

UNIVERSITY OF KWAZULU-NATAL

**CROSS-CULTURAL ADAPTATION AND PSYCHOMETRIC EVALUATION OF
THE ISIZULU 20-ITEM TORONTO ALEXITHYMIA SCALE:
PRELIMINARY FINDINGS**

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**Discipline of Psychology
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DECLARATION

I, David Daniels, declare that:

1. The research reported in this dissertation, except where otherwise indicated, is my original work. [1] [SEP]
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ABSTRACT:

According to prevalence studies, 1 in 3 South Africans will present with a diagnosable mental disorder throughout the course of their lifetime, whilst over a given period of 12 months, 1 in 6 South Africans will likely present with a mental disorder that is clinically diagnosable. Given the alarming rates of mental illness in South Africa much attention within the literature has focussed on further understanding both its determinants and associated risk factors. Due to its significant associations with several psychiatric and medical conditions, the subject of alexithymia has advanced these aims in the global literature. However, little research on the subject has been undertaken in South Africa, most likely due to the lack of a validated psychometric assessment for detecting and further investigating the issue of alexithymia among patients. Additionally, research also indicates that the measurement of alexithymia is impacted by sociocultural factors that shape it in part. Consequently, this research aimed to address these issues by undertaking a cross-cultural adaptation of the 20-item Toronto Alexithymia Scale (TAS-20) for an isiZulu-speaking sample of university students and evaluating its psychometric properties. This was achieved through three objectives: (1) cultural adaptation and translation of the TAS-20 into isiZulu; (2) evaluating the psychometric properties of the isiZulu translation of the TAS-20; and (3) exploring variation in scores on the isiZulu TAS-20 by gender. The results of the confirmatory factor analyses suggested best global fit for the standard oblique three-factor model with an additional specified covariance between two indicators. Evaluation of local fit supported meaningful parameter estimates, as well as the convergent and discriminant validity for the DIF and DDF latent factors of the model, but failed to support the validity of the EOT latent factor. Reliability analyses similarly demonstrated acceptable reliability for the total isiZulu TAS-20 scale and the DIF and DDF subscales, but failed to do so for the EOT subscale. Lastly, there was tentative indication of significantly elevated levels of alexithymia among female Zulu participants as compared to male Zulu participants. In conclusion, the psychometric evaluation confirmed the factor structure, but failed to fully support the underlying theoretical relationships in the Zulu culture. In convergence with other studies, these findings suggest that sociocultural factors significantly impact upon the construct and assessment of alexithymia. The study suggests the need for a theoretical reconceptualization of alexithymia, factoring in the role of sociocultural factors.

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CHAPTER 1

INTRODUCTION

“Every man is in certain respects; like all other men, like some other men, and like no other man” – Kluckhohn, Schneider and Murray (1953)

1.1 BACKGROUND OF RESEARCH PROBLEM

It has been noted in the literature that the burden of disease tends to be much higher in low- and middle-income countries, such as South Africa, as compared to higher-income countries (Haileamlak, 2018). Albeit often overlooked, studies show that mental disorders contribute a staggering 7-13% to the global burden of disease (Lopez et al., 2006; Rehm & Shield, 2019). Perhaps more alarming is the fact that 4 out of 5 individuals suffering from a mental illnesses within low- and middle-income countries never receive treatment (Tomlinson, 2013). According to prevalence studies by Herman and colleagues (2009), 1 in 3 South Africans will present with a diagnosable mental disorder throughout the course of their lifetime. Moreover, over a given period of 12 months, 1 in 6 South Africans will likely present with a mental disorder that is clinically diagnosable (Herman et al., 2009).

In recent years the issue of mental health in South Africa has received significantly more attention. This was demonstrated by the institution of the National Mental Health Policy Framework and Strategic Plan 2013-2020 (NMHPF) - the first officially sanctioned national mental health policy, developed by the South African Human Rights Commission (2017). Given the alarming rates of mental illness in South Africa, much attention within the literature has focussed on further understanding its various determinants and associated risk factors. One such major area of enquiry, particularly among the disciplines of psychology and

psychiatry, has been the investigation of the role that emotions play in mental and physical health (Luminet, Bagby, & Taylor, 2018). Subsequently, a converging line of research has emerged over the last two decades, focusing on the issue of “alexithymia” and its significant association with a host of physical and psychological disorders (Kinnaird, Stewart, & Tchaturia, 2019; Timoney & Holder, 2013).

As a result, attention has been given to ensuring that efficient, accurate and appropriate psychometric measures are being developed to aid clinicians and researchers alike in detecting and further investigating the issue of alexithymia among patients. Chief among these instruments is the 20-item Toronto Alexithymia Scale (TAS-20), a widely validated and utilized scale that has become somewhat of a global standard for assessing alexithymia (Bagby, Parker, & Taylor, 2020).

1.2 ISSUES IN THE LITERATURE

Whilst a large number of translations and cultural adaptations of the TAS-20 have already been validated among various cultural and linguistic groups across the globe, these have almost exclusively focused on Euro-American and some Eastern populations (Dere, Falk, & Ryder, 2012). Moreover, cross-cultural studies on the subject have found conflicting results between cultures, suggesting cultural variances in the construct of alexithymia. Research on alexithymia within the African context is scarce, especially among individuals speaking a language native to Africa, such as isiZulu or isiXhosa. This is largely due to the fact that there is presently no valid instrument with which to assess and conduct such research.

As such, an African perspective based on empirical research on the subject of alexithymia remains neglected in the literature. This leaves a potentially significant gap in the literature,

particularly in light of current trends in emotion research seeing a gradual shift from the classic ‘essentialist’ view of emotion towards a more constructivist perspective. The *‘Theory of Constructed Emotion’*, a relatively new constructivist perspective, has gained particular credence among researchers at present, and offers much in the way of understanding sociocultural influences on the shaping of psychological phenomena.

1.3 KEY CONCEPTS:

- **Alexithymia:**

Taken from the Greek, the word “alexithymia” conveys the meaning “no words for emotions” (Timoney & Holder, 2013; Tsaousis et al., 2010). The term was first employed in the early 1970’s by the late psychiatrist, Peter E. Sifneos, to describe a constellation of characteristics he’d observed in a number of patients suffering with psychosomatic illnesses (Sifneos, 1973). Sifneos noted that these patients typically exhibited markedly diminished ability to comprehend and communicate their emotional experiences; reported little inner fantasy life; and displayed a characteristic lack of introspective focus (González-Arias, Martínez-Molina, & Urzúa, 2018; Sifneos, 1973).

- **Theory of Constructed Emotion (TCE):**

The Theory of Constructed Emotion (TCE) is a constructivist perspective on emotion, that argues against previously dominant “classical perspectives” of emotion that view emotions as ‘hard-wired’ responses that are phenomenologically universal (Barrett, 2017; Colombetti, 2009; Panksepp & Watt, 2011). Instead, it is postulated by the theory of constructed emotion that variability in the experience (labeling and conceptualizing) and expression (states of physiological arousal, neural activity, and behaviour) of emotion is the norm (Barrett, 2017; Lindquist, Siegel, Quigley, & Barrett, 2013). Moreover, it is maintained that emotions are not

simply biological reactions to an environment, but rather constructs that are informed by sociocultural factors to make meaning of sensory experiences (Barrett, 2017). Consequently, the TCE brings the cross-cultural relevance and validity of the construct of alexithymia under question (Ryder, Sunohara, Dere, & Chentsova-Dutton, 2018). This framework indeed offers much in the way of providing a unique and empirically informed sociocultural perspective to the extant literature on alexithymia.

1.4 AIMS

The present research aimed to begin to address these gaps in three stages: first, by translating and adapting the TAS-20 for the isiZulu-speaking population in South Africa; second, by investigating the internal reliability and validity of the three-factor model of the TAS-20 in this population; third, by conducting a preliminary exploration of variance by gender.

1.5 CONTRIBUTIONS TO THE LITERATURE

The study hoped to make unique contributions to the existing corpus of literature on alexithymia in the following ways:

- The first cross-cultural adaptation and validation of a measure of alexithymia in an African context.
- Exploring the construct of alexithymia and its constituent sub-components in an African context
- Exploring the variances of alexithymia by demographic variables in an African context
- Exploring sociocultural factors in relation to alexithymia from a constructivist theoretical perspective, namely, the theory of ‘Constructed Emotion’.

1.6 STRUCTURE OF DISSERTATION:

This dissertation is organized into the following chapters:

Chapter 1: Introduction. The introduction provides a concise background and context for the study. A brief outline of the theory of constructed emotion (TCE) and the construct of *alexithymia* is provided, followed by a statement of the aims of the study.

Chapter 2: Review of the literature. This chapter reviews the literature on alexithymia and the TAS-20, giving a broad outline of the various associated factors and key issues in the literature. The issue of sociocultural influence on alexithymia is problematized and highlighted with reference to cross-cultural research findings. This problem is then contextualized within the Zulu cultural context and the chapter is drawn to a close.

Chapter 3: Theoretical Framework. The conceptualization of alexithymia will be discussed from psychological, biological and sociocultural perspectives in the literature, highlighting the historical developments and respective contributions of each approach. The theoretical approach utilized in this study, namely the ‘theory of constructed emotion’, will be outlined and discussed in relation to the construct of alexithymia, underscoring its underlying integrative biopsychosocial perspective and the value it holds for furthering research on alexithymia.

Chapter 4: Research Methodology. This chapter describes the aims, objectives, and research questions of the study and outlines the study methodology. Issues related to the study location, participant demographics, research procedure, measures employed, and data handling are described. The chapter closes by addressing the ethical issues relating to the research.

Chapter 5: Results. This chapter reports the results pertaining to the key objectives and research questions asked in this study in four sections. The first section outlines the data preparation and preliminary analyses performed as required for executing a confirmatory

factor analysis. Subsequently, the three competing structural models that were subjected to confirmatory factor analyses are described and outcomes tabulated. The second section reports on the internal reliability of the isiZulu TAS-20. The third section reports basic descriptive statistics for the best fitting model of the isiZulu TAS-20 scale, as well as comparing the mean scores by gender. The last section summarizes the main results.

Chapter 6: Discussion. In this chapter, the findings are briefly contextualized within the overall aims and objectives of the study, with commentary on the study achievements. The study findings are then further elaborated, addressing the key hypotheses and situating findings within the literature. Findings are also interpreted through the lens of the theory of constructed emotion, framed within a biopsychosocial perspective on alexithymia.

CHAPTER 2

LITERATURE REVIEW

2. INTRODUCTION

The literature review is structured into five parts. First, the construct of alexithymia is briefly introduced and outlined in terms of nosology and epidemiology. Second, the existing literature on the subject of alexithymia and its associated clinical issues are discussed with regard to its relation to various pathologies, wellbeing, and clinical utility factors. Third, the assessment of alexithymia is discussed with a particular focus on the Twenty-Item Toronto Alexithymia Scale (TAS-20), its development, as well as its validity and reliability across different contexts. Fourth, the cross-cultural variance of alexithymia is explored and unpacked in terms of sociocultural influences. Lastly, the cross-cultural issues in relation to alexithymia is discussed, in terms of conceptualization and sociocultural shaping. The conclusion succinctly points out the gaps identified in the reviewed literature, providing the basis for the present study.

2.1 ALEXITHYMIA IN THE LITERATURE

Since its inception in the literature in the early 1970s, research on the subject of alexithymia has garnered much interest among scholars (Sifneos, 1973). A review of the PsychInfo database alone reported a total of 946 published journal articles on the subject between just 2010 and 2020. A growing body of research has implicated alexithymia as an important non-specific transdiagnostic factor, linked to a wide array of physical and psychological pathologies, as well as poorer psychosocial functioning (Bagby, Parker, & Taylor, 2020). Consequently, its relevance has extended beyond the domain of psychiatry into general

medicine and neuroscience, becoming a burgeoning area of research for elucidating aspects of mind-body connection in relation to health.

2.1.1 NOSOLOGY

Alexithymia has been conceptualized as a dimensional personality trait, meaning that individuals vary in the degree to which they display features of alexithymia. Alexithymia is characterized by four core features: (1) a difficulty with identifying and differentiating between one's feelings, as well as their accompanying physiological responses; (2) a difficulty describing one's feelings; (3) an impoverished fantasy life; and (4) a cognitive style that is externally oriented (Bagby, Parker, & Taylor, 2020; Nemiah & Sifneos, 1970; Sifneos, 1973; Taylor, Bagby, & Parker, 1991). Albeit ostensibly similar to the concept of "emotional intelligence", latent-factor studies have empirically shown that alexithymia represents a separate construct (Fijkunishi, Amayasu, Kidachi, & Yamauchi, 2003; Parker, Taylor, & Bagby, 2001). The concept of "emotional intelligence" entails aspects of being able to recognize, understand and act on one's emotions; however, it does not capture the distinctive impoverished fantasy-life and outwardly-oriented thinking style that forms part of the concept of alexithymia (Hafen, Singh, & Laursen, 2011).

2.1.2 EPIDEMIOLOGY

Approximately 10–15% of the populace places at the extreme end of the continuum with significantly high levels of alexithymia (Franz et al., 2008; Mattila et al., 2008; Mattila, Salminen, Nummela, & Joukamaa, 2006; Tolmunen, Heliste, Lehto, Hintikka, Honkalampi, & Kauhanen, 2011). Research has implicated genetic factors, as well as developmental and sociocultural influences in the shaping of alexithymia (Moriguchi & Komaki, 2013). A number of socio-demographic and socio-cultural factors have been associated with elevated

levels of alexithymia, such as: male gender, gender norms, increased age, lower education level, collectivist self-construal, as well as low socioeconomic status (Franz et al., 2008; Grynberg, Berthoz, & Bird, 2018; Konrath, Grynberg, Corneille, Hammig, & Luminet, 2011; Mattila, Salminen, Nummela, & Joukamaa, 2006; Timoney & Holder, 2013; Tolmunen, Lehto, Heliste et al., 2010). Moreover, due to its association with numerous illnesses, alexithymia has been touted by some as a putative risk factor for the development of various conditions (Leweke, Leichsenring, Kruse, & Hermes, 2012).

3. ALEXITHYMIA: REVIEW OF ASSOCIATED CLINICAL ISSUES

Three decades of research has linked alexithymia to various conditions, a few of which include: depression (Li, Zhang, Guo, & Zhang, 2015), eating disorders (Westwood, Kerr-Gaffney, Stahl, & Tchanturia, 2017), post-traumatic stress disorder (Frewen, Dozois, Neufeld, & Lanius, 2008), gastrointestinal problems (Kano, Endo, & Fukudo, 2018), fibromyalgia (Tella & Castelli, 2013), diabetes (Luca et al., 2015), and a number of other ailments. Studies have further indicated that elevated levels of alexithymia are associated with psychosocial impairments and poorer wellbeing (Tesio, Goerlich, Hosoi, & Castelli, 2019). However, a number of clinicians have also highlighted the clinical utility of alexithymia for informing prognoses and guiding treatment choice in certain conditions (Castelnuovo et al., 2016). An in-depth review of the numerous clinical issues associated with alexithymia is beyond the scope and intent of this review. Instead, a more concise overview of selected issues and factors judged as relevant to the present study have been focussed on. More comprehensive and in-depth reviews may best be found in publications such as those of Luminet, Bagby and Taylor (2018) or Timoney and Holder (2013).

3.1 ALEXITHYMIA: ASSOCIATED CONDITIONS

3.1.1 PSYCHIATRIC CONDITIONS

Several studies have reported elevated levels of alexithymia among individuals with eating disorders when compared to healthy controls (Cochrane, Brewerton, Wilson, & Hodges, 1993; De Berardis et al., 2007; Nowakowski, McFarlane, & Cassin, 2013; Speranza et al., 2005). A recent meta-analysis of the literature on alexithymia and eating disorders by Westwood, Kerr-Gaffney, Stahl and Tchanturia (2017) supports this association. Their review included 44 studies, each utilizing the *Toronto Alexithymia Scale* (TAS), to assess and compare levels of alexithymia between both a clinical group and healthy control group. Westwood and colleagues (2017) found that two factors were most frequently reported by individuals across the eating disorder spectrum, namely: a difficulty in describing feelings and a difficulty in identifying emotions. Their findings are consistent with previous reviews on the topic (Nowakowski, McFarlane, & Cassin, 2013). Some have suggested that disturbed eating symptomatology may serve as a maladaptive coping behaviour individuals use to avoid emotional experiences, particularly in the context of invalidating parenting experiences in childhood (Corstorphine, 2006; Nowakowski, McFarlane, & Cassin, 2013).

A clear positive relationship between elevated levels of alexithymia and depression has been well established in the literature for some time (Timoney & Holder, 2013), but despite decades of research on the matter, the exact nature of the relationship has not been as clear (Li, Zhang, Guo, & Zhang, 2015). Some have argued in past that the two constructs may in fact overlap considerably. However, several studies have shown that the two are indeed distinct constructs, and that albeit closely related, depression is not predicted by elevated rates of alexithymia (Honkalampi et al., 2010; Timoney & Holder, 2013). When compared to healthy controls and other psychiatric disorders, individuals who suffer from depression do present with higher levels of alexithymia (Leweke, Leichsenring, Kruse, & Hermes, 2012). In

2015 a group of researchers from Central South University in China undertook a review of studies investigating the relationship between severity of depression and level of alexithymia (Li, Zhang, Guo, & Zhang, 2015). Their review included 19 published studies (comprising a total of 3572 subjects) each of which utilized the 20-item Toronto Alexithymia Scale (TAS-20). The study confirmed the association between elevated levels of alexithymia and depression, reporting a moderate, but significant relationship between the TAS-20 full-scale score and depression.

Interestingly, the study revealed a strong relationship between depression and the difficulty describing feelings (DDF) and difficulty identifying feelings (DIF) subscales of the TAS-20, but a weak relationship between depression and the EOT subscale in particular (Li, Zhang, Guo, & Zhang, 2015). Son and colleagues (2012) assert that individuals who suffer from depression frequently employ emotion-inhibiting strategies in order to manage their symptoms. Therefore, it stands to reason that these individuals would more likely exhibit deficits in describing and identifying their feelings (Son et al., 2012). Moreover, Dere, Falk and Ryder (2012) show that cultural factors, such as values, play a strong role in shaping cognitive style. This may explain inconsistent findings in the literature regarding the exact relationship between depression and the 'externally-oriented cognitive' aspect of alexithymia.

Samur and colleagues (2013) report that panic disorder (PD) appears to be significantly associated with alexithymia. An earlier study by De Berardis and colleagues (2008) explained that individuals suffering with PD present with a heightened sensitivity to physiological affect-arousal, which precipitates panic episodes. As a result, these individuals may tend to suppress their emotional experiences. However, Leweke and colleagues (2012) found that 21.5% of patients with anxiety disorders were alexithymic. They suggest that even though

anxiety disorders were significantly associated with high scores on the TAS-20 across the board, no significant variance by specific anxiety disorder was found. A positive relationship between anxiety and alexithymia was also supported in a study by Hazoori and Barahmand (2013). The researchers sought to investigate the relationship between alexithymia and dissociative experiences with anxiety and depression among 10 433 male and female University students in Iran. Interestingly, alexithymia scores were significantly higher than reported among samples from western cultures. This adds to the extant view that culture appears to be a strong mediating factor in levels of alexithymia reported across studies (Dere, Falk, & Ryder, 2012).

Multiple studies have indicated that individuals suffering with PTSD exhibit higher levels of alexithymia (Frewen, Dozois, Neufeld, & Lanius, 2008; McCaslin et al., 2006; Sondergaard & Theorell, 2004). In their review of the literature, Frewen, Dozois, Neufeld and Lanius (2008) report that the highest levels were particularly found among males with combat-related PTSD. This possibly suggests variance by type of trauma and gender, but requires further investigation. Alexithymia has also been associated with a number of other psychiatric conditions in the literature, such as: schizophrenia (Rotenberg, 1994), autism spectrum disorder (Bird & Cook, 2013; Kinnaird, Stewart, & Tchanturia, 2019; Samur, Tops, Schlinkert et al., 2013) obsessive-compulsive disorder (Roh, Kim, & Kim, 2011) substance use disorders (Timoney & Holder, 2013), and borderline personality disorder (Deborde et al., 2012). Converging lines of research are supporting the notion that alexithymia represents a construct strongly tied to dysregulation of affective states, which may explain its connection with several psychiatric disorders (Tesio, Goerlich, Hosoi, & Castelli, 2019).

3.1.2 MEDICAL CONDITIONS

Beyond its association with mental illness, alexithymia has been linked to a number of medical conditions in the literature, such as gastrointestinal disorders, cancer, diabetes and skin disease (Porcelli & Taylor, 2018). It was initially suggested that alexithymic individuals tend to express their psychological distress in “somatic” form rather than through emotions (Wielopolski et al., 2017). It is important to note that Cartesian-dualism prescribed a system of reasoning in the health sciences based on false-dichotomies, a legacy which lives on in the nomenclature of medicine. This is observed in the common practice of labelling conditions as either “organic” or “functional”, based on suspected etiology. However, despite the taxonomy, modern medicine has moved further away from such reductionist perspectives towards a biopsychosocial framework (Engel, 1980). There is a larger general consensus that, despite the sometimes ‘clear etiology’ of an illness, the biological, psychological and socio-cultural aspects of a patient all play important roles in the shaping of the illness to varying degrees.

This view is in line with research on the role of alexithymia in medical illnesses. Alexithymia has been positively correlated with increased risk of developing numerous physical conditions, however, no evidence suggests a direct causal relationship (Tolmunen et al., 2010). A review by Luminet, Bagby and Taylor (2018) highlights that alexithymia is non-pathognomonic and likely plays a multifarious role in medical illnesses. They reason that alexithymia contributes to the pathogenesis as either: a risk factor, a factor impacting on treatment outcomes, a factor emerging as a reaction to disease, or as a combination of these factors. Interestingly, alexithymia has also been found to play a more central role in disorders such as functional dyspepsia or irritable bowel syndrome (IBS), both functional gastrointestinal disorders (FGID) (Kano, Endo, & Fukudo, 2018).

Risk of developing a cardiovascular disease (CVD) has long been associated with a number of psychological factors in the literature, including elevated levels of alexithymia (Vadini et al., 2019). A study by Grabe and colleagues (2010) sought to determine whether elevated levels of alexithymia was associated with carotid atherosclerosis and hypertension among a German sample of 1168 individuals, comprising subjects between the ages of 20 and 65 years. The researchers performed both physical exams and assessed levels of alexithymia (using the TAS-20) to establish baselines for a follow-up assessment. Moreover, individuals were interviewed at length to control for known mediating variables, such as life-style and sociodemographic factors. Their five-year follow-up study indeed confirmed this relationship, revealing that alexithymia represented an independent risk factor associated with the development of carotid atherosclerosis and hypertension. Grabe and colleagues (2010) concluded that their study lends support to the “dysregulation hypothesis” of alexithymia, which holds that affective dysregulation causes poor regulation of the autonomic nervous system (ANS). It is argued that the poorly modulated ANS results in hyper-activation of the sympathetic nervous system and diminished vagal activity, which are known to be linked to CVD (Thayer & Lane, 2007; Thayer & Sternberg, 2006).

These results are consistent with the findings of a longitudinal study conducted on 2321 Finnish men over a period of 20 years, where a positive correlation was found between alexithymia and an increased mortality rate in CVD (Tolmunen et al., 2010). More recently, Porcelli, Vadini and Accorsi (2018) conducted a large longitudinal study in Italy investigating the relationship between alexithymia and CVD in males and females among 1170 subjects. The team of researchers found that alexithymia was significantly related to later development of CVD, even once data was adjusted to account for mediating factors such as: body mass index, lifestyle, blood pressure, and sociodemographic factors (among other

risk factors). The authors conclude that alexithymia represents a putative key psychological risk factor for the development of CVD (Porcellia, Vadinia, & Accorsic, 2018).

A recent systematic review by Carrozzino and Porcelli (2018) reports higher rates of alexithymia in patients with organic gastrointestinal (GI) disorders, such as inflammatory bowel disease (comprising predominantly ulcerative colitis and Chron's disease) or liver disease comparative to controls and the general populus, with a prevalence rate of between 30–50%. Interestingly, an even higher prevalence rate of 60% exists among individuals with functional gastrointestinal disorders, such as irritable bowel syndrome or functional dyspepsia (Tesio, Goerlich, Hosoi, & Castelli, 2019). The connection between alexithymia and GI disorders has been elucidated by some through the concept of 'somatosensory amplification', which has been correlated with deficits in identifying and communicating feelings (Mattila et al., 2008; Messina, Beadle, & Paradiso, 2014). Somatosensory amplification is marked by three key indicators in an individual: hyper-attentiveness to somatic sensations (such as expansion of the rectum or colon); mis-appraisal of such somatic sensations as indicators of underlying disease; and hypersensitivity to sensations in the body leading to increased reporting of pain (Barsky, 1992; Rasmussen, Agerter, & Colligan, 2008).

Research has indicated that high alexithymia is more prevalent in patients with skin diseases, with a reported prevalence rate of 24.8% (Sampogna et al., 2017). It has been linked to skin diseases such as: psoriasis, vitiligo, atopic dermatitis, and alopecia areata (Willemsen, Roseeuw, & Vanderlinden, 2008). Elevated levels of alexithymia have also been reported in approximately 40% of individuals with Type 2 diabetes (Avci & Kelleci, 2016; Lemche, Chaban, & Lemche, 2014). Furthermore, Nardelli and colleagues (2013) reported a 25% prevalence rate of high alexithymia among individuals with hepatic cirrhosis.

A number of other medical conditions, not listed here, have also been linked to alexithymia. Ultimately, the literature widely considers high alexithymia to be a factor associated with increased burden of disease. The exact pathogenic mechanisms are still unclear; however, at present alexithymia is chiefly considered to contribute to dysfunctional modulation of affective states. This, in turn, appears to adversely impact physical and psychological health in various ways, through: defective affect-regulation processes, reactive suppression of emotion, increasing susceptibility to dysregulated immunological inflammatory responses, somatic signal augmentation, engaging in maladaptive illness behaviours (Carrozzino & Porcelli, 2018; Lumley, Neely, & Burger, 2007).

3.2 ALEXITHYMIA: PSYCHOSOCIAL FUNCTIONING

Apart from being a risk factor for high burden of psychiatric and medical conditions, alexithymia has also been related to a number of intrapersonal and interpersonal impairments that undermine quality of life. Several studies have associated high alexithymia with lower life satisfaction (Mattila, Poutanen, Koivisto, Salokangas, & Joukamaa, 2007; Shibata et al., 2014) and poorer quality of life (Pace, Lucini, Viganò, Lombardini, & Biasini, 2013; Picardia et al., 2007; Pinna, Sanna, & Carpiniello, 2015; Tychev, Garnier, Lighezzolo-Alnot, Claudon, & Rebourg-Roesler, 2010). Emotions are an integral part of our individual and social functioning as they provide us with insight into ourselves and others. They equip us to effectively navigate and integrate into our sociocultural contexts. It is therefore no surprise that studies have found that high alexithymia, a deficit in comprehending and communicating emotions, is associated with a number of psychosocial impairments and lower quality of life (Grynberg, Berthoz, & Bird, 2018).

3.2.1 Intrapersonal Functioning:

- **Poor Coping**

Research has indicated that individuals with high alexithymia (HA) not only report lower levels of life satisfaction than those with low alexithymia (LA), but tend to exhibit poorer long-term coping and higher rates of maladaptive behaviour across various life domains. A study by Paez, Seguel and Martinez-Sanchez (2012) found that psychological and subjective well-being were inversely related to alexithymia. Several studies have found that individuals who are highly alexithymic tend to use immature defense mechanisms (Helmes et al., 2008; Lenzo, Barberis, Cannavò, Filastro, Verrastro, & Quattropani, 2020), a factor that has been tied to poorer coping with life-stressors (Goulia et al, 2014). Alexithymia has also been shown to be negatively related to self-efficacy (Faramarzi & Khafri, 2017). Perhaps not surprising, HA individuals have been found to exhibit an external locus of control, which is a key factor in self-efficacy (Hexel, 2003; Zimmermann, Rossier, de Stadelhofen, & Gaillard, 2005). Moreover, alexithymia has been positively associated with high neuroticism, a trait that has been linked to maladaptive coping and poor emotion regulation (Paez, Seguel, & Martinez-Sanchez, 2012). These findings are in line with other studies that have associated high alexithymia with poor emotion regulation (Gross, 2014; Luminet & Zamariola, 2018; Pollatos & Gramann, 2012).

- **Emotion-Regulation**

Emotions comprise a complex interplay of cognitive processes and physiological activity (Luminet & Zamariola, 2018). Even though theorists may differ on the exact directionality and nature of the interaction, there is a general consensus that a disruption of this process could cause dysfunction (Porcelli & Taylor, 2018). It was the early work of Martin and Pihl (1985) which first suggested that when alexithymic individuals are faced with stressful events, their characteristic lack of awareness of affect and inability to regulate and

communicate feelings, renders them less adept at employing efficacious and adaptive coping strategies. They further posit that this causes a phenomenon where sympathetic arousal remains unmodulated and activation is prolonged, which places stress on the poorly regulated system and leads to pathology over time (Martin & Pihl, 1986). Martin and Pihl (1985) referred to this as the ‘stress-alexithymia hypothesis’, a theory that is congruent with more recent theoretical advances in the study of stress and ‘allostatic load’ (McEwen, 2008; McEwen & Gianaros, 2010; Schulkin, 2011).

Interestingly, studies have indeed indicated poor integration between the cognitive and physiological aspects of emotional states among individuals with high alexithymia (Connelly & Denney, 2007; Timoney & Holder, 2013). An experimental study by Connelly and Denney (2007) showed sizeable discrepancies between the measured physiological indicators of distress and subjective ratings (cognitive appraisals) of distress among individuals with HA after being subjected to stress tests. Furthermore, examinations found marked heightened sympathetic activity in individuals with HA some time after the stress test had concluded, compared to individuals with LA whose autonomic activity had returned to baseline (Connelly & Denney, 2007). This finding lends support to previous work by Martin and Pihl (1985) and converges with more recent research showing poor interoception (awareness of internal physiological state) among individuals high in alexithymia (Murphy, Catmur, & Bird, 2018; Murphy et al., 2017).

Two emotion regulation strategies that have been investigated among individuals are those of ‘cognitive reappraisal’ and ‘expressive suppression’ (Gross & John, 2003; Swart, Kortekaas, & Aleman, 2009). The use of cognitive reappraisal entails the reframing of a given emotion-activating situation, in order to elicit a more desirable emotion than the initial perspective

elicited (Swart et al., 2009). Expressive suppression entails inhibiting the behavioural expression of emotion (Gross, 2014). Research by Swart and colleagues (2009) indicates that individuals scoring high in trait alexithymia are more likely to utilize suppressive regulation strategies. A meta-analysis by Webb, Miles and Sheeran (2012) concluded that the suppressive regulation strategy is maladaptive, reporting the following findings associated with its use: decreases positive emotion, but not negative emotion; prolonged sympathetic arousal; symptoms of depression. However, they found that the use of the reappraisal strategy is an adaptive emotion regulation strategy, as individuals can more successfully down-regulate the affective state, and flexibly adjust to the activating event (Webb et al., 2012).

- **Maladaptive coping behaviours**

Poor emotion regulation and its relationship to maladaptive coping behaviours has long been established in the literature (Dijk, 2012; Koerner & Dimeff, 2007; Linehan, 1993). This finding holds true in the literature on alexithymia in relation to emotion regulation difficulties and maladaptive behaviours. Several studies agree that deficits in identifying and comprehending emotions are associated with emotion dysregulation and maladaptive coping behaviours (Boden & Renee, 2015; Contreras & Cano, 2016; Zuddas, 2012). Moreover, other factors associated with alexithymia, such as: higher rates of negative emotions, reduced experience of positive emotions (Yelsma, 2007), and a tendency to use poor and ineffective emotion regulation strategies (Swart et al., 2009), makes these individuals especially vulnerable to emotion dysregulation (Robertson, Daffern, & Bucks, 2012) and maladaptive coping behaviours (Morie & Ridout, 2018).

The literature has associated high alexithymia with increased risk of engaging in maladaptive coping behaviours, such as self-harm (Borrill, Fox, Flynn, & Roger, 2009; Bresin, 2014). A

study by Lüdtké, In-Albon, Michel and Schmid (2016) found that high alexithymia was a significant predictor of non-suicidal self-injury (NSSI) among female adolescents, with a rate of 69.6%. Paivio and McCulloch (2004) reported similarly high rates of 44% among female university students. These results were also mirrored by Borrill and colleagues (2009) who found a positive relationship between alexithymia and self-harming behaviour among a sample of university students. Additionally, regression analysis identified alexithymia as an independent risk factor for self-harm (Borrill et al., 2009; Timoney & Holder, 2013) and is associated with a higher risk of suicidality (Hintikka et al., 2004). Studies also indicate that alexithymia is linked to higher rates of aggression and impulsive behaviour, often related to difficulty with emotion regulation (Fossati et al., 2009). This is congruent with a recent review of the literature, which found that high alexithymia was a substantial risk factor for recidivism among violent offenders (Rotem, van Lieshout, Ben-David, & Ben-David, 2019). HA has also been associated with the perpetration of intimate partner violence (Teten, Miller, Bailey, Dunn, & Kent, 2008).

Other studies have also shown that emotion dysregulation and alexithymia are strong moderating factors in alcohol abuse (Khosravani, Bastan, Ghorbani, & Kamali, 2017; Veilleux, Skinner, Reese, & Shaver, 2014) and that alexithymia particularly correlates with severity of use and craving (Pedersen, Sørensen, Bruun, Christensen, & Vedsted, 2016). This relation has been found in previous work by Thorberg and colleagues (2009) who reported a substantial 45-67% prevalence rate of HA among individuals who abuse alcohol. Moreover, alexithymia has also been associated with a host of other maladaptive behaviours, such as pathological gambling (Toneatto, Lecce, & Bagby, 2009), internet addiction (Scimeca, Bruno, Cava, Pandolfo, Muscatello, & Zoccali, 2014), substance abuse (Fox, Hong, & Sinha,

2008), binge eating (Casagrande, Boncompagni, Forte, Guarino, & Favieri, 2019), and gaming addiction (Gaetan, Brejard, & Bonnet, 2016).

3.2.2 Interpersonal Functioning

The literature shows that alexithymic individuals do not only struggle with healthy intrapersonal functioning, but tend to report higher rates of interpersonal difficulties, such as lower perceived social support (Saikkonen, Karukivi, Vahlberg, & Saarijarvi, 2018), higher relationship anxiety (Hesse & Floyd, 2011), loneliness (Qualter, Quinton, Wagner, & Brown, 2009), and lower relational satisfaction (Grynberg, Berthoz, & Bird, 2018). In light of recent developments in interpersonal neurobiology, this finding has grave long-term implications for the well-being and health of these individuals. Research shows that the ability to feel attached, understood, and connected with others is associated with better long-term health outcomes, resilience, and coping strategies (Porges, 2017). Moreover, previous research has related good interpersonal relationships to increased: life satisfaction (Holder, Love, & Timoney, 2014), happiness (Lyubomirsky, King, & Diener, 2005), reported well-being (Diener & Tov, 2007) and self-esteem (Voss, Markiewicz, & Doyle, 1999). Consequently, the research on alexithymia has explored several mechanisms and factors related to poor interpersonal functioning in order to elucidate this matter.

- **Insecure Attachment**

The study of alexithymia and interpersonal relationships has been approached from various lenses, including that of “attachment theory”. A study by Fossati and colleagues (2009) explored the relationship between alexithymia and adult attachment style among 637 individuals in their early adulthood. Findings showed a significant positive association between anxious and avoidant attachment with high alexithymia. This outcome was later

replicated in an adolescent sample by Besharat and Khajavi (2013), and a sample of university students by Qaisy and Darwish (2018). Both studies report a strong correlation between alexithymia and insecure attachment, with significant predictive value for both avoidant and ambivalent attachment. High alexithymia has been associated with significant attachment anxiety (Hesse & Floyd, 2011), fear of separation (Thorberg et al., 2011), interpersonal constraint (Oskis et al., 2013), and overall poorer parental attachment (Yearwood et al., 2017).

- **Relationships**

Insecure attachment style has been identified as an important risk factor for relational difficulties (Wallin, 2007), a finding that is clearly observable in the literature exploring the role of alexithymia in interpersonal functioning. A study by Holder, Love and Timoney (2014) sought to evaluate the impact of high alexithymia on the quality of romantic relationships among university students, controlling for the Big Five personality traits as possible mediating factors. The study found an inverse relationship between high levels of alexithymia and the reported quality of relational satisfaction, trust, commitment and romance. Several other studies have also tied alexithymia to a number of difficulties pertaining to intimate relationships, such as decreased sexual satisfaction in romantic relationships (Humphreys, Wood, & Parker, 2009) and lower marital quality (Frye-Cox & Hesse, 2013).

Another study found that alexithymia was inversely related to desire for connection and expressed affection towards others among a sample of university students and outpatient mental health care users (Vanheule, Desmet, Meganck, & Bogaerts, 2007). The study also found that individuals rating high in alexithymia were typically perceived by others as aloof,

cold and non-assertive. These findings are in agreement with a number of other studies that have linked high alexithymia to social avoidance (FeldmanHall, Dalgleish, & Mobbs, 2013) and infrequent social interaction (Gerber, Girard, Scott, & Lerner, 2019). Several studies have also found that alexithymic individuals report lower perceived social support (Humphreys, Wood, & Parker, 2009; Karukivi et al., 2011; Saikkonen, Karukivi, Vahlberg, & Saarijarvi, 2018). A study by Popa-Valea (2014) investigating burnout among physicians (n=79) found that alexithymia was inversely related to perceived social support, and positively associated with perceived stress, two factors associated with burnout. Interestingly, Bodenmann and Cina (2005) report that supportive social relationships are generally linked to reduced stress.

- **Impaired Mentalization**

The ability to be cognizant of one's emotions, as well as the emotions, desires and intentions of others is necessary for maintaining healthy interpersonal relationships (Grynberg, Berthoz, & Bird, 2018). This ability has been referred to as 'mentalization', a capacity that is fostered in the attachment relationship (Fonagy & Target, 1997; Meins, Fernyhough, & Russell, 1998). Perhaps unsurprisingly, it has been noted in the literature that individuals rating high in alexithymia display impaired mentalizing (Schimmenti, 2017). A study by Reker and colleagues (2010) found that alexithymic individuals performed markedly poorer than non-alexithymic individuals on tasks requiring emotion recognition in others. Cook, Brewer, Shah and Bird (2013) report similar findings among alexithymic individuals, noting a marked impairment in the ability to correctly infer the emotions portrayed by facial expressions. Moreover, alexithymia has also been associated with diminished capacity for empathy (Mikolajczak et al., 2007; Moriguchi et al., 2009) and difficulties with inferring the mental states of others (Lane et al., 2015).

- **Pro-social Behaviour**

Interestingly, research has found a variety of connections between alexithymia and increased risk of engaging in socially deviant behaviour. Vanheule, Vandenberg, Verhaeghe and Desmet (2010) found positive relationships between high alexithymia ratings and self-interested behaviour, as well as decreased desire for relational connection. Yet another study by Vanheule, Meganck, and Desmet (2011) found that HA was strongly associated with social detachment. Several other studies investigating the association between high alexithymia ratings and pro-social behaviour note similar trends, such as: higher likelihood of engaging in relationships on utilitarian terms, with decreased empathic concern for others (Grynberg, Berthoz, & Bird, 2018), higher rates of deceitfulness in relationships (Al Aïn et al., 2013; Brewer et al., 2015), increased likelihood of engaging in behaviours that pose risk to others (Powell, Coll, Trotter, Thobro, & Haas, 2011), and less likelihood of engaging in altruistic behaviour (Grynberg et al., 2012). Strickland and colleagues (2016) report a high prevalence rate of elevated alexithymia among violent offenders. This was corroborated by Craparo, Gori, Petrucci, Cannella and Simonelli (2014) who also associated HA with an increased risk of intimate partner violence. Some have reasoned possible mechanisms by appealing to findings indicating individuals with HA have impaired perception of pain in others (Bird et al., 2010; Moriguchi et al., 2007).

3.3 ALEXITHYMIA: CLINICAL UTILITY

Over the past two decades, alexithymia has been removed from the proverbial academic shelf of ‘niche interests’ and is more frequently placed in clinical contexts. (Taylor, Bagby, & Luminet, 2018). The literature has demonstrated that alexithymia impacts upon the course of illness and treatment outcomes of patients under both psychiatric and medical care. Its clinical utility has been increasingly noted as useful for informing treatment practices in

several ways. Studies have indicated that high levels of alexithymia impact on the development and course of pathology, in aspects such as: symptomology, illness perception, coping behaviours, and treatment outcomes (Porcelli & Taylor, 2018).

3.3.1 PROGNOSTIC FACTORS:

- **Illness Response and Perception**

Several studies have indicated that high alexithymia ratings may adversely affect illness behaviour by impacting upon symptom perception and response in psychiatric and medical conditions. This has often been attributed to likely misappraisal of affective and physiological states due to poor somatic attunement and interoceptive awareness among alexithymic individuals (Murphy, Catmur, & Bird, 2018). Rufer and colleagues (2014) found that high alexithymia ratings were associated with reduced treatment-seeking and increased symptom chronicity among individuals with anxiety disorders. Carta and colleagues (2013) found that individuals with high alexithymia scores tend to delay treatment-seeking behaviour during acute myocardial infarction. This finding was replicated in a study by Preti and colleagues (2013) who also noted delays in seeking emergency care among individuals with HA during acute episodes of myocardial infarction. Another study found that alexithymia was associated with overall lower health-related quality of life, despite controlling for possible psychiatric and sociodemographic mediating factors (Mattila, Saarni, Salminen, Huhtala, Sintonen, & Joukamaa, 2009). Similarly, Picardia and colleagues (2007) found that elevated levels of alexithymia were associated with higher subjective ratings of burden of condition among patients suffering with skin disease. These findings were later replicated among individuals suffering with psoriasis by Innamoratie and colleagues (2016) who also reported a positive association between HA and lower health-related quality of life.

- **Course and Management of Conditions**

A study by Phillips, Wright, and Kent (2013) found that HA significantly predicted IBS diagnoses and symptom severity among a sample comprising clinical subjects and control subjects. A broader study of gastrointestinal disorders by Carrozzino and Porcelli (2018) linked high alexithymia scores to increased visceral sensitivity, higher rates of symptom endorsement, increased duration of symptoms and higher rates of health care use. They further reported that individuals who had higher levels of alexithymia tended to endorse more severe gastrointestinal symptoms than the lower alexithymia cohort. Likewise, research on bronchial asthma has associated high alexithymia with poorer control over respiratory symptoms (Amore et al., 2013) and greater symptom severity (Ghorbani et al., 2017). Endocrinologists have also linked it to poorer glycemic control in Type 1 and 2 diabetes (Housiaux, Luminet, & Dorchy, 2016; Luca, Luca, & Mauro, 2015) as well as heightened risk for developing Type 2 diabetes (Lemche, Chaban, & Lemche, 2014).

A longitudinal study by Honkalampi and colleagues (2007), investigating the impact of alexithymia on Finnish psychiatric patients, found that high alexithymia scores were associated with greater symptom severity and poorer recovery rates among clinically depressed patients. Li, Zhang, Gou and Zhang (2015) had similar findings, with a positive association between alexithymia and severity of depression. Another study by Berardis and colleagues (2019) found that high alexithymia scores were linked to the severity of symptoms experienced among outpatients with post-traumatic stress disorder, as well as increased frequency of suicidal ideation. Research has also indicated that elevated alexithymia among individuals with schizophrenia and other psychotic disorders predicts poorer social functioning compared to those with lower alexithymia scores (Kimhy et al., 2016; Ospina,

Shanahan, Perez-Rodriguez, Chan, Clari, & Burdick, 2019). This has been related to poorer treatment outcomes for this key area of therapeutic focus.

- **Poorer Treatment Outcomes**

Several studies have found that alexithymia is associated with poorer treatment outcomes among patients with gastrointestinal disorders such as gallstones (Porcelli et al., 2007), irritable bowel syndrome (Porcelli, De Carne, & Leandro, 2017), and dyspepsia (Porcelli & Taylor, 2018). Among cancer patients, Porcelli and colleagues (2011) found that high alexithymia ratings and heightened perception of pain were related to poorer treatment outcomes and had a significant influence on the symptomology and manner in which cancer patients sought to cope with the illness and treatments.

Moreover, the research has indicated that certain therapeutic approaches, such as insight-focussed therapies, appear to be less effective and produce poorer outcomes in treating certain psychiatric illnesses among individuals who are highly alexithymic (Leweke, Bausch, Leichsenring, Walter, & Stingl, 2009; Nemiah & Sifneos, 1970; Samur, Tops & Schlinkert et al., 2013; Taylor, Bagby, & Luminet, 2018). A study by Renzi, Di Trani, Di Monte and Tambelli (2018) evaluated the impact of alexithymia on women who were receiving Assisted Reproductive Treatment (ART). They found that high alexithymia ratings predicted a much lower quality of life for them during the ART process and was likely to impact on the success of the treatment. The role of alexithymia in medical and psychiatric illnesses and recovery is complex and multidimensional. However, the association is clear, and has presented clinicians with the opportunity to engage with patients more thoughtfully and approach treatment from multimodal perspectives - often with better results (Castelnuovo, Giusti, Manzoni, Saviola, Gatti, & Gabrielli, 2016; Porcelli & Taylor, 2018; Tesio, Goerlich, Hosoi,

& Castelli, 2019; Vadini et al., 2019).

3.4 ALEXITHYMIA: RELEVANCE TO THE SOUTH AFRICAN CONTEXT

Despite the myriad of health issues associated with alexithymia, little research on this subject has been conducted in South Africa. Whilst the high prevalence of mental illnesses and medical conditions in South Africa makes this area of inquiry especially important, it has likely been stymied by the absence of valid and reliable instruments for assessing alexithymia in this population. Further complicating this matter is the great sociocultural diversity among South Africans, which plays a large role in the shaping of the construct of alexithymia (Le, Berenbaum, & Raghavan, 2002). Thus, in light of both the great burden of illness and sociocultural diversity in SA, the need for a culturally adapted and validated instrument for assessing alexithymia in South Africa is evident.

4. ASSESSING ALEXITHYMIA

After defining and coining the construct of 'Alexithymia' (as discussed in the introduction), Sifneos (1973) set out to design a questionnaire in order to operationalize his observations and measure levels of alexithymia in psychosomatic patients. This endeavour resulted in the creation of the first objective assessment of alexithymia, the *Beth Israel Hospital Psychosomatic Questionnaire* (BIQ). The BIQ indeed confirmed high rates of alexithymia among psychosomatic patients but, in addition, yielded surprising results about other patient populations (Sifneos, 1973). Individuals with other psychiatric disorders, such as personality disorders and substance use disorders, were found to exhibit similarly high levels of alexithymia (Luminet, Bagby, & Taylor, 2018).

The development of a psychometric scale enabled researchers to gain a clearer picture of the prevalence and occurrence of alexithymia across various patient groups. Findings made it abundantly clear that alexithymia was not pathognomonic of psychosomatic disorders, as had been previously thought, leaving more questions than answers. This emerging area of research fueled the development of a number of other self-report and clinician-rated alexithymia scales, including the *Schalling-Sifneos Personality Scale* (Apfel & Sifneos, 1979), the *Minnesota Multiphasic Personality Inventory Alexithymia Scale* (Kleiger & Kinsman, 1980), and the *Alexithymia Provoked Response Question* (Krystal, Giller, & Cicchetti, 1986). However, it was the development of the *Toronto Alexithymia Scale* and its subsequent iterations that truly served to further propel and broaden the scope of the research on alexithymia (Bagby, Parker, & Taylor, 2020).

4.1 THE TORONTO ALEXITHYMIA SCALES

Inadequate psychometric properties plagued early alexithymia scales, consequently limiting research (Bagby, Parker, & Taylor, 2020). In response to this, Taylor, Ryan and Bagby (1985) developed the *26-Item Toronto Alexithymia Scale (TAS)*. The 26-Item TAS was indeed far more psychometrically sound than other scales, and produced a four-factor structure upon analysis: (Factor 1) deficits in distinguishing emotions; (Factor 2) trouble with explaining emotions; (Factor 3) impoverished daydreaming and fantasy-life; and (Factor 4) a thinking style that is oriented to external phenomena (Bagby, Parker, & Taylor, 2020; Taylor, Ryan, & Bagby, 1985).

However, further causal modelling investigations revealed that items loading onto Factor 3 (impoverished daydreaming and fantasy-life) demonstrated overall poor theoretical fit in relation to the other aspects of alexithymia (Haviland, Hendryx, Cummings, Shaw, &

MacMurray, 1991). Taylor, Bagby, and Parker (1992) subsequently developed the TAS-Revised (TAS-R), which effectively improved the internal consistency, reliability and validity of the scale. Moreover the scale decreased cross-loadings between Factor 1 and Factor 2 and increased Factor 3's item-total correlations. Finally, after further analyses and refinement of the TAS-R, Bagby and colleagues (1994) rendered what has become the most widely utilized and validated alexithymia assessment in the world, the 20-Item Toronto Alexithymia Scale (TAS-20).

4.1.1 CONSTRUCTION OF THE TAS-20

The 20-item Toronto Alexithymia Scale (TAS-20) is the outcome of an effort to develop a theory-driven measure for assessing alexithymia that would be efficient, valid, and reliable (Bagby et al., 1994a). It is the result of a series of studies conducted by Bagby and colleagues (1994a, 1994b) over a period of 10 years, and included two prior versions before its final iteration. It has since become the most widely utilized measure for assessing alexithymia in the world (Bagby, Parker, & Taylor, 2020). A recent review in the *Journal of Psychosomatic Research* found that 3662 journal articles have referenced either one or both of the initial validation studies of the TAS-20 over the last two decades (Bagby, Parker & Taylor, 2020). Moreover, the review indicates that the TAS-20 has, to date, been validated and translated into approximately 30 different languages since its development 25 years ago (Bagby, Parker & Taylor, 2020).

- **Validity and Reliability**

After 25 years of research with the TAS-20, results remain largely the same. Whereas the global scale, DDF and DIF subscales have regularly demonstrated good internal consistency, the EOT subscale has exhibited lower estimates of internal consistency reliability (Parker,

Taylor, & Bagby, 2003; Preece et al., 2017b; Sekely et al., 2018). A number of studies have reported alpha coefficient estimates for the EOT subscale that fall below the recommended 0.70 score, with several even falling below 0.60 (Cleland, Magura, Foote, Rosenblum, & Kosanke, 2005; Kooiman, Spinhoven, & Trijsburg, 2002; Loas et al., 2001; Parker, Taylor, & Bagby, 2003; Taylor, Bagby, & Parker, 2003; Thorberg et al., 2010). Despite these findings, the authors of the TAS-20 have advised against utilizing subscale scores in isolation, arguing that the total scale score is the best representative indicator of alexithymia (Bagby, Parker, & Taylor, 2020). Moreover, although the EOT subscale has demonstrated generally lower internal consistency, it has demonstrated criterion validity and still measures a key component of the theoretical construct of alexithymia (Bagby, Parker, & Taylor, 2020; Preece et al., 2017b).

Interestingly, the EOT subscale has specifically garnered lower coefficient alpha estimates in TAS-20 translation studies (Sekely et al., 2018). Two plausible explanations have been offered for this finding. Some have argued that reverse-scored items may interfere with factor structure outcomes in self-report scales (van Sonderen, Sanderman, & Coyne, 2013). When running a confirmatory factor analysis, this method effect usually causes the model to specify an additional factor due to response bias emerging from the reverse-scored items (Bagby, Parker, & Taylor, 2020; van Sonderen, Sanderman, & Coyne, 2013). This has significant implications for the TAS-20, as the majority of the reverse-scored items in the scale are indeed factor-components of the EOT scale. It has therefore been suggested that the lower internal consistency reliability of the EOT subscale across translation studies may be the result of a reverse-scored item method effect (Preece et al., 2017b). Others have argued that cultural factors likely account for these variances in measuring alexithymia (Dere, Falk, & Ryder, 2012).

4.1.3 TAS-20: SOCIODEMOGRAPHIC VARIANCES

Overall, the TAS-20 has proven a psychometrically sound measure for assessing alexithymia across cultures, demonstrating acceptable internal consistency reliability and strong support for factorial validity, criterion validity and concurrent validity. Nevertheless, researchers have highlighted variances in TAS-20 scores across different sociodemographic contexts, such as: language, age, birth cohort, sex, gender, social class and education level. It has been argued that such variances warrant further consideration of the role sociocultural factors play in shaping facets of the construct of alexithymia, particularly the EOT subfactor (Ryder, Sunohara, Dere, & Chentsova-Dutton, 2018).

- **Cultural-linguistic Contexts**

As discussed previously, the TAS-20 has been translated into approximately 30 different languages and has been adapted for several cultural contexts (Bagby, Parker & Taylor, 2020). Whilst it is acknowledged that the TAS-20 has demonstrated satisfactory reliability in most studies across linguistic and cultural contexts, the issue of lower internal consistency for the EOT subscale (as compared to the other two subscales and total scale score) has been questioned. Several researchers have noted that lower estimates of internal consistency particularly occur in TAS-20 translations, and less so when the primary language of administration is in English (Meganck, Vanheule, & Desmet, 2008; Säkkinen et al., 2007; Tsaousis et al., 2010; Zimmermann et al., 2007). While it is possible that this might be the result of difficulties with reaching cultural and linguistic equivalence in the translation process, it has also been postulated that this may be an indication that the construct of EOT lacks coherency in certain cultural contexts (Ryder, Sunohara, Dere, & Chentsova-Dutton, 2018).

- **Age and Birth Cohort**

Research on the associations between alexithymia and age has generated mixed results overall. Whilst some have found no relationship (Franz et al., 2008; Lane, Sechrest, & Riedel, 1998) others have reported a positive relationship between increase in age and alexithymia (Honkalampi et al., 2000; Mattila et al., 2006). It has also been argued that age effects are only consistently found among subjects 75 years of age and older, where alexithymia appears to increase with age (Hiirola et al., 2017). However, it has been found that EOT scores in particular tend to be elevated among individuals of 60 years and older, causing a potential overestimation of rates of high alexithymia among this demographic (Timoney & Holder, 2013). Interestingly, a study by Henry and colleagues (2006) suggested that the elderly typically engage in more utilitarian thinking, which may be incorrectly evaluated as evidence of alexithymia. Others have suggested that birth cohort effects may also impact on alexithymia scores, owing to sociocultural changes among populaces (Lane, Sechrest, & Riedel, 1998). This argument has pointed to recent research in China, which has reported a gradual sociocultural shift towards individualist self-construal, largely due to modernization (Sun & Ryder, 2016). This notion is highly plausible, especially in light of findings by Dere, Falk and Ryder (2012) indicating that individualist subjects typically score lower in EOT than collectivist subjects. They conclude that the cultural value of self-construal greatly shapes thinking style, which impacts upon EOT.

- **Education Level and Social Class**

The nature of the relationship between social class, education level and alexithymia remains unclear (Ryder et al., 2018). Several studies have found a relationship between high alexithymia and lower social class, as defined by income level (Brosig et al., 2004; Franz et al., 2008; Honkalampi et al., 2000; Kokkonen et al., 2001; Lane, Sechrest, & Riedel, 1998;

Salminen et al., 1999). Moreover, a number of other studies have associated high alexithymia with lower levels of education, a factor closely related to socioeconomic status (Franz et al., 2008; Honkalampi et al., 2000; Horwitz et al., 2015; Joukamaa et al., 1996; Kokkonen et al., 2001; Lane, Sechrest, & Riedel, 1998; Mattila, Salminen, Nummela, & Joukamaa, 2006; Parker, Taylor, & Bagby, 2003; Salminen et al., 1999). A few studies have indeed diverged from these findings, reporting no significant relations (Joukamaa et al., 1996; Lane, Sechrest, & Riedel, 1998; Parker, Taylor, & Bagby, 1989). However, despite the myriads of results yielded in these studies, little is understood about the directionality of the relationship. Emerging theories have suggested links between diminished academic outcomes, lower income levels and factors associated with high alexithymia, such as poorer self-control, lower goal-attainment, ineffective coping strategies, and lower self-efficacy (Faramarzi & Khafri, 2017; Huang, Tzeng, Lin, & Chung, 2017; Mattila, Saarni, Salminen, Huhtala, Sintonen, & Joukamaa, 2009; Parker, Austin, Hogan, Wood, & Bond, 2005).

- **Sex and Gender**

Although some studies have reported no differences between men and women (Joukamaa et al., 1996; Säkkinen et al., 2007), the majority of studies show that men exhibit higher levels of alexithymia (Carpenter & Addis, 2000; Honkalampi et al., 2000; Horwitz et al., 2015; Levant & Wong, 2013). In 2009 Levant and colleagues conducted a meta-analysis of 41 studies on gender differences in alexithymia in both clinical and non-clinical samples, revealing consistent findings of higher mean levels of alexithymia in men (Levant, Hall, Williams, & Hasan, 2009). Furthermore, the literature indicates that men generally score higher on the EOT subscale than women (Karukivi et al., 2011; Moriguchi et al., 2007; Picardi et al., 2011; Säkkinen et al., 2007), and in a number of cases score higher on both the EOT and DDF subscales (Franz et al., 2008; Karukivi et al., 2015; Mattila et al., 2006;

Tsaousis et al., 2010). Levant and colleagues (2009) proposed the notion of “male normative alexithymia”, which holds that gender-role socialization may be responsible for higher rates of alexithymia among men, who typically learn to restrict emotional expression. Interestingly, Iranian women, who are socialized to be more emotionally restrictive than Iranian men, typically score higher on the EOT subscale than their male counterparts (Besharat, 2007).

5. ALEXITHYMIA: CROSS-CULTURAL VARIANCE

The literature has indeed documented variations in levels of alexithymia as measured by the TAS-20 in cross-cultural research. More specifically, the research has steadily noted higher levels of alexithymia among individuals from East Asian contexts compared to individuals of Western European contexts (Dere, 2011). Early comparative research by Dion (1996) utilized the TAS-20 to investigate the differences in levels of alexithymia between individuals of Western European and Chinese descent, using native language as proxy for ethnicity. Dion (1996) reported higher levels of alexithymia among individuals of Chinese descent and suggested that this was likely a result of cultural differences in relating to emotions. He further suggested that East Asian culture more strongly emphasized somatic, as opposed to psychological forms of expressing emotions (Dere et al., 2012; Dion, 1996).

A later study by Le, Berenbaum, and Raghavan (2002) similarly reported higher measures of alexithymia among subjects of Asian descent, as compared to individuals of European descent. Furthermore, the sample group of Asian descent were also found to be more prone to somatic expression of emotion (Le, Berenbaum, & Raghavan, 2002). A Chinese TAS-20 translation and validation study conducted in mainland China by Zhu and colleagues (2007) (which replicated the three-factor solution and demonstrated acceptable psychometric

properties) found higher overall levels of alexithymia in their Chinese sample groups compared to a similar Canadian, English-speaking group. However, Zhu and colleagues (2007) failed to report subscale results with the total-scale score results, thus limiting interpretability of the outcome.

Ryder and colleagues (2008) sought to follow up Zhu and colleagues' (2007) study with another comparative investigation of differences between Chinese and Euro-Canadian samples. Their study reported markedly higher alexithymia levels in the Chinese sample. Interestingly, it was found that the large group difference was mediated by significantly higher scores on the externally-oriented thinking (EOT) component in the Chinese group, whilst the other two subscales (DDF and DIF) measured no inter-group difference (Ryder et al., 2008). A recent study by Lo (2014) explored further cultural factors possibly underlying the tendency for Asian sample groups to exhibit higher levels of alexithymia than Western sample groups. This study again replicated previous findings, reporting higher levels of alexithymia among Asian-Canadian students compared to non-Asian Canadian students. Interestingly, the study further revealed that the East Asian Confucian values of social order and purity specifically mediated higher levels of alexithymia (Lo, 2014). The author concludes, in agreement with previous researchers, that variances in cultural values between Asian and Western populaces indeed play a significant role in influencing overall levels of alexithymia as measured by the TAS-20 (Lo, 2014).

5.1 CULTURAL UNPACKING

- **Self-Construal and Norms of Emotional Expression**

The cultural concept of 'self-construal' has been a subject of particular interest among cross-cultural researchers of late, as research consistently indicates that levels of alexithymia are

typically higher in the East Asian collectivist cultures, such as in China (Dere, 2011; Dere et al., 2012; Ryder et al., 2008; Ryder et al., 2018). The cultural focus on collective wellbeing and harmony has undoubtedly shaped the norms and values regarding the expression of emotions, resulting in the Chinese culture often being viewed as more “emotionally restrictive” (Ryder & Chentsova-Dutton, 2012). Ryder and colleagues (2008) note that whereas individualist cultures tend to be oriented to internal experience of emotion, in Chinese culture much of the emotional experiences transpire in the context of relationships. Consequently, members of this culture are more sensitive to contextual cues and events, and exercise emotional self-restraint in service of social harmony (Lo, 2014).

A compelling argument is thus made that the observed higher levels of EOT in East Asian cultural groups could be explained by the collectivist cultural values that prioritize focus on interpersonal harmony, contextual cues and unity, giving less significance to the internal experiences of the individual (Heine, 2001; Ryder et al., 2008). As a result, higher levels of EOT are likely promoted by the cultural values that serve to maintain social harmony and interpersonal focus, as opposed to an internally-oriented focus (Dere et al., 2012). Whereas the DDF and DIF factors have received wide support in the literature across cultures, the EOT factor has often demonstrated poorer reliability and poorer loading onto the overall measure of alexithymia (Taylor et al., 2018). Interestingly, research has also found that the EOT component of alexithymia is less frequently related to psychiatric and medical conditions than DDF and DIF (Dere et al., 2012). Taken together, this has raised questions regarding the cross-cultural validity of the EOT subscale, and whether the culturally shaped EOT included in the construct may be resulting in incorrect false positives - possibly pathologizing culturally normative experiences of emotion in non-Western cultural contexts (Dere et al., 2012).

6. ALEXITHYMIA IN THE SOUTH AFRICAN CONTEXT

There is an evident need for further research on the cross-cultural validity of the construct of alexithymia and its cultural shaping. It is noted that a prolific body of cross-cultural research on alexithymia has explored this matter in an East Asian sociocultural context (Ryder et al., 2018). However, a lack of similar research on alexithymia in an African cultural context has been observed in the literature, leaving a potentially valuable gap in the research. Pursuing this line of inquiry in an African context will allow for further evaluation of the validity of the TAS-20 and exploration of alexithymia from an African cultural perspective.

- **Alexithymia in the Zulu Culture**

South Africa is home to a number of different tribes that emerged from the African indigenous, ethnic Bantu language group. However, this study will explore alexithymia specifically in South Africa's largest Bantu group, the Zulu culture. It must be noted that the focus of this study will be on Zulu *culture*, albeit the term 'Zulu' may generally refer to the language spoken in this culture ('isiZulu'), the culture itself, as well as the ethnicity (Daniels, 2018). Interestingly, the Chinese and Zulu cultures are informed by two broadly similar (yet uniquely nuanced) value systems, that share at their cores an emphasis on the collective community, as opposed to the individual (Bell & Metz, 2011). The concept of 'Ubuntu' is used to describe the Zulu cultural value system and underlying philosophy (Kamwangamalu, 1999). This value system is oriented toward a "collectivist" self-construal, in which members are interdependent and define themselves in relation to their community (Triandis, 2001). Moreover, this value system emphasizes collective wellbeing over personal ambition, pursuit of interpersonal harmony, unity, contribution to the group, and a focus on interrelatedness and contextual processes more than to their internal personal experiences (Nel et al., 2012).

A culture with a collectivist-oriented self-construal, such as the Zulu culture, will produce a vastly different model of mental health, healing practices, and norms relating to emotional expression than the Western individualist culture in which the construct of alexithymia was conceived (Kirmayer, 2006). This is most certainly observed in the research findings and critiques from East Asian cultures, where alexithymia is typically higher (Ryder et al., 2008). It is reasonable to expect that research on alexithymia in the Zulu culture will yield similar findings to those of Ryder and colleagues (2008) in mainland China, due to the shared emphasis on collectivist self-construal in both the Chinese and Zulu culture. This creates an interesting point of comparison for the construct of alexithymia as it occurs across these two cultures. It is assumed that this underlying form of self-construal, with its emphasis on interpersonal harmony and contextual processes, would produce similarly unreliable or elevated scores on the EOT component in the TAS-20. If so, this would serve to further highlight the need to consider cultural context in the assessment and interpretation of alexithymia in future research.

CONCLUSION

Alexithymia is a dimensional trait that has been associated with a host of medical and psychiatric conditions in the literature. Moreover, high levels of alexithymia have also been found to undermine treatment outcomes in several conditions. A concise and convenient alexithymia assessment instrument may prove valuable for clinical use and research purposes in a South African context where rates of psychiatric and medical illnesses are high. The Twenty-Item Toronto Alexithymia Scale (TAS-20) has been translated and effectively used for these purposes in various contexts and has demonstrated good validity and reliability in most cases. However, a few issues have been highlighted in the literature, namely: (1) lower internal consistency in the EOT subscale in a number of translated TAS-20 studies; (2)

specifically lower internal consistency in the EOT subscale among collectivist East Asian samples; (3) elevated levels of alexithymia among collectivist East Asian sample groups (largely due to elevated EOT scores).

It is postulated that sociocultural factors may specifically impact on the EOT subscale, particularly among cultures that hold different values with regards to self-construal and the relative importance of individual internal emotional experiences (such as in East Asian cultures). This raises the issue of whether this factor has been pathologized from within a Western cultural framework, or whether it indeed holds validity across diverse linguistic and sociocultural contexts. It is further noted that alexithymia has been most extensively investigated in Eastern and Western sociocultural contexts (chiefly with the TAS-20), whereas the subject has hardly received any attention within the African context. It is suggested that this is likely due to the lack of a valid and reliable psychometric instrument with which to investigate this subject. This represents a substantial gap in a growing body of literature on alexithymia, and is germane to both researchers and clinicians in several fields.

The present study aimed to address several issues reviewed in the literature by conducting a cross-cultural adaptation, validation, and psychometric evaluation of the TAS-20 for use with a Zulu population. This marked the first exploration of alexithymia (as assessed by the TAS-20) in an African context. Moreover, preliminary insights were gained regarding the impact of sociocultural factors on alexithymia.

CHAPTER 3

THEORETICAL FRAMEWORK

3. OVERVIEW OF THEORETICAL ACCOUNTS

A brief outline of the psychological, biological and sociocultural perspectives and their contributions to the literature on alexithymia follows, concluding with a discussion of a burgeoning line of more integrative research, namely the ‘Theory of Constructed Emotion’ (TCE) (Barrett, 2017).

3.1 PSYCHOLOGICAL PERSPECTIVES:

- **Psychoanalytic Origins**

The concept of alexithymia was born out of the clinical work of psychoanalysts treating patients with psychosomatic illnesses (Taylor & Bagby, 2013). Psychoanalytic models sought to address issues of treating psychosomatic illness and understanding the pathogenesis of the symptomology. Alexander (1950) suggested the idea of a ‘specific dynamic conflict’, whereby unacceptable affects and fantasies are constantly repressed and allowed no expression, leaving residual affect-related somatic arousal. No symbolic manifestation or other conversion is produced in this model. Instead, the somatic symptom is argued to arise from actual damage to the organ, as a result of ongoing autonomic hyper-arousal caused by inability to discharge affect (Alexander, 1950). The theory of conversion was drawn on by Deutsch (1959) who argued that repressed fantasies, originating from distressing drives, would manifest in symbolic form as a somatic symptom. These drives were pre-genital and pre-oedipal in nature, according to Deutsch (1959), who further added that the notion of conversion could be extended to incorporate the functioning of organs and physiology.

Colleagues, Dr. Peter Sifneos and Dr. John Nemiah, both working in the psychiatric services at the Massachusetts General Hospital in 1964, happened to share special interests in psychosomatic medicine (Taylor, 2018). Both adherents to popular psychoanalytic views of psychosomatic illness at the time, found little therapeutic success in their work with these patients. Frustrated with the gruelling treatment regime and lack of progress, Sifneos (1967) decided to approach his clinical work with psychosomatic patients from an alternative perspective, drawing on some earlier work by Ruesch (1948) and MacLean (1949) who had started pointing to links between increased somatic complaints and difficulty with communicating emotions. In studying and observing his psychosomatic patients, Sifneos (1967) began to note certain patterns of characteristics shared among them. Many of his patients presented with what appeared to be a deficit in the ability to explain their feelings, much as if they were unable to perceive or distinguish meaningful forms amongst their inner emotional experiences (Taylor, 2018).

Out of these observations, Nemiah and Sifneos (1970) were inspired to re-examine previous notes from Nemiah's interviews with psychosomatic patients. It was found that whilst the reports had initially noted the frequent employment of denial, repression, or suppression of affect among these patients, a significant proportion of them had exhibited diminished ability to recognize and communicate their emotions, a concrete and externally-bound way of thinking, and a lack of fantasy-life (Taylor, 2018). This led to the official coining and establishment of the construct of 'alexithymia' by Sifneos (1973). Arguably, facets of this construct had already surfaced in the work of earlier psychoanalysts, such as the writings of Kelman (1952) and Horney (1952). They detailed characteristics among analysands that made them particularly poor candidates for analytic therapy, such as: limited introspective capacity, poor cognizance of emotional experiences, concreteness of thinking, lack of

curiosity about dreams and fantasy, and diminished awareness of their own motivations (Horney, 1952; Kelman, 1952). However, it was the depth of work by Nemiah and Sifneos (1970) and the later operationalization of the concept into the BIQ that truly established the construct of alexithymia and paved the way for further research and understanding.

- **Current Perspectives**

Most clinicians and researchers have moved away from a purely psychoanalytic model of alexithymia as centered on a defense against neurotic conflict (López-Muñoz & Pérez-Fernández, 2020). More recent models, informed by ongoing developments in the literature, have framed alexithymia as involving a deficit in the ability to mentally represent emotions, which impinge upon effective processing and the regulation of affect (Taylor, Bagby, & Parker, 2016). Advances in research, particularly in attachment and mentalization theory, have offered clinicians richer and more empirically informed avenues in psychodynamic thinking to further elucidate the pathogenesis of alexithymia (Schimmenti & Caretti, 2018; Taylor, 2018).

Attachment theory has provided major insights into the fundamental role that the mother-infant relationship plays in an individual's emotional development. Moving away somewhat from the emphasis the psychoanalytic perspective placed on the individual's psyche as the ontogenesis of pathology, Bowlby (1969) drew more attention to interpersonal processes as a contributing factor. He pointed to the importance of the early mother-infant relationship as an interpersonal context in which pathology may develop. Bowlby (1969) suggested that the patterns of interaction and connection that emerge in the mother-infant dyad would become an internalized model that the infant would use in future relationships. Since the writings of Bowlby, attachment research has increasingly yielded more and more evidence pointing to

the significance of the first years of the infant-mother dyad in shaping the development of a number of crucial cognitive and emotional inter-and-intrapersonal capacities in the infant (Costello, 2013). The infant is reliant on the attachment figure to help them contain and make sense of the new and unfamiliar experiences in both their internal and external world, including their distressing affective experiences (Wallin, 2007). As a result, Fonagy and colleagues (2002) assert that a core function of the attachment figure is to aid the infant in modulating their overwhelming affective states. Moreover, they reason that the process of co-regulating lays the foundation for the infant to develop a secure attachment and to eventually learn to regulate their own affect (Fonagy, Gergeley, Jurist, & Target, 2002).

However, effective co-regulation depends firstly on the caregiver's awareness and recognition of the infant's affective experiences, and secondly on their ability to respond in a manner that is attuned to the reality experienced by the infant (Fonagy & Luyten, 2009). Further complicating this process is the fact that infants are initially "preverbal" until around 18 to 36 months of age, when linguistic centres are effectively active and developed (Schorer, 2001). Thus, the ability to help regulate the infant's affective states requires that the caregiver possesses the capacity to mentalize effectively (Wallin, 2007). Mentalization includes the capacity to be aware of the mental states of the self and others, and to be able to reflect on them (Taylor, 2018). This allows for the child to have their affective states and experiences recognized and responded to, helping to contain and regulate them. In the context of being provided attentive, accepting and attuned responses to their affective states, the caregiver helps the infant metabolize and organize their emotional experiences. This process of mirroring facilitates integration of the child's affective states and promotes development of an awareness of emotion and the ability to regulate these experiences (Wallin, 2007).

Moreover, Fonagy and colleagues (2002) assert that integrated experiences of emotions allow for a coherent experience of self to form.

Interestingly, research has consistently linked high alexithymia to an insecure mother-infant attachment style (Luminet, Bagby, & Taylor, 2018). Lemchea, Klann-Deliusc, Kochb and Joraschkya (2004) sought to explore potential relationships between attachment, mentalization and alexithymia in a longitudinal study of 42 toddlers. The researchers utilized the Strange Situation in concert with observations of the interactions between the children and mothers at four age intervals (17, 23, 30, 36 months), assessing for mentalizing communication and attachment indicators. Findings indicated that the securely attached children displayed far more developed mentalizing abilities at 36 months than the comparatively “delayed” insecurely attached children. Several other studies have reported similar findings (Beckes, Ijzerman, & Tops, 2015; Besharat & Shahidi, 2014; Humphreys, Wood, & Parker, 2009; Luminet & Zamariola, 2018). Ultimately, the research indicates that the quality of the attachment relationship and the caregiver’s ability to mentalize play key roles in the development of emotional awareness and ability to regulate affect (Schimmenti & Caretti, 2018).

The contributions of early psychoanalytic work and more recent advances in psychodynamic thinking in attachment theory and mentalization, have added immensely to our understanding of the psychological factors at play in alexithymia. A number of other theories and concepts have also been put forward to unpack this construct, such as multiple code theory (Bucci, 1997), affect regression (Krystal, 1977), and the ‘unbinding of drives’ (Aisenstein, 2008). However, a point of convergence is created where each model links alexithymia with an impaired ability to mentally represent internal emotional experiences (Taylor, 2018).

Furthermore, the view is held that the emotional experience is not cognitively registered or processed as a feeling that may be expressed, it is instead experienced as a physical sensation or urge (Taylor, 2018). Lastly, inability to effectively access affective states through mental representation likely leads to ineffectively regulated affect arousal, which is seen to contribute to associated pathologies (Taylor, 2018).

3.2 BIOLOGICAL PERSPECTIVES

- **Limbic-Cortical Projection Deficits**

Nemiah, Freyberger, and Sifneos (1976) offered one of the earliest neurobiological models of alexithymia, framed in the work of Paul MacLean (1949). According to MacLean (1949) the limbic system gives rise to emotional experiences at a pre-symbolic and pre-cognitive level, relying on the neocortex to cognitively process and appraise the emotional experiences. This level of interaction, he further maintained, transpires over a large group of neural projections between the two regions (MacLean, 1949). Nemiah and colleagues (1976) therefore reasoned that it was possibly a deficiency of neural projections between the neocortex and the limbic system that gave rise, in part, to alexithymia (Nemiah et al., 1976).

- **Impaired Interhemispheric Communication:**

Shortly thereafter, another model emerged from the work of Hoppe and Bogen (1977) who had noticed the occurrence of alexithymia-like qualities among a number of patients, post transection of the corpus callosum. The neurobehavioural sequelae in these ‘split-brain’ patients, they noted, included difficulties with verbal expression of emotions and difficulties with symbolizing and fantasizing (Hoppe & Bogen, 1977). They therefore hypothesized that it was perhaps an impairment in interhemispheric communication that caused alexithymia. This model found approval from a number of others, particularly as the view of the brain’s

functioning as lateralized and specialized, was generally held (Goerlich & Aleman, 2018). The left hemisphere was believed to be the locus of analytical thinking, verbal processing and conscious thought, whereas the right hemisphere was believed to be responsible for processing emotion, non-verbal thinking, and unconscious thought (Bear, 1983; Gainotti, 1989; Gazzaniga, 1989; Tucker, 1981). They reasoned that a deficit in hemispheric communication would impair verbalizing of emotions and fantasy life.

- **Atypical Interoception**

In the quest to unravel the mysteries of the human mind and its functioning, the developments in brain research over the past number of decades have no doubt been the apogee of this scientific endeavour. However, a nascent line of research, focused on understanding the role of the body in relation to the mind, has quietly emerged alongside this investigation and drawn a surprising amount of attention in the literature (Pollatos & Herbert, 2018). Researchers have increasingly recognized cognitive-emotional processes as ‘embodied processes’. This has especially been the case in affective research in the area of alexithymia. Findings have indicated that signals and changes from within the body can generate up-stream changes in thinking and feeling, bringing much attention to an associated somatic function, called ‘interoception’ (Garfinkel, Critchley, & Pollatos, 2015).

Interoception is the capacity to be aware of internal signals from organ systems, such as: cardiovascular changes (heart and respiratory rates), metabolic changes (hunger, thirst, etc.), and changes in autonomic activity states (Pollatos & Herbert, 2018). A growing body of research is showing that the awareness of changes in physiological states, or interoceptive awareness, is an important component in the experience of emotions (Schulz, 2015). Several studies have indeed indicated that interoceptive awareness relates to both the degree of

intensity of emotional experience (Barrett, Quigley, Bliss-Moreau, & Aronson, 2004; Herbert & Pollatos, 2012; Herbert, Pollatos, Flor, Enck, & Schandry, 2010; Herbert, Pollatos, & Schandry, 2007; Pollatos, Gramann, & Schandry, 2007; Pollatos, Kirsch, & Schandry, 2005) as well as further cognitive processing of stimuli that evoke emotion (Goerlich & Aleman, 2018; Herbert & Pollatos, 2012; Herbert, Pollatos, & Schandry, 2007; Wiens, 2005).

Alexithymia has been associated with ‘atypical interoception’ in much of the recent literature (Donges & Suslow, 2017; Murphy, Brewer, Catmur, & Bird, 2017; Zamariola, Frost, Oost, Corneille, & Luminet, 2019). A study by Shah, Hall, Catmur and Bird (2016) found that individuals with high alexithymia exhibit a diminished interoceptive awareness. Further work by Gaigg, Maurice, and Bird (2016) subsequently replicated these results. These findings are in agreement with theories positing that alexithymic individuals have poorer awareness of their internal states, impairing their ability to utilize interoceptive representations to guide cognitive processes that facilitate recognition and interpretation of emotional experiences (Murphy, Catmur, & Bird, 2018; Zamariola, Vlemincx, Luminet, & Corneille, 2018). Interestingly, others have reported associations between greater interoceptive awareness and more effective regulation of affect (Kever, Pollatos, Vermeulen, & Grynberg, 2015; Pollatos, Matthias, & Keller, 2015; Werner, Peres, Duschek, & Schandry, 2010).

3.3 SOCIOCULTURAL PERSPECTIVES

It has already been illustrated that, despite demonstrating good psychometric properties, TAS-20 alexithymia scores tend to vary across certain sociodemographic groups, especially in the externally-oriented thinking facet. It is therefore accepted that culture tends to play some role in the shaping of the construct of alexithymia (Bagby et al., 2020; Le, Berenbaum, & Raghavan, 2002). However, it has been argued that such studies of cultural variance have

barely scratched the surface in actually exploring the underlying cultural influences (Ryder et al., 2018; Taylor et al., 2018). Ryder and colleagues (2018) highlight that for the most part, studies have merely focussed on identifying cultural variances, neglecting to delve into actual descriptive and explanatory work required of research in cultural psychology. Cultural psychology eschews the view that culture merely ‘influences’ the mind to produce cross-cultural variances in the working of the psyche (Shweder, 1991). Instead, it holds that mind and culture constitute each other (Ryder et al., 2018; Shweder, 1991). A deeper unpacking and exploration of the role of culture in alexithymia is therefore required. In this discussion, ‘culture’ is held to be a system of ideas, concepts, meanings, customs and practices situated in a social context where they are known, albeit not necessarily enacted, by constituents of the social context (Ryder, Ban, & Chentsova-Dutton, 2011).

3.3.1 CULTURAL ORIGINS OF ALEXITHYMIA

In order to provide a cultural perspective on alexithymia, it is first necessary to place it within its original historical cultural frame. As discussed, the construct of alexithymia had its roots in the psychoanalytic tradition. It emerged fully only in the 1970’s, out of the work of a team of psychiatrists who were treating psychosomatic patients in the state of Massachusetts, USA (Sifneos, 1973). These clinicians were stunned by the notable difficulties these patients experienced with recognizing and describing their emotions (Nemiah, Freyberger, & Sifneos, 1976; Sifneos, 1973). At the time, the psychodynamic perspective had already significantly influenced a number of prominent Western societies (such as Western Europe and North America) and had shaped the cultural conceptions of mental health and wellbeing in these contexts (Ryder et al., 2018).

- **Sociocultural Critiques of Alexithymia**

The work of Lesser (1981) first drew attention to the need to investigate the role social factors play in alexithymia's etiology. He expressed caution about premature inferences in this regard, particularly noting the absence of research on the subject across different sociocultural groups at the time. Subsequently, Kirmayer (1987) pointed to the issue of variations across cultural contexts in the values and norms relating to the expression of emotions and the manner in which distress is communicated among members of these cultures. For instance, the literature notes that in Western cultural contexts (such as the USA or England) it is far more normative for individuals to openly express their emotions than in Eastern cultural contexts (such as China or Japan) where exercising more restraint in emotional expression is culturally normative (Ryder et al., 2018).

The work of Kirmayer (1987, 2006) provided some of the most lucid and compelling critiques of the research on alexithymia from a cultural perspective. He highlighted the fact that cultural variations in self-construal have a significant influence on the models of mental health that inform cultural healing practices and the manner in which emotions are utilized and expressed (2006). In western cultures an 'individualist' model of self is generally held, which views members as independent and unique in their identity, focus is internally-oriented and value is placed on self-expression (Kirmayer, 2006; Triandis, 2001). The cultural ideal is for members to become self-sufficient and fulfil their own needs (Triandis, 2001).

In light of this, Kirmayer (2006) argued that the construct of alexithymia is informed by an individualist model of self, framed in a western cultural conception of mental well-being as constituting the ability to easily access, process, and express inner emotional experiences verbally. Moreover, he argued that this conception of "mental health" particularly drew on a psychoanalytic tradition which locates the source of emotional distress within the individual,

and thus views individual talk therapy as a viable healing practice (Kirmayer, 2006; Ryder et al., 2018). Kirmayer (1987, 2006) therefore expressed concern over a potential risk of erroneously pathologizing the normative emotional experiences of cultures with different values to Western society with regards to the expression of emotion.

3.4 TOWARDS A BIOPSYCHOSOCIAL MODEL

It has been somewhat customary for different disciplines to take complex phenomena, such as alexithymia, and differentially emphasize isolated aspects of the whole according to respective areas of interest or speciality. A biomedical model has traditionally taken a reductionist perspective on pathology, viewing biological systems as the locus of pathology and target of treatment (Ghaemi, 2017). Humanist models generally acknowledge that pathology may originate in the body and warrant suitably targeted treatment. Yet, this perspective places emphasis on non-physiological factors, such as the psyche or interpersonal relationships, as important sources of pathology and viable targets of treatment (Ghaemi, 2017). In seeking to address the various discontents and limitations that emerged from the aforementioned medical philosophies, Engel (1980) brought about a paradigm shift with his ‘Biopsychosocial’ model. Engel (1980) advocated for an integrative model that both (a) recognizes the interaction between biological, psychological and social factors in causing pathology, and (b) allows for treatment in all three spheres.

A similar integrative perspective is called for in the literature on alexithymia, which has increasingly highlighted the complex interplay between biological, sociocultural and psychological factors in its pathogenesis (Luminet, Bagby, & Taylor, 2018; Moriguchi & Komaki, 2013; Paitel, Corroero, Byers, & Nielson, 2018). This is the result of more interdisciplinary collaboration and cross-pollination among researchers around the globe, and has

breathed new life into previously stagnant scientific echo chambers. Over the past two decades collaborative research has taken the subject of alexithymia out of its disciplinary silo and added layers of insight into a growing integrative perspective (Porcelli & Taylor, 2018; Ryder, Sunohara, Dere, & Chentsova-Dutton, 2018). We now look to the field of the affective sciences, where new and compelling integrative biopsychosocial perspectives have emerged, and the subject of alexithymia has become more relevant than ever before (Ryder et al., 2018).

3.4.1 Emotion, Culture, and Pathology

The concept of alexithymia finds itself at an important intersection between a body of research investigating the nature of pathology and the affective sciences. The literature on alexithymia has explored questions pertaining to how the body relates to the experience of emotion, how we become aware of emotional experiences, how we identify and then express these experiences in different sociocultural contexts, and what the ramifications might be if this process goes awry. Within the general debate concerning the nature of emotion, it is largely agreed that emotions serve an adaptive purpose (Lindquist, Siegel, Quigley, & Barrett, 2013). Moreover, scientists also widely concur that ‘an emotion’ comprises of a number of ubiquitous components, namely: a shift in physiological experience; a change within the autonomic nervous system; a shift in readiness, or an innervation toward an action or behavioural response; as well as some sort of cognitive appraisal of the external environment (Lindquist et al., 2013). Apart from these common notions, much still remains within the realm of dispute among scientists investigating the nature of emotion, as reflected by the many different models in the literature. However, most models can be grouped under one of two broad principal perspectives on the nature of emotion, namely the classical perspectives and the “constructionist” perspectives (Ryder et al., 2018).

3.4.2 Classical Perspectives

Classical perspectives broadly hold that there are discrete emotions that are biologically hardwired and inherited by all humans (Colombetti, 2009; Panksepp & Watt, 2011). This is a Universalist approach, which assumes that the same distinct emotions (e.g. anger, fear, happiness, sadness, and disgust) occur across all societies, regardless of cultural and contextual factors (Barrett, Gendron, & Huang, 2009; Ekman, 1992). Each of these basic emotions is understood to possess a distinct “fingerprint” with corresponding neural substrates and physiological reactions that accompany them (Barrett, 2017). It has also been posited that there are universal behavioural and facial expressions that accompany these basic emotions, which are recognized and understood the same across all cultures (Ekman, 1994; Lindquist, Wager, Kober, Bliss-Moreau, & Barrett, 2012). This tradition has largely informed the concept of alexithymia, which assumes that all people (despite sociocultural factors) ought to experience, process and express emotions in a particular way. Deviation from this norm is considered disordered or deficient.

3.4.3 Theory Of Constructed Emotion:

A recent constructivist model of emotion has garnered widespread attention and increasing support in the scientific community, namely, the ‘theory of constructed emotion’ (Barrett, 2017). This model challenges classical theories of emotion in several ways. Importantly, it argues that emotions are not hardwired responses that present in the same basic forms across all societies and cultures. Instead, the theory of constructed emotion proposes that ‘emotion categories’ are populations of various context-dependent instances that form conceptual categories people draw on to confer meaning on various autonomic nervous system states (Siegel et al., 2018). Emotions are not viewed as brain-body responses *triggered* by activating events, but rather as *constructed* instances that emerge from unique environmental

demands placed on the autonomic nervous system (Kristen, Jennifer, & Holly, 2015). Moreover, it is argued that emotion labels (i.e. fear, anger, surprise) are in fact cultural-linguistic structures imposed on fluid and heterogeneous variations of feeling states (Barrett, 2017).

3.4.4 Theoretical Framework

This research is grounded in the framework of the Theory of Constructed Emotion as posited by Barrett (2017), which acknowledges that sociocultural factors contribute substantially to the experience of emotion (Ryder et al., 2018). As alexithymia is directly related to the experience, processing and expression of emotions, researchers have proposed that the observed cultural variations in alexithymia may be strongly influenced by the respective cultural norms and values regarding the expression of emotions. The proposed research on alexithymia offered an opportunity to investigate this. Whereas neuroscience has shown that thoughts, emotions and behaviours cannot be understood as disembodied processes, cultural psychology has revealed that they also cannot be meaningfully understood as “dis-embedded” processes, removed from their sociocultural contexts (Ryder et al., 2018). Simply, human minds are shaped in cultural contexts that are comprised of human minds. As such, it is necessary to understand the cultural context in order to understand the human mind and the experience of emotion, and vice versa (Shweder, 1991).

The theory of constructed emotion both makes a strong case and creates space, for the role of sociocultural factors in the experience of emotion, and provides a well researched and robust framework for exploring this (Ryder et al., 2018). This approach acknowledges the various contributions and interactions between biological, psychological and sociocultural factors in the experience of emotion, and successfully integrates these factors into a coherent theory

(Barrett, 2017; Cicchetti, 2016; Ryder et al., 2011). Likewise, a cross-cultural psychology perspective emphasizes the importance of considering the interplay between brain, mind and culture in the pursuit of elucidating the construct of alexithymia (Ryder et al., 2011). From a cultural psychology perspective, the Theory of Constructed Emotion offers much in the way of furthering cross-cultural research on alexithymia (Barrett, 2017; Ryder et al., 2018).

CHAPTER 4

METHODOLOGY

4.1 RESEARCH DESIGN:

Scientific paradigms are the overarching philosophies that inform and guide scientific research (Kuhn, 1970). Different research paradigms espouse different ontologies and epistemologies, which inform the methodology and methods employed by the researcher (Neuman, 2014). Ontology is a branch of philosophy that deals with questions relating to the nature of reality and what is real, whilst epistemology is a branch of philosophy concerned with what constitutes knowledge and how such knowledge may be acquired (Blanche, Durrheim, & Painter, 2008). There are several paradigms; however, two have been the most dominant, namely positivism and interpretivism (Neuman, 2006).

A positivist ontology views reality as existing separately and independently from the observer, enabling the researcher to discover natural phenomena in the process of enquiry (Neuman, 2014). This view holds the ideal that the researcher can produce value-free information by assuming an objective and neutral stance, and typically employs quantitative methods of research (Blanche, Durrheim, & Painter, 2008). An interpretivist ontology views reality as existing in the intersubjective meanings attributed to phenomena by people in interaction (Blanche, Durrheim, & Painter, 2008). Therefore, reality and meaning cannot be separated from the context and intersubjective interactions, but should rather be investigated from within the intersubjective context. This approach typically employs qualitative methods of enquiry (Blanche, Durrheim, & Painter, 2008).

This present research is framed within a cross-cultural psychology approach, aligning more closely with a post-positivist paradigm (Bracken, 1993). Post-positivism argues that, whilst an objective reality most likely exists, our knowledge of this reality will always be tentative and imprecise as the researcher's understanding of reality is shaped by an extant worldview and assumptions (Robson, 2002). It is acknowledged that the researcher cannot be an independent observer, as the process of research and meaning-making imposes pre-existing structures onto the data (Blanche, Durrheim, & Painter, 2008). As a result, it is imperative for the researcher to maintain a reflexive stance throughout the process of enquiry and reflect on the role of their own worldviews and assumptions in shaping research outcomes (Robson, 2002). Both qualitative and quantitative methods are regarded as legitimate forms of enquiry, whilst acknowledging the limitations of interpretation (Lindlof & Taylor, 2011).

Cross-cultural psychology represents a symbiosis between comparative and cultural research (Berry, 2000). Cross-cultural psychology combines both etic and emic traditions in its endeavour to study: (1) sociocultural idiosyncrasies as they meaningfully emerge and unfold in their respective contexts, (2) possible universalities across cultures as a function of their human constituents (Berry & Triandis, 2004). Eschewing the hard line taken by Absolutist and Relativist philosophies, cross-cultural psychology occupies a more moderate and intermediate position, espousing a Universalist philosophy (Berry & Triandis, 2004). This view posits that humans share certain basic capacities and qualities, such as universal faculties of reasoning, perceiving and structure of personality (Berry, 2000). However, it is also argued that sociocultural context largely shapes the development and expression of these qualities and capacities. As a result, it is espoused that quantitative methods may be used to systematically compare and evaluate phenomena across cultures, whilst qualitative methods

may be used to gain deep ideographic understandings from within sociocultural contexts (Berry & Triandis, 2004).

This research applied a cross-sectional design framed within a quantitative approach. A quantitative approach allows for the quantification and measurement of social phenomena and constructs (Blanche, Durrheim, & Painter, 2008). This approach proved most suitable to realize the aims of the study, as the researcher employed a survey-type design, which incorporated the use of measures to obtain information from respondents that could be expressed as numerical data (Blanche, Durrheim, & Painter, 2008). This allowed for the use of statistical analyses to explore the relationships among latent and manifest variables, as well as enabled the evaluation of the psychometric properties of instruments. Moreover, it also allowed for the study to employ parametric comparative analyses to explore the differences between subgroups (Neuman, 2014).

The primary statistical technique employed by this study is a multivariate statistical technique that is a form of structural equation modelling, namely ‘confirmatory factor analysis’ (CFA) (Schreiber, Stage, King, Nora, & Barlow, 2006). This technique is employed to confirm whether a theoretically or empirically informed model, which specifies particular relationships between observed variables and latent factors, fits the data sampled by the researcher (Phakiti, 2018). This type of analysis is driven by an a priori hypothesis regarding the relationship between the observed indicators (test items) and latent factors (constructs measured by specified test items), and aims to verify the hypothesized model in an alternate data set (Brown, 2015). Whereas exploratory factor analysis endeavours to find the best factor-solution for a given data set, a CFA specifies both the factor-solution and item-factor relationships in the data (Brown, 2015). CFA is a robust and sophisticated statistical

procedure that can be used for numerous purposes; however, it has chiefly been utilized for evaluating the psychometric properties of assessment tools, such as construct validity (Brown, 2015).

In evaluating an instrument, it is crucial to include an assessment of internal consistency. This evaluates whether an instrument yields results that reflect homogeneity among the items by evaluating the average correlation between all the items in the measure (Schreiber et al., 2006). This can be achieved through utilizing the split-half test, and then correlating the items of the split halves. However, a more robust measure of internal reliability is utilized in this research, namely Cronbach's alpha (Schreiber et al., 2006). This process analyses and inter-correlates all possible split halves to determine the internal consistency. Lastly, parametric comparative statistics will be used to explore the mean differences based on gender.

4.2 Research Aims

Research has indicated that there are notable variations in the levels of alexithymia across different sociocultural contexts, as measured by the TAS-20. The broad aim of the study was to evaluate the cross-cultural validity, reliability and psychometric properties of the TAS-20 in an isiZulu-speaking sample group, and perform a preliminary investigation of potential sociocultural shaping of the construct of alexithymia as measured by the TAS-20. The proposed research therefore would: (1) adapt the TAS-20 for the isiZulu speaking population in South Africa; (2) test the validity of the three-factor model of TAS-20 in an isiZulu speaking population; (3) take first steps towards establishing a valid instrument for assessing alexithymia in an isiZulu population and contribute to the corpus of literature on cross-cultural variation of alexithymia.

4.3 Research Questions

1. Does the same standard three-factor model of the TAS-20, which is in accordance with the theoretical view of alexithymia, best fit the data from the isiZulu speaking sample using the adapted isiZulu TAS-20?
 - a. Do either of the alternative models (two-factor/four-factor) provide a better fit for the data than the standard model?
2. Does the adapted isiZulu TAS-20 demonstrate internal reliability?
3. Does gender demonstrate any significant effect on the TAS-20 full-scale score?

4.4 Research Objectives

The objectives of the study were:

1. To translate and adapt the TAS-20 assessment of alexithymia for an isiZulu speaking population and establish linguistic and cultural equivalence.

2. To evaluate the factorial validity of the TAS-20's theoretically and empirically supported standard three-factor model of alexithymia in an isiZulu speaking sample group and compare this with two competing models. As the TAS-20's three-factor solution has already been widely established, it was more suitable to evaluate the validity of this model as an a priori hypothesis specifying the empirically supported relationships between the observed indicators and the latent constructs (Brown, 2015; Harrington, 2009). Model I is the standard oblique three-factor solution posited by the TAS-20 test developers (Bagby et al., 1994a; Bagby et al., 1994b). Model II is an empirically substantiated oblique two-factor solution (Erni, Lötscher, & Modestin, 1997; Tsaousis, Taylor, Quilty, Georgiades, Stavrogiannopoulos, & Bagby, 2010). Model III is an empirically substantiated oblique four-

factor solution (Parker, Taylor, & Bagby, 2003; Tsaousis et al., 2010; Tuliao, Klanecky, Landoy, & McChargue, 2019).

2.1 Hypothesis: The EOT latent factor would attain lower factor-loadings compared to the DIF and DDF latent factors, as found in other studies among collectivist cultures (Dere et al., 2012).

3. To evaluate the internal reliability of the isiZulu TAS-20.

3.1 Hypothesis: The EOT subscale would demonstrate inadequate internal reliability, as has been observed among other collectivist cultures (Ryder et al., 2018).

4. To test the hypothesis that male and female participants would demonstrate statistically significantly different mean levels of alexithymia:

$$\mathbf{H_0: } \bar{x}_m = \bar{x}_f$$

$$\mathbf{H_a: } \bar{x}_m \neq \bar{x}_f$$

4.5 Location of Study

The study was conducted at the University of KwaZulu-Natal (Howard Campus) using a sample of first year students from the College of Humanities (Applied Human Sciences). Gatekeeper permission was obtained to recruit students and a suitable slot was discussed and planned with the course coordinator of the 1st year programme within the Discipline of Psychology.

4.6 Sampling Strategy and Procedure

A homogenous purposive sampling strategy was used to select participants who identify with Zulu culture and speak isiZulu as their home language. The research aim was to validate an isiZulu translation of the TAS-20 in the Zulu culture; therefore, the ability to read and

understand isiZulu was a fundamental requirement for participation. Moreover, to unpack cultural influences, it was necessary for participants to culturally identify as Zulu. The Registrar of the University of Kwazulu-Natal granted gatekeeper permission for the commencement of the study amongst isiZulu speaking first year psychology students (see Appendix B). Further permission was granted by the course-coordinator of the first year programme within the Discipline of Psychology. The study was adapted to form part of the course content of the class. The research did not interfere with academic activities but rather determined to enrich the learning experience through an illustrative exercise. The nature of the study was explained to the class, and voluntary participation was emphasized upfront. Each participant was required to sign a consent form (made available in English and isiZulu, see Appendix B), which was explained in easy to understand language and covered issues relating to the purpose of the study, voluntary nature of participation and confidentiality. Paper questionnaires were administered to the class and completed by pencil, before being handed back to the researcher. Completion of the questionnaire took approximately 20 minutes and occurred at the end of the lecture.

4.7 Research Participants:

Participants were recruited from the first year psychology class, based at the Howard College University campus. Based on their answers to a number of demographic indicators, a total of 284 students were selected for inclusion from the larger and more diverse body of students. The criteria for inclusion required that participants speak isiZulu (able to read and write) as a home language, and identify with Zulu culture.

- *Participants included in study*

The study included a total of $N=284$ participants. As indicated in Table 4.1, of the 284 participants, 199 (70.1%) were female and 85 (29.9%) were male. All 284 participants were first language isiZulu speakers and identified as adhering to Zulu culture, to greater and lesser extents (as indicated in Table 4.1). Of the participants, 222 (78.2%) were ≤ 20 years of age, 58 (20.4%) were between ages 21 and 30, 2 (0.7%) were ≥ 31 years of age, and 2 (0.7%) cases did not indicate membership to a particular age group (see Table 4.1). Other relevant demographic characteristics are listed below in table 4.1.

Table 4.1 Participants' Demographic Information			
<i>Gender of Student</i>	Frequency	Percentage	Valid Percentage
Male	85	29.9	29.9
Female	199	70.1	70.1
Total	284	100	100
<i>Age Group</i>	Frequency	Percentage	Valid Percentage
≤ 20 Years of age	222	78.2	78.7
21-30 Years of age	58	20.4	20.6
≥ 31 Years of age	2	0.7	0.7
Total	282	99.3	100
Missing Data	2	0.7	
<i>Home Language</i>	Frequency	Percentage	Valid Percentage
IsiZulu	284	100	100
<i>Culture Identified with</i>	Frequency	Percentage	Valid Percentage
Zulu	284	100	100
<i>Strength of Identification with Culture</i>	Frequency	Percentage	Valid Percentage
Low	22	7.7	7.9
Moderate	104	36.6	37.1
Strong	154	54.2	55
Total	280	98.6	100
Missing Data	4	1.4	

<i>Religion Identified with</i>	Frequency	Percentage	Valid Percentage
Christianity	232	81.7	82.0
Other Beliefs	39	13.7	13.8
No Religion	12	4.2	4.2
Islam	1	0.4	100
Total	284	100	
<i>Area of Residence</i>	Frequency	Percentage	Valid Percentage
Rural	179	63.0	63.5
Urban	103	36.3	36.5
Total	282	99.3	100
Missing Data	2	0.7	
<i>Monthly Income</i>	Frequency	Percentage	Valid Percentage
R0-R800	41	14.4	15.4
R801-R1600	78	27.5	29.3
R1601-R3200	51	18.0	19.2
R3201-R6400	27	9.5	10.2
R6401-R12800	26	9.2	9.8
R12801-R25600	23	8.1	8.6
R25600+	20	7.0	7.5
Total	266	93.7	100
Missing Data	2	6.3	

4.8 Research Instruments:

The study incorporated a structured self-report questionnaire with standard questions related to demographics, such as gender, home language, religion, monthly income, etc. (see appendix B). The research also included the translated and adapted isiZulu TAS-20 (see appendix A) for assessing alexithymia. Permission was obtained from the TAS-20 test developers to utilize their instrument for the purposes of this study.

4.8.1 TAS-20

The 20-item Toronto Alexithymia Scale (TAS-20) is a theory-driven measure for assessing alexithymia (Bagby et al., 1994a). It is the outcome of a series of rigorous studies conducted

by Bagby and colleagues (1994a, 1994b), and included two prior versions before its current iteration. The TAS-20 derivation sample was made up of first and second year university students from a major Canadian university, and included a total of 965 subjects (Bagby et al., 1994a; Bagby et al., 1994b). The most robust model yielded by the exploratory and confirmatory factor analyses was a three-factor model (Bagby et al., 1994a). The results also indicated that the three factors were separate, yet intercorrelated. The three-factor model obtained from the derivation sample was subsequently successfully replicated in an English-speaking population through further factor analyses, and included both clinical and non-clinical subjects (Parker, Bagby, Taylor, Endler, & Schmitz, 1993; Parker, Taylor, & Bagby, 2003; Tsaousis et al., 2010). The process yielded the following validated three-factor structure: (Factor 1) Difficulty Identifying Feelings (DIF); (Factor 2) Difficulty Describing Feelings (DDF); and lastly (Factor 3) Externally-oriented Thinking (EOT). Each of the three factors contribute a subscale to the overall total scale which, taken together, measures the multidimensional construct of alexithymia along a continuum (Bagby, Parker, & Taylor, 2020).

The TAS-20 comprises a total of 20 items that are each rated on a 5-point likert scale format. Each item loads onto a specific factor subscale (DIF, DDF, or EOT) and requires an eigenvalue contributing a factor loading of ≥ 0.35 to be included in the scale (Bagby et al., 1994a; Bagby et al., 1994b). The DIF factor scale comprises 7 items: 1, 3, 6, 7, 9, 13, 14. Each item taps into an aspect of an individual's ability to identify their emotions and separate them from accompanying somatic sensations (Preece, Becerra, Robinson, Dandy, & Allan, 2018). The DDF factor scale comprises 5 items: 2, 4, 11, 12, 17. Each of these items taps into an aspect of the individual's ability to effectively describe what emotion they are experiencing (Bagby, Parker, & Taylor, 2020). Lastly, the EOT factor scale comprises 8 items: 5, 8, 10, 15, 16, 18,

19, 20. Each of the aforementioned items evaluates an aspect of the degree to which an individual adopts an externally-oriented thinking style, as opposed to a more introspective style of thinking (Bagby, Parker, & Taylor, 2020). Additionally, research has indicated that the EOT subscale may assess facets of impoverished fantasy (Bagby, Taylor, Parker, & Dickens, 2006; Bagby et al., 1994b; Tsaousis, Taylor, Quilty, Georgiades, Stavrogiannopoulos, & Bagby, 2010).

4.8.2 TAS-20 Psychometric Properties

- ***Criterion and Concurrent Validity***

The TAS-20 has demonstrated good overall criterion validity in the literature since its development (Preece, Becerra, Robinson, & Dandy, 2017b). Numerous studies have regularly predicted and confirmed associations between TAS-20 scores and several psychiatric and medical conditions (Bagby, Parker, & Taylor, 2020). Moreover, convergent validity of the TAS-20 has also found adequate to good support in the literature. A number of studies have reported theoretically consistent divergence and convergence between the TAS-20 and conceptually related assessments (Preece, Becerra, Robinson, & Dandy, 2017b; Sekely, Bagby, & Porcelli, 2018). The TAS-20 correlates significantly with other alexithymia scales, such as the Bermond-Vorst Alexithymia Questionnaire (BVAQ), and demonstrates both discriminant and concurrent validity at the subscale and global level (Bagby, Taylor, Parker, & Dickens, 2006; Preece, Becerra, Allan, Robinson, & Dandy, 2017a; Vorst & Bermond, 2001).

Similar support has been found in studies reporting theoretically consistent correlations between the TAS-20 and instruments such as the Five Factor Model of Personality (Moriguchi et al., 2007; Schäfer, Schneider, Sitte, & Franz, 2002; Taylor & Bagby, 2013),

NEO Personality Inventory (Costa & McCrae, 1992), Emotional Approach Coping Scale (Lumley, Gustavson, Partridge, & Labouvie-Vief, 2005), Emotional Creativity Inventory (Averill, 1999), and the Impulsiveness Questionnaire (Zimmerman, Rossier, de Stadelhofen, & Gaillard, 2005). Yet another study by Besharat (2007) reported strong evidence for convergent validity of the TAS-20 upon finding a substantial inverse relationship with an assessment of emotional intelligence in a sample of 587 Iranian university students. The finding is in agreement with three similar studies that report significant negative relationships between measures of emotional intelligence and the TAS-20 (Baughman, Schwartz, Schermer, Veselka, Petrides, & Vernon, 2011; Ghayas, Niazi, Ghazai, & Tahir, 2017; Parker, Taylor, & Bagby, 2001).

- ***Construct Validity***

Demonstrating the validity of a psychometric assessment's factorial structure across several sample groups is considered a measure of its construct validity (Bagby, Parker, & Taylor, 2020; Brown, 2006). The original three-factor solution has now been extensively replicated among various clinical and non-clinical populations using translated versions of the TAS-20, including in the following languages: Dutch (Taylor, Bagby, & Parker, 2003), Finnish (Joukamaa, Miettunen, Kokkonen, Koskinen, Julkunen, & Kauhanen, 2001), Hindi (Pandey, Mandal, Taylor, & Parker, 1996), Danish (Taylor, Bagby, & Parker, 2003), Chinese (Zhu, Yi, Yao, Ryder, Taylor, & Bagby, 2007), Farsi (Besharat, 2007), French (Loas, Corcos, Stephan, Pellet, Bizouard, & Venisse, 2001), Italian (Bressi, Taylor, Parker, Bressi, Brambilla, & Aguglia, 1996), German (Bach, Bach, de Zwaan, Serim, & Böhmer, 1996; Grabe et al., 2006), Hungarian (Cserjési, Luminet, & Lénárd, 2007), Hebrew (Taylor, Bagby, & Parker, 2003), Japanese (Taylor, Bagby, & Parker, 2003), Korean (Lee, Rim, & Lee, 1996), Spanish (Martínez-Sánchez, 1996), Lithuanian (Prazeres, Parker, & Taylor, 2000), Portuguese

(Prazeres, Parker, & Taylor, 2000), Norwegian (Taylor, Bagby, & Parker, 2003), and Swedish (Simonsson-Sarnecki, Lundh, Tötrestad, Bagby, Taylor, & Parker, 2000).

- ***Reliability: Internal Consistency***

Cronbach's alpha is the most extensively utilized measure of internal consistency for psychometric scales, especially for those that employ multi-level response items, such as the TAS-20 (Cronbach & Meehl, 1955; Bagby et al., 1994a). An alpha score of 0.70 is generally considered to be adequate, whereas a score of around 0.90 is considered to be excellent (Groth-Marnat, 2009). The original TAS-20 validation study demonstrated high internal consistency, yielding good alpha coefficient values for the global scale score, as well as the three subscale scores (Bagby et al., 1994a; Sekely, Bagby, & Porcelli, 2018). Between 1994 and the year 2003, the TAS-20 had been translated into 18 languages (Parker, Taylor, & Bagby, 2003). The vast majority of these translations demonstrated adequate to good internal consistency for the global scale, DIF subscale and DDF subscale (Parker, Taylor, & Bagby, 2003). However, this was not the case for the EOT subscale, which exhibited comparatively lower internal consistency.

- ***Competing Factor Solutions: 2-Factor and 4-Factor Models***

As the numerous aforementioned studies have illustrated, there is strong empirical support for the construct validity of the three-factor TAS-20 model (Bagby, Parker, & Taylor, 2020; Sekely, Bagby, & Porcelli, 2018). Moreover, taxometric studies have also found this solution to be theoretically congruent with the conceptualization of the construct of alexithymia (Parker, Keefer, Taylor, & Bagby, 2008). Nevertheless, not all factor analytic studies have replicated this factor structure (Tuliao, Klanecky, Landoy, & McChargue, 2019). Muller, Bühner and Ellgring (2003) proposed a competing four-factor solution. Their model

maintained both DIF and DDF factors, but split the EOT-factor into two separate factors, namely: pragmatic thinking (PR) and importance of emotions (IM) (Müller, Bühner, & Ellgring, 2003). The same four-factor model has emerged in a number of other studies, including in an adolescent Dutch sample group (Meganck, Markey, & Vanheule, 2012) a previous validation study in China (Zhu, Yi, Yao, Ryder, Taylor, & Bagby, 2007) and in a German sample (Müller, Bühner, & Ellgring, 2003) and a recent study by Ling, Zeng, Yuan and Zhong (2016) in an East-Asian context.

Another study, by Erni, Lötscher, & Modestin (1997) found that a two-factor solution provided a better fit for their data. Their two-factor solution combined the DIF and DDF subfactors and their corresponding items into a larger aggregated factor “DI/DDF”, whilst the EOT subfactor was maintained (Erni, Lötscher, & Modestin, 1997). This two-factor DI/DDF and EOT model provided better overall fit in several other studies (Cleland, Magura, Foote, Rosenblum, & Kosanke, 2005; Craparo, Faraci, & Gori, 2015; Tsaousis et al., 2010; Tuliao, Klanecky, Landoy, & McChargue, 2019). Despite these findings, the majority of factor analytic studies have supported the standard original three-factor model (Bagby, Parker, & Taylor, 2020). Moreover, it is not an uncommon occurrence for some factor solutions to diverge when conducting factor analyses among diverse samples (Netemeyer, Bearden, & Sharma, 2004).

- *isiZulu TAS-20: Translation and Cultural Adaptation Process*

The process of cross-cultural adaptation entails not only translating the language of the instrument, but also making sure that the instrument is culturally adapted (Beaton, Bombardier, Guillemin, & Ferraz, 2000). This requires that the translated instrument carry linguistic, semantic, experiential, idiomatic and conceptual equivalence (Beaton, Bombardier,

Guillemin, & Ferraz, 2000). The TAS-20 was translated into isiZulu and culturally adapted in order to reach cross-cultural and linguistic equivalence in six-stages, modelled off of the rigorous approach proposed by Beaton and colleagues (2000). In stage one, it is suggested that two first-language speaking translators are used, one being uninformed regarding the field of expertise and another being informed regarding the area of expertise (Beaton et al., 2000). Instead of using the suggested two translators, three translators were used. The three bi-lingual translators each completed the initial forward translation of the questionnaire from English into isiZulu. Two of the translators each hold a doctorate in isiZulu linguistics, but were uninformed regarding the psychological content and material in the questionnaire (Beaton et al., 2000). This was done in order to maximize the input of linguistic nuances from an uninformed perspective. One informed translator, who holds a Masters degree in Psychology, was among the selected, in accordance with recommendations by Beaton and colleagues (2000). Each of the translators translated the TAS-20 independently into isiZulu (see appendix A T1, T2 and T3).

In the second stage, after the forward translations were finished, an independent translator synthesized all the translations and compiled the most accurate synthesis of the translated isiZulu TAS-20, resulting in the T123 (see Appendix A). In the third stage, the synthesized isiZulu TAS-20 (T123) was back translated into English, yielding a back translation that was very accurate to the original English TAS-20. Satisfied with the back-translated version of the synthesized isiZulu TAS-20 (T123) the researcher consulted an expert panel, as per requirement of Beaton and colleagues (2000). The expert panel consisted of a language expert, a translator, a methodologist and two mental health professionals. The panel members individually reviewed and approved of the TAS-20 for semantic, idiomatic, experiential and conceptual equivalence. In stage 5 the synthesized isiZulu TAS-20 (T123) underwent a

cognitive pre-test with 6 respondents, who provided individual feedback to the researcher regarding the clarity, acceptability and perceived simplicity of the translated items. Lastly, as recommended by Sousa and Rojjanasrirat (2011), the original developers of the TAS-20 were consulted and provided with the translation and adaptation process and protocols. The test developers found the translation and adaptation process, as well as the final synthesized isiZulu TAS-20 and its back translation satisfactory, and granted approval for the use of the isiZulu TAS-20 (see appendix).

Figure 4.1

Translation and Adaptation Process



4.9 Data Preparation

All items and variables were specified and the participants’ responses were coded and entered into version 23 of the Statistical Package for Social Sciences (SPSS). Following scoring instructions by Taylor, Bagby and Parker (1992) all reverse scored items on the TAS-20 (items 4, 5, 10, 18 and 19) were re-coded and re-checked before entry into SPSS 23. The data was checked thoroughly for errors by inspecting the frequencies for each variable and cleaned before statistical analyses commenced.

Once data was cleaned, preliminary descriptive analyses were run, as recommended by Pallant (2016). This included exploring sample characteristics (see Table 4.1) for the methodology chapter, as well as assessing the data for any possible violation of the key requirements for the statistics (see Chapter 5) employed in the research (checking outliers, distribution of scores, kurtosis, etc.).

4.10 Data Analyses

The present study incorporated the following statistical methods of analyses (using SPSS 23 and AMOS 21):

- Confirmatory Factor Analyses, using AMOS 21
- Analysing Internal Consistency in SPSS 23
- Parametric Comparative Statistics – independent samples *t*-test in SPSS 23

4.10.1 Confirmatory Factor Analyses

As indicated in the discussed literature, the TAS-20 has undergone a substantial amount of psychometric evaluations across numerous linguistic and cultural groups (Bagby, Parker, & Taylor, 2020). Both the global domain and three sub-domains of the TAS-20 have largely exhibited good psychometric properties and are thus established in the literature. When developing a brand new scale without prior psychometric work and investigations one would utilize a speculative procedure such as an exploratory factor analysis (Brown, 2015). However, as the TAS-20's three-factor solution has already been widely established, it is more suitable to evaluate the validity of this model as an a priori hypothesis specifying the empirically supported relationships between the observed indicators and the latent constructs (Brown, 2015; Harrington, 2009). Moreover, to avoid unnecessary model modification and

unfounded re-specifying, Brown (2015) suggests that competing models (when available in the literature) be assessed first. Consequently, two additional competing factor solutions were identified in the literature and subjected to confirmatory factor analyses (detailed in results and discussion) to establish the best overall fit for the data. These factor solutions, namely a two-factor and four-factor solution, were discussed earlier and outlined in the literature.

The CFA followed the recommended four-stage process outlined by Brown (2015): 1) Identification of models founded in empirical research or underpinned by a robust theoretical premise; 2) data preparation and preliminary analyses; 3) model specification and 4) model evaluation and comparison. In accordance with these conventions, the most widely validated model and two further empirically founded models were outlined in the literature under the discussion of instrumentation (Müller, Bühner, & Ellgring, 2003; Tsaousis et al., 2010). A missing values analysis and evaluation of data distribution was conducted, in order to ensure sufficient data integrity and prepare the data (Jackson, Purc-Stephenson, & Gillaspay, 2009). After conducting the missing value analysis, the final analysis sample comprised 284 cases, well above the threshold sampling size criterion of $n=200$ for structural equation modelling (Boomsma & Hoogland, 2001; Kline, 1998). After establishing multivariate normality the maximum likelihood estimation method was utilized, as is often the convention in structural equation modelling (Jackson, Purc-Stephenson, & Gillaspay, 2009).

Consequently, AMOS 21 was used to specify the model parameters for the three models and to conduct the confirmatory factor analysis (results are documented in chapter 5). Each of the twenty items on the TAS-20 was regarded as a partial measurement of a particular latent factor. The standard three-factor TAS-20 model was first constructed by specifying the three latent factors derived from the original sample group used for developing the measure. The

empirically justified two-factor and 4 factor models were subsequently constructed to evaluate as competing factor solutions (Müller, Bühner, & Ellgring, 2003; Tsaousis et al., 2010). Due to the hypothesized relationship between all of the items in the scale with the construct of alexithymia, all solutions were evaluated as oblique models (Bagby et al., 1994a; Bagby et al., 1994b; Parker et al., 2003).

This study employed five commonly used indices for evaluating the “goodness-of-fit” of the latent variable models to the data of the research, as recommended (Brown, 2015; Kline, 1998), being: χ^2/df ratio, the comparative fit index (CFI), the root mean square error of approximation (RMSEA), standardized root mean squared residual (SRMR), and Hoelters critical N (CN) index (Hu & Bentler, 1999; MacCallum et al., 1996). Wheaton and colleagues (1977) argue that a chi-square/ df ratio between 2-5 indicates a good model, whilst a ratio between 1-2 has been touted as evidence of an excellent model fit (Hu & Bentler, 1999; Tabachnick & Fidell, 2007). Moreover, it has been posited that a comparative fit index (CFI) of 0.90 indicates a good model, whilst ≥ 0.95 is regarded as indication of an excellent model (Bentler, 1990; Hu & Bentler, 1999). In terms of the root mean square error of approximation (RMSEA), a value of < 0.08 is generally considered as evidence for good model fit, whilst a value of < 0.05 is indicative of an excellent model (MacCallum et al., 1996; Tabachnick and Fidell, 2007). A SRMR value of ≤ 0.08 is indicative of acceptable fit, whereas a value of < 0.06 indicates excellent fit (Hu & Bentler, 1999). A Hoelters (CN) critical value of ≥ 200 is regarded as evidence of a good model, whilst a value of ≥ 250 is evidence of an excellent model (Hoelter, 1983). Lastly, the models were compared for best overall fit by utilizing the χ^2 statistic (Brown, 2015).

4.10.2 Reliability: Calculating Internal Consistency

Internal consistency relates to the fact that the items of a questionnaire, which measures a specific construct, should yield results that reflect inter-correlations and homogeneity (Tsang, Royse, & Terkawi, 2017). This lends support to the fact that the items all indeed measure the specified construct (Neuman, 2014). Cronbach's alpha is generally used to measure internal consistency, and is represented in the following formula (where x = questionnaire; k = number of items; σ = variance):

$$\alpha = \frac{\kappa}{\kappa - 1} \left(1 - \frac{\sum \sigma_i^2}{\sigma_x^2} \right)$$

This process analyses and inter-correlates all possible split halves of the questionnaire to determine the internal consistency (Tsang, Royse, & Terkawi, 2017). General convention holds that alpha coefficients of over 0.7 are acceptable, and inter-item correlations should optimally fall between 0.2-0.4 (Pallant, 2016). The TAS-20 was assessed for internal consistency using SPSS 23 to determine Cronbach's alpha. Results are documented in chapter 5.

4.10.3 Independent Samples t -test

In order to test the hypothesis that male and female participants would be associated with statistically significantly different mean levels of alexithymia, an independent samples t -test was conducted. An independent samples t -test is a parametric statistical procedure that allows for the comparison of means across two independent groups on the same continuous variable (Neuman, 2014). This procedure determines whether the difference between the means of the groups is statistically significant or not. In order to utilize this method, the data set has to be normally distributed and demonstrate homogeneity (equal) of variance (Neuman, 2014). After determining that the assumptions were met, an independent samples t -test was run on SPSS 23 on the gender group in order to tentatively explore the effects of gender on TAS

scores. It must be emphasized that results are very limited in generalizability, as sample characteristics are not representative of the entire Zulu population, and the isiZulu TAS-20 is not validated for the isiZulu speaking population. It is therefore recommended results be interpreted with caution. Results are documented in chapter 5.

4.11 Ethics:

The researcher sought to ensure the safety and well being of all participants and thus disclosed up front the nature and content of the study. It was explicitly stated that participation is voluntary and that the participant could withdraw from the study at any stage without any prejudice. No financial incentives were involved in participation, as was stipulated. The study did not, to the best knowledge of the researcher, cause any form of psychological distress to participants. However, the research supervisor, who is a registered psychologist, was made available to debrief participants and refer them for follow up counselling if participation in the study had caused any emotional distress. The questionnaire and the consent form are both attached as appendices (A and B). Demographic information and data have been treated with confidentiality and coded to ensure anonymity. The voluntary nature of participation and issues of anonymity and confidentiality were clearly detailed on the consent form. Data was encoded and encrypted so as to protect confidentiality. Data will be destroyed within completion of the research project.

CHAPTER 5

RESULTS

5. INTRODUCTION

This chapter reports the results pertaining to the key objectives and research questions asked in this study in four sections. The first section outlines the data preparation and preliminary analyses performed as required for executing a confirmatory factor analysis. Subsequently, the three competing structural models that were subjected to confirmatory factor analyses will be described and outcomes tabulated. The second section will report on the internal reliability of the isiZulu TAS-20, as indicated by the alpha coefficients and mean inter-item correlations for both the total scale and individual factor scales. The hypothesis related to the standard three-factor scale and the internal reliability of the EOT factor scale will also be addressed. The third section reports basic descriptive statistics for the best fitting model of the isiZulu TAS-20 scale will be presented over all and by gender. The hypothesis regarding gender effect on mean TAS-20 score outcomes will then be tested by way of independent samples *t*-test, and the preliminary investigation of gender variances reported on. The last section summarizes the main results.

5.1 CONFIRMATORY FACTOR ANALYSES:

- *Model Justification*

The TAS-20 has received a significant amount of attention in the literature, and has been subjected to extensive psychometric evaluation across different linguistic and cultural contexts. As both the global and sub-domains of the scale have been sufficiently established, the study adopted the use of CFA in order to confirm the three-factor solution's fit in the present sample group (Bagby et al., 2020). However, as recommended by Harrington (2009),

competing empirically and theoretically supported factor solutions were included in the study in order to determine whether the standard three-factor model indeed provided the best overall fit for the data derived from the isiZulu sample group (Bagby, Parker, & Taylor, 1994a; Bagby, Taylor, & Parker, 1994b). Subsequently, a competing two-factor solution (Cleland, Magura, Foote, Rosenblum, & Kosanke, 2005; Erni, Lötscher, & Modestin, 1997; Tsaousis et al., 2010) and four-factor solution (Müller, Bühner, & Ellgring, 2003; Tuliao, Klanecky, Landoy, & McChargue, 2019) were subjected to CFA.

5.1.1 Preliminary Analyses And Data Preparation

A preliminary analysis was first undertaken to ensure adequate data integrity for conducting the CFA model testing. The first step was to screen for missing values to determine a) the range and extent of potential missing values for each of the items of the isiZulu TAS-20, and b) the possible underlying reasons for this, such as data missing at random or due to systematic effect. Adopting general convention, a missing value analysis (MVA) was conducted, focussing on all instances of items for which missing values exceeded 5% of the total responses for that item. This was commenced with the intended application of the Little's MCAR (Missing Completely at Random) test to examine if such instances conformed to random distribution or indicated systematic effect. The analysis revealed that none of the isiZulu TAS-20 indicators recorded missing values on proportions equal to or greater than 5%, thereby not requiring any further investigation or assessment. Following the MVA, the final analysis sample for the CFA comprised 284 cases (see **Table 5.1.1**).

Table 5.1.1
TAS-20 Descriptive Data

Valid (N)	284
Missing	0
Mean	52.48
Std. Deviation	11.55
Skewness	0.053

Std. Error of Skewness	0.145
Kurtosis	-0.543
Std. Error of Kurtosis	0.288

- **Sample Size**

The second step in the preliminary analysis entailed assessing the suitability of the sample size for the intended analysis with respect to the specifications of the latent variable model. The isiZulu TAS-20 is made up of 20 likert-scale items, each of which was entered into the CFA as a predictor with a value ranging between 1 and 5. According to Stevens (1996) the proposed sample size for robust analysis in the CFA would be at least ten cases per predictor. Given the measurement model to be tested, an adequate sample required at least 200 cases, which was indeed met.

- **Distribution: Univariate and Multivariate Normality**

The data preparation process next involved screening for univariate and multivariate outliers by producing a simple box-plot in SPSS and calculating the Mahalanobis d-squared in AMOS, respectively. No data points caused concern or warranted removal, allowing for further preliminary analyses of univariate and multivariate normality. Both the Kolmogorov-Smirnov and Shapiro-Wilk's tests (**Table 5.1.2**) revealed that the data was not significantly different ($p > 0.05$) from what would be expected under a normal distribution (Shapiro & Wilk, 1965). These findings were further confirmed by visual inspection of the histogram (**Figure 5.1.2**), normal Q-Q plot (**Figure 5.1.1**), box plot, as well as the skewness (Cut-off = ± 1) and kurtosis (Cut-off = ± 2) values, which showed that the data approximated a normal distribution, satisfying the CFA assumption of univariate normality (Cramer, 1998; Cramer & Howitt, 2004; Doane & Seward, 2011; Razali & Wah, 2011; Razali & Wah, 2011):

- The distribution of TAS-Total scores (n=284) had a skewness of 0.053 (Std. Error of Skewness = 0.145) and a kurtosis of -0.543 (Std. Error of Kurtosis = 0.228).

Table 5.1.2
Tests of Normality TAS-Total

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
TAS Total	0.044	284	0.200	0.992	284	0.159

The data was subsequently assessed for multivariate normality by comparing the chi-square distribution to the Mahalanobis distances in a Q-Q plot generated in SPSS (Arifin, 2015). The Chi-square and Mahalanobis plot for all twenty items (**Figure 5.1.3**) showed good evidence for multivariate normality.

Figure 5.1.1

Normal Q-Q Plot for TAS-Total

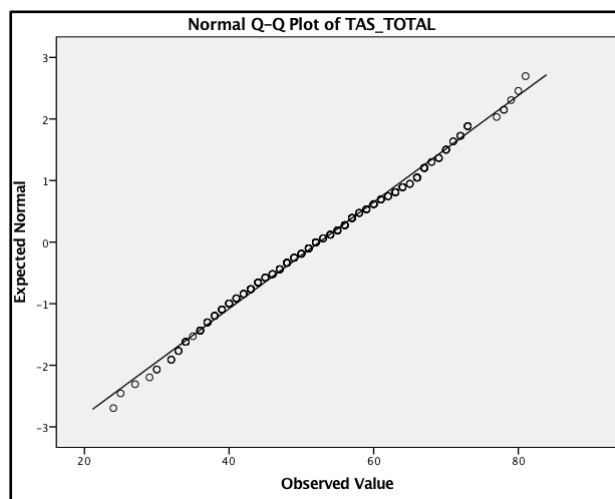


Figure 5.1.2

TAS-Total score distribution

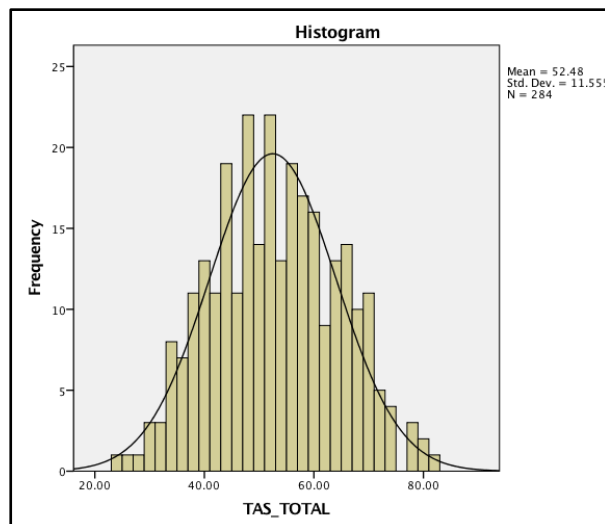
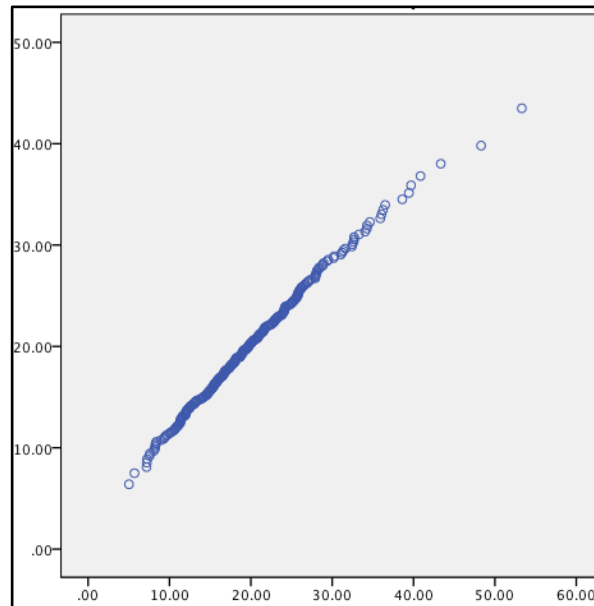


Figure 5.1.3
Chi-square vs. Mahalanobis Distance plot
(Item 1 – Item 20)



5.1.2 Model Specification And Fit Criteria:

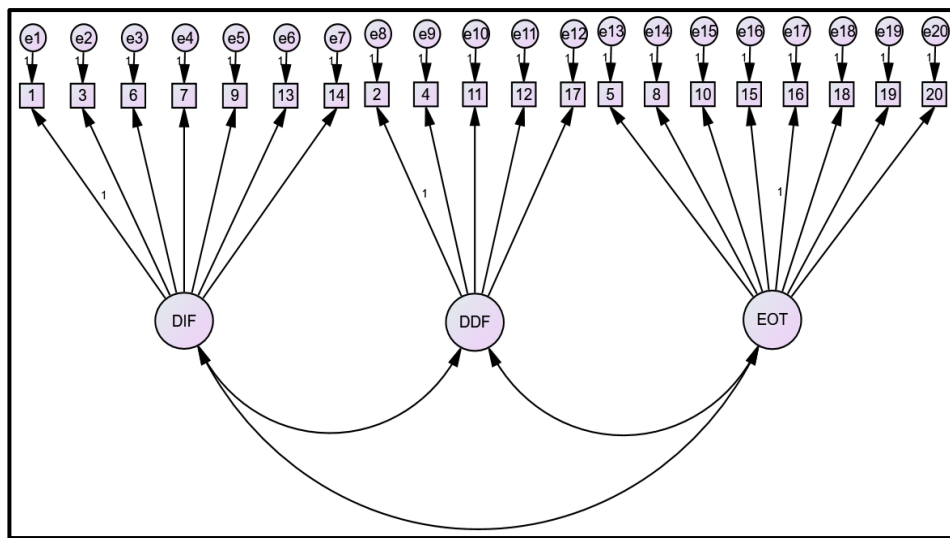
- **Standard Oblique three-factor Model Specification**

Both a large body of research-based evidence and theory have supported the standard TAS-20, developed and specified by Bagby and colleagues (1994a,b), as a valid and reliable single scale measure of the trait Alexithymia. Their global scale specifies three sub-scales, each of which is represented by a latent factor that measures a domain of alexithymia. Twenty indicators each load onto one of the three specified latent factors and are summed to produce the subscale score. The three subscales are then summed to produce the global scale score, which indicates the degree of alexithymia.

Figure 5.1.4 is a graphical representation of the specified standard oblique three-factor model. Seven observed indicators (Items: 1, 3, 6, 7, 9, 13, 14) each load onto the latent factor (F₁) difficulty identifying feelings (DIF). Five observed indicators (Items: 2, 4, 11, 12, 17) each load onto the latent factor (F₂) difficulty describing feelings (DDF). Eight observed indicators (Items: 5, 8, 10, 15, 16, 18, 19, 20) each load onto the latent factor (F₃) externally-

oriented thinking (EOT). The measurement model contained no cross-loading indicators, all measurement error was presumed to be uncorrelated, and latent variables were scaled by specifying a single marker indicator per latent variable. The latent variables of DIF, DDF and EOT were permitted to covary, based on theory and prior research showing associations between these dimensions. The model was overidentified, $df = 167$, thereby confirming that the underlying data contained sufficient information to estimate model parameters.

Figure 5.1.4
Standard 3-Factor Model



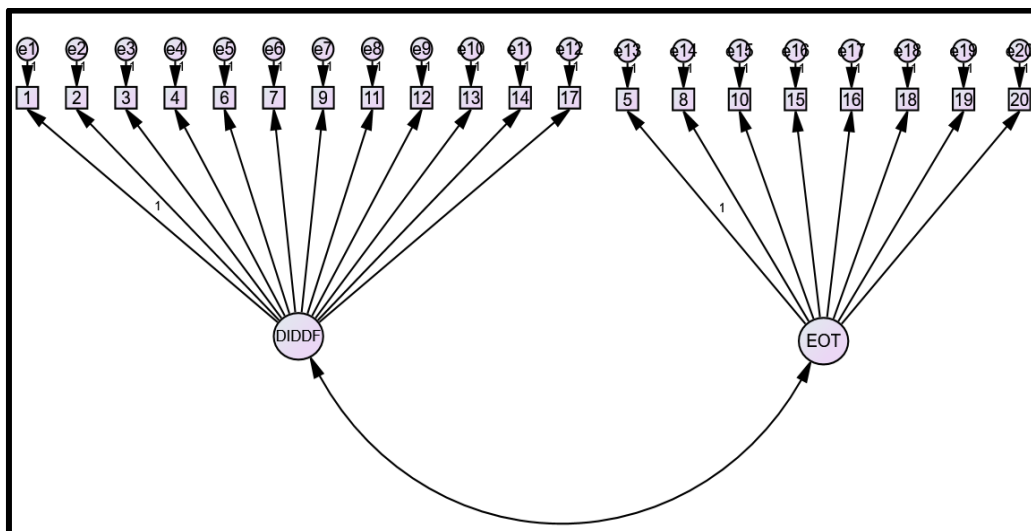
- **Oblique 2-Factor Model Specification**

An alternative two-factor solution was specified as a competing model to determine the best over all model fit for the data. A number of researchers have reported that a two-factor solution for the TAS-20 provided a better fit for their data sets (Cleland, Magura, Foote, Rosenblum, & Kosanke, 2005; Erni, Lötscher, & Modestin, 1997; Tsaousis et al., 2010). This model elects to keep all 20 items of the TAS and the EOT factor unchanged, but collapses the DIF and DDF factors into a single factor subscale called DI/DDF (Erni et al., 1997). Similarly, the twenty indicators each load onto one of the two specified latent factors and are

summed to produce subscale scores. The two subscales are then summed to produce the global scale score, which indicates the degree of alexithymia.

Figure 5.1.5 is a graphical representation of an oblique two-factor model specification. Twelve observed indicators (Items: 1, 3, 6, 7, 9, 13, 14, 2, 4, 11, 12, 17) each load onto the latent factor (F_1) DI/DDDF. Eight observed indicators (Items: 5, 8, 10, 15, 16, 18, 19, 20) each load onto the latent factor (F_2) externally-oriented thinking (EOT). The measurement model contained no cross-loading indicators, all measurement error was presumed to be uncorrelated, and latent variables were scaled by specifying a single marker indicator per latent variable. The latent variables of DI/DDDF and EOT were permitted to covary based on prior research and theory supporting associations between these dimensions (Erni et al., 1997). The model was overidentified, $df = 169$, thereby confirming that the underlying data contained sufficient information to estimate model parameters.

Figure 5.1.5
2-Factor Model (DI/DDDF & EOT)

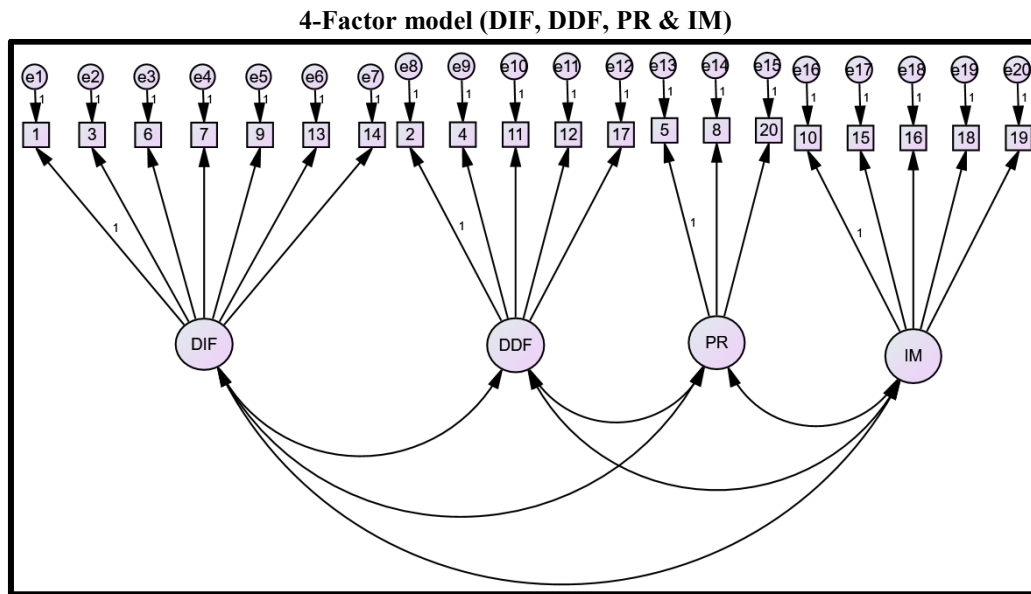


- **Oblique 4-Factor Model Specification**

An alternative four-factor solution was specified as a competing model to determine the best over all model fit for the data. A number of researchers have reported that a four-factor solution for the TAS-20 provided a better fit for their data sets (Müller, Bühner, & Ellgring, 2003; Tullio, Klanecky, Landoy, & McChargue, 2019). This model elects to keep all 20 items of the TAS and leaves the DIF and DDF factors unchanged, but splits the EOT factor into two separate factors, pragmatic thinking (PR) and degree of importance of emotion (IM) (Müller, Bühner, & Ellgring, 2003). The twenty indicators each load onto one of the four specified latent factors and are summed to produce subscale scores. The four subscale scores are then summed to produce the global scale score, which indicates the degree of alexithymia.

Figure 5.1.6 is a graphical representation of an oblique four-factor model specification. Seven observed indicators (Items: 1, 3, 6, 7, 9, 13, 14) each load onto the latent factor (F₁) difficulty identifying feelings (DIF). Five observed indicators (Items: 2, 4, 11, 12, 17) each load onto the latent factor (F₂) difficulty describing feelings (DDF). Three observed indicators (Items: 5, 8, 20) each load onto the latent factor (F₃) pragmatic thinking (PR). Five observed indicators (Items: 10, 15, 16, 18, 19,) each load onto the latent factor (F₄) importance of emotion (IM). The measurement model contained no cross-loading indicators, all measurement error was presumed to be uncorrelated, and latent variables were scaled by specifying a single marker indicator per latent variable. The latent variables DIF, DDF, PR and IM were permitted to covary based on prior research and theory supporting associations between these dimensions (Müller, Bühner, & Ellgring, 2003). The model was overidentified, $df = 164$, thereby confirming that the underlying data contained sufficient information to estimate model parameters.

Figure 5.1.6



- **Model Fit Indices and Cut-off Criteria**

Kline (1998) recommends the use of multiple model fit indices for the specification and evaluation of models by confirmatory factor analysis. Both the indices and the corresponding criterion recommendations for determining degree of fit of the latent variable models to the data were as follows:

1. **χ^2/df ratio:** A χ^2/df ratio within the range 2-5 is considered evidence of a good model and a ratio within the range 1 to 2 is considered as evidence of an excellent model (Hu & Bentler, 1999; Tabachnick & Fidell, 2007; Wheaton et al, 1977).
2. **Comparative Fit Index (CFI):** A CFI of 0.90 is regarded as indicative of a good model and a CFI of 0.95 and above is considered evidence of an excellent model (Bentler, 1990; Hu & Bentler, 1999).
3. **Root Mean Square Error of Approximation (RMSEA):** A RMSEA value of less than 0.08 is regarded as indicative of a good model, and a value less than 0.05 is regarded as evidence of an excellent model (MacCallum et al., 1996; Tabachnick and Fidell, 2007).

4. **A Standardized Root Mean Squared Residual (SRMR):** A SRMR value of ≤ 0.08 is indicative of acceptable fit, whereas a value of < 0.06 indicates excellent fit (Hu & Bentler, 1999).
5. **Hoelters Critical N (CN) Index:** A Hoelters value of 200 or more is considered indicative of a good model and a value of 250 or greater is considered indicative of an excellent model (Hoelter, 1983).

5.1.3 Model Fit Evaluation:

- **Input and Estimation Method**

Maximum likelihood (ML) estimation is a widely used and preferred estimation method, as it provides a number of useful statistics for model estimation, namely: a) standard errors for parameter estimates, enabling calculation of significance as well as confidence intervals, and b) several robust goodness-of-fit indices (Harrington, 2009). The variance-covariance matrices were analysed using Maximum likelihood (ML) estimation for all three CFA models, given that the assumptions of sufficient sample size, use of continuous variables, and normally distributed data were met (Brown, 2015). The three hypothesized latent factor models of the isiZulu TAS-20 (specified above) were entered into AMOS 21.0 and all respective a priori parameter specifications delineated before subjecting each to the CFA. A number of statistical outputs from the analyses were generated for each model. Outputs most pertinent to the research questions will be included in this chapter, however additional material will be included in the appendix.

5.1.3.1 Model Fit Metrics:

RQ – 1: Does the same standard three-factor model of the TAS-20, which is in accordance with the theoretical view of alexithymia, best fit the data from the isiZulu speaking sample using the adapted isiZulu TAS-20?

RQ – 1.1: Do either of the alternative models (two-factor/four-factor) provide a better fit for the data than the standard model?

Table 5.1.3 Goodness-of-fit Indices
(Hypothesized latent-factor models of isiZulu TAS-20)

Model	χ^2	df	χ^2/df	CFI	SRMR	RMSEA	Hoelter (.01)	AIC
Model I: 3-Factor	264,1	167	1,58 (Excellent)	0,91 (Acceptable)	0,057 (Excellent)	0,045 (Excellent)	228 (Good)	350.1
Model II: 2-Factor	269,4	169	1,59 (Excellent)	0,90 (Acceptable)	0,058 (Excellent)	0,046 (Excellent)	226 (Good)	351.4
Model III: 4-Factor	258,4	164	1,58 (Excellent)	0,91 (Acceptable)	0,059 (Excellent)	0,045 (Excellent)	229 (Good)	350.4

- **Goodness-of-Fit: (Model Fit)**

Model I - Specification and testing of the standard oblique three-factor model (**Figure 5.1.4**) returned a model with the following indices (see **Table 5.1.3**): $\chi^2 = 264.1$, $df = 167$, $\chi^2/df = 1.58$; CFI = 0.91; SRMR = 0.057; RMSEA = 0.045; and Hoelter = 228. The standard three-factor structure of the TAS-20 showed good-to-excellent fit on the selected model fit indices for the Zulu sample group.

Model II - Specification and evaluation of the oblique two-factor solution (**Figure 5.1.5**) returned a model with the following indices (see **Table 5.1.3**): $\chi^2 = 269.4$ $df = 169$, $\chi^2/df = 1.59$; CFI = 0.90; SRMR = 0.058; RMSEA = 0.046; and Hoelter = 226. Using the framework indicated earlier for assessment of model fit, we see that the two-factor model of the TAS-20 also demonstrated good-to-excellent fit for the Zulu sample group.

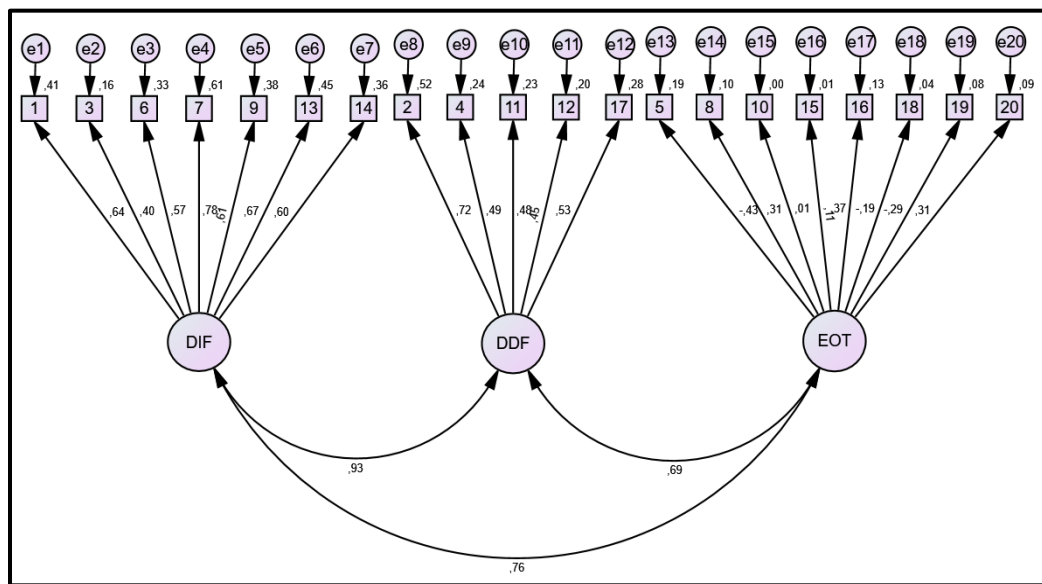
Model III - Specification and testing of the oblique four-factor model (**Figure 5.1.6**) returned a model with the following indices (see **Table 5.1.3**): $\chi^2 = 258.4$ $df = 164$, $\chi^2/df = 1.58$; CFI = 0.91; SRMR = 0.059; RMSEA = 0.045; and Hoelter = 229. Evaluating the four-factor TAS-20 solution according to the specified model fit criteria shows similarly good-to-excellent fit for the Zulu sample group.

- **Model Comparisons**

The Akaike information criterion (AIC) was utilized to compare model fit for the three non-nested model solutions. In response to **RQ 1** and **RQ 1.1**, despite all three models demonstrating good fit to the data, the standard oblique three-factor model (Model I - **Figure 5.1.7**) demonstrated best overall global fit to the data with the lowest AIC index (AIC, 350.1, **Table 5.1.3**) of the models, thereby confirming the best global fit of the a priori standard oblique three-factor model hypothesized.

Figure 5.1.7

Model I – Standard 3-Factor Solution

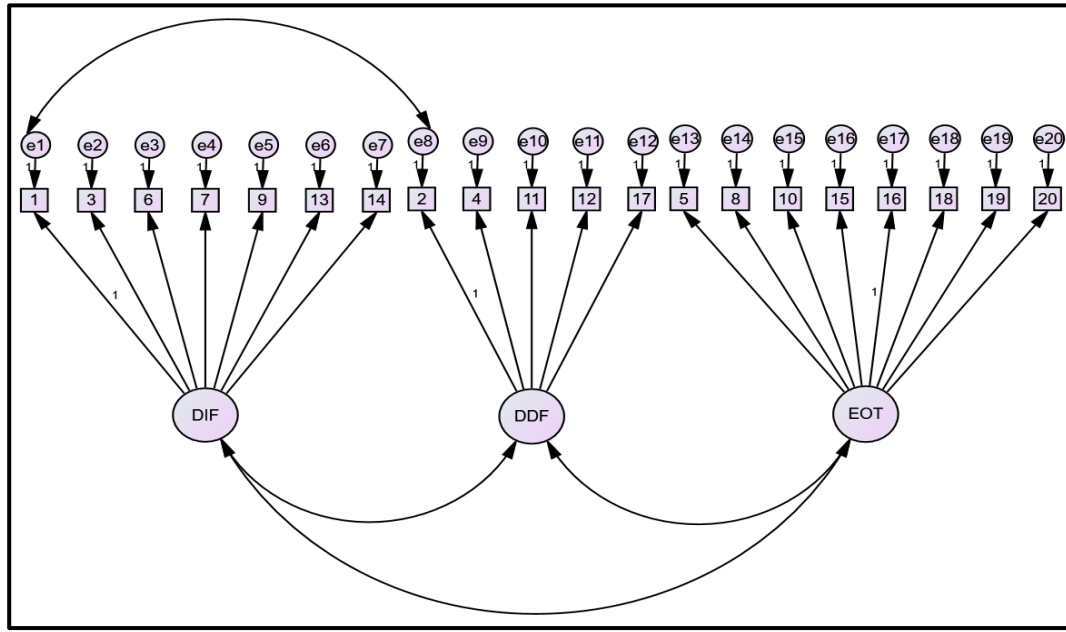


5.1.3.2 Model Modification and Respecification

Despite confirming the a priori hypothesis, CFA is a recursive process and demands further evaluation past model-level fit, to factor-level and item-level evaluation. Examination of the covariance and regression weights modification indices (MI) for the standard three-factor model output indicated problematic co-variation (M.I. = 23.27, Par Change: 0.367) between Item 1 (ϵ_1) from the DIF latent factor and Item 2 (ϵ_8) from the DDF latent factor. Albeit undesirable, adding this particular parameter was considered justifiable due to the conceptual similarities of both items in the isiZulu translation, thus a covariance path was specified between ϵ_1 and ϵ_8 (see **Figure 5.1.8**).

The standardized residual covariance's matrix was assessed for localized areas of strain. A positive standardized residual of 2.61 ($p < 0.01$) between Item 10 and 19 indicates that the model's parameters significantly underestimate the relationship between these indicators (Harrington, 2009). Further examination of the three-factor solution's regression weights output showed that all items except two were statistically significant indicators of their respective factors. Item 10 and Item 15 failed to load significantly onto their hypothesized latent factor. As the TAS-20 follows a scoring format that requires all 20 items, and removal of the items was not justifiable in relation to extant theory, the items were retained in the Revised three-factor Solution (**Figure 5.1.8**) and subjected to further CFA.

Figure 5.1.8
Model IV – Revised 3-Factor Solution



5.1.3.3 Revised 3-Factor Model:

Table 5.1.4 Goodness-of-fit Indices

Standard 3-Factor Model and Revised 3-Factor Model

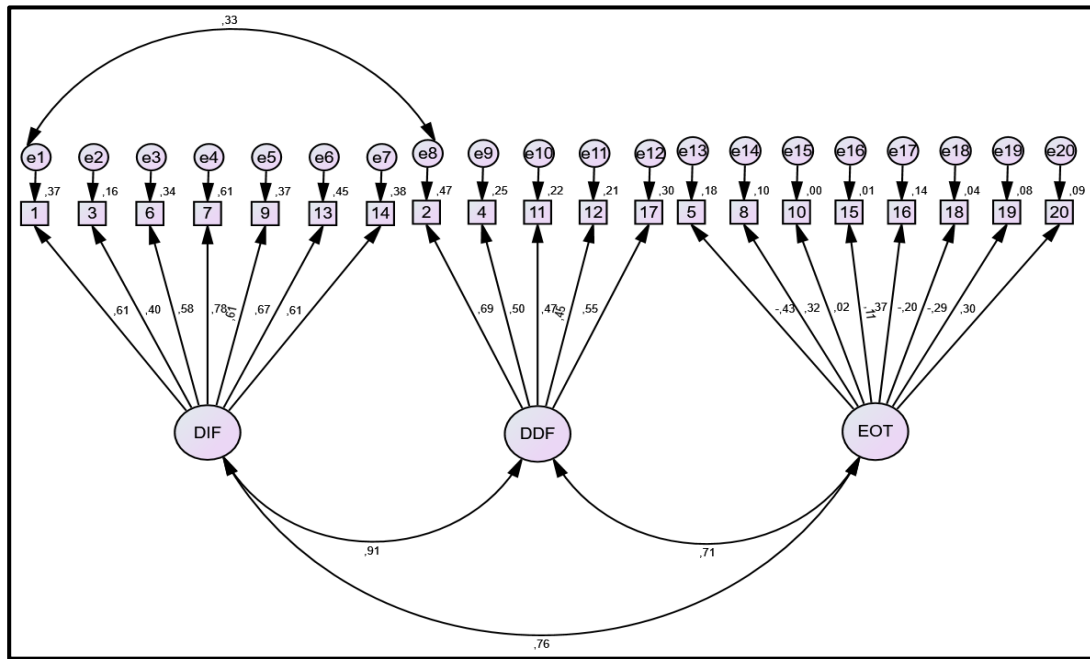
Model	χ^2	<i>df</i>	χ^2/df	CFI	SRMR	RMSEA	Hoelter (.01)
Model I: 3-Factor	264,1	167	1,58 (Excellent)	0,91 (Acceptable)	0,057 (Excellent)	0,045 (Excellent)	228 (Good)
Model IV Revised 3-Factor	239,0	166	1,44 (Excellent)	0,93 (Acceptable)	0,055 (Excellent)	0,039 (Excellent)	251 (Excellent)

- **Goodness-of-Fit: (Model Fit)**

Model IV - The model indices returned for the Revised three-factor Model were as follows (see **Table 5.1.4**): $\chi^2 = 239.0$, $df = 166$, $\chi^2/df = 1.44$; CFI = 0.93; SRMR = 0.055; RMSEA = 0.039; and Hoelter = 251. Utilizing the model fit evaluation framework specified earlier, the Revised three-factor model showed improvement in overall fit for the data set compared to the standard three-factor model. In order to evaluate whether the specified correlated error pathway between ϵ_1 and ϵ_8 yielded a significant improvement in the model fit, a chi-square likelihood ratio test was performed as follows (Brown, 2006): $\chi^2_{\text{difference}} = 264.1 - 239.0 = 25.1$; $df_{\text{difference}} = 167-166=1$. As the critical value of the χ^2 statistic at $df=1$ is 3.84 ($p=0.01$),

we can conclude that the two models are significantly different, and that the specification of the correlated error in the Revised three-factor model (**Figure 5.1.9**) provides a significant improvement over the standard three-factor model.

Figure 5.1.9
Model IV – Revised 3-Factor Solution Output



- Model Parameter Estimates: (Factor and Item Fit)**

The correlated relationships among the three latent factors (DIF, DDF and EOT) of the Revised three-factor model were all found to be significant ($p = <0.05$). The correlation between DIF and EOT was positive and strong at $r = 0.76$. DDF and EOT similarly correlated highly and positively at $r = 0.71$. The correlation between DIF and DDF was positive and higher than recommended (≥ 0.8) at $r = 0.91$, indicating possible issues with discriminant validity (Hair, Black, Babin, & Anderson, 2010).

Table 5.1.5
Factor Correlation Coefficients and Average Variance Extracted

	Factor 1 (DIF)	Factor 2 (DDF)	Factor 3 (EOT)
Factor 1 (DIF)	(0.383)		

Factor 2 (DDF)	0.91*	(0.289)	
Factor 3 (EOT)	0.76*	0.71*	(0.080)
<i>Note:</i> (AVE) = Average Variance Extracted			
* = $p < 0.05$			

The loadings for the seven items on the DIF factor ranged from $\beta = 0.404$ (Item 3) to $\beta = 0.784$ (Item 7). The loadings for the five items on the DDF factor ranged from $\beta = 0.453$ (Item 12) to $\beta = 0.686$ (Item 2). The loadings for the eight items on the EOT factor ranged from $\beta = 0.023$ (Item 10) to $\beta = -0.427$ (Item 5). All items from the DIF and DDF factors loaded significantly onto their latent factors ($p < 0.05$) with fair, to excellent loadings of ≥ 0.404 , indicating convergent validity. However, several items from the EOT factor failed to load significantly (Item 10: $p = 0.778$; and Item 15: $p = 0.178$), had poor loadings ($\beta = < 0.3$ for Items 10, 15, 18, 19) or loaded negatively, raising concerns regarding the convergent validity of the EOT subscale (Harrington, 2009). See Table 5.1.6 for results.

Table 5.1.6
Revised 3-Factor Model: Factor Loadings and Variance Explained

Item	DIF (β)	DDF (β)	EOT (β)	r^2
1	0.606*			36.7%
2		0.686*		47.1%
3	0.404*			16.4%
4(rev)		0.496*		24.6%
5(rev)			-0.427*	18.3%
6	0.580*			33.6%
7	0.784*			61.4%
8			0.318*	10.1%
9	0.609*			37%
10(rev)			0.023	0.1%
11		0.473*		22.4%
12		0.453*		20.5%
13	0.673*			45.3%
14	0.614*			37.8%
15			0.106	1.1%
16			0.368*	13.5%
17		0.546*		29.9%
18(rev)			-0.196*	3.8%
19(rev)			-0.285*	8.1%
20			0.305*	9.3%
AVE	0.383	0.289	0.080	

Note:

rev = Reverse Coded Item

* = Significant loading ($p < 0.05$)

Loading size < 0.30 = poor loading

r^2 = Variance Explained

AVE = Average Variance Extracted

The covariance between DIF and DDF ($cov = 0.788$, S.E. = 0.127) was significant ($p < 0.05$), however the value was higher than recommended (0.7), raising further concerns regarding discriminant validity between the two latent variables (Brown, 2015). The covariances between DIF and EOT ($cov = 0.366$, S.E. = 0.088), as well as DDF and EOT ($cov = 0.375$, S.E. = 0.089) were both also significant ($p < 0.05$). The inter-factor covariances among the three latent factors of the Revised three-factor model were thus all found to be significant ($p < 0.05$) and positive. The explained variance (r^2) for the seven DIF indicator variables ranged from 16.4% of their variance explained (Item 3) to 61.4% explained (Item 7). The five DDF indicator variables ranged from 20.5% of their variance explained (Item 12) to 47.1% explained (Item 2).

The eight EOT indicator variables ranged from 0.1% of their variance explained (Item 10) to 18.3% explained (Item 5), raising concerns regarding convergent validity (see **Table 5.1.6**). Further assessment of the discriminant validity between the DIF and DDF subscales revealed that the square root of the average variance extracted ($AVE = 0.383$, $\sqrt{AVE} = 0.62$) for DIF is less than its correlation with DDF ($r = 0.91$) indicating shared significant indicator variables between the subscales. The outcomes were the same when repeating the analyses with the \sqrt{AVE} for DDF ($AVE = 0.289$, $\sqrt{AVE} = 0.54 > 0.91$).

5.2 ASSESSMENT OF INTERNAL CONSISTENCY

RQ – 2: Does the adapted isiZulu TAS-20 demonstrate internal reliability?

RQ – 2.1: Will the EOT subscale demonstrate inadequate internal reliability, as has been observed among other collectivist cultures?

5.2.1 Internal Reliability of the isiZulu TAS-20:

In order to address a) the question of whether the isiZulu TAS-20 demonstrated overall internal reliability and b) whether the EOT subscale would demonstrate inadequate reliability due to culture effects, Chronbach's alpha (α) statistic was determined using SPSS 21.0. The alpha coefficients (α), and mean inter-item correlations for the total-scale and each subscale score were computed and reported (**Table 5.2.1**). The cut-off criterion recommendations for determining internal consistency were as follows:

1. **Chronbach's α :** 0.60 = questionable, 0.7 = acceptable, 0.8 = good, and 0.9 = possible redundancy (Clark & Watson, 1995; Gliem & Gliem, 2003; Streiner, Norman, & Cairney, 2015).
2. **Mean inter-item correlations (AIC):** The mean inter-item correlations assess item-to-item homogeneity and optimally fall between $r = 0.2$ to 0.4 (Pallant, 2016).
3. **Item-total Correlations:** The Corrected Item-Total Correlations assess the strength of the items correlation with the scale, and optimally falls within $r = 0.3$ to 0.7 , however scores as low as 0.2 may at times be justifiably accepted if they significantly contribute to the composite α value (Ferketich, 1991).

Table 5.2.1
Internal Reliability for Revised 3-Factor isiZulu TAS-20

(n = 284)	Factor 1 (DIF)	Factor 2 (DDF)	Factor 3 (EOT)	isiZulu TAS-20
Mean	18.10	13.90	20.48	52.48
S.D	6.81	4.69	4.23	11.56
IRC (α)	0.81	0.68	0.22	0.75
AIC (0.2-0.4)	0.37	0.30	0.03	0.12

Note: IRC = Internal reliability coefficient, AIC = Mean inter-item correlation

- **Scale-level Reliability**

As indicated in **Table 5.2.1**, the alpha coefficients were $\alpha = 0.75$ for the isiZulu TAS-20 total scale, $\alpha = 0.81$ for the DIF factor scale, $\alpha = 0.68$ for the DDF factor scale, and $\alpha = 0.22$ for the EOT factor scale. In response to **RQ 2**, the isiZulu TAS-20 total scale demonstrated adequate internal consistency. The DIF factor scale similarly demonstrated adequate internal reliability. Whilst the DDF factor scale value was marginally below the suggested standard for acceptability (0.7), it is acceptable with caution. In response to **RQ 2.1**, the EOT subscale demonstrated very poor internal consistency, falling well below recommended criteria. Mean inter-item correlations (AIC) for the DIF and DDF factor scales were satisfactory, falling within the optimum 0.2-0.4 range, indicating inter-item homogeneity. However, the AICs for the isiZulu TAS-20 total scale and EOT factor scale both fell below the acceptable range, indicating problematic inter-item heterogeneity in both the total scale and EOT subscale. Further item-level analysis was required.

- **Item-level Reliability**

Item-total statistics (**Table 5.2.2**) were examined to identify any possible problematic items. Due to the fact that the scale is a multifactor oblique scale, items were expected to correlate positively with the composite total scale score at between $r = 0.3$ and 0.7 . As indicated in **Table 5.2.2**, the corrected item-total correlation values for the DIF and DDF factor scales were all positive and fell within the recommended range (0.3 - 0.7) from $r = 0.321$ for Item 12 to $r = 0.650$ for Item 7. Moreover, item-total analyses revealed that removing any of the DIF and DDF factor scale items would negatively impact the total TAS scale's internal consistency (Chronbach's alpha level).

However, a number of item-level issues surfaced upon analysing the item-total statistics for the EOT factor scale. All of the corrected item-total correlation values from the EOT scale fell outside the recommended range (0.3 - 0.7) from $r = 0.040$ for Item 15 to $r = 0.284$ for Item 8. Additionally, three items (Item5, Item18 and Item19) from the EOT factor scale correlated negatively with the overall isiZulu TAS-20, contrary to the theoretical assumption regarding the construct of alexithymia that predicts an oblique multi-factor scale. It was noted that these three items (5, 18, 19) were among the five negatively worded items on the scale, however great care was taken to ensure that all negatively worded items (including items 4 and 10) had been reverse coded and entered correctly into the analyses.

These findings indicate significant instability in the EOT factor scale. Despite falling outside of the recommended item-total correlation range (0.3 - 0.7), further analyses indicated that Items 8, 16 and 20 from the EOT factor scale do indeed positively contribute to the composite TAS-scale's internal consistency. Their values ranged from $r = 0.223$ for Item 20, to $r = 0.284$ for Item 8. Findings from Item-level analysis would suggest the removal of EOT Items 5, 10, 15, 18, and 19 from the scale to improve overall internal consistency.

Table 5.2.2
Item-Total Statistics for isiZulu TAS-20 by factor subscale

	Item-Total r	Scale α if Item Deleted
DIF Factor Scale		
Item1	.518	.718
Item3	.354	.734
Item6	.487	.722
Item7	.650	.708
Item9	.494	.720
Item13	.588	.713
Item14	.526	.716
DDF Factor Scale		
Item2	.573	.714
Item4 (rev)	.418	.728
Item11	.398	.729

Item12	.321	.735
Item17	.450	.724
EOT Factor Scale		
Item5 (rev)	-.265**	.772
Item8	.284*	.738
Item10 (rev)	.113*	.747
Item15	.040*	.756
Item16	.230*	.742
Item18 (rev)	-.123**	.767
Item19 (rev)	-.160**	.770
Item20	.223*	.743
<i>Note:</i> rev = Negatively worded Item (reverse coded item)		
* = Correlation < 0.3		
** = Negative Correlation		

5.3 PRELIMINARY EXPLORATION: isiZulu TAS-20

5.3.1 IsiZulu Tas-20: Total Sample Descriptive Statistics:

The mean score on the isiZulu TAS-20 for the overall sample group (N=284) was 52.48 ($SD = 11.55$); DIF subscale $\bar{x}=18.10$ ($SD=6.81$); DDF subscale $\bar{x}=13.90$ ($SD = 4.29$); and EOT subscale $\bar{x}=20.47$ ($SD=4.23$), see **Table 5.3.1**. TAS-Total scores were $\bar{x}=52.5$ and $\sigma_{\bar{x}} = 11.6$, making low alexithymia ≤ 41 ; normal levels 42 – 63; and clinically significant ≥ 64 . In terms of sample spread across diagnostic categories, see **Table 5.3.2**.

Table 5.3.1
isiZulu TAS-20: Means and SD's

	N	Mean	Std. Deviation
isiZulu TAS-Total	284	52.48	11.55
DIF	284	18.10	6.81
DDF	284	13.90	4.69
EOT	284	20.48	4.23

As can be seen in Table 5.3.2, approximately 54 (19%) of the participants scored 1 standard deviation below the sample mean on the isiZulu TAS-20, thus placing in the 'low alexithymia' range relative to the sample group. Approximately 175 (61.6%) of the

participants scored in the ‘normal’ range on the isiZulu TAS-20, within one standard deviation below or above the sample mean. Lastly, a total of 55 (19.4%) of the participants scored 1 standard deviation above the mean on the isiZulu TAS-20, indicating significant levels of alexithymia relative to the cohort.

Table 5.3.2
isiZulu TAS-20: Diagnostic Categories and Frequencies

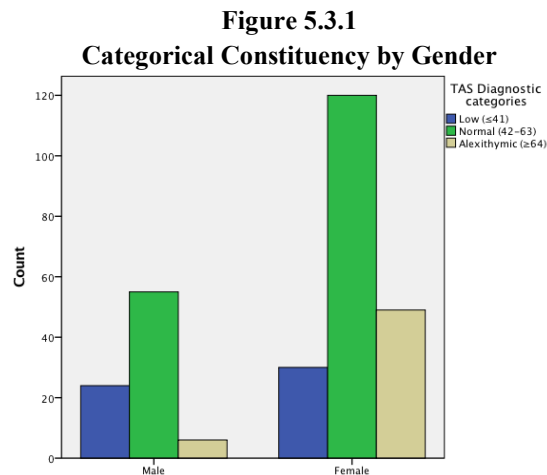
Diagnostic Cut offs	Frequency (N=284)	Percentage of Total
Low Alexithymia (≤ 41)	54	19%
Normal Range (42-63)	175	61.6%
High Alexithymia (≥ 64)	55	19.4%
Totals	284	100%

5.3.2 IsiZulu Tas-20: Descriptive Statistics by Gender:

The female participant group ($N=199$) had a mean score of $\bar{x} = 54.70$ ($SD = 11.47$) on the isiZulu TAS-20 alexithymia scale. By comparison, the male participant group ($N = 85$) had a mean score of $\bar{x} = 47.28$ ($SD = 10.04$). As can be seen in **Table 5.3.3**, within their respective cohorts, 28.2% of all male participants and 15.1% of all female participants fell within the low range of alexithymia (≤ 41), whilst 64.7% of male participants and 60.3% of female participants fell within the normal range of alexithymia (42-63). Lastly, 7.1% of male participants and 24.6% of female participants fell within the high alexithymia range (≥ 64). Results are depicted on a histogram for visual representation (**Figure 5.3.1**)

Table 5.3.3
isiZulu TAS-20: Diagnostics (Male and Female)

Alexithymia category		Male (N=85)	Female (N=199)
Low (≤ 41)	Count	24	30
	Within Gender Cohort	28.2% of men	15.1% of women
Normal (42 – 63)	Count	55	120
	Within Gender Cohort	64.7% of men	60.3% of women
High Alexithymia (≥ 64)	Count	6	49
	Within Gender Cohort	7.1% of men	24.6% of women
Total	Count	85	199
	Within Gender Cohort	100%	100%



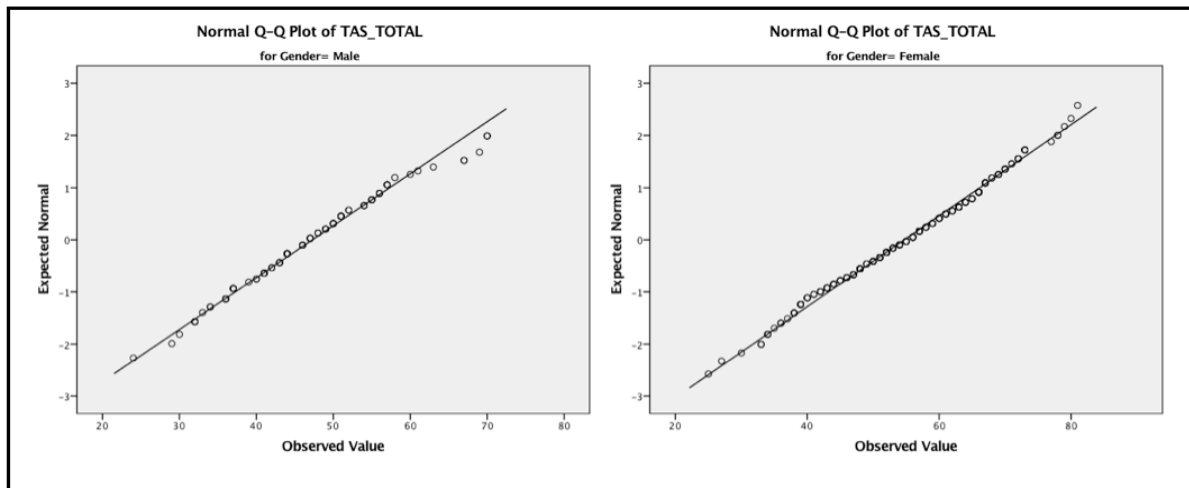
5.3.2 isiZulu TAS-20 Mean Comparison by Gender

RQ – 3: Does gender demonstrate any significant effect on the TAS-20 full-scale scores?

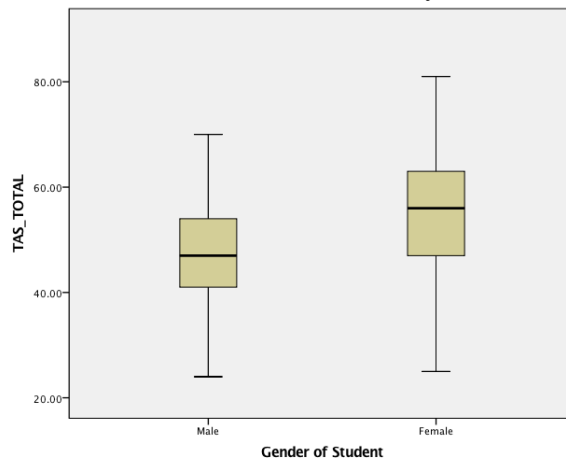
- **Independent Samples *t*-test:**

In order to test the hypothesis that male and female participants would be associated with statistically significantly different mean levels of alexithymia (as measured by the isiZulu TAS-20) an independent samples *t*-test was conducted (using SPSS 23.0). This began with preliminary analyses of the data to ensure that the prerequisite statistical assumptions are met before commencing with the *t*-test. A visual inspection of the normal Q-Q plots (**Figure 5.3.2**) and box plot (**Figure 5.3.3**) reveals that the TAS-Total scores approximate a normal distribution for both male and female participants.

Figure 5.3.2 Normal Q-Q Plots of TAS-20 Total by Gender



**Figure 5.3.3
Box Plot for TAS-20 totals by Gender**



The male and female score distributions satisfied the assumption of normality for the purposes of employing a *t*-test, with a skewness of 0.287 (Std. Error = 0.261) and a kurtosis of -0.068 (Std. Error = 0.517) for the male participants, and a skewness of -0.109 (Std. Error = 0.172) and a kurtosis of (Std. Error = 0.343) for the female participants, as seen in **Table 5.3.4** (Shapiro & Wilk, 1965; Razali & Wah, 2011; Cramer, 1998; Cramer & Howitt, 2004; Doane & Seward, 2011).

**Table 5.3.4
Descriptive statistics for TAS-20 by Gender**

MALE		Statistic	Std. Error
Mean		47.28	1.01
95% CI for Mean Lower Bound		45.12	
95% CI for Mean Upper Bound		49.45	
Std. Deviation		10.04	
Skewness		0.287	0.261
Kurtosis		-0.068	0.517
FEMALE			
Mean		54.70	0.81
95% CI for Mean Lower Bound		53.10	
95% CI for Mean Upper Bound		56.31	
Std. Deviation		11.45	
Skewness		-0.109	0.172
Kurtosis		-0.503	0.343

Furthermore, as can be seen in **Table 5.3.5**, the assumption of homogeneity of variances was evaluated and satisfied using Levene's F test $F(282) = 3.207, p=0.073$.

Table 5.3.5

Test of Homogeneity of Variances – TAS-20				
Levene Statistic	F	df	df	Sig.
	3.207	1	282	0.074

In keeping with the non-significant result from Levene's F test, equal variance was assumed for the results of the independent samples t -test. The independent samples t -test showed that there was a significant difference between female participants' mean scores ($\bar{x} = 54.70, SD = 0.81$) on the total isiZulu TAS-20, compared to male participants' mean scores ($\bar{x} = 47.28, SD = 1.01$) on the total isiZulu TAS-20. In response to **RQ 3**, the results indicate that female subjects indeed obtained significantly higher mean scores on the overall isiZulu TAS-20, $t(282) = 5.18, p = <0.001$ (see **Table 5.3.6**).

Table 5.3.6

t -test for Equality of Means: Male and Female Subjects							
TAS-Total	t	df	Sig. (2-Tailed)	Mean Difference	Std. Error Difference	95% CI of difference - Lower	95% CI of difference - Upper
Eq. Variances Assumed	5.18	282	0.000	7.42	1.43	4.60	10.24

5.4 SUMMARY OF RESULTS:

The first part of the data analyses involved conducting a series of confirmatory factor analyses on three competing factor solutions for the isiZulu TAS-20. Although all three models provided good fit for the data, the standard three factor oblique model demonstrated the best overall fit among the three base models. Based on further assessment of the results for the standard three-factor model, an additional path was specified allowing Item1 and Item2 to co-vary. The revised three-factor model demonstrated a significant improvement in overall fit to the data over the standard three-factor model, and was thus accepted as the better fitting model. The second part of the data analyses involved evaluating the internal reliability of the isiZulu TAS-20 and its three subscales. Whilst the isiZulu TAS-20 total scale and two of its subscales (DIF and DDF) demonstrated acceptable internal reliability, the EOT subscale demonstrated poor internal reliability and inter-item homogeneity. The third section tested the hypothesis that gender would be associated with significantly different isiZulu TAS-20 mean scores, and found preliminary evidence confirming this hypothesis. Findings showed that female participants scored higher on average than male participants. These findings are explored in detail in Chapter 6.

CHAPTER 6

DISCUSSION

6.1 DISCUSSION OF AIMS AND OBJECTIVES

Alexithymia has been implicated as a transnosographic risk factor associated with a host of medical and psychiatric illnesses, as well as poorer treatment outcomes, and both intrapersonal and interpersonal dysfunction (Bagby et al., 2020). As a result, it has garnered much attention across several domains of research in an effort to gain a clearer understanding of its etiology, impact on health, and possible treatment (Porcellia, Vadinia, & Accorsic, 2018). Despite the myriad of health issues associated with alexithymia, little research on this subject has been conducted in South Africa, likely due to the lack of a valid and reliable psychometric scale. The overarching aim of this study was therefore to translate and culturally adapt the TAS-20 for use in an isiZulu-speaking university sample group, as well as to evaluate its psychometric properties and explore variance by gender. The study also set out to explore whether results would converge with prior studies showing that the externally-oriented thinking (EOT) component of alexithymia does not hold in collectivist-oriented cultures (Dere, 2011; Dere et al., 2012; Ryder et al., 2008; Ryder et al., 2018). The findings are interpreted through a biopsychosocial lens, drawing specifically on the theory of constructed emotion to elucidate the role of sociocultural factors (Barrett, 2017; Engel, 1980). Three broad objectives were specified in order to operationalize the these aims:

- **Study Objectives:**

The first objective of this study was to translate and culturally adapt the TAS-20 in order to establish linguistic and cultural equivalence for use with an isiZulu-speaking first year university sample group. The translation and adaptation process employed in this study

adhered to guidelines of a number of noted cross-cultural researchers, and involved six stages (**Figure 4.1**, see Chapter 4 for detailed breakdown), including an expert panel review and oversight from the TAS-20 test developers (Beaton et al., 2000; Foxcroft & Roodt, 2013; Gjersing, Caplehorn & Clausen, 2010). In keeping with recommendations by Tsang and colleagues (2017) before administering the isiZulu TAS-20, several forms of validity were established in this process, including: semantic, idiomatic, experiential and conceptual equivalence. Moreover face validity was established through a cognitive pretest, whilst content validity was evaluated and approved by current world-leading experts on the construct of alexithymia, and test developers of the TAS-20 (Bagby et al., 1994a, 1994b, see **Appendix A, Figure 4.1**).

The second objective of this study was to conduct a preliminary evaluation of the psychometric properties of the newly translated and culturally adapted isiZulu TAS-20, utilizing two procedures to assess its validity and reliability. Confirmatory factor analyses were run to test and compare three theoretically and empirically supported TAS-20 factor solutions for best fit to the data, namely, the standard three-factor model (**Figure 5.1.4**), the two-factor model (**Figure 5.1.5**) and the four-factor model (**Figure 5.1.6**) (Bagby et al., 1994a; Bagby et al., 1994b; Erni, Lötscher, & Modestin, 1997; Müller, Bühner, & Ellgring, 2003). The aforementioned factor solutions were evaluated and compared on global-level fit and local-level fit (Brown, 2015). All three hypothesized factor solutions for the TAS-20 tested by the study were confirmed, each demonstrating acceptable global fit to the data. However, the original standard three-factor solution demonstrated superior global fit overall (**Table 5.1.3**). The study therefore successfully replicated and supported the superiority of the hypothesized three-factor structure (DIF-DDF-EOT) of the TAS-20 in the isiZulu sample group. At a local level the EOT latent factor failed to replicate in a theoretically meaningful

manner, whilst the DIF and DDF factors replicated successfully, thus confirming the sub-hypothesis. The second statistical procedure sought to determine the internal reliability of the newly adapted isiZulu TAS-20. This was evaluated through utilizing the chronbach's alpha statistic for the total-scale and subscales, as well the mean inter-item correlations (AIC) and item-total correlations of the scale (Clark & Watson, 1995; Gliem & Gliem, 2003; Streiner, Norman, & Cairney, 2015). Results showed that the total isiZulu TAS-20 scale, along with the DIF and DDF subscales demonstrated adequate internal reliability. As hypothesized, the EOT subcale was found to be ubstable in the Zulu sample group.

The third objective of the study sought to explore whether gender would be associated with significantly different mean scores on the isiZulu TAS-20 among the participants (Parker et al., 2003). This was determined by conducting an independent samples *t*-test comparing the full-scale mean score of the female cohort with the full-scale mean score of the male cohort (**Table 5.3.6**). The results of the independent samples *t*-test showed that female participants attained significantly higher mean scores on the overall isiZulu TAS-20 compared to the male participants.

- **Study Achievements:**

In pursuit of its overall aims, this study marked a number of achievements. Firstly, it is noted that this is the first cross-cultural test adaptation of a well-established alexithymia scale for an indigenous African language and cultural group. By undertaking a process of translating and culturally adapting the TAS-20 for use among an isiZulu-speaking population this study hoped to contribute to further inclusivity and prioritizing of the linguistically and culturally diverse population of South Africa in testing practices. There is a clear and urgent need for more equity in the practice of psychometric assessment in the culturally diverse context of

South Africa, as envisioned by the Employment Equity Act (No.55 of 1998). The psychometric evaluation of the isiZulu TAS-20 marks the maiden voyage of cross-cultural research on the construct of alexithymia among an indigenous African linguistic and cultural group (as measured by the isiZulu TAS-20). Consequently, first steps have been taken towards contributing a long overdue African perspective to the global literature on the subject of alexithymia, as has been called for in the literature (Abiddine et al., 2017; Dere et al., 2012; Ryder et al., 2018). Findings from this preliminary exploration have significant implications for cross-cultural research on emotion, however these implications will be further unpacked in proceeding sections. Lastly, the study marked the first exploration of variances in levels of alexithymia by demographic indicators (males and females) within an African cultural context. Consequently, the study contributes a new perspective to understanding the sociocultural shaping of alexithymia.

6.2 PSYCHOMETRIC PROPERTIES AND EXPLORATION

6.2.1 Factor Structure of the isiZulu TAS-20

Evaluating the psychometric properties of the isiZulu TAS-20 in a Zulu sample yielded a number of compelling findings. All three hypothesized factor solutions for the TAS-20 tested by the study were confirmed, each demonstrating acceptable global fit to the data as indicated by their respective goodness-of-fit indices (**Table 5.1.3**). However, as can be seen by the comparative Akaike information criterion indices, the original standard three-factor solution clearly demonstrated superior global fit compared to both the alternative two-factor and four-factor models (**Table 5.1.3**). The study therefore successfully replicated and supported the superiority of the three-factor structure (DIF-DDF-EOT) of the TAS-20 in the isiZulu sample group.

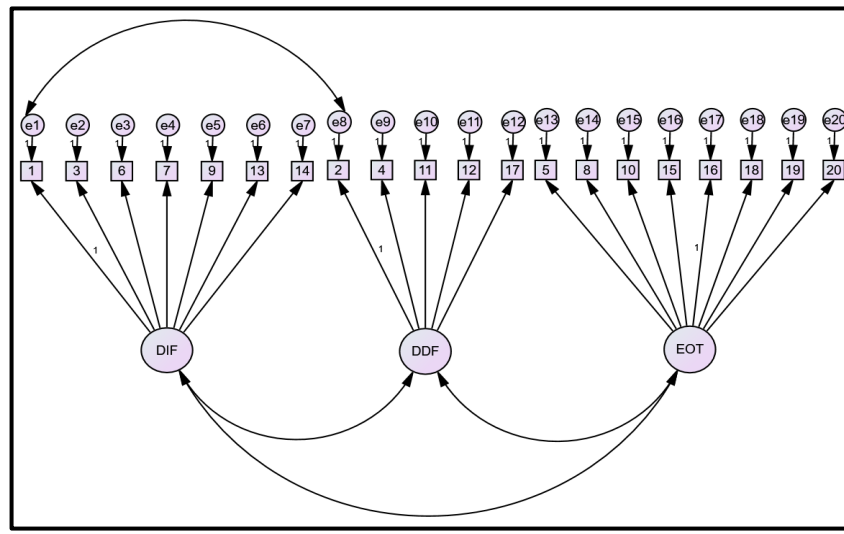
These findings were unsurprising, as the majority of TAS-20 CFA studies reviewed in the literature have demonstrated the superiority of the three-factor structure over the alternative solutions (Bach et al., 1996; Bagby et al., 2020; Besharat 2007; Bressi et al., 1996; Cserjési et al., 2007; Grabe et al., 2006; Joukamaa et al., 2001; Lee et al., 1996; Loas et al., 2001; Martínez-Sánchez et al., 1996; Pandey et al., 1996; Taylor et al., 2003; Prazeres et al., 2000; Simonsson-Sarnecki et al., 2000). Tsaouis and colleagues (2010) have suggested that this seeming consistency across studies may in fact indicate some support for the multidimensional nature of the construct of alexithymia. Results of this study support this notion to a limited extent. Due to the fact that this was the first TAS-20 CFA conducted in an African context, it would be expedient for future studies to include a wider range of empirically supported factor solutions, as the possibility of a more parsimonious model cannot be entirely rejected at this point.

- **Revised Three-Factor Model:**

Further evaluation of the modification indices of the standard three-factor model yielded an unexpected finding. Results indicated a significant covariation between item 1 from the DIF subscale, and item 2 from the DDF subscale (**Figure 5.1.8**). Interestingly, a recent study by Tuliao and colleagues (2019) also noted a residual item covariance in their TAS-20 CFA. These authors reasoned that their finding was likely due to conceptual equivalences between the items, and therefore allowed the items to co-vary (Tuliao et al., 2019). Similarly, an expert linguist inspected the item covariance at a semantic and conceptual level, and found that item 1 and item 2 both employ the same isiZulu word for “feelings”, which is contextually understood (**Appendix A** - Back translation). The covariance was thus explained by the conceptual similarities of the items, and it was deemed justifiable to specify an additional pathway allowing for the items to covary (**Figure 5.1.9**). As recommended by

Brown (2006), the revised three-factor model was compared as a nested model to the base three-factor model using the chi-square likelihood ratio test. Results showed that the revised three-factor model indeed yielded a statistically significant improvement in global fit to the data and it was therefore accepted over the standard three-factor model (**Table 5.1.4**).

Figure 5.1.9: Revised 3-Factor Model



- **Preliminary support for a multi-domain model of alexithymia:**

In summary, the theoretical three-factor model (DIF-DDF-EOT) obtained by Bagby and colleagues (1994) in the original derivation sample was recovered in the Zulu sample group, and provides support for a multi-domain model of alexithymia. The finding of acceptable global-fit may seem to suggest the theoretical validity of the three-component construct of alexithymia (measurable by the TAS-20) in the isiZulu population of South Africa. However, as Brown (2015) posits, even though CFA goodness-of-fit indices may support the global fit of a model, this does not indicate that the model is valid. This is due to the fact that model estimation does not ensure theoretically meaningful parameter estimates. The frequency of this common misunderstanding has been noted in the literature, as authors sometimes fail to inspect theoretical congruency of the model, erroneously accepting global-

fit indices as indications of validity (Brown, 2015). Indeed, a closer inspection of the parameter estimates and reliability analyses of the isiZulu TAS-20 revealed a number of issues with the theoretical model at the latent factor and predictor levels, cautioning acceptance of the validity of the three-factor model. This is further discussed below.

6.2.2 Validity and Reliability of the isiZulu TAS-20 Latent Factors

Despite the three-factor model demonstrating best overall fit to the data on a global level, not all relationships implied by the parameter estimates are congruent with the theoretical conceptualisation of the three-component TAS-20 (Bagby et al., 1994a; 1994b). As expected, both the DIF and DDF factors replicated well, whilst the EOT factor proved problematic. The reliability analyses further provided a number of key findings that served to reinforce the results from the confirmatory factor analysis and provide support for the hypotheses. The findings from the reliability analyses show that whilst the total isiZulu-TAS-20 scale and its DIF and DDF subcomponent scales demonstrated good internal reliability and homogeneity, this was not the case for the EOT subscale. These findings are unpacked below.

6.3 Externally-Oriented Thinking (EOT)

6.3.1 Psychometric Properties of EOT

- **Validity Analyses: EOT**

As expected, the parameter estimates for the EOT subscale and its indicators raised some concerns. Items 10 and 15 failed to load significantly onto the EOT subfactor, whilst items 5, 18 and 19 loaded negatively, raising concerns regarding the convergent validity of the EOT subscale (**Table 5.1.6**). CFA convention would have these five items removed from the scale and the model respecified (Harrington, 2009). However, this would have been premature and ill advised in light of the large body of empirical and theoretical support for the TAS-20, as it

would risk potential underrepresentation of the construct of alexithymia (Harrington, 2009; Tullio et al., 2019).

These findings provided strong support for this study's hypothesis that the EOT factor will replicate poorly in our collectivist-oriented sample group. Moreover, this was in keeping with findings reviewed in the literature, noting that whilst the DIF and DDF factors are commonly recovered in TAS-20 translations, the EOT factor has been less consistently replicated (Luminet et al., 2018). This was first noted in a review by Taylor and colleagues in 2003, but has since received much attention in recent years. A number of explanations have been offered in this regard.

Firstly, it has been suggested that the four negatively worded indicators pertaining to the EOT scale (items 5, 10, 18, 19) may very well be introducing a method effect, which could be undermining the factor structure of EOT (Meganck, Vanheule, & Desmet, 2008; Moriguchi & Komaki, 2013; Tullio et al., 2019). In response to this, Tullio and colleagues (2019) recently sought to address the issue by specifying a shared latent variable for the negatively worded items in the CFA, representing a common method factor. Although these items were found to load highly onto the common method factor, they did not load significantly onto the EOT factor. This meant that despite accounting for a possible method factor for these items, the EOT factor failed to emerge meaningfully in their data (Tullio et al., 2019). They concluded that the relevance of the EOT factor to the construct of alexithymia should therefore be called into question and further investigated.

A second argument reviewed in the literature questions whether the EOT subfactor represents a valid subcomponent of alexithymia, positing that it is conceptually distinct from the DIF

and DDF factors (Dere et al., 2012; Ryder et al., 2018; Tsaousis et al., 2010). Dere and colleagues (2012) argue that the components ‘difficulty identifying feelings’ and ‘difficulty describing feelings’ pertain directly to the concept of alexithymia as a “deficit” in emotion processing. However, they further maintain that the ‘externally-oriented thinking’ component rather pertains to whether internal experiences or external experiences are more salient and important to an individual (Dere et al., 2012). The EOT component is therefore not viewed as valid across all cultures, as a contextually-focussed cognitive style is normative among collectivist cultures, such as in East Asia (Dion, 1996; Kirmayer, 1987, 2006 ; Ryder et al., 2018). Dere and colleagues (2012), suggesting that the EOT factor likely represents a culturally specific norm of Western origin, where the construct of alexithymia was conceptualized. This is illustrated by the Western conceptualization of emotion as located within the individual, whereas an East Asian conceptualization of emotion views it as located in the contextual and interpersonal realm of experience (Moriguchi et al., 2007; Ryder et al., 2018). Moreover, Dere and colleagues (2012) also found that the EOT subscale was significantly predicted by collectivist cultural values in an East-Asian sample group, but not the DIF and DDF subscales. This finding has also been replicated by several other authors in East Asian culture groups (Dere et al., 2013; Ryder et al., 2018; Ryder et al., 2008; Zhu et al., 2007).

The findings of the present study are congruent with the latter argument, which holds that the EOT factor might indeed represent a Western cultural artefact rather than core defining component of alexithymia across cultures (Dere et al., 2012). It is therefore suggested that the validity of the EOT factor be reviewed and further investigated in the Zulu culture group.

- **Reliability Analyses: EOT**

As hypothesized, the EOT scale did not replicate reliably in the Zulu sample group. The EOT factor demonstrates very poor internal consistency ($\alpha = 0.22$) and falls well below the recommended cutoff criteria (**Table 5.2.1**). Furthermore, the mean inter-item correlations for several EOT indicators either fell outside of the acceptable and significant range (items 10 and 15) or correlated negatively (items 5, 18 and 19) with the overall total scale score (**Table 5.2.2**).

These findings were expected and consistent with those of several studies reviewed in the literature, showing that the EOT factor has demonstrated poorer reliability in translation studies (Meganck, Vanheule, & Desmet, 2008; Säkinen et al., 2007; Tsaousis et al., 2010; Zimmermann et al., 2007). In a number of cases, the alpha coefficient estimates for the EOT scale have fallen well below even 0.60 (Cleland, Magura, Foote, Rosenblum, & Kosanke, 2005; Kooiman, Spinhoven, & Trijsburg, 2002; Loas et al., 2001; Parker et al., 2003; Thorberg et al., 2010). The authors of the TAS-20 have noted this finding in a recent publication, arguing that the total scale score is the best representative indicator of alexithymia (Bagby et al., 2020). As such, Bagby and colleagues (2020) have advised against utilizing subscale scores in isolation. However, this reasoning does not hold validity, as the three-component scale relies on each subscale to reliably and congruently measure their theoretical factors in order to provide a composite score that is significantly predicted by its subcomponents. Moreover, this defies the logic of seeking to establish the most parsimonious model (Harrington, 2009). Nevertheless, the literature offers other possible explanations for the low reliability of the EOT scale across TAS-20 translation studies.

Firstly, it has been suggested that the markedly lower reliability values obtained by the EOT scale may be a consequence of difficulties with reaching cultural and linguistic equivalence

in the translation process (Ryder et al., 2018). Whilst this argument is certainly tenable, this begs the question of why the same finding of low reliability has not occurred for the other two factors (DIF and DDF). The extant literature and certainly the findings of this study are largely inconsistent with this explanation.

A second, partial explanation, has also been offered. Bagby and colleagues (2020) have shown that a number of researchers have obtained lower EOT reliability estimates as a result of neglecting to reverse-code its negatively worded items on the TAS-20 before running their analyses. However, this has certainly not been the case for the majority of studies reporting low EOT reliability (Luminet et al., 2018; Ryder et al., 2018). In response to this, the present study sought to rule this possibility out by taking great care to ensure that all negatively worded items in the total scale had been reverse coded and entered correctly before commencing with the analyses (see process in **Chapter 4**).

Lastly, it has been argued that the low reliability of the EOT factor across diverse linguistic and cultural contexts further indicates that the EOT latent factor does not hold across all sociocultural contexts (Kirmayer, 1987, 2006; Ryder et al., 2018). The findings of the present study converge with the last view, and suggest that the EOT factor is unstable and unreliable in the Zulu sample group. This finding is congruent with the theory of constructed emotion, which emphasizes the importance of language and culture in the formation of emotion concepts, as well as the experience of emotions (Barrett, 2017).

- **EOT Validity and Reliability in the Zulu Sample group**

The EOT factor was not successfully recovered in the data and demonstrated several validity concerns. Results found that the EOT factor did not converge in a theoretically consistent

manner with the construct of alexithymia, failing to predict seven out of its eight predictors at a significant level or in a theoretically congruent manner. Furthermore, the reliability analyses found that the EOT scale demonstrated very poor reliability and internal consistency, converging with the findings from the CFA. These findings suggest that the EOT scale cannot be considered a valid or reliable component for measuring alexithymia in the Zulu culture, and suggests that further research be done to investigate these findings. It is postulated that this finding may indicate that Traditional Zulu culture differs from Western cultures in cognitive-orientation during emotion processing, as will be elucidated below.

6.3.2 Theoretical Application: EOT (Zulu Culture)

Based on the current literature and advances in neuroscience, a strong argument can be made for the role of sociocultural factors in the shaping of the EOT component of alexithymia in the sample group (Barrett, 2017). Findings provide support for the argument that the externally-oriented thinking component included in the construct of alexithymia demonstrates cultural bias. As has been argued by Kirmayer (1987, 2006) and Dion (1996), the construct of alexithymia emerged out of the clinical practice of Western clinicians, and is therefore informed by Western cultural values that shape norms regarding the experience and expression of emotion. Moreover, the theory of constructed emotion holds that cultural factors, such as language, self-construal and gender norms all play an integral role in the way that people construct and perceive their experiences (Barrett, 2017; Kirmayer, 2006). Moreover, cultural variations in self-construal also significantly impact the models of mental health, healing practices and emotion norms we hold (Han & Northhoff, 2008). This argument holds especially true for the EOT component of alexithymia, which is clearly informed by Western emotion norms based on individualist self-construal (Kirmayer, 2006). An individualist self-construal views members of the cultural group as independent,

autonomous, and achieving sense of self through self-knowledge and introspection (Kirmayer, 2006; Triandis, 2001). In this type of cultural context emotions are conceptualized as being internal experiences, and thus being attuned and attentive to one's inner experiences and world is important (Kirmayer, 2006).

However, this "internally-oriented" attentiveness in emotion processing is not normative across all cultures (Dere et al., 2012). For example, in traditional Zulu culture, communities are guided by a value system known as 'Ubuntu', which at its core conveys the idea that selfhood only emerges and exists in relationship with others in the community (Kamwangamalu, 1999). The Ubuntu philosophy underscores collective wellbeing, pursuit of interpersonal harmony, contribution to community, and a focus on interrelatedness and contextual processes more than to internal individual experience (Nel et al., 2012). Zulu culture is thus strongly oriented toward a collectivist self-construal, where members are interdependent and define themselves in relation to their communities (Triandis, 2001). This has fundamentally shaped the Zulu cultural practices and norms in relation to emotion processing, experience and expression, as well as the healing practices and cultural views on well being (Daniels, 2018). Consequently, members of a traditional Zulu community conceptualize emotions as transpiring in the context of relationship with others, and are therefore more sensitive to contextual and interpersonal experiences (Daniels, 2018; Lo, 2014). The individual's wellbeing is viewed as deeply connected with their sustained harmony and connectedness with god, the ancestors, their community and nature (Daniels, 2018).

Subsequently, when in distress, cultural health practices would involve examining the 'external' interpersonal world for evidence of discord or strain in order to restore harmony

and relieve distress (Washington, 2010). This is frequently demonstrated in Zulu cultural health practices, where individuals seek the help of traditional healers to help them locate the areas of disharmony among their relationships with ancestors or the community (Washington, 2010). This is in contrast to individuals from an individualist culture who may locate the source of psychological distress as an internal state, which should subsequently be addressed through introspection and reflection (Kirmayer, 2006). This is reflected in the cultural health practices of early psychoanalytic therapy from which the construct of alexithymia emerged (Bargby et al., 2018).

It is therefore posited that the EOT component of alexithymia is culturally-biased, and not necessarily valid across all cultures as a core feature of alexithymia. This view is in keeping with Barrett's (2017) theory of constructed emotion, which provides a compelling argument that culture largely shapes how emotion experiences are constructed and conceptualized, meaning that they are indeed expected to vary by sociocultural context. Consequently, this finding indicates that Zulu culture likely differs from Western cultures in cognitive-orientation during emotion processing. As discussed, it is likely that the collectivist-oriented form of self-construal held in traditional Zulu culture prioritizes the salience of interpersonal and contextual factors in emotion processing (Kirmayer, 2006; Washington, 2010). This interpretation is additionally supported by recent cross-cultural neuroscience studies, which have found that self-construal shapes both sensory processes, as well as higher-level and lower-level cognitive processes (Han & Northoff, 2008). This finding signals a convergence in the literature regarding the impact of collectivist self-construal on alexithymia, and particularly the implications for the EOT subscale (Dere et al., 2012; Ryder et al., 2018).

6.3.3 EOT: Critique of Construct Validity

If EOT indeed represents a feature that is specific to alexithymia as it occurs in individualist societies, one may readily appreciate the risk that its inclusion in the construct of alexithymia may potentially pathologize culturally normative ways in which individuals within the Zulu culture process and conceptualize emotion. These worries are echoed by Kirmayer (1987, 2006) who expressed concern over erroneously problematizing the normative emotional experiences of cultures with different values to Western society. Dere and colleagues (2012) set out to investigate this exact concern among an East Asian sample and found that only the EOT subscale of the TAS-20 was significantly associated with high scores on a measure of collectivist self-construal. This finding may be understood according to the theory of constructed emotion, which postulates that experiences of emotion are not ‘universal hardwired responses’, but rather diverse and actively constructed by cultural and linguistic conceptual systems (Barrett, 2017). Interestingly, research has also found that the EOT component of alexithymia is less frequently related to psychiatric and medical conditions than DDF and DIF (Dere et al., 2012). Moreover, recent research has come to show that EOT may serve as a protective factor in cases of prolonged stress (Davydov, 2017; Kajanoja et al., 2017).

In line with these findings, a meta-analysis by Bailey and Henry (2007) showed that the DIF and DDF components of alexithymia are more frequently associated with pathology than the EOT component. Another study reported finding that mental health patients scored significantly higher on the total scale, DIF subscale and DDF subscale of the TAS-20 than patients in primary care, whilst no group variation was associated with EOT scores (Joukamaa et al., 2008). Interestingly, Joukamaa and colleagues (2008) further reported finding that the DIF and DDF subscales, but not the EOT subscale, were significantly and positively related to measures assessing experiences of neglect and abuse among the patients

in primary care. Another study by Grabe and colleagues (2000) investigated the relationship of the dimensional components of alexithymia with dissociation and found that whereas the total scale, DIF subscale and DDF subscale of the TAS-20 were related to dissociation, the EOT subscale was not. It is consequently argued that the EOT component of alexithymia should be theoretically reviewed, with particular focus on its sociocultural shaping.

6.4 Difficulty Identifying Feelings (DIF) and Difficulty Describing Feelings (DDF)

6.4.1 Psychometric Properties of DIF and DDF

- **Validity Analyses: DIF and DDF**

As expected, items from both the DIF and DDF latent factors loaded significantly onto their hypothesized latent factors, with fair to excellent loadings at $p < 0.05$, indicating good convergent validity (**Table 5.1.6**). Findings suggest that both these factors are significant predictors of their respective items and explain a considerable amount of their variability. These findings were consistent with those reported by the vast majority of TAS-20 translation and validation studies over the past 25 years (Bach, Bach, de Zwaan, Serim, & Böhmer, 1996; Besharat, 2007; Bressi et al., 1996; Cserjési, Luminet, & Lénárd, 2007; Grabe et al., 2006; Joukamaa et al., 2001; Lee, Rim, & Lee, 1996; Loas et al., 2001; Martínez-Sánchez, 1996; Pandey, Mandal, Taylor, & Parker, 1996; Prazeres, Parker, & Taylor, 2000; Simonsson-Sarnecki et al., 2000; Taylor, Bagby, & Parker, 2003; Zhu et al., 2007). The findings therefore suggest that both the DIF and DDF factors demonstrate validity among the Zulu sample group.

It should be noted that the standardized outputs for the DIF and DDF factors additionally had high correlation and covariance values, suggesting the possibility of poor discriminant validity between the factors (**Table 5.1.5**). Although not hypothesized, this finding was also

expectable and consistent with several studies reviewed in the literature. Erni, Lötscher, & Modestin (1997) first reported finding that the DIF and DDF latent factors showed poor discriminant validity in their study. They reasoned that the indicators of the DIF and DDF latent variables likely overrepresented a common latent factor (Harrington, 2009). As a result, they combined the DIF and DDF subfactors and their corresponding items into a larger aggregated factor “DI/DDF”, whilst the EOT subfactor was maintained (Erni, Lötscher, & Modestin, 1997). Their study concluded that the two-factor solution provided better fit to their data. This finding has been replicated in a number of other studies since (Cleland, Magura, Foote, Rosenblum, & Kosanke, 2005; Craparo, Faraci, & Gori, 2015; Tsaousis et al., 2010; Tuliao, Klanecky, Landoy, & McChargue, 2019). The present study did indeed evaluate a two-factor solution as indicated, which demonstrated acceptable, but poorer global fit than either the three-factor or four-factor solutions on the Akaike information criterion (**Table 5.1.3**). Consequently, it is advised that the DIF and DDF scales of the isiZulu TAS-20 should remain separate factors.

- **Reliability Analyses: DIF and DDF**

In terms of reliability, as shown in **Table 5.2.1**, results indicate that the total TAS-20 scale demonstrates adequate internal reliability, with a coefficient alpha value ($\alpha = 0.75$) falling within the recommended range of ≥ 0.70 (Clark & Watson, 1995; Gliem & Gliem, 2003; Streiner, Norman, & Cairney, 2015). The DIF factor scale similarly demonstrated good internal reliability ($\alpha = 0.81$), whilst the DDF factor scale’s internal reliability ($\alpha = 0.68$) was found to be acceptable with caution, falling marginally below generally recommended levels (Tsaousis, Taylor, Quilty, Georgiades, Stavrogiannopoulos, & Bagby, 2010). Furthermore, the mean inter-item correlations (AIC) for the DIF and DDF factor scales were satisfactory and indicated inter-item homogeneity (**Table 5.2.1**).

As expected, the DIF and DDF scales converged both with each other, and with the overall isiZulu TAS-20 score. These results were consistent with a large proportion of TAS-20 translation studies that have noted the relative stability of the TAS-20 global scale and its DDF and DIF subscales (Bagby et al., 2020; Parker, Taylor, & Bagby, 2003; Preece et al., 2017b; Sekely et al., 2018). In fact, the majority of cross-cultural studies on alexithymia (using the TAS-20) have also reached a consensus regarding the general consistency and reliability of the DIF and DDF scales (Ryder et al., 2018). Findings suggest that the DIF and DDF scales and their respective indicators hang together in a theoretically congruent manner across several linguistic and cultural contexts, including in the Zulu sample group (Dere et al., 2012; Pallant, 2016; Tsaousis et al., 2010). The implication of this finding supports the transferability and reliability of these two scales for the Zulu sample group.

- **DIF and DDF Validity and Reliability in the Zulu Sample group**

The DIF and DDF factors were successfully recovered in the data and converged in a theoretically consistent manner with the construct of alexithymia. Moreover, they were significant predictors of their hypothesized indicators. Although there were some concerns regarding their discriminant validity, findings suggested that the DIF and DDF scales be kept separate, albeit maintaining an oblique structural model. Furthermore, the reliability analyses showed that the DIF and DDF scales converge both with each other, and with the overall isiZulu TAS-20 score. The implication of this finding supports the transferability and reliability of these two scales for the Zulu sample group. Findings of this study further lend support to the observation that the DIF and DDF factors appear to reliably tap into a valid common factor across cultures (Taylor et al., 2018) Therefore, these two factors should preliminarily be considered as valid and reliable components of the isiZulu TAS-20, and maintained in this alexithymia scale for further use among the isiZulu speaking population.

6.4.2 Theoretical Application: DIF and DDF (Zulu Culture)

Results of this study provided clear preliminary support for the validity and reliability of the DIF and DDF components of alexithymia as measured by the isiZulu TAS-20. However, as it stands, the present study may only offer limited speculations as to how the DIF and DDF components of the isiZulu TAS-20 relate to the Zulu sample group. Limited empirical work has been done on investigating how sociocultural factors may shape these components, however, some suggestions are offered.

The DIF component of alexithymia relates to the inability to distinguish between emotional states and physiological states, and being unable to categorize emotional states; whereas the DDF component relates to the inability to successfully communicate or elaborate on one's internal emotional experience (Taylor, 2018). The theory of constructed emotion (TCE) intersects well with these particular components of alexithymia and presents a promising framework for future studies. Firstly, TCE suggests that emotions are constructed from an emotion conceptual system, which is facilitated by language (Barrett, 2017). This has interesting implications for the DDF component, which has been associated with an impoverished repertoire of words for emotion (Luminet et al., 2018). Similarly, whereas alexithymia has been associated with poor interoceptive accuracy, associated with the DIF component, TCE also highlights the key role of interoception in the process of emotion construction (Barrett, Gendron & Huang, 2009). This warrants further research.

It is also conceivable that the DIF and DDF concepts may perhaps erroneously problematize some of the normative aspects of emotion expression or experience in a traditional Zulu cultural context. Whereas Western cultural values promote open expression of emotion and asserting of needs, Zulu culture promotes being attuned to recognizing the needs and

experiences of the collective (Crawford and Lipsedge, 2004). According to Turner (2004) the direct expression of any emotion that may cause discord is viewed as inappropriate and unacceptable, thus unacceptable emotions are expressed in an indirect way through oral devices, such as song, in order to both bring awareness to the experience whilst processing it in a social manner that invites others to join in. In fact, Washington (2010) goes as far as to say that the wellbeing and healing of an individual is the responsibility of the community, as this also impacts upon the wellbeing of the community. Nevertheless, this represents conjecture at present and requires future research.

6.5 Gender and Alexithymia

Results of the study confirmed the hypothesis that males and females would obtain significantly different mean scores on the isiZulu TAS-20. However, contrary to expectations, the results showed that female participants attained significantly higher mean scores than the male participants (**Table 5.3.6**). Furthermore, the percentage of female participants (24.6%) that placed in the significant ‘alexithymic’ group was over three times as high as the relative percentage of male participants (7.1%, **Table 5.3.3**). Moreover, whilst a roughly equivalent percentage of male and female participants placed in the ‘normal’ range, almost twice as many male participants (28.2%) scored in the ‘low alexithymia’ range, compared to the female participants (15.1%, **Table 5.3.3**).

The study thus found preliminary evidence for higher rates of alexithymia (as measured by the isiZulu TAS-20) among the female Zulu participants in this study. These findings were surprising, as the vast majority of reviewed studies report that men typically exhibit higher levels of alexithymia when compared to women (Carpenter & Addis, 2000; Honkalampi et al., 2000; Horwitz et al., 2015; Levant & Wong, 2013), whilst several other reviewed studies

report no significant differences between men and women in alexithymia at all (Joukamaa et al., 1996; Säkkinen et al., 2007).

However, the findings of this study did match those of one other study, conducted by Besharat (2007) in an Iranian sample group. He found that female participants tended to score significantly higher on the TAS-20 than the male participants did. Besharat (2007) reasoned that this was likely due to a sociocultural factor, explaining that Iranian women are generally socialized to be more emotionally restrictive than Iranian men are. The findings of the present study are in keeping with those of Besharat (2007) and provide support for the prominent role that cultural gender role socialization plays in shaping the experience and expression of emotion.

6.5.1 Theoretical Application: Gender-role socialization

Turner (2003) states that as Zulu women have traditionally held a subjected role in a male-dominated culture, they would often rely on oral traditions to indirectly express their emotions in a culturally acceptable manner. Krige (1968) adds that Zulu girls would learn from a young age to utilize these oral devices as an indirect form of expression, processing their feelings in a social context and drawing strength and support from unity. As a result, it is reasonable to suggest that Zulu women have traditionally been socialized to restrict their emotional expression more so than Zulu men have, explaining the tentative findings of the TAS-20 mean comparison by gender (Daniels, 2018). This is further supported by Barrett's (2017) work with the theory of constructed emotion, which challenges the widely held view that men are universally 'naturally' less in touch with their emotions than women. Furthermore, this finding provides strong support for the key role that sociocultural factors (such as gender norms, or socialization) play in shaping experience and expression of

emotion (Barrett, 2017). Findings of this study indicate that levels of alexithymia are perhaps not as significantly associated with gender as is widely believed, but rather with emotion socialization (Barrett, 2017; Levant, 2009).

6.5.2 High Alexithymia in Female Participants

In the findings of this study, it was notable that a significantly larger proportion of female participants placed in the “high alexithymia” category, as compared to the male participants. By implication, this suggests that Zulu females may be at a much higher risk of developing medical conditions, such as: cardiovascular disease, functional dyspepsia, irritable bowel syndrome, carotid atherosclerosis, hypertension, cancer, diabetes, skin disease and several other gastrointestinal disorders (Grabe et al., 2010; Kano, Endo & Fukudo, 2018; Porcelli & Taylor, 2018; Vadini et al., 2019). Moreover, the literature has also associated high alexithymia with increased risk of developing several psychiatric disorders, such as: eating disorders, depression, panic disorder, PTSD, schizophrenia, OCD, substance use disorder and borderline personality disorder (Bird & Cook, 2013; Deborde et al., 2012; Kinnaird et al., 2019; Roh et al., 2011; Rotenberg, 1994; Samur et al., 2013; Tesio et al., 2019; Timoney & Holder, 2013; Westwood et al., 2017). Lastly, the literature has also associated high alexithymia with poorer psychosocial functioning, both at an intrapersonal level and in interpersonal relationships (Gross, 2014; Lenzo et al., 2020; Luminet & Zamariola, 2018; Porcelli & Taylor, 2018). These findings signal an urgent need for further investigation of alexithymia among this population.

7. RECOMMENDATIONS AND IMPLICATIONS OF FINDINGS

The findings from the present study have a number of implications for both the theoretical domain and future research of the construct of alexithymia. The findings of this study agree

with those of several others that alexithymia is likely best conceptualized and operationalized as a multi-factor construct (Parker et al., 2003; Parker, Keefer, Taylor, & Bagby, 2008; Tuliao, Klanecky, Landoy, & McChargue, 2019; Zhu et al., 2007). It may be advisable to conduct additional exploratory factor analyses in future research in order to investigate possible alternative factor solutions, among other evaluations of the TAS-20 scale. The findings from this study converge with the growing literature on alexithymia that is increasingly highlighting the complex interplay between biological, sociocultural and psychological factors in its pathogenesis (Luminet, Bagby, & Taylor, 2018; Moriguchi & Komaki, 2013; Paitel, Corroero, Byers, & Nielson, 2018). A fundamental problem with the conception of alexithymia is the fact that it is built on the foundation of several culturally-specific assumptions that have either been highly contested in recent literature, or do not apply to other sociocultural contexts (Barrett, 2017; Dere et al., 2012). Consequently, findings from this study reiterate the need to reconceptualize alexithymia, with particular consideration given to the impact of sociocultural factors in its shaping (Dere et al., 2012; Ryder et al., 2018). Findings from the present study lend further support to the theory of constructed emotion, rejecting the universality of emotional experiences and the cultural norms implicit in the construct of alexithymia. It is suggested that the EOT factor be theoretically reconceptualised to include consideration of diverse cultural emotion norms. The isiZulu TAS-20 has potential research and clinical value for attaining better insight into several psychiatric and medical conditions, as well as for informing better treatment practices in South Africa (Carrozzino and Porcelli, 2018; Ghorbani et al., 2017; Mattila et al., 2009). It is therefore imperative that further research be conducted on the rates of alexithymia among Zulu women, with express intent to understand the aetiology, associated rates of pathology and associated dysfunction.

Future research should extend sample recruiting beyond a student population so as to attain greater population representation and enable further generalizability of results. Due to its close association with psychiatric and medical conditions, it would be beneficial to extend sampling to include a clinical population, as well as a non-clinical population in order to explore and compare outcomes and group variations. Furthermore, this may allow the investigation of measurement invariance, which would be a valuable contribution to the literature. Future research should also include additional theoretically and empirically relevant scales to further assess the discriminant and convergent validity of the TAS-20. The inclusion of a scale that assesses self-construal would be of great value for cross-cultural research. Another valuable inclusion would be a scale that is conceptually convergent or divergent from the EOT subscale, so as to help evaluation of the subscale and help bolster the findings. One suggestion may be the inclusion of an assessment of emotional intelligence. Albeit the research adhered to the highest standards of cross-cultural adaptation to reach equivalence, the possibility still remains that language may have impacted outcomes. As a result, it is suggested that a future study further address this possibility by administering the TAS-20 and isiZulu-TAS-20 to a sample of bilingual participants one week apart, with the intent of evaluating the consistency of results - as done recently by Trajanović, Djurić, Latas, Milovanović, Jovanović, and Djurić (2019).

8. STRENGTHS AND LIMITATIONS

This study has various strengths and limitations. A particular strength of this study was its use of a well-established alexithymia scale that has been widely validated and translated. Another area of strength was the application of a rigorous translation and cultural adaptation process, which included the overview of the TAS-20's developers, so as to ensure good equivalence. Moreover, the study employed very robust statistical techniques for evaluating

the psychometric properties of the scale for the isiZulu translation of the TAS-20. Lastly, this study represents the first translation of the TAS-20 into an indigenous African language.

The study had several additional limitations. Firstly, the sample comprised entirely of first year university students, thus limiting the generalizability of the findings. Another limitation was the higher ratio of female to male participants, which may have skewed results to some degree. Moreover, the data for several of the demographic variables included in the study were not normally distributed, limiting the parametric investigations that could be performed. Lastly, although the instability of the EOT subscale was consistent with the literature in numerous studies, this limited the interpretability of the results.

9. CONCLUSION:

The myriad of health issues associated with alexithymia and the absence of research on the matter in an African context indicated a pressing need for a culturally translated, adapted and validated instrument for assessing alexithymia in South Africa. This study took first steps towards addressing this need by: (1) commencing with translating and culturally adapting the widely utilized 20-Item Toronto Alexithymia Scale (TAS-20) for use among an isiZulu-speaking sample; and (2) evaluating the psychometric properties of the translated Z-TAS-20 scale in a sample of first year isiZulu-speaking university students. Results supported the validity and reliability of the DIF and DDF components of alexithymia. However, the parameter estimates for the EOT subscale failed to relate meaningfully as implied by the theory, raising questions regarding its validity in a Zulu population. Within this study, a tentative exploration of mean scores between male and female participants was conducted, finding tentative evidence for higher levels of alexithymia (as measured by the Z-TAS-20) among female Zulu participants. This holds significance for future research on females and

alexithymia. The findings of this study have been interpreted through a biopsychosocial lens, and have drawn specifically on the theory of constructed emotion to elucidate the role of sociocultural factors. This study has added valuable, valid and reliable quantitative research on alexithymia in South Africa, and is the first translation and cultural adaptation of the TAS-20 within an African context. Although there is no empirical research available on the scale from Africa, the results of this study were consistent with global observations in the literature, specifically those in East Asia. Moreover, this study provided the only exploration of alexithymia with the TAS-20 in a collectivist culture outside of East Asia that the author is aware of. The adaptation of the TAS-20 for the Zulu population opens up new avenues for cross-cultural research in emotion within the multi-cultural context of South Africa. It is hoped that this study may offer a springboard for further research in this area within an African context.

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APPENDIX A

a) Original TAS-20 Scale

Sex: M / F

Age:

Date:

ID #:

T A S – 20

Using the scale provided as a guide, indicate how much you agree or disagree with each of the following statements by circling the corresponding number. Give only one answer for each statement.

Circle 1 if you **STRONGLY DISAGREE**

Circle 2 if you **MODERATELY DISAGREE**

Circle 3 if you **NEITHER DISAGREE NOR AGREE**

Circle 4 if you **MODERATELY AGREE**

Circle 5 if you **STRONGLY AGREE**

	Strongly Disagree	Moderately Disagree	Neither Disagree Nor Agree	Moderately Agree	Strongly Agree
1. I am often confused about what emotion I am feeling.	1	2	3	4	5
2. It is difficult for me to find the right words for my feelings.	1	2	3	4	5
3. I have physical sensations that even doctors don't understand.	1	2	3	4	5
4. I am able to describe my feelings easily.	1	2	3	4	5
5. I prefer to analyze problems rather than just describe them.	1	2	3	4	5
6. When I am upset, I don't know if I am sad, frightened, or angry.	1	2	3	4	5
7. I am often puzzled by sensations in my body.	1	2	3	4	5
8. I prefer to just let things happen rather than to understand why they turned out that way.	1	2	3	4	5
9. I have feelings that I can't quite identify.	1	2	3	4	5
10. Being in touch with emotions is essential.	1	2	3	4	5

Date:

ID #:

T A S – 20

	Strongly Disagree	Moderately Disagree	Neither Disagree Nor Agree	Moderately Agree	Strongly Agree
11. I find it hard to describe how I feel about people.	1	2	3	4	5
12. People tell me to describe my feelings more.	1	2	3	4	5
13. I don't know what's going on inside me.	1	2	3	4	5
14. I often don't know why I am angry.	1	2	3	4	5
15. I prefer talking to people about their daily activities rather than their feelings.	1	2	3	4	5
16. I prefer to watch "light" entertainment shows rather than psychological dramas	1	2	3	4	5
17. It is difficult for me to reveal my innermost feelings, even to close friends.	1	2	3	4	5
18. I can feel close to someone, even in moments of silence.	1	2	3	4	5
19. I find examination of my feelings useful in solving personal problems.	1	2	3	4	5
20. Looking for hidden meanings in movies or plays distracts from their enjoyment.	1	2	3	4	5

The Three Factor Structure of the TAS-20

Factor 1: Difficulty Identifying Feelings

1. I am often confused about what emotion I am feeling.
3. I have physical sensations that even doctors don't understand.
6. When I am upset, I don't know if I am sad, frightened, or angry.
7. I am often puzzled by sensations in my body.
9. I have feelings that I can't quite identify.
13. I don't know what's going on inside me.
14. I often don't know why I am angry.

Factor 2: Difficulty Describing Feelings

2. It is difficult for me to find the right words for my feelings.
4. I am able to describe my feelings easily.
11. I find it hard to describe how I feel about people.
12. People tell me to describe my feelings more.
17. It is difficult for me to reveal my innermost feelings, even to close friends.

Factor 3: Externally-Oriented Thinking

5. I prefer to analyze problems rather than just describe them.
8. I prefer to just let things happen rather than to understand why they turned out that way.
10. Being in touch with emotions is essential.
15. I prefer talking to people about their daily activities rather than their feelings.
16. I prefer to watch "light" entertainment shows rather than psychological dramas.
18. I can feel close to someone, even in moments of silence.
19. I find examination of my feelings useful in solving personal problems.
20. Looking for hidden meanings in movies or plays distracts from their enjoyment.

b) Final IsiZulu TAS-20 Translation

Ubulili: M / F Ubudala: Usuku: ID #:

(Z) T A S – 20

Usebenzisa lesi sikali osinikiwe njengomhlahlandlela, khombisa ukuthi uvuma kangakanani noma awuvumi kangakanani esitatimendeni ngasinye kulezi ezilandelayo ngokuthi ufake isikokela enombolweni ehambelana nempendulo. Nikeza impendulo eyodwa kuphela esitatimendeni ngasinye.

**Faka isikokela ku1 UMA UNGAVUMI KAKHULU
Faka isikokela ku 2 UMA UNGAVUMI KANCANE
Faka isikokela ku 3 UMA UNGAVUMI FUTHI UNGAPHIKI
Faka isikokela ku 4 UMA UVUMA KANCANE
Faka isikokela ku 5 UMA UVUMA KAKHULU**

	Angivumi kakhulu	Angivumi kancane	Ungavumi futhi ungaphiki	Uvuma kancane	Uvuma kakhulu
1. Esikhathini esiningi ngiyaye ngibe nokudi deka ukuthi imiphi imizwa engiyizwayo.	1	2	3	4	5
2. Kunzima kimina ukuthola amagama ashaya emhloveni ngemizwa yami.	1	2	3	4	5
3. Nginemizwa esemzimbeni nodokotela abahlulekayo ukuyiqonda.	1	2	3	4	5
4. Ngiyakwazi ukuchaza kalula imizwa yami.	1	2	3	4	5
5. Ngincamela ukuhlaziya izinkinga kunokuthi ngizichaze.	1	2	3	4	5
6. Uma ngingazizwa kahle, angazi noma ngiphatheke kabi, ngiyesaba, noma ngithukuthele.	1	2	3	4	5
7. Ezinkathini eziningi nginokudi deka ngemizwa esemzimbeni wami.	1	2	3	4	5
8. Ngincamela ukuthi izinto zizenzekele kunokuthi ngiqonde ukuthi zenziwa yini zibe kanje.	1	2	3	4	5
9. Nginemizwa engingakwazi ukuyichaza.	1	2	3	4	5
10. Kubalulekile ukukwazi ukuzwa imizwa yami.	1	2	3	4	5

(Z) T A S – 20

	Angivumi Kakhulu	Angivumi Kancane	Angivumi futhi Angiphiki	Ngivuma Kancane	Ngivuma Kakhulu
11. Ngikuthola kunzima ukuchaza ukuthi ngizizwa kanjani ngabantu.	1	2	3	4	5
12. Abantu bangitshela ukuba ngichaze kabanzi ngemizwa yami.	1	2	3	4	5
13. Angazi ukuthi kwenzekani ngaphakathi kimina.	1	2	3	4	5
14. Ngijwayele ukungazi ukuthi ngicasulwe yini.	1	2	3	4	5
15. Ngikhetha ukuxoxisana nabantu ngezinto abazenza nsukuzonke kunokuba sikhulume ngemizwa yabo.	1	2	3	4	5
16. Ngincamela ukuthi ngibuke imibukiso 'engagqilazi umqondo' kunemidlalo ezodinga umqondo.	1	2	3	4	5
17. Kunzima kimina ukuthi ngiveze imizwa yami ngaphakathi, kunzima nakubangani imbala.	1	2	3	4	5
18. Ngiyakwazi ukuzwa ukusondela kumuntu ngisho sithule singakhulumi.	1	2	3	4	5
19. Ngibona ukuhlolwa kwemizwa yami kusebenza ekuxazululeni izinkinga ezibhekene nami ngqo.	1	2	3	4	5
20. Ukubheka izincazelo ezicashile emafilimini noma emidlalweni kungiphazamisa ekutheni ngiyithakasele.	1	2	3	4	5

IZIZATHU EZINTATHU ZOKWAKHEKA KWE-TAS-20

Isizathu 1: Ubunzima ekuhlonzeni imizwa

1. Esikhathini esiningi ngiyaye ngibe nokudideka ukuthi imiphi imizwa engiyizwayo.
3. Nginemizwa esemzimbeni nodokotela abahlulekayo ukuyiqonda.
6. Uma ngingazizwa kahle, angazi noma ngiphatheke kabi, ngiyesaba, noma ngithukuthele.
7. Ezinkathini eziningi nginokudideka ngemizwa esemzimbeni wami.
9. Nginemizwa engingakwazi ukuyichaza.
13. Angazi ukuthi kwenzekani ngaphakathi kimina.
14. Ngijwayele ukungazi ukuthi ngicasulwe yini.

Isizathu 2: Ubunzima ekuchazeni imizwa

2. Kunzima kimina ukuthola amagama ashaya emhlozeni ngemizwa yami.
4. Ngiyakwazi ukuchaza kalula imizwa yami.
11. Ngikuthola kunzima ukuchaza ukuthi ngizizwa kanjani ngabantu.
12. Abantu bangitshela ukuba ngichaze kabanzi ngemizwa yami.
17. Kunzima kimina ukuthi ngiveze imizwa yami engaphakathi, kunzima nakubangani imbala.

Isizathu 3: Ukucabanga okungahlelekile

5. Ngincamela ukuhlaziya izinkinga kunokuthi ngizichaze.
8. Ngincamela ukuthi izinto zizenzekele kunokuthi ngiqonde ukuthi zenziwa yini zibe kanje.
10. Kubalulekile ukukwazi ukuzwa imizwa yami.
15. Ngikhethe ukuxoxisana nabantu ngezinto abazenza nsukuzonke kunokuba sikhulume ngemizwa yabo.
16. Ngincamela ukuthi ngibuke imibukiso 'engagqilazi umqondo' kunemidlalo ezodinga umqondo.
18. Ngiyakwazi ukuzwa ukusondela kumuntu ngisho sithule singakhulumi.
19. Ngibona ukuhlolwa kwenziwa yami kusebenza ekuxazululeni izinkinga ezibhekene nami ngqo.
20. Ukubheka izincazelo ezicashile emafilimini noma emidlalweni kungiphazamisa ekutheni ngiyithakasele.

c) TAS-20 – Accepted Back Translation (with commentary from linguist)

Sex: M / F Age: Date: ID #:

T A S – 20

Using the scale provided as your guide, show how much you agree or disagree with each of the following statements by encircling the number that corresponds with the answer. Provide only one answer for each statement.

Encircle 1 if you **STRONGLY DISAGREE**
 Encircle 2 if you **PARTLY DISAGREE**
 Encircle 3 if you **NEITHER DISAGREE NOR AGREE**
 Encircle 4 if you **PARTLY AGREE**
 Encircle 5 if you **STRONGLY AGREE**

	Strongly Disagree	Partly Disagree	Neither Disagree Nor Agree	Partly Agree	Strongly Agree
1. I am often confused about how I am feeling.	1	2	3	4	5
<i>["Emotion" and "sensations" is translated as "feelings" in isiZulu – interpretation of the word's meaning is derived from the context of the sentence]</i>					
2. It is difficult for me to find the ideal words that describe my feelings.	1	2	3	4	5
3. I have physical feelings that even doctors don't understand.	1	2	3	4	5
4. I am able to describe my feelings easily.	1	2	3	4	5
5. I prefer to analyze problems as opposed to just describing them	1	2	3	4	5
6. When I am upset, I don't know if I am unhappy, frightened, or angry.	1	2	3	4	5
7. I am often confused by my feelings on my body.	1	2	3	4	5
8. I prefer to just let things happen than gain understanding as to why they happened the way they did.	1	2	3	4	5
9. I have feelings that I can't describe	1	2	3	4	5
10. It is important to understand my feelings	1	2	3	4	5

Date:

ID #:

T A S – 20

	Strongly Disagree	Partly Disagree	Neither Disagree Nor Agree	Partly Agree	Strongly Agree
11. I find it hard to describe how I feel about people.	1	2	3	4	5
12. People tell me to describe my feelings more. <i>("Describe" and "identify" are the same word in isiZulu – meaning is derived from context of sentence)</i>	1	2	3	4	5
13. I don't know what's happening inside me.	1	2	3	4	5
14. I don't know why I am angry in most cases.	1	2	3	4	5
15. I prefer talking to people about their everyday chores as opposed to their feelings. <i>(Daily activities translated as "every day chores")</i>	1	2	3	4	5
16. I prefer to watch less tense shows rather than psychologically draining dramas	1	2	3	4	5
17. It is difficult for me to divulge my personal feelings, even to closest friends.	1	2	3	4	5
18. I can feel close to someone, even in moments of silence.	1	2	3	4	5
19. I find the assessment of my feelings useful in dealing with my personal problems.	1	2	3	4	5
20. Looking for hidden meanings in films or plays prevents me from enjoying them	1	2	3	4	5

d) Synthesized T123

Ubulili: M / F Ubudala: Usuku: ID #:

(Z) T A S – 20

Usebenzisa lesi sikali osinikiwe njengomhlahlandlela, khombisa ukuthi uvuma kangakanani noma awuvumi kangakanani esitatimendeni ngasinye kulezi ezilandelayo ngokuthi ufake isikokela enombolweni ehambelana nempendulo. Nikeza impendulo eyodwa kuphela esitatimendeni ngasinye.

**Faka isikokela ku1 UMA UNGAVUMI KAKHULU
 Faka isikokela ku 2 UMA UNGAVUMI KANCANE
 Faka isikokela ku 3 UMA UNGAVUMI FUTHI UNGAPHIKI
 Faka isikokela ku 4 UMA UVUMA KANCANE
 Faka isikokela ku 5 UMA UVUMA KAKHULU**

	Angivumi kakhulu	Angivumi kancane	Ungavumi futhi ungaphiki	Uvuma kancane	Uvuma kakhulu
1. Esikhathini esiningi ngiyaye ngibe nokudi deka ukuthi imiphi imizwa engiyizwayo.	1	2	3	4	5
2. Kunzima kimina ukuthola amagama ashaya emhloveni ngemizwa yami.	1	2	3	4	5
3. Nginemizwa esemzimbini nodokotela abahlulekayo ukuyiqonda.	1	2	3	4	5
4. Ngiyakwazi ukuchaza kalula imizwa yami.	1	2	3	4	5
5. Ngincamela ukuhlaziya izinkinga kunokuthi ngizichaze.	1	2	3	4	5
6. Uma ngingazizwa kahle, angazi noma ngiphatheke kabi, ngiyesaba, noma ngithukuthele.	1	2	3	4	5
7. Ezinkathini eziningi nginokudi deka ngemizwa esemzimbini wami.	1	2	3	4	5
8. Ngincamela ukuthi izinto zizenzekele kunokuthi ngiqonde ukuthi zenziwa yini zibe kanje.	1	2	3	4	5
9. Nginemizwa engingakwazi ukuyichaza.	1	2	3	4	5
10. Kubalulekile ukukwazi ukuzwa imizwa yami.	1	2	3	4	5

(Z) T A S – 20

	Angivumi Kakhulu	Angivumi Kancane	Angivumi futhi Angiphiki	Ngivuma Kancane	Ngivuma Kakhulu
11. Ngikuthola kunzima ukuchaza ukuthi ngizizwa kanjani ngabantu.	1	2	3	4	5
12. Abantu bangitshela ukuba ngichaze kabanzi ngemizwa yami.	1	2	3	4	5
13. Angazi ukuthi kwenzekani ngaphakathi kimina.	1	2	3	4	5
14. Ngijwayele ukungazi ukuthi ngicasulwe yini.	1	2	3	4	5
15. Ngikhetha ukuxoxisana nabantu ngezinto abazenza nsukuzonke kunokuba sikhulume ngemizwa yabo.	1	2	3	4	5
16. Ngincamela ukuthi ngibuke imibukiso 'engagqilazi umqondo' kunemidlalo ezodinga umqondo.	1	2	3	4	5
17. Kunzima kimina ukuthi ngiveze imizwa yami ngaphakathi, kunzima nakubangani imbala.	1	2	3	4	5
18. Ngiyakwazi ukuzwa ukusondela kumuntu ngisho sithule singakhulumi.	1	2	3	4	5
19. Ngibona ukuhlolwa kwemizwa yami kusebenza ekuxazululeni izinkinga ezibhekene nami ngqo.	1	2	3	4	5
20. Ukubheka izincazelo ezicashile emafilimini noma emidlalweni kungiphazamisa ekutheni ngiyithakasele.	1	2	3	4	5

e) TAS-20 Initial forward translation: T1

TRANSLATION OF TAS-20

1. Esikhathini esiningi ngiyaye ngibe nokudideka ukuthi imiphi imizwa engiyizwayo.
2. Kunzima kimi ukuthola igama elingachaza engikuzwayo.
3. Kunokudikiza engikuzwa emzimbeni okungaqondwa odokotela.
4. Ngiyakwazi ukuchaza kalula imizwa engiyizwayo.
5. Ngikhetha ukuhlaziya izinkinga kunokuba ngizichaze
6. Uma ngingazizwa kahle, angazi noma ngiphatheke kabi, ngiyesaba, noma ngithukuthele.
7. Esikhathini esiningi kuyangimangaza ukudikizela komzimba wami.
8. Ngikhetha ukuba izinto zizenzekele kunokuba ngiqonde ukuthi zenziwe yini kanje.
9. Nginemizwa engingakwazi ukuyihlaziya.
10. Ukukwazi ukuchaza okuzwayo kusemqoka.
11. Ngikuthola kunzima ukuchaza ukuthi ngibezwa kanjani abanye abantu.
12. Abantu bangitshela ukuba ngichaze kabanzi ngemizwa yami.
13. Angazi ukuthi kuqhubekani kimi ngaphakathi.
14. Esikhathini esiningi angazi ukuthi ngithukutheliswa yini.
15. Ngikhetha ukuxoxisana nabantu ngezinto abazenza nsukuzonke kunokuba sikhulume ngemizwa yabo.
16. Ngikhetha ukubuka izinhlelo zobumnandi kunokubuka imidlalo esebenzisa kakhulu ingqondo.
17. Kunzima ukukhipha imizwa yami engaphakathi ngisho kumngani wami esisondelene naye.
18. Ngiyakwazi ukuzwa ukusondela kumuntu ngisho sithule singakhulumi.
19. Ngikuthola ukuhlolwa kwemizwa yami kungisiza ekuxazululeni izinkinga zami.
20. Ukufuna imiqondo ecashisiwe kumabhayisikobho noma emidlalweni kuphazamisa ukuzwa ubumnandi.

f) TAS-20 Initial forward translation: T2

Initial Translation of TAS-20

1. Ezinkathini eziningi ngiyadideka ngemizwa engiyizwayo emoyeni
2. Kulikhuni ukuthi ngithole amazwi achaza indlela engizizwa ngayo emoyeni
3. Nginemizwa yenyama ngisho nodokotela abangayazi
4. Ngiyakwazi ukuchaza imizwa yami kalula
5. Ngicamela ukuzicubungula izinkinga zami kunokuvele ngizichaze
6. Mangingapathekile kahle emoyeni angazi ukuthi ngipatheke kabi, ngithukile noma ngikwatile
7. Ezinkathini eziningi nginokudideka ngemizwa esemzibeni wami
8. Ngicamela ukuthi izinto zivele zizenzakalele kunokuthi ngizame ukucabanga ukuthi kuyini zenzeke ngaleyondela
9. Nginemizwa yomoya engibuye ngingakwazi ukuyichaza
10. Ukwazi imizwa yakho yomoya kubalulekile
11. Kunzima ukuchaza ukuthi ngizizwa kanjani ngabanye abantu
12. Abantu bake bangitshela ukuthi ngichaze imizwa yami yomoya kabanzi
13. Angazi kwenzakalani ngapakathi kwami
14. Ezinkathini eziningi angazi kuyini ngikwatile
15. Ngicamela ukukhuluma nabantu mayelana ngezenzo zabo zemihla namalanga kunokukhuluma ngemizwa yabo yomoya
- 16.
17. Kulikhuni ukuthi ngikhombise imizwa yami yomoya , ngisho nakubangani abasondelene nami kakhulu
- 18.
19. Ngizwa ngathi ukuhlola kwemizwa yami yomoya kuyasiza ekutheni ngikwazi ukuxazulula izinkinga zami
- 20.

g) TAS-20 Initial forward translation: T1

TAS-20 Translation

1. Ngijwayele ukudideka ngemizwa engisuke ngiyizwa.
2. Kunzima kimina ukuthola amagama ashaya emhloeni ngemizwa yami.
3. Nginemizwa esemzimbeni nodokotela abahlulekayo ukuyiqonda.
4. Ngiyakwazi ukuchaza kalula imizwa yami.
5. Ngincamela ukuhlaziya izinkinga kunokuthi ngizichaze.
6. Uma ngicasukile, angazi noma ngidabukile, ngithukile noma ngicasukile.
7. Ijwayele ukungixaka imizwa emzimbeni wami.
8. Ngincamela ukuthi izinto zizenzekele kunokuthi ngiqonde ukuthi zenziwa yini zibe kanje.
9. Nginemizwa engingakwazi ukuyichaza.
10. Kubalulekile ukukwazi ukuzwa imizwa yami.
11. Ngikuthola kunzima ukuchaza ukuthi ngizizwa kanjani ngabantu.
12. Abantu bangitshela ukuthi ngichaze kakhulu imizwa yami.
13. Angazi ukuthi kwenzekani ngaphakathi kimina.
14. Ngijwayele ukungazi ukuthi ngicasulwe yini.
15. Ngincamela ukuthi ngikhulume nabantu ngemisebenzi yabo yansukuzonke kunokuthi ngikhulume ngemizwa yabo.
16. Ngincamela ukuthi ngibuke imibukiso 'engagqilazi umqondo' kunemidlalo ezodinga umqondo.
17. Kunzima kimina ukuthi ngiveze imizwa yami engaphakathi, kunzima nakubangani imbala.
18. Ngikwazi ukuzizwa ngisondele kakhulu komunye umuntu, ngisho noma ngabe kuthulekile.
19. Ngibona ukhulolwa kwemiziwa yami kusebenza ekuxazululeni izinkinga ezibhekene nani ngqo.
20. Ukubheka izincazelo ezicashile emafilimini noma emidlalweni kungiphazamisa ekutheni ngiyithakasele.

APPENDIX B:

a) Consent form

CONSENT FORMS

Date: _____

a) Information sheet and consent to participate in research

Dear Participant,

I am a Masters student in Clinical Psychology at the University of KwaZulu-Natal (Howard Campus). I am required to do a research dissertation as part of my training. My research aims to translate and adapt a psychometric scale, namely, the Toronto Alexithymia Scale (TAS-20) for use in South Africa amongst isiZulu speaking populations. You are being invited to consider participating in a study that involves answering questions regarding how aware you are of your emotions, and how well you feel you are able to identify and describe them.

Your participation is **voluntary** and you are entitled to withdraw from the study at any time without any consequences or prejudice. The study is expected to enroll 250-300 people. It will involve you filling out a structured questionnaire consisting of a demographics section and the translated isiZulu TAS-20 scale. The scale consists of 20 items to which you are required to respond by indicating how strongly you agree or disagree with each statement, rating your level of agreement from 1 to 5. Completing the questionnaire should take approximately 10-15 minutes.

The study involves asking structured questions, with your answers being recorded on the actual questionnaire. Your identity will not be revealed and your responses will all be coded. The study will not provide any direct benefits to you, the participant, but it will be a valuable contribution to the clinical work in our South African context, where few psychometric assessments are available in local languages that have been adapted for our context. There are no risks involved in participating in this study.

The interview **will not** record any of your identifying information (such as your name or address) – it will only assign a study number. Confidentiality of your personal/clinical information will be protected at all times.

In the event of any problems or concerns/ questions, you may contact the researcher (D. Daniels) on 084 061 5951

b) Consent Form:

I, _____ have been informed about the study entitled “A preliminary validation of the isiZulu adaptation of the 20-item Toronto Alexithymia Scale: Confirmatory factor analysis and Internal consistency” by.....

- I understand the purpose and procedures of the study.
- I have been given an opportunity to ask questions about the study and have had answers to my satisfaction.
- I declare that my participation in this study is entirely voluntary and that I may withdraw at any time.
- If I have any further questions/concerns or queries related to the study I understand that I may contact the researcher.
- If I have any questions or concerns about my right as a study participant, or if I am concerned about an aspect of the study then I may contact:

Prof. D. Cartwright (Supervisor) University of Kwa-Zulu Natal (Howard Campus) at 031 260 2507

Signature of participant: _____ **Date:** _____

Researchers' Signature: _____ **Date:** _____
(Mr. D. Daniels)

Supervisors' Signature: _____ **Date:** _____
(Prof. D. Cartwright)

Administrators' Signature: _____ **Date:** _____

b) Participant Demographic Sheet

Demographics Page and isiZulu TAS-20 Questionnaire:

Demographic information: (Please mark your selection clearly with an 'X' where necessary)

1. Gender: Male Female

2. Current age:

3. Home language:
 isiZulu English

4. How would you describe yourself in terms of population group?

Black Coloured Indian/Asian White Other

5. Field of study:

6. Year of study currently registered for:

1st Year 2- year 3+ year

Sociocultural factors: (Please mark your selection clearly with an 'X' where necessary)

7. What culture do you most identify with?

7.1 How strongly do you identify with your indicated culture's values? (Please rate from 1 to 5 by crossing with an 'X' the response that most describes you)

<i>Not at all</i>	<i>Somewhat Identify</i>	<i>Moderately Identify</i>	<i>Strongly Identify</i>	<i>Very Strongly Identify</i>
1	2	3	4	5

8. Type of area you grew up in:

Rural Urban

9. Household *monthly* income bracket:

1	2	3	4	5	6	7
R0-R800	R801-R1600	R1601-R3200	R3201-R6400	R6401-12800	R12801-R25600	R25600 +

10. Which religion, if any, do you associate yourself with?

Christianity Islam Hinduism Judaism Other beliefs No religion

(Z) T A S – 20

c) Gatekeepers Permission



3 July 2018

Mr David Christian Anthony Daniels (SN 217077889)
School of Applied Human Sciences
College of Humanities
Howard College Campus
UKZN
Email: david.daniels64@gmail.com Cartwrightd@ukzn.ac.za

Dear Mr Daniels

RE: PERMISSION TO CONDUCT RESEARCH

Gatekeeper's permission is hereby granted for you to conduct research at the University of KwaZulu-Natal (UKZN), towards your postgraduate degree, provided Ethical clearance has been obtained. We note the title of your research project is:

"A preliminary validation of the isiZulu adaption of the 20-item Toronto Alexithymia Scale: Confirmatory factor analysis and internal consistency."

It is noted that you will be constituting your sample by handing out questionnaires to first year students from the College of Humanities under School of Applied Human Sciences on the Howard College campus.

Please ensure that the following appears on your notice/questionnaire:

- Ethical clearance number;
- Research title and details of the research, the researcher and the supervisor;
- Consent form is attached to the notice/questionnaire and to be signed by user before he/she fills in questionnaire;
- gatekeepers approval by the Registrar.

You are not authorized to contact staff and students using 'Microsoft Outlook' address book. Identity numbers and email addresses of individuals are not a matter of public record and are protected according to Section 14 of the South African Constitution, as well as the Protection of Public Information Act. For the release of such information over to yourself for research purposes, the University of KwaZulu-Natal will need express consent from the relevant data subjects. Data collected must be treated with due confidentiality and anonymity.

Yours sincerely

MR SS MOKOENA
REGISTRAR

Office of the Registrar

Postal Address: Private Bag X54001, Durban, South Africa

Telephone: +27 (0) 31 260 8005/2206 Facsimile: +27 (0) 31 260 7824/2204 Email: registrar@ukzn.ac.za

Website: www.ukzn.ac.za



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Founding Campuses: Edgewood Howard College Medical School Pietermaritzburg Westville

d) Ethical Clearance



20 July 2018

Mr David Christian Anthony Daniels (217077889)
School of Applied Human Sciences – Psychology
Howard College Campus

Dear Mr Daniels,

Protocol reference number: HSS/0634/018M

Project title: A preliminary validation of the isiZulu adaption of the 20-item Toronto Alexithymia Scale: Confirmatory factor analysis and internal consistency

Approval Notification – Expedited Approval

In response to your application received on 08 June 2018, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number.

PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

Dr Shamila Naidoo (Deputy Chair)

/ms

Cc Supervisor: Professor Duncan Cartwright
Cc Academic Leader Research: Dr Maud Mthembu
Cc School Administrator: Ms Ayanda Ntuli

Humanities & Social Sciences Research Ethics Committee

Professor Shenuka Singh (Chair)






Westville Campus, Govan Mbeki Building

Postal Address: Private Bag X54001, Durban 4000

Telephone: +27 (0) 31 260 3587/8350/4557 Facsimile: +27 (0) 31 260 4609 Email: ximbap@ukzn.ac.za / snymanm@ukzn.ac.za / mohunp@ukzn.ac.za

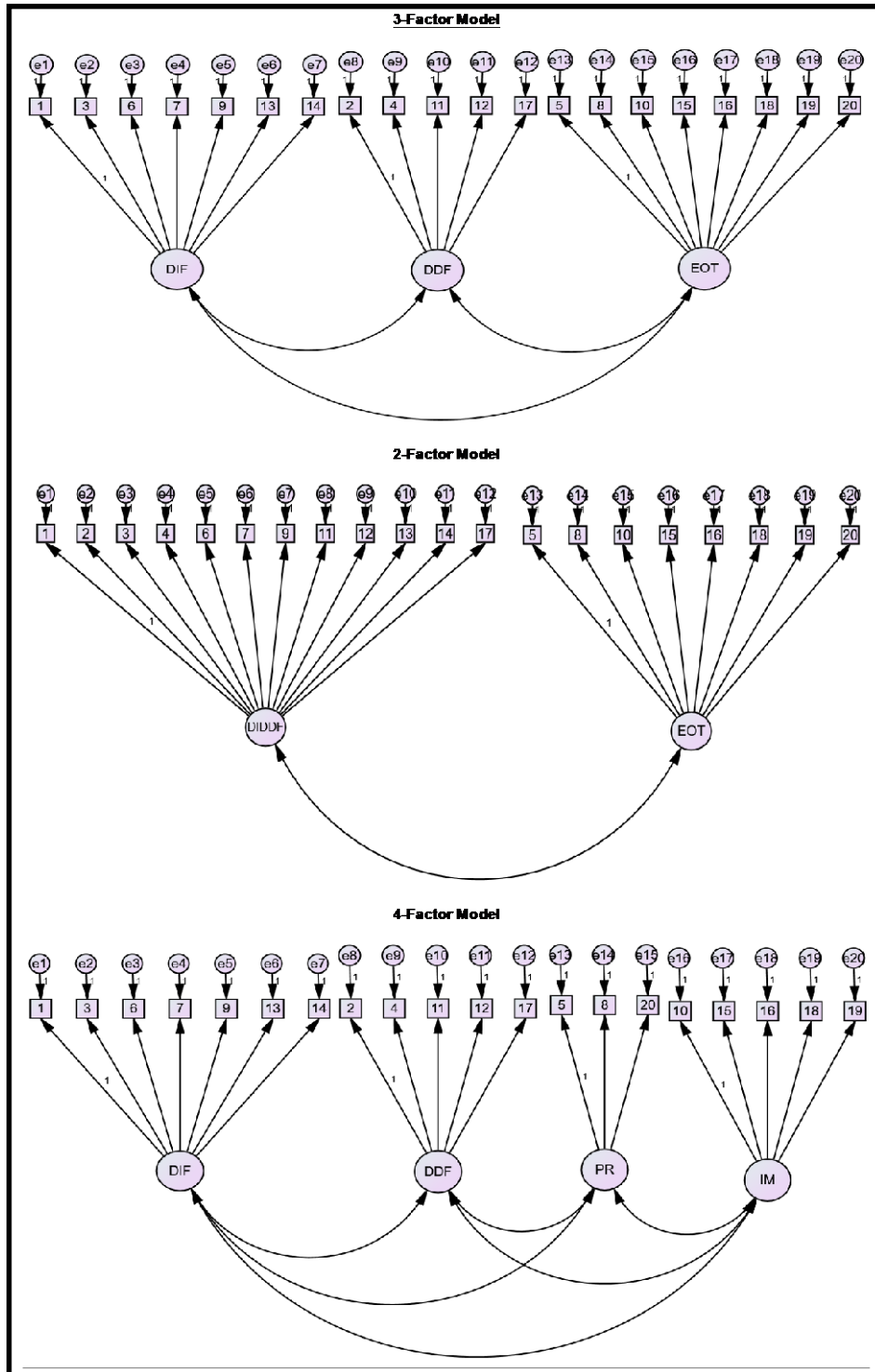
Website: www.ukzn.ac.za

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Founding Campuses:  Edgewood  Howard College  Medical School  Pietermaritzburg  Westville

APPENDIX C

a) Output of Statistics



b) All Participant Scores Tabulated

175

Case Processing Summary						
	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
DIF_TOTAL * Gender of Student	284	100.0%	0	0.0%	284	100.0%
DDF_TOTAL * Gender of Student	284	100.0%	0	0.0%	284	100.0%
EOT_TOTAL * Gender of Student	284	100.0%	0	0.0%	284	100.0%
TAS_TOTAL * Gender of Student	284	100.0%	0	0.0%	284	100.0%
TAS Diagnostic categories * Gender of Student	284	100.0%	0	0.0%	284	100.0%

Case Summaries – With Diagnostic Breakdowns							
			DIF_TOTAL	DDF_TOTAL	EOT_TOTAL	TAS_TOTAL	TAS Diagnostic categories
Gender of Student	Male	1	7.00	7.00	18.00	32.00	Low (≤ 41)
		2	27.00	18.00	25.00	70.00	Alexithymic (≥ 64)
		3	13.00	12.00	31.00	56.00	Normal (42- 63)
		4	10.00	20.00	17.00	47.00	Normal (42- 63)
		5	19.00	18.00	21.00	58.00	Normal (42- 63)
		6	16.00	12.00	23.00	51.00	Normal (42- 63)

		7	15.00	13.00	23.00	51.00	Normal (42-63)
		8	30.00	22.00	17.00	69.00	Alexithymic (≥ 64)
		9	12.00	17.00	18.00	47.00	Normal (42-63)
		10	12.00	15.00	16.00	43.00	Normal (42-63)
		11	15.00	12.00	19.00	46.00	Normal (42-63)
		12	21.00	8.00	25.00	54.00	Normal (42-63)
		13	7.00	10.00	23.00	40.00	Low (≤ 41)
		14	20.00	13.00	22.00	55.00	Normal (42-63)
		15	11.00	12.00	17.00	40.00	Low (≤ 41)
		16	10.00	8.00	19.00	37.00	Low (≤ 41)
		17	14.00	14.00	16.00	44.00	Normal (42-63)
		18	11.00	13.00	17.00	41.00	Low (≤ 41)
		19	13.00	9.00	22.00	44.00	Normal (42-63)
		20	16.00	17.00	24.00	57.00	Normal (42-63)
		21	14.00	14.00	21.00	49.00	Normal (42-63)
		22	23.00	19.00	21.00	63.00	Normal (42-63)

		23	24.00	19.00	18.00	61.00	Normal (42-63)
		24	28.00	18.00	21.00	67.00	Alexithymic (≥ 64)
		25	10.00	6.00	16.00	32.00	Low (≤ 41)
		26	18.00	17.00	19.00	54.00	Normal (42-63)
		27	26.00	12.00	29.00	67.00	Alexithymic (≥ 64)
		28	19.00	14.00	24.00	57.00	Normal (42-63)
		29	8.00	10.00	26.00	44.00	Normal (42-63)
		30	9.00	9.00	18.00	36.00	Low (≤ 41)
		31	11.00	8.00	18.00	37.00	Low (≤ 41)
		32	13.00	17.00	20.00	50.00	Normal (42-63)
		33	18.00	17.00	22.00	57.00	Normal (42-63)
		34	7.00	18.00	17.00	42.00	Normal (42-63)
		35	22.00	16.00	14.00	52.00	Normal (42-63)
		36	14.00	14.00	20.00	48.00	Normal (42-63)
		37	15.00	22.00	18.00	55.00	Normal (42-63)
		38	20.00	14.00	22.00	56.00	Normal (42-63)

		39	8.00	10.00	25.00	43.00	Normal (42-63)
		40	10.00	12.00	24.00	46.00	Normal (42-63)
		41	13.00	10.00	23.00	46.00	Normal (42-63)
		42	14.00	14.00	20.00	48.00	Normal (42-63)
		43	12.00	5.00	25.00	42.00	Normal (42-63)
		44	9.00	10.00	22.00	41.00	Low (≤ 41)
		45	16.00	9.00	16.00	41.00	Low (≤ 41)
		46	8.00	8.00	18.00	34.00	Low (≤ 41)
		47	13.00	12.00	21.00	46.00	Normal (42-63)
		48	20.00	12.00	20.00	52.00	Normal (42-63)
		49	14.00	9.00	20.00	43.00	Normal (42-63)
		50	14.00	14.00	21.00	49.00	Normal (42-63)
		51	15.00	15.00	19.00	49.00	Normal (42-63)
		52	34.00	20.00	16.00	70.00	Alexithymic (≥ 64)
		53	15.00	11.00	24.00	50.00	Normal (42-63)
		54	10.00	10.00	19.00	39.00	Low (≤ 41)
		55	9.00	6.00	15.00	30.00	Low (≤ 41)

		56	11.00	9.00	21.00	41.00	Low (≤ 41)
		57	10.00	13.00	21.00	44.00	Normal (42-63)
		58	21.00	14.00	22.00	57.00	Normal (42-63)
		59	16.00	12.00	22.00	50.00	Normal (42-63)
		60	7.00	9.00	8.00	24.00	Low (≤ 41)
		61	15.00	12.00	24.00	51.00	Normal (42-63)
		62	7.00	6.00	16.00	29.00	Low (≤ 41)
		63	25.00	19.00	16.00	60.00	Normal (42-63)
		64	29.00	20.00	21.00	70.00	Alexithymic (≥ 64)
		65	18.00	11.00	21.00	50.00	Normal (42-63)
		66	9.00	8.00	19.00	36.00	Low (≤ 41)
		67	21.00	13.00	20.00	54.00	Normal (42-63)
		68	18.00	19.00	19.00	56.00	Normal (42-63)
		69	15.00	10.00	26.00	51.00	Normal (42-63)
		70	7.00	5.00	20.00	32.00	Low (≤ 41)
		71	11.00	5.00	27.00	43.00	Normal (42-63)
		72	7.00	5.00	25.00	37.00	Low (≤ 41)
		73	10.00	6.00	21.00	37.00	Low (≤ 41)

		74	16.00	17.00	22.00	55.00	Normal (42-63)
		75	18.00	9.00	17.00	44.00	Normal (42-63)
		76	13.00	12.00	22.00	47.00	Normal (42-63)
		77	13.00	11.00	23.00	47.00	Normal (42-63)
		78	13.00	10.00	21.00	44.00	Normal (42-63)
		79	11.00	5.00	20.00	36.00	Low (≤ 41)
		80	9.00	9.00	26.00	44.00	Normal (42-63)
		81	14.00	5.00	28.00	47.00	Normal (42-63)
		82	9.00	7.00	17.00	33.00	Low (≤ 41)
		83	10.00	6.00	18.00	34.00	Low (≤ 41)
		84	7.00	5.00	25.00	37.00	Low (≤ 41)
		85	16.00	13.00	22.00	51.00	Normal (42-63)
	Total	N	85	85	85	85	85
		Sum	1238.00	1026.00	1755.00	4019.00	67.00
	Female	1	27.00	12.00	16.00	55.00	Normal (42-63)
		2	11.00	13.00	19.00	43.00	Normal (42-63)
		3	28.00	19.00	23.00	70.00	Alexithymic (≥ 64)

		4	25.00	13.00	10.00	48.00	Normal (42-63)
		5	22.00	13.00	20.00	55.00	Normal (42-63)
		6	10.00	7.00	22.00	39.00	Low (≤ 41)
		7	15.00	11.00	22.00	48.00	Normal (42-63)
		8	23.00	19.00	17.00	59.00	Normal (42-63)
		9	15.00	9.00	24.00	48.00	Normal (42-63)
		10	21.00	21.00	25.00	67.00	Alexithymic (≥ 64)
		11	8.00	6.00	24.00	38.00	Low (≤ 41)
		12	20.00	12.00	25.00	57.00	Normal (42-63)
		13	19.00	12.00	20.00	51.00	Normal (42-63)
		14	26.00	18.00	23.00	67.00	Alexithymic (≥ 64)
		15	29.00	24.00	19.00	72.00	Alexithymic (≥ 64)
		16	17.00	12.00	16.00	45.00	Normal (42-63)
		17	17.00	14.00	24.00	55.00	Normal (42-63)
		18	19.00	19.00	22.00	60.00	Normal (42-63)

		19	26.00	18.00	15.00	59.00	Normal (42-63)
		20	20.00	9.00	28.00	57.00	Normal (42-63)
		21	15.00	9.00	22.00	46.00	Normal (42-63)
		22	10.00	8.00	21.00	39.00	Low (≤ 41)
		23	17.00	16.00	15.00	48.00	Normal (42-63)
		24	13.00	15.00	20.00	48.00	Normal (42-63)
		25	28.00	17.00	19.00	64.00	Alexithymic (≥ 64)
		26	25.00	16.00	19.00	60.00	Normal (42-63)
		27	17.00	15.00	19.00	51.00	Normal (42-63)
		28	34.00	21.00	23.00	78.00	Alexithymic (≥ 64)
		29	11.00	11.00	17.00	39.00	Low (≤ 41)
		30	15.00	11.00	24.00	50.00	Normal (42-63)
		31	26.00	15.00	24.00	65.00	Alexithymic (≥ 64)
		32	22.00	17.00	21.00	60.00	Normal (42-63)
		33	17.00	13.00	24.00	54.00	Normal (42-63)

		34	18.00	10.00	30.00	58.00	Normal (42-63)
		35	25.00	20.00	18.00	63.00	Normal (42-63)
		36	26.00	12.00	26.00	64.00	Alexithymic (≥ 64)
		37	25.00	17.00	24.00	66.00	Alexithymic (≥ 64)
		38	21.00	15.00	20.00	56.00	Normal (42-63)
		39	11.00	14.00	11.00	36.00	Low (≤ 41)
		40	24.00	21.00	18.00	63.00	Normal (42-63)
		41	24.00	18.00	24.00	66.00	Alexithymic (≥ 64)
		42	29.00	18.00	23.00	70.00	Alexithymic (≥ 64)
		43	22.00	15.00	23.00	60.00	Normal (42-63)
		44	15.00	10.00	25.00	50.00	Normal (42-63)
		45	14.00	14.00	20.00	48.00	Normal (42-63)
		46	25.00	17.00	24.00	66.00	Alexithymic (≥ 64)
		47	30.00	12.00	10.00	52.00	Normal (42-63)
		48	10.00	5.00	18.00	33.00	Low (≤ 41)

		49	31.00	19.00	16.00	66.00	Alexithymic (≥ 64)
		50	18.00	20.00	16.00	54.00	Normal (42- 63)
		51	20.00	16.00	24.00	60.00	Normal (42- 63)
		52	27.00	17.00	22.00	66.00	Alexithymic (≥ 64)
		53	29.00	18.00	17.00	64.00	Alexithymic (≥ 64)
		54	12.00	14.00	21.00	47.00	Normal (42- 63)
		55	24.00	13.00	11.00	48.00	Normal (42- 63)
		56	12.00	10.00	20.00	42.00	Normal (42- 63)
		57	15.00	12.00	20.00	47.00	Normal (42- 63)
		58	24.00	18.00	22.00	64.00	Alexithymic (≥ 64)
		59	21.00	16.00	29.00	66.00	Alexithymic (≥ 64)
		60	23.00	23.00	20.00	66.00	Alexithymic (≥ 64)
		61	23.00	15.00	19.00	57.00	Normal (42- 63)
		62	27.00	12.00	29.00	68.00	Alexithymic (≥ 64)

		63	22.00	17.00	26.00	65.00	Alexithymic (≥ 64)
		64	15.00	10.00	13.00	38.00	Low (≤ 41)
		65	18.00	18.00	20.00	56.00	Normal (42- 63)
		66	15.00	19.00	14.00	48.00	Normal (42- 63)
		67	14.00	22.00	15.00	51.00	Normal (42- 63)
		68	20.00	16.00	23.00	59.00	Normal (42- 63)
		69	25.00	10.00	17.00	52.00	Normal (42- 63)
		70	15.00	16.00	21.00	52.00	Normal (42- 63)
		71	10.00	6.00	11.00	27.00	Low (≤ 41)
		72	20.00	15.00	15.00	50.00	Normal (42- 63)
		73	12.00	10.00	17.00	39.00	Low (≤ 41)
		74	23.00	20.00	16.00	59.00	Normal (42- 63)
		75	24.00	18.00	20.00	62.00	Normal (42- 63)
		76	16.00	15.00	26.00	57.00	Normal (42- 63)
		77	22.00	15.00	22.00	59.00	Normal (42- 63)
		78	12.00	13.00	20.00	45.00	Normal (42- 63)

		79	25.00	18.00	16.00	59.00	Normal (42-63)
		80	20.00	12.00	25.00	57.00	Normal (42-63)
		81	17.00	13.00	19.00	49.00	Normal (42-63)
		82	27.00	13.00	20.00	60.00	Normal (42-63)
		83	13.00	15.00	19.00	47.00	Normal (42-63)
		84	11.00	15.00	18.00	44.00	Normal (42-63)
		85	22.00	14.00	20.00	56.00	Normal (42-63)
		86	9.00	11.00	16.00	36.00	Low (≤ 41)
		87	14.00	15.00	11.00	40.00	Low (≤ 41)
		88	25.00	20.00	21.00	66.00	Alexithymic (≥ 64)
		89	22.00	17.00	17.00	56.00	Normal (42-63)
		90	31.00	21.00	20.00	72.00	Alexithymic (≥ 64)
		91	22.00	18.00	21.00	61.00	Normal (42-63)
		92	9.00	6.00	24.00	39.00	Low (≤ 41)
		93	19.00	9.00	24.00	52.00	Normal (42-63)
		94	11.00	7.00	25.00	43.00	Normal (42-63)

		95	25.00	17.00	24.00	66.00	Alexithymic (≥ 64)
		96	28.00	13.00	28.00	69.00	Alexithymic (≥ 64)
		97	18.00	14.00	21.00	53.00	Normal (42- 63)
		98	20.00	16.00	31.00	67.00	Alexithymic (≥ 64)
		99	17.00	12.00	26.00	55.00	Normal (42- 63)
		100	20.00	21.00	26.00	67.00	Alexithymic (≥ 64)
		101	14.00	19.00	18.00	51.00	Normal (42- 63)
		102	8.00	5.00	12.00	25.00	Low (≤ 41)
		103	24.00	15.00	18.00	57.00	Normal (42- 63)
		104	15.00	8.00	25.00	48.00	Normal (42- 63)
		105	11.00	9.00	13.00	33.00	Low (≤ 41)
		106	17.00	12.00	16.00	45.00	Normal (42- 63)
		107	11.00	10.00	22.00	43.00	Normal (42- 63)
		108	23.00	19.00	16.00	58.00	Normal (42- 63)
		109	23.00	20.00	13.00	56.00	Normal (42- 63)

		110	26.00	21.00	16.00	63.00	Normal (42-63)
		111	29.00	20.00	22.00	71.00	Alexithymic (≥ 64)
		112	15.00	12.00	32.00	59.00	Normal (42-63)
		113	10.00	8.00	24.00	42.00	Normal (42-63)
		114	12.00	12.00	30.00	54.00	Normal (42-63)
		115	24.00	22.00	24.00	70.00	Alexithymic (≥ 64)
		116	15.00	10.00	15.00	40.00	Low (≤ 41)
		117	15.00	10.00	23.00	48.00	Normal (42-63)
		118	22.00	19.00	25.00	66.00	Alexithymic (≥ 64)
		119	26.00	15.00	21.00	62.00	Normal (42-63)
		120	19.00	14.00	19.00	52.00	Normal (42-63)
		121	17.00	18.00	18.00	53.00	Normal (42-63)
		122	23.00	13.00	21.00	57.00	Normal (42-63)
		123	11.00	5.00	14.00	30.00	Low (≤ 41)
		124	28.00	20.00	21.00	69.00	Alexithymic (≥ 64)

		125	22.00	19.00	22.00	63.00	Normal (42-63)
		126	22.00	18.00	21.00	61.00	Normal (42-63)
		127	18.00	20.00	16.00	54.00	Normal (42-63)
		128	17.00	13.00	23.00	53.00	Normal (42-63)
		129	9.00	12.00	18.00	39.00	Low (≤ 41)
		130	7.00	17.00	20.00	44.00	Normal (42-63)
		131	12.00	9.00	17.00	38.00	Low (≤ 41)
		132	14.00	5.00	16.00	35.00	Low (≤ 41)
		133	9.00	8.00	21.00	38.00	Low (≤ 41)
		134	28.00	19.00	25.00	72.00	Alexithymic (≥ 64)
		135	19.00	19.00	22.00	60.00	Normal (42-63)
		136	34.00	21.00	26.00	81.00	Alexithymic (≥ 64)
		137	13.00	6.00	15.00	34.00	Low (≤ 41)
		138	30.00	19.00	18.00	67.00	Alexithymic (≥ 64)
		139	14.00	16.00	20.00	50.00	Normal (42-63)
		140	10.00	17.00	18.00	45.00	Normal (42-63)
		141	33.00	21.00	19.00	73.00	Alexithymic (≥ 64)

		142	21.00	13.00	17.00	51.00	Normal (42-63)
		143	17.00	15.00	18.00	50.00	Normal (42-63)
		144	20.00	12.00	24.00	56.00	Normal (42-63)
		145	9.00	11.00	28.00	48.00	Normal (42-63)
		146	21.00	18.00	24.00	63.00	Normal (42-63)
		147	14.00	8.00	18.00	40.00	Low (≤ 41)
		148	30.00	19.00	21.00	70.00	Alexithymic (≥ 64)
		149	22.00	17.00	15.00	54.00	Normal (42-63)
		150	27.00	10.00	15.00	52.00	Normal (42-63)
		151	23.00	19.00	24.00	66.00	Alexithymic (≥ 64)
		152	12.00	12.00	17.00	41.00	Low (≤ 41)
		153	11.00	10.00	15.00	36.00	Low (≤ 41)
		154	22.00	17.00	17.00	56.00	Normal (42-63)
		155	26.00	12.00	18.00	56.00	Normal (42-63)
		156	25.00	18.00	22.00	65.00	Alexithymic (≥ 64)
		157	27.00	18.00	19.00	64.00	Alexithymic (≥ 64)

		158	31.00	21.00	26.00	78.00	Alexithymic (≥ 64)
		159	23.00	10.00	19.00	52.00	Normal (42- 63)
		160	21.00	11.00	14.00	46.00	Normal (42- 63)
		161	21.00	13.00	15.00	49.00	Normal (42- 63)
		162	20.00	19.00	18.00	57.00	Normal (42- 63)
		163	30.00	25.00	24.00	79.00	Alexithymic (≥ 64)
		164	27.00	18.00	18.00	63.00	Normal (42- 63)
		165	14.00	9.00	21.00	44.00	Normal (42- 63)
		166	7.00	11.00	25.00	43.00	Normal (42- 63)
		167	28.00	23.00	18.00	69.00	Alexithymic (≥ 64)
		168	23.00	24.00	26.00	73.00	Alexithymic (≥ 64)
		169	15.00	5.00	18.00	38.00	Low (≤ 41)
		170	24.00	17.00	22.00	63.00	Normal (42- 63)
		171	34.00	25.00	18.00	77.00	Alexithymic (≥ 64)
		172	25.00	19.00	17.00	61.00	Normal (42- 63)

		173	23.00	16.00	22.00	61.00	Normal (42-63)
		174	14.00	7.00	20.00	41.00	Low (≤ 41)
		175	15.00	8.00	17.00	40.00	Low (≤ 41)
		176	9.00	9.00	19.00	37.00	Low (≤ 41)
		177	7.00	11.00	16.00	34.00	Low (≤ 41)
		178	29.00	24.00	20.00	73.00	Alexithymic (≥ 64)
		179	33.00	17.00	30.00	80.00	Alexithymic (≥ 64)
		180	28.00	15.00	28.00	71.00	Alexithymic (≥ 64)
		181	15.00	11.00	27.00	53.00	Normal (42-63)
		182	12.00	10.00	22.00	44.00	Normal (42-63)
		183	19.00	11.00	12.00	42.00	Normal (42-63)
		184	12.00	14.00	25.00	51.00	Normal (42-63)
		185	14.00	12.00	21.00	47.00	Normal (42-63)
		186	18.00	18.00	16.00	52.00	Normal (42-63)
		187	18.00	11.00	17.00	46.00	Normal (42-63)
		188	13.00	15.00	26.00	54.00	Normal (42-63)

		189	27.00	17.00	23.00	67.00	Alexithymic (≥ 64)
		190	21.00	18.00	23.00	62.00	Normal (42- 63)
		191	29.00	17.00	22.00	68.00	Alexithymic (≥ 64)
		192	7.00	12.00	15.00	34.00	Low (≤ 41)
		193	19.00	11.00	27.00	57.00	Normal (42- 63)
		194	19.00	22.00	15.00	56.00	Normal (42- 63)
		195	12.00	18.00	31.00	61.00	Normal (42- 63)
		196	23.00	15.00	20.00	58.00	Normal (42- 63)
		197	18.00	16.00	18.00	52.00	Normal (42- 63)
		198	23.00	11.00	25.00	59.00	Normal (42- 63)
		199	26.00	20.00	27.00	73.00	Alexithymic (≥ 64)
	Total	N	199	199	199	199	199
		Sum	3903.00	2923.00	4060.00	10886.00	218.00
	Total	N	284	284	284	284	284
		Sum	5141.00	3949.00	5815.00	14905.00	285.00

APPENDIX D:

a) Turnitin Report

CROSS-CULTURAL ADAPTATION AND PSYCHOMETRIC EVALUATION OF THE ISIZULU 20-ITEM TORONTO ALEXITHYMIA SCALE: PRELIMINARY FINDINGS

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