happy* (this indicates that the respondent is fairly happy and experiences happiness often) and that 84% of the respondents are *very happy* (this level of happiness is correlated with benefits such as good health, better relationships and the attainment of goals, according to Hills and Argyle (2002). The scores of Figure 4.1 show that the majority of the teachers experience moderate to high levels of happiness. This may mean that the positive emotions experienced assist rural teachers to cope with their significant adversities. The positive emotions may also increase their personal resources, which may further assist with their overall functioning, as proposed by the broaden-and-build theory (Fredrickson, 2004; Fredrickson & Losada, 2005). Furthermore, these scores indicate strong levels of eudemonic happiness, which in turn implies optimism and sustained happiness (Maltby *et al.*, 2005).

4.2.1.2 Extent of rural teachers' sense of coherence (SOC-13)

Sense of coherence is seen as a dynamic concept comprised of components that include comprehensibility, manageability and meaningfulness (Antonovsky, 1987). The Orientation to Life Questionnaire results are presented in this section by calculating the cumulative scores and then categorizing the scores to determine the levels of coherence. A response of 4 and above per item indicates an above average sense of coherence. A score of 52 indicates an average sense of coherence, as there are 13 items plotted on a Likert scale that ranges from 1 to 7. Figure 4.2 represents the frequency of the various sense of coherence categories in which the teachers were placed.

Table 4.3 presents the mean score (4.4295) per item obtained by the respondents of the SCO-13. The sum of means therefore indicates the mean value of the overall SOC-13 scores which is 57.5833.

Table 4.3: Mean, median and standard deviation of the OLQ measures per item (n=12)

Measure					
	M	Me	SD	Sum of means	SD (Sum of means)
OLQ	4.4295	4.4615	0.4644	57.5833	6.0371

The SOC-13 consists of 13 items and each item has a maximum score of 7. Therefore the maximum score that can be obtained on the SOC-13 is 91. A score of 42 is regarded as an average score.

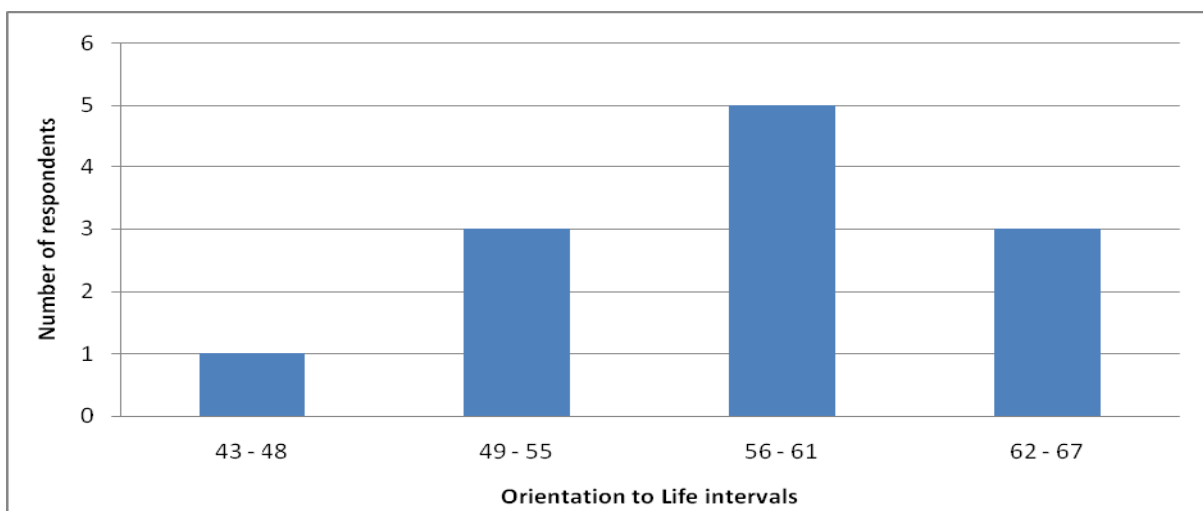


Figure 4.2: Orientation to Life Questionnaire frequencies

The distribution is positively skewed to the left in terms of the distribution of the frequencies (Cohen *et al.*, 2007), considering that the orientation to life intervals continues up to the value of 91.

When considering the results presented in Figure 4.2, it appears that all of the teachers attained scores of more than 42 (average sense of coherence). Forty-two percent of the teachers attained scores ranging between 56-61, 25% between 62-67, 25% between 49-55 and 8% between 43-48. This indicates that all of the teachers are seemingly able to respond effectively to adversity by accessing their available resources within an environment of scarce resources. Furthermore, they are able to understand their unique adversities and manage them, and they are also able to draw meaning from them so as to

better manage the potential stress that such adversities may bring (Antonovsky, 1996). This ability to access and utilise available resources with a rural environment, therefore facilitates adaptive coping (resilience) within the context significant risk (Loots *et al.*, 2012).

4.2.1.3 Extent of rural teachers' resilience (RS-14): teachers indicate high moderate to high levels of resilience

This section examines the levels of resilience according to the Resilience scale (RS-14). The categories of resilience are presented and the meanings of the scores are provided according to the resilient outcomes, as outlined in the RS-14 (Wagnild, 2011).

Wagnild (2011) developed the RS-14 in order to measures outcomes believed to constitute resilience. These outcomes included self-reliance, having a purposeful and meaningful life, equanimity, perseverance and existential aloneness. Table 4.4 shows the resilience score categories presented by Wagnild (2011).

Table 4.4: Resilience score categories

Resilience Category						
	Very low resilience	Low resilience	On the low end resilience	Moderate resilience	Moderately high resilience	High resilience
Score ranges	14-56	57-64	65-73	74-81	82-90	91-98

The RS-14 consists of 14 items arranged on a Likert scale that ranges from 1 to 7. The scores are tallied in order to establish the resilience category. Ninety-eight is the maximum score for the RS-14.

Table 4.5 presents the mean score (6.2821) per item obtained by the respondents of the RS-14. The sum of the means indicates the mean value of the overall RS-14 scores, which is 81.6667.

Table 4.5: Mean, median and standard deviation of the RS-14 measures per item (n=12)

Measure					
	M	Me	SD	Sum of means	SD (Sum of means)
RS-14	6.2821	6.2308	0.3492	81.6667	4.5394

Figure 4.3 illustrates the distribution of frequencies that were observed when the scores of the RS-14 were analysed, in terms of the various resilience categories in which the teachers were placed.

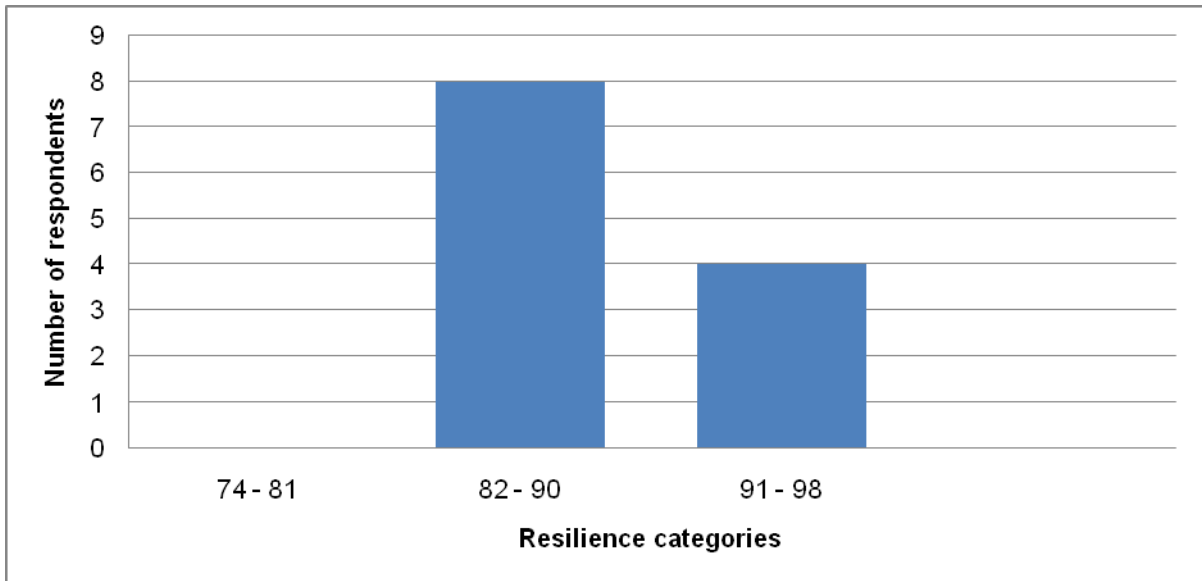


Figure 4.3: Resilience scale frequencies

All the teachers' scores fell within the *moderately high resilience to high resilience* categories. According to Wagnild (2011), *moderately high resilience* implies that the respondents have well developed aspects⁵ of resilience, and experience life as purposeful. Respondents experience little anxiousness and are reasonably optimistic. *High resilience* implies that all aspects of resilience are well developed; the respondents experience life to be very purposeful. The respondents are able to maintain balanced lifestyles and are very resourceful. Furthermore respondents are self-confident and satisfied with life.

This indicates the presence of resilience in teachers who are able to lead meaningful lives that facilitate their positive adaption to adversity through adaptive coping (Folkman, 2011). The results of the RS-14 indicate that the outcomes presented by Wagnild (2011) are evident within all the respondents. Their high resilience enables them to thrive within the context of significant risk and it also helps them to use the limited resources available for resourceful and adaptive coping (Ebersöhn, 2011).

⁵ Aspects of resilience refer to self-reliance, having a purposeful and meaningful life, equanimity, perseverance and existential aloneness as suggested in Chapter 3, Section 3.8.4.3.

4.2.1.4 Integration of results in terms of overall levels of happiness, sense of coherence and resilience: mean values RS-14, SOC-13 and OHQ

The scaled scores represented in the data set were processed to produce the results in Table 4.6. The mean, median, standard deviation, sum of means and the standard deviation of the sum of means were produced. The mean scores of the three measures hold specific relevance to this study, as they indicate the average responses of all of the respondents. These results are represented in Appendix 6 (D01-RAS1.DOC).

Table 4.6: Mean, median and standard deviation of the three measures per item overall (n=12)

Measure					
	M	Me	SD	Sum of means	SD (Sum of means)
RS-14	6.2821	6.2308	0.3492	81.6667	4.5394
OHQ	5.3161	5.3621	0.3771	154.1667	10.9365
OLQ	4.4295	4.4615	0.4644	57.5833	6.0371

The mean values of the RS-14, OHQ and the SOC-13 are shown in Table 4.6 to make sense of the quantity of the means. The mean is usually preferred (Wilson & Mclean, 2011) in the case of numerical data, as opposed to the mode or median, because it is based on the numerical value of every score in the distribution. Furthermore, it also takes into account the same properties as the median and mode. In addition, it also uses the property of equal intervals (Huysamen, 1976). The RS-14 indicates a mean of 6.3 out of a possible maximum score of 7, the OHQ indicates 5.3 out of a possible maximum score of 6, and lastly the SOC-13 indicates a mean score of 4.4 out of a possible maximum score of 7.

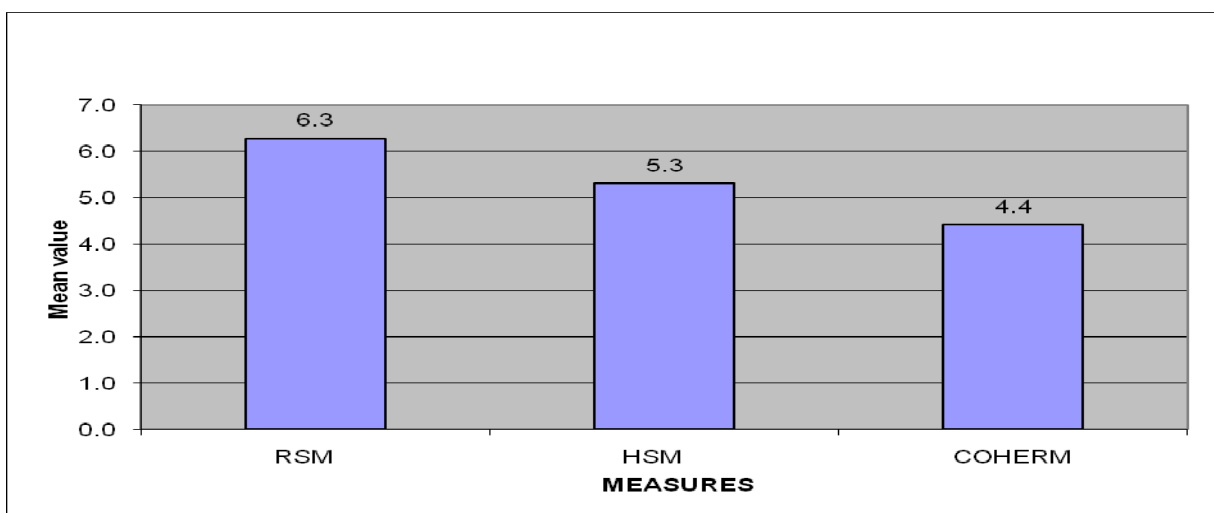


Figure 4.4: Mean values of the three selected measures

Figure 4.4 illustrates the average overall responses of each respondent according to the specific measuring instrument used. The results of the instruments have been analysed individually in terms of levels of happiness, sense of coherence and resilience. Therefore, considering Figure 4.4 together with the analysis of the individual constructs, the following deductions can be made regarding the teachers' levels of happiness, sense of coherence and resilience: Teachers in rural schools:

- Possess high moderate to high levels of happiness;
- Moderate to high moderate sense of coherence; and
- High moderate to high levels of resilience.

4.2.2 CORRELATIONAL ANALYSIS

To address the fourth research question of whether a significant relationship exists between happiness, sense of coherence and resilience, the means of the three measures were correlated using the Spearman correlation coefficient. The results are shown in Table 4.4 and are derived from document (DO1-R6) (Appendix 5). The criteria for correlation are denoted by the values within brackets in Table 4.7.

Table 4.7: Spearman correlation coefficients N = 12 (Prob > |r| under H₀: Rho = 0)⁶

	RSM (Mean of RS-14)	HSM (Mean of OHQ)	COHERM (Mean of SOC-13)
RSM	1.00000	-0.24823 (0.4366)	0.07447 (0.8181)
HSM	-0.24823 (0.4366)	1.00000	0.12014 (0.7100)
COHERM	0.07447 (0.8181)	0.12014 (0.7100)	1.00000

A review of Table 4.7 indicates that there appears to be no statistically significant correlation, as the p-values are 0.4366 (HSM vs. RSM), 0.8181 (COHERM vs. RSM) and 0.7100 (COHERM vs. HSM). However, it appears that the relationship between HSM and RSM is slightly negative, but no other correlations were statistically significant. The negative relationship was not expected, as the literature consulted for the study suggested that happiness and resilience are positively correlated. However, sample size may have influenced the result.

⁶The quantities in the brackets indicate the size needed for a statistically significant relationship to exist.

4.2.3 ANALYSIS OF DIFFERENCES AMONGST SCHOOLS

The reason for conducting the Kruskal-Wallis test is because some of the respondents were previously exposed to the STAR intervention, while others had not been. Therefore a possible difference between the respondents in terms of resilience may exist. Table 4.8 indicates whether or not the respondents were exposed to the STAR intervention.

Table 4.8: Intervention status of respondents

n=12	School	School type	Intervention status
Respondent 1	1	Secondary	post-intervention
Respondent 2	1	Secondary	post-intervention
Respondent 3	1	Secondary	post-intervention
Respondent 4	1	Secondary	post-intervention
Respondent 5	1	Secondary	post-intervention
Respondent 6	1	Secondary	post-intervention
Respondent 7	2	Primary	pre-intervention
Respondent 8	2	Primary	pre-intervention
Respondent 9	2	Primary	pre-intervention
Respondent 10	3	Primary	pre-intervention
Respondent 11	3	Primary	pre-intervention
Respondent 12	3	Primary	pre-intervention

The Kruskal-Wallis test was applied to all the median scores (results indicated on documents D01-RS1.DOC, DO1-RAS2.DOC and D01-R1) (Appendices 6 & 7) of the subscales of the three measures to address the fifth research question: *To what extent do teachers' affiliations to different rural schools impact on their ability to demonstrate happiness, a sense of coherence and resilience?*

The following hypothesis was tested to establish if a difference exists.

❖ **Null hypothesis (H0)**

Teachers' participation status in an intervention indicates similar levels happiness, sense of coherence and resilience.

❖ **Alternative hypothesis (H1)**

Teachers' participation status in an intervention indicates different levels of happiness, sense of coherence and resilience.

The Kruskal-Wallis test is conducted by ranking all of the scores and then comparing the total rankings of each group. For there to be a statistically significant difference between groups, one group's rankings need to be much higher than those of another group (Wilson & MacLean, 2011). This was not the case in this study. No significant differences were observed.

The Kruskal-Wallis one way analysis of variance test was performed to investigate possible significant differences between the scores of the three different schools. The only significant difference noted was that of the median scores of the *Purposeful life* outcome (RS-14) in schools 2 and 3.

The different outcomes that constitute the Resilience core as shown in Table 4.9 were examined further, because resilience forms the fundamental component of this study. The results of Appendix 7 (D01-R3b) are reflected below in Figure 4.5. The graph illustrates the means and sum of means of the subscales of RS-14. This was done to establish the possible statistical relationships that may exist between the outcomes. Figure 4.5 presents the mean values per subscale of the RS-14, as stated in document D01-R1b and D01-RAS2 (Appendix 7). Table 4.9 presents the various outcomes of resilience known as the Resilience core.

Table 4.9: Resilience core (Wagnild, 2011)⁷

Characteristic	Explanation of characteristic
A purposeful life	This is regarded as the most critical aspect of resilience, as it provides the foundation for the other characteristics. Life without purpose is regarded as futile and aimless. Purpose provides the driving force in an individual's life.
Perseverance	Perseverance constitutes determination to keep going despite adversities, discouragement and disappointment. Resilience is the ability to 'bounce back' when adversity strikes, which requires perseverance.
Equanimity	Equanimity refers to an individual's view of life, it can either be skewed, where the individual exclusively focuses on disappointments, or it can be a healthy, balanced perspective. Equanimity refers to the balanced and harmonious view of life. Resilient individuals learn to avoid extreme responses and remain balanced.
Self-reliance	Self-reliance refers to an individual's clear understanding of his or her capabilities, competencies and limitations. Self-reliant individuals learn from the interactions with adversities they have encountered and they develop problem solving skills from such experiences.
Existential aloneness	Existential aloneness is the ability to live with oneself, and it is an extension of self-reliance. Being existentially alone does not imply denying the importance of shared experiences, nor does it detract from the importance of close relationships. Rather, it emphasizes the willingness to accept oneself.

⁷The outcomes outlined by Wagnild (2011) are described in more detail in Chapter 2, Section 2.2.6.

Figure 4.5 below presents the mean and sum of mean values per subscale of the RS-14.

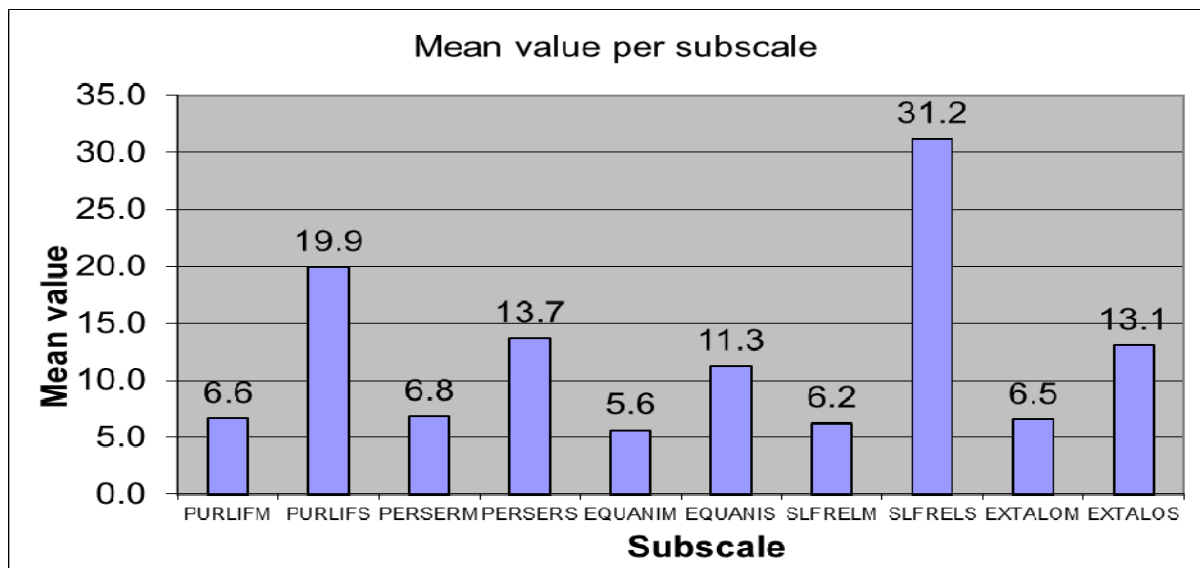


Figure 4.5: Mean values per subscale of the RS-14

What is noteworthy in Figure 4.5 is that perseverance reflects the highest mean score in terms of the resilience score. Perseverance, according to Wagnild (2011), indicates the determination to keep going despite adversities, discouragement and disappointment. The lowest mean score is that of equanimity, which indicates that an individual's view of life can either be skewed, where the individual focuses exclusively on disappointments, or it can be characterized by a healthy, balanced perspective. Equanimity refers to the balanced and harmonious view of life. It is important to note that, according to the Resilience scale manual (Wagnild, 2011), purposeful life is listed as the most significant indicator of resilience out of all the subscales. Purposeful life also indicated an above average mean score, which indicates a high level of resilience amongst the respondents.

The Kruskal-Wallis one way analysis of variance test was conducted to investigate possible significant differences between the scores of the three different schools. The only significant difference noted was that of the median scores of the *Purposeful life* outcome (RS-4), as mentioned earlier. This therefore suggests that, while the schools share similar characteristics, they differ significantly in terms of the resilience-related outcome. The statistical comparison of the schools is shown in Table 4.10.

The critical Z values are 2.13 for overall alpha of .10 (*), and 2.39 for overall alpha of .05 (**). Additional results can be found in Appendix 7 (D01 - RAS2).

Table 4.10: Comparison of schools in terms of Purposeful life

Comparisons	Z stat	Difference	Standard error
*1 - *2	1.36	3.25	2.39
*1 - *3	1.50	-3.58	2.39
*2 - *3	2.47**	-6.83	2.76

Referring to Table 4.10, it is reasonable to state that there is a statistically significant difference between the levels of a *Purposeful life* between schools 2 and school 3. School 3 scored significantly lower in terms of this outcome and this can be stated with 95% certainty. Only one subscale of the RS-14 indicates a significant variance between schools 2 and 3. Therefore, there are no significant differences between levels of happiness, sense of coherence and resilience of the respondents from the three selected schools. Hence:

Result: $H_0 > H_1$. The null hypothesis is supported and the alternative hypothesis rejected, as no significant difference was observed between the three schools.

4.2.4 EXPLORING GENDER DIFFERENCES WITH REGARD TO LEVELS OF HAPPINESS, SENSE OF COHERENCE AND RESILIENCE

Table 4.11 shows each respondent's result, as well as the gender of each respondent. The impact of gender on the constructs is deduced from the results presented.

Table 4.11: Results of the samples according to measure and gender

n=12	Gender	School	Result (RS-14)	Result (OHQ)	Result (SOC-13)
Respondent 1	F	1	High resilience	Very happy	Above average
Respondent 2	M	1	Moderately high resilience	Rather happy	Above average
Respondent 3	M	1	High resilience	Very happy	Above average
Respondent 4	F	1	Moderately high resilience	Very happy	Strong
Respondent 5	F	1	Moderately high resilience	Very happy	Above average
Respondent 6	F	1	Moderately high resilience	Very happy	Average
Respondent 7	F	2	Moderately high resilience	Rather happy	Above average
Respondent 8	F	2	Moderately high resilience	Very happy	Above average
Respondent 9	F	2	High resilience	Rather happy	Above average
Respondent 10	F	3	Moderately high resilience	Very happy	Above average

n=12	Gender	School	Result (RS-14)	Result (OHQ)	Result (SOC-13)
Respondent 11	F	3	High resilience	Very happy	Strong
Respondent 12	M	3	High resilience	Very happy	Strong

Considering the small sample (n=12), which consists of nine female teachers and three male teachers, it is difficult to observe any significant difference in levels of the three measures according to gender. Meaningful differences in scores were investigated according to school affiliations (see Section 4.2.3), and not gender, as school 2 only has female teachers. Also, given that 75% of the respondents are female and only 25% are male. Gender differences were not tested statistically; rather responses were compared and described. The following was observed in terms of scores arranged by gender:

Female resilience, sense of coherence, and happiness:

- 27% high resilience, 73% moderately high resilience;
- 16% strong sense of coherence, 73% above average sense of coherence, 11% average sense of coherence;
- 58% are very happy, and 42% are rather happy.

Male resilience, sense of coherence, and happiness:

- 66% high resilience, 33% moderately high resilience;
- 33% strong sense of coherence, 66% above average sense of coherence;
- 67% are very happy, and 33% are rather happy.

4.3 CONCLUSION

This chapter analysed the statistical outputs of this study, in terms of levels of happiness, sense of coherence and resilience. The outputs were represented graphically and they were described in terms of what the relevant outputs mean. The overall average scores were presented to obtain a precise perspective of how established these three internal coping strategies are in the coping processes of rural teachers. Furthermore, nonparametric techniques were used to examine possible differences that may exist between the three measures, as well as the three schools.

In the next chapter the existing literature is revisited to establish if the results of this study are supported or contradicted. The contribution and limitations of this study are also presented and recommendations are made relating to further research, practice and training.

CHAPTER 5

FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The aim of this study was to use a positive psychology lens to describe the resilience of teachers in rural schools that have to cope with chronic adversities on a daily basis. Chapter 1 provided an overview of the problem statement, and purpose of the study, as well as the methodological paradigms incorporated. The literature consulted was presented in Chapter 2 focussing on coping with stress and the various strategies and processes that are related to effective adaptation. The research process was presented in Chapter 3, as well as the research design and methodological perspective. Chapter 4 presented the findings of the study.

In the previous chapter I presented statistical results of the study. In this chapter I interpret the results of this study against existing literature. This is done in order to formulate a clear picture, and locate the study in relation to similar studies (Section 5.2). I answer research questions and reach conclusions (Section 5.3.). I discuss limitations of this study along with recommendations for future research, practice and training (Sections 5.6-5.8).

5.2 REFLECTION ON LITERATURE (Synthesis of results and literature control)

5.2.1 INTRODUCTION

This next section presents the results of the study as well as the literature that either supports, or contradicts the result.

5.2.2 INSTANCES WHERE RESULTS ARE SIMILAR TO EXISTING KNOWLEDGE

5.2.2.1 Teachers in rural schools indicate high levels of resilience

Like others (Brackett, Palomera, Mojsa-Kaja & Salovey, 2010; Beltman *et al.*, 2011; Jarzabkowski, 2003) I found that teachers in rural schools demonstrate resilience. Teachers are able to adapt by acquiring the necessary intellectual (internal resource) and social (external resource) resources to prevent job burnout and to promote job satisfaction (Brackett *et al.*, 2010). Beltman *et al.* (2011) state that in rural schools teachers are able to maintain good teacher-student relationships, optimism, perseverance and good problem solving skills despite significant adversity.

Jarzabkowski (2003) also found that rural teachers working in an isolated rural school in northern Australia were resilient by being able to support their colleagues and community members socially and emotionally. Teachers report that although they experience significant personal and professional isolation, they are able to maintain strong relationships among themselves and offer support where needed.

5.2.2.2 Teachers in rural schools possess a moderate to strong sense of coherence

Similar to others (Mansfield, Beltman, Price & McConney, 2012; Gropp, Geldenhuys & Visser, 2007; Jacobs, 2010), I also found that teachers in rural schools, and others working in the context of adversity, have a strong sense of coherence. In Australia, Mansfield *et al.* (2012) found that rural teachers are able to seek help and advice when needed, indicating positive adaptation through accessing resources to manage situations where they do not feel fully competent. Teachers are also able to remain positive and optimistic despite uncertainty. Furthermore teachers are also able to re-appraise their situations in order to make them more manageable and to undo the possible negative effects of stress and this in turn enhances problem solving. Thus, as with the sense of coherence results in my study, it appears that teachers are able to access resources through comprehending their environment (Brackett *et al.*, 2010).

5.2.2.3 Teachers in rural schools have significant levels of happiness despite significant adversity

Like me, others (Brackett *et al.*, 2010; Mansfield *et al.*, 2012) have found that, despite significant adversity, teachers in rural schools are happy. Brackett *et al.* (2010) state that teachers interviewed at a British secondary school in the countryside, exhibit positive emotions that have adaptive functions through buffering the effects of stress experienced in their environment. Cohn *et al.* (2009) and Fredrickson (2004) state that positive emotions, such as happiness, aid in the development of coping resources like sense of coherence and resilience that can be accessed when faced by future adversities, this seems to be the case when considering the moderate to high levels of happiness, sense of coherence and resilience that was observed by this study. Mansfield *et al.* (2012) report that despite adversity, teachers indicate resilience by being optimistic, experiencing positive emotions and having a good sense of humour, as well as being flexible and adaptable.

5.2.2.4 No significant relationship exists between happiness, sense of coherence and resilience of teachers in rural schools

Tsuno and Yamazaki (2012) also found, like I did, that there is no significant relationship between levels of happiness, sense of coherence and resilience. In particular, Tsuno and Yamazaki (2012) found that the sense of coherence of individuals living in rural areas had no relationship with their optimism or positive effect.

5.2.2.5 Gender has no significant impact on levels of happiness, sense of coherence and resilience

Others (Beasley, Thompson & Davidson, 2003; Roothman, Kirsten & Wissing, 2003) have also found that gender has no impact on levels of happiness, sense of coherence and resilience. Beasley *et al.* (2003) state that in terms of resilience and managing adversity there is no significant difference between males and females. The only noted difference in their study was that females are able to select a wider repertoire of coping styles and in turn may be more resilient.

In a study conducted in an educational setting, Roothman *et al.* (2003) examined the differences in well-being between men and woman found no significant difference. Aspects that were measured included sense of coherence, positive affect emotional intelligence and self-efficacy.

5.2.2.6 Interventions which has no significant effect on levels of happiness, sense of coherence and resilience of teachers in rural schools

Through a study and strength-based intervention known as REs (Resilient Educators), the administration of quantitative instruments (post strength-based intervention) indicated no significant findings about how REs had promoted resilience in teachers (Theron, 2012). Low levels of resilience were indicated before and after the teachers had passed through a skills development program aimed at facilitating resilience. With STAR average high moderate levels of happiness, high levels of resilience, and strong sense of coherence was present amongst both teachers who participated, and teachers who did not participate in STAR. This indicates that strength-based interventions, as in the case with this study (School 1 having participated in STAR), has no significant impact on internal protective resources.

5.2.3 INSTANCES WHERE RESULTS CONTRADICT EXISTING KNOWLEDGE

5.2.3.1 Teachers in rural schools indicate high levels of resilience

Others (Theron, 2012; Collins, 1999; Gu & Day, 2007; Meiklejohn, Phillips, Freedman, Griffin, Biegel, Roach & Saltzman 2012; Williers, 2009; Mangwaya & Ndlovu, 2013) have found that rural teachers are not resilient. Teachers struggle especially to adapt positively to the significant challenges posed by HIV/AIDS (Theron, 2012). Furthermore Collins (1999) states that rural teachers are unable to cope and adapt to isolation, distance from larger communities and family, and lack of resources.

Gu and Day (2007) state that teachers indicate significant distress due to work and personal pressures. Pressures indicated include stress related to school leadership, learner behaviour and a lack of teachers support. Meiklejohn *et al.* (2012) state that teachers are in great need of support in order to manage adversity and struggle to demonstrate resilience. In a study conducted on black teachers at a secondary school in the North West province, it was *found that only 27%* of teachers (n=200) were in fact flourishing, indicating high levels of resilience and have low levels of helplessness (Williers, 2009). Mangwaya and Ndlovu (2013) have found that the effects of HIV/AIDS in schools prove to be a significant adversity teachers are unable to effectively respond to. This has resulted in the absence of resilience, characterized by hopelessness, despair and helplessness.

5.2.3.2 Teachers in rural schools possess moderate to strong sense of coherence

Contrary to the result that teachers are able to use resources to manage adversity, Smart (2003) proposes that resources, both material and personal for community adjustment to challenges such as HIV/AIDS are stretched almost beyond its existing capacity. Furthermore those community members are unable to manage this adversity. Morrison (2013) found that rural teachers experience significant career challenges which lead to the depletion of personal resources. Relationships of care and support were also found to be non-existent according to rural teachers that contribute to a feeling of isolation and ultimately distress (Morrison, 2013).

5.2.3.3 Teachers in rural schools have significant levels of happiness despite significant adversity

Other studies (Barford, 2011; Theron, Geyer, Strydom & Delport, 2008; Morrison, 2013) have found teachers in rural schools not to be happy. Barford (2011) and Morrison (2013) states that the misconception often arises that rural teachers are happy due to their being

less materialistic. However this is not the case as rural teachers and their communities are prone to stress and consequently suffer significant health threats.

Furthermore, Theron *et al.* (2008) state that educators who work within HIV/AIDS ridden contexts are seemingly overwhelmed. These teachers are overwhelmed both personally and professionally. The teachers report significant emotional and spiritual distress, and very low levels of positive effect. As a result the teachers' morale becomes progressively worse; their performance lowers, ultimately constituting maladaptive outcomes.

5.2.3.4 No significant relationship exists between happiness, sense of coherence and resilience of teachers in rural schools

Others (Peterson *et al.*, 2005; Yeo, 2011; Olsson, Larsman & Hwang, 2008) have found a significant relationship between resilience, effective comprehension of challenging situations and positive affect. This relationship contributes to significant character strengths that enable teachers, and others dealing with significant adversity to handle stressful environments. Jacobs (2010) states that the analysis of South African educators indicated significant relationships between sense of coherence, and optimistic view of life, as well as resilience.

5.2.3.5 Gender has no significant impact on levels of happiness, sense of coherence and resilience

Other studies (Olsson *et al.*, 2008) have found that mothers living in the context of adversity report lower levels of overall well-being than fathers. Furthermore Drageset, Nygaard, Eide, Bondevik, Nortvedt and Natvig (2008) found that women have a more developed sense of coherence, and are able to better access resources in the form of social support, and are generally more optimistic.

5.2.3.6 School affiliation has no significant effect on levels of happiness, sense of coherence and resilience of teachers in rural schools

In terms of positive interventions, Sin and Lyubomirsky (2009) and Seligman *et al.* (2009) and Yeo (2011) state that positive psychology interventions performed at schools do have a significant impact on the overall well-being of participants, which was not the case as there was no difference between levels of post and pre intervention levels of happiness, sense of coherence and resilience of rural teachers. A study (Lyubomirsky & Della Porta, 2010) has shown that positive interventions are able to enhance coping abilities by providing skills for resilience and sustained happiness. Happiness enhancing activities were found to produce

positive emotions that assist in the counteracting of negative thoughts, and therefore enhancing psychological resilience as well as personal resources.

5.3 ANSWERING RESEARCH QUESTIONS AND HYPOTHESES

5.3.1 INTRODUCTION

This section will use the findings of the study in order to answer the research questions. Once the research questions have been addressed the findings will be theorised into the theoretical framework of the study, namely positive psychology.

5.3.1.1 To what extent are teachers from rural schools happy?

Like others I found that the majority of the teachers experience high moderate to high levels of happiness. I also see that this finding is dissimilar to that of other studies. Based on this finding I posit that the presence of extraversion, kindness, humour, sense of purpose, aesthetic appreciation, locus of control, positive affect, self-efficacy, physical health and self-esteem may aid rural teachers to address significant adversity. This presence of positive emotions builds personal resources that can further assist with their overall functioning and positive adaptation as proposed by the broaden-and-build theory (Fredrickson, 2004; Fredrickson & Losada, 2005). Therefore happiness may facilitate adaptive coping in the presence of adversity, and further enhance the repertoire of resilience resources available to an individual.

5.3.1.2 To what extent do teachers from rural schools have a sense of coherence?

I found that teachers in this study indicate moderate to high moderate levels of sense of coherence. This finding echoes that of existing knowledge on how teachers in rural schools are seemingly able to respond effectively to adversity by accessing their available resources and being able to comprehend their situations, manage them, and draw meaning from them in order to better manage the potential stress that they might bring (Antonovsky, 1996). The levels of sense of coherence indicated by the results also imply a flexible and adaptive dispositional orientation enabling successful coping with adversity which in turn facilitates adaptive coping (resilience). This in turn enables teachers to identify and use available resources during the resilience process. This constitutes a crucial part of the transactional processes that characterize resilience (Theron, 2010).

5.3.1.3 To what extent are teachers from rural schools resilient?

I found that teachers indicate moderately high to high levels of resilience. This indicates the presence of resilience as signified by teachers being able to lead meaningful lives that can assist with their positive adaptation to adversity through resourceful coping. The subscales of the RS-14 indicate that *purposeful life* is an especially crucial aspect of participating teachers' resilience processes. This outcome serves to indicate that rural teachers find substantial motivation despite being faced with adversity, as they experience their lives as meaningful.

5.3.1.4 Is there a significant relationship that exists between resilience, happiness and sense of coherence of rural school teachers?

Statistically I did not find a significant relationship between the constructs of resilience, happiness and sense of coherence. However, from examining the relatively high scores of all three constructs it could be reasonable to state that there is some level of relatedness (Van Breda, 2001), in terms of how each positively impact on the adaptive coping (resilience) of teachers in rural schools.

5.3.1.5 To what extent does teachers' participation status in an intervention impact on their ability to demonstrate happiness, a sense of coherence and resilience?

The only significant difference regarding the levels of resilience, happiness and resilience of the three participating schools was for one item of the RS-14 known as *Purposeful life*.

This difference was noted between the two primary schools (both of whom were measured at pre-intervention stage). School 3 scored significantly lower than school 2 with regard to a *Purposeful life*. This constitutes a significant difference between the three schools in terms of a resilience outcome. Consequently no difference was noted between the post-intervention school (1) and pre-intervention schools (2 & 3). This therefore could indicate that positive strength-based interventions may not be meaningful for teachers' resilience per se. Irrespective of an intervention or not, teachers from rural schools in the study are happy, resilient and have a strong sense of coherence.

❖ Null hypothesis (H0)

Teachers' participation in an intervention indicates similar levels happiness, sense of coherence and resilience.

❖ **Alternative hypothesis (H1)**

Teachers' participation in an interview indicates different levels of happiness, sense of coherence and resilience.

Result: $H1 < H0$ the null hypothesis is supported and the alternative hypothesis is rejected. No statistically significant indication was present that participation in an intervention impacts on teachers' levels of happiness, sense of coherence and resilience.

5.4 THEORIZING FINDINGS WITHIN THE THEORETICAL FRAMEWORK

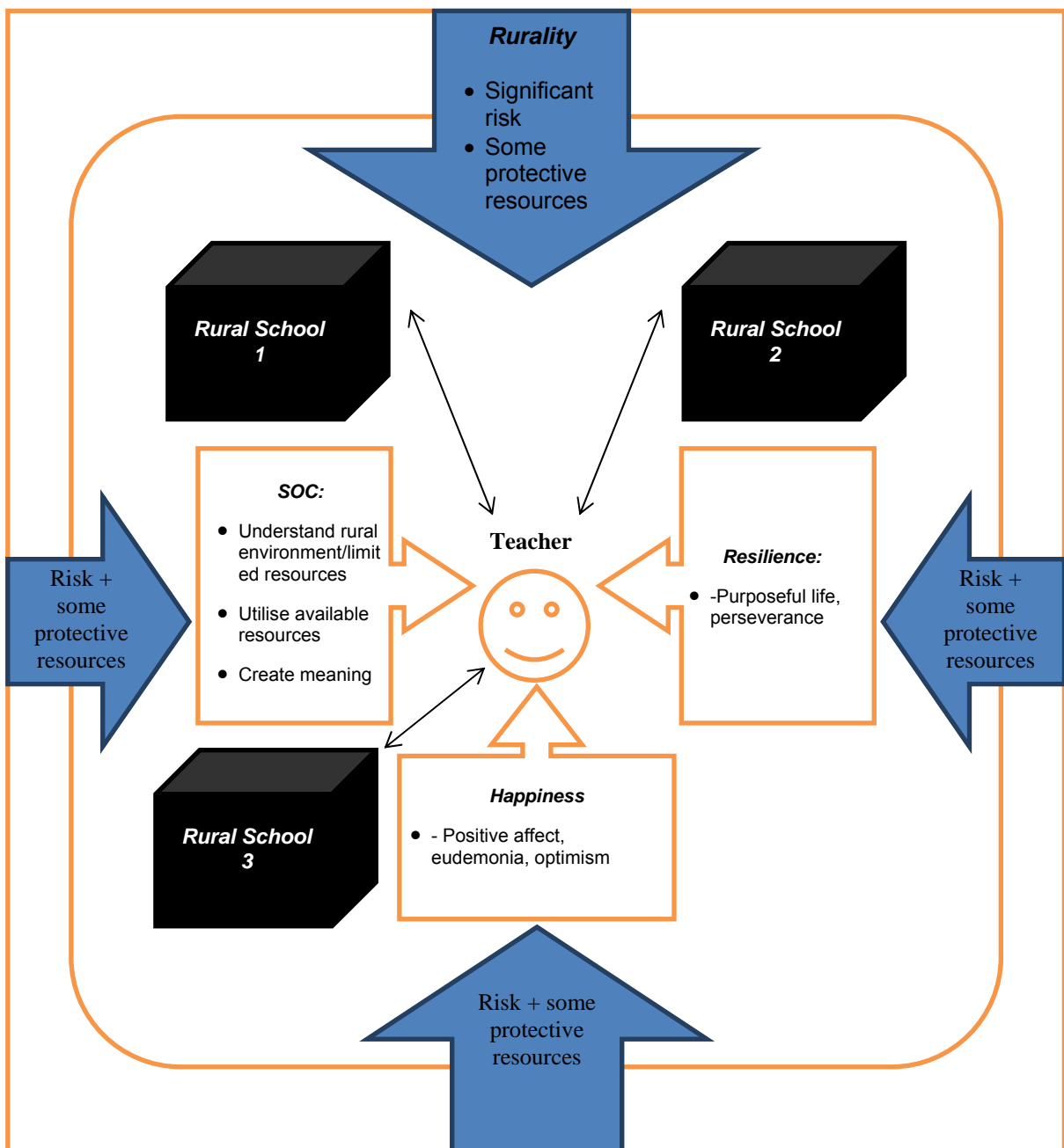


Figure 5.1: Theorizing the theoretical framework (positive psychology) with the findings of this study

Figure 5.1 depicts the rural environment in which the teacher is situated. It is characterized by extreme risk and adversity, and some protective resources. I found that teachers are one such protective resource in adaptive coping processes, because teachers are happy (Fredrickson, 2001; Seligman, 2002; Sheldon & Lyubomirsky, 2009), teachers are resilient (Theron, 2010; Ebersöhn & Ferreira, 2011; Wagnild, 2011) and teachers have a sense of coherence (Antovosky, 1996; Loots *et al.*, 2012). Theorizing the findings of this study within the theoretical framework of positive psychology indicates that despite significant risk and adversity, teachers are able to demonstrate positive psychological constructs in the form of happiness (extraversion, kindness, humor, sense of purpose, aesthetic appreciation, locus of control, positive affect, self-efficacy, physical health and self-esteem), sense of coherence (comprehensibility, manageability and meaning) and resilience (self-reliance, having a purposeful and meaningful life, equanimity, perseverance and existential aloneness). This would also serve to indicate that teachers are able to identify and utilize the limited resources in their environment, indicating transactional-ecological resilience (Theron, 2010), and that they themselves are able to serve as protective resources (Ebersöhn & Ferreira, 2012). Potentially this scenario exists whether or not interventions are undertaken with teachers.

5.5 CHALLENGES AND LIMITATIONS OF THE STUDY

The study only involved the data measures of twelve teachers, therefore the limitations imposed by this small number is important to consider (Babbie, 2005; Neuman, 2007). The findings of this study cannot be generalized due to the sample size consisting of less than 30 respondents. This study is therefore a non-probability sample and the results thereof have limited applicability to other populations. The aim of the study was however aimed at gaining insight into the sense of coherence, happiness and resilience of specific cohort rural teachers. The results of this study are therefore only relevant within a positivist, quantitative paradigm where statistical information are the only units of information deemed valid for investigation. The personal differences that may exist between respondents, in terms of age, experience, and gender were negated through this mode of inquiry.

The applicability and administration of measures is another important limitation as the instructions and questions were read by professionals to the teachers, therefore meanings could have been omitted and participant-researcher interaction could have influenced answering. Stead and Watson (2006) state that measures which are Western based, may be perceived differently by different cultural and ethnic groups, which may possibly be the case in this study. The effect of language and interpretation was addressed during the original administration of the measures however there may still be a residual effect of misunderstanding. Therefore, it was crucial for me to interpret the data with a sensitivity in

terms of cross-nationality and cross-cultural influences, as the measures have not been standardized for South African contexts. In addition to this the respondents first language is Siswati and not English, which raises obvious considerations relating to comprehension of the questions posed by the measures, especially in terms of items that were worded as double negatives which may potentially have been confusing to respondents.

5.6 RECOMMENDATIONS

The following section will make recommendations relating to further research, practice and training that relates to the resilience of rural teachers.

5.6.1 FUTURE RESEARCH

Contradictions between the findings of this study and existing knowledge should be investigated. Implied connections between findings and existing knowledge should also be examined.

- Although it was not established statistically, the possible link between happiness, sense of coherence and resilience is worth further inquiry.
- The link between happiness, positive affect and optimism could be researched with specific emphasis on Fredrickson's broaden-and-build theory within rural schools.
- Resilience outcomes, proposed by Wagnild (2011), could be investigated at a deeper level and in terms of its applicability to rural teachers.
- Research on resilience including the navigation and negotiation of resources described by Ungar (2008) could be explored in terms of sense of coherence.
- The effect of strength-based interventions on internal protective resources should be further researched; this could be done to effectively evaluate the viability of such interventions.
- The adversity depicted in rural schools could also be explored, seeing that a particular school has no effect could imply that the adversity is shared and not concentrated on rural teachers.

The development of culturally sensitive tests and assessment practices are crucial if sound research is to be done. Maree (2009) proposes the indigenisation of theories and concepts, thereby taking developmental concepts from elsewhere (such as United States of America) and modifications to make them fit and applicable to the South African context. This could perhaps be done by tailoring the RS-14, OLQ and OHQ to the South African context, and invest in further research as to what meanings do resilience, sense of coherence and happiness carry in an African, collectivist society (Foxcroft, 2005).

Beltman *et al.* (2011) state that what is missing in terms of teacher resilience is a comprehensive review of the current empirical research. Particularly in the form of individual factors, most of which is usually inferred from qualitative studies. This particular study therefore might possibly contribute in closing this gap that has been identified, however in order for a significant research impact to be made the sample would have to be significantly better in order to enhance applicability. Teacher sense of efficacy, has been found to have a significant impact on teacher resilience, and if this study is ever replicated it could be enhanced by incorporating the Teachers' Sense of Efficacy Scale (TSES). This would perhaps provide further insight into how teachers use individual resources to promote positive adaptation.

More research in terms of presiding ideologies and macro level resources are also important for future research. Therefore, further examining the resilience of communities and teachers from anthropological and sociological lenses. The role of social capital could possibly serve as the first step for such research, social capital meaning networks along with shared norms, values and understanding that facilitate co-operation within and between groups should be further researched (Lui & Besser, 2003).

Research on teachers in rural Australia indicated an interesting outcome relating to the connection that they felt to the land, which draws on literature of indigenous people and acknowledges the role of indigenous culture and cosmology as factors that promote resilience (Hegney *et al.*, 2007). This could therefore enhance the understanding of complex transactions that take place between teachers and their environments that foster resilience.

Lastly I recommend a similar study complimented by qualitative techniques perhaps at school 3 in order to investigate the possible existential challenges related to the low score on the item *Purposeful Life* of the RS-14 might be worth investigating.

5.7.2 PRACTICE

Howard and Johnson (2004) regard resilience as a process of adaptation rather than a set of individual attributes, and therefore it can be learnt. This holds specific relevance for practitioners who deal with clients that appraise their environments as stressful as the coping resources identified and examined in this study could be incorporated into therapeutic techniques. Therapeutic techniques that align with the paradigm of solutogenic functioning would therefore be best suited in order to promote and further develop individual signature strengths.

This could be further strengthened by the positive effects that positive emotions would have on the functioning of clients, when considering the theory of Fredrickson (2004) namely the Broaden-and-build theory.

5.7.3 TRAINING

Maree (2011) believes that community service should be made compulsory for all teachers and educational psychologists in order to facilitate their development but also to promote equity, access and redress. He further believes that these professionals should have access to emotional support and financial incentives. This approach could help alleviate racial barriers between people and communities, gain insight into the life-worlds of people living in desperate socio-economic contexts and provide holding environments for the most vulnerable populations. This approach would in turn assist rural teachers with their demands and also assist in fostering systemic resilience with their communities.

Similarly, service learning, which includes community-wide efforts and mentorships of young teachers and health care professionals, aligns closely with efforts to promote protective factors in rural communities (Finley, 1994).

The positive effects of experiencing a rural environment first hand are further emphasized by Gregson, Waters and Gruppetta (2006) who state that teachers in Australia who underwent a pre and post-test relating to their perceptions of rural teaching indicated significant differences in opinion after spending time in a rural environment. The visit lead to an understanding of the role that teachers play in a rural community and as a result reported a significant increase in empathy for rural communities. This could therefore not only benefit teachers and educational psychologists, but also perhaps policy makers and officials in order for them to have an enhanced conceptual understanding of the adversities faced by rural teachers and rural communities.

5.8 CONCLUSION

In this study I explored the positive psychological constructs of teacher's in rural school that facilitate healthy functioning. It was found that a sense of coherence; happiness and resilience are strategies that are employed in order to manage the significant risk posed by rural settings. Positive development and adaptation illustrate the beneficial effects of these constructs. That enables a trajectory change from risk to adaptation in rural teachers.

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RESEARCH ETHICS COMMITTEE

CLEARANCE CERTIFICATE	CLEARANCE NUMBER :	EP 06/11/01
<u>DEGREE AND PROJECT</u>	MEd Measuring resilience, happiness and sense of coherence of teachers in rural schools	
<u>INVESTIGATOR(S)</u>	Herman de Jong	
<u>DEPARTMENT</u>	Educational Psychology	
<u>DATE CONSIDERED</u>	26 August 2013	
<u>DECISION OF THE COMMITTEE</u>	APPROVED	

Please note:

For Masters applications, ethical clearance is valid for 2 years

For PhD applications, ethical clearance is valid for 3 years.

**CHAIRPERSON OF ETHICS
COMMITTEE**

Prof Liesel Ebersöhn

DATE 26 August 2013

CC Jeannie Beukes
Liesel Ebersöhn

This ethical clearance certificate is issued subject to the following conditions:

1. A signed personal declaration of responsibility
2. If the research question changes significantly so as to alter the nature of the study, a new application for ethical clearance must be submitted
3. It remains the students' responsibility to ensure that all the necessary forms for informed consent are kept for future queries.

Please quote the clearance number in all enquiries.



UNIVERSITEIT VAN PRETORIA
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YUNIBESITHI YA PRETORIA
Faculty of Education

RESEARCH ETHICS COMMITTEE

CLEARANCE CERTIFICATE

DEGREE AND PROJECT

INVESTIGATOR(S)

DEPARTMENT

DATE CONSIDERED

DECISION OF THE COMMITTEE

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EP 06/11/01

MEd

Measuring resilience, happiness and sense of coherence of teachers in rural schools

Herman de Jong

Educational Psychology

26 August 2013

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Please quote the clearance number in all enquiries.



STAR

Your name & surname¹: _____
 Your school: _____
 Facilitator or STAR
 beneficiary: _____
 Today's date: _____

Measure	Raw	Interpreted
STAR Open ended questionnaire 15min		
Brief Cope 30 min (28 item)		
14 Item Res 30 min (14 item)		
Oxford Happiness 30 min (29 item)		
Orientation to Life (SOC) 30 min (13 item)		
Belief in a Just World (10 min) (7 item)		

¹ Anonymity and informed consent for your participation in STAR is documented elsewhere.

STAR OPEN ENDED QUESTIONNAIRE

Please answer the following questions.

1. Which services / networks are available in the school community where you teach?

2. Which of these services / networks are you or your school currently using to support vulnerable children or others?

3. How do these services / networks help you to support vulnerable children or others in the school you are teaching at?

Brief COPE – Carver

These items deal with ways you've been coping with the stress in your life since you have to cope with being a teacher in your school.

There are many ways to try to deal with problems. These items ask what you've been doing to cope with this one.

Obviously, different people deal with things in different ways, but I'm interested in how you've tried to deal with it. Each item says something about a particular way of coping.

I want to know to what extent you've been doing what the item says. How much or how frequently / how often.

Don't answer on the basis of whether it seems to be working or not—just whether or not you're doing it.

Use these response choices. Try to rate each item separately in your mind from the others. Make your answers as true FOR YOU as you can.

- 1 = I haven't been doing this at all
- 2 = I've been doing this a little bit
- 3 = I've been doing this a medium amount
- 4 = I've been doing this a lot

Brief COPE – Continued

- 1 = I haven't been doing this at all
 2 = I've been doing this a little bit
 3 = I've been doing this a medium amount
 4 = I've been doing this a lot

'teaching in my school'

1. I've been turning to work or other activities to take my mind off things.	
2. I've been concentrating my efforts on doing something about the situation I'm in.	
3. I've been saying to myself "this isn't real."	
4. I've been using alcohol or other drugs to make myself feel better.	
5. I've been getting emotional support from others.	
6. I've been giving up trying to deal with it.	
7. I've been taking action to try to make the situation better.	
8. I've been refusing to believe that it has happened.	
9. I've been saying things to let my unpleasant feelings escape.	
10. I've been getting help and advice from other people.	
11. I've been using alcohol or other drugs to help me get through it.	
12. I've been trying to see it in a different light, to make it seem more positive.	
13. I've been criticizing myself.	
14. I've been trying to come up with a strategy about what to do.	
15. I've been getting comfort and understanding from someone.	
16. I've been giving up the attempt to cope.	
17. I've been looking for something good in what is happening.	
18. I've been making jokes about it.	
19. I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.	
20. I've been accepting the reality of the fact that it has happened.	
21. I've been expressing my negative feelings.	
22. I've been trying to find comfort in my religion or spiritual beliefs.	
23. I've been trying to get advice or help from other people about what to do.	
24. I've been learning to live with it.	
25. I've been thinking hard about what steps to take.	
26. I've been blaming myself for things that happened.	
27. I've been praying or meditating.	
28. I've been making fun of the situation.	

The 14-Item Resilience Scale (RS-14)

Please read the following statements.

To the right of each you will find seven numbers, ranging from

“1” (Strongly Disagree) on the left to **“7” (Strongly Agree)** on the right.

Circle the number which best indicates your feelings about that statement.

For example, if you strongly disagree with a statement, circle “1”.

if you are neutral, circle “4”,

and if you strongly agree, circle “7”, etc.

Circle the number in the appropriate column	Strongly Disagree			Strongly Agree			
	1	2	3	4	5	6	7
1. I usually manage one way or another.	1	2	3	4	5	6	7
2. I feel proud that I have accomplished things in life.	1	2	3	4	5	6	7
3. I usually take things in stride.	1	2	3	4	5	6	7
4. I am friends with myself.	1	2	3	4	5	6	7
5. I feel that I can handle many things at a time.	1	2	3	4	5	6	7
6. I am determined.	1	2	3	4	5	6	7
7. I can get through difficult times because I’ve experienced difficulty before.	1	2	3	4	5	6	7
8. I have self-discipline.	1	2	3	4	5	6	7
9. I keep interested in things.	1	2	3	4	5	6	7
10. I can usually find something to laugh about.	1	2	3	4	5	6	7
11. My belief in myself gets me through hard times.	1	2	3	4	5	6	7
12. In an emergency, I’m someone people can generally rely on.	1	2	3	4	5	6	7
13. My life has meaning.	1	2	3	4	5	6	7
14. When I’m in a difficult situation, I can usually find my way out of it.	1	2	3	4	5	6	7

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The Oxford Happiness Questionnaire²

Below are a number of statements about happiness.

Would you please indicate how much you agree or disagree with each by entering a number alongside it according to the following code:

1=strongly disagree; 2=moderately disagree; 3=slightly disagree;
 4=slightly agree; 5=moderately agree; 6=strongly agree.

You will need to read the statements carefully because some are phrased positively and others negatively. Don't take too long over individual questions; there are no 'right' or 'wrong' answers and no trick questions. The first answer that comes into your head is probably the right one for you. If you find some of the questions difficult, please give the answer that is true for you in general or for most of the time.

1y. I don't feel particularly pleased with the way I am	
2. I am intensely interested in other people	
3y. I feel that life is very rewarding	
4. I have very warm feelings towards almost everyone	
5. I rarely wake up feeling rested ()	
6. I am not particularly optimistic about the future	
7. I find most things amusing	
8. I am always committed and involved	
9. Life is good	
10. I do not think that the world is a good place	
11. I laugh a lot	
12y. I am well satisfied about everything in my life	
13y. I don't think I look attractive	
14. There is a gap between what I would like to do and what I have done	
15. I am very happy	
16y. I find beauty in some things	
17. I always have a cheerful effect on others	
18y. I can fit in everything I want to	
19. I feel that I am not especially in control of my life	
20. I feel able to take anything on	
21y. I feel fully mentally alert	
22. I often experience joy and elation	
23. I do not find it easy to make decisions	
24. I do not have a particular sense of meaning and purpose in my life	
25. I feel I have a great deal of energy	
26. I usually have a good influence on events	
27. I do not have fun with other people	
28. I don't feel particularly healthy	
29. I do not have particularly happy memories of the past	

² Notes. Items marked () should be scored in reverse.

yIndicates components of the OHQ short scale. The sum of the item scores is an overall measure of happiness, with high scores indicating greater happiness.

ORIENTATION TO LIFE QUESTIONNAIRE (SOC)

Here is a series of questions related to our lives.

Each question has seven possible answers. Please mark the number that expresses your answer, with numbers one and seven being extreme answers.

If the words under 1 are right for you circle 1, if the words under 7 is right for you circle 7. If you feel differently, circle the number which best expresses your feelings.

Please only give one answer for each question.

1. Do you have the feeling that you don't really care about what goes on around you?

1	2	3	4	5	6	7
Very seldom or never			Very often			

2. Has it happened in the past that you were surprised by the behaviour of people whom you thought you knew well?
--

1	2	3	4	5	6	7
Never			Always			

3. Has it happened that people whom you counted on disappointed you?

1	2	3	4	5	6	7
Never			Always			

4. Until now your life has had:
--

1	2	3	4	5	6	7
No clear goals or purpose at all			Very clear goals and purpose			

5. Do you have the feeling that you're being treated unfairly?

1	2	3	4	5	6	7
Very often			Very seldom or never			

12. How often do you have the feeling that there's little meaning in the things that you do in daily life?

1 2 3 4 5 6 7

Very often

Very seldom or never

13. How often do you have feelings that you are not sure that you can keep under control?

1 2 3 4 5 6 7

Very often

Very seldom or never

--

JUSTICE

Below you will find various statements. Most likely, you will strongly agree with some statements, and strongly disagree with others. Sometimes you may feel more neutral.. Read each statement carefully and decide to what extent you personally agree or disagree with it. Circle the number which corresponds to this judgment. Make sure you circle a number for every statement.

	strongly agree	agree	slightly agree	slightly disagree	disagree	strongly disagree
1 I believe that, by and large, I deserve what happens to me.	6	5	4	3	2	1
2 I am usually treated fairly.	6	5	4	3	2	1
3 I believe that I usually get what I deserve.	6	5	4	3	2	1
4 Overall, events in my life are just.	6	5	4	3	2	1
5 In my life injustice is the exception rather than the rule.	6	5	4	3	2	1
6 I believe that most of the things that happen in my life are fair.	6	5	4	3	2	1
7 I think that important decisions that are made concerning me are usually just.	6	5	4	3	2	1



Herman de Jong - Research Data - T12048

14-Item Resilience Scale (RS-14)								
V1	V2	V3	V4	V5	V6	V7	V8	V9
TEACHER	SCHOOL	Q1	Q2	Q3	Q4	Q5	Q6	Q7
1	1	7	7	6	7	6	6	7
2	1	7	7	6	7	4	7	7
3	1	7	7	7	7	4	7	7
4	1	7	7	7	6	5	7	5
5	1	7	7	5	1	3	7	7
6	1	7	7	1	7	6	7	6
7	2	7	7	7	7	7	7	7
8	2	7	7	4	7	4	5	6
9	2	7	7	7	7	7	7	7
10	3	7	7	1	7	1	7	7
11	3	7	7	7	7	6	7	7
12	3	7	7	7	7	6	7	7

							The Oxford Happiness	
V10	V11	V12	V13	V14	V15	V16	V17	V18
Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q1	Q2
7	6	5	7	7	7	7	1	5
6	4	6	7	5	7	7	3	4
7	7	7	7	4	7	7	1	6
7	6	5	6	7	7	6	6	5
7	6	7	7	7	7	7	6	5
7	7	7	7	6	7	6	1	6
7	4	5	4	4	7	7	1	6
7	6	4	7	4	7	7	1	6
7	4	5	7	4	7	7	1	6
7	7	7	7	7	7	7	1	6
7	7	6	7	7	7	7	1	6
7	7	6	7	7	7	7	1	6

is Questionnaire

V19	V20	V21	V22	V23	V24	V25	V26	V27
Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
6	6	5	1	4	5	6	1	6
5	4	2	1	5	4	5	1	6
6	6	1	1	6	6	6	1	6
6	5	2	1	3	6	6	3	4
6	6	1	1	6	6	6	1	6
6	5	1	1	6	6	6	1	6
6	2	6	1	6	1	4	1	4
6	6	1	1	6	6	6	1	6
6	6	6	1	6	1	6	1	1
6	6	1	1	6	6	6	1	6
6	6	1	6	6	6	5	1	6
6	6	1	1	6	6	5	1	6

V28	V29	V30	V31	V32	V33	V34	V35	V36
Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
5	1	4	6	6	5	6	1	5
4	6	5	5	5	5	4	1	6
5	1	4	6	6	6	2	1	6
6	2	5	5	6	4	6	1	5
1	1	6	4	6	6	6	6	6
6	1	6	6	6	5	6	1	6
4	4	6	4	6	6	6	1	6
3	1	1	6	6	6	3	1	6
6	4	6	6	6	6	6	1	6
6	1	6	4	6	6	6	1	6
5	1	6	6	6	6	6	1	6
5	1	6	6	6	6	6	1	6

V37	V38	V39	V40	V41	V42	V43	V44	V45
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29
5	4	2	1	5	5	1	6	2
6	6	1	1	6	2	1	1	3
5	5	5	1	6	6	1	1	1
6	5	2	1	6	5	2	1	1
6	6	1	1	6	6	1	1	1
6	6	1	1	6	6	2	1	1
6	5	2	3	6	6	1	1	1
5	6	1	1	6	6	1	1	1
6	5	3	3	1	6	1	1	1
6	6	6	1	6	6	1	1	1
6	6	1	1	6	6	1	1	1
6	6	1	1	6	6	1	1	1

Orientation to life Questionnaire (SOC)								
V46	V47	V48	V49	V50	V51	V52	V53	V54
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
1	3	5	7	3	6	1	5	1
5	6	2	6	3	6	1	6	6
1	7	7	7	3	5	5	7	1
1	6	2	7	7	6	2	7	6
7	7	6	6	5	5	1	4	1
1	4	2	7	3	6	1	5	1
1	1	4	1	3	7	1	1	4
5	7	3	4	6	5	1	4	1
1	7	5	1	4	7	1	7	4
7	7	6	6	1	1	1	1	1
1	7	1	7	7	5	1	7	7
1	7	1	7	7	5	1	7	7

V55 Q10	V56 Q11	V57 Q12	V58 Q13
4	4	7	7
5	3	7	4
1	4	7	4
1	7	7	7
7	4	4	1
4	5	7	6
5	7	4	7
1	7	7	7
1	4	7	7
7	1	7	6
1	7	7	7
1	7	7	7

Obs	TEACHER : V1	SCHOOL : V2	RS14-Q1 : V3	RS14-Q2 : V4	RS14-Q3 : V5	RS14-Q4 : V6	RS14-Q5 : V7	RS14-Q6 : V8	RS14-Q7 : V9	RS14-Q8 : V10	RS14-Q9 : V11	RS14-Q10 : V12	RS14-Q11 : V13	RS14-Q12 : V14	
1	1	1	7	7	6	7	6	6	7	7	6	5	7	7	
2	2	1	7	7	6	7	4	7	7	6	4	6	7	5	
3	3	1	7	7	7	7	4	7	7	7	7	7	7	4	
4	4	1	7	7	7	6	5	7	5	7	6	5	6	7	
5	5	1	7	7	5	1	3	7	7	7	6	7	7	7	
6	6	1	7	7	1	7	6	7	6	7	7	7	7	6	
7	7	2	7	7	7	7	7	7	7	7	4	5	4	4	
8	8	2	7	7	4	7	4	5	6	7	6	4	7	4	
9	9	2	7	7	7	7	7	7	7	7	4	5	7	4	
10	10	3	7	7	1	7	1	7	7	7	7	7	7	7	
Obs	RS14-Q13 : V15	RS14-Q14 : V16	Oxf-Q1 : V17	Oxf-Q2 : V18	Oxf-Q3 : V19	Oxf-Q4 : V20	Oxf-Q5 : V21	Oxf-Q6 : V22	Oxf-Q7 : V23	Oxf-Q8 : V24	Oxf-Q9 : V25	Oxf-Q10 : V26	Oxf-Q11 : V27	Oxf-Q12 : V28	Oxf-Q13 : V29
1	7	7	1	5	6	6	5	1	4	5	6	1	6	5	1
2	7	7	3	4	5	4	2	1	5	4	5	1	6	4	6
3	7	7	1	6	6	6	1	1	6	6	6	1	6	5	1
4	7	6	6	5	6	5	2	1	3	6	6	3	4	6	2
5	7	7	6	5	6	6	1	1	6	6	6	1	6	1	1
6	7	6	1	6	6	5	1	1	6	6	6	1	6	6	1
7	7	7	1	6	6	2	6	1	6	1	4	1	4	4	4
8	7	7	1	6	6	6	1	1	6	6	6	1	6	3	1
9	7	7	1	6	6	6	6	1	6	1	6	1	1	6	4
10	7	7	1	6	6	6	1	1	6	6	6	1	6	6	1
Obs	Oxf-Q14 : V30	Oxf-Q15 : V31	Oxf-Q16 : V32	Oxf-Q17 : V33	Oxf-Q18 : V34	Oxf-Q19 : V35	Oxf-Q20 : V36	Oxf-Q21 : V37	Oxf-Q22 : V38	Oxf-Q23 : V39	Oxf-Q24 : V40	Oxf-Q25 : V41	Oxf-Q26 : V42	Oxf-Q27 : V43	
1	4	6	6	5	6	1	5	5	4	2	1	5	5	1	
2	5	5	5	5	4	1	6	6	6	1	1	6	2	1	
3	4	6	6	6	2	1	6	5	5	5	1	6	6	1	
4	5	5	6	4	6	1	5	6	5	2	1	6	5	2	
5	6	4	6	6	6	6	6	6	6	1	1	6	6	1	
6	6	6	6	5	6	1	6	6	6	1	1	6	6	2	
7	6	4	6	6	6	1	6	6	5	2	3	6	6	1	
8	1	6	6	6	3	1	6	5	6	1	1	6	6	1	
9	6	6	6	6	6	1	6	6	5	3	3	1	6	1	
10	6	4	6	6	6	1	6	6	6	6	1	6	6	1	
Obs	Oxf-Q28 : V44	Oxf-Q29 : V45	SOC-Q1 : V46	SOC-Q2 : V47	SOC-Q3 : V48	SOC-Q4 : V49	SOC-Q5 : V50	SOC-Q6 : V51	SOC-Q7 : V52	SOC-Q8 : V53	SOC-Q9 : V54	SOC-Q10 : V55	SOC-Q11 : V56	SOC-Q12 : V57	SOC-Q13 : V58
1	6	2	1	3	5	7	3	6	1	5	1	4	4	7	7
2	1	3	5	6	2	6	3	6	1	6	6	5	3	7	4
3	1	1	1	7	7	7	3	5	5	7	1	1	4	7	4
4	1	1	1	6	2	7	7	6	2	7	6	1	7	7	7
5	1	1	7	7	6	6	5	5	1	4	1	7	4	4	1
6	1	1	1	4	2	7	3	6	1	5	1	4	5	7	6
7	1	1	1	1	4	1	3	7	1	1	4	5	7	4	7
8	1	1	5	7	3	4	6	5	1	4	1	1	7	7	7
9	1	1	1	7	5	1	4	7	1	7	4	1	4	7	7
10	1	1	7	7	6	6	1	1	1	1	1	7	1	7	6

Obs	TEACHER : V1	SCHOOL : V2	RS14-Q1 : V3	RS14-Q2 : V4	RS14-Q3 : V5	RS14-Q4 : V6	RS14-Q5 : V7	RS14-Q6 : V8	RS14-Q7 : V9	RS14-Q8 : V10	RS14-Q9 : V11	RS14-Q10 : V12	RS14-Q11 : V13	RS14-Q12 : V14	
11	11	3	7	7	7	7	6	7	7	7	7	6	7	7	
12	12	3	7	7	7	7	6	7	7	7	7	6	7	7	
Obs	RS14-Q13 : V15	RS14-Q14 : V16	Oxf-Q1 : V17	Oxf-Q2 : V18	Oxf-Q3 : V19	Oxf-Q4 : V20	Oxf-Q5 : V21	Oxf-Q6 : V22	Oxf-Q7 : V23	Oxf-Q8 : V24	Oxf-Q9 : V25	Oxf-Q10 : V26	Oxf-Q11 : V27	Oxf-Q12 : V28	Oxf-Q13 : V29
11	7	7	1	6	6	6	1	6	6	6	5	1	6	5	1
12	7	7	1	6	6	6	1	1	6	6	5	1	6	5	1
Obs	Oxf-Q14 : V30	Oxf-Q15 : V31	Oxf-Q16 : V32	Oxf-Q17 : V33	Oxf-Q18 : V34	Oxf-Q19 : V35	Oxf-Q20 : V36	Oxf-Q21 : V37	Oxf-Q22 : V38	Oxf-Q23 : V39	Oxf-Q24 : V40	Oxf-Q25 : V41	Oxf-Q26 : V42	Oxf-Q27 : V43	
11	6	6	6	6	6	1	6	6	6	1	1	6	6	1	
12	6	6	6	6	6	1	6	6	6	1	1	6	6	1	
Obs	Oxf-Q28 : V44	Oxf-Q29 : V45	SOC-Q1 : V46	SOC-Q2 : V47	SOC-Q3 : V48	SOC-Q4 : V49	SOC-Q5 : V50	SOC-Q6 : V51	SOC-Q7 : V52	SOC-Q8 : V53	SOC-Q9 : V54	SOC-Q10 : V55	SOC-Q11 : V56	SOC-Q12 : V57	SOC-Q13 : V58
11	1	1	1	7	1	7	7	5	1	7	7	1	7	7	7
12	1	1	1	7	1	7	7	5	1	7	7	1	7	7	7

The FREQ Procedure

TEACHER : V1

V1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	8.33	1	8.33
2	1	8.33	2	16.67
3	1	8.33	3	25.00
4	1	8.33	4	33.33
5	1	8.33	5	41.67
6	1	8.33	6	50.00
7	1	8.33	7	58.33
8	1	8.33	8	66.67
9	1	8.33	9	75.00
10	1	8.33	10	83.33
11	1	8.33	11	91.67
12	1	8.33	12	100.00

SCHOOL : V2

V2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	6	50.00	6	50.00
2	3	25.00	9	75.00
3	3	25.00	12	100.00

RS14-Q1 : V3

V3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	12	100.00	12	100.00

RS14-Q2 : V4

V4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	12	100.00	12	100.00

The FREQ Procedure

RS14-Q3 : V5

V5	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	2	16.67	2	16.67
4	1	8.33	3	25.00
5	1	8.33	4	33.33
6	2	16.67	6	50.00
7	6	50.00	12	100.00

RS14-Q4 : V6

V6	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	8.33	1	8.33
6	1	8.33	2	16.67
7	10	83.33	12	100.00

RS14-Q5 : V7

V7	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	8.33	1	8.33
3	1	8.33	2	16.67
4	3	25.00	5	41.67
5	1	8.33	6	50.00
6	4	33.33	10	83.33
7	2	16.67	12	100.00

RS14-Q6 : V8

V8	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	1	8.33	1	8.33
6	1	8.33	2	16.67
7	10	83.33	12	100.00

RS14-Q7 : V9

V9	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	1	8.33	1	8.33
6	2	16.67	3	25.00
7	9	75.00	12	100.00

The FREQ Procedure

RS14-Q8 : V10

V10	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	1	8.33	1	8.33
7	11	91.67	12	100.00

RS14-Q9 : V11

V11	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	3	25.00	3	25.00
6	4	33.33	7	58.33
7	5	41.67	12	100.00

RS14-Q10 : V12

V12	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	8.33	1	8.33
5	4	33.33	5	41.67
6	3	25.00	8	66.67
7	4	33.33	12	100.00

RS14-Q11 : V13

V13	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	8.33	1	8.33
6	1	8.33	2	16.67
7	10	83.33	12	100.00

RS14-Q12 : V14

V14	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	4	33.33	4	33.33
5	1	8.33	5	41.67
6	1	8.33	6	50.00
7	6	50.00	12	100.00

The FREQ Procedure

RS14-Q13 : V15

V15	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	12	100.00	12	100.00

RS14-Q14 : V16

V16	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	2	16.67	2	16.67
7	10	83.33	12	100.00

Oxf-Q1 : V17

V17	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	9	75.00	9	75.00
3	1	8.33	10	83.33
6	2	16.67	12	100.00

Oxf-Q2 : V18

V18	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	8.33	1	8.33
5	3	25.00	4	33.33
6	8	66.67	12	100.00

Oxf-Q3 : V19

V19	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	1	8.33	1	8.33
6	11	91.67	12	100.00

The FREQ Procedure

Oxf-Q4 : V20

V20	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2	1	8.33	1	8.33
4	1	8.33	2	16.67
5	2	16.67	4	33.33
6	8	66.67	12	100.00

Oxf-Q5 : V21

V21	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	7	58.33	7	58.33
2	2	16.67	9	75.00
5	1	8.33	10	83.33
6	2	16.67	12	100.00

Oxf-Q6 : V22

V22	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	11	91.67	11	91.67
6	1	8.33	12	100.00

Oxf-Q7 : V23

V23	Frequency	Percent	Cumulative Frequency	Cumulative Percent
3	1	8.33	1	8.33
4	1	8.33	2	16.67
5	1	8.33	3	25.00
6	9	75.00	12	100.00

Oxf-Q8 : V24

V24	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	2	16.67	2	16.67
4	1	8.33	3	25.00
5	1	8.33	4	33.33
6	8	66.67	12	100.00

The FREQ Procedure

Oxf-Q9 : V25

V25	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	8.33	1	8.33
5	3	25.00	4	33.33
6	8	66.67	12	100.00

Oxf-Q10 : V26

V26	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	11	91.67	11	91.67
3	1	8.33	12	100.00

Oxf-Q11 : V27

V27	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	8.33	1	8.33
4	2	16.67	3	25.00
6	9	75.00	12	100.00

Oxf-Q12 : V28

V28	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	8.33	1	8.33
3	1	8.33	2	16.67
4	2	16.67	4	33.33
5	4	33.33	8	66.67
6	4	33.33	12	100.00

Oxf-Q13 : V29

V29	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	8	66.67	8	66.67
2	1	8.33	9	75.00
4	2	16.67	11	91.67
6	1	8.33	12	100.00

The FREQ Procedure

Oxf-Q14 : V30

V30	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	8.33	1	8.33
4	2	16.67	3	25.00
5	2	16.67	5	41.67
6	7	58.33	12	100.00

Oxf-Q15 : V31

V31	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	3	25.00	3	25.00
5	2	16.67	5	41.67
6	7	58.33	12	100.00

Oxf-Q16 : V32

V32	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	1	8.33	1	8.33
6	11	91.67	12	100.00

Oxf-Q17 : V33

V33	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	8.33	1	8.33
5	3	25.00	4	33.33
6	8	66.67	12	100.00

Oxf-Q18 : V34

V34	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2	1	8.33	1	8.33
3	1	8.33	2	16.67
4	1	8.33	3	25.00
6	9	75.00	12	100.00

The FREQ Procedure

Oxf-Q19 : V35

V35	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	11	91.67	11	91.67
6	1	8.33	12	100.00

Oxf-Q20 : V36

V36	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	2	16.67	2	16.67
6	10	83.33	12	100.00

Oxf-Q21 : V37

V37	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	3	25.00	3	25.00
6	9	75.00	12	100.00

Oxf-Q22 : V38

V38	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	8.33	1	8.33
5	4	33.33	5	41.67
6	7	58.33	12	100.00

Oxf-Q23 : V39

V39	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	6	50.00	6	50.00
2	3	25.00	9	75.00
3	1	8.33	10	83.33
5	1	8.33	11	91.67
6	1	8.33	12	100.00

The FREQ Procedure

Oxf-Q24 : V40

V40	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	10	83.33	10	83.33
3	2	16.67	12	100.00

Oxf-Q25 : V41

V41	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	8.33	1	8.33
5	1	8.33	2	16.67
6	10	83.33	12	100.00

Oxf-Q26 : V42

V42	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2	1	8.33	1	8.33
5	2	16.67	3	25.00
6	9	75.00	12	100.00

Oxf-Q27 : V43

V43	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	10	83.33	10	83.33
2	2	16.67	12	100.00

Oxf-Q28 : V44

V44	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	11	91.67	11	91.67
6	1	8.33	12	100.00

The FREQ Procedure

Oxf-Q29 : V45

V45	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	10	83.33	10	83.33
2	1	8.33	11	91.67
3	1	8.33	12	100.00

SOC-Q1 : V46

V46	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	8	66.67	8	66.67
5	2	16.67	10	83.33
7	2	16.67	12	100.00

SOC-Q2 : V47

V47	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	8.33	1	8.33
3	1	8.33	2	16.67
4	1	8.33	3	25.00
6	2	16.67	5	41.67
7	7	58.33	12	100.00

SOC-Q3 : V48

V48	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	2	16.67	2	16.67
2	3	25.00	5	41.67
3	1	8.33	6	50.00
4	1	8.33	7	58.33
5	2	16.67	9	75.00
6	2	16.67	11	91.67
7	1	8.33	12	100.00

The FREQ Procedure

SOC-Q4 : V49

V49	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	2	16.67	2	16.67
4	1	8.33	3	25.00
6	3	25.00	6	50.00
7	6	50.00	12	100.00

SOC-Q5 : V50

V50	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	8.33	1	8.33
3	5	41.67	6	50.00
4	1	8.33	7	58.33
5	1	8.33	8	66.67
6	1	8.33	9	75.00
7	3	25.00	12	100.00

SOC-Q6 : V51

V51	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	8.33	1	8.33
5	5	41.67	6	50.00
6	4	33.33	10	83.33
7	2	16.67	12	100.00

SOC-Q7 : V52

V52	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	10	83.33	10	83.33
2	1	8.33	11	91.67
5	1	8.33	12	100.00

The FREQ Procedure

SOC-Q8 : V53

V53	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	2	16.67	2	16.67
4	2	16.67	4	33.33
5	2	16.67	6	50.00
6	1	8.33	7	58.33
7	5	41.67	12	100.00

SOC-Q9 : V54

V54	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	6	50.00	6	50.00
4	2	16.67	8	66.67
6	2	16.67	10	83.33
7	2	16.67	12	100.00

SOC-Q10 : V55

V55	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	6	50.00	6	50.00
4	2	16.67	8	66.67
5	2	16.67	10	83.33
7	2	16.67	12	100.00

SOC-Q11 : V56

V56	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	8.33	1	8.33
3	1	8.33	2	16.67
4	4	33.33	6	50.00
5	1	8.33	7	58.33
7	5	41.67	12	100.00

SOC-Q12 : V57

V57	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	2	16.67	2	16.67
7	10	83.33	12	100.00

The FREQ Procedure

SOC-Q13 : V58

V58	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	8.33	1	8.33
4	2	16.67	3	25.00
6	2	16.67	5	41.67
7	7	58.33	12	100.00

----- SCHOOL : V2=1 -----

The FREQ Procedure

TEACHER : V1

V1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	16.67	1	16.67
2	1	16.67	2	33.33
3	1	16.67	3	50.00
4	1	16.67	4	66.67
5	1	16.67	5	83.33
6	1	16.67	6	100.00

RS14-Q1 : V3

V3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	6	100.00	6	100.00

RS14-Q2 : V4

V4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	6	100.00	6	100.00

RS14-Q3 : V5

V5	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	16.67	1	16.67
5	1	16.67	2	33.33
6	2	33.33	4	66.67
7	2	33.33	6	100.00

RS14-Q4 : V6

V6	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	16.67	1	16.67
6	1	16.67	2	33.33
7	4	66.67	6	100.00

----- SCHOOL : V2=1 -----

The FREQ Procedure

RS14-Q5 : V7

V7	Frequency	Percent	Cumulative Frequency	Cumulative Percent
3	1	16.67	1	16.67
4	2	33.33	3	50.00
5	1	16.67	4	66.67
6	2	33.33	6	100.00

RS14-Q6 : V8

V8	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	1	16.67	1	16.67
7	5	83.33	6	100.00

RS14-Q7 : V9

V9	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	1	16.67	1	16.67
6	1	16.67	2	33.33
7	4	66.67	6	100.00

RS14-Q8 : V10

V10	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	1	16.67	1	16.67
7	5	83.33	6	100.00

RS14-Q9 : V11

V11	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	16.67	1	16.67
6	3	50.00	4	66.67
7	2	33.33	6	100.00

----- SCHOOL : V2=1 -----

The FREQ Procedure

RS14-Q10 : V12

V12	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	2	33.33	2	33.33
6	1	16.67	3	50.00
7	3	50.00	6	100.00

RS14-Q11 : V13

V13	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	1	16.67	1	16.67
7	5	83.33	6	100.00

RS14-Q12 : V14

V14	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	16.67	1	16.67
5	1	16.67	2	33.33
6	1	16.67	3	50.00
7	3	50.00	6	100.00

RS14-Q13 : V15

V15	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	6	100.00	6	100.00

RS14-Q14 : V16

V16	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	2	33.33	2	33.33
7	4	66.67	6	100.00

----- SCHOOL : V2=1 -----

The FREQ Procedure

Oxf-Q1 : V17

V17	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	50.00	3	50.00
3	1	16.67	4	66.67
6	2	33.33	6	100.00

Oxf-Q2 : V18

V18	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	16.67	1	16.67
5	3	50.00	4	66.67
6	2	33.33	6	100.00

Oxf-Q3 : V19

V19	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	1	16.67	1	16.67
6	5	83.33	6	100.00

Oxf-Q4 : V20

V20	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	16.67	1	16.67
5	2	33.33	3	50.00
6	3	50.00	6	100.00

Oxf-Q5 : V21

V21	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	50.00	3	50.00
2	2	33.33	5	83.33
5	1	16.67	6	100.00

----- SCHOOL : V2=1 -----

The FREQ Procedure

Oxf-Q6 : V22

V22	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	6	100.00	6	100.00

Oxf-Q7 : V23

V23	Frequency	Percent	Cumulative Frequency	Cumulative Percent
3	1	16.67	1	16.67
4	1	16.67	2	33.33
5	1	16.67	3	50.00
6	3	50.00	6	100.00

Oxf-Q8 : V24

V24	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	16.67	1	16.67
5	1	16.67	2	33.33
6	4	66.67	6	100.00

Oxf-Q9 : V25

V25	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	1	16.67	1	16.67
6	5	83.33	6	100.00

Oxf-Q10 : V26

V26	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	5	83.33	5	83.33
3	1	16.67	6	100.00

----- SCHOOL : V2=1 -----

The FREQ Procedure

Oxf-Q11 : V27

V27	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	16.67	1	16.67
6	5	83.33	6	100.00

Oxf-Q12 : V28

V28	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	16.67	1	16.67
4	1	16.67	2	33.33
5	2	33.33	4	66.67
6	2	33.33	6	100.00

Oxf-Q13 : V29

V29	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	4	66.67	4	66.67
2	1	16.67	5	83.33
6	1	16.67	6	100.00

Oxf-Q14 : V30

V30	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	2	33.33	2	33.33
5	2	33.33	4	66.67
6	2	33.33	6	100.00

Oxf-Q15 : V31

V31	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	16.67	1	16.67
5	2	33.33	3	50.00
6	3	50.00	6	100.00

----- SCHOOL : V2=1 -----

The FREQ Procedure

Oxf-Q16 : V32

V32	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	1	16.67	1	16.67
6	5	83.33	6	100.00

Oxf-Q17 : V33

V33	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	16.67	1	16.67
5	3	50.00	4	66.67
6	2	33.33	6	100.00

Oxf-Q18 : V34

V34	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2	1	16.67	1	16.67
4	1	16.67	2	33.33
6	4	66.67	6	100.00

Oxf-Q19 : V35

V35	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	5	83.33	5	83.33
6	1	16.67	6	100.00

Oxf-Q20 : V36

V36	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	2	33.33	2	33.33
6	4	66.67	6	100.00

----- SCHOOL : V2=1 -----

The FREQ Procedure

Oxf-Q21 : V37

V37	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	2	33.33	2	33.33
6	4	66.67	6	100.00

Oxf-Q22 : V38

V38	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	16.67	1	16.67
5	2	33.33	3	50.00
6	3	50.00	6	100.00

Oxf-Q23 : V39

V39	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	50.00	3	50.00
2	2	33.33	5	83.33
5	1	16.67	6	100.00

Oxf-Q24 : V40

V40	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	6	100.00	6	100.00

Oxf-Q25 : V41

V41	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	1	16.67	1	16.67
6	5	83.33	6	100.00

----- SCHOOL : V2=1 -----

The FREQ Procedure

Oxf-Q26 : V42

V42	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2	1	16.67	1	16.67
5	2	33.33	3	50.00
6	3	50.00	6	100.00

Oxf-Q27 : V43

V43	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	4	66.67	4	66.67
2	2	33.33	6	100.00

Oxf-Q28 : V44

V44	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	5	83.33	5	83.33
6	1	16.67	6	100.00

Oxf-Q29 : V45

V45	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	4	66.67	4	66.67
2	1	16.67	5	83.33
3	1	16.67	6	100.00

SOC-Q1 : V46

V46	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	4	66.67	4	66.67
5	1	16.67	5	83.33
7	1	16.67	6	100.00

----- SCHOOL : V2=1 -----

The FREQ Procedure

SOC-Q2 : V47

V47	Frequency	Percent	Cumulative Frequency	Cumulative Percent
3	1	16.67	1	16.67
4	1	16.67	2	33.33
6	2	33.33	4	66.67
7	2	33.33	6	100.00

SOC-Q3 : V48

V48	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2	3	50.00	3	50.00
5	1	16.67	4	66.67
6	1	16.67	5	83.33
7	1	16.67	6	100.00

SOC-Q4 : V49

V49	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	2	33.33	2	33.33
7	4	66.67	6	100.00

SOC-Q5 : V50

V50	Frequency	Percent	Cumulative Frequency	Cumulative Percent
3	4	66.67	4	66.67
5	1	16.67	5	83.33
7	1	16.67	6	100.00

SOC-Q6 : V51

V51	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	2	33.33	2	33.33
6	4	66.67	6	100.00

----- SCHOOL : V2=1 -----

The FREQ Procedure

SOC-Q7 : V52

V52	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	4	66.67	4	66.67
2	1	16.67	5	83.33
5	1	16.67	6	100.00

SOC-Q8 : V53

V53	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	16.67	1	16.67
5	2	33.33	3	50.00
6	1	16.67	4	66.67
7	2	33.33	6	100.00

SOC-Q9 : V54

V54	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	4	66.67	4	66.67
6	2	33.33	6	100.00

SOC-Q10 : V55

V55	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	2	33.33	2	33.33
4	2	33.33	4	66.67
5	1	16.67	5	83.33
7	1	16.67	6	100.00

SOC-Q11 : V56

V56	Frequency	Percent	Cumulative Frequency	Cumulative Percent
3	1	16.67	1	16.67
4	3	50.00	4	66.67
5	1	16.67	5	83.33
7	1	16.67	6	100.00

----- SCHOOL : V2=1 -----

The FREQ Procedure

SOC-Q12 : V57

V57	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	16.67	1	16.67
7	5	83.33	6	100.00

SOC-Q13 : V58

V58	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	16.67	1	16.67
4	2	33.33	3	50.00
6	1	16.67	4	66.67
7	2	33.33	6	100.00

----- SCHOOL : V2=2 -----

The FREQ Procedure

TEACHER : V1

V1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	1	33.33	1	33.33
8	1	33.33	2	66.67
9	1	33.33	3	100.00

RS14-Q1 : V3

V3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q2 : V4

V4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q3 : V5

V5	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	33.33	1	33.33
7	2	66.67	3	100.00

RS14-Q4 : V6

V6	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q5 : V7

V7	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	33.33	1	33.33
7	2	66.67	3	100.00

----- SCHOOL : V2=2 -----

The FREQ Procedure

RS14-Q6 : V8

V8	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	1	33.33	1	33.33
7	2	66.67	3	100.00

RS14-Q7 : V9

V9	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	1	33.33	1	33.33
7	2	66.67	3	100.00

RS14-Q8 : V10

V10	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q9 : V11

V11	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	2	66.67	2	66.67
6	1	33.33	3	100.00

RS14-Q10 : V12

V12	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	33.33	1	33.33
5	2	66.67	3	100.00

RS14-Q11 : V13

V13	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	33.33	1	33.33
7	2	66.67	3	100.00

----- SCHOOL : V2=2 -----

The FREQ Procedure

RS14-Q12 : V14

V14	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	3	100.00	3	100.00

RS14-Q13 : V15

V15	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q14 : V16

V16	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

Oxf-Q1 : V17

V17	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

Oxf-Q2 : V18

V18	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q3 : V19

V19	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

----- SCHOOL : V2=2 -----

The FREQ Procedure

Oxf-Q4 : V20

V20	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2	1	33.33	1	33.33
6	2	66.67	3	100.00

Oxf-Q5 : V21

V21	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	33.33	1	33.33
6	2	66.67	3	100.00

Oxf-Q6 : V22

V22	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

Oxf-Q7 : V23

V23	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q8 : V24

V24	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	2	66.67	2	66.67
6	1	33.33	3	100.00

Oxf-Q9 : V25

V25	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	33.33	1	33.33
6	2	66.67	3	100.00

----- SCHOOL : V2=2 -----

The FREQ Procedure

Oxf-Q10 : V26

V26	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

Oxf-Q11 : V27

V27	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	33.33	1	33.33
4	1	33.33	2	66.67
6	1	33.33	3	100.00

Oxf-Q12 : V28

V28	Frequency	Percent	Cumulative Frequency	Cumulative Percent
3	1	33.33	1	33.33
4	1	33.33	2	66.67
6	1	33.33	3	100.00

Oxf-Q13 : V29

V29	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	33.33	1	33.33
4	2	66.67	3	100.00

Oxf-Q14 : V30

V30	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	33.33	1	33.33
6	2	66.67	3	100.00

----- SCHOOL : V2=2 -----

The FREQ Procedure

Oxf-Q15 : V31

V31	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	33.33	1	33.33
6	2	66.67	3	100.00

Oxf-Q16 : V32

V32	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q17 : V33

V33	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q18 : V34

V34	Frequency	Percent	Cumulative Frequency	Cumulative Percent
3	1	33.33	1	33.33
6	2	66.67	3	100.00

Oxf-Q19 : V35

V35	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

Oxf-Q20 : V36

V36	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

----- SCHOOL : V2=2 -----

The FREQ Procedure

Oxf-Q21 : V37

V37	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	1	33.33	1	33.33
6	2	66.67	3	100.00

Oxf-Q22 : V38

V38	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	2	66.67	2	66.67
6	1	33.33	3	100.00

Oxf-Q23 : V39

V39	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	33.33	1	33.33
2	1	33.33	2	66.67
3	1	33.33	3	100.00

Oxf-Q24 : V40

V40	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	33.33	1	33.33
3	2	66.67	3	100.00

Oxf-Q25 : V41

V41	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	33.33	1	33.33
6	2	66.67	3	100.00

Oxf-Q26 : V42

V42	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

----- SCHOOL : V2=2 -----

The FREQ Procedure

Oxf-Q27 : V43

V43	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

Oxf-Q28 : V44

V44	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

Oxf-Q29 : V45

V45	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

SOC-Q1 : V46

V46	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	2	66.67	2	66.67
5	1	33.33	3	100.00

SOC-Q2 : V47

V47	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	33.33	1	33.33
7	2	66.67	3	100.00

SOC-Q3 : V48

V48	Frequency	Percent	Cumulative Frequency	Cumulative Percent
3	1	33.33	1	33.33
4	1	33.33	2	66.67
5	1	33.33	3	100.00

----- SCHOOL : V2=2 -----

The FREQ Procedure

SOC-Q4 : V49

V49	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	2	66.67	2	66.67
4	1	33.33	3	100.00

SOC-Q5 : V50

V50	Frequency	Percent	Cumulative Frequency	Cumulative Percent
3	1	33.33	1	33.33
4	1	33.33	2	66.67
6	1	33.33	3	100.00

SOC-Q6 : V51

V51	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	1	33.33	1	33.33
7	2	66.67	3	100.00

SOC-Q7 : V52

V52	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

SOC-Q8 : V53

V53	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	33.33	1	33.33
4	1	33.33	2	66.67
7	1	33.33	3	100.00

----- SCHOOL : V2=2 -----

The FREQ Procedure

SOC-Q9 : V54

V54	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	33.33	1	33.33
4	2	66.67	3	100.00

SOC-Q10 : V55

V55	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	2	66.67	2	66.67
5	1	33.33	3	100.00

SOC-Q11 : V56

V56	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	33.33	1	33.33
7	2	66.67	3	100.00

SOC-Q12 : V57

V57	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	33.33	1	33.33
7	2	66.67	3	100.00

SOC-Q13 : V58

V58	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

----- SCHOOL : V2=3 -----

The FREQ Procedure

TEACHER : V1

V1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
10	1	33.33	1	33.33
11	1	33.33	2	66.67
12	1	33.33	3	100.00

RS14-Q1 : V3

V3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q2 : V4

V4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q3 : V5

V5	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	33.33	1	33.33
7	2	66.67	3	100.00

RS14-Q4 : V6

V6	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q5 : V7

V7	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	33.33	1	33.33
6	2	66.67	3	100.00

----- SCHOOL : V2=3 -----

The FREQ Procedure

RS14-Q6 : V8

V8	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q7 : V9

V9	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q8 : V10

V10	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q9 : V11

V11	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q10 : V12

V12	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	2	66.67	2	66.67
7	1	33.33	3	100.00

RS14-Q11 : V13

V13	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

----- SCHOOL : V2=3 -----

The FREQ Procedure

RS14-Q12 : V14

V14	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q13 : V15

V15	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q14 : V16

V16	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

Oxf-Q1 : V17

V17	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

Oxf-Q2 : V18

V18	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q3 : V19

V19	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

----- SCHOOL : V2=3 -----

The FREQ Procedure

Oxf-Q4 : V20

V20	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q5 : V21

V21	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

Oxf-Q6 : V22

V22	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	2	66.67	2	66.67
6	1	33.33	3	100.00

Oxf-Q7 : V23

V23	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q8 : V24

V24	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q9 : V25

V25	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	2	66.67	2	66.67
6	1	33.33	3	100.00

----- SCHOOL : V2=3 -----

The FREQ Procedure

Oxf-Q10 : V26

V26	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

Oxf-Q11 : V27

V27	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q12 : V28

V28	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	2	66.67	2	66.67
6	1	33.33	3	100.00

Oxf-Q13 : V29

V29	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

Oxf-Q14 : V30

V30	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q15 : V31

V31	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	33.33	1	33.33
6	2	66.67	3	100.00

----- SCHOOL : V2=3 -----

The FREQ Procedure

Oxf-Q16 : V32

V32	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q17 : V33

V33	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q18 : V34

V34	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q19 : V35

V35	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

Oxf-Q20 : V36

V36	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q21 : V37

V37	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

----- SCHOOL : V2=3 -----

The FREQ Procedure

Oxf-Q22 : V38

V38	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q23 : V39

V39	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	2	66.67	2	66.67
6	1	33.33	3	100.00

Oxf-Q24 : V40

V40	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

Oxf-Q25 : V41

V41	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q26 : V42

V42	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q27 : V43

V43	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

----- SCHOOL : V2=3 -----

The FREQ Procedure

Oxf-Q28 : V44

V44	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

Oxf-Q29 : V45

V45	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

SOC-Q1 : V46

V46	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	2	66.67	2	66.67
7	1	33.33	3	100.00

SOC-Q2 : V47

V47	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

SOC-Q3 : V48

V48	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	2	66.67	2	66.67
6	1	33.33	3	100.00

SOC-Q4 : V49

V49	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	1	33.33	1	33.33
7	2	66.67	3	100.00

----- SCHOOL : V2=3 -----

The FREQ Procedure

SOC-Q5 : V50

V50	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	33.33	1	33.33
7	2	66.67	3	100.00

SOC-Q6 : V51

V51	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	33.33	1	33.33
5	2	66.67	3	100.00

SOC-Q7 : V52

V52	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

SOC-Q8 : V53

V53	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	33.33	1	33.33
7	2	66.67	3	100.00

SOC-Q9 : V54

V54	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	33.33	1	33.33
7	2	66.67	3	100.00

SOC-Q10 : V55

V55	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	2	66.67	2	66.67
7	1	33.33	3	100.00

----- SCHOOL : V2=3 -----

The FREQ Procedure

SOC-Q11 : V56

V56	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	33.33	1	33.33
7	2	66.67	3	100.00

SOC-Q12 : V57

V57	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

SOC-Q13 : V58

V58	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	1	33.33	1	33.33
7	2	66.67	3	100.00

----- SCHOOL : V2=1 -----

The FREQ Procedure

TEACHER : V1

V1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	16.67	1	16.67
2	1	16.67	2	33.33
3	1	16.67	3	50.00
4	1	16.67	4	66.67
5	1	16.67	5	83.33
6	1	16.67	6	100.00

RS14-Q1 : V3

V3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	6	100.00	6	100.00

RS14-Q2 : V4

V4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	6	100.00	6	100.00

RS14-Q3 : V5

V5	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	16.67	1	16.67
5	1	16.67	2	33.33
6	2	33.33	4	66.67
7	2	33.33	6	100.00

RS14-Q4 : V6

V6	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	16.67	1	16.67
6	1	16.67	2	33.33
7	4	66.67	6	100.00

----- SCHOOL : V2=1 -----

The FREQ Procedure

RS14-Q5 : V7

V7	Frequency	Percent	Cumulative Frequency	Cumulative Percent
3	1	16.67	1	16.67
4	2	33.33	3	50.00
5	1	16.67	4	66.67
6	2	33.33	6	100.00

RS14-Q6 : V8

V8	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	1	16.67	1	16.67
7	5	83.33	6	100.00

RS14-Q7 : V9

V9	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	1	16.67	1	16.67
6	1	16.67	2	33.33
7	4	66.67	6	100.00

RS14-Q8 : V10

V10	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	1	16.67	1	16.67
7	5	83.33	6	100.00

RS14-Q9 : V11

V11	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	16.67	1	16.67
6	3	50.00	4	66.67
7	2	33.33	6	100.00

----- SCHOOL : V2=1 -----

The FREQ Procedure

RS14-Q10 : V12

V12	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	2	33.33	2	33.33
6	1	16.67	3	50.00
7	3	50.00	6	100.00

RS14-Q11 : V13

V13	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	1	16.67	1	16.67
7	5	83.33	6	100.00

RS14-Q12 : V14

V14	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	16.67	1	16.67
5	1	16.67	2	33.33
6	1	16.67	3	50.00
7	3	50.00	6	100.00

RS14-Q13 : V15

V15	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	6	100.00	6	100.00

RS14-Q14 : V16

V16	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	2	33.33	2	33.33
7	4	66.67	6	100.00

----- SCHOOL : V2=1 -----

The FREQ Procedure

Oxf-Q1 : V17

V17	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	50.00	3	50.00
3	1	16.67	4	66.67
6	2	33.33	6	100.00

Oxf-Q2 : V18

V18	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	16.67	1	16.67
5	3	50.00	4	66.67
6	2	33.33	6	100.00

Oxf-Q3 : V19

V19	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	1	16.67	1	16.67
6	5	83.33	6	100.00

Oxf-Q4 : V20

V20	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	16.67	1	16.67
5	2	33.33	3	50.00
6	3	50.00	6	100.00

Oxf-Q5 : V21

V21	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	50.00	3	50.00
2	2	33.33	5	83.33
5	1	16.67	6	100.00

----- SCHOOL : V2=1 -----

The FREQ Procedure

Oxf-Q6 : V22

V22	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	6	100.00	6	100.00

Oxf-Q7 : V23

V23	Frequency	Percent	Cumulative Frequency	Cumulative Percent
3	1	16.67	1	16.67
4	1	16.67	2	33.33
5	1	16.67	3	50.00
6	3	50.00	6	100.00

Oxf-Q8 : V24

V24	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	16.67	1	16.67
5	1	16.67	2	33.33
6	4	66.67	6	100.00

Oxf-Q9 : V25

V25	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	1	16.67	1	16.67
6	5	83.33	6	100.00

Oxf-Q10 : V26

V26	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	5	83.33	5	83.33
3	1	16.67	6	100.00

----- SCHOOL : V2=1 -----

The FREQ Procedure

Oxf-Q11 : V27

V27	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	16.67	1	16.67
6	5	83.33	6	100.00

Oxf-Q12 : V28

V28	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	16.67	1	16.67
4	1	16.67	2	33.33
5	2	33.33	4	66.67
6	2	33.33	6	100.00

Oxf-Q13 : V29

V29	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	4	66.67	4	66.67
2	1	16.67	5	83.33
6	1	16.67	6	100.00

Oxf-Q14 : V30

V30	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	2	33.33	2	33.33
5	2	33.33	4	66.67
6	2	33.33	6	100.00

Oxf-Q15 : V31

V31	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	16.67	1	16.67
5	2	33.33	3	50.00
6	3	50.00	6	100.00

----- SCHOOL : V2=1 -----

The FREQ Procedure

Oxf-Q16 : V32

V32	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	1	16.67	1	16.67
6	5	83.33	6	100.00

Oxf-Q17 : V33

V33	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	16.67	1	16.67
5	3	50.00	4	66.67
6	2	33.33	6	100.00

Oxf-Q18 : V34

V34	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2	1	16.67	1	16.67
4	1	16.67	2	33.33
6	4	66.67	6	100.00

Oxf-Q19 : V35

V35	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	5	83.33	5	83.33
6	1	16.67	6	100.00

Oxf-Q20 : V36

V36	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	2	33.33	2	33.33
6	4	66.67	6	100.00

----- SCHOOL : V2=1 -----

The FREQ Procedure

Oxf-Q21 : V37

V37	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	2	33.33	2	33.33
6	4	66.67	6	100.00

Oxf-Q22 : V38

V38	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	16.67	1	16.67
5	2	33.33	3	50.00
6	3	50.00	6	100.00

----- SCHOOL : V2=2 -----

The FREQ Procedure

TEACHER : V1

V1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	1	33.33	1	33.33
8	1	33.33	2	66.67
9	1	33.33	3	100.00

RS14-Q1 : V3

V3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q2 : V4

V4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q3 : V5

V5	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	33.33	1	33.33
7	2	66.67	3	100.00

RS14-Q4 : V6

V6	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q5 : V7

V7	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	33.33	1	33.33
7	2	66.67	3	100.00

----- SCHOOL : V2=2 -----

The FREQ Procedure

RS14-Q6 : V8

V8	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	1	33.33	1	33.33
7	2	66.67	3	100.00

RS14-Q7 : V9

V9	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	1	33.33	1	33.33
7	2	66.67	3	100.00

RS14-Q8 : V10

V10	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q9 : V11

V11	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	2	66.67	2	66.67
6	1	33.33	3	100.00

RS14-Q10 : V12

V12	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	33.33	1	33.33
5	2	66.67	3	100.00

RS14-Q11 : V13

V13	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	33.33	1	33.33
7	2	66.67	3	100.00

----- SCHOOL : V2=2 -----

The FREQ Procedure

RS14-Q12 : V14

V14	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	3	100.00	3	100.00

RS14-Q13 : V15

V15	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q14 : V16

V16	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

Oxf-Q1 : V17

V17	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

Oxf-Q2 : V18

V18	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q3 : V19

V19	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

----- SCHOOL : V2=2 -----

The FREQ Procedure

Oxf-Q4 : V20

V20	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2	1	33.33	1	33.33
6	2	66.67	3	100.00

Oxf-Q5 : V21

V21	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	33.33	1	33.33
6	2	66.67	3	100.00

Oxf-Q6 : V22

V22	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

Oxf-Q7 : V23

V23	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q8 : V24

V24	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	2	66.67	2	66.67
6	1	33.33	3	100.00

Oxf-Q9 : V25

V25	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	33.33	1	33.33
6	2	66.67	3	100.00

----- SCHOOL : V2=2 -----

The FREQ Procedure

Oxf-Q10 : V26

V26	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

Oxf-Q11 : V27

V27	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	33.33	1	33.33
4	1	33.33	2	66.67
6	1	33.33	3	100.00

Oxf-Q12 : V28

V28	Frequency	Percent	Cumulative Frequency	Cumulative Percent
3	1	33.33	1	33.33
4	1	33.33	2	66.67
6	1	33.33	3	100.00

Oxf-Q13 : V29

V29	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	33.33	1	33.33
4	2	66.67	3	100.00

Oxf-Q14 : V30

V30	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	33.33	1	33.33
6	2	66.67	3	100.00

----- SCHOOL : V2=2 -----

The FREQ Procedure

Oxf-Q15 : V31

V31	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	33.33	1	33.33
6	2	66.67	3	100.00

Oxf-Q16 : V32

V32	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q17 : V33

V33	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q18 : V34

V34	Frequency	Percent	Cumulative Frequency	Cumulative Percent
3	1	33.33	1	33.33
6	2	66.67	3	100.00

Oxf-Q19 : V35

V35	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

Oxf-Q20 : V36

V36	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

----- SCHOOL : V2=2 -----

The FREQ Procedure

Oxf-Q21 : V37

V37	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	1	33.33	1	33.33
6	2	66.67	3	100.00

Oxf-Q22 : V38

V38	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	2	66.67	2	66.67
6	1	33.33	3	100.00

----- SCHOOL : V2=3 -----

The FREQ Procedure

TEACHER : V1

V1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
10	1	33.33	1	33.33
11	1	33.33	2	66.67
12	1	33.33	3	100.00

RS14-Q1 : V3

V3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q2 : V4

V4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q3 : V5

V5	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	33.33	1	33.33
7	2	66.67	3	100.00

RS14-Q4 : V6

V6	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q5 : V7

V7	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1	33.33	1	33.33
6	2	66.67	3	100.00

----- SCHOOL : V2=3 -----

The FREQ Procedure

RS14-Q6 : V8

V8	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q7 : V9

V9	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q8 : V10

V10	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q9 : V11

V11	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q10 : V12

V12	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	2	66.67	2	66.67
7	1	33.33	3	100.00

RS14-Q11 : V13

V13	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

----- SCHOOL : V2=3 -----

The FREQ Procedure

RS14-Q12 : V14

V14	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q13 : V15

V15	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

RS14-Q14 : V16

V16	Frequency	Percent	Cumulative Frequency	Cumulative Percent
7	3	100.00	3	100.00

Oxf-Q1 : V17

V17	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

Oxf-Q2 : V18

V18	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q3 : V19

V19	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

----- SCHOOL : V2=3 -----

The FREQ Procedure

Oxf-Q4 : V20

V20	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q5 : V21

V21	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

Oxf-Q6 : V22

V22	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	2	66.67	2	66.67
6	1	33.33	3	100.00

Oxf-Q7 : V23

V23	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q8 : V24

V24	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q9 : V25

V25	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	2	66.67	2	66.67
6	1	33.33	3	100.00

----- SCHOOL : V2=3 -----

The FREQ Procedure

Oxf-Q10 : V26

V26	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

Oxf-Q11 : V27

V27	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q12 : V28

V28	Frequency	Percent	Cumulative Frequency	Cumulative Percent
5	2	66.67	2	66.67
6	1	33.33	3	100.00

Oxf-Q13 : V29

V29	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

Oxf-Q14 : V30

V30	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q15 : V31

V31	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	1	33.33	1	33.33
6	2	66.67	3	100.00

----- SCHOOL : V2=3 -----

The FREQ Procedure

Oxf-Q16 : V32

V32	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q17 : V33

V33	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q18 : V34

V34	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q19 : V35

V35	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	3	100.00	3	100.00

Oxf-Q20 : V36

V36	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Oxf-Q21 : V37

V37	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

----- SCHOOL : V2=3 -----

The FREQ Procedure

Oxf-Q22 : V38

V38	Frequency	Percent	Cumulative Frequency	Cumulative Percent
6	3	100.00	3	100.00

Obs	V1	PURLIFM	PURLIFS	PERSERM	PERSERS	EQUANIM	EQUANIS	SLFRELM	SLFRELS	EXTALOM	EXTALOS
1	1	6.66667	20	6.5	13	5.5	11	6.8	34	7.0	14
2	2	6.00000	18	6.5	13	6.0	12	6.0	30	7.0	14
3	3	7.00000	21	7.0	14	7.0	14	5.8	29	7.0	14
4	4	6.66667	20	7.0	14	6.0	12	6.0	30	6.0	12
5	5	6.66667	20	7.0	14	6.0	12	6.2	31	4.0	8
6	6	7.00000	21	7.0	14	4.0	8	6.2	31	7.0	14
7	7	6.00000	18	7.0	14	6.0	12	6.4	32	5.5	11
8	8	6.66667	20	6.0	12	4.0	8	5.6	28	7.0	14
9	9	6.00000	18	7.0	14	6.0	12	6.4	32	7.0	14
10	10	7.00000	21	7.0	14	4.0	8	5.8	29	7.0	14
11	11	7.00000	21	7.0	14	6.5	13	6.8	34	7.0	14
12	12	7.00000	21	7.0	14	6.5	13	6.8	34	7.0	14

The MEANS Procedure

Variable	N	Mean	Std Dev	Std Error	Mode	Median	Minimum	Maximum
PURLIFM	12	6.6388889	0.4133708	0.1193299	7.0000000	6.6666667	6.0000000	7.0000000
PURLIFS	12	19.9166667	1.2401124	0.3579896	21.0000000	20.0000000	18.0000000	21.0000000
PERSERM	12	6.8333333	0.3256695	0.0940127	7.0000000	7.0000000	6.0000000	7.0000000
PERSERS	12	13.6666667	0.6513389	0.1880254	14.0000000	14.0000000	12.0000000	14.0000000
EQUANIM	12	5.6250000	1.0471824	0.3022955	6.0000000	6.0000000	4.0000000	7.0000000
EQUANIS	12	11.2500000	2.0943647	0.6045910	12.0000000	12.0000000	8.0000000	14.0000000
SLFREL M	12	6.2333333	0.4163332	0.1201850	6.8000000	6.2000000	5.6000000	6.8000000
SLFRELS	12	31.1666667	2.0816660	0.6009252	34.0000000	31.0000000	28.0000000	34.0000000
EXTALOM	12	6.5416667	0.9404625	0.2714881	7.0000000	7.0000000	4.0000000	7.0000000
EXTALOS	12	13.0833333	1.8809250	0.5429763	14.0000000	14.0000000	8.0000000	14.0000000

The CORR Procedure

3 Variables: RSM HSM COHERM

Simple Statistics

Variable	N	Mean	Std Dev	Median	Minimum	Maximum
RSM	12	6.00000	0.37550	6.07143	5.35714	6.42857
HSM	12	5.31609	0.37712	5.36207	4.82759	5.75862
COHERM	12	4.42949	0.46439	4.46154	3.53846	5.07692

Spearman Correlation Coefficients, N = 12
Prob > |r| under H0: Rho=0

	RSM	HSM	COHERM
RSM	1.00000	-0.24823 0.4366	0.07447 0.8181
HSM	-0.24823 0.4366	1.00000	0.12014 0.7100
COHERM	0.07447 0.8181	0.12014 0.7100	1.00000

VARIABLE GROUP	59 RSM FREQUENCY	RANK SUM
1 *1	6	35.0
2 *2	3	18.0
3 *3	3	25.0

KRUSKAL-WALLIS TEST STATISTIC = 1.05. P-VALUE = 0.5906
USING CHI-SQUARE DISTRIBUTION WITH 2 DEGREES OF FREEDOM

MULTIPLE COMPARISONS

THE NULL HYPOTHESIS IS REJECTED IF ZSTAT IS LARGER THAN THE CRITICAL VALUE Z_C , WHERE $1-\Phi(Z_C) = \alpha/(K(K-1))$, Φ IS THE CUMULATIVE STANDARD NORMAL DISTRIBUTION FUNCTION, α IS THE DESIRED OVERALL SIGNIFICANCE LEVEL, AND K IS THE NUMBER OF GROUPS COMPARED.

WITH 3 GROUPS, THE CRITICAL Z VALUES ARE:
2.13 FOR OVERALL ALPHA OF .10 (*)
2.39 FOR OVERALL ALPHA OF .05 (**)

COMPARISONS	ZSTAT	DIF	SE
*1 - *2	0.07	-0.17	2.53
*1 - *3	0.99	-2.50	2.53
*2 - *3	0.80	-2.33	2.92

VARIABLE GROUP	60 RSS FREQUENCY	RANK SUM
1 *1	6	35.0
2 *2	3	18.0
3 *3	3	25.0

KRUSKAL-WALLIS TEST STATISTIC = 1.05. P-VALUE = 0.5906
USING CHI-SQUARE DISTRIBUTION WITH 2 DEGREES OF FREEDOM

MULTIPLE COMPARISONS

THE NULL HYPOTHESIS IS REJECTED IF ZSTAT IS LARGER THAN THE CRITICAL VALUE Z_C , WHERE $1-\Phi(Z_C) = \alpha/(K(K-1))$, Φ IS THE CUMULATIVE STANDARD NORMAL DISTRIBUTION FUNCTION, α IS THE DESIRED OVERALL SIGNIFICANCE LEVEL, AND K IS THE NUMBER OF GROUPS COMPARED.

WITH 3 GROUPS, THE CRITICAL Z VALUES ARE:
2.13 FOR OVERALL ALPHA OF .10 (*)
2.39 FOR OVERALL ALPHA OF .05 (**)

COMPARISONS	ZSTAT	DIF	SE
*1 - *2	0.07	-0.17	2.53
*1 - *3	0.99	-2.50	2.53
*2 - *3	0.80	-2.33	2.92

VARIABLE GROUP	61 HSM FREQUENCY	RANK SUM
1 *1	6	33.5
2 *2	3	16.0
3 *3	3	28.5

KRUSKAL-WALLIS TEST STATISTIC = 2.81. P-VALUE = 0.2456
USING CHI-SQUARE DISTRIBUTION WITH 2 DEGREES OF FREEDOM

MULTIPLE COMPARISONS

THE NULL HYPOTHESIS IS REJECTED IF ZSTAT IS LARGER THAN THE CRITICAL VALUE Z_C , WHERE $1-\Phi(Z_C) = \alpha/(K(K-1))$, Φ IS THE CUMULATIVE STANDARD NORMAL DISTRIBUTION FUNCTION, α IS THE DESIRED OVERALL SIGNIFICANCE LEVEL, AND K IS THE NUMBER OF GROUPS COMPARED.

WITH 3 GROUPS , THE CRITICAL Z VALUES ARE:

2.13 FOR OVERALL ALPHA OF .10 (*)
2.39 FOR OVERALL ALPHA OF .05 (**)

COMPARISONS	ZSTAT	DIF	SE
*1 - *2	0.10	0.25	2.54
*1 - *3	1.54	-3.92	2.54
*2 - *3	1.42	-4.17	2.93

VARIABLE	62 HSS	RANK
GROUP	FREQUENCY	SUM
NO. NAME		
1 *1	6	33.5
2 *2	3	16.0
3 *3	3	28.5

KRUSKAL-WALLIS TEST STATISTIC = 2.81. P-VALUE = 0.2456
USING CHI-SQUARE DISTRIBUTION WITH 2 DEGREES OF FREEDOM

MULTIPLE COMPARISONS

THE NULL HYPOTHESIS IS REJECTED IF ZSTAT IS LARGER THAN THE CRITICAL VALUE Z_C , WHERE $1-\Phi(Z_C) = \alpha/(K(K-1))$, Φ IS THE CUMULATIVE STANDARD NORMAL DISTRIBUTION FUNCTION, ALPHA IS THE DESIRED OVERALL SIGNIFICANCE LEVEL, AND K IS THE NUMBER OF GROUPS COMPARED.

WITH 3 GROUPS , THE CRITICAL Z VALUES ARE:

2.13 FOR OVERALL ALPHA OF .10 (*)
2.39 FOR OVERALL ALPHA OF .05 (**)

COMPARISONS	ZSTAT	DIF	SE
*1 - *2	0.10	0.25	2.54
*1 - *3	1.54	-3.92	2.54
*2 - *3	1.42	-4.17	2.93

VARIABLE	63 COHERM	RANK
GROUP	FREQUENCY	SUM
NO. NAME		
1 *1	6	42.0
2 *2	3	12.5
3 *3	3	23.5

KRUSKAL-WALLIS TEST STATISTIC = 1.80. P-VALUE = 0.4064
USING CHI-SQUARE DISTRIBUTION WITH 2 DEGREES OF FREEDOM

MULTIPLE COMPARISONS

THE NULL HYPOTHESIS IS REJECTED IF ZSTAT IS LARGER THAN THE CRITICAL VALUE Z_C , WHERE $1-\Phi(Z_C) = \alpha/(K(K-1))$, Φ IS THE CUMULATIVE STANDARD NORMAL DISTRIBUTION FUNCTION, ALPHA IS THE DESIRED OVERALL SIGNIFICANCE LEVEL, AND K IS THE NUMBER OF GROUPS COMPARED.

WITH 3 GROUPS , THE CRITICAL Z VALUES ARE:

2.13 FOR OVERALL ALPHA OF .10 (*)
2.39 FOR OVERALL ALPHA OF .05 (**)

COMPARISONS	ZSTAT	DIF	SE
*1 - *2	1.12	2.83	2.54
*1 - *3	0.33	-0.83	2.54
*2 - *3	1.25	-3.67	2.93

VARIABLE GROUP	64 COHERS FREQUENCY	RANK SUM
1 *1	6	42.0
2 *2	3	12.5
3 *3	3	23.5

KRUSKAL-WALLIS TEST STATISTIC = 1.80. P-VALUE = 0.4064
USING CHI-SQUARE DISTRIBUTION WITH 2 DEGREES OF FREEDOM

MULTIPLE COMPARISONS

THE NULL HYPOTHESIS IS REJECTED IF ZSTAT IS LARGER THAN THE CRITICAL VALUE ZC, WHERE $1-\Phi(ZC) = \alpha / (K(K-1))$, Φ IS THE CUMULATIVE STANDARD NORMAL DISTRIBUTION FUNCTION, α IS THE DESIRED OVERALL SIGNIFICANCE LEVEL, AND K IS THE NUMBER OF GROUPS COMPARED.

WITH 3 GROUPS, THE CRITICAL Z VALUES ARE:
2.13 FOR OVERALL ALPHA OF .10 (*)
2.39 FOR OVERALL ALPHA OF .05 (**)

COMPARISONS	ZSTAT	DIF	SE
*1 - *2	1.12	2.83	2.54
*1 - *3	0.33	-0.83	2.54
*2 - *3	1.25	-3.67	2.93

NUMBER OF INTEGER WORDS USED IN PRECEDING PROBLEM 3250

BMDP3S - NONPARAMETRIC STATISTICS
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by BMDP Statistical Software, Inc.

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Release: 8.1 (Windows 9x, 2000, Me, Xp) Date: 12/08/12 at 11:31:45
Manual: BMDP Manual Volumes 1, 2, and 3.
Digest: BMDP User's Digest.
IBM PC: BMDP PC Supplement -- Installation and Special Features.

PROGRAM INSTRUCTIONS

/ FINISH

NO MORE CONTROL LANGUAGE.

PROGRAM TERMINATED

BMDP3S - NONPARAMETRIC STATISTICS

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by BMDP Statistical Software, Inc.

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Release: 8.1 (Windows 9x, 2000, Me, Xp) Date: 01/16/13 at 19:08:57

Manual: BMDP Manual Volumes 1, 2, and 3.

Digest: BMDP User's Digest.

IBM PC: BMDP PC Supplement -- Installation and Special Features.

PROGRAM INSTRUCTIONS

```

*****
# (D01-RAS2) : HERMAN DE JONG - T12048 - BMDP3S on varbs from TEACH.TXT
*****

/ INPUT  VARIABLES=58. NO DELCASE.
        FORMAT='F2,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,
                F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,
                F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,
                F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,
                F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,
                F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,
                F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X,F1,X'.

        FILE='S:\SAS\Mike van der Linde\DEJONG HERMAN T12048\TEACH.TXT'.

/ VARIABLE NAMES=V1 ,V2 ,V3 ,V4 ,V5 ,V6 ,V7 ,V8 ,V9 ,V10,V11,V12,V13,
                V14 ,V15,V16 ,VV17,V18 ,V19 ,V20,VV21,VV22,V23,V24,V25,VV26,
                V27 ,V28,VV29,VV30,V31 ,V32 ,V33,V34 ,VV35,V36,V37,V38,VV39,
                VV40,V41,V42 ,VV43,VV44,VV45,V46,V47 ,V48 ,V49 ,V50,V51,V52,
                V53 ,V54,V55 ,V56 ,V57,V58.

        BLANKS=MISS. USE=PURLIFM,PURLIFS,PERSERM,PERSERS,EQUANIM,EQUANIS,
                SLFRELM,SLFRELS,EXTALOM,EXTALOS,V2.

/ TRANSFORM  PURLIFM=mean(V4,V11,V15).
                PURLIFS= sum(V4,V11,V15).
                PERSERM=mean(V8,V10).
                PERSERS= sum(V8,V10).
                EQUANIM=mean(V5,V12).
                EQUANIS= sum(V5,V12).
                SLFRELM=mean(V3,V7,V9,V14,V16).
                SLFRELS= sum(V3,V7,V9,V14,V16).
                EXTALOM=mean(V6,V13).
                EXTALOS= sum(V6,V13).

/ PROBLEM TITLE='(D01-RAS2) : BMDP3S on varbs from data set TEACH.TXT'.
/ TEST      KRUSKAL.
                VAR=PURLIFM,PURLIFS,PERSERM,PERSERS,EQUANIM,EQUANIS,
                SLFRELM,SLFRELS,EXTALOM,EXTALOS.
                COMP.
/ GROUP     VAR=V2.

/ END

```


GROUPING VARIABLEV2
DO NOT DELETE INCOMPLETE CASES
COMPUTE KRUSKAL-WALLIS H TEST
COMPUTE MULTIPLE COMPARISONS FOR KRUSKAL-WALLIS TEST

RECORDS FOR EACH CASE ON INPUT FILE: 1

NUMBER OF CASES READ. 12

VARIABLE NO.	NAME	MEAN	STANDARD DEVIATION	MINIMUM	MEDIAN	MAXIMUM	COUNT
59	PURLIFM	6.6389	0.4134	6.0000	6.6667	7.0000	12
60	PURLIFS	19.9167	1.2401	18.0000	20.0000	21.0000	12
61	PERSERM	6.8333	0.3257	6.0000	7.0000	7.0000	12
62	PERSERS	13.6667	0.6513	12.0000	14.0000	14.0000	12
63	EQUANIM	5.6250	1.0472	4.0000	6.0000	7.0000	12
64	EQUANIS	11.2500	2.0944	8.0000	12.0000	14.0000	12
65	SLFRELM	6.2333	0.4163	5.6000	6.2000	6.8000	12
66	SLFRELS	31.1667	2.0817	28.0000	31.0000	34.0000	12
67	EXTALOM	6.5417	0.9405	4.0000	7.0000	7.0000	12
68	EXTALOS	13.0833	1.8809	8.0000	14.0000	14.0000	12

VARIABLE NO.	NAME	STATED VALUES FOR			GROUP CODE	CATEGORY INDEX	NAME	INTERVALS	
		MINIMUM	MAXIMUM	MISSING				.GT.	.LE.
2	V2				1.000	1	*1		
					2.000	2	*2		
					3.000	3	*3		

*** N O T E *** THE PROGRAM CREATED CATEGORY NAMES BEGINNING WITH ASTERISKS(*).

KRUSKAL-WALLIS ONE WAY ANALYSIS OF VARIANCE TEST RESULTS

VARIABLE 59 PURLIFM

GROUP NO.	NAME	FREQUENCY	RANK SUM
1	*1	6	38.5
2	*2	3	9.5
3	*3	3	30.0

KRUSKAL-WALLIS TEST STATISTIC = 6.12. P-VALUE = 0.0468
USING CHI-SQUARE DISTRIBUTION WITH 2 DEGREES OF FREEDOM

MULTIPLE COMPARISONS

THE NULL HYPOTHESIS IS REJECTED IF ZSTAT IS LARGER THAN THE CRITICAL VALUE ZC, WHERE $1-\Phi(ZC) = \alpha / (K(K-1))$, Φ IS THE CUMULATIVE STANDARD NORMAL DISTRIBUTION FUNCTION, α IS THE DESIRED OVERALL SIGNIFICANCE LEVEL, AND K IS THE NUMBER OF GROUPS COMPARED.

WITH 3 GROUPS, THE CRITICAL Z VALUES ARE:

- 2.13 FOR OVERALL ALPHA OF .10 (*)
- 2.39 FOR OVERALL ALPHA OF .05 (**)

COMPARISONS	ZSTAT	DIF	SE
*1 - *2	1.36	3.25	2.39
*1 - *3	1.50	-3.58	2.39
*2 - *3	2.47**	-6.83	2.76

VARIABLE 60 PURLIFS

GROUP	FREQUENCY	RANK
NO. NAME		SUM
1 *1	6	38.5
2 *2	3	9.5
3 *3	3	30.0

KRUSKAL-WALLIS TEST STATISTIC = 6.12. P-VALUE = 0.0468
 USING CHI-SQUARE DISTRIBUTION WITH 2 DEGREES OF FREEDOM

MULTIPLE COMPARISONS

THE NULL HYPOTHESIS IS REJECTED IF ZSTAT IS LARGER THAN THE CRITICAL VALUE Z_C , WHERE $1-\Phi(Z_C) = \alpha/(K(K-1))$, Φ IS THE CUMULATIVE STANDARD NORMAL DISTRIBUTION FUNCTION, α IS THE DESIRED OVERALL SIGNIFICANCE LEVEL, AND K IS THE NUMBER OF GROUPS COMPARED.

WITH 3 GROUPS , THE CRITICAL Z VALUES ARE:

2.13 FOR OVERALL ALPHA OF .10 (*)
 2.39 FOR OVERALL ALPHA OF .05 (**)

COMPARISONS	ZSTAT	DIF	SE
*1 - *2	1.36	3.25	2.39
*1 - *3	1.50	-3.58	2.39
*2 - *3	2.47**	-6.83	2.76

VARIABLE 61 PERSERM

GROUP	FREQUENCY	RANK
NO. NAME		SUM
1 *1	6	37.0
2 *2	3	17.0
3 *3	3	24.0

KRUSKAL-WALLIS TEST STATISTIC = 1.27. P-VALUE = 0.5308
 USING CHI-SQUARE DISTRIBUTION WITH 2 DEGREES OF FREEDOM

MULTIPLE COMPARISONS

THE NULL HYPOTHESIS IS REJECTED IF ZSTAT IS LARGER THAN THE CRITICAL VALUE Z_C , WHERE $1-\Phi(Z_C) = \alpha/(K(K-1))$, Φ IS THE CUMULATIVE STANDARD NORMAL DISTRIBUTION FUNCTION, α IS THE DESIRED OVERALL SIGNIFICANCE LEVEL, AND K IS THE NUMBER OF GROUPS COMPARED.

WITH 3 GROUPS , THE CRITICAL Z VALUES ARE:

2.13 FOR OVERALL ALPHA OF .10 (*)
 2.39 FOR OVERALL ALPHA OF .05 (**)

COMPARISONS	ZSTAT	DIF	SE
*1 - *2	0.26	0.50	1.94
*1 - *3	0.95	-1.83	1.94
*2 - *3	1.04	-2.33	2.24

VARIABLE 62 PERSERS

GROUP	FREQUENCY	RANK
NO. NAME		SUM
1 *1	6	37.0
2 *2	3	17.0
3 *3	3	24.0

KRUSKAL-WALLIS TEST STATISTIC = 1.27. P-VALUE = 0.5308
 USING CHI-SQUARE DISTRIBUTION WITH 2 DEGREES OF FREEDOM

MULTIPLE COMPARISONS

THE NULL HYPOTHESIS IS REJECTED IF ZSTAT IS LARGER THAN THE CRITICAL VALUE Z_C , WHERE $1-\Phi(Z_C) = \alpha/(K(K-1))$, Φ IS THE CUMULATIVE STANDARD NORMAL DISTRIBUTION FUNCTION, α IS THE DESIRED OVERALL SIGNIFICANCE LEVEL, AND K IS THE NUMBER OF GROUPS COMPARED.

WITH 3 GROUPS, THE CRITICAL Z VALUES ARE:

2.13 FOR OVERALL ALPHA OF .10 (*)
 2.39 FOR OVERALL ALPHA OF .05 (**)

COMPARISONS	ZSTAT	DIF	SE
*1 - *2	0.26	0.50	1.94
*1 - *3	0.95	-1.83	1.94
*2 - *3	1.04	-2.33	2.24

VARIABLE 63 EQUANIM

GROUP	FREQUENCY	RANK
NO. NAME		SUM
1 *1	6	39.0
2 *2	3	16.0
3 *3	3	23.0

KRUSKAL-WALLIS TEST STATISTIC = 0.69. P-VALUE = 0.7088
 USING CHI-SQUARE DISTRIBUTION WITH 2 DEGREES OF FREEDOM

MULTIPLE COMPARISONS

THE NULL HYPOTHESIS IS REJECTED IF ZSTAT IS LARGER THAN THE CRITICAL VALUE Z_C , WHERE $1-\Phi(Z_C) = \alpha/(K(K-1))$, Φ IS THE CUMULATIVE STANDARD NORMAL DISTRIBUTION FUNCTION, α IS THE DESIRED OVERALL SIGNIFICANCE LEVEL, AND K IS THE NUMBER OF GROUPS COMPARED.

WITH 3 GROUPS, THE CRITICAL Z VALUES ARE:

2.13 FOR OVERALL ALPHA OF .10 (*)
 2.39 FOR OVERALL ALPHA OF .05 (**)

COMPARISONS	ZSTAT	DIF	SE
*1 - *2	0.48	1.17	2.44
*1 - *3	0.48	-1.17	2.44
*2 - *3	0.83	-2.33	2.81

VARIABLE 64 EQUANIS

GROUP	FREQUENCY	RANK
NO. NAME		SUM
1 *1	6	39.0
2 *2	3	16.0
3 *3	3	23.0

KRUSKAL-WALLIS TEST STATISTIC = 0.69. P-VALUE = 0.7088
 USING CHI-SQUARE DISTRIBUTION WITH 2 DEGREES OF FREEDOM

MULTIPLE COMPARISONS

THE NULL HYPOTHESIS IS REJECTED IF ZSTAT IS LARGER THAN THE CRITICAL VALUE ZC, WHERE $1-\Phi(ZC) = \alpha/(K(K-1))$, Φ IS THE CUMULATIVE STANDARD NORMAL DISTRIBUTION FUNCTION, ALPHA IS THE DESIRED OVERALL SIGNIFICANCE LEVEL, AND K IS THE NUMBER OF GROUPS COMPARED.

WITH 3 GROUPS, THE CRITICAL Z VALUES ARE:

2.13 FOR OVERALL ALPHA OF .10 (*)
 2.39 FOR OVERALL ALPHA OF .05 (**)

COMPARISONS	ZSTAT	DIF	SE
*1 - *2	0.48	1.17	2.44
*1 - *3	0.48	-1.17	2.44
*2 - *3	0.83	-2.33	2.81

VARIABLE 65 SLFRELM

GROUP	FREQUENCY	RANK
NO. NAME		SUM
1 *1	6	35.5
2 *2	3	18.0
3 *3	3	24.5

KRUSKAL-WALLIS TEST STATISTIC = 0.88. P-VALUE = 0.6439
 USING CHI-SQUARE DISTRIBUTION WITH 2 DEGREES OF FREEDOM

MULTIPLE COMPARISONS

THE NULL HYPOTHESIS IS REJECTED IF ZSTAT IS LARGER THAN THE CRITICAL VALUE ZC, WHERE $1-\Phi(ZC) = \alpha/(K(K-1))$, Φ IS THE CUMULATIVE STANDARD NORMAL DISTRIBUTION FUNCTION, ALPHA IS THE DESIRED OVERALL SIGNIFICANCE LEVEL, AND K IS THE NUMBER OF GROUPS COMPARED.

WITH 3 GROUPS, THE CRITICAL Z VALUES ARE:

2.13 FOR OVERALL ALPHA OF .10 (*)
 2.39 FOR OVERALL ALPHA OF .05 (**)

COMPARISONS	ZSTAT	DIF	SE
*1 - *2	0.03	-0.08	2.51
*1 - *3	0.90	-2.25	2.51
*2 - *3	0.75	-2.17	2.90

VARIABLE 66 SLFRELS

GROUP	FREQUENCY	RANK
NO. NAME		SUM
1 *1	6	35.5
2 *2	3	18.0
3 *3	3	24.5

KRUSKAL-WALLIS TEST STATISTIC = 0.88. P-VALUE = 0.6439
 USING CHI-SQUARE DISTRIBUTION WITH 2 DEGREES OF FREEDOM

MULTIPLE COMPARISONS

THE NULL HYPOTHESIS IS REJECTED IF ZSTAT IS LARGER THAN THE CRITICAL VALUE ZC, WHERE $1-\Phi(ZC) = \alpha/(K(K-1))$, Φ IS THE CUMULATIVE STANDARD NORMAL DISTRIBUTION FUNCTION, ALPHA IS THE DESIRED OVERALL SIGNIFICANCE LEVEL, AND K IS THE NUMBER OF GROUPS COMPARED.

WITH 3 GROUPS, THE CRITICAL Z VALUES ARE:

2.13 FOR OVERALL ALPHA OF .10 (*)
 2.39 FOR OVERALL ALPHA OF .05 (**)

COMPARISONS	ZSTAT	DIF	SE
*1 - *2	0.03	-0.08	2.51
*1 - *3	0.90	-2.25	2.51
*2 - *3	0.75	-2.17	2.90

VARIABLE 67 EXTALOM

GROUP	FREQUENCY	RANK
NO. NAME		SUM
1 *1	6	36.0
2 *2	3	18.0
3 *3	3	24.0

KRUSKAL-WALLIS TEST STATISTIC = 1.19. P-VALUE = 0.5508
 USING CHI-SQUARE DISTRIBUTION WITH 2 DEGREES OF FREEDOM

MULTIPLE COMPARISONS

THE NULL HYPOTHESIS IS REJECTED IF ZSTAT IS LARGER THAN THE CRITICAL VALUE ZC, WHERE $1-\Phi(ZC) = \alpha/(K(K-1))$, Φ IS THE CUMULATIVE STANDARD NORMAL DISTRIBUTION FUNCTION, ALPHA IS THE DESIRED OVERALL SIGNIFICANCE LEVEL, AND K IS THE NUMBER OF GROUPS COMPARED.

WITH 3 GROUPS, THE CRITICAL Z VALUES ARE:

2.13 FOR OVERALL ALPHA OF .10 (*)
 2.39 FOR OVERALL ALPHA OF .05 (**)

COMPARISONS	ZSTAT	DIF	SE
*1 - *2	0.00	0.00	1.94
*1 - *3	1.03	-2.00	1.94
*2 - *3	0.89	-2.00	2.24

VARIABLE 68 EXTALOS

GROUP	FREQUENCY	RANK
NO. NAME		SUM
1 *1	6	36.0
2 *2	3	18.0
3 *3	3	24.0

KRUSKAL-WALLIS TEST STATISTIC = 1.19. P-VALUE = 0.5508
USING CHI-SQUARE DISTRIBUTION WITH 2 DEGREES OF FREEDOM

MULTIPLE COMPARISONS

THE NULL HYPOTHESIS IS REJECTED IF ZSTAT IS LARGER THAN THE CRITICAL VALUE ZC, WHERE $1-\Phi(ZC) = \alpha / (K(K-1))$, Φ IS THE CUMULATIVE STANDARD NORMAL DISTRIBUTION FUNCTION, α IS THE DESIRED OVERALL SIGNIFICANCE LEVEL, AND K IS THE NUMBER OF GROUPS COMPARED.

WITH 3 GROUPS, THE CRITICAL Z VALUES ARE:

- 2.13 FOR OVERALL ALPHA OF .10 (*)
- 2.39 FOR OVERALL ALPHA OF .05 (**)

COMPARISONS	ZSTAT	DIF	SE
*1 - *2	0.00	0.00	1.94
*1 - *3	1.03	-2.00	1.94
*2 - *3	0.89	-2.00	2.24

NUMBER OF INTEGER WORDS USED IN PRECEDING PROBLEM 3242

BMDP3S - NONPARAMETRIC STATISTICS

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Digest: BMDP User's Digest.
IBM PC: BMDP PC Supplement -- Installation and Special Features.

PROGRAM INSTRUCTIONS

/ FINISH

NO MORE CONTROL LANGUAGE.

PROGRAM TERMINATED