

**Personal protective resources supporting adolescent resilience
to the challenges of a petrochemical-affected community**

By

Reanetse Monat Matlali

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SUPERVISOR

PROF L. Theron

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Declaration

I, Reanetse Monat Matlali (student number 27198252), declare that the mini-dissertation titled: *Personal protective resources supporting adolescent resilience to the challenges of a petrochemical-affected community*, which I hereby submit for the degree Magister Educationis in Educational Psychology at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution.

.....

Reanetse Monat Matlali

30 August 2018

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- Informed consent/assent,
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Ethics statement

The author, whose name appears on the title page of this thesis, has obtained, for the research described in this work, the applicable research ethics approval. The author declares that she has observed the ethical standards required in terms of the University of Pretoria's *Code of ethics for researchers and the Policy guidelines for responsible research*.

Dedication

I dedicate this research study to my family, especially my late father, Masilo Matlali, and my amazing mother, Moelo Matlali.

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To have achieved this milestone in my life, I would like to express my sincere gratitude to the following people:

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Abstract

Personal protective resources supporting adolescent resilience to the challenges of a petrochemical-affected community

Supervisor: Prof. Linda Theron

Department: Educational Psychology

Degree: Magister Educationis (Educational Psychology)

My study is a sub-study of the Resilient Youth in Stressed Environments (RYSE) Project. RYSE aims to better understand the resilience of youth who live in environments that are stressed by the petrochemical industry and its associated risks. In particular, the purpose of my study is to explore and understand the personal protective resources that facilitate resilience among adolescents (aged 15-24) living in the petrochemical-affected community of eMbalenhle in Secunda, South Africa. My study was guided by Ungar's (2011) Social Ecology of Resilience Theory (SERT). To this end I employed a phenomenological research design. Purposive sampling was used to recruit the participants. Thirty participants were selected from eMbalenhle community. Arts-based activities, namely body-map storytelling, draw-write-and-talk, and group discussions were used in four groups to generate the data. Thematic content analysis was used to identify themes that emerged from the data set. These themes related to personal motivation and determination, cognitive competencies, social skill, positive emotion, and physical well-being. My study fills a gap in the current resilience literature related to research on the resilience of adolescents living in a petrochemical-affected community with its associated risks for adolescents (e.g., crime, violence, drug and alcohol abuse) in South Africa, and the lack of knowledge pertaining to how these adolescents adjust positively despite exposure to the challenges associated with living in such a community.

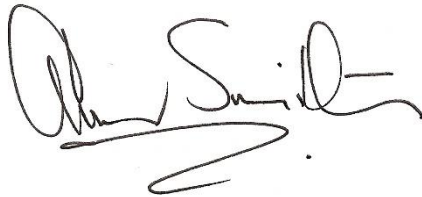
Key Terms:

adolescence, resilience, personal protective resources, risk factors, petrochemical industry, petrochemical-affected community.

Language Editor

Ann Smith PhD
Tel: + 00 1 514 6098322 (Canada)
5 Kloof View Rd
Forest Hills Kloof 3610

I have edited **Reanetse Monat Matlali's** thesis for **grammatical felicity, clarity of expression, and accuracy of spelling.**

A handwritten signature in black ink, appearing to read 'Ann Smith', with a large, sweeping flourish underneath.

Ann Smith PhD

Managing Editor of *Girlhood Studies: an Interdisciplinary Journal*

www.berghahnjournals.com/girlhood-studies

Adjunct Professor Department of Integrated Studies in Education,

McGill University, Montreal

514 276 5419

Cell Phone: 514 609 8322

List of Abbreviations

RYSE	Resilient Youth in Stressed Environment
SERT	Social Ecology of Resilience Theory
CAP	Community Advisory Panel

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION AND RATIONALE OF THE STUDY

My research study formed part of the research project *Patterns of Resilience among Youth in Communities that Depend on Oil and Gas Production and Those Coping with Climate Change* (also called Resilient Youth in Stressed Environments or RYSE). This RYSE study explored the risk and resilience factors among adolescents residing in petrochemical-affected communities in Canada and South Africa. My study formed part of the South African collaboration in this study. The South African RYSE research team explored how social ecologies (i.e., individual, family, and community) facilitated youth resilience despite the risks associated with residing in a petrochemical-affected community. My study (which is of limited scope) focused on only one of these aspects, namely the personal protective resources that facilitated resilience among adolescents living in a petrochemical-affected community in eMbalenhle township, Mpumalanga Province, South Africa. As explained later (see Chapter 3, section 3.2 and Chapter 5), I choose this focus for two reasons: first, because it fits with the overall aim of the larger RYSE study (RYSE protect, 2017); and second, because it resonated with me from a personal point of view and on a para-professional level. Since the early stages of my training as an Educational Psychologist I have always been intrigued with how adolescents flourish in their lives despite the adversity they are experiencing or have experienced. This interest in adolescent resilience led to my desire to learn more about this phenomenon. During the course of my training (Honours training in Educational Psychology), although I had a theoretical understanding of resilience, I lacked practical experience of working with resilient adolescents until my internship training during which I engaged with adolescents for individual therapeutic intervention. Many of these adolescents demonstrated positive adjustment to really difficult life circumstances. Engaging with these adolescents helped me to understand resilience better. Following my internship training, my interest in working with adolescents intensified. During this final stage (the research component) in my training as an Educational Psychologist,

when I was given the opportunity to choose my focus for my research of limited scope I identified an opportunity to broaden my knowledge about adolescent resilience and was motivated to focus on individual protective factors. This focus mirrored my interest in gaining more theoretical knowledge and practical experience of engaging with adolescents and documenting their voices. This coincided with my learning about the personal protective resources that enable resilience in adolescents affected by the petrochemical industry.

Petrochemical industries are regarded as industries that produce materials and items resulting from refining oil and gas (Amer, 2011; Chen, Lin, & Chan, 2014). This process is associated with various risk factors and negative outcomes that range from biological to psychosocial and economic effects (Cox, Irwin, Scannell, Ungar, & Bennett, 2017; Goldenberg, Shoveller, Koehoorn, & Ostry, 2010). Kumpfer (1999) maintains that the environmental context in which young people grows up influences their risk and resilience processes. Literature on petrochemical industries and their associated environmental risks (e.g., crime, violence, drug and alcohol abuse on adolescents), as well as how South African youth adjust to these challenges, is absent in the South African resilience literature (Pooley & Cohen, 2010). My study of limited scope aims to respond to this gap in the current literature on resilience.

As noted earlier, as an Educational Psychologist in training with limited experience of working with adolescents I am interested in expanding my knowledge about the resilience of adolescents who are exposed to negative circumstances such as those associated with the petrochemical industry. I believe that my research will form part of the evolving research on adolescent resilience in the context of petrochemical-associated risks in the South African context. Furthermore, I believe that further exploration of resilience in unexplored contexts such as that of a petrochemical-affected community like eMbalenhle, will produce a rich, in-depth, contextualised understanding of adolescents' strengths and resources that enable their resilience when confronted with this sort of adversity. I am of the opinion that this new knowledge from my research study will be used to improve the practice of Educational Psychologists who are designing interventions that are relevant to adolescents affected by the risks associated with the petrochemical industry. I also believe that my research will encourage continual

research on the personal protective resources of adolescents living in petrochemical-affected communities. The findings of my research study will form part of the *RYSE* study findings which will be used by the RYSE Knowledge Dissemination Committee to make it possible for adolescents who live in communities involved in the petrochemical industry to be healthy and do well in life despite the risks associated with such an industry.

1.2 PROBLEM STATEMENT

Resilience research with adolescents has been widely studied in South Africa (Malindi, 2014a; Malindi, 2014b; Malindi & Theron, 2010; Theron, 2013a, 2013b, 2015; Theron & Theron, 2014; van Breda & Theron, 2018). Resilience has been studied in different South African contexts of adversity, such as streetism (e.g., Hills, Meyer-Weitz, & Asante, 2016; Malindi, 2014a; Malindi, 2014b; Malindi & Machenjedge, 2012; Malindi & Theron, 2010); township hardships (e.g., Mampane & Bouwer, 2011; Theron, 2007); health challenges (e.g., Lau & van Niekerk, 2011); and violence (Choe, Zimmerman, & Devnarain, 2012; Hlatshwayo & Vally, 2014; Isaacs & Savahl, 2014; Pretorius, Padmanabhanunni, & Campbell, 2016). No research study to date has conducted resilience research in a petrochemical-affected community (like eMbalenhle) in South Africa. Additionally, South African literature on resilience lacks reference to how well adolescents function when challenged with adversity in the context of petrochemical exposure. This is of concern because it is predicted that the petrochemical industry will continue to grow as its end products become increasingly important to consumers globally (Processing Magazine, 2015). As the industry grows and employs more people, it is probable that more and more youth will live in communities like eMbalenhle that are close to petrochemical industries, either because their parents/caregivers are employed there, or because they work there themselves, or are hoping to have jobs there. Research specific to the resilience of adolescents in the context of petrochemical exposure is thus important to provide helping professionals such as Educational Psychologists and those in training like myself with insight and knowledge about the personal protective factors that enable resilience in such adolescents. Given that resilience has been studied extensively in other contexts, it is important to learn what

facilitates it in this specific context. Masten (2014) explains that although much of what facilitates resilience is ordinary and universal, it should not be assumed that resilience enablers will be identical across contexts. Therefore, it is important to learn about the personal protective resources that adolescents living in eMbalenhle use to navigate their life worlds and adapt well to the risks associated with living in such proximity to the petrochemical industry. This will help us to have a better understanding of resilience in the context of risks associated with the petrochemical industry and assist us in developing support that will be relevant and beneficial to adolescents exposed to these risks.

1.3 PURPOSE OF THE STUDY

The purpose of my study is to explore the personal protective resources that facilitate resilience among adolescents living in the petrochemical-affected community of eMbalenhle.

1.4 RESEARCH QUESTION

My research study was guided by one main question:

- To what personal protective resources do adolescents living in a petrochemical-affected community attribute adolescent resilience?

1.5 THEORETICAL FRAMEWORK

1.5.1 Social Ecology of Resilience Theory (SERT)

My study was guided by the Social Ecology of Resilience Theory (SERT) (Ungar, 2011). SERT is a theory that provides an ecological and systemic understanding of resilience (Ungar, 2011). The South African literature on resilience indicates strongly that resilience is rooted systemically (e.g., Mampane & Bouwer, 2011, van Rensburg, Theron, & Rothmann, 2015). Therefore, the concept of resilience can be applied to systems including the individual, family, community, and society at large, that are dynamic and that interact at different levels (Masten, 2014). SERT (Ungar, 2011) is appropriate for my research because it provides a systematic and holistic explanation of resilience that acknowledges that the individual person plays a role in the resilience process. SERT provides an understanding of how the individual can mobilise personal

resources that facilitate resilience in conjunction with the community-enabling resilience by making resources available for the individual in a contextually relevant way (Ungar, 2011). We can see, therefore, that both the individual and the community can work together to enable resilience. This theory has guided many other South African researchers to come to their understanding of how young South African people draw on their own assets as well as interacting with and using resources in their families and communities to facilitate resilience (e.g., Lethale & Pillay, 2013; Mosavel, Ahmed, Ports, & Simon, 2015; van Breda 2017). SERT is guided by four principles: decentrality, complexity, atypicality, and cultural relativity. These principles, as Ungar (2011) has pointed out, provide a framework to account for resilience and for a better understanding of how some individuals flourish in the face of adversity while others do not.

1.5.1.1 Decentrality

This principle suggests that resilience must be observed from an individual and from an environmental perspective and be understood as a mutually beneficial exchange between the individual and her/his environment (Ungar, 2011). By so doing there is an acknowledgement that the adolescent has a role in the resilience process, but the adolescent's role is not more important than that of other parts of the ecology. All the components of the ecology are equally important in enabling resilience (Ungar, 2011). In the case of my study which focused only on the personal protective resources of adolescents, this principle implies that my findings will not provide a complete explanation of the resilience of adolescents living in a petrochemical-affected community. A more complete explanation will be found when the findings from my study (which is of limited scope) are merged with those of other members of the *RYSE* team who are focusing on other social ecological resources such as family and community.

1.5.1.2 Complexity

This principle suggests that there is a need to develop descriptions of resilience that fit with the context and developmental stage or point of time in history to explain resilience-related outcomes (Ungar, 2011). Given that each part of the social ecology is adaptable, each part will probably make a different contribution to resilience at a

different point in time. Positive development under adversity and the protective processes that influence its occurrence are multifaceted and thus simplified explanations of resilience should be avoided (Ungar, 2011). For example, we cannot assume that two children living in the same environment will explain resilience in the same way. The experience and understanding of resilience varies since resilience is influenced by different factors such as gender, race, class, and culture (Ebersöhn, 2017).

1.5.1.3 Atypicality

This principle refers to the idea that one resilience-enabling behaviour or characteristic in one context may be considered strange or inappropriate but in a different context it may not necessarily be considered as such (Ungar, 2011). For example, street-connected youth vandalizing public telephones to get money for food, and teasing each other is not socially appropriate but in studies with street-connected youth reported by Malindi (2014b) and Malindi and Theron (2010), such behaviour supported adolescent resilience. These are examples of atypical coping mechanisms. However, such atypical behaviour enabled the adolescents to navigate towards positive outcomes (Malindi, 2014b).

1.5.1.4 Cultural Relativity

This principle suggests that positive development under adversity is shaped or influenced by culture (Masten, 2018). Resilience is a complex construct with varied outcomes and the cultural components need to be accounted for when we try to understand resilience (Panter-Brick, 2015). For example, in rural African communities Sesotho-speaking adolescents value or esteem education. Despite the poor education available in disadvantaged, rural communities, youths in these communities still maintain their educational hopes and work diligently towards their educational goals (Theron, 2016c). In more developed, competitive western communities the emphasis is not on appreciating education, but is, rather, on academic achievement (Masten, 2014).

1.6 CONCEPT CLARIFICATION

In this section I will define briefly the following terms and concepts that were central to my study: adolescence, resilience, personal protective resource, risk factors associated with adolescents at risk, petrochemical industry, and petrochemical-affected community.

1.6.1 Adolescence

Adolescence is a developmental period between childhood and adulthood (Kinghorn, Shanaube, Toska, Cluver, & Bekker, 2018). This stage of development includes biological and cognitive growth and transitions in social roles (Sawyer et al., 2018). In previous definitions adolescence has been defined as a stage of development between the ages of 10 and 19 (World Health Organization [WHO], 2013). In current literature adolescence is defined as the developmental stage between the ages of 10 to 24 years (Kinghorn et al., 2018; Sawyer et al., 2018). Therefore, I refer to the participants in my study, who were between the ages of 15 and 24 (as specified by the greater *RYSE* project), as adolescents.

1.6.2 Resilience

Resilience is defined as developing well despite experiencing significant hardships (Kumpfer, 1999; Masten, 2014). Thus, resilience is referred to as the process of positive adaptation despite adverse circumstances or experiences (Fergus & Zimmerman, 2005). This process leads to positive outcomes as Theron (2017) has pointed out, adolescents who are challenged by structural disadvantage but who remain engaged in education go on having positive future aspirations.

1.6.3 Personal protective resources

Personal protective resources are mechanisms or assets located within the system of the individual (Boyden & Mann, 2005) that protect an individual against the potentially harmful effects of risk. Personal protective factors can be biological in nature (i.e., good physical health) and/or psychological (i.e., high IQ, easy temperament, high self-

esteem, internal locus of control, high self-efficacy, and an optimistic attributional style) (Carr, 2006).

1.6.4 Risk factors associated with adolescents at risk

Risk factors are circumstances that increase the chances of negative outcomes (Masten, 1999). In the context of at-risk adolescents, risk factors often include pollution, poverty, crime, violence, drugs and alcohol, HIV and AIDS, and dysfunctional families (Carrington, McIntosh, & Scott, 2010; Cox et al., 2017; Reber, Allen, & Reber, 2009). In my study, risk factors refer to any factors associated with the petrochemical industry that may influence or affect the adolescent in a negative way.

1.6.5 Petrochemical industry

The petrochemical industry is one that produces synthetic materials and items resulting from refining petroleum and natural fuel gases. These industries have been identified as significant sources of emissions of a wide range of chemical substances, some of which have been recognised as harmful environmental chemicals (Chen, Lin, & Chan, 2014). In addition, petrochemical industries are also associated with risks such as the influx of migrating people seeking employment since this affects the availability of resources (i.e., housing) and leads to an increase in prostitution, unwanted pregnancies, abortions, and crime as well as experimentation with drugs and alcohol. These industries produce pollution along with its physical effects, and employment downsizing which results in workers losing their jobs during a bust period (Chang, Zivin, Gross, & Neidell, 2014; Cox et al., 2017; Misan & Rudnik, 2015; Windle & Rolfe, 2013).

1.6.6. Petrochemical-affected community

I refer often to a petrochemical-affected community. In my study, this community is eMbalenhle; it is built next to a large petrochemical industry that most people in the community work either work for, or hope to work for. I contextualise the community of eMbalenhle in Chapter 3, section 3.4.2.

1.7 ASSUMPTIONS

At the beginning of my study, my assumptions were that the experiences of adolescents living in a petrochemical-affected community would vary based on different factors and resources that influence each one's social world. The adolescent's interpretation of their social reality would therefore vary from person to person. I strongly believed that even though the social exposure for the adolescents in my study would be more or less the same since they lived in the same community, their experiences of the exposure as well as how they coped with the risks associated with the petrochemical community would differ. I think that the factors that put these adolescents at risk depend largely on the influence of each level of the social ecology—the individual, family, school, and community. I also assumed that the adolescents in my study might report different personal protective resources that were unique to them depending on their interpretation of their experience of living in a petrochemical-affected community. I assumed that the personal strengths that would be reported by the adolescents would be a positive outlook on life despite challenges; high self-esteem; having dreams and goals; and a determination to achieve personal goals. I thought religion and or spiritual connections would also be reported as a strong personal protective resource. As an Educational Psychologist-in-training who has worked with adolescents, I know from experience that religion and spirituality have often been described as a very strong coping resource for black adolescents. After all, when I was an adolescent I drew on personal strengths and personal beliefs, including religion. My religious beliefs were influenced by my heritage as a black South African, so I assumed that these personal factors might facilitate resilience among black adolescents living in a petrochemical-affected context.

1.8 METHODOLOGY

The methodology is detailed in Chapter 3. What follows below is a summary of the methodology applied in this study.

1.8.1 Epistemological paradigm

The interpretivist perspective guided my research study. Interpretivists believe that individuals construct their own meaning about their social world and merge their own subjective and intersubjective meanings as they interact with the world around them (Cohen, Manion, & Morrison, 2011; Nieuwenhuis, 2016; Tshabangu, 2015). The advantages and disadvantages of interpretivism are discussed in Chapter 3.

The interpretivist perspective was appropriate for my research study because I interacted with the participants in their natural environment of eMbalenhle and I learned how they interpreted life in a community that is dependent on and affected by a petrochemical industry. Following Tshabangu (2015), I was able to gain a deeper understanding of the phenomenon under study through the expression of the participant's socially constructed meaning of their lived experiences. I learned about adolescent resilience and the personal resources that support adolescent resilience through listening to the interpretations of the adolescents in my study.

1.8.2 Research paradigm

I followed a qualitative research paradigm. Qualitative research takes place in the participant's natural setting in a naturalistic way (i.e., without experiments). Qualitative research explores and understands the meaning that people ascribe to a particular phenomenon (Creswell, 2014). I selected this research paradigm because it makes provision for research to be conducted in a natural setting like eMbalenhle community in Secunda, and it allows the participants to express their experiences of the research phenomenon (i.e., their personal protective factors that enable resilience) as they experience it in their everyday social world. The research site, advantages and disadvantages of qualitative research are discussed in Chapter 3 (Section 3.3.2 and 3.4.2).

1.8.3 Research design

My research study followed a phenomenological research design. Phenomenology studies personal experiences, referred to as the lived experiences, of the participants, through the descriptions provided by the individuals involved

(Nieuwenhuis, 2016; Tshabangu, 2015). I selected this design because the purpose of my study was to explore the phenomenon of personal protective resources that enable resilience in adolescents living in a petrochemical-affected community. This research design was appropriate for my research study because it expanded and enriched my understanding of the lived experiences of the adolescents living in the petrochemical-affected community of eMbalenhle, Secunda. It also helped me explore the similarities and differences of the personal resources to which they attribute adolescent resilience. The advantages and disadvantages of the phenomenology research design are discussed in Chapter 3 (section 3.4.1).

1.8.4 Sampling

The sampling strategy that I used was purposive sampling (Nieuwenhuis, 2016) using the criteria of adolescence as a developmental stage (Sawyer et al., 2018) and the area of residence. This was appropriate for my research study because I was interested in working with a specific group of adolescents (those challenged by risks from a petrochemical industry), and from a specific demographic area (eMbalenhle, a petrochemical-affected community in South Africa). I worked collaboratively with adolescents residing in this community. This research site was selected because it is a community that is dependent on and affected by the petrochemical industry. eMbalenhle is a township that was built by the local petro-chemical company (Sasol) and is characterised by pollution, high unemployment, and social disadvantage (Statistics South Africa). The Community Advisory Panel (CAP) that formed part of the *RYSE* study recruited 30 participants who fit the above criteria of developmental stage and location.

1.8.5 Data generation and documentation

The answer to my research question drew on data that was generated through the arts-based activities of body-map storytelling, draw-write-and-talk, and group discussions (explained and described in Chapter 3, section 3.5.3). These activities were conducted in four groups (see Chapter 3, section 3.5.3). These activities were appropriate for my study because they provided the participants with an opportunity to

express their experiences of living in a petrochemical-affected community and, following Ebersöhn (2015), to say which personal resources helps adolescents to adjust to the negative experiences and risks associated with the petrochemical industry in eMbalenhle. Additionally, these data generation techniques further enabled the participants to communicate their experiences in a meaningful manner through making things themselves, and then reflecting on what they had made (see Ebersöhn, 2015; Ebersöhn, Ferreira, van der Walt, & Moen, 2016; Gastaldo, Magalhães, Carrasco, & Davy, 2012). Full details of the data generation activities, their advantages and disadvantages are discussed at length in Chapter 3 (Section 3.5.3.1 and section 3.5.3.2).

1.8.6 Data analysis and interpretation

The research data was analysed using thematic content analysis. I followed Braun and Clarke's (2006) six phase guide for thematic content analysis. Thematic content analysis is defined as a systematic technique of summarizing data into themes based on the rules of coding (Braun & Clarke, 2006; Creswell, 2014). I selected this type of data analysis because it seemed to be a relatively straightforward way of generating codes that produced themes that could answer my research question. The steps of analysing the data using thematic content analysis as well as the advantages and disadvantages of this analytic approach are discussed in Chapter 3 (Section 3.5.4).

1.9. QUALITY CRITERIA

Lincoln and Guba (1994) noted that to establish trustworthiness in research, a variety of quality criteria must be adhered to. These criteria include credibility, dependability, transferability, confirmability, and authenticity. In line with the precepts of Yin (2016) my research maintained trustworthiness by using the true representation of the participants' experiences. I collected the data myself. I maintained a researcher's diary of the fieldwork descriptions that enabled me to reflect on the fieldwork and the findings that emerged from it. I provide details of what I did to promote trustworthiness in Chapter 3 (section 3.6).

1.10. ETHICAL CONSIDERATIONS

As I explain in Chapter 3 (section 3.7), my study of limited scope formed part of the *RYSE* study and was granted ethical clearance [UP 17/05/01 Theron 17-005] by the ethics committee of the Faculty of Education, University of Pretoria. This research was conducted according to the ethical guidelines provided by the University of Pretoria. When I interacted with the participants, I was careful to work ethically as explained in Chapter 3 (section 3.7).

1.11. CONCLUSION

In this chapter I introduced my research study and the theoretical approach that guided the study. The full methodological details are discussed at length in Chapter 3. In Chapter 2 I discuss the literature that I explored to better understand what is already known about how adolescents' personal protective resources support resilience.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

In the first part of this chapter I summarise what is known about the risks associated with the petrochemical industry and the effects that it has on people who work in it and are mostly dependent on it for their livelihood, and/or people (like the participants in my study) who live in a community that is adjacent to such an industry. In the second part of this chapter I shift the focus to a review of the literature on resilience that reports on the personal protective resources that enable resilience in adolescents. The review is of both international and South African literature on resilience that focuses on adolescents.

Resilience has been widely defined as a process of successful adaptation to negative life circumstances or stressors (Masten, 1994, 2011; Rutter, 2012; Ungar, 2011). It is commonly understood that resilience manifests because of two key components: (1) the individual experiences adversity to the extent of its affecting their normal functioning and development; (2) the individual successfully adapts to the negative life circumstances (Masten, 2011; Masten & Powell, 2003; Ungar, 2006, 2011a) This process of adjusting well to adversity draws on ecological resources (Ungar, 2006; 2011). Various reviews of South African studies on adolescent resilience (Haffejee & Theron, 2017; Theron & Theron, 2010; van Breda & Theron, 2017; van Rensburg et al., 2015) show that the resilience of young South African people is supported across systemic levels, including personal resources (e.g., agency and optimism), family resources (e.g., caring parents and grandparents), community resources (e.g., effective schools) and cultural resources (e.g., faith-based practices). This indicates that resilience is an interactive process (Rutter, 2006; Ungar, 2006) between the individual and the environment to enhance positive developmental results when the individual is faced with adversity (Ungar, 2013). This interactive process is influenced by different levels of the social ecology (Ungar, 2006; Ungar, Ghazinour, & Richter, 2013).

Personal protective resources are one part of the resilience process. My literature review excludes in-depth reference to the resilience-enabling protective factors evident in the family and community level because my research focused only on the personal (individual) protective factors that enable resilience among adolescents residing in a petrochemical-affected community. However, I have made a brief summary of the resilience enablers from the family and community system and this is documented below in table 2.1.

Table 2.1 Summary of resilience enablers excluding the personal protective resources of the current study

Family resilience enablers ←	Studies	Community resilience enablers ←	Studies
Fulfilment of basic needs	E.g., Brittian et al., 2013; Ebersöhn et al., 2012; Hills et al., 2016; Pedersen & Madsen, 2002.	Protective community institutions e.g., religious establishments, schools, libraries and hospitals	E.g., Barry, Sutherland & Harris, 2006; Ebersöhn, et al., 2015; Hall & Theron, 2016; Hlatshwayo & Vally, 2014; Mampane 2014; Masten, 2014; Theron & Phasha, 2015.
Emotional support	E.g., Theron, Theron, & Malindi, 2013; Werner, 2004.	Community representatives e.g., elders, prosocial teachers, mentorships and social workers	E.g., Liebenberg et al., 2016; Theron, 2015. Theron & Theron, 2014; van Breda & Dickens, 2017; van Rensburg, Theron, Rothmann, & Kitching, 2013
Parental motivation and encouragement	E.g., Fan & Williams, 2010; Henry, Plunkett & Sands, 2011; Lowe & Dotterer, 2013; Theron, 2007.	Safe schools and neighbourhoods and quality schooling	E.g., Bhana & Bachoo, 2011; Ebersöhn, 2008; Jefferis & Theron, 2015, 2017. Mampane, 2014
Positive family interactions	E.g., Bowes, 2010; Masten, 2018; Werner, 2013	Extra mural activity e.g.. sport and cultural activities	E.g., Ebersöhn, 2008; Mampane & Bouwer, 2011; Ungar, Connelly, Liebenberg & Theron, 2017.
Supportive relationships within family	E.g., Afifi & MacMillan, 2011; Luthar, Cicchetti & Becker, 2000.	Community initiatives e.g., agricultural endeavours, marches and festivals, positive relationships NGOs	E.g., Barry, Sutherland, & Harris, 2006; Ebersöhn & Ferreira, 2011; Ebersöhn, 2012; 2013; Skovdal & Campbell, 2009. van Breda (2015)
Extended family	E.g., Dass-Brailsford, 2005; Theron, 2016.	Social well-being amenities e.g., social grants	E.g., Thabethe, Mbatha & Mtapuri, 2016.
Parenting styles	E.g., Black & Lobo, 2008; Bowes, Maughan, Caspi, Moffitt & Arseneault, 2010; Kritzas & Grobler, 2005.	Employment opportunities	E.g., Fernando & Cooley, 2016; Jefferis, 2009.
Shared beliefs	E.g., Walsh, 1996; 2013.		

2.2 RISK IN THE CONTEXT OF PETROCHEMICAL-AFFECTED COMMUNITIES

A literature review by Cox et al. (2017) reported that risk factors associated with petrochemical-affected communities range from biological effects in the form of physical and mental risks, and psychosocial and economic effects. Physical and mental risks include factors such as breathing problems (i.e., respiratory ailments, asthma) and cardiovascular problems (i.e., heart or blood related problems). Psychosocial effects include factors such as prostitution, sexually transmitted infections, an increase in the number of pregnancies and abortions, addiction to drugs and alcohol, and violence and the psychological stress of social isolation, especially as related to being away from family and relatives (Cox et al., 2017; Goldenberg et al., 2010). Economic effects include what is known as the boom bust cycle that is associated with economic contraction and expansion. Bust leads to compulsory downscaling and/or an increase in migration as a result of unemployment and poverty (Cox et al., 2017; Goldenberg et al., 2010).

2.2.1. Physical health-related risks

The risks associated with biological or/and physical effects may compromise the individual's well-being (Cox et al., 2017). Physical health-related risks that are often associated with petrochemical outcomes include extreme environmental conditions such as exposure to excessive heat and cold, pollution (outdoor air and household air pollution, water pollution, and noise pollution), respiratory problems, inflammatory conditions, and cancer (Cox et al., 2017; Han, Zhang, Niu, Han, Bai, 2014; Marcotte, 2016; Murray, Brondi, Kleinbaum, McGowan, Van Mels, Brooks, Goswami, Ryan, Klen, & Bridges, 2012). The most commonly reported physical health-related risk associated with the petrochemical industry is air pollution (Chang et al., 2014; Lavy, Ebenstein & Roth, 2014; Graff Ziven & Neidell, 2013; Marcotte, 2016; Stafford, 2015).

Some researchers have reported that pollution from petrochemical industries may have devastating effects on young people's cognitive abilities especially when the individual is faced with cognitively demanding tasks (Bharadwai, Gibson, Ziyin, & Neilson, 2014; Ebenstein, Lavy, & Roth 2016; Marcotte, 2016). Lavy et al. (2014) explained this cognitive consequence as a result of the small polluted air particles

penetrating into the lungs, blocking the flow of oxygen into the bloodstream which subsequently inhibits optimal blood flow to the brain, resulting in impaired cognitive functionality. Poor air quality is also reported as having an effect on productivity among employees working in petrochemical industries (Lavy et al., 2014; Stafford, 2015).

Factors such as potential work-site accidents in the form of probable explosions or structural collapse, hazards (because of poor safety standards), and irregular work patterns (shift-work and related patterns of fatigue) have been linked to negative effects on the physical health of individuals, especially people living in close proximity to highly industrialised areas (Choobineh, Soltanzadeh, Tabatabaee, Jahangiri, Neghab, & Khavaji, 2011; Petkova, Lockie, Rolfe, & Ivanova, 2009). Young people employed in petrochemical industries are at greater risk of suffering from the previously-mentioned physical and mental risks related to petrochemical industries since they (especially male adolescents) constitute the most common population group that seeks employment in these industries (Cox et al., 2017). Although most of the research refers to males seeking employment I suggest that the same would apply to female adolescents living in this context.

2.2.2 Psychosocial risks

Psychosocial risks refer to a combination of psychological and social risk factors that put individuals at risk (Reber et al., 2009). Youth living in petrochemical-affected communities are often exposed to risky behaviours that have psychosocial effects on their well-being (Carrington et al., 2010; Goldenberg et al. 2008; Mactaggart, McDermott, Tynan, & Gericke, 2016). This includes behaviours such as engagement in prostitution (Goldenberg et al., 2010), which may result in pregnancy and the termination of unwanted pregnancies (Shandro, Veiga, Shoveller, Scoble, & Koehoorn, 2011), and could result in an increased rate of sexually transmitted infections (Goldenberg et al., 2010). Other risky behaviors could include addiction to drugs and/or alcohol (Goldenberg et al., 2010); being exposed to violent activities (Gilmore, Lang, & Chikritzhs, 2016), and psychological stress (Hajkowicz, Heyenga, & Moffat, 2011; Meredith, Rush, & Robinson, 2014) as a result of loneliness and social exclusion from family and friends (Petkova et al., 2009; Hoath & Pavez, 2013). According to

Goldenberg et al. (2010) these risky behaviours may be the result of youth seeking entertainment and excitement, which are common occurrences in petrochemical-affected communities.

2.2.3 Economic risks

As mentioned previously, communities dependent on petrochemical industries are regularly exposed to the boom-bust economy (Goldenberg et al., 2010). The boom period leads to people being paid high salaries and the bust period is characterised by downsizing resulting in workers losing their jobs. A bust economy is a difficult period for families because of this possibility and the resulting loss of income (Misan & Rudnik, 2015; Windle & Rolfe, 2013).

Communities that rely on the petrochemical industry frequently experience demographic and social disruptions (Goldenberg et al., 2008). Petrochemical industries offer employment (skilled and unskilled labour) to young people (predominantly men) and an opportunity for them to earn high (if temporary) income (Goldenberg et al., 2008; Hoath & Pavez, 2013). This could result in an influx of migration as people move away from areas characterised by unemployment and poverty to seek a better quality of life in petrochemical-affected communities (Cox et al., 2017). This influx of workers may result in shortages of infrastructural support like housing (Goldenberg et al., 2008; Goldenberg et al., 2010). While the petrochemical industries often offer economic benefits like high salaries and low unemployment during boom times, seeking employment in this industry can also be accompanied by negative consequences that have an impact on social well-being like poor and/or incomplete education as a result of young people dropping out of school to seek work in the industry during boom times (Goldenberg et al., 2010).

2.2.4 Conclusion to risk section

As an Educational Psychologist-in-training I have observed that adolescents are vulnerable to various challenges and risks factors that may negatively affect their development and functioning. The risks faced by adolescents may vary from one context to another as noted previously. As much as the previous discussion outlines the risks experienced by adolescents living in petrochemical-affected communities (i.e.

Australia and Canada) I wondered if the same risks would be reported by the participants in my study who live in South Africa and which of these personal protective resources reported in the literature would apply to the adolescents in my study. I anticipated that the participants would report health risks because of what I had read in the Ridge Times (the newspaper in the eMbalenhle and Secunda area) and other newspapers. For example, Comrie (2016) reported how black residents in the Secunda and eMbalenhle area are challenged by respiratory illnesses and eye ailments and the residents linked this to petrochemical pollution. I also anticipated concerns about unemployment and poor service delivery, as reported by Mathebula (2015, 2017, 2018).

In the following section, I outline the personal protective resources that are reported in existing literature on resilience, and that could potentially support adolescent resilience to the aforementioned risks.

2.3. RESILIENCE: DEFINING PERSONAL PROTECTIVE RESOURCES

Personal protective resources are defined as personal characteristics, traits, or resources that typically enable an individual to cope well with adversity (Carr, 2006; Malindi, 2014b; Afifi & MacMillan, 2011). I use Kumpfer's (1999) definition of personal protective resources; she refers to them as resources that buffer the individual from negative life events that may occur at any level of the ecosystem. She divides personal resources into five dimensions. These include motivational or spiritual factors (e.g., hopefulness); cognitive competencies (e.g., intelligence and problem solving skills); emotional stability (e.g., emotional regulation); behavioural and social competencies (e.g., agency); and physical well-being (e.g., good health and physical attractiveness).

International and South African literature on resilience also includes evidence of all these personal protective resources as factors that enable resilience in adolescents (Alvord & Grados, 2005; Benzies & Mychasiuk, 2009; Dass-Brailsford, 2005; Fonaghy, Steele, Steele, Higgett, & Target, 1994; Masten, 2001; Masten & Coatsworth, 1998; Mohamed & Thomas, 2017; Mosavel et al., 2015; Phasha, 2010; Theron & Theron, 2010; van Breda & Theron, 2018). My literature review reports on both the international and South African research studies on resilience that demonstrate personal protective resources that are found to be associated with resilient adolescents.

2.3.1 Motivational or spiritual factors

Motivational or spiritual factors refer to a collection of resilience characteristics that help an individual stay motivated and focused. Kumpfer (1999) identified these motivational factors as dreams and goals, purpose in life, meaning in life, spirituality, belief in oneself, internal locus of control, hopefulness and optimism, and determination and perseverance.

International research on resilience (Dias & Cadime, 2017; McMillan & Reed, 1994) and South African research (Mampane, 2014; Theron, 2017) support the belief that adolescent resilience is enabled by motivational factors. For instance, Chapin (2015) reported on the positive outcomes and resilience factors of 12 Mexican-American adolescent boys who were perceived to be at risk for poor outcomes compared to girls and other ethnic groups. This scholar found that the adolescent boys displayed personal resilience-enabling resources that related to success in school and getting a good job. Emotion regulation (i.e., an internal locus of control), confidence (i.e. belief in oneself), and adaptability were three personal resources that emerged as personal protective factors that enabled resilience with these participants.

Smokowski, Reynolds, and Bezruczko (1999) explored the resilience and protective factors of 86 disadvantaged high school students in Chicago. This research study used quantitative comparisons of the adolescents' autobiographical essays to evaluate resilience and protective factors. The results from the adolescents' autobiographies reported perseverance, determination, having experience of prior mastery, and being able to learn from other people's behaviour as prominent resilient-enabling factors. They concluded that a combination of motivational factors such as optimistic future expectations, a realistic appraisal of ones' strengths, and having personal goals are likely to be coping mechanisms for these adolescents. In my experience, as an Educational Psychologist in training, of working with adolescents from challenged contexts, I have also observed that the motivation-linked resources reported by Smokowaski et al. (1999) are common personal protective resources especially internal resources such as belief in oneself, the ability to persevere in challenging situations, and maintaining one's determination to achieve personal goals. I noticed these personal strengths during my internship when I worked with adolescents who

attended individual therapy sessions at the Centre for Psychological Services and Career Development (PsyCaD), at the University of Johannesburg. Many of the adolescents with whom I engaged during individual and group therapy sessions demonstrated similar personal strengths as those listed previously.

South African literature also supports the belief that motivational factors enable resilience in adolescents. Theron (2016b), in a South African study with Sesotho-speaking adolescents who were challenged by poverty, reported that the participants hoped that if they completed their education they would have a better future. This hope helped them to endure and not give up during difficult times. She reported that South African resilience studies reveal similar results pertaining to hope and goal-directed behaviour as integral resources that are resilience-enablers in adolescents (see, for example, Ebersöhn & Maree 2006; Malindi & Machejdedze 2012; Phasha 2010; Theron, 2015; Theron & Theron 2010, van Breda 2017). Similarly, Mampane and Boucher (2011) and Malindi (2014b), reported that hope and the ability to remain focused and motivated are personal strengths that supported black South African adolescents to adjust well to poverty and structural disadvantage (i.e., violence, poverty, and crime etc.). Similarly, in my internship training as an Educational Psychologist many of the adolescents during individual and group therapy sessions attributed their personal strengths to hope. One of my therapy clients used a Sesotho idiom to explain that being hopeful is not a futile exercise. This adolescent often referred to these words whenever he felt challenged by difficulties in his life and he mentioned that being hopeful would reactivate his desire to pursue his goals and persevere beyond his current difficulties.

Research done by Theron (2017) in South Africa, in the Vaal Triangle, with 385 black adolescents and 284 adults who were challenged by structural disadvantage reported faith-based support as a personal protective resource that sustained their hope and regulated their behaviour. Furthermore, these adolescents regarded education and education-related hope as an individual resilience-enabler that predicted improved future outcomes (i.e., financial well-being, economic independence, a sense of pride in academic achievement among family and community members, and esteemed social standing). This research suggested that resilience motivated resources are intertwined

with community resources (such as opportunity for education and opportunity to be part of a faith-based community).

Malindi (2014a) conducted a qualitative study with 30 street-involved South African female adolescents aged 12 to 17 who similarly reported faith and listening to music as intrapersonal resources that supported their resilience. Likewise, a study by Ebersöhn, Nel, and Loots (2017) on the analysis of risk and resilience using the sand trays built by 25 adolescents at a rural school in Mpumalanga, South Africa, reported spirituality to be a dominant protective resource that protected them from internal and external challenges and risks. Similarly, Theron (2016c) and Theron and Malindi (2010) found that resilient young peoples' descriptions of their support systems included spiritual beings like God and their ancestors. In the study by Theron and Malindi (2010) the faith that predominated among the participants was the Christian faith. Street children in South Africa were also found to be resilient in the context of streetism as a result of having religious faith (Malindi & Theron 2010; Theron & Malindi, 2010). It is evident from these studies that these resilient adolescents valued faith and spirituality and regarded these resources as enablers of resilience. From personal experience as a black woman from a rural context and from my professional exposure, I have seen that faith and spirituality have always been prominent protective resources in females especially. I have noticed that faith and spirituality bring about some alleviation of distress, help people to remain optimistic, and validate a sense of belonging.

Research by Mampane (2014) on the factor analysis of the resilience questionnaire for middle-adolescents in township schools (R-MATS) that surveyed 291 Grade 9 middle-adolescent learners from two South African black-only township secondary schools reported that the adolescents attributed their resilience to individual and environmental factors. The individual factors included Kumpfer's (1999) motivational factors, namely self-confidence, an internal locus of control, a tough personality, commitment to succeed in achieving set goals, and being achievement-oriented. Likewise, a study by Dass-Brailsford (2005) with 16 socio-economically disadvantaged black South African adolescents attempted to understand how this poverty stricken group achieved academic success and demonstrated resilience. The results of this study indicated that motivation and having strong initiative, being goal-

oriented, and having a sense of agency supported their academic success. Despite the structural disadvantages (poverty in particular) they were able to succeed academically.

In summary, in terms of motivation and/or spiritual factors as defined by Kumpfer (1999) it is clear from the studies previously reported that both international and South African literature on resilience report similar personal protective factors (hope, perseverance, faith, and spiritual connections) that enable resilience among adolescents living in challenging contexts.

2.3.2 Cognitive competencies

Cognitive competencies are cognitive abilities that assist an individual to achieve her/his dreams and goals and to develop (Kumpfer, 1999). These cognitive abilities include intelligence, problem-solving skills, academic achievement and homework skills, delayed gratification, reading skills, moral reasoning, insight, interpersonal awareness, and the ability to plan and be creative (Kumpfer, 1999). Masten, Hubbard, Gest, and Tellegen (1999) conducted a 10-year longitudinal study with 205 learners (114 females and 90 males) in Pennsylvania. These researchers examined a) the resilient competency outcomes of adolescence in relation to adversity over time, b) antecedent competence, and c) psychosocial resources. The results from their study suggested that Intelligence Quotient (IQ) was a significant indicator of positive adaptation that supports child development in the context of severe adversity.

Likewise, Buckner, Mezzacappa, and Beardslee (2003) conducted research in Worcester, Massachusetts, with 155 youths aged 8 to 17 years and their mothers, all of whom were part of a longitudinal study of low-income families. They found that some youths, including 29% of the participants in the study, were resilient despite the adversities in their lives. These youths were noted as functioning well across multiple indicators of mental health and competence. These researchers found that the most reported predictor of a resource for internal resilience with these participants was intellectual functioning. They maintained that higher levels of intelligence assist children to succeed in important developmental tasks such as academic achievement and that high levels of intelligence may encourage a wide range of coping strategies in children who are managing stress.

According to the American Psychological Association (APA) (2015) some literature reports that at-risk students such as homeless ones are more likely to have academic difficulties because of their structural challenges. However, many of these homeless students are reported to have excelled in the face of adversity and to have demonstrated high intelligence (Buckner, Mezzacappa, & Beardslee, 2009). Students who attain academic excellence following exposure to adverse circumstances demonstrate academic resilience (Martin & Marsh, 2009; Morales & Trotman, 2004). Thus, we can see that intelligence and academic success serve as personal resilience-enabling factors that contribute positively to homeless children's development. In a literature review by Cutuli and Herbers (2014) executive function was identified as an adaptive protective factor for homeless children. They maintained that adaptive systems, such as intellectual functioning, enable children's avoidance of the negative effects of chronic and acute risks associated with homelessness.

In South African research, Mampane (2012) and Malindi and Theron (2010) report that cognitive competencies support South African adolescents in being resilient. These cognitive competencies include problem-solving abilities. Similarly, Theron, Theron, and Malindi (2013) conducted research with 11 South African adult participants from a disadvantaged rural area who reported on the factors that make black South African adolescents resilient. Academic progress was reported as a personal protective resource. In my experience I have also identified that adolescents, especially school-going ones, tend to value education and they interpret education, particularly educational success, as the gateway to their future.

South African children living in poverty-stricken environments are at risk of considerable adversity and those with negative thoughts are at increased risk of developing psychological problems (Cortina, Stein, Kahn, Hlungwani, Holmes, & Fazel, 2016). These scholars have pointed out that the manner in which such children interpret the world around them will influence how they cope with adversity. In this study the Cognitive Triad Inventory for Children (CTI-C) was administered to 1025 socio-economically disadvantaged children from a rural community in Mpumalanga, South Africa, to examine their cognitive interpretations. The findings reported that children with

more positive cognitive interpretations demonstrated better psychological functioning than those with negative cognition.

2.3.3 Behavioural and social competencies

Behavioural and social skills include skills such as agency, social skills, street smartness, communication skills, peer resistance, multi-cultural skills, bi-gender competencies, talent, and a capacity for intimacy (Kumpfer, 1999). In the South African studies of child and adolescent resilience, there is also mention of agency (e.g., Botha & van den Berg, 2016; George, 2017; Hage & Pillay, 2017; Soji, Pretorius & Bak, 2015; Woollett, Cluver, Hatcher & Brahmhatt, 2016) and self-regulation of behaviour (e.g., Bhana, Mellins, Small, Nestadt, Leu, Petersen, McKay, 2016; Goliath & Pretorius, 2016; Kumpulainen, Theron, Kahl, Bezuidenhout, Mikkola, Salmi, Uusitalo-Malmivaara, 2016; Mohangi, Ebersöhn, & Eloff, 2011; Ogina, 2012).

Research conducted in Portugal by Simões, Matos, and Morgan (2015) with 472 adolescents with special needs reported that such adolescents faced different negative life events, but simultaneously had a set of internal assets that served as personal protective resources for their well-being. The findings of this research pointed consistently to behavioural resources that promote resilience in adolescents. Among these factors were communication skills and goal-oriented agency.

Malindi (2014b), Malindi and Machenjedge (2012), and Theron (2015) reported that behavioural and social skills support South African adolescents in being resilient. These behavioural and social skills include socially appropriate forms of agency, the skill to regulate the self socially, the ability to maintain a meaningful balance between independence and dependence by co-operating with others when the need arises, being sociable, having a sense of belonging to a group (social support), practising deterrence from alcohol and drug abuse, having empathy, being able to access material resources, having relational support, experiencing cohesion, and adhering to cultural values. For example, research done by Malindi and Theron (2010) with 20 street youths in the Free State and Gauteng reported that the street participants ascribed their resilience to their peer group, personal assertiveness, agency, and self-regulatory skill.

In my brief experience of working with adolescents it has been apparent to me that those who have good communication skills tend to be more confident, are easily approachable, and find it easy to make friends in a social setting. Additionally, having peers who share common interests and aspirations to succeed also facilitate socially appropriate behaviours. The peer group becomes a deterrence against negative behaviours.

2.3.4 Emotional stability and emotional management

Emotional stability and emotional management are characteristics that are considered to underlie resilience (Kumpfer, 1999). These include happiness, humour, the recognition of feeling, having emotional management skills, and the ability to control anger and depression.

Literature on resilience often describes resilient individuals as energetic, happy, and prone to using humour as a coping mechanism to reduce tension and stress and restore adaptive functioning (Abel, 2002; Kumpfer, 1999; Henman, 2001; Martin, Kuiper, Olinger, & Dance, 1993). Humour is also regarded as a useful interpersonal skill that influences the development and maintenance of social skills and friendships. Using humour as a coping mechanism has been associated with the lower occurrence of depressive symptoms. Thus, positive humour is associated with good adjustment and it is believed to promote healthy well-being in adolescents (Kumpfer, 1999; Henman, 2001; Martin et al., 1993).

In support of the above, a study by Erickson and Feldstein (2007) investigated the psychometric properties of the Humour Styles Questionnaire (HSQ) in measuring adolescent humour with 113 adolescents in the United States. This study was aimed at gaining a better understanding of the relationship between humour and coping style, defence style, depressive symptoms, and the positive adjustment of adolescents. The results pertaining to this study suggested that humour is a psychometrically relevant resilience construct for adolescents.

Cameron, Fox, Anderson, and Cameron (2010) conducted research in Canada with two at-risk but resilient adolescents (a 15-year-old female and a 14-year-old male). This study investigated the types and functions of these adolescent's humour in their

social contexts. The participant's humour included jokes, teasing each other, physical play, and using light tones, irony, sarcasm, and mockery. The results of the study suggested that humour influenced socio-emotional functions such as coping with socially sensitive topics and situations and facilitating affiliation with friends and family. Cameron et al. (2010) reported that humour can serve as a resilience-enabling protective factor for adolescents living under adverse circumstances. They concluded that humour can promote healthy development in early adolescence, buffer stressors, and enhance adaptive socio-emotional functioning in young adolescents.

Similarly, Malindi (2014b) noted that street-involved South African children relied on humour, ingenuity, and tenacity as a mechanism to cope with streetism. Malindi and Theron (2010) and Theron and Malindi (2010), showed that street children generated humour unconventionally through teasing each other. Although teasing is atypical as an enabler of resilience, in the context of streetism it was reported in both studies as having promoted mental well-being.

Humour is not the only resource that supports emotional stability and/or the management of emotions. For instance, Zolkoski, Bullock, and Gable (2016) that explored the resilience factors of individuals aged 18 to 23 who graduated from alternative educational settings in the North-eastern part of the United States. The researchers wanted to identify factors specific to such alternative educational settings that may contribute to resilience in adolescents. Among the various findings a sense of humour and being goal-oriented were noted as two personal protective factors that contributed to some participant's resilience.

Banyard et al. (2017) conducted research that investigated the protective factors that are associated with physical health among adolescents and adults exposed to high levels of adversity. This study included 2565 individuals with an average age of 30 who completed computerised surveys. The study took place in rural Appalachia, in the United States. The study reported that among participants exposed to adverse circumstances, those with good emotional regulation (i.e., emotion management skills) reported better health outcomes compared to participants with poor emotional regulation. The results were consistent with the researcher's hypothesis that personal resources such as emotional regulation have positive associations with physical health

and a positive quality of life. Likewise, Mohamed and Thomas (2017) conducted research that explored the perceptions of refugee children, refugee parents, and school staff in London regarding the positive adaptation of refugee children in a new social context and the effects on their mental health and psychological well-being. The research also included an exploration of resilience and the role of risk and protective factors among refugee youth. The findings reported that positive emotions were associated with resilience in these young people.

In South Africa, Malindi (2014b) reported that emotional stability supports South African adolescents in being resilient. Emotional stability factors include happiness, self-confidence, self-efficacy, recognition, emotional management skills, the ability to control anger and depression, and the ability to restore self-esteem.

2.3.5 Physical well-being and physical competencies

Physical well-being and physical competencies include good health, health maintenance skills, physical talent development, and physical attractiveness (Kumpfer, 1999). Physical attractiveness is associated with positive life adaptation in that physically attractive people are more liked and desired (Kumpfer, 1999) and treated more positively in everyday social interactions than less attractive individuals (Lorenzo, Biesanz, & Human, 2010). This positive perception based on physical attractiveness promotes interpersonal relationships (Segal-Caspi, Roccas, & Sagiv, 2012) because individuals desire to have close social bonds with attractive people (Lemay, Clark, & Greenberg, 2010). This association between physical attractiveness and perceived desire was further supported by research done by Segal-Caspi et al. (2012) who explored the relationship between perceived attractiveness and perceived personality with 118 females who video-reported their traits and 118 judges who evaluated the reported traits. Segal-Caspi et al. (2012) found that being physically attractive correlated with being socially desirable. These results were consistent with research by Lemay et al. (2010) and Lorenzo et al. (2010) that also supported the “what is beautiful is good” stereotype (Segal-Caspi et al., 2012, p. 1115).

In a research review by Silverman and Deuster (2014) it was reported that physical fitness (i.e., regular exercise or any physical activity) can promote increased

resilience and well-being as well as positive psychological and physical health. Physical activity can elicit positive psychological and physiological benefits that may prevent the development of stress-related diseases. Therefore, physical fitness can contribute to positive well-being and resilience. Physical inactivity has been associated with persistent adverse effects on mental and physical health. The effects of regular exercise and/or physical activity are reported to have promoted behavioral and metabolic resilience, and to have been a barrier against various chronic diseases (Silverman & Deuster, 2014).

Brettschneider (1999) conducted research on the relationship between academic success and coping with sports among young athletes in Germany. This mixed-method research aimed to investigate how young athletes coped with stress resulting from the demands of school and training. This research included approximately 700 male and female top athletes from elite sport schools, aged between 12 and 17, who completed the Marsh's self-description questionnaire and 40 qualitative interviews. Top-level athletes reported higher self, peer, and parent relations and academic achievement scores. The results of the qualitative interviews reported that positive feedback in the form of academic achievement contributed to the development of a positive self-concept for adolescents who achieved sporting success. The findings of this research suggested that involvement in elite sport may serve as a personal resource in the process of coping well with stress.

In research by Strachan, Côté, and Deakin (2011) with five elite youth sport coaches, two of them suggested that adolescent athletes demonstrated the development of pride during their training. These scholars reported that sport/physical activity has the potential to serve as an outlet for young people to develop positive personal characteristics such as leadership and responsibility. Sport has the potential to be a positive avenue of growth and development for children and youth. They argued that the opportunities for athletes to travel and spend more time together on trips increases their sense of belonging in sports programs. Two coaches mentioned the expectation of respect through participation in the programme. This indicates that participation in sports has an influence on the development of personal characteristics that can serve as protective factors in adolescent development.

Closer to home, Theron (2015, 2017) and Malindi (2014b) reported that physical health and well-being support South African adolescents in being resilient. For instance, Theron's (2017) qualitative study with 385 black adolescents and 284 adults who were challenged with structural disadvantage, showed that physical competency (e.g., sporting talent) facilitated resilience. The adolescent's reported sporting talent as being supportive of resilience and explained that using this sporting talent kept them productively engaged and out of trouble, and encouraged the capacity to behave respectfully.

Physical health/well-being also includes health that is maintained by health care (Kumpfer, 1999). For example Ebersöhn (2012) reported on an 8-year longitudinal case study in South Africa with 12 schools and 74 teachers which indicated that, in the face of chronic adversity, a collective response such as the collaboration of schools with social workers (who conducted home visits when children stayed away from school), links with social development officers (who assisted with social grant applications for children's parents), and collaboration with clinic nurses to provide healthcare to children requiring treatment are support factors that facilitated positive well-being among South African youth faced with adversity.

2.4 CONCLUSION

From the literature that I have reviewed pertaining to petrochemical industries (the effects on personal, social, economic, and physical well-being) I concluded that there was no research done that focused on the personal protective resources that enable resilience among adolescents living in petrochemical-affected communities, such as eMbalenhle in Secunda, South Africa. In the first literature synthesis of its kind Cox et al. (2017) highlighted the absence of children's' and youths' voices and participation in the research focusing on the impact of energy systems (such as the petrochemical industry) on their well-being. They argued that there is a need for research that will focus on exploring the lived experiences of children and youth living in communities that are economically dependent on energy focused industries, as well as research focusing on exploring the protective and promotive factors that can increase

childrens' and youths' resilience despite the risks associated with living in petrochemical-affected communities.

My literature review also revealed that most of the research in the field of petrochemical-affected communities and industries concentrated on particular contexts, such as Australia, Canada, Thailand, India, Nigeria, Portugal, and communities in close proximity to particular extraction or production sites. No study to date has focused on petrochemical-affected communities in the South African context, particularly eMabalenhle community in Secunda. This thus points to a need for specific South African research focusing on the personal protective factors that enable resilience in South African adolescents living in petrochemical-affected communities. In Chapter 3 I explain what I did to address this gap in existing research on resilience.

CHAPTER 3

METHODOLOGY

3.1 INTRODUCTION

In this section I discuss the methodology that I used in my research. I describe the research design and the reasons for choosing this particular one. I explain how I selected my participants; how I collected the data using art-based techniques; and how I analysed the data. I also discuss my role as a student researcher and the ethical considerations that applied to my research.

3.2 SITUATING MY STUDY OF LIMITED SCOPE IN THE RYSE STUDY

As explained in Chapter 1, my study is part of the RYSE study. The purpose of the *RYSE* study is to explain which biological, psychosocial, and environmental factors influence the resilience of young people who live in stressed environments in Canada and South Africa (www.ryseproject.org). I was not part of the research team that designed the *RYSE* study but as a student researcher in the *RYSE* study I had to choose a research focus that fit with the overall aim of *RYSE* and that provided a clear motivation for my chosen focus (see Chapter 1, section 1.1). I was also free to choose which type of sub-study would fit with this focus. Next, I collaborated with the *RYSE* team (including my South African fellow student co-researchers) to identify qualitative methods that would fit with my research design choice and research question. We tried to find methods that would generate data that would answer all our research questions (my fellow student co-researchers were interested in the family and community enablers of resilience). During our discussion on qualitative methods, I kept in mind my research question and kept checking that the research methods and the broad prompts for each would, potentially, generate data that would be useful in answering my research question. I did not recruit participants because this was the responsibility of the *RYSE* Community Advisory Panel (CAP). On 30 June 2017 my fellow student co-researchers and I met the CAP members to explain the criteria that needed to direct participant recruitment. While we waited for the CAP to recruit, we prepared ourselves to generate data by becoming familiar with the methods we had decided on and the *RYSE* project manager trained us on 25 August 2017. Then, on 26 August 2017 my fellow student co-

researchers and I met the participants. Each of us implemented the same methods (with the same broad resilience-focused questions) with one group of participants. I transcribed my group's data, as did the other student co-researchers. We then shared this data. The data that was generated by the groups that I did not facilitate could be seen as secondary data. Secondary data is pre-existing data that has been collected to be used for another primary purpose by someone else (Andrews, Higgins, Andrews, & Lalor, 2012; Dunns, Arslanian-Engoren, DeKoekkoek, Jadack, & Scott, 2015; Johnston, 2014). Therefore, the data set that supported the findings I report on in Chapter 4 included primary data (the data from the group that I facilitated) and secondary data (from the three groups that my fellow student co-researchers facilitated). To provide answers to the research question that I identified, I analysed and interpreted the data set. I do not think that this analysis was a secondary analysis because the data has not been analysed in any prior studies.

3.3. PURPOSE OF STUDY

The purpose of my study was to explore the personal protective resources that facilitate resilience among adolescents living in a petrochemical-affected community in eMbalenhle, Secunda. In my research, I focused on exploring how a small sample of adolescents explained the personal resources that support adolescent resilience despite exposure to the petrochemical industry. My study was therefore exploratory in nature. An exploratory study explores a phenomenon that is under-researched and where little or no information exists in previous research studies (van Wyk & Taole, 2015). Given that there have been no previous South African studies of personal protective resources that facilitate resilience in adolescents living in petrochemical-affected communities, my exploratory study is helpful because I gained a preliminary insight into, and understanding of, the personal enablers of adolescent resilience in the face of negative outcomes from the petrochemical industry.

3.4 PARADIGMATIC PERSPECTIVE

3.4.1 Meta theoretical paradigm

My research study was guided by the interpretivist perspective. Interpretivism is concerned with understanding the subjective world of human experience (Cohen et al., 2011). Interpretivism was appropriate for my study because it helped me gain an understanding of the meaning that the participants attach to the personal strengths that support adolescent resilience and how they interpret that meaning. Participants also shared their individual (i.e., subjective) experiences of living in a petrochemical-dependent community and how this challenges adolescent resilience.

An interpretive approach was advantageous for my study because, following Nieuwenhuis (2016) it allowed me to gain in-depth understanding of personal resilience-enablers from the adolescent's own perspective and within a specific context. The participants had an opportunity to discuss and explain their experiences of living in a petrochemical-dependent community and how they believed adolescents used personal resources to adjust well to living in such a community. The participants constructed their own meanings and this allowed for deeper exploration of how they used personal resources to cope positively with the negative effects of the petrochemical industry on their health and well-being, and that of their families and community members. Researchers of resilience (e.g., Haffeejee & Theron, 2017; Theron & Theron, 2010; van Breda & Theron, 2018; van Rensburg et al., 2015) have stressed the importance of adolescent interpretations of resilience.

An interpretive approach is not limitation-free. For example, my exploration of adolescents' insights into personal protective resources was time-consuming and I noticed that some of the participant's perseverance levels were limited. To address this limitation, we took brief comfort breaks to help the participants to feel rejuvenated enough to continue with the research activities. Another limitation was the possibility of influencing the findings with my personal assumptions and/or experiences. To avoid this limitation, I declared my assumptions at the onset of the research study (see section 1.7 in Chapter 1). Also, I made it clear to the participants that much as we are of the same race (I am a Sotho-speaking black African woman, who is also multilingual in some African languages), our life experiences and interpretations will differ because of our

different backgrounds. For example, I grew up in the small rural town of Matatiele in the Eastern Cape Province but currently work and study in a large, metropolitan city, Pretoria, which is not directly affected by the petrochemical industry. Therefore, by virtue of the environments in which we grew up our life experiences are bound to be unique and context-specific. I emphasised that I was participating in this research to learn from them about their unique experiences and they should not assume that I knew their individual experiences by virtue of being of the same race as them. Furthermore, I engaged in a process of reflexivity by keeping a research diary to record my reflections on the research process. In addition, when the team from the greater RYSE study met, we reflected on the research process and the findings that were emerging and this helped to limit personal assumptions.

3.4.2 Methodological paradigm

My research study followed a qualitative research paradigm. Qualitative research intends to understand a particular social phenomenon, event, group or, interaction (McMillan & Schumacher, 2014). In my research I aimed to gain an in-depth understanding of adolescents' understandings of the personal resilience enablers that facilitate their positive functioning despite exposure to the negative effects of the petrochemical industry. Qualitative research is often conducted in what Cresswell (2014) describes as a natural setting. My research was conducted in the participants' natural setting in eMbalenhle community, Secunda, Mpumalanga Province, in South Africa where the participants reside and are exposed to the effects of the petrochemical industry. Following Cresswell (2014), my study did not manipulate anything since it was not an experiment. I was the research instrument which means that three other RYSE research team members and I co-generated the data. From this greater data set, I extracted only the data that was relevant to the focus of my study (the individual resources that enable resilience among adolescents living in a petrochemical-dependent community). Qualitative research requires multiple data collection techniques which I discuss below in section 3.4.3.

Qualitative research is appropriate in relatively scarce areas of research where the researcher's goal of the study is to gain in-depth insight about the participants'

experiences of, and perspectives on, the phenomenon being studied (Moretti, Vliet, Bensing, Deledda, Mazzi, Rimondini, & Fletcher, 2011). As has been explained by Creswell (2014), qualitative research was suitable for my study because it allowed me to explore and understand the meaning that the participants attach to their experiences of living in a petrochemical-dependent community. I was able to learn about the participants' insights into the personal resources that support the resilience of adolescents. On a theoretical level, Ungar (2003) argued that a qualitative research approach is suitable for research on resilience because it complements the discovery of protective processes that are consistent with the lived experiences of the participants. Additionally, qualitative research produces rich data and makes provision for in-depth contextualised descriptions of the phenomenon from the participants' perspectives (Moretti et al., 2011).

In line with the points made by Creswell (2014), as a qualitative researcher I was aware that the participants were the experts on adolescent resilience and that I, as the researcher, was the research instrument that facilitated the data-generation and data-analysis process. In this sense, the data was co-generated between the participants and myself as the researcher. As Nieuwenhuis (2016) has suggested, my role included guiding the data-generation process and probing for clarity or more information where necessary to get clarity on the participants' views of their social world and what they knew and understood about the personal resources that support adolescent resilience in the face of risks associated with living in a petrochemical-affected community. My focus was on learning about the meaning that the participants attach to these resources, not to focus on the meaning that I, as the researcher, attribute to them. I interacted directly with the participants as advised by Denzin and Lincoln (2000), using multiple data-generation techniques such as body-mapping, draw-write-and-talk, and a group discussion to get answers to my research question.

Qualitative research was advantageous for my study because it produced rich, personalised narrative and visual data which gave me a contextualised and deep understanding of the phenomenon under study. Research on resilience needs richer, youth-directed explanations of resilience (Liebenberg & Theron, 2015). The qualitative approach is not without its limitations. It is time-consuming, as mentioned previously, as

a result of its production of high volumes of data (Creswell, 2014). By nature, the findings from qualitative research cannot be generalised, but this is not a limitation of my study because I wanted to gain a contextualised understanding of the phenomenon. When I contextualise my study and describe my participants in detail (see sections 3.4.2) then the findings will be what Creswell (2014) would describe as transferable.

3.5 METHODOLOGY

3.5.1 Research design

My research study followed a phenomenological research design. Phenomenological research intends to understand human experiences of a specific phenomenon (Pringle, Hendry, McLafferty, 2011) from the participant's perspective (Tshabangu, 2015). It is interested in the subjective interpretations of human beings and their perceptions of whatever the research phenomenon is and the details of this phenomenon in their social world (Nieuwenhuis, 2016). Phenomenologists assume that the social world is socially constructed (Aspers, 2009). For this reason, the goal of phenomenological research is to describe participants' lived experiences about the phenomenon (Creswell, 2014) and the meanings they attach to this in order to provide in-depth description of the experiences of the participants (Nieuwenhuis, 2016; Tshabangu, 2015). Phenomenologists focus on describing what all participants have in common as they experience a certain phenomenon. For this reason, I was interested in how the adolescents who agreed to participate in the RYSE study experienced life in eMbalenhle and their shared views of the personal resources that support adolescent resilience in the face of risks associated with a petrochemical-affected community.

A phenomenological design is advantageous because it allows the researcher to report the participant's lived experiences from the participant's perspective (Alase, 2017). This is an advantage because the research data will be authentic since it would have been reported by the original source, the participants. The potential disadvantage may be that the findings relating to the participants' lived experiences may be biased as the researcher makes interpretations of the participants' lived experiences (Alase, 2017). To eliminate this limitation, I had my data analysis peer-viewed by the RYSE research team members and I sought continual guidance from my research supervisor.

3.5.2 Participants

The participants in my study were selected using a purposive sampling technique. Purposive sample entails selecting participants with the purpose of representing a particular phenomenon, group, location, or type of relation to a key criterion of the research study (Nieuwenhuis, 2016). In my qualitative study the participants had to be adolescents (young people aged 15 to 24) and resident in eMbalenhle township. eMbalenhle is a local township located approximately 12 km from Secunda, Mpumalanga Province, South Africa. This area is surrounded by petrochemical industries, power stations, and mines. This research site, eMbalenhle, was chosen because it is a community that is dependent on and affected by the petrochemical industry, SASOL, having been built by this company (see figure 3.1). It is characterised by low socio-economic status, poverty, pollution (see figure 3.2), high unemployment and social disadvantage (Thabethe, Engelbrecht, Wright, & Oosthuizen, 2014).



Figure 3.1 SASOL industry in Secunda



Figure 3. 2 eMbalenhle informal settlement

The population of the community of eMbalenhle is 118,889. (See table 3.1 below for population composition). The majority of locals are Black Africans who are disproportionately challenged by risks such as pollution (Comrie, 2016) and unemployment and poor service delivery (Mathebula, 2015, 2017, 2018).

Table 3.1: Population composition of eMbalenhle community (Statistics of South Africa, 2011)

Total population	118,889	Young (0-14)	Working Age (15-64)	Elderly (65+)	Population density	No schooling aged 20+	Higher education aged 20+	Matric aged 20+
		28,3%	69,5%	2,2%	6050 persons/km ²	7,9%	5,6%	31.5%

Table 3.2: Demographic composition of the population of eMbalenhle community according to the Census of 2011 (Statistics of South Africa, 2011).

Sex	Population	Percentage
Male	62348	52.44%
Female	56541	47.56%

Population Group	Population	Percentage
Black African	117745	99.04%
Coloured	433	0.36%
White	276	0.23%
Other	247	0.21%
Indian or Asian	188	0.16%

The Community Advisory Panel (CAP) that formed part of the *RYSE* study recruited 30 adolescents who fit the above criteria of age and location (see Table 3.3). CAP recruited the participants by means of a recruitment flyer (see addendum A). All participants identified themselves as Black African. They mostly spoke isiZulu. Fewer than half were engaged in education or training when my fellow student co-researchers and I worked with them.

Table 3.3: Information summary of the data collection group of RYSE participants on 26 August 2017.

Participants	Males	Females	Average age	School-going (12)	Employed (Part Time= 4)	Continuing with studies (2)	No information= 2*
Adolescents aged 15-17 [n=10]	4	6	16,6	6	1	-	-
Adolescents aged 18-24 [n= 20]	13	7	20,4	6	3	2	-

3.5.3 Data Generation

The data generation techniques that I used were the arts-based activities of body-map storytelling and draw-write-and-talk (see below for an explanation). These activities were conducted in four groups. I facilitated one group and my fellow student co-researchers (also Masters students) from the *RYSE* project facilitated the others. As already mentioned, we were taught how to use the methods in a workshop on 25 August 2017.

Liebenberg and Theron (2015) encourage qualitative researchers to use creative visual data collection techniques when they are conducting research on resilience since these techniques give adolescents the option to express themselves visually thus

addressing any potential struggle to do so verbally; these creative qualitative research methods, body mapping and draw-write-and-talk, were, therefore, appropriate for my study. The drawings and narratives, written and verbal, provided richly textured data. Following Gastaldo et al. (2012), these art-based techniques enabled the participants to communicate their experiences and insights in a meaningful manner through creatively making things themselves, and then reflecting on what they had made. These art-based activities were audio-recorded by me and the three other researchers who were part of the Patterns for Resilience study. Each of the researchers in the research team audio-recorded and transcribed the data of the group they facilitated and at the end of the data generation process we shared our audio-recordings and verbatim transcripts of the data so that each researcher had the audio data from the groups that were facilitated by fellow researchers.

3.5.3.1 Body-map storytelling

This is a data-generating research technique used to tell a story that reflects an individual's personal experiences and meaning attached to a particular phenomenon in a visual manner. The body-map storytelling is composed of three elements: a life-size body map, a brief narrative in the first person, and a description of each visual element in the map (Gastaldo et al., 2012; Ebersöhn, 2015; Ebersöhn et al., 2016). Whole-body mapping involves having another person trace around a person's body to create a life-sized outline, which is filled in during a creative and reflective process, thus producing an image that represents many aspects of the participant's embodied experience (de Jager, Tewson, Ludlow, & Boydell, 2016).

The value of this technique is that it has the potential to stimulate dialogue and engagement in shared knowledge given that the mapped story brings research participants' experiences to life through combined visual and oral media (Gastaldo et al., 2012). As Mitchell, Theron, Stuart, Smith, and Campbell (2011) have noted in relation to drawings more generally, body mapping has the potential limitation of participants being concerned with whether their drawings are good enough. In my study some participants were concerned about how their drawings would be perceived. I addressed this limitation by reassuring them that I was interested in what they drew and

created in the body-maps and not in how well they could do this. After I had reassured them, they seemed relaxed (their body language was less tense) and they were ready to start with the activity. I used the following prompt to explain the body map activity:

We are going to use this paper so that you can each tell a story of how your whole body, head, and heart feels and thinks about the petrochemical industry and how the petrochemical industry affects your well-being. It will be like a life-size photograph that you make of yourself.

After this prompt I told the participants that they would help each other to outline one another's body-maps. The participants were asked to choose anyone else in the group to trace their body maps. I used this prompt: "Help each other to draw your body maps; you can partner with anyone." I observed that the participants all chose another of the same sex to trace their body maps. During the drawing of the body-maps, the participants lay on top of the sheet of paper while their chosen partner outlined their body with a marker (see Figures 3.3 and 3.4). This was followed (see Figures 3.5 and 3.6) by the prompt:

After this you will each decorate your own body-map. Then you will take turns to tell a story of your own body map to me and I will take photographs of the body-map, take notes while you tell your story, and audio record you as you tell your story. The map remains your property and you may take it with you at the end of today's time together.



Figure 3.3 A female participant drawing the body outline of another female participant for the body-map activity



Figure 3.4 A male participant drawing the body outline of another male participant for the body-map activity



Figure 3.5 Participants decorating and filling in details in their body-map outlines

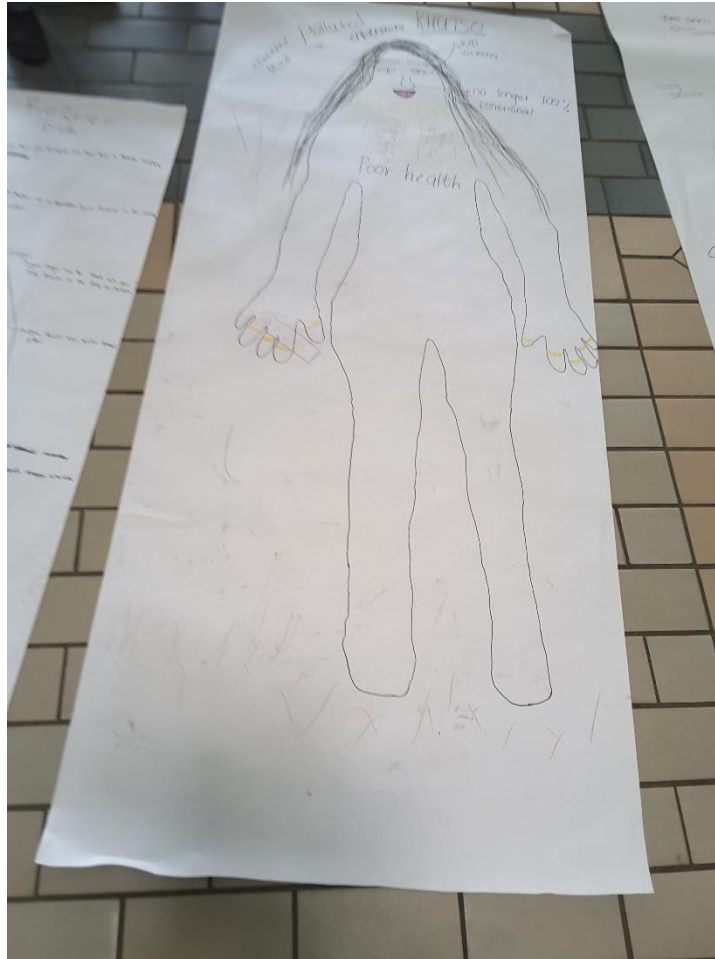


Figure 3.6 Example of one participant's completed body-map

3.5.3.2 Draw-write-and-talk

This is a visual method that invites participants to share their insights into a particular phenomenon by representing it through a drawing and then by explaining the drawing first in writing, and then verbally to the group (Angell, Alexander, & Hunt, 2015; Mitchell, Theron, Smith, & Stuart, 2011). Draw-write-and-talk is known to decrease the power imbalance between researchers and participants in part because participants have the freedom to choose how to visually represent their experiences of the research phenomenon (Guillemin, 2004). This method was appropriate for my research because it caters for potential language barriers in the participants who may not be proficient in the researcher's language. With this activity, I used the following prompt: "Please make a drawing that explains what/who makes it possible for young people to be OK when the

petrochemical industry affects their life in a negative way.” After this prompt the participants drew a figure and wrote short sentences that explained what or who made it possible for them to experience well-being under these conditions. After the drawings, a group discussion that I facilitated took place with my group and all the participants explained their drawing and the meaning they attached to it (see figure 3.7).



Figure 3.7 Group members busy with the draw-write-and-talk activity

3.5.4 Data analysis

In this study the qualitative data was in the form of words and drawings. I transcribed the verbal data verbatim and the transcripts were peer-reviewed to check for accuracy. The photos of the participants' body-maps and writings from the draw-write-and-talk activities were also analysed by me and peer-reviewed for accuracy.

I used thematic content analysis (Braun & Clarke, 2006) to make meaning of the narrative transcript and visual data. Thematic content analysis has been defined as a systematic, trustworthy technique of summarising data into representative themes based on the rules of coding (Braun & Clarke, 2006; Creswell, 2012). In other words, this type of analysis is used to find themes (Emmel, 2015). This analysis helped me to

identify patterns in the narrated lived experiences and insights of the participants. Following Braun and Clarke (2006) and Creswell (2014), I identified patterns that led to themes based on the similarities and differences that emerged from the information provided by the participants. This type of analysis was appropriate for my study because it provided a systematic process of making sense, as suggested by Creswell (2012), of the qualitative data.

During the data analysis phase, I was guided by Braun and Clarke's (2006) guidelines for analysis qualitative data.

1. **Familiarise self with the data.** This phase entailed immersing myself in the data transcripts by reading the data repeatedly until I felt well acquainted with it. After reading and rereading the transcripts and studying the visual data, I felt that I could begin to code it.
2. **Generating initial codes.** This stage entailed coding relevant data in a systematic manner across the entire data set. This means that I coded only the information that related to my research question. I looked for answers pertaining only to my research question and labelled (i.e. coded) these answers by writing a few words to paraphrase the answer. My audit-trail (see Addendum B) provides an example of this.
3. **Search for themes.** This involved identifying and arranging the codes (from step 2) into potential themes. I did this by grouping all the similar codes together. In this step I was guided by Kumpfer (1999). I followed her way of organising personal protective factors (i.e., motivational, cognitive, emotional, behavioural, and social, as well as physical well-being factors) to organise how I grouped my themes (see Chapter 4). In some ways this means that I worked deductively as has been done in other studies on resilience (e.g., Gruenenfelder, 2018; Naude, 2018), but my initial or open codes were inductive in that they came from the data.
4. **Review themes.** This stage involved checking if the potential themes corresponded with the coded information. During this stage I presented the initial themes to my research supervisor and RYSE research team and we considered which themes worked and complemented which data set, and which did not. This led to some minor changes. For example, initially I had included physical exercise as behavioural

competency but our discussion as the research team, prompted me to rather report physical exercise as part of physical well-being.

5. ***Defining and naming themes.*** This stage involved defining the themes. I identified the essence of what each theme was about and determined what aspect of the data each theme captured. When I reported the themes in Chapter 4, I included these definitions.
6. ***Producing the report.*** This final stage involved writing up the themes and providing evidence of the themes by giving examples from the participants' narratives and/or visual artefacts. I did this by reporting on the emerging themes using Kumpfer's (1999) dimensions of personal protective resources. Each theme was reported and supported with evidence from the participant's verbatim transcripts.

3.6 QUALITY CRITERIA

In order for research to be trustworthy a variety of quality criteria need to be adhered to (Lincoln & Guba, 1994). These criteria include credibility, dependability, transferability, confirmability, and authenticity. These criteria are discussed in detail below.

3.6.1 Credibility

Credibility entails reporting the results in a manner that will convince the reader that the information is true and accurate (Polit & Beck, 2012). I used a credible research design and methods that complemented my study. To ensure further credibility I engaged in frequent debriefing with my research supervisor as well with as my fellow RYSE research team members. This was to seek and receive guidance about what meaning I was making of the data and help in managing the assumptions I brought to the study. I engaged in a process of reflexivity by maintaining a researcher's diary (see ADDENDUM C) in which I noted my personal reflections on the research after the data collection process with the participants; after meeting with the advisory panel who assisted in the recruitment of the participants; after each research meeting with my research supervisor and fellow research team members; and after writing up the findings of my research. In my reflections I noted the processes of the research, my personal and professional growth, as well the limitations of my study.

3.6.2 Transferability

Transferability is concerned with whether the results from one study can be consistent if the research were to be conducted with similar participants, in this case adolescents, of a similar demographic. One way to ensure transferability in qualitative research is to give a thorough description of the participants of the study (i.e., geographic composition, age, sex, and their study or work occupation) (Lincoln & Guba, 1994). Section 3.5.2 provides the details of the participants in my study as well as of the research site. As Thomas and Magilvy (2011) have pointed out, this information will help another researcher to judge whether the findings of my study are transferable to a similar context.

3.6.3 Dependability

Dependability is concerned with keeping a record of the research process, research design, and how the data was collected, analysed, and documented to make it possible for the research and its findings to be believable (Elo et al., 2014). I ensured dependability in my study by keeping memos about the research in my research diary so that I could explain the research process that I followed (i.e its methodology and methodological processes) so that a reader can follow my thought trail and see how I arrived at my conclusions. I also added an audit trail of the data analysis (see Addendum B) where I have inserted extracts from the participant's verbatim transcripts, coded them, and grouped similar codes into the themes that I discuss in Chapter 4. The audit trail will allow the reader to note the research steps that I followed and how I reached my conclusions.

3.6.4 Confirmability

Confirmability refers to the accurate representation of the information provided by the participants without the data being changed by the researcher. This means that the information provided by the participants must be reported accurately without being influenced by the researchers' motivations or interests (Polit & Beck, 2012). To achieve this confirmability, I engaged in a process of triangulation by using different data-generating techniques (i.e., draw-talk-and-write that included group discussions, and

body-mapping) to limit potentially influencing the participant's data. In line with Elo et al., (2014), I used quotations from the participants' transcripts to indicate a connection between the data and the findings. Furthermore, I asked the participants to explain their individual body maps and drawings in an attempt to limit any assumptions of mine that could influence my interpretation of the data. I also declared my assumptions at the beginning of the research process and reiterated to the participants that my interest was to learn from them. Engaging in continual reflections with my research supervisor and the research team assisted me in being mindful not to impose my own interpretations on the data set. The Patterns of Resilience team had some meetings with the CAP (that included five young people from eMbalenhle) and this panel confirmed the qualitative findings from the study (and those from my sub-study).

3.6.5 Authenticity

Authenticity refers to the extent to which the researcher can report the findings of the research in a truthful and faithful manner (Elo et al., 2014). To ensure authenticity I reported a variety of participants' voices and did not favour one particular view. Additionally, I engaged in continual self-critical thinking and self-reflection at each phase of the research process. Continual supervision from my research supervisor and discussions with my fellow student co-researchers stimulated me to think critically about the data to ensure that my interpretations were valid and that they corresponded with the data set to ensure that the participants were fairly represented without privileging one specific participant's voice over another.

3.7 ETHICAL CONSIDERATIONS

As explained in Chapter 1 (section 10), my study formed part of *RYSE* and was granted ethical clearance [UP 17/05/01] by the ethics committee of the Faculty of Education, University of Pretoria. My sub-study received aligned clearance [UP 17/05/01 Theron 17-005]. This research was conducted according to the ethical guidelines provided by the University of Pretoria. When I interacted with the participants, I was careful to conduct the research ethically.

The participants (and their caregivers if participants were younger than 18) gave written consent (see Addendum D) after they were fully informed about the research study in which they would be participating. They consented to photographs of them and their body map/drawings being made public which is why I could use some of these in my thesis. This consent process was facilitated by the RYSE team. Participants were informed that they could withdraw from the study without any consequences to them. Following the advice of Creswell (2014), I was mindful to maintain ethical considerations such as voluntary participation and keeping the personal identities of the participant's confidential by using pseudonyms (unless participants indicated otherwise; some of them indicated that they were comfortable with my using their real names). Given the nature of the research, data collection was done in a group, so anonymity and confidentiality were therefore necessarily limited. I was mindful not to inflict harm on the participants, to respect them, and to have group rules to maintain confidentiality and manage this limited anonymity in line with the points made by Willig (2008). I aimed to preserve the participant's psychological well-being and dignity at all times by respecting their opinions and embracing their unique experiences of the phenomenon of research. When I was writing up the findings I was careful not to misrepresent the participants' voices or stereotype their opinions.

3.8 CONCLUSION

In summary, in this chapter I discussed the research methodology that I used during this research process. I outlined the research design of my study and its theoretical underpinnings. In the next chapter I discuss the results of my research study.

CHAPTER 4

REPORTING RESULTS

4.1 INTRODUCTION

In this chapter I report on the findings of my study of limited scope. I report briefly on the risks associated with the petrochemical industry as reported by the participants. Although my primary research question was not about risk, it would be helpful to report what the participants experienced as challenging because this provides a context for the protective personal resources that participants identified. My focus is on the personal protective resources that relate to the primary research question: “To what personal protective resources do adolescents living in a petrochemical-affected community attribute adolescent resilience?” In answer to the primary research question, five themes emerged that explain these personal protective resources as reported by the participants. As summarised in Figure 4.1, I have used Kumpfer’s (1999) delineation of personal protective resources to organise these themes. The themes are arranged from most popular to least popular. I report on the risks and personal protective resources using the participant’s verbatim responses.

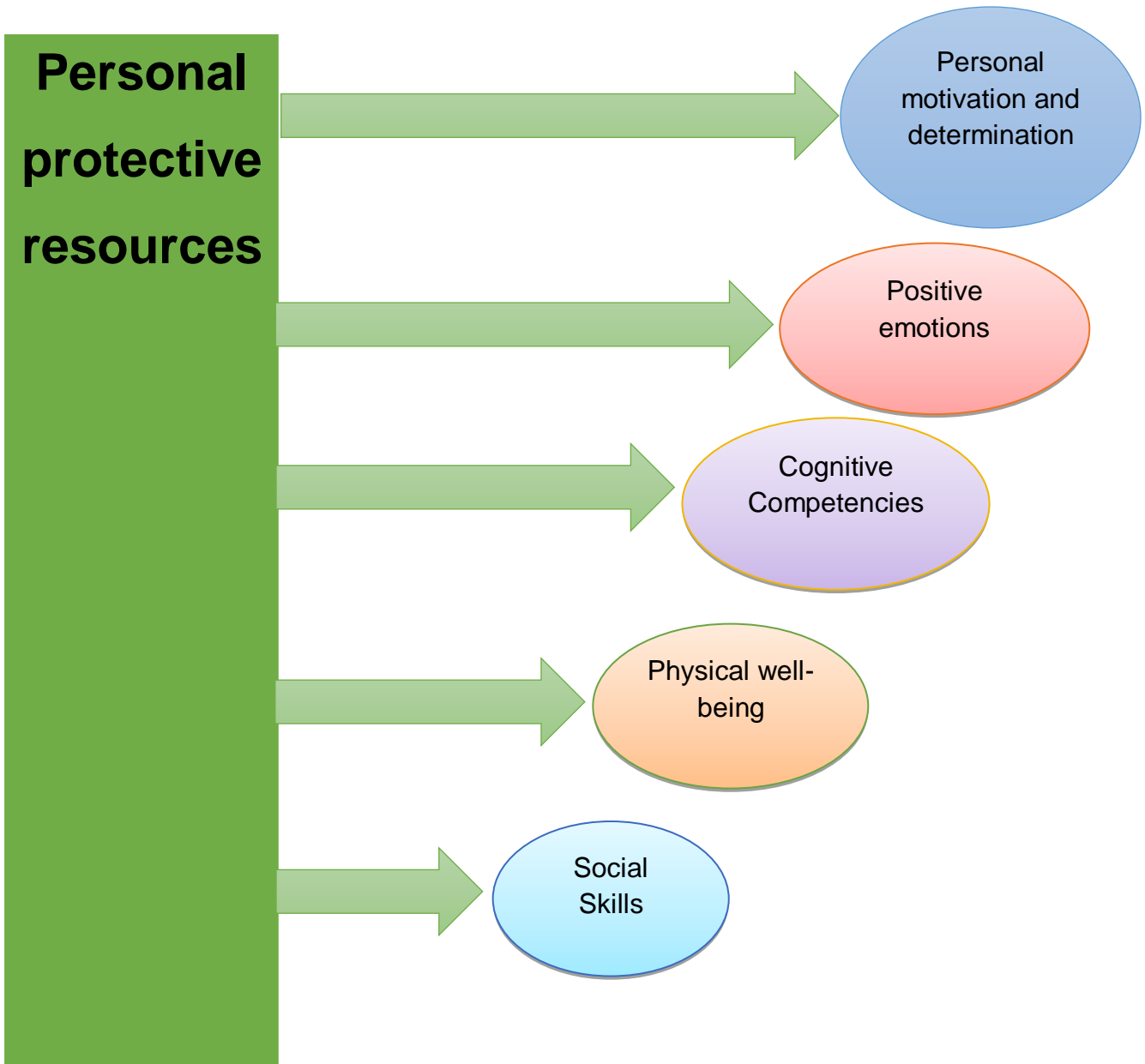


Figure 4.1 Visual summary of my findings

4.2 RISKS ASSOCIATED WITH THE PETROCHEMICAL INDUSTRY

In explaining their resilience, the participants in all four groups referred to the petrochemical-affected community in which they lived as being full of risks. The risk that was common to all four groups was health-threatening pollution that had physical and mental effects. Participants in only two groups – 1 and 4 – reported emotional distress (i.e., mental effects) as a risk of living in proximity to the petrochemical industry: “*When I see how [dad] is affected by asthma it starts hitting me deep*” (Happiness, Group 1). “*I get distressed when I’m thinking polluted things*” (Langa, Group 4).

In terms of health-threatening risks factor’s, for example, participants in Group 1 reported risk factors such as “*lung problems, difficulties breathing, asthma*” and “*I have sinuses*” (Danny). They also mentioned that they were “*affected by asthma*” (Happiness), and other participants also reported sinus problems. Zenande mentioned that she has been “*affected negatively because of bronchitis.*” Eye problems and nose bleeding were also noted: “*I have an eye problem . . . I have a runny nose; I bleed every morning*” (Fikile). Thuso mentioned that when he moved to eMbalenhle his sister started having breathing problems and nose bleeds: “*My sister it got to the point where um she occasionally bleeds [from] her nose.*”

Similarly, participants in Group 2 also reported health-threatening risks such as asthma: “*A lot of people that I know have asthma*” (Gugu). Three participants reported experiencing headaches and sinus problems as a result of the pollution caused by the petrochemical industry: “*Bad smell that causes headaches . . . it also causes sinus problems for me*” (Andy); “*I have a headache problem*” (Nomalanga); “*Most people have sinuses, lung problems*” (Khotso). One participant from Group 2 reported eye and skin related problems “*... eye problem they are always crying and skin problems on our face*” (Nomalanga).

Participants in Group 3 also reported health-threatening risks such as lung problems like “*bronchitis*” (Minki); eye problems: “*My eyes were watery*” (Lelo); and skin problems and headaches: “*I have a skin problem and most of the time I have rash or some sort of pimples and stuff that is very itchy. . . constant headache, almost every day*” (Minki). Similarly, participants from Group 4 also reported health-related risks such eye problems: “*It affects everything – eyes...*” (Tshepo). Quphza mentioned,

“Sometimes I feel sick,” Tshepo said, “You get diseases” and Sibusiso said, “I’m always dizzy.”

In the next sections, I detail the personal protective resources that mitigated these risks.

4.3. THEME 1: PERSONAL MOTIVATION AND DETERMINATION

Personal motivation and determination can be defined as internal characteristics that help an individual towards being encouraged to persevere and stay focused (Kumpfer, 1999). Participants in three of the four groups (Groups 1, 2, and 4) reported aspects of personal motivation, determination, achievement motivation, and goal-orientation as personal resources that enable their resilience. Personal motivation and determination were mostly related to achieving personal goals and being future-orientated. For example, Andy in Group 2 explained her ability to be alright despite the daily health risks in terms of being self-motivated. Her desire to achieve future goals motivated her. *“I wanna achieve things and so I don’t really care what happens around my environment. I think about what I want in the future. That’s what makes me ok. That’s what drives me every day to do what I am doing.”* Khotso from Group 2 expressed her aspiration to become a medical doctor: *“I want to do medicine.”* Zenande from Group 1 also expressed her desire to become a doctor: *“I want to become a medical doctor.”* Zenande also said that her career aspirations motivated her to forget about the daily risks and motivated her to achieve her dream: *“Personally I have a bigger dream.”*

Siyabonga in Group 4 mentioned that to make such dreams come true, young people need perseverance; they must *“have a warrior spirit and keep pushing forward.”* Siyabonga further expressed a strong belief in his capacity to achieve his goals: *“You always reach your goal”* and this was linked to perseverance: *“If you never surrender to life, you’ll reach your success.”* In his drawing (see Figure 4.2) Siyabonga drew two people, one with his hands up alongside the word *“goal”* and the other next to what he referred to as the *“chemical plants”* next to the words *“don’t mind.”* He explained during the group discussion: *“Don’t let [negative factors in the environment] get in your way of your future.”* Additionally, Siyabonga mentioned that one should persevere and not give

up on ones' dreams despite environmental challenges: *"I shouldn't give up on my dream because I see the environment [eMbalenhle] like this [as negative]. I should always push forward because I want to change myself."* This demonstrates Siyabonga's ability to remain optimistic and maintain the self-belief that he can achieve his future goals despite negative environmental effects. Similarly, Thoko from Group 2 also expressed a sense of self-belief and perseverance when she mentioned, *"I have to push myself to succeed."* Thoko said that she would push herself by studying: *"I would do that by studying."*

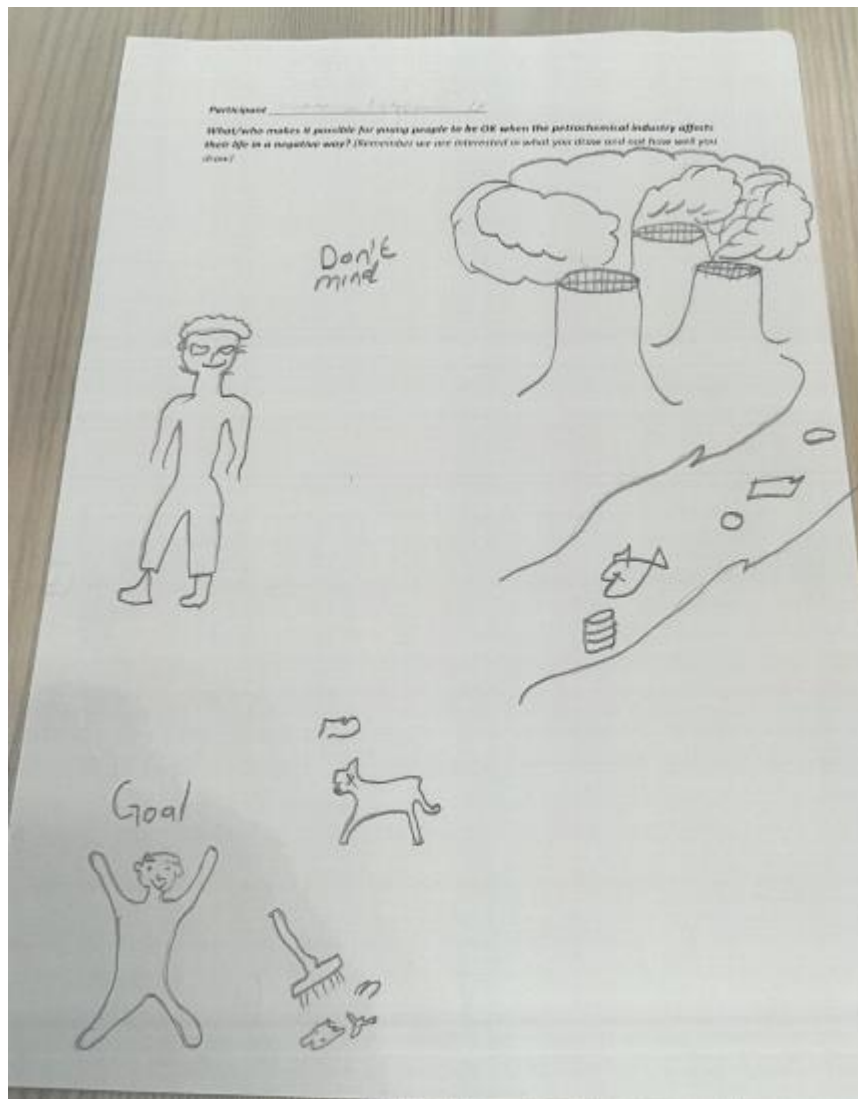


Figure 4.2 Siyabonga's depiction of perseverance

Gugu from Group 2 expressed her desire to pursue her desire to own businesses and organisations that will be of benefit to the community members of eMbalenhle: *“I want to have organisations here, I want to have businesses here, I want to take other people out of here.”* This relates to the desire to help others. According to Kumpfer (1999), this desire to help others motivates resilient youth to work hard towards achieving their desired personal goals. Khotso from Group 2 expressed her determination to leave eMbalenhle and explore alternative possibilities as well as being a positive influence on other people. *“I don’t want to see myself here [in eMbalenhle] . . . I want to do medicine; I want to get out of this area.”* This determination to leave eMbalenhle forms part of Khotso’s *“clear vision.”* This vision that she has of her future motivates her and this ensures her well-being, *“I would like to get out there and motivate others, tune [influence] their minds to thinking beyond Sasol and all of that. So my vision actually is what gets me going.”* (See Figure 3.) Andy from Group 2 was similarly determined to leave: *“I am working on getting out of here, like I want to get out of here. I don’t want to live here . . . I don’t see myself here in the near future.”*

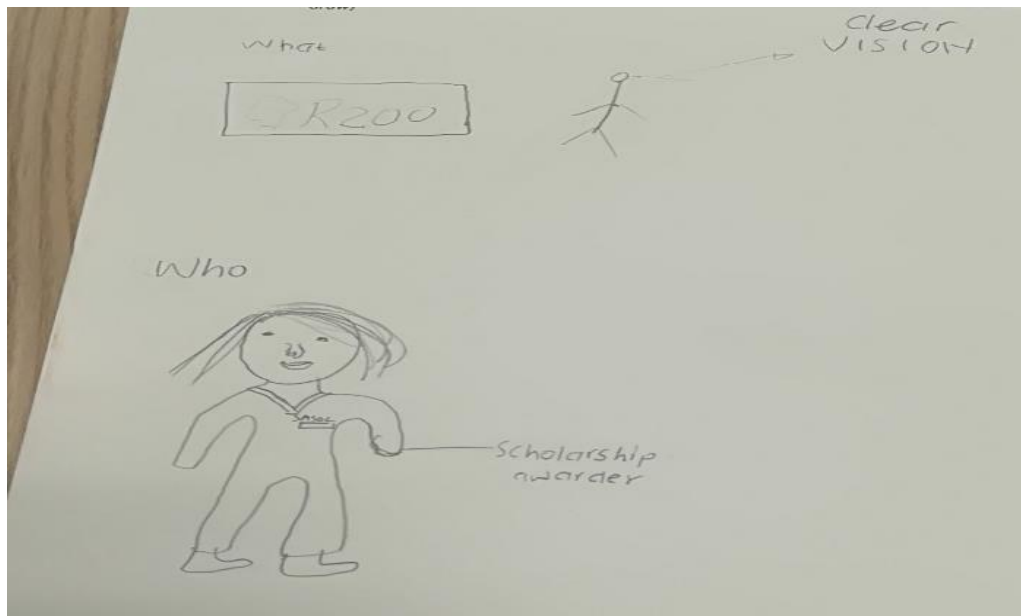


Figure 4.3 Khotso's personal motivation

It is evident from this discussion that participants from three of four groups attributed resilience to personal motivation and determination, belief in their dreams, an internal locus of control, and having an optimistic outlook on life. These facets of this theme align well with current resilience theory that is supported by both international

resilience literature (Dias & Cadime, 2017; McMillan & Reed, 1994; Murray, 2008) and South African resilience literature (Ebersöhn & Maree 2006; Malindi & Machenjedze 2012; Phasha 2010; Mampane, 2014; Theron, 2015, 2017; Theron & Theron, 2010; van Breda 2017) that has consistently reported that personal motivation and determination are fundamental factors that facilitate resilience among adolescents. My study reports that motivation and determination support resilience when young people are challenged by risks associated with the petrochemical industry. This specific risk-filled context is not reported in the published literature, so my study makes a contribution to the resilience literature by confirming that motivation and determination also matter for resilience in challenging petrochemical contexts.

Additionally, it is interesting that for some of the participants their motivation to succeed related to them leaving their community, while for others it was about making a difference in their community. Research by Mosavel et al. (2015) reported the desire to want to make a positive difference as a personal protective factor that supports South African adolescents' resilience. The participants in their study strongly reported their desires to help people in need, either monetarily or through careers that protect other people (i.e. like becoming a policeman, lawyer, or doctor). This was consistent with the findings of my study in which one participant (Gugu, Group 2) discouraged the idea of leaving the community and advocated staying and engaging in activities that would benefit other people in the community. I could find no South African resilience studies that report moving away from a challenging community as resilience-enabling for adolescents. One possible explanation for this gap in existing literature could be related to the fact that resilience is a complex phenomenon that is best understood contextually because it is influenced by various factors (Panter-Brick, 2015; Ungar, 2011). In the context of petrochemical affected communities, no research is yet available to explain why migrating from a petrochemical-affected community is a resilience-enabling factor for adolescents challenged by petrochemical risks. From my informal observations, I have noticed that it is common for young black South Africans, especially those who are raised in rural communities such as that of the participants in my study, to desire to leave their rural community in pursuit of better life outcomes in a better area, such as the city. I, too, have experienced this personally. As mentioned in

Chapter 1, I was raised in the rural community of Matatiele but am currently pursuing my studies and career in the city of Pretoria. I believe that like the participants in my study who expressed their desire to move from their community desire so in quest of a better life.

As an Educational Psychologist-in-training, I have observed from my limited experience of working with adolescents that in addition to the previously-mentioned personal protective factors, resilient South African adolescents often also attribute their motivation and tenacity to religion (i.e., connection with God), spiritual connections (i.e., with their ancestors) and personal faith (i.e., a belief in a higher power). Kumpfer (1999) includes these as sources of motivation. Some international literature (Butler-Barnes, Martin, Copeland-Linder, Seaton, Matusko, Caldwell, & Jackson, 2016; Jones, 2007; Krause & Hayward, 2014; Lee & Neblett, 2017; Masten & Wright, 2010; Salgado, 2014) and South African literature (Dass-Brailsford, 2005; Ebersöhn, Nel & Loots, 2017; Isaacs & Savahl, 2014; Theron, 2017; Theron, Cameron, Didkowsky·Lau, Liebenberg, & Ungar, 2011; Theron & Dunn, 2010; Theron & Malindi, 2010; Theron & Theron, 2010) also report religious beliefs, spirituality, and personal faith as important factors that promote motivation, tenacity, healthy development, and resilience among adolescents exposed to risk. It was however surprising that none of the participants in any of the four groups from my study reported personal religious beliefs, spirituality, or personal faith as personal protective resources that support South African adolescents motivation and perseverance in the face of risks associated with the petrochemical industry.

4.4 THEME 2: POSITIVE EMOTIONS

Positive emotions refer to positive personal feelings that promote healthy emotional functionality (Kumpfer, 1999). Only two groups (two participants from Group 1 and four participants from Group 4) reported positive emotions. Thuso from Group 1 was happy because despite the negative effects of the petrochemical industry he is still able to make positive meaning and perceive his current environment as an opportunity for growth. He said, *“Although we are living near plants [i.e., industry] that actually affect us, it does not basically kill us, it does not basically stop us from thinking, it actually allows us to grow.”* Similarly, Fikile from Group 1 was glad for others who had the

opportunity to work at SASOL. She said, *“I am happy for those who can go and work at Sasol because I can’t, because I am sick.”*

A number of participants from Group 4 linked positive emotion to their culture and/or relaxing or recreational activity in which they engaged such as dancing. For these participants, personal engagement in these activities facilitated positive feelings. Sibusiso from Group 4 explained, *“I love Ndebele traditional things . . . Yes, [it] makes me happy.”* Similarly, Lunga from Group 4 also attributed his happiness to dancing. He said, *“When I dance it makes me feel happy.”* Tshepo from Group 4 also expressed that when he dances he feels liberated, he explained, *“When I dance I feel free. I don’t think of a lot of things. I’m just thinking about me and my partner enjoying the dance.”* It is evident from this discussion that positive emotion can result from engaging in cultural activities such as traditional dance. Recent research indicates that creative arts such as dancing can be a form of expression that stimulates pleasurable emotions and a meaningful life (Stark, Vuust, & Kringelbach, 2018). This is also supported by South African literature (e.g. Dube, 2009; Malindi, 2014b; Ramphele, 2002).

Brute, from Group 4, reported that music makes him feel good about himself. He said, *“And music makes me feel okay and be myself.”* It was surprising that only one adolescent mentioned music as a resource that prompts positive emotion. I have observed from working with adolescents during my training as an Educational Psychologist that some of them use music in conjunction with dancing as a form of experiencing and expressing their emotions. Additionally, I have often noticed that adolescents exchange feelings and affective emotions through music, songs, and dance. Cultural dance is a common activity in African culture and can be a form of expressing one’s cultural identity since different cultures have their own unique dance styles (Rani, 2011). As noted previously, I believe that this also applied to the participants in my study because some of them expressed experiencing joyful emotions when they dance the Ndebele cultural dance. To some individuals, African dance facilitates the process of self-identification (Rani, 2011). Thus, personal engagement in creative art activities such as dancing can be a catalyst that promotes positive well-being, positive affect, and positive psychological functioning (Conner, DeYoung, & Silvia, 2018; Rani, 2011). The fact that personal appreciation of music was not a more

prominent part of the creative activities that adolescents linked to positive emotions is strange to me and probably requires a follow-up study to explain why this was so.

In previous studies of resilience, both international (Cameron et al., 2010; Erickson & Feldstein, 2007) and South African (Malindi, 2014b; Malindi & Theron, 2010; Theron & Malindi, 2010; Theron & Theron, 2014) humour is reported as a resilience-enabling protective factor for adolescents living in adverse circumstances. Humour is also considered as a strategy that protects the individual from negative or unpleasant emotions and promotes positive socio-emotional functioning (Cameron et al., 2010). It was surprising that none of the participants in my study made any reference to humour as a potential coping mechanism to defuse tension or stress or develop or maintain friendships in a social context. In my experience of working with adolescents I have also noticed that they use humour as a coping strategy. Adolescents, especially males, often tease each other in a humorous manner as reported by Malindi (2014b) in work with resilient street-children. The absence of humour as a personal resource for the participants in my study may be related to contextual differences; it is possible that the bleakness of living in a community affected by the petrochemical industry meant that there was little to laugh or tease each other about. This fits with Ungar's (2011) SERT framework that emphasises that what is evident in one context may not be so in a different one.

4.5 THEME 3: COGNITIVE COMPETENCIES

Cognitive competencies refer to cognitive abilities, such as problem-solving skills, that assist an individual to achieve her or his desired dreams and goals (Kumpfer, 1999). This also includes the ability to plan how one will achieve one's set of dreams and goals. This dimension was represented by three participants from Group 2 and one participant from Group 1. These participants expressed individual insight into alternative opportunities that will assist them in achieving their goals and dreams. For example, Thoko, Group 2, said, *"What's makes me ok is that there are lots of opportunities."* In order to use these opportunities, the participants had to plan and apply their problem-solving skills. For example, Andy from Group 2 mentioned that she is doing research that could provide her with alternative opportunities. *"I am studying and researching*

places . . . so I am looking at other places that can give me the opportunity that I could have been given by Sasol.” Similarly, Gugu from Group 2 expressed how she was aware of her personal strengths and had planned her progress accordingly. *“I developed myself from a young age, from grade 5 I already knew what I wanted to do, I knew my path.”*

These results confirm that cognitive competencies in the form of planning how one will achieve dreams and goals as well as applying problem-solving skills serve as personal protective resources that enable resilience among a few adolescents living in a petrochemical-affected community. Both international (Cutuli & Herbers, 2014; Fayyad, Cordahi-Tabet, Yeretziyan, Salamoun, Najm, & Karam, 2017; Masten & Wright, 2010) and South African literature on resilience (Lethale & Pillay, 2013; Theron & Theron, 2010; Theron, Theron, & Malindi, 2013) support the notion that problem-solving skills and awareness of personal strengths enable resilience in adolescents. However, because this theme was not strongly supported by the participants (i.e., it was limited to three participants in Group 2), ideally, follow-up studies are needed to gauge whether planning skills are a facilitator of resilience for other adolescents living in a petrochemical-affected community.

Cognitive competencies also includes intellectual ability (above-average or high intelligence) as a personal protective resource for adolescents, including vulnerable South African ones (Lethale & Pillay, 2013). Adolescents with strong intellectual abilities are reported to experience a sense of competence and empowerment and find it easier to cope with academic tasks (Lethale & Pillay, 2013). Only one participant, Zenande from Group 1, acknowledged her cognitive ability to advance in her studies as a personal resource. She was grateful for the ability to study and she regarded this ability as one that fosters her well-being. *“I am able to study further than high school and that helps me to be okay with myself.”* It is possible that the reason for only one participant reporting cognitive ability as a personal protective resource may be related to the African cultural practice that discourages people from expressing self-pride, so acknowledging cognitive abilities could be viewed as such (Theron, 2007). In most African cultures the emphasis is on collective identity rather than individual identity and how personal success can support the well-being of the community/family. This is

evident in South African resilience research (see Hage & Pillay, 2017; Phasha, 2010) that reports on resilient black South African adolescents aspiring towards educational advancement through scholastic progression and the hope that this will benefit their families and communities. Aspirations for educational progression is also consistent with the findings of other South African studies (see Dass-Brailsford, 2005; Lethale & Pillay, 2013) that report on adolescents who consider education an important resource in their aspiration for a better life, both for themselves and their family and/or community.

4.6 THEME 4: PHYSICAL WELL-BEING

Physical well-being refers to personal characteristics or personal habits that promote positive physical health and functioning (Kumpfer, 1999). Members of two groups (one participant from Group 1 and two participants from Group 4) reported personal protective resources related to personal physical well-being. Sport, in the form of physical fitness from exercising, and dancing as an activity that promotes physical fitness were reported. Lunga, from Group 4, said *"[Dancing]... is part of the exercise to prevent the illnesses that we'll be experiencing here [in eMbalenhle] for this pollution that we are getting here . . . It feels okay to me because I'm exercising and I don't think any illnesses will be able to get me because I'm physical [fit] in that respect. I take dancing as an exercise meant [to] keeping my body healthy and on [in] shape."* Happiness, from Group 1, reported that she exercises, *"I jog exercise."* Similarly, Tshepo, from Group 4, attributed activities such as sports as being a distraction from engaging in negative activities such as risky behaviours that threaten physical health. In relation to adolescents from eMbalenhle he said, *"Sports can keep you safe from doing bad things . . . sports can save them."* Tshepos' sentiments that sport and dancing can be a deterrent from risky or health-threatening behaviours is supported by Hall (2011). In a review by Eime, Harvey, Charity, Casey, van Uffelen, and Payne, (2015) they similarly report that, on an individual level, participation in physical activities like sports can facilitate health and well-being.

Resilience research supports the belief that physical activities support physical health which contributes to positive physical well-being and positive psychological

functioning (Silverman & Deuster, 2014; Eime et al., 2015). Local studies of resilience (i.e., Malindi, 2014b; Theron; 2015, 2017) also report that physical activities such as sports and exercising support physical health and well-being and enable resilience in young adolescents. Young people's personal commitment to physical exercise is therefore a pathway to personal health.

Some international literature (Lemay et al., 2010; Lorenzo et al., 2010; Segal-Caspi et al., 2012) suggests that adolescents report physical attractiveness as a protective factor. However, none of the participants in my study mentioned physical attractiveness as a factor that influences adolescent resilience in the community. It is not clear in my study why this is so and therefore further research is called for.

4.7 THEME 5: SOCIAL SKILLS

Social skills refer to the ability to interact well with other people, the ability to develop and maintain relationships, communicate well in social settings, the ability to embrace one's talent(s), and the ability to resist immediate gratification (Kumpfer, 1999). There was very limited data in my study that related to social skills. Only two participants (one from Group 2 and the other from Group 4) mentioned such skill. Gugu from Group 2 expressed interacting with other people as a social skill that furthers her well-being. She said, "*So socialising makes it OK to live in such [an] environment.*" She explained that socialising provides an opportunity to meet other people who can be helpful with challenges and in discussing issues such as living in such an unhealthy environment as the one in which they live. She said, "*I believe that we are here [eMbalenhle] to make contacts with other people. . . we are talking about it [living in a petrochemical-affected community] . . . now we have spoken that they [the negative effects of the petrochemical industry] are limiting us but then there is someone who knows that yes it was limiting us but you can do this and this and this, you get it from the next person.*" I understood her to mean that one can get alternative solutions to a problem from someone else, through social interaction. Additionally, Brute, from Group 4, mentioned that he talks to his friends and they share advice. He explained, "*My friends sometimes do give me advice. I tell them my problems; they give me some advices.*"

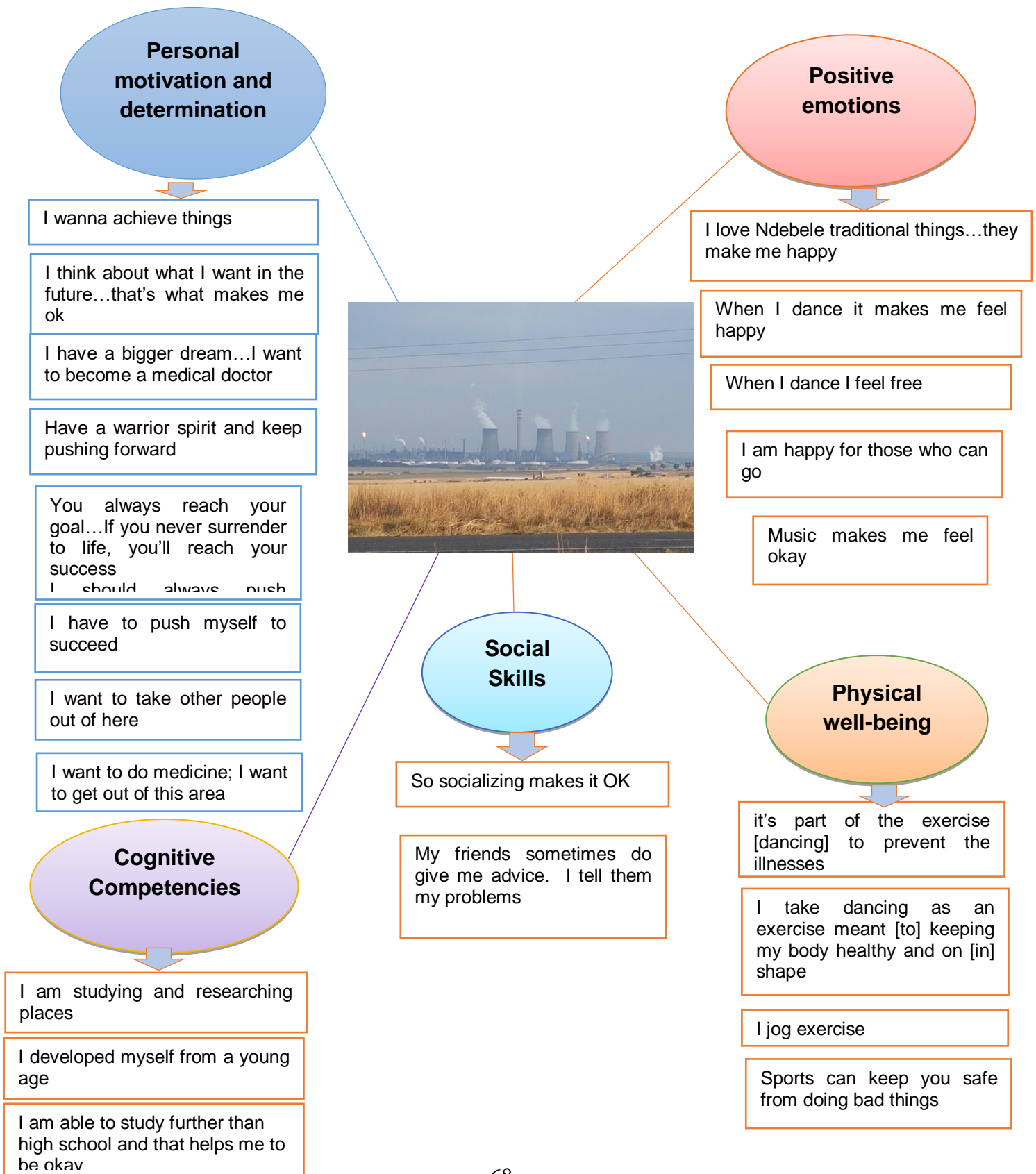
Even though a limited number of participants referred to social skill and how it supports resilience, it is evident that a social skill like the capacity to ask for and take advice can contribute to resilience in the face of challenges associated with the petrochemical industry. This aligns well with current resilience theory as reported by both international resilience literature (e.g. Simões et al., 2015) and South African (e.g. Malindi, 2014b; Malindi & Machenjedge, 2012; Theron, 2015). Again, because this theme was not reported by many participants, follow-up studies are needed to better understand how important social skills are to adolescent resilience in this petrochemical-affected community and what the reasons might be behind adolescents not reporting social skills as enabling resilience more often.

4.8. CONCLUSION

In conclusion, it is evident from the reported findings that adolescents living in the challenged petrochemical-affected community in eMbalenhle are faced with a number of risks that threaten their physical and emotional well-being. It is also evident that these adolescents draw on personal protective resources that enable them to adjust to the negative health and emotionally threatening effects associated with living in proximity to a petrochemical industry (see Figure 4.4). The results of my study indicate that adolescents who have been exposed to petrochemical risks draw mostly on personal motivation and determination to achieve personal goals and embrace future aspirations. To a lesser extent, these young adolescents also draw on positive emotions, cognitive competencies, social skills, and personal resources associated with physical well-being. When I compared my findings with those of existing literature on resilience, it was evident that how South African adolescents adjust to the risk-filled context of living close to a petrochemical plant is not mentioned in the published literature. However, my findings often echoed those of the existing literature on adolescent resilience in other contexts and so my study makes a contribution to this literature by confirming that previously reported personal protective resources as described by Kumpfer (1999) also enable resilience in adolescents living in challenging petrochemically polluted contexts. In addition, in relation to the existing literature, there were silences in my findings in that the participants did not mention the personal protective factors of religion, spirituality,

personal faith, humour, or physical attractiveness. Although I tried to theorise why some of these silences existed, follow-up studies are needed to explain in detail why these personal protective resources were not reported on in my study.

Figure 4.4 Summary of the personal protective resources as reported by the participants in my study



CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

In this chapter I re-visit the primary research question and I discuss the findings of my study as they relate to this. I discuss the limitations of my study and reflect on my experience of being involved in this research project. I also discuss the contribution that my study makes to resilience literature. I make recommendations relating to future research as well as to Educational Psychologists.

5.2 RESEARCH QUESTION REVISITED

My study of limited scope was directed by one main research question: “To what personal protective resources do adolescents living in a petrochemical-affected community attribute adolescent resilience?” As discussed in Chapter 1, for resilience to be evident there must be significant adversity (Masten, 2018). For this reason, before considering the answer to my research question it is important to verify that the adolescents in my study were at risk. According to their own reports, it was clear that adolescents from eMbalenhle community were challenged by various petrochemical associated risks (health-threatening pollution that had physical and mental effects). Figure 5.1 provides a summary of the risks factors associated with living in the petrochemical-affected community of eMbalenhle as reported by the participants in my study. In addition to the importance of verifying risk (Masten, 2014; Panter-Brick, 2015; Ungar, 2014), it is helpful to report the risks that were noted by the participants because they provide a context for the identified personal protective resources that enable adolescent resilience in such a context of petrochemical exposure.

Although the petrochemical industry negatively affected the participating adolescents in these ways, the adolescents in my study reported personal protective resources that support their resilience. Figure 5.2 provides a summary of the answer to the primary research question.

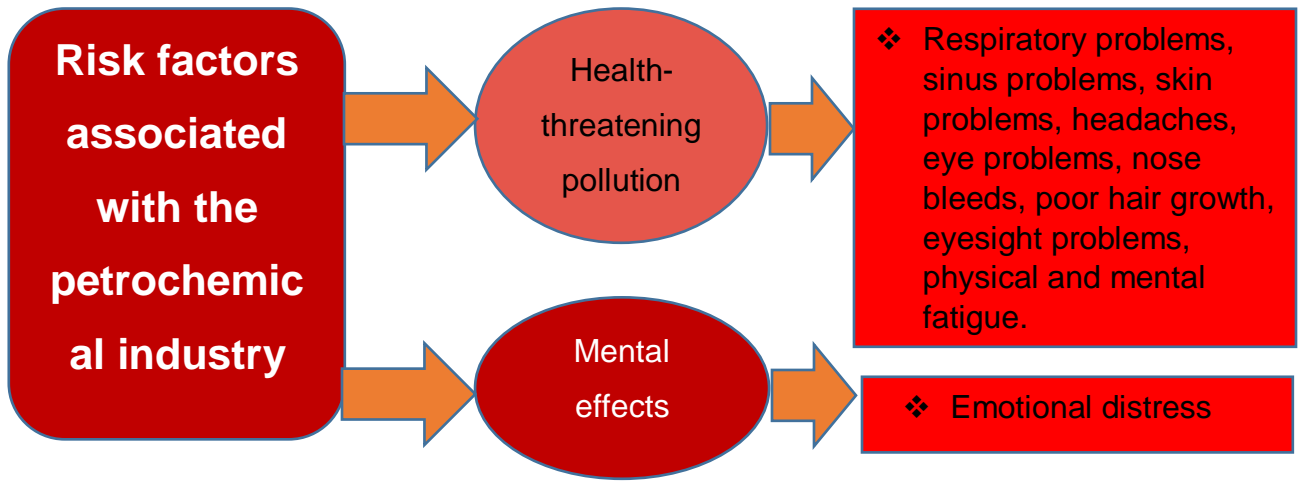


Figure 5.1 Visual summary of the petrochemical-related risk factors reported by my participants

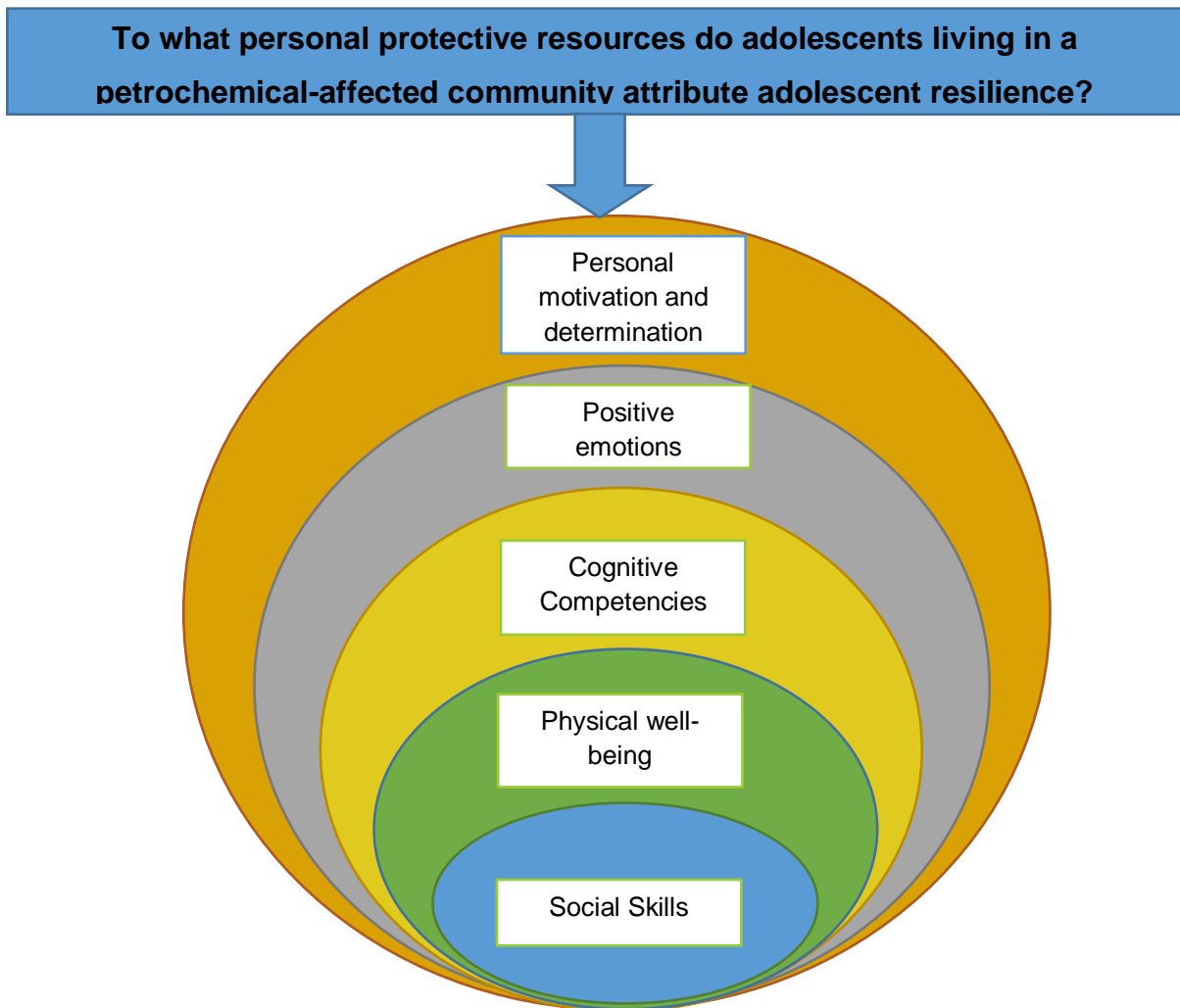


Figure 5.2 Summary of the findings as they relate to the primary research question

This figure (Figure 5.2) represents the personal protective resources that enable adolescent resilience in the context of petrochemical exposure as reported by the participants in my study. A resilient adolescent from eMbalenhle community affected by the petrochemical industry would be able to draw on personal protective resources that align to personal motivation and determination, cognitive competencies, social skills, physical well-being, and the experiencing of positive emotions. The most strongly represented theme compared to the other themes was personal motivation and determination. The other four least reported themes (as mentioned in section 5.5.1) are areas that need further research. All five themes resonated with the original delineation of Kumpfer's (1999) individual protective resources. I did wonder, though, whether my participants emphasised personal motivation and determination to succeed because this notion fits well with adolescent development. Adolescence is a stage that is characterized by increased motivation to be successfully independent (e.g. goals relating to education and other future aspirations that will support independence become prominent) (Collins & Steinberg, 2008)

The findings from my study of limited scope complement two of the four principles of Ungar's (2011) Social Ecology of Resilience Theory (SERT). Decentrality and atypicality were the two principles that were not represented in my findings. The reason why decentrality was not represented is most likely because my research question was centred on the individual, so my study focused only on the individual system and did not explore family or community systems. Perhaps when all the findings of the larger project (*RYSE*) are integrated, decentrality may be represented because to get a systemic and holistic understanding of adolescent resilience in the context of petrochemical exposure, the individual component of protective resources needs to be understood in relation to the protective factors from other systems in the socio-ecology. As I acknowledged in the introduction to my study (Chapter 1, section 1.1), the focus on the individual dimension offers only one aspect of adolescent resilience in the context of petrochemical exposure. Atypicality was not represented because the participants did not report findings that were consistent with behaviours that are regarded as unconventional. This might have been because the data was generated in groups. It is

possible that adolescents are less likely to mention unconventional protective resources when there are many people listening to their answers.

Ungar (2011) suggests that resilience is a phenomenon that differs from one individual to the other. Resilience is a multifaceted phenomenon and needs to be treated as such. This links to the principle of complexity. The experience and understanding of resilience varies from one context to another since resilience is influenced by different factors such as gender, race, class, and culture (Ebersöhn, 2017). It was evident from my findings that most participants attributed their resilience to personal motivation and determination. Fewer participants attributed resilience to cognitive or social skills or to physical wellbeing, or to positive emotions. This indicates that even within the individual dimension the experiences, interpretation, and understanding of resilience may differ from one individual to the next. Similarities may be present, but variations are also possible.

The final principle, cultural relativity also resonated with the findings of my study in that some participants (three participants from Group 4) attributed adolescent resilience to personal engagement in cultural activities such as cultural dance as a resource that stimulates resilience in the form of positive emotions that are experienced as one engages in it. These three participants shared common Ndebele cultural roots, and a common language and cultural practices. One explanation for the limited number of participants who associated their resilience with cultural activities may relate to South African adolescents becoming more westernised. The implications of being influenced by western ways of life further emphasise the need to understand culture and resilience as dynamic processes that can foster positive adjustment to hardship for some individuals, but not necessarily for all. As a young black South African woman I have observed that there have been many changes in the way of life from my parent's generation, to mine and, in turn, to the generation after mine; culture is ever-changing and needs to be understood as such. Thus, following Panter-Brick (2015), although culture can play a role in the contextual understanding of resilience, the dynamics of cultural components need to be considered when we are seeking contextual understanding of adolescent resilience, including the personal resources that adolescents report.

Understanding the personal protective components of adolescent resilience in Ungar's (2011) SERT framework has implications for Educational Psychologists in that it suggests that the understanding of resilience varies from one individual to another and it is context related. For Educational Psychologists to serve adolescents meaningfully they need to be mindful that resilience is variable (Unger, 2011b). In other words, my research findings that adolescents who grow up in a petrochemical-affected context and whose health and well-being are challenged by this context show positive adaptation because of personal motivation and determination, positive emotions, cognitive competencies, social skills, and physical well-being needs to be cautiously interpreted by Educational Psychologists. These personal protective resources might vary depending on who the individual adolescent is, his/her specific experiences, and how connected he/she is to his/her culture or the dominant culture. In other words, although the personal protective resources that are reported in my study are a useful starting point, resilience is too complex to assume that the answer to my primary question will apply to all adolescents who are challenged by living in a petrochemical-affected community.

5.3 LIMITATIONS OF THIS STUDY

I identified a number of limitations of my study. As mentioned in Chapter 1, because my study is part of a bigger project (*RYSE*), I had limited control over the execution of the project, including its having been conducted in the single South African site of eMbalenhle. I did not have control over all four groups. I was responsible only for the group that I facilitated. This was a limitation because I could not control the process of the data generation in the other groups. One group (Group 3) accidentally failed to audio record the body map activity which was the activity that linked best with the focus of my research study. This unfortunate incident resulted in the loss of some data and the unreported voices of those participants probably could have added more insight to my data set. Despite the loss of data from Group 3 related to the body map activity, there were three other groups that generated data for this activity and it was sufficient to answer my primary research question. In addition, I had the visual data from Group 3 for the body map activity and I could probe the facilitator of this group for her recollections

and read her reflections. However, I would have preferred to have had a transcript of this activity.

Furthermore, generating data within a group context was a limitation because some of the participants were shy about expressing their experiences in the group context. If alternative supplementary methods such as individual interviews or individual journals had been used so that participants had more time and opportunity to reflect on the questions/prompts, I believe these methods would have offered additional rich data.

The timeframe for data generation was another limitation in that data was generated in a single day. This limited the amount of time that the participants had to reflect on the group activities, and this could have affected the quality of the data generated. In my research group I noticed that with the last group activity (draw-write-and-talk activity) the participants were physically tired and that might have compromised the quality of the data generated.

My fellow student co-researchers (none of whom spoke isiZulu or Sesotho as I do) reported language proficiency as a limitation for some participants even though English competence was a prerequisite for participation in the study. My fellow student co-researchers also mentioned that some discussions among the participants were conducted in their home language and when these were reported to the research facilitator some information may have been lost. Even though the other groups had translators to help with the language, limited language proficiency may have affected the participant's engagement in group discussions. This was a limitation of my study as well because I used the data that was co-generated by my fellow student co-researchers as secondary data and if language was a challenge in their research groups this may have affected the richness of this secondary data.

The other limitation was that not all themes were richly supported by the participants. Personal motivation and determination was the most strongly represented theme. Positive emotions, cognitive competencies, social skill, and personal resources associated with physical well-being were less frequently reported. This then resulted in thin data that reports on these other dimensions of personal protective resources.

The other limitation relates to my limited research skill and experience of doing research as an Educational Psychologist-in-training. Although we (student researchers) received training beforehand and had the project manager with us at the research site, we were anxious and nervous and that might have affected our ability to facilitate the groups efficiently and may have affected the richness of the data generated.

Despite these limitations, I think that the results of my study offer contextually relevant insight into the understanding of the personal protective resources that enable resilience among adolescents living in the petrochemical-affected community of eMbalenhle. I also think that these limitations could be addressed in subsequent studies. I make recommendations in this regard in section 5.5.1.

5.4 REFLEXIVITY

Reflexivity refers to the process of reflecting about the study in terms of how the research process has affected the researcher and how the researcher has intentionally or unintentionally influenced the participants (Cohen et al., 2011). Therefore, the researcher reflects on her/his role during the research process, on how personal background, culture, and experiences may have influenced and/or contributed to the outcome of the study (Creswell, 2014). To that end, I will provide reflections first as a post-graduate research student and second as an Educational Psychologist-in-training, and then from my personal perspective.

5.4.1 Reflections as a post-graduate research student

As previously mentioned in Chapter 1 I had a fairly adequate theoretical understanding of resilience. Before this research project I did not have any practical experience of qualitative research. In my Honours year my research was quantitative in nature and the scope was much smaller than that of my Master's research. Through this research project I was able to gain not only practical qualitative research experience with adolescent resilience but had the opportunity to integrate my theoretical knowledge of resilience and qualitative research with the practical experience of doing research. The previous absence of this integration had been the biggest shortfall of my academic training. From this experience I feel I have gained valuable research skills such as the

ability to prepare for data generation by reading extensively about qualitative research, resilience, and the mechanics of working in groups; the ability to identify a meaningful research question and my role as a student co-researcher within the project; the ability to choose appropriate research activities and facilitate a research group for the purpose of data generation and being able to analyse the data meaningfully; and the ability to report on my research findings in an academic manner and engage meaningfully in supervision and in debriefing with my fellow student co-researchers.

Working with an experienced researcher (my research supervisor) and being part of an international study was a privilege and one that is the highlight of my academic experience. This experience of working in a research project was a whole lot more manageable than doing research alone. I gained a sense of purpose that encouraged me to do my best and contribute meaningfully to the research project.

When I reflect on my positioning in my research I am inspired to borrow the words “insider” and “outsider” from Maxwell, Abrams, Mosavel and Zungu (2015). At the initial stages of my research, when I was mentally preparing myself for the data generation phase and engagement with the participants, I wondered if the participants would consider me as an insider by virtue of my race (being a black South African) and my multilingual abilities, or if they would consider me to be an outsider because I was not from their community and I was unfamiliar with any community that is affected by petrochemical-associated risks. For my personal positioning, I took on a dual role. On the one hand, my knowledge of the languages that were spoken in the community (isiNdebele, isiZulu and isiSwati) positioned me as an insider which also made communication more efficient with the participants. On the other hand, not residing in a petrochemical-affected community excluded me and positioned me as an outsider. The outsider position made me take a learner/student stance and position the participants as the teachers/educators. My lack of knowledge and exposure to the petrochemical industry and its effects on these individuals made me more intrigued and eager to learn from the participants’ experiences. I had to suspend my assumptions about the way of life in such a community and open myself to a process of learning and gaining insight and contextual understanding of the processes that facilitate adolescent resilience in the context of petrochemical exposure. I believe that my position as an outsider served as

an asset because the participants were interested in learning about life in the city from someone who was raised in a rural community and was now residing in the city and, in turn, they were more willing to share their experiences of living in a community affected by petrochemical associated risks. Positioning myself as an insider assisted the data generation in that the participants were free to communicate in any indigenous language they preferred. I believe this amplified the richness of the data and eliminated the risk of data being misrepresented if it had had to be translated.

I do believe that my race helped me to connect more easily with the black South African participants but I still had to explain to the participants that as much as we are of the same race our experiences and perspectives on life are unique. I told the participants that they should not assume that I would know about their experiences, and that, instead, they needed to teach me about their coping skills as adolescents in eMbalenhle and about how adolescents are resilient in the face of petrochemical-associated risks.

Going into the community of eMbalenhle I did not know what to expect. I was an outsider, unfamiliar with the experiences of living in a petrochemical-affected community or the challenges that adolescents in that community face. I did, however, leave the community with a sound perspective on the petrochemical industry and with knowledge about the first-hand experiences of some of the physical effects that were reported as risks factors by the participants. I got a glimpse of the physical effects experienced by adolescents in this community when I developed an irritating rash on my face and stomach, my eyes became itchy and they burned; my mouth and nose became very dry, and I developed an unusual headache. I had never experienced any of these symptoms before. When I reflected on this with one of the participants in my group she said, *“Those are the problems that we have to deal with on a daily basis.”* The participants’ challenges were different from any I have experienced, and in many ways their challenges were the direct opposite of things I take for granted in my own life, like walking outside without being concerned about the negative effects of heavily polluted air.

5.4.2 Reflections as an Educational Psychologist-in-training

My experience of this research project as an Educational Psychologist-in-training has been meaningful both on a professional and on a personal level.

On a professional level I have gained insight into the resilience pathways of adolescents exposed to petrochemical risks. The petrochemical industry was an unfamiliar context for me and I asked myself at the start of this project what the role of an Educational Psychologist would be in this context. Initially I could not see the connection between Educational Psychology and the petrochemical industry. It was only after the data generation process that I was able to make the connection between them. I realised that it was the risk factors that made it possible for us, as student researchers, to explore the protective resources that buffer the adolescents of eMbalenhle against the risks associated with the petrochemical industry, and learn how these adolescents do well in life despite the risks associated with it.

I experienced first-hand the value of experiencing art-based activities, especially the body-mapping. In my internship training as an Educational Psychologist-in-training, I used a lot of creative art activities with bereaved clients during individual and group therapy sessions but I always shied away from body-mapping as I associated that activity with career guidance since it was emphasised more in that component of my theoretical training. This indicated to me that my theoretical understanding prior to this research project was fragmented and in need of integration. Through this project I was able to experience the value of body-mapping first-hand and could see how I could incorporate body-mapping as a tool to better understand the risks that adolescents experience and how they cope with these risks in individual and group therapy.

Another benefit that stands out from this research project is the knowledge that I have gained not only about adolescent resilience but also about the petrochemical industry and what it means, and how it affects individuals and other systems in the socio-ecology. I have come to learn that gaining knowledge about the petrochemical industry is important because it is reported in various articles (Chauhan & Kotecha, 2016; Kadambur & Kotecha, 2016; Processing Magazine, 2015) and it is a growing industry that is estimated to be worth \$600 billion globally. This means that as this industry grows and more people are employed, it is probable that more and more youth

will live in communities like eMbalenhle and will experience the risks associated with petrochemical industries. This then implies that helping professionals such as Educational Psychologists need more intimate knowledge of the industry, its risks, and the factors that promote resilience in the face of its risks. In having a holistic understanding of the petrochemical industry, Educational Psychologists may be able to identify personal strengths and assets that adolescents can use to cope with challenges resulting from petrochemical industry exposure. This research has offered me an opportunity to gain some understanding of the risks associated with the petrochemical industry and how, despite all the risks, adolescents can be healthy and can cope positively in their development. In essence, I received an opportunity to see the face, as it were, of resilience in adolescents in the context of petrochemical exposure. This encourages me to learn more about how to facilitate resilience as well as social change in the same or similar contexts in the future.

On a personal level, through this research project I was able to identify my own personal strengths and assets. Today as I write the concluding chapter of my mini-thesis I feel emancipated from low self-esteem and self-doubt. Despite all the delays that I have endured to get to this point, I indeed feel that I have actively mastered what I passively suffered for the last six years of my training to becoming a registered Educational Psychologist.

If I could repeat my research study, I know I would be less nervous since I feel that my research skills have improved. I would become more flexible and would probe for more information when necessary instead of being rigid and sticking strictly to the set research prompts.

5.5 RECOMMENDATIONS

5.5.1 Recommendations Relating to Future Research

I recommend that future studies continue exploring personal protective resources that enable adolescent resilience in different petrochemical communities in South Africa. Such continuation in research will generate alternative insights relating to adolescents ability to function well and it will provide additional understanding of adolescent resilience in the context of petrochemical exposure from a different South African site.

Additionally, future studies could also revisit the participants at regular intervals (e.g. in a five-year longitudinal study) and assess how they have maintained resilience over time. Such explorations will offer updated knowledge and understanding of adolescent resilience in the context of petrochemical-associated risks.

In terms of the research methods, future studies could consider using supplementary data generation methods such as individual interviews or individual journals so that the individual's insight can be explored with minimal chance of accidents that result in the loss of data. Additionally, future studies could consider extending the timeframe for data generation (i.e., two-three days rather than one).

Future studies could invite the participants to comment on the themes that emerged and explore the significant differences between them. Such research could further explore why personal motivation and determination was more salient than positive emotions, cognitive competencies, social skill, and physical well-being for these adolescents. Additionally, future research could also explore why other themes that have been reported in other South African resilience studies (i.e. religion, spirituality, connections to higher power, music as a personal protective resource) were not reported in this study.

5.5.2 Recommendations for Educational Psychologists

Educational Psychologists can use the findings of my study cautiously to plan contextually relevant activities or interventions that will support at-risk adolescents to cope well with adversity and do well in life. Such interventions can focus on facilitating personal protective resources such as personal motivation and determination to cater for the needs of adolescents affected by the petrochemical industry. These interventions can focus on personal motivation and use motivation as a resilient resource that can be a catalyst to promoting positive adaptation and coping skills, and enable healthy functioning despite negative risks such as those associated with the petrochemical industry.

It is my hope that the results of my research study will encourage Educational Psychology researchers to continue with research that focuses on the personal protective resources of adolescents living in petrochemical-affected communities in

other areas in South Africa so that helping professionals such as themselves can learn more about the petrochemical industry, how it affects individuals, and how they can do meaningful work with individuals from such or similar contexts given how this industry is growing. This will promote further insight and understanding of adolescent's resilience skills as more and more people are affected by risks associated with the petrochemical industry.

My research study has further reiterated the value and appropriateness of arts-based activities as a meaningful method of exploring participants' insights and experiences of resilience. I therefore recommend that Educational Psychologists, in their practice and in their research, continue to use arts-based activities when they are working with adolescents from the same or similar contexts. In therapy, Educational Psychologists can use arts-based activities therapeutically to facilitate the process of supporting individuals to identify their personal strengths and use those identified personal strengths as protective resources that will buffer them against risks. My practical research experience suggests that this will be of value to Educational Psychologists who want to better understand adolescent resilience.

5.6 CONCLUSION

Translated, *eMbalenhle* means place of a beautiful flower. The participants in my study of limited scope demonstrated personal resilience despite exposure to the petrochemical associated risks. These adolescents of *eMbalenhle* resemble a beautiful flower that is able to grow and blossom in harsh conditions of adversity. The adolescents attributed resilience to motivation and determination, positive emotions, cognitive competencies, social skills, and physical well-being. All these capacities are malleable (i.e., an Educational Psychologist can support adolescents to develop and/or sustain them). Luthar and Eisenberg (2017) are clear that the future of resilience work lies in focusing on those capacities that are malleable and can be enabled. In other words, I believe that a research study such as mine is an effort in the right direction since it highlights the personal strengths and assets which will be useful in supporting more at-risk adolescents to blossom.



The beautiful
flower that grows
despite harsh
conditions...
eMbalenhle

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LIST OF ADDENDA

Addendum A: CAP recruitment flyer

Addendum B: Audit trail

Addendum C: Excerpt of researcher diary

Addendum D: Informed Consent

Addendum E: Ethics clearance certificate for greater project

Addendum F: Ethics clearance certificate for my study

ADDENDUM A:

CAP RECRUITMENT FLYER

Looking for volunteers

Are you:

- **15-24** years old,
- Living in **the Secunda area**, Mpumalanga,
- **affected (negatively or positively)** by the **petrochemical industry** and

OK speaking, writing and reading **English**?

Do you want to spend time helping researchers learn about **what helps young people** in communities affected by the petrochemical industry **to do OK in life**?

If you answered yes to all of the above,
please ask the person who gave you this advert
for more information about the research project.

ADDENDUM B:

AUDIT TRAIL

ADDENDUM A –

AUDIT TRAIL

Excerpt illustrating open coding process

The table that follows links to the highlighted sections

Research question: To what personal protective resources do adolescents living in a petrochemical-affected community attribute adolescent resilience?

Group 2, Activity B – Draw-write-and-talk

- 1 F: What does it mean for a young person to be OK?
2 Gugu: other people that I live with. They make everything OK... do you understand
3 F: how so?
4 Gugu: like...for example...getting to meet [angisho] I believe that we are here to
5 make contacts with other people so obviously [ngengamange] like now you see this,
6 over here...we are talking about it so that we are living under such a thingy you see,
7 but there is somewhere where we are going you see, now we have spoken that they
8 are limiting us but then there is someone who knows that yes it was limiting us but
9 you can do this and this and this, you get it from the next person. So, socializing
10 makes it OK to live in such uh uh environment.
11 F: Don't press ne because once you press then it's not recording. Uhm let me just
12 give it to you... so for you Nomalanga, what does it mean for a young person to be
13 OK with the petrochemical industry even though it affects you negatively?
14 Nomalanga; uhm it's the opportunities given to young
15 F: Opportunities like what?
16 Nomalanga: the bursaries that they give children at school. Uhm projects... ya
17 Andy: well I would say... well from my side I think about the future. I wanna achieve
18 things and so I don't really care what happens around my environment, and so the
19 negative things that are occurring, I think about what I want in the future. That's what
20 makes me ok. That's what drives me every day to do what I am doing. Ya
21 F: Khotso.., what does it mean for a young person be ok living in petrochemical
22 industry that affects them negatively?
23 Khotso: Personally, what makes me ok is having a clear vision that one day I will get
24 out of this area, and never, actually I see myself not ever coming back into this area,
25 ya so having a clear vision of where I am going and getting out of this place, ya

26 actually makes me feel better, it makes me ok to not focus on the harm it [this area]
 27 does to us.
 28 F: What's your name sisi [arrived during the second activity]
 29 Thoko: Thoko
 30 F: Welcome Thoko
 31 Thoko; What's makes me ok is that there is lots of opportunities, like uhm, like Sasol,
 32 that helps us we want money from them, ya

Line	Open codes	Axial Codes (that underpinned candidate themes)
4-5	Connecting to other people	Social inclination
6-7	Directed to the future	Future orientated
9	Socialising with other people	Social inclination
13	Awareness of opportunities	Optimistic outlook / focussing on the positive
16	Thinking about the future	Future orientated
16	Desires to achieve personal goals	Motivated to achieve personal goals
17-19	Being determined to achieve personal goals, despite negative effects from the environment, is enabling	Motivated by future goals
22	Vision about the future	Future orientated
22-24	Desires to leave the community	Specific future plans/aspirations
25	Not focusing on negative effects	Optimistic outlook / focussing on the positive
29	Awareness of available opportunities to help financially	Optimistic outlook / focussing on the positive

Inclusion and Exclusion criteria for axial codes

Axial code [which underpinned candidate themes]	Inclusion criteria	Exclusion criteria
Social inclination	Any reference to the adolescent connecting to others or valuing connections to others	Any reference to others being social/sociable
Future-orientated	Any reference to the adolescent thinking about their own future (without mention of specific future plans)	Any reference to the adolescent thinking about other people's future or any reference to specific future plans/goals
Motivated to achieve personal goals	Any reference to the adolescent feeling motivated to achieve personal future goals	Any reference to the adolescent feeling motivated by other people's achievement of goals
Motivated by future goals	Any reference to the adolescent being motivated by personal future goals	Any reference to the adolescent being motivated by other people's future goals
Specific future plans/aspirations	Any reference to specific personal aspirations and/or specific future plans	Any reference to the adolescent aspiring to achieve goals that are related to other people and not to the self and/or any reference to the adolescent thinking about their own future (without mention of specific future plans)
Optimistic outlook / focussing on the positive	Any reference to something positive or evidence of a positive outlook	Any reference to other people being positive

ADDENDUM C:

EXCERPT OF RESEARCHER DIARY

Training day

Reflection of the training session

25 August 2017

I am excited for tomorrow (meeting the participants and engaging in data generation), but at the same time I am very nervous (what if I don't do the right thing, what if my nervous over power me, what if I get stuck). Or maybe it won't be that bad since the project manager will be with us. I suppose I can ask her if unsure or feel stuck, if that happens.

What I liked about today is that I have learned how to do body-maps (note to self: I will use this technique in practice).

Data generation day

26 August 2017

I was very happy that we had a satisfactory number of participants that came through. I was particular happy with the group of participants that I had as it was a good mixture of males and females of different ages. Some were working and others were still at school.

I expected the participants to include culture and spirituality more. I was very surprised of the thin reports on these two factors...

ADDENDUM D:

INFORMED CONSENT



PARTICIPANT INVITATION AND ASSENT FORM – Activity 2 (Adolescents)

We invite you to participate in a project called: *Patterns of Resilience among Youth in Communities that Depend on Oil and Gas Production and Those Coping with Climate Change.*

Who are we?

We are researchers from the University of Pretoria (South Africa), Dalhousie University (Canada), Royal Roads University (Canada) and Khulisa Social Solutions (South Africa). Our contact details are at the end of this letter if you need them.

What are we doing in this project?

Broadly, we want to learn from you (and other people from the Secunda area) what makes it possible for people to be OK in life when they live in communities which are involved in the oil and gas industry. We will do the same with people living in North American communities which are involved in and challenged by the oil and gas industry. We will use this information to better understand what makes it possible for people to be healthy and to feel good. We want to use this understanding to make it possible for more people who live in communities involved in the oil and gas industry to be healthy and feel good.

The Research Ethics Committee of the Faculty of Education, University of Pretoria has said it is OK for us to do this study (UP 17/05/01). They know we will work carefully using South Africa's and international ethical rules (this is actually called the guidelines and principles of the international Declaration of Helsinki and the ethical guidelines of the National Health Research Ethics Council). The committee will maybe want to look at the forms you sign (if you say yes to being in this study) to check that we did everything in the right way.

Why are we asking you to be part of this project?

Because you

1. Are 15-17 years old, *and*
2. Are OK speaking English and can read and write in English, *and*
3. Live in the Secunda area, Mpumalanga, and
4. Have been affected (negatively or positively) by the petrochemical industry,
5. Were recommended as a participant for this project by someone working at Khulisa or by a member of the project's Community Advisory Panel.

What do you need to know?

- You can say no. If you say no, there will be no problem, you don't need to give a reason. Even if you say yes now, it is OK for you to change your mind later and stop taking part.
- If you want to participate, then you must ask your parents/caregivers to agree that you can participate. If they say no, then we unfortunately cannot let you participate. If they say yes, but you say no, then there will be no problem: nobody can force you to say yes. If they say yes and you say yes, then you and your parents/caregivers must complete and sign **pages 5 - 6**.
- If something (like drug use) makes it hard for you to understand clearly what this project is about, we will not be able to let you take part.

If you say yes, what will you be asked to do?

You will be asked to participate in a research activity

<i>Date and time</i>	<i>Place</i>	<i>Description</i>
Date: <hr/> Time: <hr/>	Embalenhle Sasol Club	We will ask you (and the other young people in your group) to use an artistic activity (e.g., a drawing or clay model or video; we will lend you everything you need to do this) that will help answer the following questions: <ul style="list-style-type: none"> – How does the petrochemical industry affect your life? – Are boys and girls affected differently and if so how? – What does it mean for a young person to be OK when the petrochemical industry affects their life in a negative way? – What/who makes it possible for young people to be OK when the petrochemical industry affects their life in a negative way? – Are there differences in what/who makes it possible for boys and girls to be OK when the petrochemical industry affects their life in a negative way, and if so how?

We will ask your permission to audio record the above so that we can write down what you say. We will also use video cameras to record what you are saying and doing during the research. We will also take photos of you during the research; we will ask your permission to use your pictures in on social media and on our websites.

What do you get out of this?

We would like to offer you R100 as a token of our appreciation. At the end of this study, a copy of the findings will be made available to you if you would like to have them.

Can you get hurt by taking part?

We don't think that you can get hurt physically, but there are some other risks. We explain them below and what we will do to manage them.

Possible / Probable risks/discomforts	Strategies to minimise risk/discomfort
Speaking English could be tiring or difficult.	If you prefer, you can speak in your home language. We will ask members of the research team or others in your group to translate into English so that the researchers who speak English can also understand.
You will complete the activities on [date] in a group.	Because you will be part of a group, other people will know that you participated and what you said. To try and minimize outsiders knowing what you said, we will agree on group rules (e.g., treating one another respectfully; not talking to others about what specific participants said/did).
If your group chooses to use a video-activity and this video is made public, your community and many other people will know that you participated in the study.	You do not have to take part in the video. Alternatively, if you do want to take part but you don't want other people to identify you, then we can find ways of hiding your face (e.g., by wearing a mask). You can also choose whether your name is added to the credits or list of people who are in the video.

There is one other thing that you must know: If you tell us, while we are doing the research with you that you are planning to hurt someone or that someone is abusing you, then we must tell people (including the police) who can help.

What will happen to what you write or draw or make or say during the study?

We will ask a person/people to listen to the audio-recordings of the activity that you did and type what you and the other participants have said. This person/these people will sign a form in which they promise to keep the recording private (meaning they can't tell anyone anything about what they listen to and type up). Once everything is typed up, the researchers from the University of Pretoria will delete (erase/wipe out) what was recorded.

We (the South African and Canadian researchers working in the project) will study the typed-up version of what you and others said. We will use the information you gave us to finalize a questionnaire that we will ask about 300 young people from the Secunda area to complete. We will also use it to write about what makes it harder and easier for young people to do well in life. We will probably quote what you said/wrote or show the drawings you made when we write about what we learnt from you or when we tell others about what we learnt from you (e.g., at a conference or when we teach students). We will also compare what you tell us with what we have learnt from young people living in Canadian communities which are involved in the oil and gas industry and use this comparison to better understand how young people think about health and about feeling good.

We will keep a copy of what you said in a safe place at the University of Pretoria. We will keep the copies for 10 years. Your name will not be on any of these copies. We will allow university students who have to complete research projects about resilience, adolescents, climate change or communities dependent on oil and gas producing companies to use these copies for their research projects.

Who will see the forms you sign and what happens to them?

Only the researchers from the University of Pretoria will have access to the forms that you sign. They will store these forms for 10 years.

Will it cost you anything to take part in this study?

No, it will not cost you anything. We will pay the cost of the local bus/local taxi that you use to participate in the research activities on _____

Do you have questions to ask?

- If you have questions you can email Linda Theron at Linda.theron@up.ac.za or phone her at 012 420 6211. You can also contact Mosna Khaile on 0767756180 or email her at Khaile.mosna@up.ac.za
- You can contact the chair of the Research Ethics Committee, Prof Liesel Ebersohn on (012 422 2337) if you have any concerns or complaints that have not been adequately addressed by the researcher.
- You will receive a copy of this information and consent form for your own records.

Thank you very much for considering our invitation!

Linda and Mosna

Declaration by participant

By signing below, I [full name] agree to take part in a research study named: *Patterns of Resilience Among Youth in Communities that Depend on Oil and Gas Production and Those Coping with Climate Change.*

I say that:

- I have read and understood this information and consent form and it is written in a language with which I am fluent enough and comfortable.
- I have had a chance to ask questions to both the person obtaining consent, as well as the researcher (if this is a different person), and all my questions have been adequately answered.
- I understand that taking part in this study is **voluntary** (I can say no) and I have not been pressurised to take part.
- I understand that my parents/legal caregiver must also say yes (in writing) before I can participate
- I understand that what I contribute (what I say/write/draw) could be reproduced publicly and/or quoted.
- I reserve the right to decide whether or not my actual name or a made-up one will be used in the research. I will decide this at the end of my participation once I have a better understanding of what is involved, and once I have talked through what that would mean with the university researchers.
- I understand that I may choose to leave the study at any time and that will not be a problem. I also understand that once the findings of the study are in the process of publication I cannot withdraw what I contributed to the study.
- I may be asked to leave the study before it has finished, if the researcher feels it is in my best interests.
- I agree that photos/videos of me engaging in research activities can be put up on social media and on research websites and be used in research-related publications/conference papers.

Signed at (*place*) on (*date*) 2017

.....
Signature of participant

.....
Signature of witness

You may contact me again	Yes	No
I would like a summary of findings	Yes	No

My contact details are:

Name & Surname: _____

Age: _____

Male / Female: _____

Postal Address: _____

Email: _____

Cell Phone Number: _____

In case the above details change, please contact the following person who knows me well and who does not live with me and who will help you to contact me:

Name & Surname: _____

Phone/ Cell Phone Number /Email: _____

Declaration by Parent/Legal Guardian

By signing below, I [full name] agree to allow my child/the child I legally care for [child's full name:] to take part in a research study entitled: *Patterns of Resilience Among Youth in Communities that Depend on Oil and Gas Production and Those Coping with Climate Change.*

I declare that:

- My child asked me to read the information about this study. I have read and understood this information and consent form and it is written in a language with which I am fluent enough and comfortable.
- I have had a chance to ask questions to both the person obtaining consent, as well as the researcher (if this is a different person), and all my questions have been adequately answered.
- I understand that my child's participation in this study is **voluntary** (I can say no and my child can too) and I have not been pressurised to allow him/her to take part.
- I understand that what he/she contributes will be shared with international researchers.
- I understand that what he/she contributes (says/writes/draws) could be reproduced publicly and/or quoted.

- I understand that my child has the right to decide whether or not his/her actual name or a made-up one will be used in the research and that this decision will be made at the end of the study once my child has a better understanding of what is involved, and once he/she have talked through what that would mean with the university researchers.
- My child may be asked to leave the study before it has finished, if the researcher feels it is in his/her best interests.
- I understand that researchers will not be asking questions about abuse/harm, but that they have will have to report abuse/harm to child protection services if they should become aware that your child is being abused/harmed.
- I agree that photos/videos of my child engaging in the research activities can be put up on social media and on research websites and be used in research-related publications/conference papers.

Signed at (*place*) on (*date*) 2017

.....
Signature of parent/legal guardian

.....
Signature of witness

Declaration by person obtaining consent

I (*name*) declare that:

- I explained the information in this document to
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above.
- I did/did not use an interpreter.

Signed at (*place*) on (*date*) 2017

.....
Signature of person obtaining consent

.....
Signature of witness



Declaration by researcher

I (*name*) declare that:

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Education

- I explained the information in this document to
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above
- I did/did not use an interpreter.

Signed at (*place*) on (*date*) 2017

.....
Signature of researcher

.....
Signature of witness

PARTICIPANT INVITATION AND CONSENT FORM – Activity 2
(Young Adults)

We invite you to participate in a project called: *Patterns of Resilience among Youth in Communities that Depend on Oil and Gas Production and Those Coping with Climate Change*.

Who are we?

We are researchers from the University of Pretoria (South Africa), Dalhousie University (Canada), Royal Roads University (Canada) and Khulisa Social Solutions (South Africa). Our contact details are at the end of this letter if you need them.

What are we doing in this project?

Broadly, we want to learn from you (and other people from the Secunda area) what makes it possible for people to be OK in life when they live in communities which are involved in the oil and gas (petrochemical) industry. We will do the same with people living in North American communities which are involved in and challenged by the petrochemical industry. We will use this information to better understand what makes it possible for people to be healthy and to feel good. We want to use this understanding to make it possible for more people who live in communities involved in the petrochemical industry to be healthy and feel good.

The Research Ethics Committee of the Faculty of Education, University of Pretoria has said it is OK for us to do this study (UP 17/05/01). They know we will work carefully using South Africa's and international ethical rules (this is actually called the guidelines and principles of the international Declaration of Helsinki and the ethical guidelines of the National Health Research Ethics Council). The committee will maybe want to look at the forms you sign (if you say yes to being in this study) to check that we did everything in the right way.

Why are we asking you to be part of this project?

Because you

1. Are 18-24 years old, *and*
2. Are OK speaking English and can read and write in English, *and*
3. Live in the Secunda area, Mpumalanga, and
4. Have been affected (negatively or positively) by the petrochemical industry,
5. Were recommended as a participant for this project by someone working at Khulisa or by a member of the project's Community Advisory Panel.

What do you need to know?

Room 4-1.7, Level 4, Building
University of Pretoria, Private Bag X20
Hatfield 0028, South Africa
Tel +27 (0)12 420 1234
Fax +27 (0)12 420 5678
Email name.surname@up.ac.za
www.up.ac.za

Faculty of Education
Fakulteit Opvoedkunde
Lefapha la Thuto

- You can say no. If you say no, there will be no problem, you don't need to give a reason. Even if you say yes now, it is OK for you to change your mind later and stop taking part.
- If something (like drug use) makes it hard for you to understand clearly what this project is about, we will not be able to let you take part.

If you say yes, what will you be asked to do?

You will be asked to participate in a research activity

<i>Date and time</i>	<i>Place</i>	<i>Description</i>
Date: <hr/> Time: <hr/>	Embalenhle Sasol Club	We will ask you (and the other young people in your group) to use an artistic activity (we will give you everything you need to do this) that will help answer the following questions: <ul style="list-style-type: none"> – How does the petrochemical industry affect your life? – Are young men and women affected differently and if so how? – What does it mean for a young person to be OK when the petrochemical industry affects their life in a negative way? – What/who makes it possible for young people to be OK when the petrochemical industry affects their life in a negative way? – Are there differences in what/who makes it possible for young men and women to be OK when the petrochemical industry affects their life in a negative way, and if so how?

We will ask your permission to audio record the above so that we can write down what you say. We will also use video cameras to record what you are saying and doing during the research. We will also take photos of you during the research; we will ask your permission to use your pictures in on social media and on our websites.

What do you get out of this?

We would like to offer you R100 as a token of our appreciation. At the end of this study, a copy of the findings will be made available to you if you would like to have them.

Can you get hurt by taking part?

We don't think that you can get hurt physically, but there are some other risks. We explain them below and what we will do to manage them.

Possible / Probable risks/discomforts	Strategies to minimise risk/discomfort
Speaking English could be tiring or difficult.	If you prefer, you can speak in your home language. We will ask members of the research team or others in your group to translate into English so that the researchers who speak English can also understand.
You will complete the activities on [date] in a group.	Because you will be part of a group, other people will know that you participated and what you said. To try and minimize outsiders knowing what you said, we will agree on group rules (e.g., treating one another respectfully; not talking to others about what specific participants said/did).
If your group chooses to use a video-activity and this video is made public, your community and many other people will know that you participated in the study.	You do not have to take part in the video. Alternatively, if you do want to take part but you don't want other people to identify you, then we can find ways of hiding your face (e.g., by wearing a mask). You can also choose whether your name is added to the credits or list of people who are in the video.

What will happen to what you write or draw or make or say during the study?

We will ask a person/people to listen to the audio-recordings of the activity that you did and type what you and the other participants have said. This person/these people will sign a form in which they promise to keep the recording private (meaning they can't tell anyone anything about what they listen to and type up). Once everything is typed up, the researchers from the University of Pretoria will delete (erase/wipe out) what was recorded.

We (the South African and Canadian researchers working in the project) will study the typed-up version of what you and others said. We will use the information you gave us to finalize a questionnaire that we will ask about 300 young people from the Secunda area to complete. We will also use it to write about what makes it harder and easier for young people to do well in life. We will probably quote what you said/wrote or show the drawings you made when we write about what we learnt from you or when we tell others about what we learnt from you (e.g., at a conference or when we teach students). We will also compare what you tell us with what we have learnt from young people living in Canadian communities which are involved in the petrochemical industry and use this comparison to better understand how young people think about health and about feeling good.

We will keep a copy of what you said in a safe place at the University of Pretoria. We will keep the copies for 10 years. Your name will not be on any of these copies. We will allow university students who have to complete research projects about resilience, adolescents, climate change or communities dependent on petrochemical producing companies to use these copies for their research projects.

Who will see the forms you sign and what happens to them?

Only the researchers from the University of Pretoria will have access to the forms that you sign. They will store these forms for 10 years.

Will it cost you anything to take part in this study?

No, it will not cost you anything. We will pay the cost of the local bus/local taxi that you use to participate in the research activities on _____

Do you have questions to ask?

- If you have questions you can email Linda Theron at Linda.theron@up.ac.za or phone her at 012 420 6211. You can also contact Mosna Khaile at 0767756180 or email her at Khaile.mosna@up.ac.za
- You can contact the chair of the Research Ethics Committee, Prof Liesel Ebersohn on (012 422 2337) if you have any concerns or complaints that have not been adequately addressed by the researcher.
- You will receive a copy of this information and consent form for your own records.

Thank you very much for considering our invitation!

Linda and Mosna

Declaration by participant

By signing below, I [full name] agree to take part in a research study named: *Patterns of Resilience Among Youth in Communities that Depend on Oil and Gas Production and Those Coping with Climate Change.*

I say that:

- I have read and understood this information and consent form and it is written in a language with which I am fluent enough and comfortable.
- I have had a chance to ask questions to both the person obtaining consent, as well as the researcher (if this is a different person), and all my questions have been adequately answered.
- I understand that taking part in this study is **voluntary** (I can say no) and I have not been pressurised to take part.
- I understand that what I contribute (what I say/write/draw) could be reproduced publicly and/or quoted.
- I reserve the right to decide whether or not my actual name or a made-up one will be used in the research. I will decide this at the end of my participation once I have a better understanding of what is involved, and once I have talked through what that would mean with the university researchers.
- I understand that I may choose to leave the study at any time and that will not be a problem. I also understand that once the findings of the study are in the process of publication I cannot withdraw what I contributed to the study.
- I may be asked to leave the study before it has finished, if the researcher feels it is in my best interests.
- I agree that photos/videos of me engaging in research activities can be put up on social media and on research websites and be used in research-related publications/conference papers.

Signed at (*place*) on (*date*) 2017

.....
Signature of participant

.....
Signature of witness

You may contact me again	Yes	No
I would like a summary of findings	Yes	No

My contact details are:

Name & Surname: _____

Age: _____

Male / Female: _____

Postal Address: _____

Email: _____

Phone Number: _____

Cell Phone Number: _____

In case the above details change, please contact the following person who knows me well and who does not live with me and who will help you to contact me:

Name & Surname: _____

Phone/ Cell Phone Number /Email: _____

Declaration by person obtaining consent

I (*name*) declare that:

- I explained the information in this document to
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above.
- I did/did not use an interpreter.

Signed at (*place*) on (*date*) 2017

.....
Signature of person obtaining consent

.....
Signature of witness

Declaration by researcher

I (*name*) declare that:

- I explained the information in this document to
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above
- I did/did not use an interpreter.

Signed at (*place*) on (*date*) 2017

.....
Signature of researcher

.....
Signature of witness

ADDENDUM E:

ETHICS CLEARANCE CERTIFICATE FOR GREATER PROJECT

Ethics Committee

7 June 2017

Prof L Theron

Dear Prof Theron

REFERENCE: UP 17/05/01

This letter serves to confirm that your application was carefully considered by the Faculty of Education Ethics Committee. The final decision of the Ethics Committee is that your application has been approved and you may now start with your data collection. The decision covers the entire research process and not only the days that data will be collected. The approval is valid for two years for a Masters and three for Doctorate.

The approval by the Ethics Committee is subject to the following conditions being met:

1. The research will be conducted as stipulated on the application form submitted to the Ethics Committee with the supporting documents.
2. Proof of how you adhered to the Department of Basic Education (DBE) policy for research must be submitted.
3. In the event that the research protocol changed for whatever reason the Ethics Committee must be notified thereof by submitting an amendment to the application (Section E), together with all the supporting documentation that will be used for data collection namely; questionnaires, interview schedules and observation schedules, for further approval before data can be collected. **Non-compliance implies that the Committee's approval is null and void.** The changes may include the following but are not limited to:
 - Change of investigator,
 - Research methods any other aspect therefore and,
 - Participants
 - Sites

The Ethics Committee of the Faculty of Education does not accept any liability for research misconduct, of whatsoever nature, committed by the researcher(s) in the implementation of the approved protocol.

Upon completion of your research you will need to submit the following documentations to the Ethics Committee for your Clearance Certificate:

- Integrated Declaration Form (Form D08),
- Initial Ethics Approval letter and,
- Approval of Title.

Please quote the reference number **UP 17/05/01** in any communication with the Ethics Committee.

Best wishes



Prof Liesel Ebersöhn
Chair: Ethics Committee
Faculty of Education

ADDENDUM F:

ETHICS CLEARANCE CERTIFICATE FOR MY STUDY



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YUNIBESITHI YA PRETORIA
Faculty of Education

RESEARCH ETHICS COMMITTEE

CLEARANCE CERTIFICATE	CLEARANCE NUMBER	EP 17/03/03 Theron 17-001
DEGREE AND PROJECT	M.Ed	The resilience of young adults in a context of drought
INVESTIGATOR	Ms Netsai Gwata	
DEPARTMENT	Educational Psychology	
APPROVAL TO COMMENCE STUDY	23 March 2017	
DATE OF CLEARANCE CERTIFICATE	01 March 2018	

CHAIRPERSON OF ETHICS COMMITTEE: Prof Liesel Ebersöhn

CC
Ma Bronwynne Swartz
Prof Linda Theron

This Ethics Clearance Certificate should be read in conjunction with the Integrated Declaration Form (IDF) which specifies details regarding:

- Compliance with approved research protocol,
- No significant changes,
- Informed consent/assent,
- Adverse experience or undue risk,
- Registered title, and
- Data storage requirements.