

THE NATURE OF THE ASSOCIATION BETWEEN MALE VIOLENT
OFFENDING AND ALEXITHYMIA

Catherine Louisa Parry

This thesis is presented in fulfilment of the requirements for the degree of
Doctor of Philosophy

Faculty of Computing, Health and Science
Edith Cowan University

July 2012

Abstract

Previous researchers have alluded to an association between violence and alexithymia. Nemiah (1978) and H. Krystal (1979) were the first to report sudden outbursts of rage and or aggression in clinical observations of non-offender people with alexithymia. Limited research on the subject matter conducted since the time of those reports demonstrates that alexithymia is prevalent among male violent offenders. Much of the previous research, however, was performed with early assessments methods of alexithymia which often failed to measure all aspects of alexithymia. Furthermore, the exact nature of the association between violent offending and alexithymia is unclear. Given the high costs of violent offending to both society and victims it would appear necessary to assess for the presence of alexithymia among male violent offenders in order to provide appropriate intervention and treatment.

The aim of this research was to determine the exact nature of the association between male violent offending and alexithymia. The Toronto Alexithymia Scale (TAS-20) was employed for this purpose. As the scale had not previously been standardised in Australia, the aim of the first research question was to examine the utility of the cut-off scores and stability of the factor structure with a Western Australian community sample. This was achieved by a comparison of the means of the original Canadian standardisation sample with the means of the Western Australian sample ($n = 323$). A Confirmatory Factor Analysis (CFA) was employed to assess the factor structure. The Canadian cut-off scores proved to be applicable with Western Australian participants and stability of the factor structure was

confirmed. Through the analysis, however, some psychometric weaknesses of the scale were revealed.

The second research question was aimed at determining the prevalence of alexithymia among male violent offenders in Western Australia. A sample of 79 violent offenders incarcerated in prisons around Western Australia was recruited for Study Two. The results of a chi-square analysis for Study Two demonstrated an association between male violent offending and alexithymia.

The aim of the third research question was to determine the exact nature of the association. For this purpose, all the TAS-20 scores of the violent offender sample, males in the community sample and a non-violent offender sample (comprising of 67 male participants) were compared by means of a Multivariate Analysis of Variance (MANOVA) and post-hoc Analysis of Variance (ANOVA). There were statistically significant differences between community males and both the offender groups, with higher TAS-20 scores for the offender groups. The differences between the two offender groups were not statistically significant. Furthermore non-violent offenders were just as likely as violent offenders to score above the cut-off score on the TAS-20. The results suggest that there is an association between not only alexithymia and violent offending, but also alexithymia and offending in general. The consistent results for all the TAS-20 factor scores further suggest that it is alexithymia in general, rather than a specific aspect of alexithymia that is associated with offending. The current results are discussed in terms of forensic, clinical and research implications.

Acknowledgements

I would like to express my gratitude to my supervisors Professor Alfred Allan and Doctor Ricks Allan both of whom have provided invaluable advice and support throughout the duration of this project. The data collection for this research proved particularly difficult, so I would like to thank all the people involved in the process including staff of Offender Programs Edith Cowan and prison staff who took the time to assist with the data collection. I would also like to give a special thank you to all the participants who gave their time to partake in the research. Finally, I would like to extend my gratitude to my family and friends who have supported me throughout this journey.

Table of Contents

Use of Thesis	ii
Abstract	iii
Declaration	v
Acknowledgements	vi
List of Appendices	xiii
List of Tables.....	xiv
CHAPTER ONE: INTRODUCTION	1
<i>Aims of the Research</i>	<i>4</i>
Research Question One	5
Research Question Two	5
Research Question Three	6
Research Question Four	6
<i>Plan of the Thesis</i>	<i>7</i>
Literature Review	7
Measurement of Alexithymia.....	8
Reliability and validity.....	9
Model fit.....	9
Absolute fit.....	10
Comparative fit.....	11
Parameter estimates.....	12
Study One.....	12
Study Two	13
Study Three	14
CHAPTER TWO: LITERATURE REVIEW	15
<i>The Alexithymia Construct</i>	<i>15</i>
History.....	15
Aetiology of Alexithymia.....	20
Biological and neurological theories.....	21

Psychological theories.....	24
Conclusion.	25
Clinical Characteristics of Alexithymia.....	26
Prevalence of Alexithymia.....	28
Community samples.....	31
Offender samples.	33
Correlates of Alexithymia.....	33
Gender.....	34
Age.....	35
Culture.....	36
Socioeconomic status.....	39
Education.....	40
Types of Alexithymia.....	42
Primary and secondary alexithymia.....	42
Bermond's alexithymia types.....	44
Moormann's alexithymia types.....	46
Trait and State Alexithymia.....	48
Trait alexithymia.....	48
State-dependent alexithymia.....	50
Treatment of Alexithymia.....	51
Modified psychotherapy.....	52
Supportive psychotherapy.....	53
Group therapy.....	55
Willingness for treatment.....	56
Criticism of the Alexithymia Construct.....	57
Emotional intelligence.....	57
Psychological mindedness.....	60
<i>Violent Behaviour</i>	61
Theories and Perspectives.....	61
Psychodynamic perspectives.....	62
Biological perspectives.....	64
Social learning theories.....	67
Assessment and Treatment of Violent Offenders.....	70
What works?.....	70
The risk-needs-responsivity model.....	71
Anger management.....	74
Readiness for treatment.....	77
<i>Violence and Alexithymia</i>	78

Alexithymia and Violence: Common Features	85
Development and Family-of-Origin.....	86
Family subtypes and social situation.....	86
Family dysfunction, abuse and violence.....	90
Emotional expressiveness.....	93
Impulsivity	95
Hostile Attribution Bias	98
Emotion Regulation.....	100
Distressing Emotions.....	102
Deficits in Empathy.....	106
<i>Measurement of Alexithymia</i>	109
Observer-Rated Questionnaires.....	110
The Beth Israel Hospital Psychosomatic Questionnaire.....	110
Reliability and validity.....	111
Factor structure and factorial validity.....	112
The Alexithymia Provoked Response Questionnaire.....	112
Reliability and validity.....	113
Observer Alexithymia Scale.....	113
Reliability and validity.....	114
Factor structure and factorial validity.....	114
Criticisms of observer-rated questionnaires.....	114
Projective Measures	115
Thematic Apperception Test.....	116
Reliability and validity.....	116
Rorschach.....	116
Reliability and validity.....	117
The Objectively Scored Archetypal Test.....	118
Reliability and validity.....	118
Criticisms of projective measures.....	119
Verbal Content Analysis	120
Gottschalk-Gleser Verbal Content Analysis Scales.....	120
Reliability and validity.....	121
Criticisms of verbal content analysis.....	121
Self-Report Measures	121
The Schalling-Sifneos Personality Scale.....	122
Reliability and validity.....	122
Factor structure and factorial validity.....	123
Influences on the SSPS.....	124
Criticisms of SSPS.....	125

The Minnesota Multiphasic Personality Inventory, Alexithymia Scale.....	125
Reliability and validity.....	126
Factor structure and factorial validity.....	127
Influence on MMPI-A scores.....	128
Criticisms of MMPI-A.....	128
The Bermond-Vorst Alexithymia Questionnaire.....	129
Reliability and validity.....	129
Factor structure and factorial validity.....	130
Influence on BVAQ scores.....	131
Criticisms of BVAQ.....	132
Toronto Alexithymia Scale.....	132
TAS-26.....	133
TAS-R.....	133
TAS-20.....	134
Reliability.....	136
Validity.....	137
Factor structure and factorial validity.....	139
TAS-20 with substance users and offender samples.....	142
Substance users.....	142
Offenders.....	143
Influences on TAS-20 scores.....	145
Age.....	145
Gender.....	146
Culture.....	147
Criticisms of the TAS-20.....	148
Factor structure.....	148
Factor 3: Externally oriented thinking.....	150
Composition of the scale.....	151
Conclusion.....	152
CHAPTER THREE: STUDY ONE.....	153
<i>Method and Analysis</i>	153
Participants.....	153
Instrument.....	154
Procedure.....	155
Statistical Analysis.....	156
<i>Results</i>	159
Confirmatory Factor Analysis.....	162
Conclusion.....	168

<i>Discussion</i>	169
Limitations	174
Conclusion.....	174
CHAPTER FOUR: STUDY TWO	175
<i>Method and Analysis</i>	175
Participants	175
Instrument.....	176
Procedure.....	176
Statistical Analysis	179
<i>Results</i>	180
<i>Discussion</i>	180
CHAPTER FIVE: STUDY THREE.....	182
<i>Method and Analysis</i>	182
Participants	182
Instrument.....	183
Procedure.....	183
Statistical Analysis	183
<i>Results</i>	184
<i>Post-Hoc Analysis</i>	188
<i>Discussion</i>	189
Conclusion.....	195
CHAPTER SIX: GENERAL DISCUSSION	197
<i>Implications for Assessment and Treatment of Offenders</i>	200
<i>Research Implications</i>	202
<i>Limitations</i>	203
<i>Future Research</i>	204

<i>Conclusion</i>	205
REFERENCES	207

List of Appendices

Appendix A	Consultation with Indigenous Psychologists	228
Appendix B	Methodological Issues	241
Appendix C	TAS-20.....	244
Appendix D	Community Participants Information Sheet and Consent Form.....	246
Appendix E	Offender Participants Information Sheet and Consent Form.....	249
Appendix F	Offences Classified as Violent	252
Appendix G	Letter to Accompany TAS-20 for Offender Mail-Out	258

List of Tables

Table 1	Clinical Characteristics of Alexithymia.....	29
Table 2	Prevalence of Alexithymia.....	30
Table 3	Characteristics of Alexithymia and Key terms used for Literature Search...	87
Table 4	Common Features of Alexithymia and Violent Offending.....	88
Table 5	Factors of the TAS-20.....	136
Table 6	Factor Structure and Fit Indexes of the TAS-20.....	140
Table 7	Common Features of Violence and Alexithymia and their Association with Factors of the TAS-20.....	146
Table 8	Cultural Demographics of the Community Sample.....	154
Table 9	Cronbach's Alpha for the TAS-20.....	159
Table 10	A Comparison of the Canadian and Western Australian TAS-20 Scores ..	161
Table 11	Percentage of Community Participants Scoring ≥ 61 on TAS-20	162
Table 12	Fit Indexes of TAS-20 Factor Structures	163
Table 13	Factor Loadings for the One and Two-Factor Models of the TAS-20.....	164
Table 14	Factor Loadings for the Three-Factor Model of the TAS-20.....	166
Table 15	Factor Loadings for the Four-Factor Model of the TAS-20	167
Table 16	Correlations Between the Factors for Different TAS-20 Models.....	168
Table 17	Cultural Demographics of the Violent and Non-Violent Offender Sample	176
Table 18	TAS-20 Means and Standard Deviations for Community Males and Offender Samples.....	185
Table 19	Results Depicting the Significance of Pairwise Comparisons.....	187
Table 20	Percentage of Offender Participants Scoring ≥ 61 on TAS-20.....	188

CHAPTER ONE: INTRODUCTION

Violence is a major social issue with significant implications in Australian society, including detrimental effects on victims and financial costs associated with prosecuting and incarcerating or monitoring offenders. The latest statistics from the Australian Bureau of Statistics (2005) indicate that in the 12 months preceding the survey, there was an estimated 2,613,400 assaults, with approximately 770,600 victims across Australia. As of 30 June 2006, 18% of the 25,790 incarcerated offenders around Australia were detained or imprisoned for acts intended to cause injury (Australian Bureau of Statistics, 2006b). Acts intended to cause injury was on the top of the list of six offences accounting for 70% of sentenced offenders (Australian Bureau of Statistics, 2006b). The latest report from the Department of Corrective Services (DOCS) in Western Australia details that the cost per day of keeping an offender imprisoned has risen to \$258.35 in recent years (Department of Corrective Services: Western Australia, 2005-2006). This equates to approximately \$94,297 per year, while the cost of monitoring an offender in the community has risen to \$23.22 per day, and equates to approximately \$8,475 per year.

In addition to the financial costs associated with violent offending, there are vast and detrimental consequences for victims. Such deleterious effects can include psychological trauma, physical injuries, substance use and behavioural and or personality changes (Kamphuis & Emmelkamp, 2005; L. Miller, 1998; Romito, Turan, & March, 2005; Tedeschi, 1999). Evidence indicates that victims of violent offences may continue to experience trauma associated with the act, even if they are no longer exposed to stimuli (Carlson, 2005). Consequently, being a victim of a

violent offence is a major contributor to mental health related issues (Carlson, 2005; Golding, 1999).

The prevalence of violence within Australian society and the associated costs calls for research to identify psychological factors that contribute to violent offending and intervention methods that may reduce violent behaviour. A substantial body of research on violence exists that details a number of factors associated with violent behaviour, including personality (Ullrich & Marneros, 2004), impulsivity (Komarovskaya, Loper, & Warren, 2007) and emotional and developmental factors, such as low emotional expressiveness and abuse and violence in family-of-origin (Delsol & Margolin, 2004). A number of factors associated with violent offending have also been reported in the alexithymia literature. Alexithymia, however, is a relatively unexplored factor in relation to violent offending.

Alexithymia is defined as a multidimensional construct characterised by deficits in affective and cognitive regulation (Taylor, 2000). People with alexithymia experience difficulty in identifying and communicating emotions to others and a significant dearth of fantasy life (Taylor, 2000). The construct of alexithymia has been researched at length in Canada and North America. Of particular importance are researchers Bagby, Parker, and Taylor (1994) who developed the Toronto Alexithymia Scale – 20 Items (TAS-20), the most commonly used assessment for alexithymia. Despite the interest overseas, there is a scarcity of research regarding alexithymia in Australia. In a search for Australian literature on alexithymia on *PsychInfo* using the search terms *alexithymia* and *Australia* or *Australian* as byline, under the researcher's names referring to institutional affiliation, only 40 articles were returned. Of these articles, a number were meta-analyses or detailed research not conducted in Australia. The remainder typically dealt with alexithymia in

adolescence, such as Heaven, Ciarrochi, and Hurrell's (2010) study which examined a brief measure of alexithymia for adolescents and Moriarty, Stough, Tidmarch, Eger and Dennison (2001) who investigated alexithymia in conjunction with deficits in emotional intelligence in juvenile sexual offenders. Other Australian research that could be located investigated alexithymia as a right brain hemisphere deficit (Jessimer & Markham, 1997), in brain injured people (Becarra, Amos, & Jongenelis, 2002), in schizophrenia (Henry, Bailey, Hippel, Rendell, & Lane, 2010), and as an association with defence mechanisms (Helmes, McNeil, Holden, & Jackson, 2008). No Australian research could be located that examined the utility and applicability of measures of alexithymia with Australian community or offender samples. Nor could any Australian research be located that investigated the prevalence of alexithymia within an Australian sample. An article by Day and colleagues (2008) was the only Australian research that could be located that examined alexithymia in an offender sample.

Day and colleagues (2008) examined cultural differences in the experience of anger among male Indigenous and non-Indigenous offenders incarcerated in regional prisons in South Australia. Eighty-five percent of the 49 participants who identified as non-Indigenous were convicted of violent crimes and 82% of the 46 participants who identified as Indigenous. A battery of assessment instruments was utilised for the study including the TAS-20. The utility of the TAS-20 in an Australian sample was not assessed prior to use of the scale, and violent and non-violent offenders were not analysed independently.

These researchers reported the mean scores on Factor 1 *Difficulty Identifying Feelings* (DIF) and Factor 2 *Difficulty Describing Feelings* (DDF) on the TAS-20 were significantly higher among the Indigenous sample as compared to the non-

Indigenous sample. Scores on Factor 3 *Externally Oriented Thinking* (EOT) were not reported. The non-Indigenous participants' scores on the TAS-20 were not significantly different from the norms indicated by the original authors of the scale. The aim of the research was not to demonstrate an association between violence and alexithymia; nonetheless, Day et al.'s (2008) research indicated an association between offending in general by Indigenous offenders and alexithymia. There appears to be no Australian research directly examining the association between male violent offending and alexithymia.

Alexithymia has been linked to violence in clinical observations of people with alexithymia that indicate they can be prone to sudden outbursts of rage, violent or destructive behaviour (H. Krystal, 1979; Nemiah, 1978). Researchers have therefore speculated that alexithymia may be associated with violence and empirical support for this notion has been reported in a limited number of studies (Keltikangas-Jarvinen, 1982; H. Krystal, 1979; Louth, Hare, & Linden, 1998; Yelsma, 1996). A review of the literature by the current researcher also revealed people with alexithymia and those individuals who commit violent acts share some psychological features. However, no research could be located that explored the common features.

Aims of the Research

The primary aim of the current study was to explore the exact nature of the association between alexithymia and violent offending. The researcher proposed to determine the prevalence of alexithymia in a sample of male violent offenders in Western Australia. The researcher hypothesised male violent offending would be associated with alexithymia and an examination of the factor scores of the TAS-20

would provide insight as to the nature of the association. Four research questions were examined in the current study.

Research Question One

Is the TAS-20 a reliable and valid measure of alexithymia in Australia, and are the Canadian cut-off scores applicable for use in Western Australia? The TAS-20 has yet to be standardised using an Australian sample; the researcher therefore proposed to determine whether the TAS-20 is a reliable and valid measure of alexithymia in Western Australia. The investigation of the reliability of the TAS-20 was based on Cronbach's Alpha and the validity based on factor analysis. The aim of research question one was also to assess if the Canadian cut-off scores are applicable for use in Western Australia and if the three-factor structure is replicable.

Research Question Two

Does the prevalence of alexithymia in male violent offenders differ from that of males in the community? The researcher proposed to compare a male violent offender sample to a male community sample in order to assess whether the prevalence of alexithymia is different. The researcher anticipated that the prevalence of alexithymia would be greater in the violent offender sample. Male violent offenders were recruited specifically as there is a much higher proportion of violent offending among male offenders as opposed to female offenders (Australian Bureau of Statistics, 2006b). A higher prevalence of alexithymia among violent offenders in Western Australia would allude to a possible association between violent offending and alexithymia that would require further empirical testing.

Research Question Three

What is the nature of the association between alexithymia and male violent offending? Previous researchers have indicated that there may be an association between violent offending and alexithymia; however, the exact nature of the association is unclear. The primary aim of the current research is to fill this gap. The researcher proposed a comparison between a male violent offender sample, a male non-violent offender sample, and a sample of community males would provide greater insight into the nature of the association between male violent offending and alexithymia. Specifically, examination of the factor scores of the TAS-20 in the violent offender sample in comparison to the latter two groups would provide a deeper understanding of the reason some individuals may be prone to violence. The purpose of comparison with a non-violent offender sample is to establish that it is specifically violence, not simply reckless or criminal behaviour, that is associated with alexithymia.

Research Question Four

Is the TAS-20 a reliable and valid measure of alexithymia for use with Western Australian violent offenders and Western Australian non-violent offenders? Previous researchers have reported differences in the factor structure of the TAS-20 across various samples. The aim of the fourth research question was therefore to investigate the reliability, validity and stability of the three-factor structure of the TAS-20 with the Western Australian violent and non-violent offender samples by way of a confirmatory factor analysis (CFA).

Plan of the Thesis

Literature Review

In preparation for the research, a critical analysis of the literature was undertaken. The purpose of the literature review was primarily to examine the clinical observations and limited empirical research that linked alexithymia directly or indirectly with violent behaviour. The literature review focussed primarily on the history, features and treatment approaches of alexithymia. The research on violence is expansive and it is outside of the scope of the current study to provide a thorough review of this research. The major theories of violence, however, were briefly reviewed as were treatment approaches. There are numerous personality characteristics which have been associated with violence and many of these will be covered in the review of the commonalities between alexithymia and violence research. Previous research exploring the association between violence and alexithymia was examined, beginning with a review of clinical observations of sudden outbursts of rage in people with alexithymia. The findings of the literature search revealed a number of commonalities between the research on violence and alexithymia and these are discussed in the review.

For the purposes of the literature review, a violent offender was any individual who had been convicted of committing a crime against another person, such as assault or grievous bodily harm or an act involving force without consent, or consent obtained by fraud. This definition was deemed appropriate for the current research, as it is in accordance with Part V of the Criminal Code ("Criminal Code ", 1913) in Western Australian and is therefore the definition that is used in the justice system. This definition is also in accordance with the accepted definition of violent offenders in much of the literature, where violent offenders were described as

individuals who have committed forceful acts against another person resulting in physical injury (Blackburn, 1993). Violent behaviour can refer to any violent act, however, in discussion relating to violent offenders, the terms violent behaviour and violent offending were used interchangeably.

Aggression is generally defined as a deliberate act causing harm, which may include physical injury, but also psychological injury, and as such is not dependent on physical harm (Blackburn, 1993). Based on this distinction, for the purposes of the current literature review, any act resulting in physical harm was considered *violent* and any actions or tendencies designed to cause harm, physical or otherwise, will be considered *aggressive* or *aggression*. For the purposes of the current study, a non-violent offence referred to any offence other than those of a violent nature, and included offences of a sexual nature that did not involve violence.

Measurement of Alexithymia

The measurement of alexithymia in various forms was reviewed. The psychometric properties of each of the measures of alexithymia were also discussed. Various authors, such as Brown (2006), Groth-Marnat (2009), Hu and Bentler (1998; Hu & Bentler, 1999) and Kline (2005) describe the constructs and criteria relevant to the evaluation of the psychometric properties of measuring instruments. These criteria are briefly described in the next sections, as they are relevant to the discussion of measures of alexithymia.

Based on the criteria for assessing the reliability, validity and model fit of alexithymia measurements, the TAS-20 demonstrated sound psychometric properties in comparison to other instruments. Therefore the researcher deemed it appropriate to

utilise the TAS-20 for the current study. The findings of the literature analysis are reported in Chapter Two.

Reliability and validity.

In regards to test-retest reliability, inter-rater reliability, and internal consistency reliability (Cronbach's Alpha), high reliabilities closer to 1.0 are regarded as desirable, however, a reliability above .7 is acceptable for research purposes (Groth-Marnat, 2003; Kline, 2005). Evidence of validity can take a variety of forms. Content validity refers to judgments of whether the content of the instrument accurately assesses what it claims to assess. Concurrent validity, which is a form of criterion validity, refers to the extent to which the scores on a particular instrument are related to the scores on an existing instrument designed to measure the same construct. Concurrent validity can be established by examining the correlation between different instruments. Construct validity refers to the extent the instrument measures the theoretical construct it is designed to measure. The construct validity of an instrument can be assessed through various means, such as correlations with other instruments measuring coinciding traits and factor analysis. Construct validity can also be assessed through convergent or discriminant validity that relates to the extent variables on a measure are theoretically similar or dissimilar, and correlate highly (Groth-Marnat, 2009).

Model fit.

The fit of a model to the data as assessed by factor analysis is indicated by a number of different fit indexes falling under the general headings of absolute fit and

comparative fit. Measures of absolute fit include chi-square, Root Mean Square Error of Approximation (RMSEA) Root Mean Square Residual (referred to as RMR or RMS), Standardised Root Mean Square Residual (SRMR), Goodness of Fit Index (GFI), and Adjusted Goodness of Fit Index (AGFI). Measures of comparative fit of the model include the Comparative Fit Index (CFI), and the Tucker Lewis Index (TLI; Hu & Bentler, 1999; Kline, 2005).

Absolute fit.

Chi-square (χ^2) is the most basic and most widely used fit index. A statistically significant chi-square indicates the model is not a good fit to the data and a certain amount of covariance is unexplained by the model. A non-significant chi-square therefore indicates a good fit to the data (Brown, 2006; Kline, 2005). It is rarely relied upon as a sole measure of fit, as it is influenced by small sample sizes, and it is unrealistic to expect a model to have a perfect fit (Brown, 2006). Other fit indexes are therefore evaluated along with chi-square to determine model fit (Brown, 2006; Kline, 2005). As a rule, fit indexes will demonstrate a better fit to the data if the chi-square result also indicates a good fit (Hu & Bentler, 1998).

The RMR or RMS assesses the average discrepancy between the predicted correlations and the observed correlations in the model (Brown, 2006; Kline, 2005). The RMR or RMS is difficult to interpret, and is affected by the scale of the variables. The SRMR is the preferred indicator. RMR or RMS and SRMR values of 0 indicate a perfect fit, however, any value $< .10$ is considered favourable (Brown, 2006; Kline, 2005). The GFI is a standardised measure of absolute fit that estimates the variability explained by the model (Kline, 2005). A GFI or an AGFI of 1.0 suggests a perfect fit, however, as a rule GFI values $> .90$ are indicative of good fit

(Kline, 2005). GFI and AGFI have been reported to perform poorly in simulation studies and are not recommended for evaluating model fit by a number of researchers (Hu & Bentler, 1999; Kline, 2005)

The RMSEA is also a measure of absolute fit, but it is also a parsimony adjusted index meaning when two models present with similar goodness of fit, the simpler model will be favoured (Brown, 2006). The RMSEA is a population-based index, and therefore measures the degree to which the model fits reasonably well in the population (Brown, 2006). RMSEA is one of the most widely used and recommended indicators of goodness of fit (Brown, 2006). A reasonable fit to the data is generally considered in cases where RMSEA is $< .08$, but a RMSEA of $\geq .10$ indicates poor fit (Hu & Bentler, 1999). An RMSEA of $.05$ to $.06$ is considered ideal (Hu & Bentler, 1999).

Comparative fit.

The comparative fit of models is assessed by the CFI and TLI fit indexes. The CFI, which is also referred to as a measure of incremental fit, provides a measure of the improvement of the current model in comparison to a baseline model (Kline, 2005). It is generally considered that CFI values closer to 1.0 reflect good model fit, however, a value $> .90$ is considered a reasonably good fit (Brown, 2006; Kline, 2005). The TLI is a non-normed index and compensates for model complexity. Values can range outside of the 0 - 1.0 range; however, values closer to 1.0 are indicative of model fit. RMSEA, CFI, and SRMR are generally considered superior fit indexes because they have been reported to perform the best in simulation studies and are therefore the most commonly used (Hu & Bentler, 1999; Kline, 2005).

Parameter estimates.

Parameter estimates can include the factor loadings of each of the items on the corresponding scale, and the correlations between the factors. Factor loadings are generally interpreted via a conservative cut-off of $> .60$ (Marsh & Hau, 1999). Higher factor loadings are desirable; however, factors loadings $> .60$ are sufficient to explain the variance (Stevens, 2002). In samples greater than 300, however, factor loadings above $.30$ are considered acceptable by some researchers (Stevens, 2009).

The correlation between the factors is indicative of the degree of discriminant validity. A calculation provided by Kline (2005) is used as a guideline for determining discriminant validity. The correlation between the factors should be below $.8$ in order to demonstrate the factors are unique (Anderson & Gerbing, 1988; Fornell & Larcker, 1981).

Study One

Research question one was investigated in Study One which will be covered in Chapter Three. There is an absence of Australian norms and reliability and validity information for the TAS-20. Study one was therefore aimed at examining the psychometric properties of the TAS-20 in a Western Australian sample. Specific attention was given to examining the applicability of the Canadian norms by way of a comparison of means between the Canadian standardisation sample and the Western Australian sample. A quasi-experimental design was used with TAS-20 scores, serving as the dependent variables, and country (Canada or Western Australia) as the independent variable. The internal consistency of the scale was assessed by way of Cronbach's Alpha.

In order to assess whether the three-factor structure was replicable in a Western Australian sample, a CFA was performed. Previous researchers have suggested the original three-factor structure proposed by Parker et al. (2003) is applicable in most samples (Cleland, Magura, Foote, Rosenblum, & Kosanke, 2005; Haviland & Reise, 1996; Loas et al., 2001; Swift, Stephenson, & Royce, 2006). There is evidence to suggest, however, that the factor structure may vary across samples (Kooiman, Spinhoven, & Trijsburg, 2002; Muller, Buhner, & Ellgring, 2003). Chi-square was used as an indicator of model fit in addition to RMSEA, CFI, and SRMR. All fit indexes were interpreted according to the criteria outlined above.

Study Two

To investigate research question two and determine the prevalence of alexithymia among male violent offenders a sample of violent offenders from Western Australian prisons was collected for Study Two. A quasi-experimental design was also used for study two with sample (community or violent offender) as the independent variable and incidence of alexithymia as the dependent variable. The incidence of alexithymia among violent offenders was compared with the community sample of males by way of a chi-square analysis. The method, analysis, results and discussion for Study Two are presented in Chapter Four. Appendix F lists offences classified as violent.

Soon after commencing the data collection for violent offenders it also became apparent to the researcher that the TAS-20 may not be appropriate for use with Indigenous persons. Two Indigenous Psychologists were consulted in regards to this matter. The outcomes of the interviews are discussed in Appendix A.

Study Three

In order to investigate research question three, the TAS-20 scores for the violent offender sample were compared with males from the community sample and a sample of non-violent offenders by way of a Multivariate Analysis of Variance (MANOVA) followed post-hoc Analysis of Variance (ANOVA). As with Study One and Study Two this involved a quasi-experimental design with the sample (community, violent offender, and non-violent offender) serving as the independent variable and TAS-20 scores as the dependent variable. The method, analysis, results and discussion for Study Three are presented in Chapter Five.

A number of methodological issues were encountered during the course of data collection for study two. These issues are reported in Appendix B. Due to issues with the data collection of the offender samples, the size of these samples was insufficient to conduct a CFA and research question four was abandoned. The reasons for this and a general discussion of the results from the three studies of the research are presented in Chapter Six.

CHAPTER TWO: LITERATURE REVIEW

The Alexithymia Construct

Prior to the conceptualisation of the alexithymia construct there were a number of researchers who concurrently and independently reported on observations of alexithymic type characteristics. Ruesch (1948), MacLean (1949), and Shands (1975) all reported observations of alexithymic type characteristics in various groups of patients before the term alexithymia was coined. Following their observations, French researchers Marty and de M'Uzan (1963) conceptualised some of these characteristics. It was not until the 1970's that researchers Nemiah (1978) and Sifneos (1972) from Boston conceptualised the construct now known as alexithymia.

History

Ruesch made the first recorded observations of alexithymia type characteristics in 1948. In a study of patients with chronic disease and post-traumatic syndromes, Ruesch observed the patients appeared to be concerned only with sensations in their body and used these sensations as a means of communication. He used frustration as an example to illustrate this behaviour and stated frustration may manifest as an increase in heart rate and muscular tension because the person has not learnt self-expression to verbalise their frustration or take action to reduce it. The long-term result of using the body as a means of communication in these patients was chronic illness. Ruesch purported the patients' verbal and symbolic disturbances in expression of emotion were not representative of a mature adult and they appeared to be stuck in an infantile state. By describing an infantile state, Ruesch meant the

person had not reached a level of self-expression representative of a mature adult, did not function effectively as an independent person and was not successful in social interactions. According to Ruesch an individual's affective experience, way of thinking and communicative style are essential to personality development and therefore these patients possessed what he called *infantile personalities* (Ruesch, 1948).

Independent of Ruesch's observations, neurophysiological researcher MacLean (1949) developed the notion of the *visceral brain* in response to his observations of psychosomatic patients. MacLean made a distinction between the visceral or emotional centre of the brain and other areas of the brain responsible for symbolic functioning stating the visceral section of the brain is anatomically unique. He proposed psychosomatic sensations could be explained by a lack of exchange between the visceral brain and the area of the brain responsible for communication. He observed psychosomatic patients demonstrated an inability to communicate their emotions verbally. The consequence was patients would experience their emotions as physical sensations in the body leading to psychosomatosis.

Apparently unaware of the work of the aforementioned researchers H. Krystal (1968) examined the affect of drug withdrawal states on survivors of Nazi World War II concentration camps. According to H. Krystal, the survivors had experienced psychological trauma. He reported somatisation of emotions in the patients with minimal verbalisation of symptoms. When they described emotions, the patients were typically vague in their accounts, and specific emotions could not be identified. H. Krystal concluded the patients did not cognitively experience their emotions, and therefore could not understand them.

In response to reports from Ruesch (1948), MacLean (1949) and H. Krystal (1968) of symptoms of affective disturbance, Shands (1975) reported on observations he made almost 20 years prior, in 1958, of a group of anxiety patients and psychosomatic rheumatoid arthritis patients in examining their suitability for psychotherapy. In the article, he detailed the arthritic patients, in contrast to the anxiety patients, had marked difficulty in describing their emotions, and would frequently state how they should feel or how anyone else would feel as opposed to how they actually felt. The arthritic patients were also unable to apply meaning to personal experiences. He observed a general lack of affect in these patients as well as a concrete thinking style. The arthritic patients in comparison to the anxious patients had fewer years of education and lower socioeconomic status. Shands concluded an inability to communicate emotions put the arthritic patients at a disadvantage for psychotherapy (Shands, 1975).

Despite reports from Ruesch (1948), MacLean (1949), Shands (1975) and H. Krystal (1968), the emotional characteristics and affective disturbances reported by these clinicians were not conceptualised at the time. French psychoanalysts Marty and de M'Uzan (1963) were the first to conceptualise the emotional characteristics of psychosomatic patients. Based on his work with Marty on psychosomatic patients, de M'Uzan (1974) detailed the characteristics of psychosomatic patients. He described a dearth of fantasy and non-elaboration, or a reduction of experiences or objects to the simplest forms which the researchers referred to as *basic representative inhibition*. Difficulty with interpersonal relationships and a tendency to view themselves in a global sense, as opposed to individual characteristics, was referred to as *reduplication*. *Operatory thinking* referred to the patients' way of thinking that was invariable, tied to the present reality and utilitarian, as defined by de M'Uzan, or

concrete in nature. Patients reportedly would focus on mundane external events and life experiences as opposed to inner thought or affective experiences. De M'Uzan argued the symptoms could arise as a means of coping with conflict or in traumatic situations, and therefore represented a defence mechanism of the patients.

Prompted by the research of Marty and de M'Uzan (1963) and their own clinical interviews with psychosomatic patients at a teaching hospital of Harvard University Medical School, in 1970 Nemiah and Sifneos explored the capacity of a group of psychosomatic patients to experience affect. The researchers reviewed clinical interview transcripts of 20 psychosomatic patients. The transcripts revealed the majority of patients were unable to describe their emotions verbally, or expressed them through other means. In addition, Nemiah and Sifneos found evidence of operatory thinking as it was described by Marty and de M'Uzan (1963). The patients demonstrated a lack of inner thought as indicated by tendency to elaborate on mundane details of the external environment when recounting experiences or events. Nemiah and Sifneos (1970) offered three explanations for the characteristics in these patients. Firstly, they proposed the symptoms may represent a form of repression against aversive emotions. Secondly, the affective disturbance may be a disruption in learning the associations between words and feelings during early developmental stages. Thirdly, the disturbance could have resulted from a neurobiological defect involving disruptions between the neocortex and the limbic system.

Subsequent to the discovery of emotional deficits in psychosomatic patients, Sifneos (1972) attempted to determine the prevalence of these characteristics. He reported on an investigation examining 25 psychosomatic inpatients and 25 controls and their ability to express emotion and fantasise. The medical records of each of the patients were examined by the researcher to determine psychological difficulties. A

forced-choice questionnaire designed to determine the patient's ability to verbalise emotions and fantasise was administered to staff who knew the patients well. Many of the psychosomatic patients in comparison to the group of controls were thought by the researcher to present with a restricted fantasy repertoire and a lack of introspection. Deficits in emotional functioning, including inappropriate affect and insensitivity, were also noted. Sifneos described a primitive personality structure in the patients along the lines of what Ruesch's (1948) labelled an *infantile personality*. Difficulties in interpersonal relationships were reported, and Sifneos commented that individuals generally gave the impression of being dull. The patients would typically use behavioural actions to demonstrate emotions and to avoid frustrating situations or conflict. The most marked feature, however, was the patient's inability to communicate their emotions accurately. They appeared to have difficulty finding the appropriate words to describe how they were feeling. Sifneos coined the term alexithymia, literally translating from Latin (*a* meaning lack, *lex* meaning word, and *thymos* meaning mood or emotion) to 'no words for feelings', to describe these characteristics.

Sifneos and colleagues (1976) reviewed the clinical observations of alexithymic characteristics in psychosomatic patients from numerous researchers. To the list of emotional characteristics already identified, they added a tendency to take impulsive action which they had observed through their own research. They proposed alexithymic people may take impulsive action to rid themselves of *internalised psychological conflict*. In a following article discussing alexithymia and psychosomatic illness, Nemiah (1978) detailed clinical observations of sudden and short violent outbursts in alexithymic people. He described patients may suddenly lash out in an aggressive or violent manner. Following the brief outbursts, patients

were unable to explain their behaviour. From the current researcher's review of the literature it appears this was the first time violence and alexithymia had been linked in the literature.

Nemiah and Sifneos's clinical observations were presented at a symposium on emotion in psychosomatic illness in London in 1972 (Sifneos, 1996). Following the symposium, there was debate between researchers as to the role of emotion in psychosomatic medicine (Sifneos, 1996). Further clinical research was conducted in the wake of the London symposium and the Eleventh European Conference on Psychosomatic Research was held in Heidelberg Germany in 1976. The specific aim of the conference was to develop a theory of alexithymia and operatory thinking. According to Sifneos the conference was successful in establishing the presence and importance of alexithymia in psychosomatic medicine. Since the conference alexithymia has been identified in various medical and psychiatric disorders including, among others, coronary heart disease (Valkamo et al., 2001), type one diabetes (Chatzi et al., 2009) and Parkinson's disease (Costa, Peppe, Carlesimo, Salamone, & Caltagirone, 2010).

Aetiology of Alexithymia

Over the decades, numerous researchers have speculated as to the aetiology of alexithymia. Ideas as to the aetiology of alexithymia have been developed from various lines of research ranging from psychophysiological studies, social learning and development to attachment research (Taylor & Bagby, 2004). The two major theories have focused on biological or neurological theories and more psychologically based theories (Sifneos, 1996). These two groups of theories are further discussed in the next section.

Biological and neurological theories.

The biological or neurological theories of alexithymia are based on the notion of an innate structural neurological basis of alexithymia. MacLean, (1949), building on the work of Ruesch (1948), proposed a neurophysiological explanation for what is now known as alexithymia. He detailed the *visceral brain*, or the rhinencephalon, as largely responsible for emotional functioning. The flow of information to the neocortex, which is responsible for language, from the visceral brain is faulty or disrupted. Emotions cannot be effectively evaluated or expressed as emotions and might be interpreted as physical sensations. Consequently emotions are expressed as somatic complaints. MacLean was a neurophysiological researcher, and based his theory on the evidence available at the time and his own clinical work.

Based on clinical observations of alexithymic patients, Nemiah (1977) likewise postulated that alexithymia might be the result of faulty connections between the limbic system and the neocortex. As the limbic system is largely responsible for emotional functioning and the neocortex for language, a disruption between these two systems would result in difficulties understanding and expressing emotions. Nemiah's theory was not empirically tested, and he remarked that alexithymia is most likely the result of multiple pathways and cannot be explained by neurophysiology alone.

In recent years, a plethora of neurophysiological studies have provided possible explanations for alexithymia and tested the original theories above. These studies fall into three broad categories specifically relating to dysfunctioning of the corpus collosum, right hemisphere and frontal lobe (Larsen, Brand, Bermond, & Hijman, 2003). A thorough review of these studies is beyond the scope of the current

review. However, a few select studies dealing with the major lines of research are discussed.

Zeitlin, Lane, O'Leary and Schrift (1989) investigated the interhemispheric transfer in 25 male war veterans diagnosed with post-traumatic stress disorder (PTSD), compared to a group of 10 control participants. A tactile finger localisation task was used whereby participants were blindfolded and asked to indicate which finger or fingers have been touched by the researcher. The task provides a behaviour indicator of interhemispheric transfer and the functioning of the corpus callosum. Alexithymia was assessed on the TAS-26, the former version of the TAS-20. The results were indicative of a strong association between higher alexithymia scores and a lack of interhemispheric transfer. Zeitlin and colleagues concluded deficits in alexithymia are the result of a lack of interhemispheric communication. There were no statistically significant differences between PTSD participants without alexithymia and the control group indicating the results were not attributable to PTSD.

Zeitlin et al.'s (1989) study was replicated by Parker et al. (1999) using 15 non-alexithymic and 14 males with alexithymia in an undergraduate university program. A tactile finger localisation task was used and alexithymia assessed on the updated TAS, the TAS-20. Non-alexithymic participants performed significantly better on the task compared to alexithymic participants. On the uncrossed section of the task, where one hand was touched as opposed to two, there was no difference between alexithymic and non-alexithymic participants. Parker and colleagues concluded that the results provided strong evidence that deficits in alexithymia are not attributable to either hemisphere, but are the result of a bidirectional

interhemispheric transfer deficit. Right hemisphere deficits, have been investigated by other researchers as the cause of alexithymia.

The right hemisphere of the brain is associated with the processing of emotional stimuli (Larsen, et al., 2003). Jessimer and Markham (1997) tested the hypothesis that alexithymia is associated with right hemisphere dysfunction in a non-clinical sample. The researchers proposed there would be a significant difference between high and low alexithymic participants in recognising facial expressions of emotion. A chimeric task was employed whereby faces were presented with left side of the face displaying an emotive expressive and the right side a non-emotive expression. Complete faces displaying various emotions were also presented. High school students and university students were assessed for alexithymia on the TAS-20. Those scoring in the highest and lowest 10% of the sample were recruited for the study. The results indicated alexithymic participants did not favour the expressive left side of the face and were less likely to recognise the emotion displayed in the complete face in comparison to the low alexithymic participants. The researchers argued the results support the hypothesis of right hemisphere dysfunction in alexithymic people as there was less activity in the right hemisphere.

Berthoz and colleagues (2002) postulated that there are individual differences in the neural processing of emotions that are yet to be revealed. Based on the hypothesis that alexithymia involves a dysfunction in the anterior cingulate cortex, the researchers conducted an *fMRI* (functional magnetic resonance imaging) study to investigate cerebral activation in the brains of alexithymic participants. A sample of 16 males, eight with high scores on the TAS-20, and eight with low scores were recruited from a large community sample. A series of images containing neutral, negative or positive emotionally arousing stimuli was presented to the participants.

In addition to the fMRI, participants were asked to rate the images. Results indicated no differences between the high and low alexithymic groups on ratings of the images. The results from the fMRI, however, showed clear differences between the two groups. In response to negative emotionally arousing images alexithymic participants had less activation in the left mediofrontal-paracingulate gyrus as compared to low alexithymic participants. Positive emotionally arousing images produced greater activity in the mediofrontal, middle frontal gyri and anterior cingulate for high alexithymic participants in comparison to low alexithymic participants. The researchers concluded there were statistically significant differences in the mediofrontal and anterior cingulate activity of high and low alexithymic participants in response to emotional stimuli.

A brief review of the neurophysiological research by the current researcher reveals explanations for alexithymia characteristics from many different areas of brain functioning. This lack of consistency in the research may indicate a dysfunction in different areas of the brain is responsible for different characteristics of alexithymia as suggested by Larsen et al. (2003). For example, dysfunction in the corpus callosum may be responsible for emotional deficits, but not cognitive deficits that may be better accounted for by right hemisphere dysfunctioning or interhemispheric transfer (Larsen, et al., 2003). Despite the lack of consistency, the research indicates there are neurophysiological correlates of alexithymia.

Psychological theories.

Joyce McDougall (1974) was among the first to propose a psychoanalytical explanation for alexithymia. She postulated alexithymia in adulthood has its origins in infancy. According to McDougall, infants develop a primitive form of neurosis

in response to an inadequate mother-child relationship. The infant is unable to self-soothe and begins to develop strong defence mechanisms. In adulthood, this tendency continues and they are unable to escape into fantasy as a means of defence and instead use somatisation.

Freyberger (1977) and H. Krystal (1988) provide further psychological explanations of alexithymia. The latter postulated two pathways to developing alexithymia as a result of trauma. The first pathway, infantile trauma, occurs in children under two years. Infantile trauma is the result of overexposure to emotional stimuli before the child is cognitively able to process such information, and therefore becomes distressed or frustrated. Emotional development is arrested at this level. The result is an individual who lacks the ability to verbalise their emotions in adulthood, is prone to somatisation and has a diminished or dearth of fantasy life.

H. Krystal (1988) postulated the second pathway to alexithymia after conducting extensive work with survivors of the Holocaust. During this time, he observed severe depression, anxiety and anhedonia in survivors and a general intolerance for affect. He attributed alexithymia in survivors to an arrest in development or regression in affect as a result of the trauma. The individual is no longer focused on emotions and fantasies, and in their place becomes preoccupied with mundane details of the external world. Emotions manifest as bodily sensations. Freyberger (1977), like H. Krystal, postulated two forms of alexithymia that will be discussed in detail in the section below on primary and secondary alexithymia.

Conclusion.

Although each theory has contributed to the greater understanding of alexithymia, it is important to acknowledge that there is currently no one universally

accepted explanation for the development of alexithymia (Taylor & Bagby, 2004). Moreover, it is more likely that the aetiology of alexithymia is varied between individuals and is the result of multiple contributory factors (Taylor, Bagby, & Parker, 1997). Despite the fact there is currently no universally accepted aetiological explanation for alexithymia, it has been proposed that more than one form of alexithymia exists. Consequently, some researchers have chosen to discuss different forms of alexithymia as opposed to aetiological explanations. In spite of a lack of consensus regarding the aetiology of alexithymia, the clinical characteristics of the condition are now well established and universally acknowledged.

Clinical Characteristics of Alexithymia

Alexithymia reflects specific deficits in the cognitive processing of emotions, including difficulties with the experience and regulation of emotion (Taylor, 2000). The salient features include; 1) difficulty in identifying and describing subjective feelings, or a diminished ability to verbalise emotions; 2) difficulty in distinguishing feelings from bodily sensations of emotional arousal, or a deficiency in recognising that some bodily sensations may be the manifestations of emotions; 3) a markedly constricted imaginal capacity, or an incapacity to fantasise, as indicated by a paucity of fantasy, and; 4) a cognitive style that is externally oriented, or an absence of the tendency to think about one's emotions and instead a thinking style that is focused on external reality as opposed to inner thought (Taylor, 2000; Taylor, Bagby, & Parker, 1991). As it is conceptualised today, alexithymia is considered to be a multi-faceted construct denoting disturbances in cognitive and affective functioning that manifest in the individual's communicative style (Taylor, 1984, 2000).

People with alexithymia typically present with inability to accurately identify and communicate emotions, which often involves choosing inappropriate words for the emotion, or, in most cases, focussing on the somatic sensations (Apfel & Sifneos, 1979; Fava et al., 1995; Taylor, 1987). Consequently, this focus on somatic sensations leads many people with alexithymia to present with physical complaints and be incorrectly labelled by clinicians as hypochondriacs (Taylor, 1987; Taylor, et al., 1991). People with alexithymia are also limited in their ability to reflect on their emotions and or communicate distress to others (Taylor, 2000). Taylor (2000) proposed the lack of ability to share emotions with others might perpetuate their difficulty with identifying emotions. The thinking style of people with alexithymia is also invariable and tied to reality, overly literal and focussed on minor details of external reality (Taylor, 1984, 1987). Inner attitudes and desires of people with alexithymia are therefore rarely revealed due to strikingly absent symbolic thought (Taylor, 1984, 1987). Paucity of fantasy is a marked characteristic and dreams are rarely recalled and if they are the focus will typically be on content as opposed to symbols or meaning (H. Krystal, 1982-1983; Taylor, 1984).

The interpersonal characteristics of people with alexithymia generally portrays the image of an individual with a preference to be alone and a distinctive reserved or avoidant interpersonal style (Berenbaum & Irvin, 1996; Cercero & Holmstrom, 1997). People with alexithymia also typically display a critical attitude towards others that is marked by a general suspicion and mistrust (Cercero & Holmstrom, 1997). Researchers have reported a discrepancy between verbal and non-verbal reports of affective experience (Berenbaum & Irvin, 1996). People diagnosed with alexithymia demonstrate a low degree of affective intensity in conjunction with a general inability to cope in stressful situations and poor stress

management skills (Fukunishi & Rahe, 1995; Jacob & Hautekeete, 1999; Zimmerman, Rossier, Stadelhofen, & Gaillard, 2005). Adherence to stereotypical masculine roles has also demonstrated a relationship to alexithymia, with alexithymic men reporting a greater fear of intimacy and reduced emotional expressiveness (Fischer & Good, 1997; Levant et al., 2003). Lowered subjective well-being and low life satisfaction has been associated with alexithymia in both men and women (Honkalampi, Hinitikki, Tanskanen, Lehtonen, & Viinamki, 2000; Honkalampi et al., 2004). Table 1 on the next page provides an outline of these main features of alexithymia.

Prevalence of Alexithymia

The role of alexithymia in psychosomatic medicine is well established and researchers continue to examine the construct in various medical and psychiatric populations. To date, alexithymia is reportedly prevalent among substance users and alcoholics (Loas, et al., 2001), those suffering from depression (Honkalampi, Hintikka, Lehtonen, & Viinamaki, 2000), psychogenic pain (Lumley, Asselin, & Norman, 1997), eating disorders (Loas, et al., 2001), post-traumatic stress disorder (Shipko, Alvarez, & Noviello, 1983), personality disorders (Berenbaum, 1996), and somatoform disorders (Modestin, Furrer, & Malti, 2004) in addition to individuals within the general population (Sifneos, 1996).

One of the aims of the current research is to determine the prevalence of alexithymia in a male violent offender sample in comparison to a community sample of males. For this reason it is necessary to examine previous studies which have assessed the prevalence of alexithymia in the community and offender samples.

Details regarding the prevalence of alexithymia across community, medical and psychiatric and offender samples are set out in Table 2 on the next page.

Table 1

Clinical Characteristics of Alexithymia

Feature	Description
Affective	<p>Inability to accurately identify emotions</p> <p>Difficulty in distinguishing bodily sensations from emotions</p> <p>Low degree of affective intensity</p> <p>Reduced emotional expressiveness</p> <p>Impulsive outbursts of strong emotion</p>
Cognitive	<p>Inability to accurately communicate or verbalise emotions</p> <p>Restricted fantasy repertoire or incapacity to fantasise</p> <p>Tendency to focus on external reality as opposed to inner thought</p> <p>Concrete thinking style</p>
Interpersonal	<p>Preference to be alone</p> <p>Avoidant or reserved personality style</p> <p>Critical attitude towards others marked by suspicion or mistrust</p> <p>Fear of intimacy</p> <p>Lowered subjective well-being</p> <p>Low life satisfaction</p>

Table 2
Prevalence of *Alexithymia*

Alexithymia researchers	Year	Sample	Country	Measure	Prevalence
Parker, Taylor and Bagby	1989	General community	Canada	TAS-26	18.8%
Joukamaa et al.	1996	Elderly citizens	Finland	TAS-26	34.0%
Salminen et al.	1999	General community	Finland	TAS-20	12.8%
Honkalampi	2000	General community	Finland	TAS-20	10.3%
		Community			
		Medical and psychiatric			
Cox, Kuch, Parker, Shulman and Evans	1994	Somatiform disorder patients with chronic pain	Canada	TAS-20	53.0%
Bach, de Zwaan, Ackard, Nitzinger and Mitchell	1994	Personality disorders	Austria	TAS-26	17.0%
Todarello, Taylor, Parker and Fanelli	1995	Hypertension psychiatric outpatients	Canada	TAS-20	55.3%
Iancu, Dannon, Poreh, Lepkifler and Grunhaus	2001	Panic disorder	Israel	TAS-26	39.0%
Valkamo et al.	2001	Coronary heart disease	Finland	TAS-20	21.0%
Friedman et al.	2003	Insulin dependent diabetes	France	TAS-26	14.4%
van Rossum, Laheij, de Doelder, de Jong and Jansen	2004	Gastrointestinal	Netherlands	TAS-20	54.0%
Richards, Fortunea, Griffiths and Main	2005	Psoriasis	United Kingdom	TAS-20	33.0%
Lamas et al	2006	Infertile women	France	TAS-20	28.0%
Chatzi et al.	2009	Type 1 diabetes	Greece	TAS-20	22.2%
Costa, Peppe, Carlesimo, Salamone and Callagirono	2010	Parkinsons disease	Italy	TAS-20	21.4%
Barbosa, Freitas and Barbosa	2011	Chronic urticaria	Portugal	TAS-20	56.9%
		Offender			
Louth, Hare and Linden	1998	Female offenders	Canada	TAS-26	32.0%
Parker et al.	2005	North American male Indigenous	Canada	TAS-20	33.3%

Community samples.

Studies on the prevalence of alexithymia within the general community appeared to have been predominately conducted in Finland; the reasons for this are unclear. Despite a thorough search of the literature, the researcher was unable to locate any studies reporting the prevalence of alexithymia outside of Finland aside from an earlier study of Parker, Taylor and Bagby from 1989.

In that particular study, Parker et al. (1989) examined the relationships between certain sociodemographic variables of intelligence, socioeconomic status, age and gender and alexithymia. The TAS-26 was used as a measure of alexithymia and participants were recruited from railway stations and airports in Canada. Previously established cut-off scores on the TAS-26 were used to identify alexithymia in 18.8% of the sample. Correlations with certain sociodemographic variables were reported and will be discussed in the next section. The prevalence of alexithymia in males and females was not reported independently.

A lower prevalence of 12.8% of participants in Salminen, Saarijarvi, Aarela, Toikka, and Kauhanen (1999) study were identified as alexithymic as indicated on the TAS-20. Unlike Parker et al. (1989) these researchers also reported the proportion of males (16.6%) compared to females (9.6%) scoring above the cut-off score. Salminen reported alexithymia scores were normally distributed across both males and females. The sample used was also much larger (1,285 Finnish participants from the general community) in comparison to Parker et al. (1989).

The prevalence of alexithymia was also higher among males in the Honkalampi, Hinitikki, Tanskanen, Lehtonen, and Viinamki (2000) study. In the sample 2,018 from the general community in Finland, 12.8% of males scored as being alexithymic on the TAS-20 and 8.2% of women. Overall, 10.3% of the total

sample was identified as alexithymic. The purpose of this study was to examine the association between depression and alexithymia and sociodemographic variables such as marital and economic status and alexithymia was significantly higher among depressed participants with a prevalence of 32%. Alexithymia was also found to be associated with sociodemographic variables; however, much of this variance could be explained by the association with depression.

In the most recent study that could be located exploring the prevalence of alexithymia in the community, Kokkonen et al.(2001) reported the prevalence of alexithymia in a sample of 5,993 Finnish participants males was 9.4% and 5.2% in females, the prevalence rate of the total sample was not provided. A cut-off score of 60 was used to determine alexithymia on the TAS-20. It is noted this is one point below the ≥ 61 cut-off score specified by the authors of the scale.

Unlike the aforementioned researchers who investigated the prevalence of alexithymia across various age ranges, Joukamaa, Saarijavi, Muuriaisniemi, and Salokangas (1996) examined the prevalence of alexithymia exclusively among an elderly population in Finland. The study was part of a larger study to investigate coping with retirement and older age and association with sociodemographic variables. A sample of 339 participants was collected and alexithymia was assessed using the TAS-26. In total, 34% of the sample was identified as alexithymic, no significant difference was found between males and females. In contrast to the aforementioned studies alexithymia was not found to be associated with sociodemographic variables, but was associated with psychiatric disturbance.

Offender samples.

A thorough search of the literature by the researcher revealed a significant dearth of research investigating the prevalence of alexithymia in offender samples. Of the studies that could be located on this topic only two provided information as to the prevalence. The details of both these studies detailed below will be discussed at length later in this review in the section on violence and alexithymia.

Louth, Hare, and Linden (1998) reported a prevalence rate of alexithymia of 32% among female incarcerated offenders. The TAS-26, which is the former version of the scale, was used as a measure of alexithymia in the sample of 37 participants. This percentage is higher than prevalence rates reported for community samples in the studies discussed above. A comparable prevalence rate of 33.3% was reported by Parker, Shauhnessy, Wood, Majeski, and Eastabrook (2005) who compared the prevalence of alexithymia in North American Indigenous offenders and North American Indigenous non-offenders. The prevalence rate for the sample of non-offenders was 8.3%.

Correlates of Alexithymia

The relationship between certain demographic and sociocultural correlates of alexithymia has been the focus of much empirical research. In particular, researchers have investigated sociodemographic variables of gender, age, culture and education and their association to alexithymia.

Gender.

The prevalence of alexithymia among males is generally higher than that of females (Honkalampi, et al., 2004; Kokkonen, et al., 2001; Salminen, et al., 1999). This phenomenon may be explained by socialisation of gender roles. Fischer and Good (1997) hypothesised that many men in Caucasian North American culture are socialised to restrict emotional expression in order to appear more masculine as emotional expressiveness is seen as a feminine characteristic. The researchers argued restriction of emotions might lead to difficulty identifying and verbalising emotions, which are two of the core features of the alexithymia construct. A sample of 208 male undergraduate psychology students, the majority of whom were Caucasian, were assessed for alexithymia by way of the TAS-20 and masculine gender roles using a battery of instruments including the Fear of Intimacy Scale (FIS), Gender Role Conflict Scale (GRCS), and Masculine Gender Role Stress (MGRS). The results revealed alexithymia was strongly associated with traditional masculine gender roles, in particular fear of intimacy and restricted emotional expressiveness.

The result of Fischer and Good's (1997) research is in accordance with Salminen et al. (1999) who reported greater deficits in the ability to express and describe feelings in men who were alexithymic as compared to women who were alexithymic. In addition, women who were alexithymic were more likely to have internally oriented thinking (as assessed by way of Factor 3 EOT on the TAS-20) as compared to men who were alexithymic.

In a similar vein to Fischer and Good's (1997) research, Levant, Hall, Williams, and Hasan (2009) conducted a meta-analysis to assess Levant's (1992) theory that restriction of emotionality in males is a product of socialisation of masculine gender roles. Based on a review of 41 studies, the researchers reported a

general trend of higher scores on alexithymia measures (TAS and non-TAS across various studies) in males as compared to females. Despite a higher prevalence of alexithymia in males, the researchers were unable to provide an explanation as to why this phenomenon occurs. The finding of a higher incidence of alexithymia in males as compared to females is in line with the research on violence which indicates males are far more likely to be violent (Steen & Hunskaar, 2004).

Age.

Joukamaa et al's (1996) research in comparison to Kokkonen et al's (2001) demonstrated marked difference in the prevalence rates of alexithymia in young adults compared to elderly people, although it is unclear what the cut-off was for participants to be considered of older age. The rate of alexithymia was much higher in elderly people (34% as compared to 9.4% and 5.2% in younger males and females respectively). This result was confirmed in Salminen et al.'s (1999) study. In an investigation of sociodemographic variables and their association to alexithymia, Salminen et al. found a significant effect for age, specifically older age was associated with alexithymia. The researchers provide two possible explanations as to this finding. Firstly, alexithymia in older individuals may be a secondary phenomenon as a result of ailing physical health. Freyberger (1977) has demonstrated alexithymia can occur in the face of serious illness as a coping mechanism. Secondly, alexithymia in older people may be a generational phenomenon due to growing up in an era where emotional expressiveness may not have been encouraged or modelled.

Accordingly, Lane, Sechrest, and Riedel (1998) reported a weak association between high scores on the TAS-20 and older age in their study investigating

sociodemographic correlates of alexithymia. A community sample of 380 participants was recruited in North America for the purposes of the study. As Salminen et al. (1999) proposed the year following, Lane et al. (1998) speculated the finding might be due to a generational phenomenon, because of increasing attention to emotional states in younger generations.

In contradiction to the above studies, Parker, Taylor and Bagby (2003), in an investigation of the reliability and factorial validity of the TAS-20 in a Canadian community sample ($n = 1,933$) reported negative correlations between age and the total TAS-20 and factors one DIF and two DDF. The researchers stated the magnitude of these correlations was low. Although the exact reasons for the dissimilar results are unknown, differences in the cultural groups of the participants in this study and those above are noted. In addition, it is unclear what many of the researchers defined as older age and differences in this definition may account for some differences in the findings of each study.

Culture.

The results of Parker et al.'s (2003) research above indicates that alexithymia may be influenced by culture. Various researchers, such as Dion (1996) who studied the effects of culture on alexithymia by examination of the scores of the TAS-20 in an ethnically diverse sample, have investigated this phenomenon. A sample of 950 undergraduate students at a university in Toronto were recruited for the purpose of the study and divided into 11 different categories based on their primary language. Participants whose primary language was not English scored higher on the total TAS-20 and Factor 1 DIF. Further analyses revealed differences between native Chinese speakers and speakers of European languages. Specifically Chinese speakers

scored higher on both the TAS-20 and all factor scores compared to European speakers. Nonetheless, native English speakers scored higher on the total TAS-20 and Factor 2 DDF as compared to European speakers. In response to these results the researchers proposed there may be cultural processes that are influential upon alexithymia.

Le, Berenbaum, and Raghaven (2002) also examined cultural differences in alexithymia and possible explanations for such differences. Participants from three samples were examined which included 102 Asian American students, 104 European American students at an American university and 94 Asian students attending tertiary schooling in Malaysia. All three samples of participants were required to be proficient in English as indicated by an English proficiency test. The English version of the TAS-20 was used to assess alexithymia. The results revealed both Asian American and Malaysian students scored higher on the total TAS-20 and Factor 1 DIF and Factor 2 DDF as compared to European Americans. There were no significant differences between the Asian American sample and the Malaysian sample on the total TAS-20 or any of the factors.

In a subsequent study, Le et al. (2002) investigated the hypothesis that family environment and emotional expressiveness is responsible for the differences in the scores between Asian and European cultures. Two new samples of students were recruited and examined on the TAS-20 and a battery of assessments as to family environment and emotional expression. Asian participants generally reported their parents were less emotionally expressive both verbally and physically and tended to be more restrictive and controlling in their parenting style. The researchers argued cultural differences in family environment could facilitate the development of alexithymia.

Although the above researchers have looked largely at Eastern versus Western culture, the influence of Indigenous culture on alexithymia has also been examined. Parker, Shaughnessy, Wood, Majeski, and Eastabrook (2005) explored alexithymia in the North American Aboriginal culture. A sample of 123 male and female Aboriginal participants based in the community and a forensic sample consisting of 102 Aboriginal incarcerated male offenders were recruited. The TAS-20 was utilised to determine alexithymia. By way of a CFA the researchers aimed to determine whether the TAS-20 was applicable in the North American Aboriginal culture. The scores of the sample of Aboriginal participants were compared with the previous standardisation sample for the TAS-20 (Parker, et al., 2003). The researchers reported the results of the community-based Aboriginal sample did not significantly differ from the standardisation sample. The forensic sample differed significantly from the community sample on the total TAS-20 and all factors. A higher incidence of alexithymia was reported in the forensic sample.

In a study mentioned earlier in the introduction, Day et al. (2008) explored the experience of anger in a sample of male Indigenous offenders. The sample of 49 non-Indigenous participants was compared with 46 Indigenous offenders. Each participant was assessed on a battery of instruments that included the TAS-20 to determine the presence of alexithymia. The results revealed Indigenous participants scored higher on Factor 1 DIF and Factor 2 DDF of the TAS-20 as compared to non-Indigenous participants. The researchers did not examine the applicability of the TAS-20 with Indigenous participants prior to use. It is unclear, therefore, whether these results reflect a genuine cultural difference between Indigenous and non-Indigenous offenders in the levels of alexithymia or it is simply an outcome of the measurement itself. Day et al.'s study (2008) and Parker et al.'s (2005) study were

the only studies examining alexithymia in Indigenous cultures that could be located by the researcher.

Socioeconomic status.

Lane et al. (1998) in their investigation of sociodemographic variables associated with alexithymia assessed for correlations with socioeconomic status. They defined socioeconomic status in terms of occupations and designated participants to one of three categories, working class which included mostly labourers, middle class, such as salespersons and upper class for professionals. Higher scores on the total TAS-20 and each of the factors was associated with lower socioeconomic status. Lane et al. (1998) proposed environmental factors may account for some of the findings, for example, poorer health in general is typically associated with lower socioeconomic status and consequently alexithymia in some cases may be a function of lower socioeconomic status. Furthermore, the characteristics associated with alexithymia may inhibit an individual's social success and result in lower socioeconomic status.

Lane et al.'s (1998) results were largely replicated by Salminen et al. (1999). These researchers utilised the Finnish Statistical Handbook to classify socioeconomic status. Although they did not detail exactly how different socioeconomic statuses are defined in the handbook they commented the definition takes into account years of education and the researchers discussed terms of *white* and *blue collar workers*. Salminen et al. (1999) reported blue collar workers were more likely to score higher on the TAS-20 as compared to white collar workers in both males and females. The researchers proposed higher alexithymia scores in lower socioeconomic groups may represent lack of affect or fantasy in family-of-origin.

Unlike the above studies, income was used as a measure of socioeconomic status in Kokkonen et al's (2001) study. The researchers divided income into increments and accounted for years of education and place of residence (rural versus urban). What was classified as high versus low income is unclear. The prevalence of males scoring above the cut-off on the TAS-20 with low income was 15.1% in comparison to 3.8% of high income earners. The results for females were 7.5% in the low-income category and 3.1% in the high-income category. The researchers concluded deficits in communication skills and a restricted interpersonal style may result in lower social success and account for many of the sociocultural and demographic correlates of alexithymia.

Education.

In their examination of sociodemographic correlates of alexithymia, Lane et al. (1998) investigated a possible association with education. Education was classified according to number of years of schooling. Higher scores on the TAS-26 were reported to be associated, albeit weakly, with fewer years of education in both males and females. The exact cut-offs for fewer years of education, however, was unclear. Lane et al. (1998) proposed that environmental factors may account for the findings, for example, alexithymia in some cases may also be a function of lower socioeconomic status that takes education into account.

In contrast to Lane et al. (1998), Salminen et al. (1999) defined education in simpler terms comparing secondary school graduates with non-graduates. The results revealed those participants who completed their secondary schooling scored significantly lower on the TAS-20 as compared to those who did not complete secondary schooling. This result was the same for both males and females. The

authors argued an association between lower levels of education and alexithymia is intuitively accurate as individuals with alexithymia may be less likely to pursue a higher education. The researchers reasoned higher education is frequently coupled with higher socioeconomic status and emotional stability.

The results of two above studies were largely confirmed in Kokkonen et al.'s (2001) research. In their study, education was divided into four categories from no education to tertiary education. It unclear what level of schooling each of the categories related to and it is noted that participants completed the questionnaire through a mail-out system and this indicates even *no education* participants must have been literate. The highest prevalence of alexithymia was found in males with no education (17.7%) and with a significantly lower proportion of males with tertiary education with alexithymia (2.3%). The results for females also revealed a significance difference between no education and tertiary education (10.9% and 2.6% respectively). The researchers concluded alexithymia was associated with low education levels, and cautioned that this may be a function of low socioeconomic status.

In contrast to the above studies which divided age into distinct categories, Parker et al. (2003) reported the mean level of education of the standardisation sample for the TAS-20 was 14.75 years. The correlation between education and the total TAS-20 and each of the TAS-20 variables was examined and revealed low negative correlations ranging from -.17 to -.23. Parker and colleagues concluded education accounted for very little of the variance in the data. The researchers failed to acknowledge that a mean education level of almost 15 years is high in comparison to other studies that utilised participants with very little education.

Although the definition of level of education varied across studies from reportedly no education to tertiary levels, the results suggested that individuals with a higher level or degree of education compared with individuals with lower levels of education score significantly lower on measures of alexithymia (Honkalampi, et al., 2004; Kokkonen, et al., 2001; Lane, et al., 1998; Salminen, et al., 1999). No articles could be located by the researcher that investigated the association between Intelligence Quotient and alexithymia.

Types of Alexithymia

Theoretical subtypes of alexithymia have been proposed by Freyberger (1977), Sifneos (1988) and Bermond (1997) and further developed by Moormann, Bermond, Vorst, Bloemendaal, Teijin, and Rood (2008). In each case, the development of the subtypes was based on clinical observations and reviews of the literature. The review of the literature by the current researcher revealed very little empirical evidence existed to support the subtypes.

Primary and secondary alexithymia.

The theoretical distinction between *primary* and *secondary alexithymia* can be attributed to Freyberger (1977) and Sifneos (1988). Freyberger (1977) conducted psychotherapy on patients with organic or life-threatening illnesses, cancer, on dialysis or awaiting organ transplants. Through his work he observed many patients acquired a temporary or chronic form of alexithymia. From his clinical observations he theorised two forms of alexithymia exist. *Primary alexithymia* he postulated is biological in nature and manifests during the stages of infantile development.

According to Freyberger, *secondary alexithymia* develops following major illness or a life-threatening state. Freyberger proposed that secondary alexithymia may serve as a protective factor against the seriousness or emotional significance of a situation. In the face of serious illness individuals may make a conscious, or subconscious, attempt to numb the distressing emotion which consequently results in alexithymic characteristics. Freyberger used the distinction between primary and secondary alexithymia as means of tailoring therapy to for alexithymic patients and did not empirically test his theory.

Sifneos (1988) conceptualised the distinction between primary and secondary alexithymia based on his own clinical experience with alexithymia patients and drawing on neurobiological research of others examining hemispheric specialisation and affect. Like Freyberger, Sifneos proposed primary alexithymia is neurobiological in nature, and arises as a result of defects in neuroanatomical structures or biochemical imbalances. Secondary alexithymia arises as a result of one of the following situations. A massive psychological trauma in childhood might lead to an arrest in an individual's development of affect. Alternatively having reached adulthood and having learnt to identify and cope with emotions effectively an individual who has experienced a traumatic attack to their environment such as war, develops a defence mechanism in which they restrict their emotions and numb reactions. Lastly, psychodynamic factors such as denial, repression or regression of emotions may lead to the development of alexithymia (Sifneos, 1988).

It is important to note the distinction between primary and secondary alexithymia is purely theoretical and to date has not been empirically tested. Furthermore, few researchers still currently use these definitions. Taylor et al. (1997) argue that primary and secondary alexithymia are a confusing representation of

alexithymia implying a singular aetiological explanation, which is seldom the case. Consequently, the current researcher could only locate very little research on the distinction between primary and secondary alexithymia.

Bermond's alexithymia types.

Based on an analysis of the literature particularly focussing on neurological research, Bermond (1997) proposed three subtypes of alexithymia; *type one alexithymia*, *type two alexithymia* and *pseudo-alexithymia*.

Type one alexithymia according to Bermond is the extreme type of alexithymia, and is typified by a total lack of emotional experience (Bermond, 1997). Individuals with *type one alexithymia* are therefore largely unaware of any form of emotional arousal and consequently any cognition accompanying those emotions (Bermond, 1997; Vorst & Bermond, 2001). Identifying similarities between neurological conditions and certain aspects of alexithymia Bermond argued this type of alexithymia might arise as a result of reduced functioning in the right hemisphere, by way of lesions, or reduced functioning of orbito-prefrontal cortex or the commissural anterior.

Type two alexithymia, similar to type one alexithymia, is characterised by a lack of cognitions accompanying emotional experience (Bermond, 1997). In contrast to type one alexithymia, however, individuals with type two alexithymia are able to perceive their level of emotional arousal at a conscious level in line with that of people without alexithymia (Bermond, 1997; Vorst & Bermond, 2001). Bermond (1997) proposes this type of alexithymia may develop because of interference in the corpus callosum.

The third type of alexithymia, referred to *pseudo-alexithymia* is not characterised by a lack of emotional experience or cognitions, rather, individuals with pseudo-alexithymia are consciously aware of their emotional experience, however, they lack desire to act upon the experience. Diminished operation in the dorsolateral prefrontal cortex is said to be responsible for this type of alexithymia (Bermond, 1997).

Empirical support was found for Bermond's theoretical alexithymia types in a study examining the validity and reliability of the Bermond-Vorst Alexithymia Questionnaire (BVAQ) (Vorst & Bermond, 2001). Two studies were conducted in which the questionnaires were administered to English, Dutch and French speaking psychology students. Analyses of the subscales of BVAQ resulted in a two-factor structure with one factor correlating with affective functioning and the other with cognitive functioning, which the researchers argued is consistent with type one and type two alexithymia respectively. No mention was made of *pseudo-alexithymia* and how this third type may fit with the scale.

Bagby et al. (2009) tested Vorst and Bermond's (2001) findings by way of a CFA using a sample of 1,696 students from various universities and of various nationalities. The researchers reported a five-factor model was a better fit to the data, as compared to the two-factor model on which the two types of alexithymia was dependent. A cluster analysis also failed to reveal meaningful clusters of affective and cognitive factors in the sample. The researchers concluded alexithymia subtypes are not representative of the construct of alexithymia and it is dimensional rather than distinct. Bagby and colleagues' scale of alexithymia, the TAS-20, measures alexithymia on a dimensional basis. Bagby et al's (2009) and Vorst and Bermond's

(2001) studies were the only studies the researcher could locate that empirically examined Bermond's alexithymia types.

Moormann's alexithymia types.

Despite limited empirical evidence for alexithymia types, Moormann et al. (2008) recently further developed Bermond's alexithymia types and distinguished between six types of alexithymia, based primarily on personality types. *Type one alexithymia* is characterised by limited emotional expression and emotion accompanying cognitions. Individuals with type one alexithymia are typically lacking in empathy and fantasy life. A significant overlap was reported between type one alexithymia and schizoid personality disorder. *Type two alexithymia* was characterised by a high degree of emotional experience and fantasising, however, a significant dearth of emotions accompanying the cognitions. Type two alexithymia was purported to be associated with borderline personality disorder. The third type of alexithymia, *type three alexithymia*, was defined by a restricted fantasy life and a low degree of emotionality, however, with a healthy level of emotion accompany cognitions. Type three alexithymia individuals are equipped to handle their emotions in a largely effective and productive manner, but this type of alexithymia apparently shares similarities to narcissistic personality disorder due to the presence of social manipulation.

The fourth, fifth and sixth type of alexithymia as defined by Moormann et al. (2008) are those people with who fit in a healthier or more effective range of functioning, or did not fit the criteria for type one, two or three alexithymia. Specifically, the fourth type of alexithymia, *lexithymia*, is at face value the opposite

of the traditional definition of alexithymia. Moormann et al. (2008) described alexithymics as individuals who are emotionally stable, with a healthy well-developed level of cognitions and emotions. Due to a tendency towards dramatics and exhibitionism, however, Moorman et al. (2008) stated the personality of alexithymics resembles histrionic personality disorder. *Modals*, or the fifth type of alexithymia, are those individuals scoring in the average range of both emotionality and cognition on measures of alexithymia. The final or sixth type of alexithymia, *mixed*, are those individuals who do not meet the criteria for the previous five types of alexithymia and therefore present with a mixed profile. The current researcher could not locate any studies that made mention of or empirically examined Moormann's alexithymia types.

Despite the aforementioned arguments as to the existence of alexithymia types other researchers cite a lack of evidence for the different types. Specifically, Bagby et al. (2009) argue that decomposition of alexithymia into distinct types is not a reliable representation of the construct. Instead, the researchers argue types of alexithymia may be better discussed in terms of latent structures on measures of alexithymia. Finally, alexithymia as a single construct with no differentiation of types is consistent with the theory of alexithymia.

Overall, only a small group of researchers seem to support the existence of alexithymia types, and this concept does not appear to have gained much momentum or support in the literature. At this point in time alexithymia is largely considered to be a singular construct that cannot be meaningfully separated in distinct types. From a search of the literature, it appeared as though many researchers have abandoned the notion of alexithymia types and turned attention to examining whether alexithymia represents a stable personality trait or state-dependent phenomenon.

Trait and State Alexithymia

Trait alexithymia refers to alexithymia as a chronic deficit in cognitive and emotional functioning which is a personality trait that is relatively stable over time and does not fluctuate with changes in mood (Mikolajczak & Luminet, 2006). State alexithymia refers to a relative instability in alexithymia levels that fluctuate according to mood or stress (Martinez-Sanchez, Ato-Garcia, & Ortiz-Soria, 2003). In the following discussion of the stability of alexithymia the distinction is made between absolute and relative stability. This should be noted, as many researchers refer to one or both as indicators of stability. Absolute stability refers to the degree that scores on a measure fluctuate over time, while relative stability refers the relative differences among individuals that remain unchanged over time (Luminet, Bagby, & Taylor, 2001; Picardi, Toni, & Caroppo, 2005). Both absolute and relative stability provide an indication of the stability of a certain trait, however, relative stability can be used as a reliable indicator of stability even if absolute stability is not found (Luminet, et al., 2001). In some studies researchers discuss stability in general terms without referring to absolute or relative levels.

Trait alexithymia.

Martinez-Sanchez and colleagues (1998) examined the stability levels of alexithymia in a group of 36 undergraduate university students. Participants were assessed at two phases; after examinations and during examinations, on the premise that the period during examinations would be a time of heightened anxiety and emotional distress. The researchers reported there were no significant changes in alexithymia scores from the first phase to the second, however, there was a change in the level of emotional distress. Martinez-Sanchez et al. (1998) concluded alexithymia

must represent a stable personality trait, as during periods of heightened emotional distress and anxiety the levels of alexithymia were unchanged.

Also based on the premise that examinations are a time of heightened stress Picardi and colleagues (2005) examined the stability of alexithymia through assessment of 221 students at examination periods. The researchers utilised a battery of assessment instruments including the TAS-20 and measures of anxiety and depression including the State-Trait Anxiety Inventory (STAI) and Zung Depression Scale (ZDS) among others. Results were indicative that depression and anxiety were only moderately correlated with alexithymia and demonstrated support for the absolute and relative stability of alexithymia.

In other studies, researchers have used both medical and psychological participants to examine whether alexithymia is stable across differing states (Luminet, et al., 2001; Porcelli, Leoci, Guerra, Taylor, & Bagby, 1996). Porcelli et al. (1996) performed a longitudinal study on patients with functional gastrointestinal disorders. The researchers discovered that anxiety and depression appeared to vary over time often depending on the condition of the disease; however, alexithymia scores were stable.

Luminet et al. (2001) examined psychiatric outpatients with major depression prior to and upon completion of a 14-week treatment program for depression. The researchers reported alexithymia scores changed significantly from baseline to follow-up indicating there was no evidence of absolute stability in alexithymia scores. There was, however, strong evidence for the relative stability of alexithymia, as baseline scores were predictive of follow-up scores. The researchers concluded although scores of alexithymia may fluctuate with symptoms of major depression it is nonetheless a stable personality trait.

State-dependent alexithymia.

Not all researchers have reached a conclusion of relative and or absolute stability in alexithymia scores. Keltikangas-Jarvinen (1987) examined alexithymia in a group of psychosomatic patients with digestive diseases and control participants with chronic illness. Alexithymia was assessed by the Beth Israel Hospital Questionnaire (Apfel & Sifneos, 1979) and patients were assessed prior to treatment at an outpatient clinic and re-assessed 18 to 24 months later. The researcher reported high alexithymia scores were only consistent with a few patients and the intraindividual consistency within the groups was low. Keltikangas-Jarvinen argued that alexithymia could not be considered a stable personality trait, as there was no consistency with the scores.

Also utilising patients as participants, Honkalampi and colleagues (2000) examined ratings of depression in 169 outpatients diagnosed with depression at baseline and a six-month follow-up. The aim of their study was to determine whether alexithymia is a stable feature in depressed patients. Depression was assessed through a structured clinical interview and the Beck Depression Inventory – 21 items (BDI) and alexithymia through scores on the TAS-20. The researchers found that a reduction in alexithymia scores significantly fluctuated with a reduction in scores on the BDI. Honkalampi et al. (2000) concluded alexithymia in depression patients is state-dependent and scores on the TAS-20 fluctuate according to the severity of depression.

In a subsequent study Honkalampi et al. (2001) examined the relationship between depression and alexithymia within the general population over a 12-month period. Using a sample of 1,584 participants from Eastern Finland the researchers

reported alexithymia scores were strongly related to depression and fluctuated significantly during the 12-month follow-up period.

The research of Keltikangas-Jarvinen (1987) and Honkalampi et al. (2001) suggests that alexithymia is in fact not a stable personality trait, but rather a state-dependent phenomenon that fluctuates particularly with depression and anxiety. It is of note that these studies concluding that alexithymia is state-dependent appear only to have examined absolute stability, when relative stability can also be used as a reliable indicator of stability even if absolute stability is not found (Luminet, et al., 2001).

From this examination of the literature, it would appear as though the majority of researchers have concluded alexithymia is a stable personality trait. The research is nonetheless indicative that alexithymia, to a certain extent, can be state-dependent, and individuals have the capacity to shift or vary in their degree of alexithymia depending on environment, personal circumstances or states such as depression and anxiety in particular. As Taylor (1984) highlighted alexithymia is not an *all-or-none* phenomenon.

Treatment of Alexithymia

If alexithymia were associated with violence it would be necessary to treat alexithymia as an adjunct to violent offender treatment. Various approaches to treatment have been explored with people who are alexithymic. A review of the literature, however, highlighted a dearth of research into treatment approaches for alexithymia considering the support the concept has gained in the psychological literature. This may be because prior to the conceptualisation of alexithymia, early researchers such as Ruesch (1948) concluded such patients responded poorly to

treatment as they lacked insight and the ability to discuss their emotions. Sifneos and colleagues (1976) supported this view and stated that based on clinical observations psychotherapy was counterindicated for people with alexithymia and specific treatments needed to be developed. The limited literature that is available revolves around three broad approaches to treatment; modified psychotherapy, supportive psychotherapy and group therapy.

Modified psychotherapy.

H. Krystal (1979) was among the first to propose a modified form of psychotherapy could be used to treat patients with alexithymia. H. Krystal based his modifications on his own clinical work specifically with substance dependent alexithymia patients and patients with PTSD, and theory of alexithymia. H. Krystal proposed clinicians must assist alexithymic patients in understanding the nature of their disorder. This specifically involved teaching patients to recognise their feelings for what they are, and somatic complaints as manifestations of those feelings. This process also involves assisting patients to develop a tolerance for those feelings. H. Krystal observed patients responded with anger out of intolerance for their emotional states.

A large component of H. Krystal's (1979) modified psychotherapy was facilitating patients to verbalise their emotion. H. Krystal made reference to patient's emotional outbursts of rage and how these outbursts were used to communicate emotions. The therapist's role is to help the patient recognise and name the emotion they are experiencing. H. Krystal acknowledged the process of assisting patients recognise and verbalise emotions is long and often monotonous. The process is also largely educational in teaching the patients to recognise feelings for what they are.

The research of Stingl, Bausch, Walter, Kagere, Leichsenring, and Leweke (2008) was the only that could be located to examine the effectiveness of modified psychotherapy. These researchers measured the effectiveness of psychotherapy on a sample of 397 inpatients at a clinic for psychosomatic medicine in Germany. The majority of participants were female and many were assessed as clinically depressed. Alexithymia was measured by the German translated TAS-26 prior to and upon completion of treatment. In addition, the participants completed the Symptom Checklist 90 to measure levels of depression. All participants participated in three one-hour group therapy sessions and two individual psychotherapy session per week. Treatment typically focussed on describing and naming inner states by way of mirroring, highlighting deficits and drawing upon social situations that may have occurred at the clinic. The aim of the treatment was to improve participant's ability to identify and describe their emotions. Depending on their length of stay, participants were involved with therapy for 4 to 12 weeks. The researchers reported a significant reduction in TAS-26 scores from baseline to follow-up after controlling for the effects of depression. Stingl et al. (2008) concluded modified psychotherapy, and particularly a combination of individual and group therapy, is effective for treating alexithymic inpatients.

Supportive psychotherapy.

Supportive psychotherapy for alexithymia was developed by Freyberger (1977) who modified the technique depending on whether the patient presented with primary or secondary alexithymia (discussed above). For primary alexithymia Freyberger described a number of steps to supportive psychotherapy, firstly, the therapist must develop a stable *object-relationship* with the patient. Object-

relationship refers to the patient's pattern of relationships from infant to mature (Piper, Joyce, Azim, & McCallum, 1998). Freyberger cautioned this was an *oral-narcissistic* relationship but stabilisation of the relationship allowed for a lessening of oral-narcissistic acting-out or emotional outbursts. The therapist was to provide a vocabulary for emotions by continually using feeling words and imagery and their role was primarily to educate the patient on somatic manifestations of emotions. The therapist must also be available to the patient in order to maintain the stable relationship. For secondary alexithymia, the steps involved in supportive psychotherapy were the same but with a few additions. As secondary alexithymia is considered to be a form of defence against serious illness or trauma, the therapist needed to be mindful of regression tendencies and denial and encourage the patient to adapt more functional behaviours where these tendencies occur.

McCallum, Piper, Ogrodniczuk, and Joyce (2003) collated the data of two of their previous studies (Piper, Joyce, McCallum, & Azim, 1998; Piper, McCallum, Joyce, Rosie, & Ogrodniczuk, 2001) to test the efficacy of supportive psychotherapy for alexithymia. The results for participants in supportive psychotherapy were compared to those who participated in interpretive therapy ($n = 144$ and $n = 107$ respectively). The aims of interpretive therapy are to develop the patient's insight particularly in regards to those factors that may be maintaining their problems. Supportive therapy, as used in these studies, focussed more on education and developing more adaptive behaviours and did not involve exploring emotions. In both studies, participants were required to attend weekly therapy sessions between 50 to 90 minutes for 12 to 20 weeks. Alexithymia was assessed by the TAS-20. Patients from neither group showed statistically significant reductions in their symptoms of

alexithymia. The researchers concluded alexithymia was negatively associated with treatment outcome for individual therapy.

Group therapy.

Beresnevaite (2000) explored the benefits of group psychotherapy on alexithymic participants with coronary heart disease. Participants who had suffered a myocardial infarction were recruited from a cardiology outpatient clinic in Lithuania. Twenty participants received group psychotherapy while 17 participants were assigned to an educational group. Each participant was assessed for alexithymia prior to commencing treatment and upon completion using the Lithuanian version of the TAS-26. The group therapy involved weekly sessions of 90 minutes that focussed on stress reduction techniques, relaxation and attention to inner experiences. Participants were required to partake in role-plays to develop their understanding and verbalisation of emotions. Music was played to encourage fantasy and participants were asked to write down their dreams. The education group received information on heart disease and relaxation. The mean level of alexithymia scores decreased in the treatment group following completion of the group. A non-significant difference was reported for the educational group. Follow-up at two years post treatment showed the reduction in TAS-26 scores was maintained. The researcher concluded group therapy is effective for reducing symptoms of alexithymia.

Grabe and colleagues (2008) investigated the effectiveness of an inpatient group treatment program for alexithymia. Patients admitted to a mental health hospital in Germany were asked to participate in the study, in total 297 patients were recruited, 80 of whom scored above the cut-off score for alexithymia. Alexithymia was assessed in each participant by the German version of the TAS-20. Group

therapy was conducted in 90-minute sessions three times per week and ranged from eight to 12 weeks depending on the patient's length of stay. The focus of the treatment was verbalisation of emotion difficulties and role-play. Depending on their particular diagnoses, participants were also offered individual therapy and psychopharmacological treatments. A significant reduction in TAS-20 scores was reported for alexithymic participants following completion of the group treatment program. No follow-up was conducted. The researchers concluded the intensive inpatient program was effective in developing the ability to verbalise and identify emotions.

A review of the literature suggests treatment outcomes for alexithymic people are mixed. Group therapy has received the most attention and provided the most promising results in comparison to individual forms of therapy. Modified psychotherapy and supportive therapy, however, incorporated techniques to address emotional outbursts of rage, of which the group therapies reviewed above did not make mention. If techniques to address rage or emotional outbursts are incorporated into group therapy for alexithymia, it may prove effective for violent people who are alexithymic.

Willingness for treatment.

Given people with alexithymia experience difficulty with emotion some researchers have argued it is intuitive alexithymic people would be reluctant to seek traditional forms of therapy (Ogrodniczuk, Piper, & Joyce, 2010). Ogrodniczuk, Piper, Joyce, and Abbass (2009) tested this assumption by offering alexithymic patients at a psychiatric outpatient clinic in Canada different forms of therapy. The choices were no treatment, pharmacological treatment or psychotherapy. If

psychotherapy was selected participants were then given a choice of individual or group therapy. The researchers proposed alexithymic patients might opt for no treatment or be more willing to participate in pharmacological treatment.

Alexithymia was measured by the TAS-20. The researchers reported alexithymic patients were no different to non-alexithymic patients in their therapy preferences and were just as likely to nominate psychotherapy. There was a tendency for patients who elected for group psychotherapy to have higher scores on the TAS-20. While this study constitutes the only study that could be located by the current researcher to assess willingness for treatment in alexithymic people, it indicates people with alexithymia are willing to seek treatment.

Criticism of the Alexithymia Construct

Although the construct of alexithymia is now well established, it is not without criticism. The majority of this criticism focuses on the striking similarities between alexithymia and low emotional intelligence and or psychological mindedness.

Emotional intelligence.

Salvoney and Mayer (1989-90) originally developed the construct of emotional intelligence. The researchers defined the construct as a set of skills utilised in the regulation of emotion. Emotional intelligence therefore represents the ability to use emotions to guides one's actions, and express and appraise emotions accurately. On face value, the concept of emotional intelligence mirrors to a certain extent the features of low alexithymia. Namely, among the key features of emotional

intelligence, as outlined by Salvoney and Mayer (1989-90) is the ability to appraise emotions in the self and others and express emotions through verbal and non-verbal means. The ability to regulate emotions, for example to change an emotion by altering a negative emotion to a positive one is included as is empathy and creative thinking. Salvoney and Mayer (1989-90) discussed in detail their criticism of alexithymia, namely that it has not been conceptualised in a way that would make it distinct from emotional intelligence. Since this time, a small group of researchers have empirically examined the overlap between alexithymia and emotional intelligence.

In response to Salvoney and Mayer's (1989-90) article, Parker, Taylor, and Bagby (2001) examined the relationship between alexithymia and emotional intelligence. The researchers hypothesised the two concepts would be related, but nonetheless independent. A large community sample of 734 adults was recruited for the purpose of the study. Each participant was assessed on the TAS-20 and the Bar-On Emotional Quotient Inventory (EQ-i) for alexithymia and emotional intelligence respectively. The EQ-i is a 133-item questionnaire loading on 13 subscales relating to various interpersonal and intrapersonal emotions, stress management and adaptability. Results indicated scores on the TAS-20 were strongly and inversely related to scores on the EQ-i. The researchers concluded the constructs overlap, but argued alexithymia is a more precise construct as compared to emotional intelligence which is broad and encompasses features such social skills that alexithymia does not.

The results of Parker et al. (2001) were largely supported by the research of Fukunishi et al. (2001) who investigated the association between alexithymia and emotional intelligence. The Japanese version of the TAS-20 was used to assess alexithymia and Japanese version of The Emotional Intelligence Scale (EIS; (Schutte

et al., 1998) was used to measure emotional intelligence. The EIS is a 65 item questionnaire loading on three factors; intrapersonal, interpersonal and situational. In the sample of 398 psychiatric outpatients and 297 university students' scores on the total TAS-20 correlated significantly and negatively with each of the factors scores on the EIS indicating significant overlap between the concepts.

Austin, Saklofske, and Egan (2005), in comparison to the above studies, utilised both the EIS and the EQ-i to investigate the association between alexithymia and emotional intelligence. A large sample of Canadian ($n = 500$) and Scottish ($n = 204$) university students were recruited to participate. The TAS-20 was used as a measure of alexithymia. The findings supported those of Parker et al. (2001) and Fukunishi et al. (2001) detailed above. The results indicated total scores on the TAS-20 correlated negatively with the majority of the factor and subscales scores on the EIS and EQ-i. Correlations between factors scores and subscales scores of each of the emotional intelligence measures and factors scores of the TAS-20 were not reported.

A review of the research by the current researcher revealed limited research is available on the overlap between alexithymia and emotional intelligence. In spite of this, results are nonetheless consistent across studies that the two constructs share an inverse relationship. Although the developers of the TAS-20 argue alexithymia and emotional intelligence are separate constructs, it appears the main difference is that alexithymia is a narrower construct and does not incorporate aspects of social skills, relationships or empathy. Accordingly, the TAS-20 is a smaller measure with only 20 items in comparison to 63 and 133 items on the EQ-i and the EIS respectively.

Psychological mindedness.

Psychological mindedness, as defined by Appelbaum (1973) is an individual's capacity to see relationships between actions, feelings and thoughts with the objective of discovering the meanings behind actions and experiences. Psychological mindedness encompasses empathy and intuition. A person who is psychological minded is introspective and capable of using their skills in psychoanalysis whether through self-directed thought or in therapy.

Shill and Lumley (2002) in an investigation of the factor structure of the Psychological Mindedness Scale (PMS; Conte et al., 1990) examined correlations with the TAS-20. The PMS is a 45 item questionnaire loading on five factors relating to feelings, openness and motivation to understand problems, others and behaviour. Three hundred and ninety undergraduate students were recruited for the study. Significant negative correlations were reported between total scores on the PMS and TAS-20. Low negative correlations were also found between each of the factors on both scales with some exceptions. There was a low positive correlation between Factor 1 DIF and Factor 2 DDF on the TAS-20 and *interest in meaning and motivation of others and own behaviour* on the PMS. The researchers proposed alexithymic participants might have an interest, but not the ability to understand behaviour. No correlations were found between any of the TAS-20 factors and *openness to change* on the PMS.

In a study previously discussed, McCallum and colleagues (2003) investigated the relationship between alexithymia and psychological mindedness as a predictor of outcome in therapy. Psychological mindedness was assessed by way of the Psychological Mindedness Assessment Procedure (PMAP). Participants were required to watch a video depicting two different therapy sessions and asked to

comment on the problems facing the client-actor in the video. Their responses were video recorded and scored by trained raters as to their level of psychological mindedness. Alexithymia was measured by the TAS-20. The researchers reported a low and non-significant correlation between alexithymia and psychological mindedness and concluded psychological mindedness and alexithymia are distinct constructs.

The research on the relationship between psychological mindedness and alexithymia is mixed. There is also a dearth of research in this area making it difficult to draw conclusions. The two studies above provided different results, however, they used different measures of psychological mindedness. It is possible alexithymia and psychological mindedness share certain features as it seems intuitively accurate that someone who is high in alexithymia would be low in psychological mindedness.

Violent Behaviour

The purpose of the following review of theories and perspectives of violent behaviour and current approaches to treatment of violent offenders is to provide an overview of the area and draw links where appropriate to the alexithymia research.

Theories and Perspectives

There are numerous theories on violent behaviour and aggression that have been developed and tested by various researchers. It is outside the scope of the current review to discuss each of these theories, however, the major psychodynamic,

biological and social learning theories are briefly reviewed with a more detailed view of the social learning perspective.

Psychodynamic perspectives.

Psychodynamic theories of aggression are based on Freud's (1924) original notion of the *structures* of the individual. Freud postulated that humans have strong aggressive and sexual tendencies that are stored in the *id*. These tendencies and the energy to release these tendencies are biologically based. Aggressive responses are activated when basic needs are not met and the individual becomes frustrated and consequently motivated to meet those needs. Aggression is therefore a biological reaction to frustration and or pain. Each individual possesses the motivation and ability to commit violent acts, and whether or not these tendencies are unleashed depends on the external environment and the control functioning of the *ego* and *superego*.

Freud (1920) differentiated between many different types of offenders including neurotic offenders and antisocial offenders. One type of offender, *the weak ego type offender*, Freud speculated is most likely to become involved in crime by misinterpretation of the external environment or by simply having a *temper tantrum*. This particular type of offender is likely to possess poor social skills and be psychologically immature. Psychological maturity as defined by Freud refers to social competence and self-control. On face value, certain characteristics of this offender mirror features of alexithymia. In particular, a lack of social skills and psychological immaturity has been associated with alexithymia (Berenbaum & Irvin, 1996; Cercero & Holmstrom, 1997). A temper tantrum could also relate to sudden outbursts of emotion as has been observed in alexithymic patients by Nemiah (1978).

Freud's original theory was not empirically tested at the time and was purely speculative. It is now rarely employed, although elements of this approach have been incorporated into many updated psychodynamic theories as well as behavioural and social learning theories of aggression (Andrews & Bonta, 2003; Blackburn, 1993).

Drawing on Freud's theory, Glueck and Glueck (1950) provided a comprehensive psychodynamic explanation of juvenile crime based on empirical findings. For their research, they compared 500 male juvenile offenders from training schools in Boston and 500 male juvenile non-offenders from regular schools in the same district. The age range of the participants was 10 to 17 years. A substantial amount of data was collected through interviews with participants and their teachers, reviews of the participant's school reports and criminal histories among others means. The results of their study are vast and comprehensive, however, a few are worthy of note here as they mirror characteristics of alexithymia. Namely, the researchers reported a concrete thinking style in the offending participants with a lack of symbolic thought. Families of origin in juvenile offenders also displayed less emotion expression or outward affection in comparison to non-offenders.

In more recent times, M. Gottfredson and Hirschi (1990) proposed a *general theory of crime* which centres around Freudian psychological maturity and self-control or the ability to delay gratification. Among the factors involved in aggressive behaviour are minimal cognitive skills. The role of attachment and adherence to societal norms and rules were also emphasised. M. Gottfredson and Hirschi's formulation of aggressive behaviour was purely theoretical and not based on empirical findings. Australian researcher Mak (1990) tested the theory.

Mak (1990) recruited a sample of 793 male and female secondary school students from public schools in Canberra for the purposes of her study. A self-report

delinquency measure devised by Mak was used to assess offending behaviour including assaults. A battery of instruments was used to measure self-control and attachment. A lack of self-control or impulsiveness was found to be the most significant predictor of juvenile offending. The association between impulsiveness and different types of offences, for example assaults in comparison to burglaries, was not provided.

This review of the literature indicates psychodynamic theories of aggression and offending have received less empirical attention in recent years. An examination of these theories, however, revealed an overlap with certain features of alexithymia.

Biological perspectives.

There are varied biological perspectives on violent behaviour stemming from early animal studies to structural and functional neurobiological studies, however, underlying each is a basic assumption that aggression is the result of inborn structures of the brain and musculature (Blackburn, 1993). As Blackburn stated, violence is therefore like any other human activity and is a co-ordinated act under the control of neurochemical systems. While some biological theories allow for the concept of learning, many are based on the notion of aggression as an internal mechanism which overpowers volitional control. This view has been subject to criticism, with opponents arguing a lack of evidence exists for a biological component to aggression and automatism of violent behaviour. As Blackburn argues, however, to ignore biological determinants of aggressive behaviour is to refute that much of our behaviour is a product of brain activity. A thorough discussion of each biological correlate of violent behaviour is outside the scope of the current review,

however, a brief review of a select few studies from each of the major streams of research is provided.

Bard (1928) was among the first biological researchers of aggression. He proposed the hypothalamus played a significant role in aggressive behaviour. Brain surgery was performed on a group of cats to remove a section of brain stem and dorsal sections of the diencephalon. Following the procedure the cat's behaviour was monitored. Bard observed the cats would have spontaneous outbursts of rage in response to no or minor provocations, similar to sudden outbursts of rage detailed in the literature on alexithymia. He referred to these outbursts as *sham rage* and corresponding heightened activity in the sympathetic nervous systems as a *pseudo-affective* response. Numerous studies on aggression in animals followed Bard's research such as Masserman (1941), Hess and Akert (1955) and Wasman and Flynn (1962) to name a few. In more recent times, however, researchers, such as Raine and colleagues (1998) have moved away from animal studies to examining biological and neurophysiological explanations (Felson, 2008).

Raine and colleagues (1998) hypothesised a functional basis of violence meaning there is a dysfunction in certain areas of the brain that can account for violent or aggressive behaviour. These researchers used brain imaging to investigate subcortical functioning in two groups of murderers. A sample of nine affective (reactive, unplanned or impulsive) murderers and 15 predatory murderers were compared to a control sample of 41 non-murderers. Brain functioning was assessed by Positron Emission Tomography (PET) whereby a chemical tracer is injected into the participant which is then used as an indicator of metabolic rate in the brain. Participants were asked to complete a continuous performance task. Results indicated that lower prefrontal functioning and higher right hemisphere subcortical functioning

was associated with affective murderers. Predatory murderers exhibited normal prefrontal functioning but extremely high subcortical activity in the right hemisphere. Researchers such as Jessimer and Markham (1997) likewise reported dysfunction in the right hemisphere of the brain in people with alexithymia. Raine and colleagues (1998) concluded affective murderers were deficient in their ability to regulate and control their aggressive tendencies.

In comparison to the functional study above, Narayan et al. (2007) investigated a structural neurophysiological basis for violence. These researchers hypothesised there is a difference in the structure of certain brain areas that is responsible for violence and or aggression. Narayan et al. (2007) investigated the areas of the brain and neural substrates that underlie violent behaviour. Samples of violent participants with antisocial personality disorder ($n = 14$) or schizophrenia ($n = 12$) were recruited in addition to a group of controls with no psychiatric diagnosis or history of violence ($n = 15$). Based on previous research the authors proposed an fMRI would reveal differences in the cortical thickness of violent participants. Results indicated that violent participants displayed a cortical thinning of the medial frontal and lateral sensory motor cortex. There were some differences in the results between the two violent groups, which may be accounted for by the differences in the disorders. Abnormalities in the sensorimotor cortex, however, were associated with violence in both groups.

The studies reviewed above indicate both a structural and functional basis to violence and or aggressive behaviour. Of note, Raine and colleagues (1998) reported dysfunction of cortical activity leads to an inability to control aggressive impulses. Clinical accounts of sudden outbursts of rage or violence in alexithymic people have been reported. In recent years biological approaches to violence have been largely

rejected by social scientists in favour of approaches which place greater emphasis on the role of learning.

Social learning theories.

The social learning theory of violent behaviour has its origins in the frustration-aggression hypothesis (Andrews & Bonta, 2003). In 1939 a group of Yale University psychologists and sociologists developed a perspective on aggression that incorporated behavioural aspects and psychoanalytic concepts. Dollard, Miller, Doob, Mowrer and Sears (1939) postulated that frustration is at the core of aggression and aggression is always preceded by frustration. Aggression is a behavioural response with the explicit purpose of physically hurting another person. The strength of the aggressive response is determined by the amount of frustration. Inhibition may be mediated by the potential of punishment and the degree of that punishment. The commission of an aggressive act is cathartic to the perpetrator.

An update of the frustration aggression hypothesis was provided by Berkowitz (1962) based on research conducted since the original hypothesis. Berkowitz placed greater emphasis on the role of learning in comparison to his predecessors. He distinguished between two types of aggression: instrumental and angry. Instrumental aggression is goal oriented while angry aggression is a frustration response. Anger therefore predisposes an individual to violence. According to the theory, if violent behaviour is positively reinforced the person will be more likely to use violence in other situations. They also learn to interpret ambiguous situations or events as hostile.

It is Bandura's social learning theory, however, that is most commonly cited and most widely accepted perspective for evaluation of, and understanding violent

behaviour (Blackburn, 1993). Bandura's social learning theory posits that aggression and violent behaviour is learnt through a process of observational learning and direct experience (Bandura, 1973; Blackburn, 1993). Bandura postulated that as with all human behaviour, aggression is socially transmitted and developed by way of examples encountered in everyday life. According to the social learning theory, those witnessing aggression in their daily lives are more prone to use aggression as a means of meeting needs (Hines & Saudino, 2002). Whether the aggressive tendencies are then maintained or abandoned is dependent on the response the individual receives when using aggression (Bandura, 1973). For example, if there appears to be a functional value to the modelled behaviour or if it is rewarded in some capacity then the individual is more likely to exercise the behaviour themselves (Bandura, 1973).

It is therefore through practicing such behaviour that it is reinforced and subsequently maintained (Bandura, 1973). Aggression and violent acts become regulated by way of environmental cues or reinforcement and consequences of the action. The consequences of the behaviour may shape the behaviour itself. Aggression that is positively rewarded, through social outcomes and or positive consequences for the self, is more likely to be repeated. As a result the behaviour is controlled and determined by the consequences. Bandura argues aggression is not an instinctual or innate drive but instead is mediated by external factors under stimulus control.

Tapper and Boulton (2005) used social learning theory as a framework to investigate aggression in primary school children. Parental consent was obtained for 77 children in year three and six at British primary schools to participate in the study. A hidden microphone and camera were used to record the children's behaviour in the

playground. Children were aware they were being recorded but informed they should act naturally. A researcher was also on site to observe the children's behaviour. The children's aggressive behaviour and responses were coded according to the type of aggression and response. The results indicated approximately 30% of aggressive acts were positively reinforced by peers either through smiling or laughing. Aggressive behaviour in children could be maintained by positive reinforcers from peers.

Researchers Sellers, Cochran, and Branch (2005) investigated social learning theory as a means to explain violence in relationships. A sample of 1,641 participants all of whom indicated they were in relationships was recruited from a university in Florida. The Conflict Tactics Scale, which is a self-report measure of violence, was used to assess violence in relationships. Participants were also asked to report actual and anticipated reactions to their violent behaviour. The results were indicative that increased partner violence was associated with approval of the violence by the partner. Relationships with peers who approve of partner violence were also associated with increased partner violence. Conversely, disapproval or negative reinforcement of the violence was associated with decreased partner violence.

In a similar vein to the above study, Wareham, Boots, and Chavez (2009) examined the intergenerational transmission of violence in partner violence perpetrators as a test of social learning theory. The researchers proposed childhood physical abuse and witnessing violence between caregivers would be associated with a higher incidence of partner violence in adulthood. A sample of 204 male partner violence perpetrators were recruited from domestic violence rehabilitation programs. Self-report was used to assess level and severity of violence as well as violence in family-of-origin and responses to that violence. Results indicated that the experience of physical abuse in childhood increased the odds of committing partner violence in

adulthood. The results for witnessing violence between caregivers, however, were not significant. Perpetrators who reported positive reinforcement or support from peers and family for violence were more likely to report a higher incidence of violence in line with social learning theory. Although it has not been directly attributed to social learning, researchers have also shown violence in family-of-origin, whether witnessed or experienced is a significant predictor of alexithymia adult life (Modestin, et al., 2004).

Assessment and Treatment of Violent Offenders

The debate over offender treatment has oscillated over the years between *nothing works* to *what works* (McGuire, 1995). Punitive approaches were once favoured but the rise of the risk-needs-responsivity model saw a shift to more rehabilitative approaches (Andrews & Bonta, 2003). Approaches to dealing with violent offenders have also varied from individual to group treatment, institutional to community treatment, from cognitive behavioural to purely behavioural or social skills training (Blackburn, 1993). The current focus of the majority of programs in Australia is on anger management (Howells et al., 2002).

What works?

In 1974, based on an extensive review of the research at that time, Martinson effectively declared nothing works in terms of offender rehabilitation. He argued that education and or psychotherapy whether it is individual or group do nothing to change an offender's behaviour. Martinson stated more emphasis needed to be placed on investigating punishment as a deterrent and developing more effective

means of social control. He did acknowledge, however, that poor research methodology had plagued many of the studies he reviewed. A number of researchers supported Martinson's views that no intervention reliably reduced the incidence of offending (Davies, 1990; Lipton, Martinson, & Wilks, 1975; Pitts, 1992). There are, however, a number of opponents of this perspective.

Meta-analyses conducted mostly in the 1980's and 1990's indicate support for the effectiveness of rehabilitation for offenders (Doob & Brodeur, 1989; Gendreau, Little, & Goggin, 1996; Gendreau & Ross, 1987; McGuire, 1995). More importantly, the results of these meta-analyses provided information about what particular interventions do and do not work with offenders. Psychoanalytic and medical treatment demonstrated little effectiveness, while rehabilitations focussing on risk level of the offender with attention to criminogenic needs and suited to the learning style of the offender were more promising. Programs with a cognitive-behavioural approach were generally more effective as were those with program integrity or clearly defined aims and well-trained administrators (McGuire, 1995).

The risk-needs-responsivity model.

The *risk-needs-responsivity* model is founded in the psychology of criminal conduct (PCC) developed by Andrews and Bonta (2003). The focus of the PCC is on variation in individual criminal behaviour. Variation occurs across the type, number, and range of criminal behaviour in which individuals engage in addition to the situation and timing of criminal acts. Andrews and Bonta argue that a comprehensive PCC must be rationally organised so that it may be of practical use, but also in line with systematic observation and empirical research. Accordingly, the authors acknowledge the contributions made by social psychological research, biological

psychology and personality research. An empirical understanding of PCC would include determining those variables which are associated with criminal behaviour. Andrews and Bonta emphasised, however, that imperfect relationships are still meaningful to the understanding of criminal behaviour. Empirical understanding must also coincide with a theoretical understanding that provides a simple but rational explanation for criminal behaviour. If theoretical and empirical understandings are ensured then a practical use should follow. Empirical knowledge with a theoretical framework should provide predictors of criminal behaviour that can then be used to implement treatment (Andrews & Bonta, 2003).

Based on the above principles, Andrews and Bonta (2003) developed the risk-needs-responsivity model to guide offender classification and treatment. The *risk* principle dictates the prediction of criminal behaviour is possible and the level of treatment should be matched to the risk level of the offender. The *need* principle distinguishes between criminogenic needs and non-criminogenic needs. While both criminogenic needs and non-criminogenic needs represent dynamic risk factors, Andrews and Bonta (2003) state only criminogenic needs should be targeted for correctional treatment. Criminogenic needs are factors that are reliably associated with offending and focussing on these factors should reduce the likelihood of re-offending. Criminogenic needs include, among others, criminal or antisocial attitudes, lack of social support for pro-social behaviour, self-control and negative emotionality. Non-criminogenic needs on the other hand include self-esteem and living accommodation and other factors that Andrews and Bonta argue are not directly related to recidivism. The third principle in the model is *responsivity*, which refers to the delivery style of treatment and specifies that it should match to the learning and ability of the offender. Andrews and Bonta state that offenders should

respond to the most powerful techniques currently available which are cognitive-behavioural strategies. The final two principles of *professional discretion* and *program integrity* deal respectively with the option of professional overrides on assessment instruments in unique cases and the need for staff training and professionalism when conducting assessments and administering treatment (Andrews & Bonta, 2003).

The risk-needs-responsivity model signified a shift from a punishment based perspective to a more rehabilitative view of offender treatment. In drawing from various lines of research and emphasising an individual approach, the risk-needs-responsivity model has proven a popular base for many treatment programs (Polaschek, 2011; Ward, Melser, & Yates, 2007). The focus on criminogenic needs while neglecting non-criminogenic needs, however, has been a source of criticism (Ward & Stewart, 2003). Researchers such as Ward have argued a focus on non-criminogenic needs is equally as important as non-criminogenic needs may manifest in criminal behaviour. For example, if an individual has difficulty communicating with others, as in the case with alexithymia, they may find a way of meeting this need through criminal behaviour. In this situation violence may be used as a means to demonstrate anger or frustration, but the need itself does not necessarily constitute a criminogenic need. If alexithymia is associated with offending, however, it would constitute a criminogenic need to be addressed in treatment. Furthermore, based on the principle of responsivity, tailoring treatment to suit the ability of an offender with alexithymia is necessary.

Anger management.

Novaco (Novaco, 1975, 1976, 1997) demonstrated anger is associated with violent behaviour. Based on his findings anger management programs have become a popular approach for treating violent offenders (Stermac, 1987). The goal of anger management programs, whether individual, group, prison or community-based, is to assist offenders in controlling their anger and aggression with the goal of reducing violent behaviour (Howells, et al., 2002). Anger management programs inevitably differ across various states and countries, however, the approach and aims of each are relatively similar. The first aim of many anger management programs is to assist participants to identify the cognitive, behavioural and physiological indicators of anger in addition to triggers to anger. A second major component is teaching participants alternative coping strategies or responses to anger provoking situations and improving control of anger. The foundation of many anger management treatment programs is therefore cognitive behavioural.

Researchers such as C. McDougall and Boddis (1991) have assessed the effectiveness of anger management treatment. These researchers assessed anger and aggression as implications for treatment among a sample of incarcerated offenders in Britain. The researchers used a battery of instruments including the State-Trait Anger Expression Inventory (STAXI) and the Emotional Control Questionnaire (ECQ) to measure, among other things, anger, anxiety, aggression and tension. They reported a high degree of somatic tension among offenders who would then aggress to relieve the tension. This description of somatic tension and aggressive is remarkably similar to clinical accounts from Nemiah (1978) and H. Krystal (1979) of sudden outbursts of aggression in people with alexithymia. A brief aggression program conducted in a group format over two, two-hour sessions was then conducted with participants. The

results indicated a significant decrease in measures of anger and aggression upon completion of the program for offenders in comparison to a group of controls.

The efficacy of various cognitive behaviour treatment programs for anger was investigated by Beck and Fernandez (1998) who conducted a meta-analysis. Fifty studies were analysed with the majority of samples from offender populations. The origin of the studies varied. A mean effect size for the studies was obtained indicating an overall treatment effect for participants of anger management programs in comparison to controls across the various studies. It is unclear whether any studies included in the meta-analysis were investigating Australian programs.

In Western Australia, one of the group programs for anger management is the Skills Training for Aggression Control (STAC). Watt and Howells (1999) investigated the efficacy of the STAC in offenders from maximum and minimum security prisons. Offenders on a waiting list for the program were recruited for the control group. The STAXI, Novaco Anger Scale (NAS) and Watt Anger Knowledge Scale (WAKS) were used as pre and post-test measures. The program was presented over a period of five weeks in 10 two-hour sessions. Session content involves education as to the association between feelings and behaviour, specifically anger and violence. The practical component of the program involves teaching participants to identify, understand and manage their anger by developing communication and conflict resolution skills. The researchers failed to find significant treatment effects. At post-test, the control group did not significantly differ on measures of anger compared to the treatment group.

In a similar vein to the above study, Heseltine, Howells and Day (2010) evaluated the effectiveness of a brief intervention for anger among a sample of incarcerated offenders. They did not reveal the name of the program, but stated that it

was a cognitive-behavioural program that is frequently used in prisons throughout Australia. The program has three major components; understanding anger, understanding the association between thoughts, feelings and behaviour and managing anger and is presented in 10 two-hour sessions. A battery of instruments was used for pre and post-testing on 51 program participants and 37 in a wait-list control group. Instruments included among other the STAXI, Short Anger Measure (SAM) and the modified WAKS. No treatment effects were found and the only significant finding was a greater understanding of anger in the treatment group compared to the control group. The researchers concluded brief anger management programs are not effective at reducing anger.

This review of the literature on anger management programs revealed mixed results. In particular, the two Australian studies reported no significant difference between treatment completers and control group participants. As Howells (2004) argues, anger is an important antecedent to violent behaviour but not a necessary one. It is possible many offenders are being placed in anger management treatment programs for violence, but for whom violence is not related to anger. As is indicated in the alexithymia research, it is also possible many offenders do not understand the emotion of anger. Conducting interventions based around a pre-conceived understanding of emotions, particularly anger is therefore redundant and failing to meet the offender's needs and address the principle of responsivity. Issues of treatment readiness, however, can also affect treatment outcome (Heseltine, et al., 2010).

Readiness for treatment.

Readiness to undertake treatment, similar to the concept of responsivity discussed above, refers to a person's motivation, characteristics or internal states that are likely to impede or enhance therapeutic interventions (Howells & Day, 2002). These researchers argue there may be a number of factors as to why treatment readiness can be low, including mental disorders, personality disorders, setting of the treatment and lack of analysis as to why anger is occurring. A person with a mental disorder may be unwilling to address problems related to anger as negative symptoms of the disorder interfere. Many programs do not address the function of anger for an individual person. Violence may not necessarily be a consequence of anger for some people while for others anger may be an unpleasant state they wish to rid themselves of by means of violence.

Empirical support for the proposition that some violent offenders may be unwilling to engage in treatment was reported by Williamson and colleagues (2003). The aim of their research was specifically to investigate the utility of a treatment readiness questionnaire for anger management programs. The researchers modified the Readiness to Change Questionnaire that is based on the Prochaska and di Clemente's (1984) Stages of Change, to an Anger Readiness to Change Questionnaire (ARCQ). A sample of 418 male adult incarcerated offenders participating in anger management programs were recruited from prisons across two states in Australia. Results indicated over half of the sample was motivated to engage in treatment. The researchers concluded a measure of readiness for treatment would be useful when assessing offenders for anger management.

Violence and Alexithymia

Early clinical observations of people with alexithymia revealed they are prone to sudden outbursts of strong emotion. To date the association between violence and alexithymia has received little empirical attention. John C Nemiah, the Psychiatrist-in-Chief at Beth Israel Hospital in Boston Massachusetts and Professor of Psychiatry at Harvard Medical School, was the first to detail violent characteristics in people with alexithymia that was seemingly incongruous with the nature of the construct. A report by Nemiah was published in 1978 in which he formulated the clinical features of alexithymia based on his own observations of people with alexithymia and the clinical formulations of others. He described people with alexithymia would typically display sudden outbursts of tears or aggression, violent or even destructive behaviour which would end as unexpectedly as it began. There was seemingly no premeditation, fantasy or thought prior to the outburst. Following the outburst or even during the individuals would be unaware of the underlying emotion and little remnants of any emotion remained in the aftermath. Nemiah stated the patients reported no feelings of anger, however, circumstances preceding the outbursts were often aggravating and their behaviour indicated they were angry.

A year following Nemiah's formulation, Henry Krystal (1979), Professor of Psychiatry at Michigan State University who was conducting research on psychotherapy in Holocaust survivors reported on clinical observations of alexithymic patients' proneness to abrupt outbursts of rage. In a published report detailing the nature of alexithymia, H. Krystal stated outbursts of rage would cease almost as suddenly as they began. He described that upon questioning such individuals would typically report the outburst was *for show* or an attempt to convince themselves they there were indeed experiencing something, even though

they were seemingly unsure or unaware of the exact underlying emotion. The patients reported they often felt as though they got *carried away* with the display of emotion. According to H. Krystal it appeared as though these patients had switched rapidly from one emotion to another which was then subsequently and abruptly abandoned. The outbursts were more common in alexithymic patients with *addictive* patterns but H. Krystal did not elaborate on this point.

Nemiah's (1978) and H. Krystal's (1979) reports constitute the first documentations linking alexithymia with outbursts of strong emotion resembling anger. In both instances, an underlying emotion(s) manifested through violent behaviour. Both Nemiah and H. Krystal's clinical observations of alexithymic patients and the association between alexithymia and violence were not empirically tested at this time.

The first empirical study to examine an association between alexithymia and violence was conducted by Keltikangas-Jarvinen in 1982. The researcher proposed people with alexithymia would be more prone to violence as they lack the ability to escape into fantasy. Drawing upon previous research on fantasy and aggression Keltikangas-Jarvinen argued fantasy is a protective factor against violence. When provoked an individual could meet their need for retaliation or aggression through their capacity to escape into fantasise. People with alexithymia would be unable to meet this need due to cognitive deficits. The researcher hypothesised alexithymia would therefore be found among violent offenders. Clinical interviews, the Rorschach and the Thematic Apperception Test (TAT) were used to assess for alexithymia, in particular the ability to fantasise, among a sample of 68 incarcerated male violent recidivist offenders and 64 students as controls. The structure of the interviews was not revealed.

The results of the clinical interviews indicated sterile, empty personalities according to Keltikangas-Jarvinen (1982) among the violent offender group. Events were described in a concrete fashion with focus on the details as opposed to the feelings associated with the event. The responses to the Rorschach Test in the violent offender sample were typically short, stereotyped or detached in comparison to the control sample. Likewise, responses on the TAT were brief, focussed on the present and lacked emotional content. Overall, the violent offender sample evidenced little fantasy expression in the projective tests and significantly less fantasy aggression in comparison to the controls. Keltikangas-Jarvinen (1982) concluded violent offenders express significantly less fantasy than controls due to a cognitive defect and therefore argued the hypothesis regarding the presence of alexithymia among violent offenders was supported.

Based on these results, it seems fantasy may act as a protective factor against violence and when faced with a hostile provoking situation, people without alexithymia can simply escape into fantasy as a means of coping. Since people with alexithymia lack this ability, they may be prone to committing violent acts. There were, however, a number of limitations of Keltikangas-Jarvinen's study (1982). Firstly, the researcher used clinical interviews, the Rorschach and the TAT to assess for the presence of alexithymia. Researchers have since shown that the use of projective measures to assess for alexithymia does not provide an accurate assessment as only the fantasy component of alexithymia is assessed (Linden, Wen, & Paulhus, 1995; Taylor & Bagby, 1988). Keltikangas-Jarvinen's results therefore indicate fantasy deficits are evident in violent offenders, which is also evident in people with alexithymia. This result does not conclusively demonstrate an association between violence and alexithymia exists and does not provide insight into

the exact nature of the association. A thorough assessment of the components of alexithymia and their association to violent offending is necessary. Keltikangas-Jarvinen's (1982) research was nonetheless the first study to ever examine the possible association of alexithymia and violent offending.

Some years following Keltikangas-Jarvinen's (1982) study, Yelsma (1996) investigated the affective orientations of perpetrators and victims in domestically violent relationships. As part of this research, Yelsma assessed for the presence of alexithymia in domestically violent couples. Yelsma hypothesised abusive partners would have significantly higher alexithymia scores, and as a comparison investigated the alexithymia scores of abused women. Seventy-nine abusive persons were recruited through a domestic violence treatment program in Michigan and 57 victims both male and female of partner violence from counselling agencies and shelters. A sample of 35 *functional* couples with no history of partner violence was used as controls. Each participant was assessed on a battery of assessment instruments including, among others, the Partner Abuse Scale (PAS), Affective Orientations Scale (AOS) and the TAS-20.

The results that indicated alexithymia was more prevalent among both perpetrators and victims as compared to non-violent couples with TAS-20 means of 57.59, 55.30 and 48.07 respectively. There was no significant difference between the mean TAS-20 scores for the perpetrators and victims; however, both were significantly different to the scores of functional couples. When the victim sample was split by gender, there was a significant difference between the TAS-20 scores of female victims compared to females in functional relationships. Further results indicated perpetrators had lower awareness of affect cues and expressed less positive affect than functional persons. Alexithymia was also negatively correlated with affect

awareness and positive feelings (Yelsma, 1996). The researchers concluded male partner violence perpetrators had more difficulties finding appropriate words for expression of emotions and an inability to identify their feelings as compared to males in non-violent relationships.

The results of Yelsma's research (1996) suggest that violence in people with alexithymia may be the result of an inability to effectively communicate distress, anger and frustration to others. Based on this result, it is possible that violence is a means of communication for people with alexithymia to compensate for a lack of appropriate verbal communication for emotion.

As alexithymia was examined in conjunction with a number of other affective orientations, however, it cannot be concluded that alexithymia shares an exclusive association with violence or whether other factors are involved. Given that alexithymia was also reported among victims of domestic violence it is difficult to ascertain if alexithymia is a contributing factor to the perpetration of violence and whether the association is exclusive to partner violence perpetrators or violent offenders in general. Although a significant difference in alexithymia levels between violent and non-violent couples was reported, the mean of alexithymia in the violent couples did not approach clinical significance as indicated by the authors of the scale. In spite of the above limitations, Yelsma's (1996) research is indicative that an association exists. It is the nature and strength of the association that is unclear.

In a similar vein to the two studies discussed above, Louth, Hare, and Linden (1998) examined the connection between alexithymia and psychopathy in female violent offenders. Louth and colleagues postulated that there are several reasons to expect a connection between the two, mostly revolving around similarities in symptoms between alexithymia and psychopathy. According to Louth et al. (1998)

such similarities include deficits in empathy, insensitivity in interpersonal relationships, sudden outbursts of rage or violence and difficulty with describing emotions and appreciating the emotional significance of certain events. A sample of 37 incarcerated female violent offenders was recruited for the study from a medium security prison for women in Vancouver, Canada. Participants were assessed on a range of instruments and procedures including the TAS-26, Psychopathy Checklist Revised (PCL-R), voice analysis (speech samples were analysed by trained raters and affective vocabulary scores were calculated based on the intensity, appropriateness and sincerity of emotion), and the BDI. Participants' files were reviewed to determine a history of violent crime as indicated by charges of assault, murder, manslaughter or like crimes.

In total 32% of the sample scored above the cut-off score for alexithymia and 30% for psychopathy, three women were identified as both. Total scores on the TAS-26 and PCL-R were not significantly correlated; however the total TAS-26 was positively correlated with Factor 2 on the PCL-R, which assesses *social deviance*. Factor 1 on the TAS-26 *difficulty identifying and distinguishing between feelings and bodily sensations* and Factor 2 of the PCL-R were also significantly and positively correlated. Higher total scores on both the TAS-26 and PCL-R were associated with a history of violence as was Factor 1 and 3 (*reduced daydreaming*) of the TAS-26. Louth et al. (1998) concluded, based on the correlations between PCL-R, alexithymia and violence, the inability to describe emotions accurately is associated with violence and alexithymia may incorporate aspects of violent behaviour.

The results of Louth et al.'s (1998) research support the hypothesis that people with alexithymia may respond with violence when they are unable to identify and or communicate an underlying emotion. This finding is in accordance with

clinical observations of Nemiah (1978) and H. Krystal (1979) that individuals would state the outburst was to convince themselves they are experiencing some emotion. In combination, Louth et al.'s (1998) research and Nemiah's (1978) and H. Krystal's (1979) observations, suggest violence in alexithymia can be the result of the inability to identify emotions.

The limitations of Louth et al.'s (1998) study is that only female violent offenders were utilised and it is therefore necessary to conduct similar research with male violent offenders. This would ensure that any significant results were not gender specific. Furthermore, the TAS-26 utilised in Louth's and colleagues study has been superseded by the TAS-20 and due to the significant correlations between Factor 1 and Factor 3 of the TAS-26 and violence, the research should be replicated with the updated version of the TAS.

A review of the three studies above indicates an association between violence and alexithymia is probable. Only one study, however, that of Keltikangas-Jarvinen's (1982) specifically examined the association between the two. This study was flawed and since the time of that research, improved methods of measuring alexithymia have been developed. The remaining two studies examined alexithymia in specific violent samples (female violent offenders and domestically violent people) and these results may not be generalisable to violent offenders outside of these specific samples. Considering Nemiah (1978) and H. Krystal's (1979) clinical observations in the late seventies there is significant dearth of research in this area. In fact, the three aforementioned studies were the only such studies the researcher of the current study was able to locate that examined the association. Sifneos (1996) himself in an article summarising the current status of alexithymia called for research examining a possible association between violence and alexithymia. He questioned whether an

inability to experience feelings may be a predecessor to violent crime. Given the possible implications of an association between violence and alexithymia and in relation to the financial and social costs of violent offending it is a significant area of research that has been overlooked.

Alexithymia and Violence: Common Features

Given the lack of empirical studies available demonstrating an association between violence and alexithymia the researcher undertook a literature review aimed at uncovering indirect evidence of an association by determining what features of alexithymia have also been reported in the violence literature.

The researcher first identified a number of findings from both empirical studies and clinical observations in the alexithymia literature that were associated with alexithymia in general and specifically with the development of alexithymia and outbursts of aggression. The researcher then used these features as keywords for a literature search of the violence literature using the database *PsychInfo*. Table 3 on page 87 outlines the features of alexithymia and the major key terms that were used for the search. The violence literature that was located on these features was then reviewed and common findings compared with the alexithymia literature.

As a result of this literature search, a number of commonalities between clinical observations and empirical findings of alexithymia and factors associated with violent offending were identified. Common features include development and factors associated with family-of-origin, elevated levels of impulsivity, hostile attribution bias, difficulty coping with distressing emotions and regulating emotions and demonstrated deficits in empathy. Table 4 on page 88 details the references that appear to indicate common features.

The researcher could not locate any literature to date that has noted any common features shared by people with alexithymia and violent individuals. The following is a discussion of overlapping findings from the clinical literature on alexithymia and the forensic literature on violent offending.

Development and Family-of-Origin

Within the alexithymia and violence literature there were a number of factors relating to family-of-origin and childhood that were associated with the development of the respective condition and behaviour. These factors fell broadly under the headings of family subtypes and social situation, family dysfunction and abuse, and emotional expressiveness.

Family subtypes and social situation.

The term family subtype refers broadly to single or dual parent families as a result of death, divorce or an unplanned pregnancy outside of a stable relationship. In a definitive study Joukamaa and colleagues (2003) from Northern Finland followed almost 6,000 participants from birth through to adulthood and examined family and developmental factors associated with alexithymia. The TAS-20 was used to identify those participants who were alexithymic. The researchers discovered that alexithymia was associated with perinatal, and particularly maternal social situation during development. Unwanted children either from young, unmarried mothers or children born of older women into families with many siblings were at greater risk for developing alexithymia in adulthood. Alexithymia was also associated with being born in a rural community (Joukamaa, et al., 2003).

Table 3

Characteristics of Alexithymia and Key terms used for Literature Search

Alexithymia Characteristic	Key Terms
Inability to identify and accurately communicate emotions	Emotion Affect Communication Expressiveness Emotion regulation Affective experience
Restricted fantasy repertoire or externally oriented thinking	Fantasy Imagination Symbolism
Deficits in interpersonal skills and relationships	Interpersonal Avoidant Intimacy Masculinity Mistrust Hostile attribution bias Empathy
Sudden outbursts of aggression	Impulsivity Aggression Anger Rage Distress
Social situation, trauma or violence in family of origin	Family of origin Trauma Parental violence Social situation Development Childhood

Table 4

Common Features of Alexithymia and Violent Offending

Feature	Alexithymia researchers	Year	Violence researchers	Year
Development and family-of-origin	Berenbaum	1996	Corvo	2006
	Joukamaa et al.	2003	Delsol and Margolin	2004
	Modestin, Furrer and Malti	2005	Sauvola et al.	2002
Impulsivity	Bagby, Taylor and Ryan	1986	Craig, Browne, Beech and Stringer	2004
	Nemiah	1978	James and Seager	2006
	H. Krystal	1979	Moeller, Ernest, Donald, Joy and Alan	2001
	Sifneos, Apfel-Savitz and Frankel	1976	Nussbaum et al.	2002
	Zimmerman, Rossier, Stadelhofen and Gaillard	2005	Seager	2005
Hostile attribution bias	Berenbaum and Prince	1994	Hazebroek, Howells and Day	2001
			James and Seager	2006
			Seager	2005
			Serin and Kuriychuk	1994
			Tremblay and Belchevski	2004
			Vitale, Newman, Serin and Bolt	2005
			Walters	2007
Emotion regulation	H. Krystal	1979	Bushman, Phillips and Baumeister	2001
	Nemiah	1978	Lopes, Salvoney, Beers and Cote	2005
	Zimmerman et al.	2005	McGuire and Broomfield	1994
			Ross and Fontao	2007
			Umberson, Williams and Anderson	2002

Table continued on following page

Feature	Alexithymia researchers	Year	Violence researchers	Year
Distressing emotions	Bagby, Taylor and Parker	1988	Bushman et al.	2001
	Berenbaum and Irvin	1996	Eckhardt, Barbour and Davison	1998
	Berenbaum and Prince	1994	Maiuro, Cahn, Vitaliano, Wagner and Zegree	1988
	McDonald and Prkachin	1990	Wood and Newton	2003
			Umberson et al.	2002
Deficits in empathy	Guttman and Laporte	2002	Goldstein and Higgins-D'Alessandro	2001
	Moriguchi et al.	2007	Lauterbach and Hosser	2007
			Miller and Eisenberg	1988
			Nussbaum et al.	2002

Using the same birth cohort as Joukamaa et al. (2003), Sauvola et al. (2002), followed 5,589 males from birth until age 32, in an attempt to determine whether a relationship exists between family subtypes and the development of criminal behaviour in later life. Through examination of the national crime register (which commences at age 15), the researchers discovered that males reared in single-parent families for the majority of their youth, were five times more likely to commit a violent crime. Males exposed to death and divorce, were at a heightened risk to commit violent crimes. Although the same birth cohort was used it is unclear whether any participants were engaged in both Joukamaa et al.'s (2003) and Sauvola et al.'s (2002) study.

Taken together the findings of Joukamaa et al. (2003) and Sauvola et al.'s (2002) research can be construed as indicating an overlap between family-of-origin situation in both people with alexithymia and violent offenders. Alexithymia and violent offending were both associated with parental social situation, specifically

single-parent families or unmarried mothers. It is possible in such situations parents' emotional relationship with children may be compromised due to the increased demands of single-parenthood. If both alexithymia and violent behaviour are associated with similar family subtypes then alexithymia and violent behaviours may overlap in some incidences. Both Joukamaa et al. (2003) and Sauvola et al.'s (2002) studies, however, were conducted in Northern Finland using the same 1966 birth cohort, therefore any outcomes may simply be a generational phenomenon.

Family dysfunction, abuse and violence.

In the literature, family dysfunction generally refers to abuse or violence within the family whether experienced or witnessed, maladaptive communication between family members and a general feeling of being unsafe in childhood (Mallinckrodt, King, & Coble, 1998). Berenbaum (1996) examined the relationship between physical and or sexual abuse in childhood, development of alexithymia and personality disorders. An outpatient sample of 60 adults was utilised for the study. The TAS-20 was used as a measure of alexithymia in addition to information provided by therapists. A statistically significant association was discovered between abuse in childhood the development of alexithymia. Specifically, participants who were abused were more likely to experience difficulties identifying their emotions compared to those who had not been abused. Berenbaum postulated that victims of childhood abuse might more be prone to developing alexithymia because the abuse can result in reduced ability to identify their emotions. As regulation of affect is developed during these primary years, childhood abuse may interfere with this development and consequently result in alexithymia in later life.

The results of Berenbaum's (1996) study have been largely supported by subsequent research. Following an investigation of eating disorders in a sample of college women, researchers Mazzeo and Espelage (2002) reported eating disorders were not directly associated with childhood abuse (family violence, neglect, physical and or sexual abuse) but rather alexithymia and depression played a mediating role. Likewise, violence between caregivers was found to be a significant predictor of alexithymia in adult life for 223 adult non-patients in a study by Modestin, Furrer, and Malti (2005). Both Mazzeo and Espelage (2002) and Modestin et al. (2005) used the TAS-20 as a measure of alexithymia.

Moving away from the issues of abuse, King and Mallinckrodt (2000) examined family environment and its association with alexithymia using a sample of 33 clients at a university counselling centre and 37 students as controls. The TAS-20 was used as a measure of alexithymia and the Family Structure Survey (FSS) and Family Environment Scale (FES) as retrospective measures of family environment. The researchers reported higher scores on the TAS-20 were significantly and positively associated with self-reported fear of separation in childhood, parent enmeshment and parent-child role-reversal. The association was particularly strong for the Factor 1 DIF of the TAS-20. Reports of healthier family functioning including emotional expressiveness and communication were associated with lower levels of alexithymia.

The research findings discussed above are suggestive the development of alexithymia is associated with traumatic childhood experiences such as physical or sexual abuse, neglect and witnessing violence among family members. Each of the above researchers discussed difficulties with identifying and communicating feelings in adulthood following traumatic childhood experiences. It is noted little mention

was made of any associations with Factor 3 EOT in each study. The results regarding abuse in childhood of violent offenders are remarkably similar to those in the alexithymia research.

As previously discussed, the social learning theory of violence implies that people exposed to violence in their family-of-origin would be at a heightened risk to commit violent acts themselves (Bandura, 1973). Skuja and Halford (2004) recruited young males in interpersonal relationships and used the Parental Conflict Tactics Scale (PCTS) to identify those who had been exposed to family violence. Exposure to violence was defined by having witnessed violence between parents. The males' partners were administered a battery of self-report instruments to assess for relationship violence. There was a significant difference between the males exposed to violence and those not exposed to violence, with exposed males more likely to have been aggressive with their partners and use negative communication and report negative affect.

Corvo (2006) examined the intergenerational transmission of violence within families in a group of 74 male participants referred to treatment for partner violence. The researcher identified a correlation between violence in the family-of-origin and violence in current relationship. In particular, there was a strong correlation between having experienced physical abuse in the family of origin and the level of violence in the current relationship. This relationship was stronger than simply having witnessed parental spousal abuse (Corvo, 2006). The relationship between violence experienced in family-of-origin and violence in the current relationship was moderate.

The above research is suggestive that experiencing or witnessing violence in family-of-origin is a mediating factor for violence. It is noted, however, that the majority of studies on violence in family of origin that could be located focussed on

partner violence as an outcome and did not examine violence outside of relationships.

Emotional expressiveness.

A key component of the alexithymia construct is communication of emotions. The emotional expressiveness of a family refers to the verbal and non-verbal communication of positive and negative emotions within the family environment, the level and intensity of those emotions, the way emotions are received and reflected back and whether family members are responsive to the emotional needs of others within the family. Positive emotional expressiveness within a family generally involves less expression of negative emotions, unrestricted expression and greater verbal and non-verbal communication (Yelsma, Hovestadt, Anderson, & Nilsson, 2000).

Berenbaum and James (1994) examined the relationship between alexithymia and family environments. In a sample of 183 students retrospective reports of emotional expression in family environment were assessed by way of a battery of questionnaires. Alexithymia was measured with the TAS-20. The researchers reported a family environment in childhood in which emotional expression was viewed negatively or threatening emotional expression was modelled, correlated with higher scores on the TAS-20. In particular, difficulties with identifying and communicating emotions were correlated with *emotionally unsafe* family environments in childhood.

Taking examination of the association between family environment and alexithymia to another level, Kench and Irwin (2000) investigated whether family-of-origin emotional environment could actually predict alexithymia levels. A sample of

92 university students was recruited for the study. Each participant was assessed with the TAS-20 and a battery of instruments relating to childhood family environment. The researchers reported emotional expressiveness was the one feature of childhood family environment that was predictive of adult alexithymia.

Growing up in homes where there was little positive communication or dysfunctional affective communication has been reported as a strong predictor of alexithymia by a number of researchers (Berenbaum & James, 1994; Kench & Irwin, 2000; Lumley, Mader, Gramzow, & Papineau, 1996; Yelsma, et al., 2000; Yelsma, Hovestadt, Nilsson, & Paul, 1998). This type of family environment is associated with difficulty not only communicating emotion, but also identification of emotion, poor problem solving, externally oriented thinking and impairments in imaginal capacity (Berenbaum & James, 1994; Lumley, et al., 1996). In combination, the results of these studies suggest that deficits in communication and expression of emotion in family-of-origin are significantly related to the development of alexithymia.

The researcher could not locate studies directly examining the relationship between expressiveness in family-of-origin and the development of violent offending. Communication deficits such as aversive, negative or less facilitative language, however, have been discovered in violent offenders in adulthood (Edin, Lalos, Högberg, & Dahlgren, 2008; Robertson & Murachver, 2006, 2007). Given the role of modelling in families of origin it is possible that communication deficits in violent offenders in adulthood stem from ineffective communication within familial environments in childhood.

An examination of the research on family-of-origin in both violent offenders and people with alexithymia reveals striking similarities. Seemingly, developmental

or familial environments that appear to foster violent behaviour also appear to be associated with the development of alexithymia. In particular, child abuse and violence in family-of-origin in addition to certain sociodemographic variables all share a positive and independent relationship to adult violent offending and alexithymia.

Impulsivity

Impulsivity has been conceptualised a number of different ways throughout the literature including action without sufficient thought or with less forethought than others, and has also been compared to risk-taking behaviours and a lack of planning (Eysenck, Pearson, Easting, & Allsopp, 1985; Moeller, Ernest, Donald, Joy, & Alan, 2001). A review of the literature by the current researcher revealed the most widely used definition, however, states impulsivity is a failure to regulate responses, which may be the result of either learning that rewards are not forthcoming for delayed actions or a deficit in integrating information (Seager, 2005; Serin & Kuriychuk, 1994). For the purpose of the current review this conceptualisation will be utilised.

As discussed earlier in this chapter Nemiah (1978) and H. Krystal (1979) through clinical observations made note of sudden outbursts of strong emotion in people with alexithymia. The apparent abruptness of these outbursts led researchers to propose alexithymic people were prone to taking impulsive action (Sifneos, et al., 1976). Sifneos and colleagues postulated people with alexithymia might become increasingly frustrated or distressed to the point where they take impulsive action in order to reduce their level of distress when faced with a distressing situation as they are unable to escape into fantasy or verbalise their feelings. Since this time,

researchers such as Bagby and colleagues (1986a) have empirically investigated observations of impulsive behaviour in alexithymic people.

Bagby and colleagues (1986a), while assessing the construct validity of the previous version of the Toronto Alexithymia Scale, the TAS-26, examined the relationships between the TAS-26 and personality measures. A sample of 542 undergraduate students was recruited for the study. As measured on the Basic Personality Inventory, there was a correlation, albeit low in magnitude, between the TAS and impulsive expression. The researchers concluded the positive relationship is consistent with previous clinical reports and as such supports the notion of impulsive behaviour present in people with alexithymia.

In a more recent study Zimmerman et al. (2005) examined the relationship between personality factors and the factor scores of the TAS-20 using a sample of 136 undergraduate students at a university in Switzerland. The researchers reported the total TAS-20 was not associated with impulsivity (as assessed by the Impulsiveness Questionnaire), although Factor 1 DIF, was significantly associated with impulsivity. Such a result implies that it is specifically difficulty with the identification of feelings that may be associated with impulsive behaviour in people with alexithymia.

Bagby et al.'s (1986a) and Zimmerman et al.'s (2005) studies therefore provide empirical support to clinical observations of impulsive behaviour in people with alexithymia. Although it is noted the above two studies were the only two that could be located on impulsivity in alexithymic people. This area appears to be under-researched particularly in light of clinical observations of impulsivity in alexithymic people and a possible association to violence. Impulsivity has been associated to

violence in a number of empirical studies including that of Stuart and Holtzworth-Munroe (2005).

A multi-method assessment of impulsivity, including various self-report questionnaires, behavioural and performance-based measures of impulsivity, was employed by Stuart and Holtzworth-Munroe (2005) to examine a group of partner violent ($n = 50$) and non-violent ($n = 36$) males. The researchers reported violent males demonstrated significantly greater levels of impulsivity compared to their non-violent counterparts (Stuart & Holtzworth-Munroe, 2005). This finding suggests that impulsivity, specifically the inability to control impulses, plays a substantial role in violent behaviour. The men examined in this study, however, were all perpetrators of partner violence and as such it is possible these results would not translate to other more generalist violent men.

Similar results have been reported by Seager (2005), who examined of the role of impulsivity and cognitive schemas in violent males. Impulsivity was measured by way of the I Questionnaire and cognitive schemas through responses on a vignette. Violence was determined by convictions of assault (non-domestic), robberies and reported fights in prison in sample of 50 violent offenders at a Canadian prison. Results were indicative that violence was significantly and positively correlated with impulsivity.

In a subsequent study similar to the previous study James and Seager (2006) investigated violence, impulsivity and schemas for a hostile world in a sample of 40 incarcerated male violent offenders. James and Seager proposed persistently violent men would have elevated levels of impulsivity. A multi-modal assessment method involving vignettes, I Questionnaire and a dichotic shadowing task was utilised. Using assaults as an ordinal measure they discovered a significant correlation to

impulsivity. The result indicates that people who commit acts of violence can do so in an impulsive manner, and consequently impulsivity can, to a certain degree, predict individuals who may become violent and commit assaults.

Impulsivity has therefore been discovered to share a positive association with violent behaviour in a number of empirical studies (Craig, Browne, Beech, & Stringer, 2004, 2006; James & Seager, 2006; Komarovskaya, et al., 2007; Moeller, et al., 2001; Seager, 2005; Stuart & Holtzworth-Munroe, 2005). Researchers have proposed that violent offending, in part, can be predicted by levels of impulsivity and indeed research has generally supported this proposition (Craig, et al., 2004; James & Seager, 2006). Impulsivity has been reported to have the most significant predictive power for violent reconviction in comparison to other variables (Craig, et al., 2004). It is important to note that impulsivity appears to be mediated by a hostile attribution bias (James & Seager, 2006; Seager, 2005; Serin & Kuriyuchuk, 1994), which will be discussed next.

Hostile Attribution Bias

Hostile attribution bias refers to the tendency of an individual to perceive hostile intent in another's actions or behaviour, and in many cases, act aggressively in response (Orobio de Castro, Veerman, Koops, Bosch, & Monshouwer, 2002). Serin and Kuriyuchuk (1994) propose a hostile attribution bias in violent offenders forms part of a greater deficit in social and cognitive processing. According to Serin and Kuriyuchuk, (1994) schema's based on past events interact with disinhibition, or impulsivity, and hostile attribution biases prompt the individual to respond with violence in situations where they perceive another person has acted with malice.

Deficits in social and cognitive processing are also a key component of the alexithymia construct.

The relationship between a hostile attribution bias and alexithymia has seemingly not been directly examined. Berenbaum and Prince (1994), however, studied the relationship between alexithymia and the interpretation of emotion-relevant information. A sample of 137 students was assessed for alexithymia on the TAS-20 and their interpretation of emotion-relevant information on the Emotional Story Test (EST). The EST is a test comprising nine different stories in which participants are asked to choose an emotion they feel best relates to the content of the story. The researchers discovered that alexithymia was significantly associated with the tendency to choose angry and or dominant interpretations. This result suggests that people with alexithymia may have a bias towards hostile attributions. It is important to note that only limited research has been conducted in this area with people with alexithymia.

Researchers have proposed that a hostile attribution of intent may explain, in part, why some individuals are prone to violence (Hazebroek, Howells, & Day, 2001; James & Seager, 2006; Matthews & Norris, 2002; Serin & Kuriychuk, 1994; Tremblay & Belchevski, 2004). James and Seager (2006), in a study previously discussed, examined persistently violent men on perceptions of hostility. Number of type of assaults was used to indicate violence, while hostility was measured by responses to vignettes of ambiguous situations. The researchers discovered a significant relationship between hypervigilance for a hostile world and the number of assault convictions (as indicated on the offender's criminal history). A hostile view of the world and subsequent hostile attributions of intent were found to be associated with persistent violence. This result suggests that persistently violent offenders are

seemingly more prone to making hostile attributions of intent, and may act impulsively and respond with violence in ambiguous situations.

Emotion Regulation

Emotion regulation encompasses more than the experience and recognition of the emotion, it involves the management of emotion which in turn contributes to how emotions are expressed (Mayer, Salovey, Gomberg-Kaufman, & Blainey, 1991). The ability to regulate emotions is vitally important for well-being, managing relationships, and coping effectively with stressful situations (Lopes, Salvoney, Beers, & Cote, 2005).

Due to the very nature of the alexithymia construct, which is difficulty with identifying and communicating feelings, it is evident that deficits in emotion regulation may also be prevalent in people with alexithymia. Schaffer (1993) proposed that people with alexithymia may engage in maladaptive forms of emotion regulation. Accordingly, the researcher have noted maladaptive coping mechanisms, such as binge eating, in people with alexithymia (Schaffer, 1993).

The ability to cope with stress in 179 alexithymic non-patients was investigated by Fukunishi and Rahe (1995). The researchers proposed deficits in identifying and communicating emotions in people with alexithymia would contribute to a lack of stress management skills. The TAS-26 was used as a measure of alexithymia and the Stress and Coping Inventory as a measure of coping with stress. Results were indicative that participants scoring higher on the TAS-26 (more alexithymic) had poorer and more negative responses to stress.

In similar study to Fukunishi and Rahe (1995), Zimmerman et al. (2005) examined alexithymia and dimensions of personality. These researchers reported

alexithymia was positively associated with a deficiency in coping in stressful situations. Specifically, internal locus of control was negatively related to alexithymia, while external locus of control was positively related. Collectively, these results indicate that people with alexithymia evidence deficits in emotion regulation. Furthermore, the researchers speculated alexithymia might actually represent a form of emotion dysregulation. In particular, it may represent a maladaptive or an inadequate coping mechanism against distressing emotions and stressful situations.

Ross and Fontao (2007) investigated self-regulation and the role it plays in the commission of violent acts, specifically if there is a functional role of self-regulation of emotion. In a comparison of violent ($n = 42$) and non-violent offenders ($n = 28$), the researchers hypothesised violent offenders would show greater deficits in the ability to self-regulate emotions. In contrast to the expected results, both violent and non-violent offenders demonstrated deficits in self-regulation of emotion in comparison to controls. In line with Ross and Fontao's (2007) findings, some years earlier McGuire and Broomfield's (1994) had found that perceived loss of control of emotion is a function of both violent offences and non-violent offences.

A loss of control of emotion may be construed as repeated failures by the individual to manage and contain strong feelings of anger and a subsequent progression to violence (McGuire & Broomfield, 1994). An example of this may be a sudden or impulsive outburst of aggression. McGuire and Broomfield (1994) examined the relationship between loss of control of emotion, specifically anger, and violent offending. Based on probation officers observations and self-report of violent offenders the researchers reported perceived loss of control was the largest single contributor to violent behaviour (McGuire & Broomfield, 1994). This finding is also

in accordance with research indicating that individuals with a high degree of emotion regulation are more pro-social and interpersonal than those with a lower degree of emotion regulation (Lopes, et al., 2005). Loss of control of emotion, however, was also significantly related to non-violent offences suggesting that, to a certain extent, a loss of control of emotion is involved in all offending behaviour.

A lack of a significant difference between violent and non-violent offenders in both Ross and Fontao's (2007) and McGuire and Broomfield's (1994) studies is indicative that both violent and non-violent offenders experience difficulties with emotion regulation, specifically relating to control of emotions. As to the nature of the association between a loss of control and violent behaviour, clinical and theoretical work indicates violent individuals may be unable to communicate effectively during periods of anger arousal and consequently use maladaptive strategies such as violence in place of pro-social strategies (Maiuro, Cahn, Vitaliano, Wagner, & Zegree, 1988). Deficits in emotional regulation and using violence as means to rid oneself of a distressing emotion has been significantly associated with violent behaviour (Umberson, Williams, & Anderson, 2002). An alternative proposition dictates that individuals may use violence to regain a sense of control in a stressful situation where they may be experiencing loss of control (Umberson, et al., 2002). Clinical reports have similarly noted violent outbursts in people with alexithymia, apparently as a means of regulating behaviour (H. Krystal, 1979; Nemiah, 1978).

Distressing Emotions

Distressing or negative emotions include, among others, anger, fear and disgust and have for years been of interest to researchers in the areas of violent

offending and more recently alexithymia (McDonald & Prkachin, 1990). Anger has received the most attention in both areas of research. A review of the literature revealed anger is generally viewed as an emotion typified by rage, fury and or irritation (C. McDougall & Boddis, 1991). Anger is typically aroused in response to a stressor with psychological or physiological components (Stermac, 1987). Anger has been viewed as a significant antecedent to violent behaviour (Novaco, 1997). Due to the very nature of the alexithymia construct, it is evident that the role of distressing emotions, particularly anger, would receive significant empirical attention. Since anger typically occurs in an interpersonal context and alexithymia is associated with difficulties in interpersonal relations, researchers have argued people with alexithymia would experience difficulties with anger and other distressing emotions (Berenbaum & Irvin, 1996).

Bagby et al. (1988) investigated the relationship of the TAS-26 to measures of anger expression. Using the Anger Expression Scale which examines both anger-in (suppression) and anger-out (expression), the researchers reported that people with alexithymia experience anger but have difficulty expressing it and subsequently suppress it. Bagby and colleagues argued people who are alexithymic may not necessarily express anger outwardly, but rather contain their anger feelings and suppress them. These results are largely in line with clinical reports suggesting people with alexithymia experience problems communicating their feelings and display outbursts of rage but state they are unaware of the underlying emotion (Nemiah, 1978; Sifneos, 1972). Berenbaum and Irvin (1996), who investigated the expression of anger in interpersonal situations in people with alexithymia, reported further empirical support for these clinical observations.

For their study, a sample of 98 college students was assessed for alexithymia on the TAS-20 (Berenbaum & Irvin, 1996). The researcher engaged in a series of real-life anger provoking situations that participants were not aware was part of the study including arriving late and asking participants to complete a series of mundane tasks. Berenbaum and Irvin (1996) determined alexithymic participants displayed greater levels of non-verbal anger and more interpersonally avoidant behaviours in comparison to non-alexithymic participants. There was a tendency for alexithymic participants to report their laboratory experience as more pleasant in contrast to non-alexithymic participants indicating a discrepancy between verbal reports of anger and non-verbal displays of anger. The researchers proposed people with alexithymia may be disinclined to communicate their anger or are completely unaware they are experiencing anger.

The results of Berenbaum and Irvin's (1996) study were largely supported by McDonald and Prkachin's (1990) research on non-verbal displays of anger. In a study designed to assess the ability to recognise and express emotion through facial displays, McDonald and Prkachin (1990) asked 20 participants to mirror facial expressions of emotions and produce spontaneous facial expressions of various emotions. Alexithymia was measured on the Schalling-Sifneos Personality Scale (SSPS). A blind rater judged expressions, and it was reported alexithymic participants exhibited poorer displays of anger and other negative emotions as compared to non-alexithymic participants (McDonald & Prkachin, 1990). The researchers concluded people with alexithymia have deficits in non-verbal expression of negative or distressing emotions.

The role of anger in violent offending has been extensively researched (Davey, Day, & Howells, 2005; Howells, 2004; Howells et al., 2005; C. McDougall

& Boddis, 1991; Stermac, 1987; Wood & Newton, 2003). Researchers have argued that violent behaviour may be construed as the inappropriate response to anger arousal that can occur when individuals have difficulty controlling the expression of anger (Wood & Newton, 2003).

In an investigation of anger in violent men, Maiuro, Cahn, Vitaliano, Wagner and Zegree (1988) compared domestically violent men to generally assaultive men (non-domestically violent men) and mixed assaultive men (domestically violent and generally violent). The researchers reported that all three groups demonstrated equally elevated levels of anger in comparison to controls; violent men typically reported greater levels of anger as opposed to non-violent men. The researchers argued the result is indicative of a relationship between anger and violent behaviour, but also that anger related violence is not circumstantial or situationally based.

Subsequent research, however, has not always supported the finding of elevated anger levels associated with violent behaviour. Wood and Newton (2003) measured anger on the NAS in a sample of 69 incarcerated male offenders. The researchers reported no significant differences in the level of anger experienced by violent offenders in comparison to non-violent offenders. There were no significant effects for offence, violent or non-violent. This result is in contention with previous findings of elevated anger levels in violent offenders; however it is in line with research on anger and alexithymia that indicates there may often be a discrepancy between verbal and non-verbal reports of anger, as in Berenbaum and Irvin's (1996) research.

Other researchers have speculated that some violent individuals may use violence as a means of release or as a response to distressing emotions or stressful situations (Bushman, Phillips, & Baumeister, 2001; Umberson, et al., 2002).

Individuals experiencing distressing emotions may attempt to avoid the emotion and feelings of upset, but when this fails, they will engage in violent acts in the belief that releasing the emotion in such a way will cause them to feel better and rid themselves of the emotion (Bushman, et al., 2001; Umberson, et al., 2002). Although it has been demonstrated that some individuals do feel a sense of catharsis following such an outburst, many individuals feel worse (Bushman, et al., 2001). Some individuals may therefore engage in violent behaviour based on the belief that it will cause them to feel better when experiencing negative emotions.

Collectively, the results seem to suggest that people with alexithymia may experience anger to a certain degree, which is then demonstrated through non-verbal displays of anger. It seems likely, therefore, that people with alexithymia experience anger but due to the nature of the disorder are unable to express it verbally and appropriately and as such it manifests in non-verbal forms. This appears to be supported by claims that people with alexithymia may suppress anger, as they are incapable of effectively dealing with the emotion (Bagby, Taylor, & Parker, 1988). Suppression, as some researchers have demonstrated can lead to outbursts of emotion (Bushman, et al., 2001; Umberson, et al., 2002).

Deficits in Empathy

A final area of apparent overlap between research on alexithymia and research on violent offending is deficits in empathy. Empathy can be broadly defined as the ability of one person to understand and share in the emotional state of another individual in a given context (Bjorkqvist, Osterman, & Kaukiainen, 2000; Covell & Scalora, 2002; Davis, 1983; Jolliffe & Farrington, 2004). Although there are a number of different definitions of empathy most definitions comprise at least two

essential components; firstly, a cognitive, perspective-taking component involving the ability to view a situation from another's perspective; and secondly an affective component which involves the ability to understand or match another's emotional state, without necessarily experiencing the emotion themselves (Bjorkqvist, et al., 2000; Covell & Scalora, 2002; Goldstein & Higgins-D'Alessandro, 2001). H. Krystal (1982-1983) first noted that people with alexithymia appeared to have reduced capacity for empathy and researchers have since investigated this claim.

Moriguchi and colleagues (2007) explored empathic deficits in a sample of 16 alexithymic participants compared to 14 non-alexithymic participants. Behavioural measures and self-report measures of empathy were used to assess empathic ability when judging another person's pain. The results revealed alexithymic participants scored lower on empathy ratings indicating deficits in empathy. The researchers concluded the finding is intuitively accurate, as individuals who have difficulty distinguishing their own emotional state would have further difficulties vicariously experiencing the emotions of others.

The relationship between empathy and alexithymia was further investigated by Guttman and Laporte (2002) who examined the constructs within a family context of women with various psychological disorders. The TAS-20 was used as a measure of alexithymia and empathy by the Interpersonal Reactivity Index (IRI). The researchers reported those women who scored as being alexithymic also scored lower in the cognitive perspective-taking aspect of empathy and generally had high levels of personal distress. The results further demonstrated that alexithymia shares an inverse relationship to empathy. The researchers argued the results support the notion of empathy deficits in women who are alexithymic, particularly in relation to the cognitive aspects of empathy.

Instinctively, it would appear as though those who offend against others, particularly in violent or harmful ways, must be lacking in empathic skills in order to commit such acts (Jolliffe & Farrington, 2004). They are free to commit harmful acts against others because they are not bound by the guilt and conflict that would plague an empathic individual (Davis, 1983). If violent individuals were able to comprehend and appreciate the damage they inflict on another through their actions they may be less inclined to perform such acts (Jolliffe & Farrington, 2004). This has been the perception of many researchers and the focus of a number of empirical studies.

Nussbaum and colleagues (2002) explored personality differences, including empathy, between violent, sexual, non-violent offenders, and violent and sexual offenders. The researchers administered the Temperament and Character Inventory to 185 incarcerated male offenders. Overall, violent offenders scored as the least empathic in comparison to the other offender groups. This study did not differentiate between cognitive and affective empathy.

Researchers have reported deficits in empathy in violent offenders are particularly significant for the cognitive perspective-taking component of empathy (Jolliffe & Farrington, 2004; P. A. Miller & Eisenberg, 1988). Empathy may therefore be perceived as a protective factor, reducing the likelihood that an individual will engage in violent behaviour (Jolliffe & Farrington, 2004). Conversely, a deficiency in empathic skills may facilitate violent behaviour (Jolliffe & Farrington, 2004).

For other researchers who have not found a significant relationship between empathy and violent behaviour, it appears that the correlation was mediated by other factors such as anger (Day, Mohr, Howells, Gerace, & Lim, 2007; Kuppens & Tuerlinckx, 2007). Day et al. (2007) proposed that certain types of deficits (perhaps

not detected through conventional means) may mediate the mechanism through which a lack of empathy may lead to anger and violent behaviour. Day and colleagues reported a significant relationship between anger and empathy in both violent and non-violent groups (Day, et al., 2007). Although mixed results have been reported, generally speaking, the assumption of reduced empathy in violent offenders has been supported through empirical research (Jolliffe & Farrington, 2004; Lauterbach & Hosser, 2007; Nussbaum, et al., 2002).

Measurement of Alexithymia

For both research and clinical purposes it is necessary to operationalise and measure the construct of alexithymia. A variety of measures have been utilised in attempts to operationalise the alexithymia construct, such as the Beth Israel Hospital Psychosomatic Questionnaire (Apfel & Sifneos, 1979), the Schalling-Sifneos Personality Scale (SSPS), developed by Apfel and Sifneos (1979) and the TAS-20 (Bagby, Parker, et al., 1994). The instruments developed and utilised for alexithymia can be divided into observer-rated questionnaires, projective measures, verbal content analysis and self-report measures. Many of the instruments discussed in the section below were not utilised for a great length of time and therefore little information exists on the psychometric properties. The following is a review of the information available on the previous and current measures of alexithymia with a greater focus on current self-report measures.

Observer-Rated Questionnaires

Among the numerous instruments developed and employed over the years to measure alexithymia, the first such measures were observer-rated questionnaires. Observer-rated questionnaires are typically completed by a trained observer in response to answers provided by or behavioural observations of the individual in question. The BIQ (Apfel & Sifneos, 1979) was the first of its kind to be developed and utilised, followed by the Alexithymia Provoked Response Questionnaire (APRQ; J. H. Krystal, Giller, & Cicchetti, 1986) and the Observer Alexithymia Scale (OAS; Haviland, Warren, Riggs, & Gallacher, 2001).

The Beth Israel Hospital Psychosomatic Questionnaire.

As one of the first assessments of alexithymia, the BIQ was once a popular and widely used assessment instrument (Taylor & Bagby, 1988). The original BIQ is a 17-item questionnaire that is completed by the interviewer. Of the 17 items, six items are aimed at the interviewer to describe their feelings about the interviewee. There are also socioeconomic questions and questions that require the interviewee to choose an emotion as a response such as joy, sadness, or happiness. An example of this type of question is: *how do you feel when you are angry?* The BIQ was modified some years later to contain 26 items loading on four factors (Gardos, Schniebolk, Mirin, Wolk, & Rosenthal, 1984). Factor 1 contained items pertaining to difficulty expressing feelings and operative thinking. Factor 2 contained items relating to impaired verbal and non-verbal communication. Factor 3 identified persons as educated, verbal and intelligent and Factor 4 contained items that identified deficits in dreams and fantasy and psychosomatic illness. A third and more recent revision of the BIQ reduced the questionnaire to 12 items each on a seven point Likert scale.

The latest version of the BIQ loaded on two factors; *affect awareness*, which includes the ability to identify and communicate feelings, and *operative thinking*, which includes imaginative capacity and externally oriented thinking (Haviland, Warren, Riggs, & Nitch, 2002).

Reliability and validity.

Apfel and Sifneos (1979) reported inter-rater agreement of 85% for the original 17 item BIQ. Other researchers have reported both the interviewer and the interview setting influence the results on the BIQ (Schneider, 1977; Wolff, 1977). Taylor, Doody, and Newman (1981) in a study of alexithymic patients with inflammatory bowel disease used separate interviewers to score the BIQ. The inter-rater reliability was unacceptable as calculated by Pearson's r at .30.

Promising results for the internal consistency of a modified 26-item BIQ were reported by Gardos et al. (1984). Acceptable internal consistency was demonstrated for three of the four factors with alphas ranging from .63 to .72 for Factors 1, 2 and 3. Factor 4 had poor internal consistency at .43 which the researchers indicated a need for re-defining.

Gardos and colleagues (1984) argued the modified BIQ had content validity, particularly Factor 3, as there was a correlation with low education. Haviland, Warren, Riggs, and Nitch (2002) assessed the concurrent validity of the third revision of the BIQ reported the correlation between the OAS and BIQ was .69. Despite the apparent popularity of the BIQ, very little information could be located regarding the validity of the original instrument.

Factor structure and factorial validity.

The factor structure and factorial validity of the modified 26-item BIQ was investigated by Gardos and colleagues (1984) by way of a Varimax Orthogonal Rotation. The researchers reported Factor 1 accounted for 42.4% of the variance in the data, Factor 2 for 21.8%, Factor 3 for 18.4% and Factor 4 for 7.4% giving a total of 90%. Factor loadings for the items on each of the factors ranged from .41 to .66. These factor loadings are low and therefore indicate the items cannot account for much of the variance in the factors. Taylor and Bagby (1988) have also argued Gardos et al.'s study was flawed in their statistical analysis and the reliability of the results is questionable.

The Alexithymia Provoked Response Questionnaire.

The APRQ was developed by J. H. Krystal and colleagues (1986) who described other measures of alexithymia as problematic. The APRQ is a 17-item instrument that is based on the BIQ and presented as a structured interview. Responses are scored dichotomously as alexithymic or non-alexithymic. The aim of the APRQ is to elicit affective language and imagination. The participant is asked to describe their responses while picturing themselves in variety of situations. An example of these questions is *how would you feel if someone you loved died suddenly*. Though J.H. Krystal and colleagues did some investigations of the psychometric properties of the measure, no other studies that examined the psychometric properties of the scale could be located. The researchers investigated the scale in four samples of psychiatric patients with various disorders. The scale was compared to the BIQ, Minnesota Multiphasic Personality Inventory – Alexithymia scale (Kleiger & Kinsman, 1980) and the SSPS.

Reliability and validity.

J.H. Krystal et al. (1986) reported significant inter-rater reliability levels using the Kappa statistic ($R_1 = .84$). The overall inter-rater agreement was 82.6%; agreement for the presence of alexithymia was lower at 71.4% and higher for the absence of alexithymia at 87.5%. Internal consistency for the scale was not reported.

A high correlation ($r = .72$) with the BIQ was reported by J.H. Krystal et al. (1986) which according to the researchers suggests the APRQ has content validity. No significant correlations were found between the APRQ and any other scales. No information could be located on factor structure or factorial validity of the APRQ.

Observer Alexithymia Scale.

Haviland and colleagues (2000) developed the Observer Alexithymia Scale (OAS). The scale contains 33 items pertaining to five key features of alexithymia; distance in interpersonal relationships, lack of insight, somatisation, lack of humour and rigidity or self-controlling. An example of a question from the scale is *he or she has strong emotions they cannot explain*. Responses are marked on a four-point Likert scale. The scale was designed to be accessible to lay persons and therefore could be completed by those who knew the participant well such as staff or family and friends as opposed to only clinicians. Despite a search of the literature by the researcher, no studies could be located that examined the psychometric properties or utilised the OAS by researchers other than the developers of the scale.

Reliability and validity.

A good test-retest reliability coefficient was calculated at .87 over a two-week interval (Haviland, et al., 2000). High internal consistency for the OAS with coefficient alphas ranging from $\alpha = .88$ to $.90$ for the total score in non-clinical samples were reported in two successive studies by Haviland and colleagues (2000; 2001). The coefficient alphas for the subscales were lower ranging from $\alpha = .69$ to $.86$. Haviland et al. (2002) investigated the concurrent validity of the OAS in comparison with the BIQ. Correlation with total scores was good at $.69$, however, subscale scores varied substantially from low to good with a range of $.16$ to $.71$.

Factor structure and factorial validity.

Haviland and colleagues (2000) performed a CFA on the OAS and reported an excellent fit of the model to the data (CFI = $.988$) with a five-factor structure. The structure was confirmed in a subsequent study with CFI = $.988$ (Haviland, et al., 2001). Other fit indexes that would have provided a greater overview of the fit of the data were not presented. Correlations between subscales ranged from $.16$ to $.79$ indicating some factors were too highly correlated with other factors and for others the correlations were too low. Factor loadings for each of the items on the factors were not presented.

Criticisms of observer-rated questionnaires.

There were a number of implicit problems with observer-rated questionnaires for alexithymia. Namely, as with many observer-rated questionnaires, they may appear to have good face validity, however, the inter-rater reliability of the scale is

subject to bias, experience and style of the observer (Demers-Desrosiers, 1985; Sifneos, 1996). Furthermore, due to the administrator time and effort involved with observer-rated questionnaires, they are more applicable in clinical settings than research settings. A search of the literature by the researcher reveals the use of these scales has waned.

Projective Measures

In addition to observer-rated questionnaires, clinicians and researchers have also utilised projective measures to assess for the presence of alexithymia (Bash, 1986; K. Cohen, Auld, Demers, & Catchlove, 1985; Demers-Desrosiers, 1985; Demers-Desrosiers, Cohen, Catchlove, & Ramsay, 1983; Keltikangas-Jarvinen, 1985; Koski, Holmberg, & Torvinen, 1988; Taylor, et al., 1981; Tibon, Weinberger, Handelzalts, & Porcelli, 2005). Projective measures rely on exploring the imagination of the participant, often without necessarily asking for a verbal description of the participants emotions (Mehrotra, 1998). Projective measures supposedly tap into affective and fantasy deficits in people with alexithymia (Taylor, 1984; Taylor & Bagby, 1988). The projective measures utilised for alexithymia over the years include, among others, the TAT (Keltikangas-Jarvinen, 1985; Mehrotra, 1998), the Rorschach (Rorschach, 1941), specifically with scales relating to fantasy (Bash, 1986; Tibon, et al., 2005) and The Objectively Scored Archetypal Test (K. Cohen, et al., 1985; Demers-Desrosiers, 1985; Demers-Desrosiers, et al., 1983).

Thematic Apperception Test.

The aim of the TAT is to elicit unconscious fantasies of the participant to be evaluated and analysed by the administrator. A series of ambiguous pictures are presented on cards and the participant is asked to tell a story surrounding the pictures. Many different methods to evaluate answers on the TAT have been developed; however, responses are often open to interpretation of the scorer (Vane, 1981).

Reliability and validity.

Vollhardt, Ackerman, and Shindledecker (1986) used the TAT to assess alexithymia in a study of 64 rheumatoid arthritis patients. They reported inter-rater agreement of 86.5%. Mehrotra (1998) examined TAT alexithymia indexes in a small sample of adolescents ($n = 40$). Responses on the TAT were scored according to somatic references, imaginative thinking, operator thinking, length of narrative and affective references. Crude estimates of inter-rater agreement between the researcher and another psychologist ranged from 80% to 100% on various TAT cards. No information could be located on the validity or internal consistency of the TAT.

Rorschach.

Developed by Hermann Rorschach in 1921 the goal of the Rorschach Inkblot Test is to examine the personality structure, motivations and desires of the participant (Rorschach, 1941). The underlying assumption of the test is that perception is influenced by the individual needs and motivations of the person. A series of 10 bilaterally symmetrical inkblot images are presented and participants are asked to tell

the examiner what they see in the inkblot or what the image reminds them of. Scoring of responses on the Rorschach is convoluted and attempts to develop a standardised coherent scoring system have been unsuccessful. Generally, however, responses are scored according to three categories; *location* or the part of the image on which the response is centred, *determinants* or the specific elements of the inkblot on which the participant is basing their response, and *content* or what the image relates to for example, human anatomy, nature or building. Some scoring systems also allow for meanings associated with the images (Garb, Wood, Lilienfeld, & Nezworski, 2005; Schontz & Green, 1992). The Rorschach became popular for diagnosing alexithymic people as it highlighted a lack of fantasy and affective expression (Taylor, 1984). Although a number of articles were located by the researcher that utilised the Rorschach with alexithymic participants, few articles were located that examined the psychometric properties of the test for alexithymia.

Reliability and validity.

Porcelli and Meyer (2002) selected six Rorschach indexes related to alexithymia to assess the validity of the test with alexithymic participants. The indexes included fantasy, cognition, affect, projection, social adaptation and adaptive resources. The inter-rater reliability between the two researchers ranged from .87 to .90 for the English and Italian versions respectively. Porcelli and Meyer (2002) reported the six alexithymia indexes on the Rorschach listed above were accurate at differentiating alexithymic participants from non-alexithymic participants. The researchers concluded the Rorschach has construct validity when used for assessment of alexithymia, as the indexes not only predict the presence of alexithymia but also

the severity. No information regarding the internal consistency of the Rorschach test for alexithymia could be located by the researcher.

The Objectively Scored Archetypal Test.

The Objectively Scored Archetypal Test with nine elements (AT₉) was developed to measure the inhibition of symbolic function in people who are alexithymic (Demers-Desrosiers, 1985; Demers-Desrosiers, et al., 1983). Participants are asked to draw a picture linking nine symbols or stimuli such as a sword, monster and fire and compose a story about the picture. The items are meant to elicit anxiety (for example the monster) and give participants the means to resolve the anxiety (for example through use of the sword). The aim of the test is to elicit symbolic function in the participant; those with impairments are unable to create myth or meaning in the image and story. The AT₉ is scored according to the absence and presence of the elements in the picture and the story. A person with alexithymia may not be able to integrate the elements and may resort to simply naming them in the story.

Reliability and validity.

Cohen, Demers-Desrosiers, and Catchlove (1983) reported high inter-rater reliability for the AT₉ at .91 in a sample of pain patients. In a subsequent study by Demers-Desrosiers (1985) the inter-rater reliability was $r = .93$. Unacceptable inter-rater reliability at $r = .36$, however, was reported by Norton (1989) who used Cohen's scoring system. Cohen, Auld, Demers and Catchlove (1985) examined 61 patients with chronic pain on the AT₉. High internal consistency for the test was reported at K-R coefficient = .91.

Catchlove and colleagues (1985) argued discriminant validity of the scale was demonstrated by non-significant correlations between the Depression, Hysteria and Hypochondriasis scales on the MMPI and the AT₉. While a significant correlation between the AT₉ and the BIQ in Demers-Desrosiers and colleagues (1983) study of chronic pain patients, provides evidence of convergent validity, the correlation between the AT₉ and the MMPI scale for alexithymia was non-significant. Norton (1989) reported low correlations between the AT₉ and other measures of alexithymia including the SSPS ($r = -.3$) and MMPI scale for alexithymia ($r = .2$). This is not, however, consistent evidence of concurrent validity.

Criticisms of projective measures.

The researcher could locate little research evaluating the use of projective measures for alexithymia; however, it is clear from discussion of the instruments that there are a number of issues regarding their use to assess alexithymia. Issues with the use of projective measures revolved largely around scoring and interpretation of the instruments. As scoring and interpretation of responses is dependent upon the interpreter, namely their experience and training, the results are subjective (Linden, et al., 1995; Taylor & Bagby, 1988). Furthermore, there is an absence of normative data with which to compare results for alexithymia on projective tests and in many cases they have only been tested in one or two samples (Linden, et al., 1995; Taylor & Bagby, 1988).

Verbal Content Analysis

Some researchers have proposed the use of verbal content analysis, especially the Gottschalk-Gleser Verbal Content Analysis Scales (G-G), to assess for the prevalence of alexithymia (Lebovits & Holland, 1983; Taylor & Doody, 1985). Verbal content analysis involves analysis of speech samples (computerised or manually) to measure verbal affective expression (Taylor & Doody, 1985). The rationale for this approach is that since alexithymia is a communicative disorder, deficits should be evidenced in speech (Taylor & Doody, 1985).

Gottschalk-Gleser Verbal Content Analysis Scales.

The aim of the G-G is to determine the participant's emotional state by specific analysis of verbal content. The method involves asking the participant to speak into a recorder for five minutes on a personal situation that is particularly interesting or dramatic. The participant is requested not to ask any questions but to speak continuously about the situation until the five minutes has concluded. The participant's account is then transcribed verbatim and the transcript is scored by a trained interpreter. Scoring is designed to take into account the semantics of various words and phrases as well as the magnitude of the experience. Formal scales of scoring are available; the most widely used is that for anxiety which provides references for various forms of anxiety including anxiety over death, and separation anxiety (Lebovits & Holland, 1983).

Reliability and validity.

No information regarding the inter-rater reliability could be located for the G-G. Researchers such as Taylor & Doody (1985) and Linden and colleagues (1995) have argued the G-G has obvious face and content validity, however, no research was located that empirically measured the validity of the test. Information regarding the internal consistency of the G-G method was also not located from a thorough review of the literature.

Criticisms of verbal content analysis.

One of the major criticisms of verbal content analysis is that scoring can be subjective even in light of scoring guidelines and scales of measurement (Lebovits & Holland, 1983). Scoring is additionally convoluted and complex and can only be done by a trained rater (Lebovits & Holland, 1983). The result is that verbal content analysis is both a timely and costly procedure (Linden, et al., 1995). A lack of normative data also means interpretation of the results is extremely difficult (Taylor, 1984). Researchers have also demonstrated the content of the speech of the participants can be influenced by the interview and the interview situation (Taylor & Doody, 1985). A review of the literature revealed very little evidence regarding the validity and reliability of verbal content analysis, and what is available is generally not supportive of the use of verbal content analysis.

Self-Report Measures

Of all the measures employed to assess for alexithymia, self-report questionnaires have arguably been the most widely utilised. A review of the research

revealed self-report measures have gained popularity as a measure for alexithymia in recent years and as a result, more research is available on the psychometric properties of these scales. Early self-report measures of alexithymia include the SSPS and the MMPI-A. In recent times the Bermond-Vorst Alexithymia Scale (BVAQ), and the TAS-20 have been developed and utilised.

The Schalling-Sifneos Personality Scale.

The SSPS developed by Apfel and Sifneos (1979) is a 20-item questionnaire designed to counter interviewer effects in the BIQ. Questions are aimed at feelings, the ability to describe and express emotions, actions, fantasy and dreams. Responses are recorded on a four-point Likert scale. Low scores indicate higher levels of alexithymia. The SSPS was later revised with several of the items rewritten and the new scale called the Schalling-Sifneos Personality Scale – Revised (Sifneos, 1986).

Reliability and validity.

The test-retest correlation of the SSPS was reported at .76 when administered twice to a sample of students over a two-week period (Shipko & Noviello, 1984). Cronbach's alpha for the SSPS was reported at $\alpha = .57$ by Bagby, Taylor and Ryan (1986b) which is unacceptably low for both research and clinical purposes. In a subsequent study Bagby and colleagues (1988) calculated the internal consistency of the SSPS at $\alpha = .34$ for males and $\alpha = .49$ for females. Other researchers have likewise reported poor internal consistency, ranging from .41 to .57 across various studies (Apfel & Sifneos, 1979; Faryna, Rodenhauser, & Torem, 1986; Norton, 1989).

J. H. Krystal and colleagues (1986) assessed the SSPS in combination with the BIQ, MMPI-A and APRQ. No significant correlations were found between the SSPS and any of the other measures of alexithymia indicating a lack of concurrent validity. The SSPS, however, was significantly correlated with the TAS in Bagby, Taylor and Atkinson's study (1988) but was not significantly correlated with the MMPI-A. In regards to the construct validity, Blanchard, Arena and Pallmeyer (1981) reported the SSPS was not significantly correlated with measures of depression or anxiety but was significantly correlated with psychosomatic symptoms as they predicted.

Factor structure and factorial validity.

Blanchard et al (1981) used a principle factor solution to investigate the factor structure of the SSPS in a sample of 230 students. The researchers reported the three-factor structure was a good fit to the data accounting for 58.4% of the variance. Factor loadings for each of the items were not reported, rather the researchers stated any above .3 were considered to load significantly and a number of items reached this cut-off or above.

Results of the principle factor rotation in Martin and colleagues study (1984) largely mirrored those of Blanchard et al (1981). A three-factor solution for the SSPS was found to be a good fit to the data in a sample of 430 students. The three-factor accounted for 54.4% of the variance. Factor loadings above .3 were considered significant and the researchers reported on a small number of items that reached this cut-off. Factor loadings for each of the items, however, were not reported. Both Blanchard et al. (1981) and Martin et al. (1984) gave .3 as acceptable level for factor

loadings. Marsh and Hau (1999) have suggested factor loadings should be $>.6$ in order to explain the variance.

Shipko and Noviello (1984) also used a principle factor solution to investigate the factor structure of the SSPS. Forty six students were recruited for the study. The researchers reported a four-factor structure with factors relating to *difficulty expressing feelings*, *value placed on feelings*, *deficits in fantasy* and *introversion*. Certain items, such as *I prefer to use my left hand*, correlated negatively with factors or did not contribute to the total score. The researchers described these items merely added *noise* to the scoring of the instrument.

Bagby and colleagues (1986b) investigated the factor structure of the SSPS in 542 students by way of a principle factor extraction. The resulting three-factor solution accounted for only 18.3% of the variance in the data indicating that the three factors were relatively independent. The three factors related to *difficulty in describing feelings*, *the importance of feelings* and *day-dreaming* respectively. Factor loadings on each of the items on the factors were generally quite low with very few items approaching a desirable level of $.6$. In a subsequent study of 209 students using the same method to assess the factor structure Bagby, Taylor and Atkinson (1988) found a four-factor solution was a better fit as opposed to a three-factor structure, but was largely unstable. The fourth factor was *externally oriented thinking*. Factor loadings were again low with few approaching a desirable level.

Influences on the SSPS.

In a large sample of students ($n = 542$) Bagby, Taylor and Ryan (1986b) reported results on the SSPS were not significantly influenced by age, education or socioeconomic status. In a subsequent study, however, Bagby and colleagues (1988)

reported a significant effect for gender with a greater proportion of males identified as alexithymic. Results presented by other researchers have generally indicated the SSPS is not significantly influenced by age, gender or socioeconomic status (Blanchard, et al., 1981; Martin, et al., 1984; Taylor & Bagby, 1988).

Criticisms of SSPS.

The results for the reliability and validity of the SSPS are generally mixed with low internal consistency reported by a number of researchers but promising test-retest reliability results (Linden, et al., 1995). Results from the factor analyses across various studies indicate low factor loadings and therefore these items may not be accurately measuring what they claim to measure (Taylor & Bagby, 1988). A number of researchers have also reported results obtained on the SSPS were frequently erratic and difficult to interpret (Apfel & Sifneos, 1979; Faryna, et al., 1986; Norton, 1989).

The Minnesota Multiphasic Personality Inventory, Alexithymia Scale.

The MMPI-A developed by Kleiger and Kinsman (1980) is a 22-item subscale on the MMPI (Minnesota Multiphasic Personality Inventory). The original MMPI was developed by Starke R Hathaway and J Charnley McKinley in 1939 (Groth-Marnat, 2009). Respondents are asked to indicate whether the 22 statements are true or false about themselves. The items on the subscale were derived from the BIQ. Examples of items from the scale are *I daydream very little* and *at times I have felt like smashing things*. Other statements ask respondents if they would like to be a florist, a journalist or whether they are attracted to members of the opposite sex. The

developers acknowledged the scale lacks face validity, but argue the statements tap into a general pattern of denial of impulses and social limitations in people who are alexithymic. Kleiger and Kinsman contend the statements revolving around affect and fantasy address the core features of alexithymia.

Reliability and validity.

High test-retest reliability for the MMPI-A of .8 over a period of 53.1 months was demonstrated indicating stability in the scores over time (Kleiger & Kinsman, 1980). Poor internal consistency for the MMPI-A was reported by Bagby, Taylor, and Atkinson (1988) using the Kuder-Richardson – 20 at .24 for males and .53 for females. In a subsequent study by Bagby, Parker, and Taylor (1991) the internal consistency was calculated at .58 also using Kuder-Richardson – 20.

The developers of the scale reported 82% reliability of the MMPI-A in predicting alexithymia scores in a sample of 112 respiratory inpatients. The MMPI-A correlated significantly with the BIQ in Kleiger and Kinsman's (1980) study at $r = .66$. Federman and Mohns (1984) replicated Kleiger and Kinsman's (1980) study with a sample of 56 migraine patients and reported different results. The MMPI-A was not significantly correlated with the BIQ, rather a negative correlation of $-.22$ was found as indicated by the Pearson's product-moment correlation coefficient. Sixteen percent of the sample were assessed as being alexithymic on the BIQ while 42% were assessed as alexithymic on the MMPI-A. On the basis of their results Federman and Mohns (1984) stated the validity of the MMPI-A is questionable. The MMPI-A was also not significantly correlated with the SSPS or the TAS-26 in Bagby et al.'s (1988) study.

Support for the construct validity of the MMPI-A was reported by Greenberg and O'Neill (1988). In a sample of psychiatric and physical complaints patients the researchers argued the MMPI-A was apt at distinguishing alexithymics from non-alexithymics. Other subscales from the MMPI and the Rorschach were used to identify specific features of alexithymia such as fantasy as indicated by alexithymic theorists.

Factor structure and factorial validity.

Norton (1989) conducted a factor analysis on the MMPI-A by way of a principle components orthogonal rotation. The researcher reported there was no unitary construct which the MMPI-A was assessing and this is a function of low internal consistency and reliability of the scale. The most interpretable solution was a five-factor model with items loading on *pragmatism, dissatisfaction with minor worry, manic style, restlessness and hostility*, and *somatic symptoms*. The five-factor model accounted for 36.6% of the variance in the data.

The factor structure of the MMPI-A was also investigated by Bagby and colleagues (1991) in an inpatient ($n = 398$) and an outpatient ($n = 220$) sample. Following a factor extraction and rotation procedure a three-factor structure for the inpatient sample was revealed. Seven items loaded significantly on Factor 1 but the researchers were unable to identify a clear theme. Three items reflecting mania or excitability loaded on Factor 2 and three items on Factor 3 relating to interests or occupational style. Nine items failed to load significantly on any of the identified factors.

The outpatient sample produced a different factor structure in comparison to the inpatient sample with a four-factor structure providing the best fit to the data

(Bagby, et al., 1991). Factor 1 contained five items with no discernable theme. Factor 2 comprised of three items which each reflected a need for excitement. The theme of Factor 3 was unclear and factor four contained three items. The three items in factor four reflected restlessness and mania. The researchers concluded the factor structure of the MMPI-A is unstable and varies across samples.

Influence on MMPI-A scores.

The MMPI-A was found to be significantly and negatively correlated with age in Greenberg and O'Neill's (1988) study. Gender effects were also reported by Bagby, Taylor, & Atkinson (1988) in the opposite direction to what would be expected. Previous researchers such as Honkalampi et al. (2004) have demonstrated alexithymia is more prevalent among males, however, results on the MMPI-A indicate a higher prevalence of alexithymia among female participants.

Criticisms of MMPI-A.

The greatest criticism of the MMPI-A is that it fails to measure the capacity to fantasise or the ability to verbalise feelings, two of the salient features of alexithymia. The developers of the TAS among other researchers have argued the MMPI-A is lacking in both face and construct validity and therefore advise against the use of the MMPI-A for clinical or research purposes (Bagby, et al., 1991; Federman & Mohns, 1984; Taylor, 1984; Taylor & Bagby, 1988). Linden and colleagues (1995) support this view and argue the validity and reliability of the MMPI-A are suggestive of problems with the instrument. Furthermore, aside from somatic symptoms, the five factors identified by Norton (1989) do not appear to be

consistent with the construct of alexithymia or factors on other scales. Whether or not the MMPI-A is measuring alexithymia as it was originally conceptualised is therefore questionable.

The Bermond-Vorst Alexithymia Questionnaire.

The BVAQ was developed by researchers Bob Bermond and Harrie C M Vorst in Amsterdam in 1994. The scale was designed to measure five components of alexithymia; *emotionalising*, *fantasising*, *identifying*, *analysing* and *verbalising*. Bermond and Vorst took the five components from Taylor et al.'s (1985) definition of alexithymia on which they based their own scale, the TAS. Bermond and Vorst argued, however, the TAS is limited to three factors and therefore reduces the construct of alexithymia and fails to measure it completely and accurately. The BVAQ comprises 40 items on two parallel forms (A and B) which both contain 20-items. Participants record their responses on a five-point Likert scale and higher scores indicate the presence of alexithymia. The scales has English, Dutch and French translated versions (Vorst & Bermond, 2001).

Reliability and validity.

The initial results for the internal consistency of the BVAQ as indicated by Cronbach's alphas were promising. Vorst and Bermond (2001) reported high internal consistency for the total scale at $\alpha = .81$ for the Dutch scale with subscales alphas ranging from $\alpha = .7$ to $\alpha = .88$. Muller and colleagues (2004) reported results similar with a coefficient alpha of $\alpha = .83$ for the total score. Subscale alphas, however, were lower ranging from $\alpha = .54$ for emotionalising, $\alpha = .59$ for fantasising, $\alpha = .6$ for

analysing, $\alpha = .7$ for identifying and $\alpha = .8$ for verbalising. Coefficients alphas of above .7 for each of the subscales were reported by Morera and colleagues (2005). The researcher could not locate any information on the test-retest reliability of the BVAQ.

The convergent validity of the BVAQ as assessed by examining correlations between subscales of the BVAQ and the TAS-20 was acceptable and ranged from .61 to .85 (Vorst & Bermond, 2001). Muller, Buhner and Ellgring (2004) in a sample of 370 German inpatients reported a correlation of $r = .62$ between the total scores of the TAS-20 and the BVAQ.

Factor structure and factorial validity.

Zech and colleagues (1999) performed a CFA to investigate the five-factor structure of the BVAQ. A sample of 305 British students and sample of 305 French speaking Belgian students were recruited for the study. Chi-square was significant for both the British and the French samples. The researchers reported goodness-of-fit indexes were just below standard criteria, however, it is noted, the researchers specified stricter criteria for evaluating goodness-of-fit than is recommended in the literature. Results for the goodness-of-fit in the British and French samples respectively were GFI = .81, GFI = .80, AGFI = .79, AGFI = .77, RMSEA = .059, RMSEA = .064, and CFI = .83, CFI = .76. Factor loadings were assessed for form A and B of the BVAQ separately. A number of factor loadings were below .6, however all were above .3 and in accordance with Stevens (2009). Zech and colleagues (1999) argued factor loadings above .3 are acceptable if the sample size is greater than 300.

The results of Zech and colleagues (1999) were largely replicated by Vorst and Bermond (2001) who investigated the factor structure of the BVAQ by way of a

Principle Component Analysis. Three samples of Dutch students ($n = 375$), French speaking Belgian students ($n = 175$) and English students ($n = 129$) were recruited for the study. Chi-square tests were significant across the three samples indicating a poor fit, however, fit indexes GFI, AGFI and RMSEA were all satisfactory. Forms A and B combined produced GFI = .8, AGFI = .78 and RMSEA = .058 which all indicated a satisfactory to good fit to the data. The predicted five factor model accounted for 47% of the variance in the data. These researchers also used criteria of $\geq .3$ to determine acceptable factor loadings and all reported were above this, however, many were below .6.

Muller et al. (2004) performed a confirmatory maximum-likelihood factor analysis to assess the factor structure of the BVAQ and reported similar results. Chi-square, SRMR and RMSEA were reported as indexes of goodness of fit. The result for the chi-square was not significant indicating the five-factor model was an adequate fit to the data. SRMR = .081 and RMSEA = .062 further indicated a reasonable fit for the five factor model. Factor loadings were reported, and generally at appropriate levels, however, a small number of very low factor loadings of below .1 were reported across the various scales.

Influence on BVAQ scores.

One advantage of the BVAQ is that it does not appear to be unduly influenced by age or gender. Researchers have reported no significant interactions between scores on the BVAQ and age and gender (Muller, et al., 2004; Vorst & Bermond, 2001). The potential influence of factors such as education and socioeconomic status has not been investigated.

Criticisms of BVAQ.

A review of the literature revealed the BVAQ is still largely in its infancy and consequently the research surrounding the psychometric properties is limited (Berthoz, Perdereau, Godart, Corcos, & Haviland, 2007). Notably there is a significant lack of research regarding the reliability of the scale (Zech, et al., 1999). The scale is also yet to be assessed as appropriate for use across various clinical and non-clinical samples. In spite of some promising results, researchers such as Berthoz and colleagues (2007) have argued it is premature to recommend the use of the BVAQ for research or clinical purposes.

Toronto Alexithymia Scale

The Toronto Alexithymia Scale (Taylor, et al., 1985) is by far the mostly widely used and validated instrument for measuring alexithymia (Besharat, 2007; Cleland, et al., 2005; Gignac, Palmer, & Stough, 2007; Kauhanen, Julkunen, & Salonen, 1992; Kooiman, et al., 2002; Loas, et al., 2001; Muller, et al., 2003; Tull, Medaglia, & Roemer, 2005; Waller & Scheidt, 2004; Zech, et al., 1999; Zhu et al., 2007). The scale has been revised three times; the original scale comprised 26 items and can be referred to as the TAS-26. The TAS-26 was subsequently revised to the TAS-R (Toronto Alexithymia Scale - Revised). The third and current revision of the scale contains 20 items and is referred to as the TAS-20. The developers of the scale and other researchers have extensively investigated the psychometric properties of the TAS-20. The utility of the scale has also been examined in both clinical and non-clinical samples, various cultural samples and it is the only scale the current researcher could locate that had been assessed for use in an offender sample.

TAS-26.

The TAS-26 consisting of 26 items was developed in an attempt to address the shortcomings of previous measures of alexithymia (Taylor, et al., 1985). The authors formulated the scale following a review of the literature focusing on the theoretical conception of alexithymia, and noted five content areas which reflected the key components of alexithymia. These included 1) deficits in verbalising feelings, 2) difficulty in differentiating between bodily sensations and feelings, 3) absence of introspective thought, 4) social conformity, and, 5) paucity of fantasy and limited dream recall.

Forty-one items were taken and adjusted from previous measurements to be included in the scale. The scale was then administered to a group of 542 university students and following psychometric analysis, 26 items were retained. The results of the factor analysis supported a four-factor structure of the scale, consistent with the original five key components, excluding social conformity. The researchers reported the scale had good internal consistency (Cronbach $\alpha = .79$) and test-retest reliability over one week ($r = .82, p < 0.0001$) and five week periods ($r = .75, p < 0.0001$). There were some issues with the TAS-26, however, which included high correlations between two of the factors, low magnitude on some of the day-dreaming factor items, and a lack of congruence between the compositional structure of the scale overall and the features of alexithymia (Taylor, et al., 1985).

TAS-R.

In spite of promising results with the TAS-26 Taylor, Bagby and Parker (1992) revised the scale to address the psychometric weaknesses. The revised TAS-R eliminated three items relating to imaginal activity, resulting in a 23-item scale

(Taylor, et al., 1992). The authors proposed a two-factor structure with Factor 1 comprising items relating to describing feelings and distinguishing between bodily sensations and feelings and Factor 2 containing items related to externally oriented thinking. Through a factor analysis, the two-factor structure was found to be an inadequate fit to the data and therefore not representative of the construct of alexithymia (Bagby, Parker, et al., 1994; Taylor, et al., 1992). A three-factor structure was found to be a better fit and in light of these considerations, the scale was redeveloped.

TAS-20.

The third revision of the scale involved extracting a new pool of items that were used in the development of the TAS-R, along with 17 newly written items relating to imaginal capacity and daydreaming (Bagby, Parker, et al., 1994). The derivation sample used to generate the new pool of items comprised 965 Canadian university students, while the sample used to confirm the factor structure consisted of 401 students and 218 psychiatric outpatients. The new scale was subsequently cross-validated in both clinical and non-clinical samples (Bagby, Parker, et al., 1994).

In accordance with the three content domains previously established, three factors were identified following a factor analysis. Items with factor loadings $\leq .35$ were eliminated leaving a total of 20 items. The new revised scale therefore comprised 20 items loading on three distinct factors: Factor 1, Difficulty Identifying Feelings (DIF), Factor 2 Difficulty Describing Feelings (DDF) and Factor 3 Externally Oriented Thinking (EOT). Items relating to imaginal capacity from the TAS-26 performed poorly and were removed from the scale. Having eliminated these factors, however, the authors proposed that Factor 2 DDF and Factor 3 EOT of

the TAS-20 measure these components indirectly (Bagby, Parker, et al., 1994; Parker, et al., 2003). Table 5 on the next page details the factors of the TAS-20, the abbreviations and briefly what characteristics of alexithymia each of the factors measure.

The TAS-20 is scored by adding the responses on the Likert scale. The negatively keyed items are reversed prior to scoring. The total TAS-20 scores in the Canadian sample are divided into *low / non-alexithymic* (≤ 51) and *high / alexithymic* (≥ 61). The *high* cut-off score was determined as 1.5 standard deviations above the mean score for the total score of the entire Canadian community sample (Parker, Taylor, & Bagby, 2003). The scores for each of the factors are divided into *low level of difficulty*, *moderate level of difficulty* and *high level of difficulty*. The level of difficulty for each of the factor scores was generated via one standard deviation above and below the mean, for the total Canadian standardisation sample and males and females separately.

The authors reported stability and replicability for the three-factor structure across both the clinical and student samples as indicated by the results of a CFA (Bagby, Parker, et al., 1994). The chi-square goodness-of-fit was significant in both samples; however, goodness-of-fit indexes were at appropriate levels and therefore indicated an adequate fit of the data and the favourability of the three-factor structure over a two-factor or unidimensional structure (Bagby, Parker, et al., 1994). Refer Table 6 (below) for information regarding the fit indexes in the student and clinical sample.

Table 5

Factors of the TAS-20

Number	Name	Abbreviation	Description
1	Difficulty Identifying Feelings	DIF	The ability to distinguish between feelings and bodily sensations.
2	Difficulty Describing Feelings	DDF	The ability to describe feelings and states of emotional arousal to others.
3	Externally Oriented Thinking	EOT	Lack of introspective thought, focussed on minor and mundane details of events and experiences.

Reliability.

The authors of the scale calculated the test-retest reliability at .77 at a three-week interval in the derivation sample (Bagby, Parker, et al., 1994). Subsequent researchers have supported these findings, namely, using a sample of 70 outpatients (44 females and 26 males) Kooiman, Spinhoven, and Trijsburg (2002) reported a test-retest reliability of .74 at a three-month interval, indicating the scores did not significantly differ at follow-up. The test-retest reliability for each of the factors ranged from .66 to .71. In a more recent study, Besharat (2007) examined the psychometric properties of the Farsi (Iranian) version of the TAS-20 and reported test-retest reliabilities ranging from .80 to .87 at a four-week interval. The results of

these studies collectively indicate the test-retest reliability of the TAS-20 is generally good.

The internal consistency of the total TAS-20 was found to be at an acceptable level, with Cronbach's alpha at .81 for the derivation sample (Bagby, Parker, et al., 1994). The normative sample produced internal reliability coefficients ranging from .70 to .86 for the total sample and males and females separately (Parker, et al., 2003). Researchers other than the original authors of the scales have additionally reported coefficients alphas at appropriate levels ranging from $\alpha = .76$ to $\alpha = .89$ across various studies (Bagby, Parker, et al., 1994; DeGucht, Fontaine, & Fischler, 2004; Haviland & Reise, 1996; Kooiman, et al., 2002; Loas, et al., 2001; Swift, et al., 2006). However, it is important to note that the alpha coefficients for Factor 3 EOT are generally lower than for Factor 1 DIF and Factor 2 DDF (Kooiman, et al., 2002; Loas, et al., 2001; Muller, et al., 2003). In Loas et al.'s (2001) study the coefficients alphas for Factor 3 EOT were unacceptable for both samples at $\alpha = .56$ for clinical and non-clinical sample, and low for Factor 2 DDF in the clinical sample at $\alpha = .61$. Leising et al. (2009) reported high internal consistency for Factor 1 DIF and Factor 2 DDF at $\alpha = .86$ to $\alpha = .80$ respectively, Factor 3 EOT was low at $\alpha = .58$. Lower Cronbach's alphas for the third factor have been reported by other researchers and will be discussed in further detail later in this chapter.

Validity.

In order to assess the discriminant and convergent validity of the TAS-20, the authors of the scale employed two separate student samples with sizes of 85 and 83 and mean ages of 21.47 and 25.41 respectively (Bagby, Taylor, & Parker, 1994). Convergent validity was demonstrated by a strong significant negative correlation

between the TAS-20 and scales of openness to feelings on the NEO Personality Inventory (NEO-PI). There is a significant conceptual overlap between the concepts of alexithymia and openness to experience, and therefore the results provide support for the convergent validity of the TAS-20. Non-significant correlations between the TAS-20 and scales of excitement seeking, agreeableness and conscientiousness as measured on the NEO-PI provide support for the discriminant validity of the TAS-20. Personality traits of agreeableness, conscientiousness and need for excitement and or activity are unrelated to the concept of alexithymia. The BIQ and an outpatient sample was also utilised to assess the concurrent validity. The results were statistically significant indicating positive correlations between the scores on the TAS-20 and the BIQ and therefore demonstrating concurrent validity of the scale (Bagby, Taylor, et al., 1994).

Besharat (2007) investigated the concurrent validity of the Farsi version of the TAS-20. The relationship between the TAS-20 and the Emotional Intelligence Scale and the Mental Health Inventory were calculated. A positive relationship between scores on the TAS-20 and psychological distress was reported, and a negative relationship with emotional intelligence. The researchers concluded the concurrent validity of the Farsi version of the TAS-20 is confirmed by these findings.

Leising, Grande and Faber (2009) argued the validity (the type of validity was not defined) of the TAS-20 could be demonstrated by establishing people with alexithymia talk less about emotions or discuss them in a differential manner to people without alexithymia. Sixty three community participants completed the German version of the TAS-20 and were interviewed about interpersonal relationships. Results indicated participants who scored high on the TAS-20 reported greater distress and more negative emotions. The researchers concluded the validity

of the TAS-20 is therefore questionable, as individuals with high alexithymia would be expected to articulate fewer emotions.

Factor structure and factorial validity.

The three-factor structure of the TAS-20 was confirmed using a large community sample. Based on the sample of 1,933 adults (1053 females and 880 males) from the general community in Ontario, Canada, the researchers reported replicability of the three-factor structure for the total sample, and for males and females separately (Parker, et al., 2003). Correlations between each of the factors were significant and ranged from .49 to .73, factor loadings for item to factor ranged from .41 to .70 for the total sample, .42 to .71 for males and .35 to .76 for females, and all fit indexes were at appropriate levels (Parker, et al., 2003). The results of the CFA are presented in Table 6. The results of the study provide support for factorial validity of the scale and the normative data for the TAS-20 was generated from this study (Parker, et al., 2003).

The results of Parker et al.'s (2003) research for the factorial validity and the stability of the three-factor structure of the TAS-20 have been supported by other researchers citing factor congruence, or the degree to which two factor structures are alike, ranging from .95 to .97 (DeGucht, et al., 2004; Loas, et al., 2001; Meganck, Vanheule, & Desmet, 2008; Swift, et al., 2006). A number of researchers have examined the factor structure across clinical and non-clinical samples providing further support for the three-factor structure and overall factorial validity (DeGucht, et al., 2004; Loas, et al., 2001; Meganck, et al., 2008). Table 6 on the next page details the results of factor analyses across various studies.

Loas et al. (2001) examined the factor structure of the TAS-20 using a CFA in a non-clinical sample of 769 and an eating or substance use disorder (clinical) sample of 659. The chi-square goodness-of-fit was significant, however, fit indexes across both samples were in accordance with criteria standards for adequacy of fit. Some factor loadings, however, were particularly low ranging across the clinical and non-clinical sample. DeGucht et al. (2004) employed two distinct clinical samples and three distinct non-clinical samples to examine the factor structure of the Dutch translation of the TAS-20.

Using a Principle Component Analysis (PCA), as opposed to a CFA as it provided a better indicator of factor congruence; the researchers reported the factor structure to be replicable and stable across all five samples with factor congruence ranging from .96 to .97. Similarly, using both clinical outpatient ($n = 404$) and non-clinical ($n = 157$) samples, Meganck et al. (2008) examined six different factor structures of the Dutch translation of the TAS-20. The various factor structures were based on factor structures that had been reported or proposed by previous researchers. A CFA demonstrated that Bagby, Parker et al.'s (1994) original three-factor model was the best fit to the data, for the clinical sample and non-clinical sample with all goodness-of-fit criteria at appropriate levels (Meganck, et al., 2008). Factor loadings were low in some cases ranging from .14 to .84 across both samples (Meganck, et al., 2008).

In addition to replicability and stability of the three-factor structure in various clinical and non-clinical samples, the factorial validity has been examined across the various translations of the scale in different cultures. In particular Parker, Bagby, Taylor, Endler, and Schmitz (1993) analysed the factor structure by way of a CFA using Canadian ($n = 405$), American ($n = 292$), and German ($n = 306$) samples with

mean ages ranging from 19 to 27 years. The results confirmed the three-factor structure across all three samples (Parker, et al., 1993). Although the chi-square was significant in each sample, the criteria standards for adequacy of fit were met for the Canadian, American and German samples. In combination, the results of the above studies provide support for the factorial validity of the TAS-20 in its various translations, and in particular the replicability and stability of the three-factor structure proposed by Bagby, Parker et al. (1994).

TAS-20 with substance users and offender samples.

The utility of the TAS-20 in clinical and non-clinical samples has been demonstrated in the studies discussed above. Whereas previous measures of alexithymia have been limited to these samples, the utility of the TAS-20 has also been investigated in non-clinical, non-community samples. In particular, the psychometric properties of the scale have been reported for substance and alcohol users and offenders.

Substance users.

Cleland and colleagues (2005) investigated the psychometric properties of the TAS-20 among a sample of 230 outpatients admitted to a treatment centre in New York for alcohol and or substance use. A CFA was performed assessing for a two-factor structure combining the first two factors (Factor 1 DIF and Factor 2 DDF), and the three-factor structure confirmed by the authors of the scale. The two-factor model represented only a marginal fit to the data, the three-factor structure, however, indicated adequate fit to the data. The results obtained for the fit indexes were not

ideal, however, provided a better fit to the data over the two-factor model. There were in addition a number of low factor loadings and the reliability of Factor 3 EOT was low. The results of the CFA are presented in Table 6. The researchers concluded their results provide tentative support for the use of the TAS-20 with substance users.

In a similar vein to the above study, Thornberg and colleagues (2010) examined the factorial validity of the TAS-20 with a sample of 210 alcohol dependent outpatients in Brisbane, Australia. A CFA determined the original three-factor structure was a superior fit to the data as opposed to a one or two-factor structure. Chi-square was non-significant for the three-factor model and fit indexes were only just outside of the acceptable range (see Table 6). In accordance with previous research, a number of low factor loadings ranging from .05 to .63 were reported for Factor 3 EOT. In light of their results Thornberg et al. (2010) advised against the use of the TAS-20 in alcohol dependent samples and emphasised the need to examine the factor structure of the TAS-20 prior to use in a new sample. Their conclusion, however, is questionable as based on their results the three-factor model for the TAS-20 met basic psychometric standards and provided an adequate fit to the data.

Offenders.

Kroner and Forth (1995) applied a confirmatory procedure to the TAS-20 in sample of 508 male violent and sexual offenders who were incarcerated at an Assessment Unit in Canada. The result was a two-factor solution in contradiction to the three-factor solution reported by the authors of the scale. They specified the factors were *emotional understanding deficit* and *experiencing and utilising emotion*. Kroner and Forth (1995) propose a number of possible reasons for this result,

namely, that the offenders may represent a more diverse sample as opposed to a community sample, the scale may not be sensitive enough for offenders or offenders may have a more restrictive style of responding. Nonetheless, the researchers argue that the TAS-20 met the basic psychometric standards required and as such is a valid scale for use with offenders.

The applicability of the TAS-20 for North American Aboriginal offenders was investigated by Parker and colleagues (2005). A North American Aboriginal community sample of male and females ($n = 123$) was compared with a male forensic sample ($n = 102$). The aim of the study was to determine the factorial reliability of the TAS-20 across the two samples. A CFA confirmed the three-factor structure was a good fit to the data in the community and forensic samples with all fit indexes at appropriate levels (refer Table 6). The internal reliabilities of the total scale and the factor scores were consistent across both community and offender samples of Aboriginal Canadians ranging from $r = .85$ to $r = .86$. Parker and colleagues (2005) concluded the TAS-20 is applicable for use with North American Aboriginal male forensic participants.

The TAS-20 has recently been used in South Australia with Australian Indigenous offenders. Day et al. (2008) whose study previously discussed in the current review utilised the instrument, in combination with a number of other measures in order to examine cultural differences between Australian Indigenous and Non-Indigenous violent offenders in the experiences of trauma and anger. Indigenous offenders scored significantly higher on Factor 1 DIF and Factor 2 DDF of the TAS-20. The differences between the total TAS-20 scores were not reported. Aside from a relatively minor number of participants (14 of 101) with literacy issues, the

researchers did not report any problems or issues with the use of the instrument in their sample.

In addition to the three studies discussed above, factors of the TAS-20 have been linked to features of violence by a number of alexithymia researchers as detailed in the section on violence and alexithymia. Table 7 outlines the common features of violence and alexithymia and their association to factors of the TAS-20.

Influences on TAS-20 scores.

As previously discussed there are a number of known factors which are associated with alexithymia including male gender, low socioeconomic status and older age among others. In conjunction with these known correlates of alexithymia, researchers have speculated whether factors such as age, gender or culture can influence scores on the TAS-20 (Bagby, Taylor, et al., 1994; Le, et al., 2002; Parker, et al., 2003; Taylor, Bagby, & Parker, 2003).

Age.

Results from the derivation sample indicated age had no influence on TAS-20 scores (Bagby, Parker, et al., 1994). In a later study, the authors reported a low non-significant correlation of $-.08$ between scores on the total TAS-20 and age (Parker, et al., 2003). No other studies could be located that directly examined the correlation between age and scores on the TAS-20, however, a number of the studies previously discussed that reported a higher incidence of alexithymia in older age used the TAS-20 as a measure of alexithymia (Lane, et al., 1998; Mattila, Salminen, Nummi, & Joukamaa, 2006).

Table 7

Common Features of Violence and Alexithymia and their Association with Factors of the TAS-20

Common Features	Researchers	Year
	Factor one DIF	
Impulsivity	Zimmerman et al.	2005
Hostile attribution bias	Berembaum and Prince	1994
Social deviance (female offenders)	Louth et al.	1998
Violence (female offenders)	Louth et al.	1998
	Factor two DDF	
Extraversion	DeGucht et al.	2004
	Factor three EOT	
Male gender	Guttman and Laporte	2002
Socioeconomic status	Guttman and Laporte	2002

Gender.

Gender has been reported as significantly influencing not only the prevalence of alexithymia, but also the manifestation of the disorder as discussed in the previous section (Levant, et al., 2009; Salminen, et al., 1999; Spitzer, Brandl, Rose, Nauck, & Freyberger, 2005). Analysis of the data from the normative sample revealed a significant difference between male ($M = 51.14$, $SD = 10.40$) and female ($M = 48.99$, $SD = 11.48$) scores, however it is important to note the difference was relatively minimal (Bagby, Parker, et al., 1994). Subsequent researchers have found relatively minimal differences in the scores of the TAS-20 across males and females (Kooiman,

et al., 2002). Despite the reported gender differences in alexithymia, the TAS-20 appears to account for the gender differences in alexithymia by providing gender specific norms.

Culture.

At the time of writing this review the TAS-20 had been translated into 19 different languages (Taylor, et al., 2003). Based on a collation of results from various studies the authors of the scale reported generalisability of the factor structure across cultures and good reliability and validity of the translated scales (Taylor, et al., 2003). The results provided by Taylor and colleagues (2003) indicate, however, that a number of fit indexes for the translated scales do not indicate a good fit for the three-factor structure. For example, the Swedish translation had a GFI = .88, AGFI = .85 and RMSEA = .04. The Danish translation had GFI = .86, AGFI = .83 and RMSEA = .09. Furthermore, a literature search revealed some significant differences were found between the scores generated in various cultural samples as compared to the Canadian normative sample. For example, Dion (1996) reported statistically significant differences in the TAS-20 scores between English, European and Chinese participants. Statistically significant differences in the TAS-20 scores of American students with European, Asian or Malaysian dependency was reported in Le, Berenbaum, and Raghaven's (2002) research. In Zhu et al.'s (2007) study the scores generated using a Chinese sample were significantly higher than that of the Canadian normative sample. It is necessary, therefore, to assess the applicability of the instrument and cut-off scores when utilising the scale in a new cultural sample in order to conduct meaningful analysis.

Criticisms of the TAS-20

In spite of significant evidence in favour of the use of the TAS-20 for research purposes, previous researchers have identified a number of shortcomings of the scale. Specifically, criticisms have revolved around the factor structure of the scale, problems with Factor 3 EOT and the composition of the scale.

Factor structure.

The factor structure of the TAS-20 has been reported to differ from the original three-factor structure proposed by Bagby, Taylor et al. (1994) among different samples. Haviland and Reise (1996) found the three-factor structure proposed by Bagby, Taylor et al. (1994) provided the best fit to the data for an American student sample using Full Information Item Factor Analysis. Although the three-factor model was the best fit it was not a good fit as all fit indexes except RMR were outside of criteria standards. The best fit for the clinical sample involved merging Factor 1 DIF and Factor 2 DDF, and splitting Factor 3 EOT into two separate and unrelated factors. Based on their results, Haviland and Reise (1996) recommend assessing the factor structure when utilising the scale in different samples.

Kooiman and colleagues (2002) similarly found that the factor structure differed across samples in the Netherlands. Using Multiple Groups Methods Analysis (MGM) and a Simultaneous Component Analysis (SCA) the researchers discovered Factor 1 DIF and Factor 2 DDF are best represented, particularly in a clinical sample, by a single factor, indicating an overall two-factor structure (refer Table 6).

Support for a four-factor structure of the TAS-20 has also been found. Muller, Buhner, and Ellgring (2003) examined the factor structure of the German

version of the TAS-20 across a clinical ($n = 204$) and non-clinical ($n = 224$) samples through a Confirmatory Maximum Likelihood Factor Analysis (ML). A four-factor model with factors relating to *difficulty identifying feelings*, *difficulty describing feelings*, *pragmatic thinking*, and *lack of subjective significance or importance of emotions* presented a better fit to the data for both samples with GFI .87 and .84 for the clinical and non-clinical samples respectively. Refer Table 6 for information regarding the fit indexes and results of this study.

More recently, Gignac, Palmer and Stough (2007) argued the TAS-20 is best represented by a nested five-factor model (refer Table 6). Based on a sample of 355 participants from New South Wales and Victoria the researchers examined five different factor models by way of a CFA and further distinguished between oblique or higher order models and nested models (Gignac, et al., 2007). The results indicated the TAS-20 measures a global alexithymia factor (GA), in conjunction with four factors, similar to those reported by Muller, Buhner and Ellgring (2003); *difficulty identifying feelings*, *difficulty describing feelings*, *pragmatic thinking* and *lack of importance*.

In light of the above findings, researchers have proposed previous investigators of the factor structure were too liberal when examining model fit and allowed for fit indexes outside the recommended guidelines (Gignac, et al., 2007; Meganck, et al., 2008). The factorial validity of the TAS-20 has been questioned by researchers who suggest it is not at a level where the authors can assume that the scale is measuring what it is designed to measure (Tull, et al., 2005). It should be acknowledged, however, that a number of the researchers mentioned above utilised methods other than a CFA to draw their conclusions and direct comparisons between results of these studies and those using CFA might not be possible.

Factor 3: Externally oriented thinking.

Consistently Factor 3 EOT presents as problematic with a number of researchers reporting low internal consistency and low factor loadings (DeGucht, et al., 2004; Kooiman, et al., 2002; Loas, et al., 2001; Meganck, et al., 2008). Kooiman et al. (2002) reported alpha coefficients ranging from $\alpha = .44$ to $\alpha = .65$ across male and female, clinical and student samples. These results are lower than the alpha coefficients reported for Factor 1 DIF and Factor 2 DDF which were typically above .7, and in many cases above .8 (Kooiman, et al., 2002). DeGucht et al. (2004) reported similarly low alpha coefficients ranging from $\alpha = .45$ to $\alpha = .65$ across clinical and non-clinical samples indicating the internal reliability of Factor 3 EOT is questionable. Other researchers have reported low alpha coefficients ranging from $\alpha = .53$ to $\alpha = .56$ (Loas, et al., 2001; Meganck, et al., 2008).

Low factor loadings for Factor 3 EOT have also been reported by various researchers (Gignac, et al., 2007; Loas, et al., 2001; Meganck, et al., 2008; Parker, et al., 2003). The original authors of the scale reported factor loadings as low as .36 (item 5), with a range of .36 to .62 for all items loading on Factor 3 (Parker, et al., 2003). These results have been supported by other researchers, with Loas et al. (2001) calculating factor loadings as low as .17 (item 10) and a range of .17 to .50 for all items loading on Factor 3 EOT. A range of .13 (item 15) to .68 was reported by Gignac et al. (2007). Similarly, Meganck et al. (2008) reported factor loadings as low as .14 across both student and clinical samples, with a range of .14 to .68. In the majority of these cases, the factor loadings for a number of items loading on Factor 3 EOT did not approach .60. These items cannot account for much of the variance in Factor 3 EOT.

Based on the results of various investigations of the factor structure, researchers have questioned whether Factor 3 EOT is better represented by two separate factors (Gignac, et al., 2007; Haviland & Reise, 1996; Muller, et al., 2003). Most commonly, researchers have proposed externally oriented thinking is best divided into *pragmatic thinking* and *lack of importance of emotions* (Muller, et al., 2003). *Pragmatic thinking* (PT) resembles operational or concrete thinking as originally defined by Marty & de M'Uzan (1963), while *lack of importance of emotions* (LIE) relates to the concept of psychological mindedness or an individual's ability to see relationships between thoughts, feelings and actions (Muller, et al., 2003).

The greatest criticism of the TAS-20 is therefore that it fails to measure the construct as it was originally conceptualised by Sifneos (Loas, et al., 2001; Sifneos, 1996; Vorst & Bermond, 2001). This criticism specifically relates to Factor 3 EOT and the elimination of items directly relating to fantasising. Researchers argue that the elimination of such items has simplified the alexithymia construct and therefore a full assessment of the alexithymia is not provided by the TAS-20 (Vorst & Bermond, 2001).

Composition of the scale.

Other researchers such as Vorst and Bermond (2001) have criticised the composition of the scale, claiming the factors are not balanced evenly with the number of items; Factor 3 EOT contains more items than Factor 1 DIF or Factor 2 DDF. Vorst and Bermond (2001) further argue response tendencies may influence the scores as negatively and positively keyed items are not evenly balanced. The majority of negatively keyed items are contained within Factor 3 EOT.

Conclusion

Despite some criticisms, the TAS-20 remains a widely used assessment instrument for alexithymia. The TAS-20 has generated more support in the literature than any previous alexithymia measure and proved to provide a more sound assessment of alexithymia in comparison to previous instruments (Kauhanen, et al., 1992). The TAS-20 has demonstrated generalizability across both clinical and non-clinical samples, as well as different cultures and languages (Besharat, 2007; DeGucht, et al., 2004; Pandey, Mandal, Taylor, & Parker, 1996; Taylor, et al., 2003; Zhu, et al., 2007). Finally, the cut-off scores in the TAS-20 for determining alexithymic individuals from non-alexithymic individuals, which are lacking in many previous measures, provide a sensitivity that is required in order to use the scale for research purposes (Loas, et al., 2001; Taylor & Bagby, 1988). The TAS-20 therefore appears to meet the standards of stability, reliability, and validity required for research purposes. Additionally, it appears to be the only alexithymia measurement that has been utilised in an offender sample, albeit to a limited extent, and results are generally supportive of the use of the TAS-20 in offender samples.

CHAPTER THREE: STUDY ONE

Method and Analysis

To assess whether the TAS-20 is applicable as a measure of alexithymia in Western Australia and if the Canadian cut-off scores are valid it was necessary to compare the means of the Western Australian community sample with the means of the Canadian standardisation sample. A CFA was then conducted to assess whether the three-factor structure reported in the standardisation sample was replicable with the Western Australian sample.

Participants

The non-offending community-based participants for the current study comprised of adult males and females from the general community in Perth, Western Australia. In total, the community sample comprised of 323 participants. Males and females were spread relatively evenly across the sample with 158 males and 165 females. There were five participants (two males and three females) with missing values on the TAS-20, leaving 318 cases valid for analysis (156 males and 162 females). These cases were excluded when necessary for the purpose of each analysis. The mean age of both males and females was 32 years with an age range of 17 to 83 years. The vast majority of participants identified themselves as Australian born non-Indigenous, followed by non-Australian born and a much smaller percentage of Australian born Indigenous. See Table 8 for information regarding the cultural demographics of the community sample participants.

Table 8

Cultural Demographics of the Community Sample

Sample	Australian born non-Indigenous		Australian born Indigenous		Non-Australian born		Missing information		Total number of participants
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
Male	74	46.80	3	1.89	46	29.11	35	22.15	158
Female	104	63.00	1	0.60	41	24.84	19	11.51	165
Total	178	55.11	4	1.24	87	26.93	54	16.71	323

In order to provide an accurate comparison with the Canadian sample, attempts were made to match the Western Australian sample with the Canadian standardisation sample in terms of age and culture. The Canadian standardisation sample comprised 880 males and 1053 females totalling 1,933 participants from the general community in Ontario, Canada (Parker, et al., 2003). The mean age was approximately 35 years. The vast majority of Canadian participants identified themselves as *White* with a minority of *Black*, *Asian* and *Native American* (Parker, et al., 2003).

Instrument

The instrument utilised for the current study was the TAS-20. The TAS-20 is a self-report questionnaire comprising 20 items loading on three factors; Factor 1 DIF, Factor 2 DDF and Factor 3 EOT (Parker, et al., 2003). Factor 1 DIF is comprised of seven items, Factor 2 DDF is comprised of five items and Factor 3 EOT is comprised of eight items. Of the 20 items, five are negatively keyed (4, 5, 10, 18, and 19). For detailed information on the TAS-20 and its three factors and scoring,

please refer to the measurement section on alexithymia in the literature review above. The normative scores for the scale are based on the Canadian community sample of 1,933 participants. The TAS-20 is scored by adding the responses on the Likert scale. The negatively keyed items are reversed prior to scoring. Scores ≥ 61 determine the presence of alexithymia.

The TAS-20 form was not modified in any way for the purposes of the current study except for adding a question regarding cultural demographics to the questionnaire in the administrative section. Participants were asked to specify which particular cultural group they identified with, Australian born Indigenous, Australian born non-Indigenous or non-Australian born (other). Refer Appendix C for the TAS-20 and Appendix D for the Information Sheet and Consent Form provided to community participants. The means and standard deviations from the Canadian standardisation sample can be observed in Table 10 in the results section below.

Procedure

Participants for the community sample were initially recruited from the undergraduate psychology program at Edith Cowan University. The researcher attended a number of undergraduate psychology lectures and with the lecturer's permission provided a brief explanation of the study to students. Students were then invited to participate and the information and consent form along with the TAS-20 was distributed. Participants were given the option of either completing the questionnaire immediately and returning it directly to the researcher, or alternatively completing the questionnaire in their own time and returning it to a secure box in the reception area of the psychology building at Edith Cowan University. Students were also invited to take extra questionnaires should they identify others who may be

willing to participate in the study and complete the questionnaire. Pre-paid, return addressed sealable envelopes were provided in these instances.

In order to provide a community sample representative of the Western Australian community population participants were also recruited by way of a purposeful sampling technique. This technique enabled the researcher to identify individuals from different socioeconomic populations for participation in the research. Participants in various community groups including sporting venues and work sites were approached and asked to participate in the research. These participants were then asked to identify other members of the community who may be suitable for the research. Participants external to the university were provided with a reply-paid return addressed sealable envelope to post the completed questionnaire directly back to the researcher at the university should they so wish. Alternatively, in situations where the researcher was present, participants were able to hand the completed questionnaire directly to the researcher. For the majority of participants the questionnaire typically took approximately 5-10 minutes to complete.

Statistical Analysis

The applicability of the TAS-20 in a Western Australian sample was assessed by comparison of the means of the Western Australian sample with the means of the Canadian standardisation sample. As the raw data of the Canadian sample was not available, only a comparison of means was possible. A one-sample *t*-test was chosen to compare the means of the Western Australian sample with the means of the Canadian standardised sample. This analysis was used for the total score and factor scores respectively.

In order to assess the three-factor structure of the TAS-20 in the Western Australian sample a CFA using Lisrel 8.80 was performed. A CFA is a statistical procedure that enabled the researcher to evaluate the factor structure and the relationships between factors of the TAS-20 (Brown, 2006). Based on the recommended ratio of the number of parameters to the number of cases 20:1 (Kline, 2005), the sample size of 318 for the current study was considered sufficiently large to ensure stability in the parameters.

A covariance matrix was generated using the scores on the TAS-20, which was then used for the CFA. Initially, a one-factor model was assessed, whereby each of the items of the TAS-20 was assumed to load on a single latent factor. The assumption underlying this analysis is that each of the items is a linear function of one overarching factor, alexithymia. Based on previous literature, a two-factor model and a four-factor model were also examined. Each of the models was standardised with freely estimated parameter estimates. The two-factor model combined all items from factors one DIF and Factor 2 DDF to form one latent variable (Difficulty with Feelings; DF) and the items assessing Factor 3 EOT on a second latent variable. The original three-factor structure proposed by the authors of the scale was examined. The construction of the four-factor model involved separating Factor 3 EOT into two separate factors, *pragmatic thinking* (PT; items 5, 8, 20) and *lack of importance of emotions* (LIE; items 10, 15, 16, 18, 19). While various other factor structures have been explored by researchers, the two (Haviland & Reise, 1996; Kooiman, et al., 2002; Loas, et al., 2001) and four-factor (Haviland & Reise, 1996; Muller, et al., 2003) models explored in the current study have been supported through empirical research.

The statistical fit of the models to the data was assessed using the absolute fit index the Satorra-Bentler Scaled Chi-Square (χ^2), RMSEA, CFI, SRMR, and GFI. The aforementioned fit indexes were chosen as they are generally considered superior fit indexes (Hu & Bentler, 1999; Kline, 2005). For information regarding the fit indexes and interpretation of the fit indexes, please refer to the introduction in Chapter One.

As the indicators for the TAS-20 were ordinal, the method of estimation for the parameters was distribution free. The parameter estimates of each of the models, in particular the factor loadings and correlations between factors were therefore analysed on the principle of Diagonal Weighted Least Squares (DWLS). The factor loadings for each of the models were standardised and interpreted via a conservative cut-off of $> .60$ (Marsh & Hau, 1999) as outlined in the introduction.

Following interpretation of goodness-of-fit and the parameter estimates, the discriminant validity of the factors was examined to determine the extent to which each of the factors of the TAS-20 represented unique factors. Correlations greater than $.80$ indicate a lack of discriminant validity (Anderson & Gerbing, 1988; Fornell & Larcker, 1981) and therefore $> .80$ was used as a guideline for determining discriminant validity in the current study. In addition, a calculation was performed to give a more accurate determination of discriminant validity for the model that provided the best fit to the data. The calculation was as follows:

$$\rho_{vc(\eta)} = \frac{\sum \lambda_i^2}{\sum \lambda_i^2 + \sum \varepsilon_i}$$

λ_i Standardised factor loading

ε_i Error variance of each variable

$\rho_{vc(\eta)}$ Measure of the variance extracted.

Results

Prior to analysis of the data, the assumption of normality was assessed by way of the Shapiro-Wilks statistics. Normality was found to be violated; however, both the skewness and kurtosis of the distribution were in the positive direction. The sample was also sufficiently large and therefore robust against the deviation from normality (Keppel & Wickens, 2004; Tabachnick & Fidell, 2007). In order to combat the increased possibility of type one errors, a Bonferroni adjustment was performed and an alpha level of .05 was divided by four, which is the number of comparisons (Howell, 2002). This resulted in a more stringent alpha level of .0125 which was then utilised for all comparisons.

Cronbach's alpha was used to calculate the internal reliability coefficients and overall was found to be at an acceptable level for research purposes for the total TAS-20, Factor 1 DIF and Factor 2 DDF scores. Factor 3 EOT was below the recommended cut-off of .70. Please refer to Table 9 for information regarding the internal consistency of the TAS-20.

Table 9

Cronbach's Alpha for the TAS-20

TAS-20	Total sample	Males	Females
Total TAS-20	.83	.82	.85
Factor 1 DIF	.85	.84	.88
Factor 2 DDF	.70	.65	.75
Factor 3 EOT	.62	.62	.55

The *t*-test results for the comparison of means of the Canadian and Western Australian community samples are provided in Table 10 on the next page. It shows few significant differences were found; however, there was a statistically significant difference for Factor 2 DDF, in the total sample. On average, Western Australians scored .75 (95% CI [confidence interval] -1.19 to -0.31) points below participants in the Canadian sample. A small effect size using Cohen's *d* (Howell, 2002) was also calculated at $d = .17$, indicating the magnitude of the difference between the two means is minimal.

There was a statistically significant difference between the means of the Canadian male sample and the means of the Western Australia community male sample for Factor 2 DDF. Western Australian males in the community sample scored .90 points (95% CI -1.51 to -0.29) below males in the Canadian sample. The magnitude of the difference, however, was small, $d = -.23$.

The total TAS-20 mean for the Western Australian and Canadian samples did not significantly differ in any of the comparisons. For the purposes of the current study, it was deemed appropriate to utilise the Canadian cut-off scores for determining the prevalence of alexithymia in the Western Australian sample.

Based on the Canadian cut-off score of ≥ 61 for the total TAS-20, 29 participants in the community sample met the criteria to be classified as alexithymic. The majority of participants who met the criteria were Australian born Non-Indigenous, and the mean age of alexithymic participants was 32 years. See Table 11 for information regarding the demographics of community participants scoring ≥ 61 on the total TAS-20.

Table 10

A Comparison of the Canadian and Western Australian TAS-20 Scores

TAS-20	Canadian		Western Australian		<i>t</i>	<i>df</i>	<i>p</i>
	Mean	<i>SD</i>	Mean	<i>SD</i>			
Total sample ^a							
Total TAS-20	45.57	11.32	44.37	11.32	-1.888	316	.060
Factor 1 DIF	14.38	5.21	13.85	6.45	-1.453	319	.147
Factor 2 DDF	12.50	4.20	11.75	4.00	-3.355	321	.001*
Factor 3 EOT	18.70	4.72	18.78	4.56	.311	321	.756
Male ^b							
Total TAS-20	47.30	11.32	46.44	11.41	-0.939	155	.349
Factor 1 DIF	14.51	5.22	13.92	7.25	-1.023	155	.308
Factor 2 DDF	13.16	4.10	12.26	3.88	-2.913	157	.004*
Factor 3 EOT	19.62	4.67	20.30	4.74	-1.797	157	.074
Female ^c							
Total TAS-20	44.15	11.19	42.36	10.90	-2.083	160	.039
Factor 1 DIF	14.27	5.20	13.79	5.70	-1.074	163	.285
Factor 2 DDF	11.96	4.21	11.26	4.06	-2.198	163	.029
Factor 3 EOT	17.93	4.63	17.32	3.92	-1.999	163	.047

Note.

^a Canadian *n* = 1933, Western Australian *n* = 323

^b Canadian *n* = 868, Western Australian *n* = 158

^c Canadian *n* = 1065, Western Australian *n* = 165

* *p* < .0125

Table 11

Percentage of Community Participants Scoring ≥ 61 on TAS-20

Sample	Australian born non-Indigenous		Australian born Indigenous		Non-Australian born		Missing information		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Male ^a	6	3.8	1	.6	4	2.5	4	2.5	15	9.5
Female ^b	9	5.5	4	2.4	0	0	1	.6	14	8.5
Total ^c	15	4.6	1	.3	8	2.5	5	1.5	29	9.0

Note.

^a *n* = 158

^b *n* = 165

^c *n* = 323

Confirmatory Factor Analysis

The results of the CFA are presented in Table 12. Based on the sample of 318 participants the results indicated that the one-factor model provided a poor fit to the data. Fit indexes CFI, SRMR and GFI indicated the one-factor model provided a reasonably good fit to the data, however, fit index chi-square was significant at $p = .00$ and fit index RMSEA suggests a poor fit. Factor loadings for the one-factor model are presented in Table 13. Inspection of the factor loadings for the one-factor model revealed a number of factor loadings ranging below .60 (items 1, 2, 6, 7, 9, 13, and 14) and a possible source of ill model fit. Accordingly, these items do not explain much of the variance for the latent factor of alexithymia.

Table 12

Fit Indexes of the Different TAS-20 Factor Structures

Number of Factors	χ^2	df	RMSEA	CFI	SRMR	GFI
1	710.97	170	.09	.90	.10	.93
2	440.47	169	.71	.95	.81	.96
3	334.02	167	.05	.97	.06	.97
4	325.20	164	.05	.97	.06	.97

The two-factor model likewise provided a poor fit to the data. Despite fit indexes CFI and GFI suggesting a good fit, the chi-square was significant at $p = .00$, and the fit indexes RMSEA and SRMR indicated a poor fit. The factor loadings for the two-factor model are presented in Table 13. For the two-factor model, items 5, 8, 15, 16, 18 and 20 from the latent variable EOT were below .60. Similarly, items 11, 12 and 17 were below .60 on factor DF. The remainder of factor loadings loaded sufficiently on the respective latent variables.

The three-factor model proposed and developed by the authors of the scale provided a good fit to the data. Although the chi-square was significant, $p = .00$, fit indexes RMSEA, CFI, GFI and SRMR were at appropriate levels. The factor loadings for the three-factor model are presented in Table 14. Inspection of the factor loadings reveals a number of items $< .60$, namely, item 5, 8, 15, 16, 18 and 20 on the latent variable of EOT. All items on DIF were strongly related to the latent variable. However, the factor loadings for items 12 and 17 on DDF were $< .60$. A number of items on EOT are problematic for the scale and do not appear to be strongly related to the latent variable EOT.

Table 13

Factor Loadings for the One and Two-Factor Models of the TAS-20

Item	One-Factor Model	Two-Factor Model	
	Alexithymia	DF	EOT
Item 1	.41	.78	
Item 2	.48	.73	
Item 3	.61	.63	
Item 4	.61	.63	
Item 5	.98	.70	
Item 6	.53	.69	
Item 7	.54	.79	
Item 8	.86	.57	
Item 9	.39	.53	
Item 10	.88	.80	
Item 11	.68	.70	
Item 12	.72	.45	
Item 13	.38		.22
Item 14	.53		.58
Item 15	.92		.60
Item 16	.96		.52
Item 17	.79		.33
Item 18	.95		.46
Item 19	.86		.70
Item 20	.95		.32

The four-factor model provided a good fit to the data despite the significant chi-square result, $p = 0.00$. Fit indexes RMSEA, CFI, SRMR and GFI suggest the model provided a good fit to the data. Table 15 presents the factor loadings for the four-factor model. Items 12 and 17 were below .60 on Factor 2 DDF, as were all items on Factor 3 PT and items 15, 16, 18 on factor four LIE.

Table 16 presents the correlations between each of the factors for the two, three and four-factor models tested. For the two factor model the correlation between DF and EOT was .44, indicating that DF and EOT are distinct variables. In the four-factor model the correlation between Factor 1 DIF and Factor 2 DDF was high as was the correlation between Factor 3 PT and factor four LIE. These correlations were at a level that indicates potential poor discriminate validity. The correlation between DIF and LIE, however, is low. The remainder of the correlations were at an acceptable level.

For the three-factor model that represented the best fit to the data, the correlation between Factor 2 DIF and Factor 3 DDF is $> .80$ indicating a lack of discriminant validity between these factors. As outlined in the section on statistical analysis above, further tests of discriminant validity that involved a calculation were conducted for the three-factor model. The results of the more accurate test of discriminate validity indicated Factor 1 DIF and Factor 2 DDF are not separate factors. Factor 2 DDF and Factor 3 EOT are not separate factors, however, Factor 1 DIF and Factor 3 EOT are separate factors.

Table 14

Factor Loadings for the Three-Factor Model of the TAS-20

Item	Factor		
	DIF	DDF	EOT
Item 1	.80		
Item 3	.65		
Item 6	.72		
Item 7	.71		
Item 9	.81		
Item 13	.82		
Item 14	.72		
Item 2		.77	
Item 4		.68	
Item 11		.61	
Item 12		.55	
Item 17		.50	
Item 5			.20
Item 8			.57
Item 10			.60
Item 15			.54
Item 16			.33
Item 18			.46
Item 19			.71
Item 20			.31

Table 15

Factor Loadings for the Four-Factor Model of the TAS-20

Item	Factor			
	DIF	DDF	PT	LIE
Item 1	.81			
Item 3	.65			
Item 6	.72			
Item 7	.71			
Item 9	.81			
Item 13	.82			
Item 14	.72			
Item 2		.77		
Item 4		.68		
Item 11		.61		
Item 12		.55		
Item 17		.50		
Item 5			.20	
Item 8			.56	
Item 20			.31	
Item 10				.62
Item 15				.58
Item 16				.34
Item 18				.48
Item 19				.75

Table 16

Correlations Between the Factors for Different TAS-20 Models

Factors	Factors					
	DF	EOT	DIF	DDF	PT	LIE
Two-Factor Model						
DF	1.00	.44				
EOT		1.00				
Three-Factor Model						
EOT		1.00	.30	.64		
DIF			1.00	.82		
DDF				1.00		
Four-Factor Model						
DIF			1.00	.82	.50	.23
DDF				1.00	.54	.50
PT					1.00	.84
LIE						1.00

Conclusion

The three and four-factor models produced similar results on fit indexes which suggested both models provide a good fit to the data. Based on the principle of parsimony in cases where two models provide a similarly good fit, the simpler model is favoured. On this basis, the original three-factor model is considered as having an acceptable fit to the data.

Discussion

The purpose of study one was to evaluate whether the TAS-20 is a reliable and valid measure of alexithymia in Western Australia, and assess whether the Canadian cut-off scores are applicable for use in Western Australia. In order to provide an accurate comparison between the samples attempts were made to match the Western Australian sample with the Canadian standardisation sample (Parker, et al., 2003). Overall, the Western Australian sample for the current study aligned relatively well with the original Canadian standardisation sample in most respects. The mean age across both samples (Canadian = 35, Western Australian = 32) appeared to be largely consistent. It was considered important to match the mean age in order to provide an accurate comparison with the Canadian sample as age has been reported to have a significant effect on the prevalence of alexithymia (Honkalampi, et al., 2004; Joukamaa, et al., 1996; Lane, et al., 1998; Salminen, et al., 1999).

In the Canadian standardisation sample the majority of participants identified themselves as *White* (88%) with much smaller proportions of *Black* (3%), *Asian* (1%) or *Native American* (1%) and missing information (6%) (Parker, et al., 2003). It was not possible to match the cultural groups due to the differing cultural compositions of Western Australia and Canada, nonetheless cultural information was collected from each participant. The proportion of Australia-born non-Indigenous participants was roughly half at 55%, with substantial proportion of non-Australian born participants (27%). This percentage is in line with the proportion of Australians registered as being born overseas, 27.1% (Australian Bureau of Statistics, 2007). Australian-born Indigenous participants accounted for approximately 1% of the total sample. An Australian Bureau of Statistics (2006a) report indicates that as of 2006 the population of Indigenous and Torres Strait Islanders living in Western Australian

comprised 3.8% of the total Western Australian population. Indigenous people were therefore slightly underrepresented in the Western Australian community sample. Cultural information was missing for 16% of participants.

Comparison of the means of the Western Australian sample and the Canadian standardisation sample for the total and factor scores revealed only two significant differences. Specifically, there was a significant difference on Factor 2 DDF for males and the total sample respectively. When the effect size was calculated for each comparison it was found to be relatively small, indicating that the magnitude of the differences is minimal. Despite a significant difference between the Western Australian sample and the Canadian sample on Factor 2 DDF, in practical terms this difference was negligible. There were no significant differences on the total TAS-20 score between the two samples, indicating the results of the Western Australian sample were largely in accordance with the results of the Canadian sample.

In regards to the reliability of the TAS-20 in Western Australia, Cronbach's alpha was used to calculate the internal reliability coefficient, giving a measure of the internal consistency of the scale. The calculation was performed for the total TAS-20, in addition to each of the factors for the total sample and males and females separately. In each case, the alpha level was reported to be at a level acceptable for research purposes. The level of internal consistency reported in the current study appears to be largely in line with levels reported by previous researchers (Bagby, Parker, et al., 1994; Bagby, Taylor, & Atkinson, 1988; Parker, et al., 2003). As discussed in the literature review, previous researchers have reported alpha coefficients for the total TAS-20 at appropriate levels ranging from $\alpha = .76$ to $\alpha = .89$ across various studies (Bagby, Parker, et al., 1994; DeGucht, et al., 2004;

Haviland & Reise, 1996; Kooiman, et al., 2002; Loas, et al., 2001; Swift, et al., 2006).

The level of internal consistency generated for Factor 3 EOT in the current study was lower than for the total TAS-20, Factor 1 DIF and Factor 2 DDF. Previous researchers have reported similar results for Factor 3 EOT of the TAS-20, and factor analyses have yielded low factor loadings for Factor 3 EOT items (Kooiman, et al., 2002; Loas, et al., 2001; Muller, et al., 2003; Parker, et al., 1993). The low internal consistency of Factor 3 EOT therefore appears to be an on-going issue with the scale, and will be discussed later in this chapter.

The results of the CFA in the current study provide support for the three-factor structure of the TAS-20. Despite the fact the three and four-factor models produced similar scores on fit indexes and χ^2 , and therefore both provided a reasonable fit to the data, based on the principle of parsimony the simpler model is favoured. The confirmation of the three-factor structure is in accordance with the previous research of the original authors of the scale.

Despite providing general support for the three-factor model, the results of the current study highlight some psychometric weaknesses of the scale and points of consideration. Firstly, tests of discriminant validity in the current study revealed a lack of differentiation between Factor 1 DIF and Factor 2 DDF. This result is largely in accordance with that of previous research, which has indicated relatively high and low correlations between factors ranging from .20 between Factor 1 DIF and Factor 3 EOT to .80 between Factor 1 DIF and Factor 2 DDF (Loas, et al., 2001). Haviland and Reise (1996) reported a lack of distinction between the factors of the TAS-20 and suggest further evaluation of the correlations between the factors. Unlike the current study, however, the correlations between the factors in Parker et al.'s (2003)

study ranged from .49 to .73 for the three-factor model indicating discriminant validity on face value. Although a large degree of discrimination between the factors may be seen as problematic, it also provides evidence that each factor can be used to assess individual facets of alexithymia, and therefore calculating factor scores in addition to the total score of the TAS-20 for participants is important.

Secondly, factor loadings in the current study for the three-factor model ranged from .20 to .82. Although the majority of factor loadings were at an acceptable level, a number of low factor loadings raise questions as to the amount of variance in the factor that can be accounted for by these items. Previous researchers such as Gignac et al. (2007), Loas et al. (2001), and Meganck et al. (2008) have reported low factor loadings on some of the items, particularly on Factor 3 EOT. Loas et al. (2001) reported replicability of the three-factor structure, however, in accordance with the current study factor loadings as low as .17 were revealed. In particular, it is noted that despite the original authors reporting an overall good fit to the data, factor loadings ranged from .14 to .78 (Parker, et al., 1993). In the later study, low factor loadings were again reported suggesting there may be problems with some of the items (Parker, et al., 2003). As discussed in the literature review, researchers reporting low factor loadings on the scale have specified it is mostly those items loading on Factor 3 EOT.

The low factor loadings reported in the current study suggest there may be problems with the content of some of the items loading on Factor 3 EOT. In particular, items 5, 16 and 20 demonstrated the lowest factor loadings; however, it is unclear exactly why these particular items were identified as problematic. Additionally, given the problems identified with Factor 3 EOT researchers have argued there are a disproportionate number of items loading on this factor (Loas, et

al., 2001). In comparison to the remaining two factors, there are also a larger number of negatively keyed items; four of the five negatively keyed items are contained within Factor 3 EOT. Researchers have argued this could be problematic as people with alexithymia demonstrated an inflexible, stereotypical response style (DeGucht, et al., 2004).

In conjunction with low factor loading, low internal consistency for Factor 3 EOT was revealed in the current study and has been reported by a number of previous researchers (DeGucht, et al., 2004; Kooiman, et al., 2002; Loas, et al., 2001). In light of problems with this factor, Muller et al. (2003) proposed that Factor 3 EOT might be better represented by two separate factors. Accordingly, the current study assessed a four-factor model separating Factor 3 EOT into two distinct factors. The four-factor model provided a reasonable fit to the data, however, similar to the results for the three-factor model for factor loadings. The results of the current study provide evidence that a four-factor model is possible but not favourable over the three-factor model in the current form.

In further consideration of the problems identified with Factor 3 EOT, researchers have argued EOT may not be measuring what it is designed to measure (Loas, et al., 2001; Vorst & Bermond, 2001). Specifically, the number of factors represented in the TAS-20 significantly reduces the concept of alexithymia and particularly Factor 3 EOT does not indirectly measure fantasy or reduced emotional experience as the authors claim (Vorst & Bermond, 2001). Factor 3 EOT may not represent a salient feature of alexithymia and therefore low factors loadings and internal consistency on this item could be expected.

Limitations

The current study is limited by the fact that the level of education of the participants was not taken into account. As discussed in the literature review, previous researchers have demonstrated a link between fewer years of education and a higher incidence of alexithymia (Kokkonen, et al., 2001; Lane, et al., 1998; Salminen, et al., 1999). Information regarding education was collected in the Canadian standardisation sample and Parker and colleagues (2003) reported an average of 14.75 years of education. A large proportion of participants for the current Western Australian community sample were recruited through Edith Cowan University, specifically through the undergraduate psychology program. It is therefore unlikely the Western Australian community sample differed greatly from the Canadian sample, as the years of education of an undergraduate student would typically range from 12 to 14 years. It is also possible the participants recruited through these students were friends and family who may have obtained similar years of education. It is impossible to know for certain, however, how the current sample matched the Canadian standardisation sample in regards to education or whether it is representative of the Western Australian community.

Conclusion

Overall, despite some psychometric weaknesses of the scale, the results of the current study provide evidence for the use of the scale in a Western Australian sample. The CFA further provides general support for the three-factor structure of the TAS-20. A lack of significant differences between the Canadian sample and the Western Australian sample indicates the cut-off scores are applicable for use in Western Australia.

CHAPTER FOUR: STUDY TWO

Method and Analysis

The aim of study two was to determine the prevalence of alexithymia among male violent offenders as compared to males within the community. A quantitative approach was taken.

Participants

The researcher originally proposed to recruit approximately 100 male violent offenders. As a result of difficulties with the data collection process (refer Appendix B) the final sample of male violent offenders comprised 79 participants. Of the 79 participants, four cases contained missing data, leaving 75 valid cases for analysis. The cases containing missing data on the TAS-20 were excluded when necessary for the purposes of analysis. The mean age of participants was 36 years, with an age range of 19 to 69. As with the community sample, the vast majority of participants identified themselves as Australian born non-Indigenous with a much smaller percentage identifying as non-Australian born. Information regarding the cultural demographics of the violent offender sample can be seen in Table 17. Indigenous participants were excluded from the violent offender sample for reasons outlined in Appendix A. In order to provide an accurate comparison, only non-Indigenous males from the community sample ($n = 153$) were compared with the violent males.

Table 17

Cultural Demographics of the Violent and Non-Violent Offender Sample

Sample	Australian born non-Indigenous		Non-Australian born		Missing demographic information		Total number of participants
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
Violent offenders	48	60.8	6	7.6	25	31.6	79
Non-violent offenders	40	59.7	9	13.4	18	26.9	67

Instrument

As with Study One, the TAS-20 was the sole instrument utilised for Study Two. The total score of the TAS-20 for each participant was used to identify alexithymia. Those participants scoring above the cut-off score of 61 were deemed alexithymic. Please refer to Chapter One for details regarding the TAS-20. The Information Sheet and Consent Form were modified for the offender samples in accordance with ethics guidelines provided by the Department of Corrective Services (DOCS) Western Australia. Refer to Appendix E for in the Information Sheet and Consent Form supplied to offender participants.

Procedure

The participant recruitment for the violent offender sample was done through DOCS Western Australia. Following ethics approval from DOCS, staff of the Offender Programs Edith Cowan (OPEC) team were asked to identify violent offenders in prisons and on *Community Based Orders* (CBO) around Western

Australia. Prisons were initially contacted and informed of the purpose of the study and asked to participate. Community and Youth Justice (CYJ) were contacted regarding offenders on Parole or CBO's; however, they declined to assist with the research.

The criteria set for identifying violent offenders was based on offence type. Appendix F provides a complete list of offences classified as violent. All these offences by their very nature constituted violent behaviour or intention to commit violent behaviour. Sexual offenders were included provided they had additionally committed a violent crime that was not of a sexual nature.

Once a potential pool of participants was identified, letters were sent to participating prisons; Casuarina Prison, Karnet Prison Farm, and Wooroloo Prison Farm, containing the participant Information Sheet and Consent Form. Violent offenders who wished to participate were instructed to sign the consent form and post it back to OPEC via the internal mail system.

Administration of the TAS-20 took place in the Visits Centre at each of the prisons. The researcher and an OPEC staff member were present to administer the TAS-20. A brief explanation of the purpose of the research was detailed in each session and an explanation of the offender's rights. On average, four offenders attended each session and approximately 30 minutes was allocated for each session. Following collection of the data, each individual questionnaire was assigned a unique code, relating to participant group and Indigenous or non-Indigenous cultural group. The unique code was utilised for the purposes of analysis. Indigenous and non-Indigenous offenders were to be analysed separately in order to determine whether the scale is applicable for use with Western Australian Indigenous individuals.

During the initial administration of the TAS-20 at prisons, a number of problems were identified both with the administration of the instrument and the use of the instrument with Indigenous offenders. The researcher approached DOCS ethics to receive permission to alter the method of data collection, which is outlined in the following paragraphs. Consultation was sought with two Indigenous Psychologists following which it was decided to exclude Indigenous participants from the offender samples. Appendix A details the consultations and Appendix B details the methodological issues encountered.

Due to issues with the initial mode of data collection, the researcher subsequently proposed to distribute and administer the questionnaire by way of a mail-out system. The mail-out system was to involve posting the Information Sheet, Consent Form and questionnaires to offenders. The initial stage of the mail-out data collection therefore remained the same as the original method of data collection.

Offenders were identified in the same way as the initial data collection for the violent offender sample. Offenders who had already participated in the study were excluded from the mail-out. Following approval from the ethics committees of DOCS and Edith Cowan University in regards to the changes, Western Australian prisons were contacted once again with information regarding the new means of data collection. All prisons that were initially contacted agreed to participate and were amenable to the changes in the data collection. The mail-out system also meant regional prisons could now be contacted. Albany Regional Prison and Bunbury Regional Prison were contacted and both agreed to participate. In addition, Acacia prison which is a privately run prison in Western Australia agreed to participate in the mail-out.

A number of prisons were excluded from the research, namely regional prisons Broome, Greenough, Eastern Goldfields and Roebourne were excluded due to the high Indigenous population and extremely minor non-Indigenous population. Hakea Remand Centre was excluded due to the remand status on the offenders, meaning offenders had not been sentenced for their crimes and therefore could not be classified as violent or non-violent.

Offenders incarcerated at participating prisons were sent packages containing an Information Sheet and Consent Form which should they choose to participate, could then be posted internally back to OPEC. Following the return of the consent forms in the specified one-week turn-around, the questionnaires were then mailed to those who agreed to participate. The questionnaire mail-out additionally contained a further Information Sheet reiterating participants' rights and detailed instructions as how to complete the questionnaire (refer Appendix G).

Statistical Analysis

In order to determine whether the prevalence of alexithymia in male violent offenders differed from that of males in the community, the number of offenders scoring above the cut-off score was compared with the number of males identified as alexithymic in the community sample by way of a chi-square analysis (the Canadian cut-off scores were used as they were deemed suitable in Study One). Chi-square analysis enabled the researcher to meaningfully compare the prevalence of alexithymia between the two groups and according to Field (2009) is robust when sample sizes are uneven.

Results

The assumptions of independence of the data and expected frequencies greater than five for the chi-square were met. With the Indigenous males removed from the community sample, one of whom scored above the cut-off score for alexithymia, 14 male community participants were identified as alexithymic equating to approximately 10% of the sample. Of the 75 violent offenders, 30 were identified as alexithymic. This equates to approximately 40% of the violent offender sample. On face value, this figure is substantially greater than the 10% of the male community sample identified as alexithymic. The chi-square analysis was statistically significant at $\chi^2(1, n = 234) = 28.71, p < .000$. The results of the chi-square analysis support the hypothesis that male violent offenders are significantly more likely to be alexithymic as compared to community males. Based on the odds ratio this result indicates male violent offenders are 5.78 times more likely to be alexithymic than males in the community.

Discussion

The purpose of study two was to determine if there is a higher incidence of alexithymia among the sample of male violence offenders as opposed to the sample of males within the community. As expected, the results of study two are indicative that alexithymia is more prevalent among male violent offenders than among males in the community. Male violent offenders in the current study were over five times more likely to score above the cut-off score for alexithymia as compared to males in the community sample. Consequently the results for study two point to an association between alexithymia and violent offending among males. The results of study two would appear to be in line with previous research such as that of Keltikangas-

Jarvinen (1978), Louth, Hare, and Linden (1998) and Yelsma (1996) which has demonstrated a relationship between violence and alexithymia.

The finding of an association between violent offending and alexithymia is a significant one and has potential implications for offender management and treatment. Namely, a higher incidence of alexithymia in violent offenders would indicate a need to assess violent offenders for alexithymia before prescribing psychological interventions. Researchers indicate people with alexithymia typically respond poorly to interventions based on emotions and feelings and such therapies are unsuitable for people with alexithymia given the nature of the disorder (Freyberger, 1977; H. Krystal, 1982-1983; Porcelli et al., 2003; Taylor, 1984). These findings may in part account for the high recidivism rates and attrition from intervention programs for violent offenders.

Researchers report varying rates of recidivism following prison-based and community-based interventions for violent offenders, however, programs are often accompanied by high rates of attrition (Dowden & Andrews, 2000; Jones, 1991; Loza & Loza-Fanous, 1999; Piquero, 2003; Wormith & Olver, 2002). The national recidivism rate for Australia in 2009 was 56%, while Western Australia's rate was 38.3%. At the national level, 15.9% of the re-offending was for assaults, with a large percentage making up other violent offences.

In order to provide a proper assessment of alexithymia and tailor interventions to suit the needs of violent offenders who are alexithymic it is necessary to determine the exact nature of the association between alexithymia and violent offending. The nature of the association was explored in Study Three.

CHAPTER FIVE: STUDY THREE

Method and Analysis

To determine the nature of the association between male violent offending and alexithymia the researcher aimed to compare community males, male violent offenders and male non-violent offenders on the total score and each of the factors of the TAS-20.

Participants

In addition to the male community sample and male violent offender sample (refer Chapter Three and Chapter Four above), it was aimed to recruit 100 male non-violent offenders for the purposes of a comparison. Due to difficulties with the data collection outlined in Appendix B, the final sample comprised 67 participants. In total 1,687 Information Sheets and Consent Forms were posted to potential violent and non-violent offender participants and only 146 completed questionnaires were returned. This equates to a return rate of approximately 8.65%. Of the 67 non-violent offender participants, 62 cases were valid for analysis; the remaining five contained missing data. The mean age of participants was 39 years with a range of 19 to 74. The majority of participants identified themselves as Australian born non-Indigenous, with a much smaller percentage of non-Australian born participants. Refer to Table 17 above in Chapter Four for information regarding the cultural demographics of the sample. Females from the community sample and Australian born Indigenous participants were excluded from the sample.

Instrument

As with the first and second research question, the TAS-20 was the sole instrument utilised for study three. Please refer to Chapter One for details regarding the TAS-20. The Information Sheet and Consent Form for non-violent offenders was identical to that provided to the violent offenders, refer Appendix E

Procedure

As with violent offenders, non-violent offenders were recruited through OPEC at DOCS. Staff were asked to identify any male offender who had not committed a violent offence, and could therefore be considered a non-violent offender. Participants were again sent an envelope containing an Information Sheet and Consent Form and requested to send back the signed Consent Form in the return addressed envelope to DOCS if they wished to participate in the research. The participant recruitment and administration of the TAS-20 for the non-violent offender sample mirrored that of the violent offender sample and was conducted simultaneously. Prisons that were excluded in the violent offender sample were excluded in the non-violent offender sample. Please refer to Chapter Four for detailed information regarding participant recruitment.

Statistical Analysis

A Multivariate Analysis of Variance (MANOVA) was performed on the data. Assumption testing for the MANOVA was conducted prior to analysis of the data. Post-hoc Analyses of Variance (ANOVA) were then conducted to assess for any significant differences in the factor scores. Assumption testing for the ANOVAs was

conducted using Levene's statistic for homogeneity of variance and Shapiro-Wilks for univariate normality. Post-hoc pairwise analyses using Gabriel's pairwise test procedure were performed to compare the factor scores and total score of the different samples. Gabriel's procedure was elected in place of Tukey's Honestly Significant Difference procedure due to the increased power of this procedure when sample sizes are uneven (Field, 2009). A Bonferroni adjustment was additionally performed to counter the increased possibility of type one errors. The researcher proposed examination of factor score differences between the groups may provide further insight into the nature of the association between violent offending and alexithymia.

Results

The assumption of independent observations was met during the design and data collection phase of the study. An examination of the Shapiro-Wilks statistic indicated violations of the assumption of normality for each sample for Factor 1 DIF, and the non-violent sample for Factor 2 DDF. The assumption of multivariate normality cannot be directly assessed and was therefore assessed by way of the univariate normality test Shapiro-Wilks (Field, 2009; Stevens, 2002). Researchers indicate that MANOVAs are robust in terms of violations of normality and such violations have little effect on power or effect size (Stevens, 2002). The assumption of homogeneity of covariance matrices was met as indicated by Box's Test of Equality of Covariance Matrices.

A MANOVA was performed to assess for significant differences between the community sample, violent offender sample and non-violent offender sample on the scores of the TAS-20. Refer to Table 18 for the means and standard deviations of

each sample. Pillai's Trace indicated there was a significant difference between the three samples on the total score and each of the factor scores, $F(6, 572) = 21.414, p = .000$, partial $\eta^2 = .367$. In order to provide further information as to the difference post-hoc ANOVAs using Gabriel's procedure were performed on each of the factor and total scores of TAS-20 in each group.

Table 18

TAS-20 Means and Standard Deviations for Community Males and Offender Samples

TAS-20	Mean	SD
Community ($n = 153$)		
Total TAS-20	45.96	10.70
Factor 1 DIF	13.52	5.32
Factor 2 DDF	12.26	3.88
Factor 3 EOT	20.18	4.74
Violent offenders ($n = 75$)		
Total TAS-20	57.93	12.62
Factor 1 DIF	16.80	8.10
Factor 2 DDF	14.80	4.05
Factor 3 EOT	26.33	4.27
Non-violent offenders ($n = 62$)		
Total TAS-20	57.69	12.40
Factor 1 DIF	15.81	7.34
Factor 2 DDF	14.63	4.32
Factor 3 EOT	27.26	3.73

Prior to conducting the analysis, the assumptions of the ANOVA were examined. As with the MANOVA violations of the normality assumptions were reported for the ANOVAs. ANOVAs are robust in terms of violations of normality and as such, the violations were not considered to significantly raise the probability of type one errors or lower the power of the study (Stevens, 2002). Homogeneity of variance was violated for Factor 1 DIF, and according to Field (2009), ANOVAs are sensitive to violations of this assumption when sample sizes are unequal, as they are in the current study. In order to combat the possibility of type one errors Welch's F statistic was used for Factor 1 DIF only. In addition, the alpha level was adjusted by way of Bonferroni's adjustment to combat the increased possibility of type one errors. The Familywise alpha level of .05 was divided by the number of dependent variables (four) resulting in a more stringent alpha level of .0125.

The results of the ANOVAs depicting the pairwise comparisons are presented in Table 19. The ANOVA examining the total scores was statistically significant $F(2, 290) = 37.075, p = .000, \eta^2 = .054$ indicating that the total score for the TAS-20 was dependent on sample. Based on Welch's F statistic the results for the Factor 1 DIF were likewise statistically significant at $F(2, 124.889) = 7.822, p = .001, \eta^2 = 0.056$. Based on Gabriel's procedure the results for Factor 2 DDF were $F(2, 296) = 15.338, p = .000, \eta^2 = .093$ and Factor 3 EOT, $F(2, 294) = 81.954, p = .000, \eta^2 = .357$ were both statistically significant indicating that the scores were dependent upon the sample of participants.

As a result of the significant scores post hoc analyses were conducted. When the total scores of each of the samples were compared, there was a significant difference between the community sample and each of the violent offender and non-violent offender samples (refer to Table 19). The difference between the violent

offender group and non-violent group, however, was non-significant. The results for each of the factors largely replicated those of the total score. For each factor, there was a significant difference between the violent and non-violent offender samples and the community sample respectively while the difference between the violent and non-violent sample was non-significant. Due to the lack of significant differences between the violent and non-violent offender samples, further post hoc analyses were conducted.

Table 19

Results Depicting the Significance of Pairwise Comparisons

Sample	Violent Offender	Non-Violent Offender
Total Score		
Community	< .0001	< .0001
Violent Offender		.999
Factor 1		
Community	< .0001	.071
Violent Offender		.450
Factor 2		
Community	< .0001	< .0001
Violent Offender		.956
Factor 3		
Community	< .0001	< .0001
Violent Offender		.710

Post-Hoc Analysis

Due to a lack of significant difference between the violent offender sample and the non-violent offender sample on the ANOVAs, a post-hoc chi square analysis was conducted to determine if the difference in the prevalence of alexithymia in non-violent offenders was statistically different to that of violent offenders and that of community males.

In total 40% of the non-violent male offender sample were identified as alexithymic (refer Table 20). In comparison to the community male sample the difference was statistically significant at $\chi^2(1, n = 229) = 25.68, p < .00$. The result indicated that non-violent offender males are 6.16 times more likely to be alexithymia as compared to males within the community. The difference, however, between the violent and non-violent offending males was not statistically significant at $\chi^2(1, n = 137) = .176, p > .05$.

Table 20

Percentage of Offender Participants Scoring ≥ 61 on TAS-20

Sample	Australian born non-Indigenous		Non-Australian born		Missing information		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Violent offenders	20	25.3	1	3.0	9	11.4	30	40.0
Non-violent offenders	18	26.9	3	4.5	6	9.0	27	43.5

A non-significant difference between male violent offenders and male non-violent offenders indicates that alexithymia is associated with offending and not specifically violent offending. Obviously this result contradicts the original

hypothesis that alexithymia would be associated exclusively with violent offending. The implications of this finding are further discussed in the following sections.

Discussion

The aim of Study Three was to determine the exact nature of the association between male violent offending and alexithymia. The researcher anticipated that analysis of the factor scores would provide further insight into the nature of the association between male violent offending and alexithymia. The majority of previous researchers have examined the total scores of the TAS-20 without determining where exact associations or connections may lie. The review of the literature by the researcher highlighted common features of violence and alexithymia that may correspond with each of the factors of the TAS-20 (refer Table 7 in Chapter Two). Based on these findings it could be expected violent offenders would differ from community males on all factors of the TAS-20, however, no previous researchers had tested this assumption.

The results for Study Three indicated violent offenders differ from males in the community on all aspects of alexithymia as measured on the TAS-20 and there is no specific factor or feature of the disorder that can solely explain the nature of the association. Rather, some individuals with alexithymia are clearly predisposed to violence, but it is not a particular feature of the disorder per se that can explain violent behaviour in such individuals. Moreover, it is not merely violent offending that was associated with alexithymia, but offending in general.

An unexpected result of the current study was therefore that non-violent offenders, like violent offenders, were also more likely to be alexithymic compared to males in the community. This is an important and unique finding. Possible

explanations for this finding, including offending as risk-taking behaviour for people with alexithymia and the effects of incarceration on alexithymia, are discussed below.

Risk-taking involves an evaluation of possible costs and benefits with benefits typically inflated and potential costs minimised (Pallone & Hennessy, 1998). In order to effectively evaluate the costs and benefits of a decision to proceed or act in a certain manner one must rely on emotional memories in order to guide future responses (Mantani, Okamoto, Shirao, Okada, & Yamawaki, 2005). As people with alexithymia lack the ability to rely on emotions, their tendency towards risky decisions may be elevated above that of a person without alexithymia. Proponents of this theory, Pallone and Hennessy (1994, 1996, 1998) argue that people with alexithymia (who are lacking in imaginative capacity) may be more prone to boredom, and as a result, more actively seek stimulating activities such as criminal behaviour. Due to the nature of their disorder, people with alexithymia may have lower non-verbal intelligence and this could affect their ability to evaluate costs and benefits and choose effective ways of behaving (Pallone & Hennessy, 1998). People with alexithymia may therefore not be able to construe various responses and may act impulsively (Pallone & Hennessy, 1998).

Support for Pallone and Hennessy's (1994, 1996, 1998) theory is provided by Eastwood and colleagues' (2007) research. These researchers reported on a relationship between boredom and alexithymia. Their research demonstrated people with alexithymia were prone to boredom because of externally oriented thinking, or lack of imaginative life, and lack of awareness of emotions. The consequence of this relationship is that people with alexithymia will seek intense stimulation in order to

reduce boredom (which is typically short-lived) only to become bored again and the cycle continues (Eastwood, et al., 2007).

Further empirical support comes from researchers utilising the Iowa Gambling Task (Ferguson et al., 2009). The IGT entails participants making a series of decisions involving costs and benefits based on previous learning within the task. The researchers reported people with alexithymia were prone to taking more and more risks as the task progressed. The results indicated people with alexithymia were unable to draw on previous emotional information in order to guide their decisions. Furthermore, participants with alexithymia were seemingly less sensitive to losses as compared to participants without alexithymia and therefore more prone to taking risks (Ferguson, et al., 2009).

Pallone and Hennessy's (1994, 1996, 1998) theory also appears in line with research in the area of violent offending that indicates violent offenders are prone to impulsivity (Craig, et al., 2004, 2006; James & Seager, 2006; Komarovskaya, et al., 2007; Moeller, et al., 2001; Seager, 2005; Stuart & Holtzworth-Munroe, 2005). Based on Pallone and Hennessy's theory and the results of the various studies examining violence and impulsivity it would appear some offenders in the current study may have committed acts of crime because they were prone to boredom, unable to effectively evaluate possible responses to their acts and consequently acted impulsively. Whether the offence was violent or non-violent may have been dependent on other factors not examined in the current study. Furthermore, it would appear some of these offenders may be more likely to commit further offences as they will continually seek stimulation and cannot rely on emotional memories to guide their future actions or are less sensitive to the consequences of their actions.

The research discussed above suggests that risk-taking in people with alexithymia is a consequence of an inability to regulate responses due to deficits in evaluating costs and benefits because of impaired fantasy life and lack of emotional awareness. Woodman, Cazenave, and LeScanff (2008), however, have proposed risk-taking among people with alexithymia may also be a means of emotion regulation. Woodman et al. (2008) reported a significant reduction in anxiety, as measured by the State-Trait Anxiety Inventory (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983), for women who skydive as a result of completing a dive successfully. The reduction in anxiety was moderated by alexithymia. In accordance with Eastwood et al.'s (2007) results, the reduction in anxiety was short-lived and anxiety rose again until another dive was completed. Woodman et al. (2008) proposed engaging in a high risk activity such as sky-diving may give people with alexithymia a sense of control over what they are feeling, even if they cannot describe the experience.

Woodman et al.'s (2008) results appear to also be in line with Umberson et al.'s (2002) hypothesis that some people aggress or act out violently in order to relieve tension. In these situations violence is apparently used as a means of emotion regulation. Conversely, based on Woodman et al.'s (2008) results, it is also possible offenders with alexithymia may have committed criminal acts in order to experience a form of emotion, even if they are unsure of the exact emotion. For example, some offenders in the current study may have committed criminal acts (violent or non-violent) in order to feel a sense of exhilaration or relief from tension or anxiety. If the criminal act does serve either of these purposes, then they may be more likely to repeat the act, or similar acts again.

The aforementioned research of Eastwood et al. (2007), Ferguson et al. (2009) and Woodman et al. (2008) indicates alexithymia may be prevalent in offenders as a form of risk-taking behaviour. It is possible, however, that the results for the current study are merely an artefact of the situation of the offenders. Alexithymia is generally regarded as a stable personality trait that nonetheless interacts with environmental stressors. Anxiety has been associated with alexithymia and some researchers have demonstrated fluctuations, albeit minor, in the levels of alexithymia because of anxiety (Marchesi, Brusamonti, & Maggini, 2000; Picardi, et al., 2005). These researchers investigated students prior to examination, but incarceration is arguably a far more anxiety-provoking situation. Researchers have demonstrated severe anxiety can result as a consequence of incarceration and anxiety prevalence rates of up to 70% among incarcerated offenders (Kavanagh, Rowe, Hersch, Barnett, & Reznik, 2010; Way, Miraglia, Sawyer, Beer, & Eddy, 2005).

The current researcher could not find any articles that directly examined the relationship between incarceration, anxiety and alexithymia. In light of previous research findings that anxiety as result of examinations can lead to fluctuations in TAS-20 scores, it could be argued that anxiety as a result of incarceration would likewise have an influence on TAS-20 scores. Given that the offenders utilised for the current study were all incarcerated it is impossible to rule out the effects of incarceration and the implications of this on the results. Heightened anxiety may accentuate other disorders in offenders with co-morbid disorders or influence the responding style on psychological assessments. If this was the case, it could explain the lack of a statistically significant difference between non-violent offenders and violent offenders on TAS-20 scores in the current study. Essentially, the elevated level of anxiety experienced by incarcerated offenders may have induced state-

dependent alexithymic characteristics in some offenders that may otherwise not manifest.

In further regards to the offender's situation, it is a possibility that a number of non-violent offenders were included in the study that had also committed violent offences. The latest statistics indicate that only 31% of assault victims reported the incident to the police (Australian Bureau of Statistics, 2005). Repeat imprisonment rates were calculated at 56% around Australia (Australian Bureau of Statistics, 2010). As Felson (2008) demonstrated victims of domestic violence in particular are less likely to report offences to the police. The reasons for this were concern by the victims that police intervention would not help the situation. It is therefore a point of consideration that some of the non-violent offenders in the current may have previously engaged in violent behaviour but may not have been charged or convicted for these offences as the offence was unreported.

A further point of consideration in regards to the current results is the reduction of items directly relating to fantasy in the TAS-20. As discussed in the literature review, when Bagby, Parker, and Taylor (1994) revised the TAS-26 to the TAS-20 they eliminated a number of items directly relating to fantasy and argued fantasy was indirectly assessed in Factor 3 EOT. Researchers such as Vorst and Bermond (2001) have argued the reduction in fantasy items on the TAS-20 has reduced the construct and consequently the instrument does not measure the disorder as it was originally conceptualised. Researchers have argued the ability to escape into fantasy may act as a protective factor against committing acts of violence as one can imagine such an act and experience satisfaction through imagination or effectively evaluate costs and benefits (Keltikangas-Jarvinen, 1982; Pallone & Hennessy, 1996). In particular Keltikangas-Jarvinen's (1982) study, which is the only study the current

researcher could locate which directly examined the association between violence and alexithymia reported the inability to fantasise in violent offenders was fundamental to their behaviour. Problems with Factor 3 EOT were discovered in the current study and consequently the exact nature of the difference between the violent and non-violent offenders, if one exists, may not have been detected.

As discussed in the literature review, alexithymia has been associated with low socioeconomic status and lower levels of education (Lane, et al., 1998; Mattila, et al., 2006). Researchers such as Jolliffe and Farrington (2004) have demonstrated low socioeconomic status and low education levels are influential factors for offending. Data pertaining to socioeconomic status and years of education were not collected in the current study and therefore the researcher cannot say for certain whether the offenders were consistent with previous literature in this regard. The results may have been affected by the lower socioeconomic status and years of education of offenders and higher alexithymia scores may be an artefact of this association. The lack of differentiation between the violent and non-violent offenders in the current study could be accounted for by these variables.

Conclusion

The results of Study Three determined that male violent offenders are more likely to be alexithymic compared to males within a general community sample. The total score and all three factors scores of the TAS-20 in violent offenders were significantly different from those of males in the community. There is an association between male violent offending and alexithymia and the association is not exclusive. Non-violent offender males were just as likely as violent offenders to be alexithymia compared to community males as indicated by the scores on the TAS-20. This result

indicates it is not solely violent offending that is associated with alexithymia, but rather reckless (or offending) behaviour in general which incorporates violent offending in some instances. Alexithymia is associated with factors related to offending in general. The results of the current study therefore indicate that alexithymia is an area of research in offending behaviour that has previously been overlooked.

CHAPTER SIX: GENERAL DISCUSSION

The overarching aim of the current study was to explore the nature of the association between male violent offending and alexithymia. The study involved three stages, although it was initially proposed to conduct a fourth study. In light of variations in the factor structure among different samples reported by previous researchers, the current researcher originally proposed to conduct a fourth study investigating the factor structure of the TAS-20 in the violent and non-violent offender samples. Due to difficulties with the data collection, the offender samples were smaller than was anticipated. These small sample sizes meant it was impossible to conduct a meaningful CFA. Kline (2005) stated sample sizes of fewer than 100 are untenable for CFA. According to Brown (2006) the reason for this is the increased probability of fit indexes falsely rejecting models in cases of small sample sizes. Given the samples of 75 for violent and 62 non-violent, it was deemed inappropriate to attempt a CFA for the offender samples and the fourth study was abandoned.

The first stage of the current study was aimed at ascertaining whether the TAS-20 was applicable for use with a Western Australian sample and whether the means of the Western Australian community sample were comparable with the original Canadian sample. Coefficient alpha's were generally good with the exception of Factor 3 EOT. A CFA revealed the three-factor structure as having the best fit to the data and in accordance with the original factor structure as proposed by the authors of the scale. The results of Study One therefore provide evidence for the utility of the TAS-20 in Western Australia with non-Indigenous participants.

Study One revealed some psychometric weaknesses of the scale including low Coefficient alpha's for Factor 3 EOT. A number of low factor loadings were also

revealed in accordance with previous studies. This result would appear to highlight the need to re-evaluate certain items, particularly those loading on Factor 3 EOT. Similarly, a lack of discrimination between Factor 1 DIF and Factor 2 DDF would suggest significant overlap between some of the items on these factors. The authors of the scale have been criticised for unevenly distributed items among the factors and a larger number of negatively keyed items on Factor 3 EOT (Vorst & Bermond, 2001). Problems were identified with Factor 3 EOT in the current study. Previous researchers have reported problems with this factor, and questions have been raised as to whether or not the factor measures what the authors claim it measures, particularly in relation to fantasy (Loas, et al., 2001; Vorst & Bermond, 2001).

The second and third studies involved determining the prevalence of alexithymia among male violent offenders and exploring the exact nature of the association by examination of the factor scores. Violence has previously been associated with alexithymia in a small number of clinical and research reports (Keltikangas-Jarvinen, 1982; Kroner & Forth, 1995; H. Krystal, 1979; Nemiah, 1978; Yelsma, 1996). Flaws with the previous studies made it difficult to draw conclusions and Keltikangas-Jarvinen (1982) who was the only researcher to examine the association exclusively relied on projective measures and interviews which are not accurate means of assessing alexithymia. Furthermore, none of the previous studies were aimed at examining the nature of the association. The principal hypothesis of the current study was supported and male violent offending was significantly associated with alexithymia, with higher TAS-20 scores for male violent offenders compared to males from the community sample. Moreover, violent males were over five times more likely to be classified as alexithymic than males in the community.

The results of the current research therefore provide further evidence of an association between violent offending and alexithymia and support for previous research. The current results provide empirical support to Nemiah (1978) and H. Krystal's (1979) clinical observations that people with alexithymia may be prone to violence because of their difficulties understanding and communicating their emotions. The results of Keltikangas-Jarvinen (1982) who reported alexithymia among a sample of male violent offenders as measured through projective measures were also supported as were the results of Yelsma (1996) who demonstrated alexithymia was found among partner violence perpetrators. Louth et al. (1998) whose research revealed alexithymia was prevalent among female violent offenders was corroborated using male violent offenders and more effective means of assessing alexithymia.

Higher scores on each factor and the total TAS-20 scores were statistically and significantly associated with violent offending. The nature of the association is therefore that alexithymia in general is associated with male violent offending. No particular factor of the TAS-20 was revealed as defining the association. An unexpected result was also reported and non-violent offenders were just as likely to be diagnosed as alexithymic as compared to violent offenders. Higher scores on each of the factors of the TAS-20 and the total TAS-20 were associated with non-violent offending. The results of Study Two and Three therefore indicate that the association between male violent offending and alexithymia is not exclusive. In conjunction with the results for the violent offender sample, the findings of the research are that alexithymia is associated with offending.

An in-depth discussion of the possible reasons why alexithymia was associated with both violent and non-violent offenders is contained in Chapter Five

and will not be repeated here. Rather the implications of the results for the assessment and treatment of offenders, limitations of the study and directions for future research are discussed in this chapter.

Implications for Assessment and Treatment of Offenders

The finding that alexithymia is associated with violent offending is notable, as is the finding that alexithymia was prevalent among non-violent offenders. In particular, these findings have implications for the assessment and subsequent treatment of offenders. As outlined in the literature review the risk-needs-responsivity model dictates offender treatment should be matched to the risk level of the offender, their criminogenic needs and in many cases non-criminogenic needs which can include, among others, criminal or antisocial attitudes, lack of social support for pro-social behaviour, self-control and negative emotionality (Andrews & Bonta, 2003). The association between alexithymia and offending in the current study suggests that alexithymia is a criminogenic need to be addressed in treatment.

According to the risk-needs-responsivity model the delivery style of treatment should be targeted to the learning and ability of the offender (Andrews & Bonta, 2003). The presence of alexithymia would mean that any intervention that is emotion based, insight oriented or even empathy based may have little impact on the offender and the offending behaviour. Clinical reports and empirical evidence suggest that people with alexithymia respond poorly to such interventions (Freyberger, 1977; H. Krystal, 1982-1983; McCallum, et al., 2003; Piper, Joyce, Azim, et al., 1998). This is largely due to a lack of introspection and an inability to learn and or process emotional information (Freyberger, 1977). In some cases, it has been reported that group therapy, as is often conducted in the prison setting, with

people with alexithymia resulted in negative reactions from the facilitator due to the lack of emotional response in the participants (Ogrodniczuk, et al., 2010). One way of addressing this issue, as implied by Freyberger (1977) when discussing individual therapy for alexithymia, may be to place greater emphasis on building relationships within the group.

As previously discussed both clinical reports and empirical evidence have demonstrated people with alexithymia have deficits in empathy (Guttman & Laporte, 2002; H. Krystal, 1982-1983; Moriguchi, et al., 2007). Unlike violent offenders who are not alexithymic and could arguably respond to such interventions, people with alexithymia do not possess the capacity for empathy. Emphasis on eliciting empathy, which is a frequent component of many individual and group based interventions for violent offenders, is therefore likely to have little impact on offenders with alexithymia. Attempts to engage offenders who are alexithymic in interventions based on developing empathy may be unsuccessful.

Overall, the current results indicate alexithymia is prevalent among offenders and therefore is representative of a need to be assessed and addressed in treatment. A failure to address alexithymia is a failure of responsiveness and will inevitably result in poor treatment outcomes. This is not to say that offenders with alexithymia cannot respond to therapy. Rather, alternative forms of treatment such as supportive therapy or more behavioural approaches are recommended (Freyberger, 1977; Taylor, et al., 1997). Ideally, alexithymia issues should be addressed prior to any treatment to address offending behaviour. Group therapy, if modified appropriately to place greater emphasis on education of alexithymia symptoms and behavioural techniques of dealing with these symptoms has been shown to be effective with some alexithymic people (Iaso Fukunishi, Ichikawa, Ichikawa, & Matsuzawa, 1994). By

educating offenders with alexithymia on the nature of their disorder and teaching them to understand and communicate their emotions, any treatment that followed would arguably be more effective with these skills and knowledge in place.

Research Implications

The results of the current study have implications for future research in the area of both alexithymia and offending. Firstly, given the high prevalence of alexithymia among both violent and non-violent offenders it would appear the disorder is a necessary consideration or potential confounding variable when conducting research among offenders, particularly those who are incarcerated. It is possible that many features associated with violent offending, such as impulsivity, the association could be accounted for or compounded by the presence of alexithymia.

Secondly, given the psychometric weakness of the scale revealed in the current study, in conjunction with similar reports from previous researchers it would appear necessary to determine the applicability of the scale prior to conducting research in any new populations. Although the scale has been translated into various languages and utilised in many different cultures the generalizability of the scale is not guaranteed. The researcher encountered problems with the use of the scale with Indigenous offenders. Through consultation with two Indigenous Psychologists (refer Appendix B) the researcher gained insight as to the reasons why the TAS-20 may not be appropriate for use with Western Australian Indigenous people.

Furthermore, problems with the scale itself should be addressed and the implications this may have on research results acknowledged. For example, the low factor loadings and lack of discriminate validity reported in the current study raise

some questions as to the validity of the scale, in particular for Factor 3 EOT. What is more, it cannot be ruled out that the removal of items directly relating to fantasy implicated on the current results. Previous researchers had reported a lack of fantasy as a risk factor for violent behaviour in people with alexithymia (Keltikangas-Jarvinen, 1982). A significant difference may therefore have been discovered between violent and non-violent offenders had the items pertaining to fantasy been retained. The results of the current study, in conjunction with the results of many previous studies highlight a need for further research on the scale and possible re-defining of some of the items particularly those on Factor 3 EOT.

Limitations

There were a number of limitations in the current study that need to be considered. Firstly, the sample sizes for the offending samples were smaller than anticipated due to difficulties with data collection. As a result of difficulties encountered with CYJ, a division within the DOCS it was not possible to engage offenders in the community and consequently only incarcerated offenders were able to participate in the research. The use of only an incarcerated offender sample meant the possible confounding effects of incarceration, such as increased anxiety, which can have implications on the scores of the TAS-20, could not be controlled.

The small sample sizes of the offender samples also meant the fourth research question relating to the factor structure of the TAS-20 in the offender samples could not be investigated. As a result, it remains unclear whether the three factor structure of the TAS-20 is applicable in a Western Australian offender sample.

In hindsight, it would have also been beneficial to incorporate a personality assessment to assess for the presence of certain personality traits and mental

disorders such as anxiety and depression which previous researchers have demonstrated are mediated by alexithymia (Honkalampi, Hinitikki, et al., 2000; Honkalampi, et al., 2001). Given the known relationship of depression and anxiety with alexithymia, this information could have eliminated possible confounding variables or provided a greater understanding of the nature of the association between violent offending and alexithymia.

Future Research

The current study paves the way for future research in the area. In particular, there appears to be a need to further explore the nature of the association between male violent offending and alexithymia. The current study demonstrated an association does exist, however, the nature of the association was not revealed by examination of the factor scores. Furthermore, non-violent offending was also associated with alexithymia indicating that alexithymia is associated with offending in general or that other factors mediate the association. It is possible greater insight may be gained by exploring personality traits in conjunction with alexithymia features, and determine why some individuals with alexithymia are more prone to violence. It would also be beneficial to replicate the research using samples of incarcerated and community-based offenders to determine the confounding effects of incarceration.

Any future researchers in this area should also consider accounting for education and socioeconomic status. Previous researchers have demonstrated that fewer years of education and lower socioeconomic status are associated with a higher incidence of alexithymia and can influence alexithymia scores (Lane, et al., 1998; Mattila, et al., 2006). It is possible these variables will play a mediating role.

The possibility that the current study's findings are the product of problems with certain items in the scale cannot be eliminated. Moreover, although the scale overall was applicable for use in Western Australia problems with the factor loadings and in particular the validity of Factor 3 EOT indicate the need for further research on the scale. Alternative methods of assessing alexithymia in a culturally appropriate manner also require attention.

Conclusion

Overall the results of the CFA indicated the factor structure was stable and reliable and the means of the original Canadian sample were comparable with the means of the Western Australian community sample. Some psychometric weaknesses of the scale were revealed including low factor loadings on some of the items and low validity of Factor 3 EOT, which has implications on the scale as whole. In conjunction with the findings from previous researchers, the current results highlight the need for further research on the scale. The results were nonetheless indicative that the TAS-20 is applicable for use in a Western Australian sample. The results of the consultations with Indigenous Psychologists, however, suggest the scale is most likely not applicable with Western Australian Indigenous people.

The current study succeeded in demonstrating an association between male offending, both violent and non-violent, and alexithymia in Western Australia. The results of the current study therefore fill a gap in the research by indicating an association between male violent offending and alexithymia, and identified a previously undiscovered association between male non-violent offending and alexithymia. While previous researchers have examined the relationship between risk-taking and alexithymia, no study to date has apparently explored this association

in a forensic setting in Australia. There was no statistically significant difference between the violent and non-violent samples and that indicated alexithymia was associated with offending in general. This is a unique and significant finding and has implications for assessment and treatment of offenders and future research.

REFERENCES

- Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modelling in practice: A review and recommended two-step approach. *Psychological Bulletin*, *103*(3), 411-423.
- Andrews, D. A., & Bonta, J. (2003). *The psychology of criminal conduct* (Second ed.). Cincinnati, Ohio: Anderson Publishing Co.
- Apfel, R. J., & Sifneos, P. E. (1979). Alexithymia: Concept and measurement. *Psychotherapy and Psychosomatics*, *32*, 180-190.
- Appelbaum, S. A. (1973). Psychological-mindedness: Word, concept and essence. *International Journal of Psycho-analysis*, *54*, 35-46.
- Austin, E. J., Saklofske, D. H., & Egan, V. (2005). Personality, well-being and health correlates of trait emotional intelligence. *Personality and Individual Differences*, *38*, 547-558.
- Australian Bureau of Statistics. (2005). Crime and safety, Australia. Canberra, ACT: Author.
- Australian Bureau of Statistics. (2006a). Population characteristics, Aboriginal and Torres Strait Islander Australians, Western Australia Canberra, ACT: Author.
- Australian Bureau of Statistics. (2006b). Prisoners in Australia Canberra, ACT: Author.
- Australian Bureau of Statistics. (2007). Feature article 2: Cultural diversity in Western Australia Canberra, ACT: Author
- Australian Bureau of Statistics. (2010). Repeat Imprisonment *Australian Social Trends*. Canberra, Australia.
- Bagby, R. M., Parker, J. D. A., & Taylor, G. J. (1991). Reassessing the validity and reliability of the MMPI Alexithymia Scale. *Journal of Personality Assessment*, *56*, 238-253.
- Bagby, R. M., Parker, J. D. A., & Taylor, G. J. (1994). The twenty-item Toronto Alexithymia Scale - I. Item selection and cross-validation of the factor structure. *Journal of Psychosomatic Research*, *38*, 23-32.
- Bagby, R. M., Quilty, L. C., Taylor, G. J., Grabe, H. J., Luminet, O., Verissimo, R., . . . Vanheule, S. (2009). Are there subtypes of alexithymia? *Personality and Individual Differences*, *47*, 413-418.
- Bagby, R. M., Taylor, G. J., & Atkinson, L. (1988). Alexithymia: A comparative study of three self-report measures. *Journal of Psychosomatic Research*, *32*, 107-116.
- Bagby, R. M., Taylor, G. J., & Parker, J. D. A. (1988). Construct validity of the Toronto Alexithymia Scale. *Psychotherapy and Psychosomatics*, *50*, 29-34.
- Bagby, R. M., Taylor, G. J., & Parker, J. D. A. (1994). The twenty-item Toronto Alexithymia Scale - II. Convergent, discriminant and concurrent validity. *Journal of Psychosomatic Research*, *38*, 33-40.

- Bagby, R. M., Taylor, G. J., & Ryan, D. (1986a). Toronto Alexithymia Scale: Relationship with personality and psychopathology measures. *Psychotherapy and Psychosomatics*, *45*, 207-215.
- Bagby, R. M., Taylor, G. J., & Ryan, D. P. (1986b). The measurement of alexithymia: Psychometric properties of the Schalling-Sifneos Personality Scale. *Comprehensive Psychiatry*, *27*, 287-294.
- Bandura, A. (1973). *Aggression: a social learning analysis*. New Jersey, USA: Prentice-Hall Inc.
- Bard, P. (1928). A diencephalic mechanism for the expression of rage with special reference to the sympathetic nervous system. *American Journal of Physiology*, *84*, 490-515.
- Bash, K. W. (1986). Psychosomatic diseases and the Rorschach Test. *Journal of Personality Assessment*, *50*, 350-357.
- Becarra, R., Amos, A., & Jongenelis, S. (2002). Organic alexithymia: a study of acquired emotional blindness. *Brain Injury*, *16*(7), 633-645.
- Beck, R., & Fernandez, E. (1998). Cognitive-behavioral therapy in the treatment of anger: A meta-analysis. *Cognitive Therapy and Research*, *22*, 63-74.
- Berenbaum, H. (1996). Childhood abuse, alexithymia and personality disorder. *Journal of Psychosomatic Research*, *41*, 585-595.
- Berenbaum, H., & Irvin, S. (1996). Alexithymia, anger and interpersonal behavior. *Psychotherapy and Psychosomatics*, *65*, 203-208.
- Berenbaum, H., & James, T. (1994). Correlates and retrospectively reported antecedents of alexithymia. *Psychosomatic Medicine*, *1994*, 353-359.
- Berenbaum, H., & Prince, J. D. (1994). Alexithymia and the interpretation of emotion relevant information. *Cognition and Emotion*, *8*, 231-244.
- Beresnevaite, M. (2000). Exploring the benefits of group psychotherapy in reducing alexithymia in coronary heart disease patients: A preliminary study. *Psychotherapy and Psychosomatics*, *69*, 117-122.
- Berkowitz, L. (1962). *Aggression: A social psychological analysis*. New York: McGraw-Hill.
- Bermond, B. (1997). Brain and alexithymia. In A. Vingerhoets, F. Bussell & J. Boelhouwer (Eds.), *The (non) expression of emotions in health and science* (pp. 115-130). Tilburg, The Netherlands: Tilburg University Press.
- Berthoz, S., Artiges, E., Moortele, P.-F. V. d., Poline, J.-B., Rouquette, S., Consoli, S. M., & Martinot, J.-L. (2002). Effect of impaired recognition and expression of emotions on frontocingulate cortices: An fMRI study of men with alexithymia. *The American Journal of Psychiatry*, *159*, 961-967.
- Berthoz, S., Perdereau, F., Godart, N., Corcos, M., & Haviland, M. G. (2007). Observer- and self-rated alexithymia in eating disorder patients: Levels and correspondence among three measures. *Journal of Psychosomatic Research*, *62*, 341-347.

- Besharat, M. A. (2007). Reliability and factorial validity of a Farsi version of the 20-item Toronto Alexithymia Scale with sample of Iranian students. *Psychological Reports, 101*, 209-220.
- Bjorkqvist, K., Osterman, K., & Kaukiainen, A. (2000). Social intelligence - empathy = aggression. *Aggression and Violent Behavior, 5*, 191-200.
- Blackburn, R. (1993). *The psychology of criminal conduct*. West Sussex, England: John Wiley & Sons Ltd.
- Blanchard, E. B., Arena, J. G., & Pallmeyer, T. P. (1981). Psychometric properties of a scale to measure alexithymia. *Psychotherapy and Psychosomatics, 35*, 64-71.
- Brown, T. A. (2006). *Confirmatory factor analysis for applied research*. New York, USA: The Guildford Press.
- Bushman, B. J., Phillips, C. M., & Baumeister, R. F. (2001). Do people aggress to improve their mood? Catharsis beliefs, affect regulation opportunity, and aggressive responding. *Journal of Personality and Social Psychology, 81*, 17-32.
- Byrne, B. M., Oakland, T., Leong, F. T. L., van de Vijver, F., Hambleton, R. K., Cheung, F. M., & Bartram, D. (2009). A critical analysis of cross-cultural research and testing practices: Implications for improved education and training in psychology. *Training and Education in Professional Psychology, 3*, 94-105.
- Carlson, B. E. (2005). The most important things learned about violence in the past 20 years. *Journal of Interpersonal Violence, 20*, 119-126.
- Catchlove, R. F. H., Cohen, K. R., Braha, R. E. D., & Demers-Desrosiers, L. A. (1985). Incidence and implications of alexithymia in chronic pain patients. *The Journal of Nervous and Mental Disease, 173*(4), 246-248.
- Cercero, J. C., & Holmstrom, R. W. (1997). Alexithymia and affect pathology among adult male alcoholics. *Journal of Clinical Psychology, 53*, 201-208.
- Chatzi, L., Bitsios, P., Solidaki, E., Christou, I., Evridiki Kyrilaki, Sfakianaki, M., . . . Pappas, A. (2009). Type 1 diabetes is associated with alexithymia in nondepressed, non-mentally ill diabetic patients: A case-control study. *Journal of Psychosomatic Research, 67*, 307-313.
- Cleland, C., Magura, S., Foote, J., Rosenblum, A., & Kosanke, N. (2005). Psychometric properties of the Toronto Alexithymia Scale (TAS-20) for substance users. *Journal of Psychosomatic Research, 58*, 299-306.
- Cohen, K., Auld, F., Demers, L., & Catchlove, R. (1985). Alexithymia: The development of a valid and reliable projective measure (the Objectively Scored Archetypal 9 Test). *The Journal of Nervous and Mental Disease, 173*, 621-627.
- Cohen, K. R., Demers-Desrosiers, L. A., & Catchlove, R. F. H. (1983). The SAT9: A Quantitative scoring system for the SAT9 test as a measure of symbolic function central to alexithymic presentation. *Psychotherapy and Psychosomatics, 39*(2), 77-88.

- Conte, H. R., Plutchika, R., Junga, B. B., Picarda, S., Karasua, T. B., & Lottermanna, A. (1990). Psychological Mindedness as a predictor of psychotherapy outcome: A preliminary report. *Comprehensive Psychiatry*, *31*(5), 426-431.
- Corvo, K. (2006). Violence, separation, and loss in the families of origin of domestically violent men. *Journal of Family Violence*, *21*, 117-125.
- Costa, A., Peppe, A., Carlesimo, G., Salamone, G., & Caltagirone, C. (2010). Prevalence and characteristics of alexithymia in parkinson's disease. *Psychosomatics*, *51*(1), 22-28.
- Covell, C. N., & Scalora, M. J. (2002). Empathic deficits in sexual offenders. An integration of affective, social, and cognitive constructs. *Aggression and Violent Behavior*, *7*, 251-271.
- Craig, L. A., Browne, K. D., Beech, A., & Stringer, I. (2004). Personality characteristics associated with reconviction in sexual and violent offenders. *The Journal of Forensic Psychiatry & Psychology*, *15*, 532-551.
- Craig, L. A., Browne, K. D., Beech, A., & Stringer, I. (2006). Differences in personality and risk characteristics in sex, violent and general offenders. *Criminal Behaviour and Mental Health*, *16*, 183-194.
- . Criminal Code (1913). Western Australia.
- Davey, L., Day, A., & Howells, K. (2005). Anger, over-control and serious violent offending. *Aggression and Violent Behavior*, *10*, 624-635.
- Davies, M. (1990). Balance between court and client. *Community Care*, *25*, 16-17.
- Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology*, *44*, 113-126.
- Day, A., Davey, L., Wanganeen, R., Casey, S., Howells, K., & Nakata, M. (2008). Symptoms of trauma, perceptions of discrimination, and anger: A comparison between Australian indigenous and nonindigenous prisoners. *Journal of Interpersonal Violence*, *23*, 245-258.
- Day, A., Mohr, P., Howells, K., Gerace, A., & Lim, L. (2007). *The role of empathy in anger arousal in violent offenders*.
- de M'Uzan, M. (1974). Psychodynamic mechanisms in psychosomatic symptoms formation. *Psychotherapy and Psychosomatics*, *23*, 103-110.
- DeGucht, V., Fontaine, J., & Fischler, B. (2004). Temporal stability and differential relationships with neuroticism and extraversion of the three subscales of the 20-item Toronto Alexithymia Scale in clinical and nonclinical samples. *Journal of Psychosomatic Research*, *57*, 25-33.
- Delsol, C., & Margolin, G. (2004). The role of family-of-origin violence in men's marital violence perpetration. *Clinical Psychology Review*, *24*, 99-122.
- Demers-Desrosiers, L. A. (1985). Empirical journey into the measurement of symbolic function as a dimension of alexithymia. *Psychotherapy and Psychosomatics*, *44*, 65-71.

- Demers-Desrosiers, L. A., Cohen, K. R., Catchlove, R. F. H., & Ramsay, R. A. (1983). The measure of symbolic function in alexithymia pain patients. *Psychotherapy and Psychosomatics*, *39*, 65-76.
- Department of Corrective Services: Western Australia. (2005-2006). Annual Report. Western Australia: Author.
- Dion, K. L. (1996). Ethnolinguistic correlates of alexithymia: Towards a cultural perspective. *Journal of Psychosomatic Research*, *41*, 531-539.
- Dollard, J., Miller, N. E., Doob, L. W., Mowrer, O. H., & Sears, R. R. (1939). *Frustration and aggression*. New Haven, CT: Yale University Press.
- Doob, A. N., & Brodeur, J.-P. (1989). Rehabilitating the debate on rehabilitation. *Canadian Journal of Criminology*, *31*, 179-192.
- Dowden, C., & Andrews, D. A. (2000). Effective correctional treatment and violent reoffending: a meta-analysis.(Canada). *Canadian Journal of Criminology*, *42*, 449.
- Eastwood, J. D., Cavaliere, C., Fahlman, S. A., & Eastwood, A. E. (2007). A desire for desires: Boredom and its relationship to alexithymia. *Personality and Individual Differences*, *42*, 1035-1045.
- Edin, K. E., Lalos, A., Högberg, U., & Dahlgren, L. (2008). Violent men: Ordinary and deviant. *Journal of Interpersonal Violence*, *23*, 225-244.
- Eysenck, S. B. G., Pearson, P. R., Easting, G., & Allsopp, J. F. (1985). Age norms for impulsiveness, venturesomeness and empathy in adults. *Personality and Individual Differences*, *6*, 613-619.
- Faryna, A., Rodenhauer, P., & Torem, M. (1986). Development of an analog alexithymia scale: Testing in a nonpatient population. *Psychotherapy and Psychosomatics*, *45*, 201-206.
- Fava, G. A., Freyberger, H. J., Bech, P., Christodoulo, G., Sensky, T., Theorell, T., & Wise, T. N. (1995). Diagnostic criteria for use in psychosomatic research. *Psychotherapy and Psychosomatics*, *63*, 1-8.
- Federman, R., & Mohns, E. (1984). A validity study of the MMPI alexithymia subscale conducted on migraine headache outpatients. *Psychotherapy and Psychosomatics*, *41*, 29-32.
- Felson, R. B. (2008). The legal consequences of intimate partner violence for men and women. *Childre and Youth Services Review*, *30*, 639-646.
- Ferguson, E., Bibby, P. A., Rosamond, S., O'Grady, C., Parcell, A., Amos, C., . . . O'Carroll, R. (2009). Alexithymia, cumulative feedback, and differential response patterns on the Iowa Gambling Task. *Journal of Personality* *77*, 883-902.
- Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). London: Sage.
- Fields, A. J. (2010). Multicultural research and practice: Theoretical issues and maximising cultural exchange. *Professional Psychology: Research and Practice*, *41*, 196-201.

- Fischer, A. R., & Good, G. E. (1997). Men and psychotherapy: An investigation of alexithymia, intimacy and masculine gender roles. *Psychotherapy, 34*, 160-170.
- Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of Marketing Research, 18*, 382-388.
- Freud, S. (1920). *A general introduction to psychoanalysis*. New York, USA: Boni & Liveright, Inc.
- Freud, S. (1924). *A general introduction to psychoanalysis*. New York, USA: Washington Square Press Inc.
- Freyberger, H. (1977). Supportive psychotherapeutic techniques in primary and secondary alexithymia. *Psychotherapy and Psychosomatics, 28*, 337-342.
- Fukunishi, I., Ichikawa, M., Ichikawa, T., & Matsuzawa, K. (1994). Effect of family group psychotherapy on alcoholic families. *Psychological Reports, 74*, 568-570.
- Fukunishi, I., & Rahe, R. A. (1995). Alexithymia and coping with stress in healthy persons: Alexithymia as a personality trait is associated with low social support and poor response to stress. *Psychological Reports, 76*, 1299-1304.
- Fukunishi, I., Wise, T. N., Sheridan, M., Shimai, S., Otake, K., Utsuki, N., & Uchiyama, K. (2001). Association of emotional intelligence with alexithymic characteristics. *Psychological Reports, 89*, 651-658.
- Garb, H. N., Wood, J. M., Lilienfeld, S. O., & Nezworski, M. T. (2005). Roots of the Rorschach controversy. *Clinical Psychology Review, 25*, 97-118.
- Gardos, G., Schniebolk, S., Mirin, S. M., Wolk, P. C., & Rosenthal, K.-L. (1984). Alexithymia: Towards validation and measurement. *Comprehensive Psychiatry, 25*, 278-282.
- Geisinger, K. F. (1994). Cross-cultural normative assessment: Translation and adaptation issues influencing the normative interpretation of assessment instruments. *Psychological Assessment, 6*, 304-312.
- Gendreau, P., Little, T., & Goggin, C. (1996). A meta-analysis of the predictors of adult offender recidivism: What works! *Criminology, 34*, 575-607.
- Gendreau, P., & Ross, R. R. (1987). Revivification of rehabilitation: Evidence from the 1980s. *Justice Quarterly, 4*, 349-407.
- Gignac, G. E., Palmer, B. R., & Stough, C. (2007). A confirmatory factor analytic investigation of the TAS-20: Corroboration of a Five-Factor Model and suggestions for improvement. *Journal of Personality Assessment, 89*, 247-257.
- Glueck, S., & Glueck, E. (1950). *Unraveling juvenile delinquency*. Cambridge, Massachusetts: Harvard University Press.
- Golding, J. M. (1999). Intimate partner violence as a risk factor for mental disorders: A meta-analysis. *Journal of Family Violence, 14*, 99-132.

- Goldstein, H., & Higgins-D'Alessandro, A. (2001). Empathy and attachment in relation to violent vs non-violent offense history among jail inmates. *Journal of Offender Rehabilitation, 32*, 31-53.
- Gottfredson, M. R., & Hirschi, T. (1990). *A general theory of crime*. California, USA: Stanford University press.
- Grabe, H. J., Frommer, J., Ankerhold, A., Ulrich, C., Gröger, R., Franke, G. H., . . . Spitzer, C. (2008). Alexithymia and outcome in psychotherapy. *Psychotherapy and psychosomatics, 77*, 189-194.
- Greenberg, R. P., & O'Neill, R. M. (1988). The construct validity of the MMPI Alexithymia Scale with psychiatric inpatients. *Journal of Personality Assessment, 52*, 459-464.
- Groth-Marnat, G. (2003). *Handbook of psychological assessment* (4th ed.). New Jersey, USA: John Wiley & Sons, Inc.
- Groth-Marnat, G. (2009). *Handbook of psychological assessment* (5th ed.). New Jersey, USA: John Wiley & Sons Inc.
- Guttman, H., & Laporte, L. (2002). Alexithymia, empathy and psychological symptoms in a family context. *Comprehensive Psychiatry, 43*, 448-455.
- Hambleton, R. K., & Kanjee, A. (1995). Increasing the validity of cross-cultural assessments: Use of improved methods for test adaptations. *European Journal of Psychological Assessment, 11*, 147-157.
- Haviland, M. G., & Reise, S. P. (1996). Structure of the twenty-item Toronto Alexithymia Scale. *Journal of Personality Assessment, 66*, 116-125.
- Haviland, M. G., Warren, W. L., & Riggs, M. L. (2000). An observer scale to measure alexithymia. *Psychosomatics, 41*(5), 385-392.
- Haviland, M. G., Warren, W. L., Riggs, M. L., & Gallacher, M. (2001). Psychometric properties of the observer alexithymia scale in a clinical sample. *Journal of Personality Assessment, 77*, 176-186.
- Haviland, M. G., Warren, W. L., Riggs, M. L., & Nitch, S. R. (2002). Concurrent validity of two observer-rated alexithymia measures. *Psychosomatics 43*(6), 472-477.
- Hazebroek, J., Howells, K., & Day, A. (2001). Cognitive appraisals associated with high trait anger. *Personality and Individual Differences, 30*, 31-45.
- Heaven, P. C. L., Ciarrochi, J., & Hurrell, K. (2010). The distinctiveness and utility of a brief measure of alexithymia for adolescents. *Personality and Individual Differences, 49*, 222-227.
- Helmes, E., McNeil, P. D., Holden, R. R., & Jackson, C. (2008). The construct of alexithymia: Associations with defence mechanisms. *Journal of Clinical Psychology, 64*(3), 318-331.
- Henry, J. D., Bailey, P. E., Hippel, C. v., Rendell, P. G., & Lane, A. (2010). Alexithymia in schizophrenia. *Journal of Clinical and Experimental Neuropsychology, 32*(8), 890-897.

- Heseltine, K., Howells, K., & Day, A. (2010). Brief anger interventions with offenders may be ineffective: A replication and extension. *Behaviour Research and Therapy*, 48, 246-250.
- Hess, W. R., & Akert, K. (1955). Experimental data on role of hypothalamus in mechanisms of emotional behaviour. *Archives of Neurology and Psychiatry*, 73(2), 127-129.
- Hines, D. A., & Saudino, K. J. (2002). Intergenerational transmission of intimate partner violence: A behavioral genetic perspective. *Trauma, Violence & Abuse*, 3, 210-225.
- Honkalampi, K., Hinitikki, J., Tanskanen, A., Lehtonen, J., & Viinamäki, H. (2000). Depression is strongly associated with alexithymia in the general population. *Journal of Psychosomatic Research*, 48, 99-104.
- Honkalampi, K., Hintikka, J., Lehtonen, J., & Viinamäki, H. (2000). Is alexithymia a permanent feature in depressed patients? *Psychotherapy and Psychosomatics*, 69, 303-308.
- Honkalampi, K., Koivumaa-Honkanen, H., Hintikka, J., Antikainen, R., Haatainen, K., Tanskanen, A., & Viinamäki, H. (2004). Do stressful life events or sociodemographic variables associate with depression and alexithymia among a general population? - A 3 year follow-up study. *Comprehensive Psychiatry*, 45, 254-260.
- Honkalampi, K., Koivumaa-Honkanen, H., Tanskanen, A., Hintikka, J., Lehtonen, J., & Viinamäki, H. (2001). Why do alexithymic features appear to be stable? *Psychotherapy and Psychosomatics*, 70, 247-253.
- Howell, D. C. (2002). *Statistical methods for psychology* (5 ed.). Pacific Grove CA: Duxbury Thomson Learning.
- Howells, K. (2004). Anger and its link to violent offending. *Psychiatry, Psychology and Law*, 11, 189-196.
- Howells, K., & Day, A. (2002). Readiness for anger management: Clinical and theoretical issues. *Clinical Psychology Review*, 584, 1-20.
- Howells, K., Day, A., Bubner, S., Jauncey, S., Williamson, P., Parker, A., & Heseltine, K. (2002). Anger management and violence prevention: Improving effectiveness. *Trends and Issues in Crime and Criminal Justice*, 227, 1-6.
- Howells, K., Day, A., Williamson, P., Bubner, S., Jauncey, S., Parker, A., & Heseltine, K. (2005). Brief anger management programs with offenders: Outcomes and predictors of change. *The Journal of Forensic Psychiatry & Psychology*, *In press*.
- Hu, L.-t., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods*, 3(4), 424-453.
- Hu, L.-t., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), 1-55.

- Human Rights and Equal Opportunity Commission. (1997). Bringing them home: National inquiry into the separation of Aboriginal and Torres Strait Islander children from their families. Canberra, Australia.
- Jacob, S., & Hautekeete, M. (1999). Alexithymia is associated with low self-estimated affective intensity. *Personality and Individual Differences*, *27*, 125-133.
- James, M., & Seager, J. A. (2006). Impulsivity and Schemas for a Hostile World: Postdictors of Violent Behaviour. *International Journal of Offender Therapy and Comparative Criminology*, *50*, 47-56.
- Jessimer, M., & Markham, R. (1997). Alexithymia: A right hemisphere dysfunction specific to recognition of certain facial expressions? *Brain and Cognition*, *34*, 246-258.
- Jolliffe, D., & Farrington, D. P. (2004). Empathy and offending: A systematic review and meta-analysis. *Aggression and Violent Behavior*, *9*, 441-476.
- Jones, P. R. (1991). The risk of recidivism: Evaluating the public-safety implications of community corrections program. *Journal of Criminal Justice*, *19*, 49-66.
- Joukamaa, M., Kokkonen, P., Veijola, J., Laksy, K., Karvonen, J. T., Jokelainen, J., & Jarvelin, M.-R. (2003). Social situation of expectant mothers and alexithymia 31 years later in their offspring: A prospective study. *Psychosom Med*, *65*(2), 307-312. doi: 10.1097/01.psy.0000030389.53353.bc
- Joukamaa, M., Saarijavi, S., Muuriaisniemi, M.-L., & Salokangas, R. K. R. (1996). Alexithymia in a normal elderly population. *Comprehensive Psychiatry*, *37*, 144-147.
- Kamphuis, J. H., & Emmelkamp, P. M. G. (2005). 20 years of research into violence and trauma: Past and future developments. *Journal of Interpersonal Violence*, *20*, 167-174.
- Kauhanen, J., Julkunen, J., & Salonen, J. T. (1992). Validity and reliability of the Toronto Alexithymia Scale (TAS) in a population study. *Journal of Psychosomatic Research*, *36*, 687-694.
- Kavanagh, L., Rowe, D., Hersch, J., Barnett, K. J., & Reznik, R. (2010). Neurocognitive deficits and psychiatric disorders in a NSW prison population. *International Journal of Law and Psychiatry*, *33*, 20-26.
- Keltikangas-Jarvinen, L. (1978). Personality characteristics of homicides and assaulters. *Psychiatric Fennica*, *22*, 65-71.
- Keltikangas-Jarvinen, L. (1982). Alexithymia in violent offenders. *Journal of Personality Assessment*, *46*, 462-467.
- Keltikangas-Jarvinen, L. (1985). Concept of alexithymia I. The prevalence of alexithymia in psychosomatic patients. *Psychotherapy and Psychosomatics*, *44*, 132-138.
- Keltikangas-Jarvinen, L. (1987). Concept of alexithymia II: The consistency of alexithymia. *Psychotherapy and Psychosomatics*, *47*, 113-120.
- Kench, S., & Irwin, H. J. (2000). Alexithymia and childhood family environment. *Journal of Clinical Psychology*, *56*, 737-745.

- Keppel, G., & Wickens, T. D. (2004). *Design and analysis: A researchers handbook*. New Jersey: Pearson Education Inc.
- King, J. L., & Mallinckrodt, B. (2000). Family environment and alexithymia in clients and non-clients. *Psychotherapy Research, 10*, 78-86.
- Kleiger, J. H., & Kinsman, R. A. (1980). The development of an MMPI alexithymia scale. *Psychotherapy and Psychosomatics, 34*, 14-24.
- Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). New York, USA: The Guildford Press.
- Kokkonen, P., Karvonen, J. T., Veijola, J., Laksy, K., Jokelainen, J., Jarvelin, M.-R., & Joukamaa, M. (2001). Prevalence and sociodemographics correlates of alexithymia in a population sample of young adults. *Comprehensive Psychiatry, 42*, 471-476.
- Komarovskaya, I., Loper, A. B., & Warren, J. (2007). The role of impulsivity in antisocial and violent behavior and personality disorders among incarcerated women. *Criminal Justice and Behavior, 34*, 1499-1515.
- Kooiman, C. G., Spinhoven, P., & Trijsburg, R. W. (2002). The assessment of alexithymia. A critical review of the literature and a psychometric study of the Toronto Alexithymia Scale - 20. *Journal of Psychosomatic Research, 53*, 1083-1090.
- Koski, M.-L., Holmberg, R.-L., & Torvinen, V. (1988). Alexithymia in juvenile diabetes: A clinical study based on projective methods (TAT and ORT). *Psychiatric Fennica, 19*.
- Kreitler, S., & Kreitler, H. (1988). Meanings, culture and communication. *Journal of Pragmatics, 12*, 725-742.
- Kroner, D. G., & Forth, A. E. (1995). The Toronto Alexithymia Scale with incarcerated offenders. *Personality and Individual Differences, 19*, 625-634.
- Krystal, H. (1979). Alexithymia and psychotherapy. *American Journal of Psychotherapy, 33*, 17-31.
- Krystal, H. (1982-1983). Alexithymia and the effectiveness of psychoanalytic treatment. *International Journal of Psychoanalysis and Psychotherapy, 9*, 353-388.
- Krystal, H. (1988). *Integration and self-healing: Affect, trauma and alexithymia*. New York: Routledge.
- Krystal, H. (Ed.). (1968). *Massive Psychic Trauma*. New York: International Universities Press Inc.
- Krystal, J. H., Giller, E. L., & Cicchetti, D. (1986). Assessment of alexithymia in posttraumatic stress and somatic illness: Introduction of a reliable measure. *Psychosomatic Medicine, 48*, 84-94.
- Kuppens, P., & Tuerlinckx, F. (2007). Personality traits predicting anger in self-, ambiguous-, and caused unpleasant situations. *Personality and Individual Differences, 42*, 1102-1115.
- Lane, R. D., Sechrest, L., & Riedel, R. (1998). Sociodemographic correlates of alexithymia. *Comprehensive Psychiatry, 39*, 377-385.

- Larsen, J. K., Brand, N., Bermond, B., & Hijman, R. (2003). Cognitive and emotional characteristics of alexithymia: A review of neurobiological studies. *Journal of Psychosomatic Research, 54*, 533-541.
- Lauterbach, O., & Hosser, D. (2007). Assessing empathy in prisoners--A shortened version of the Interpersonal Reactivity Index. *Swiss Journal of Psychology - Zeitschrift für Psychologie - Revue Suisse de Psychologie, 66*, 91-101.
- Le, H.-N., Berenbaum, H., & Raghaven, C. (2002). Culture and alexithymia: Means levels, correlates, and the role of parental socialization of emotion. *Emotion, 2*, 341-360.
- Lebovits, A. H., & Holland, J. C. (1983). Use of the Gottschalk-Gleser Verbal Content Analysis scales with medically ill patients. *Psychosomatic Medicine, 45*, 305-320.
- Leising, D., Grande, T., & Faber, R. (2009). The Toronto Alexithymia Scale (TAS-20): A measure of general psychological distress. *Journal of Research in Personality, 43*, 707-710.
- Levant, R. F. (1992). Toward the reconstruction of masculinity. *Journal of Family Psychology, 5*, 379-402.
- Levant, R. F., Hall, R. J., Williams, C. M., & Hasan, N. T. (2009). Gender differences in alexithymia. *Psychology of Men & Masculinity, 10*, 190-203.
- Levant, R. F., Richmond, K., Majors, R. G., Incline, J. E., Rossello, J. M., Heesacker, M., . . . Sellers, A. (2003). A multicultural investigation of masculinity ideology and alexithymia. *Psychology of Men & Masculinity, 4*, 91-99.
- Linden, W., Wen, F., & Paulhus, D. L. (1995). Measuring alexithymia: Reliability, validity and prevalence. In J. N. Butcher & C. D. Spielberger (Eds.), *Advances in Personality Assessment* (Vol. 10, pp. 51-95). Hillsdale, NJ, England: Lawrence Erlbaum Associates Inc.
- Lipton, D., Martinson, R., & Wilks, J. (1975). *The effectiveness of correctional treatment: A survey of treatment evaluation studies*. New York: Praeger.
- Loas, G., Corcos, M., Stephan, P., Pellet, J., Bizouard, P., Venisse, J. L., . . . Jeammet, P. (2001). Factorial structure of the 20-item Toronto Alexithymia Scale. Confirmatory factorial analysis in nonclinical and clinical samples. *Journal of Psychosomatic Research, 50*, 255-261.
- Lopes, P. N., Salvoney, P., Beers, M., & Cote, S. (2005). Emotion regulation abilities and the quality of social interaction. *Emotion, 5*, 113-118.
- Louth, S. M., Hare, R. D., & Linden, W. (1998). Psychopathy and alexithymia in female offenders. *Canadian Journal of Behavioural Sciences, 30*, 91-98.
- Loza, W., & Loza-Fanous, A. (1999). Anger and prediction of violent of nonviolent offenders' recidivism. *Journal of Interpersonal Violence, 14*, 1014-1029.
- Luminet, O., Bagby, R. M., & Taylor, G. J. (2001). An evaluation of the absolute and relative stability of alexithymia in patients with major depression. *Psychotherapy and Psychosomatics, 70*, 254.
- Lumley, M. A., Asselin, L. A., & Norman, S. (1997). Alexithymia in chronic pain patients. *Comprehensive Psychiatry, 38*, 160-165.

- Lumley, M. A., Mader, C., Gramzow, J., & Papineau, K. (1996). Family factors related to alexithymia characteristics. *Psychosomatic Medicine*, *58*, 211-216.
- MacLean, P. D. (1949). Psychosomatic disease and the "visceral brain": Recent developments bearing on the papaz theory of emotion. *Psychosomatic Medicine*, *11*, 338-353.
- Maiuro, R. D., Cahn, T. S., Vitaliano, P. P., Wagner, B. C., & Zegree, J. B. (1988). Anger, hostility, and depression in domestically violent versus generally assaultive men and nonviolent control subject. *Journal of Consulting and Clinical Psychology*, *56*, 17-23.
- Mak, A. S. (1990). Testing a psychosocial control theory of delinquency. *Criminal Justice and Behavior*, *17*, 215-230.
- Mallinckrodt, B., King, J. L., & Coble, H. M. (1998). Family dysfunction, alexithymia, and client attachment to therapist. *Journal of Counseling Psychology*, *45*, 497-504.
- Mantani, T., Okamoto, Y., Shirao, N., Okada, G., & Yamawaki, S. (2005). Reduced activation of posterior cingulate cortex during imagery in subjects with high degrees of alexithymia: A functional magnetic resonance imaging study. *Biological Psychiatry*, *57*, 982-990.
- Marchesi, C., Brusamonti, E., & Maggini, C. (2000). Are alexithymia, depression, and anxiety distinct constructs in affective disorders? *Journal of Psychosomatic Research*, *49*, 43-49.
- Marsh, H. W., & Hau, K. T. (1999). Confirmatory factor analysis: Strategies for small sample sizes. In R. H. Hoyle (Ed.), *Statistical strategies for small sample research* (pp. 252-284). Thousand Oaks, CA: Sage.
- Martin, J. B., Pihl, R. O., & Dobkin, P. (1984). Schalling-Sifneos Personality Scale: Findings and recommendations. *Psychotherapy and Psychosomatics*, *41*, 145-152.
- Martinez-Sanchez, F., Ato-Garcia, M., Adam, E. C., Medina, T. B. H., & Espana, J. J. S. (1998). Stability in alexithymia levels: A longitudinal analysis on various emotional answers. *Personality and Individual Differences*, *24*, 767-772.
- Martinez-Sanchez, F., Ato-Garcia, M., & Ortiz-Soria, B. (2003). Alexithymia - state or trait? *The Spanish Journal of Psychology*, *6*, 51-59.
- Marty, P., & de M'Uzan, M. (1963). La "pensee operateire". *Revue Francaise de Psychoanalyse*, *27*, 345-356.
- Masserman, J. H. (1941). Is the hypothalamus a center of emotion? *Psychosomatic Medicine*, *3*(1), 3-25.
- Matthews, B. A., & Norris, F. H. (2002). When is believing 'seeing'? Hostile attribution bias as a function of self-reported aggression. *Journal of Applied Social Psychology*, *32*, 1-32.
- Mattila, A. K., Salminen, J. K., Nummi, T., & Joukamaa, M. (2006). Age is strongly associated with alexithymia in the general population. *Journal of Psychosomatic Research*, *61*, 629-635.

- Mayer, J. D., Salovey, P., Gomberg-Kaufman, S., & Blainey, K. (1991). A broader conception of mood experience. *Journal of Personality and Social Psychology, 60*, 100-111.
- Mazzeo, S. E., & Espelage, D. L. (2002). Association between childhood physical and emotional abuse and disordered eating behaviours in female undergraduates: An investigation of the mediating role of alexithymia and depression. *Journal of Counseling Psychology, 49*, 86-100.
- McCallum, M., Piper, W. E., Ogrodniczuk, J. S., & Joyce, A. S. (2003). Relationships among psychological mindedness, alexithymia and outcomes in four forms of short-term psychotherapy. *Psychology and Psychotherapy: Theory, Research and Practice, 76*, 133-144.
- McDonald, P. W., & Prkachin, K. (1990). The expression and perception of facial emotion in alexithymia: A pilot study. *Psychosomatic Medicine, 52*, 199-210.
- McDougall, C., & Boddis, S. (1991). Discrimination between anger and aggression: Implications for treatment. *Issues in Criminological and Legal Psychology, 2*, 101-106.
- McDougall, J. (1974). The psychosoma and the psychoanalytic process. *International Review of Psychoanalysis, 1*, 437-442.
- McGuire, J. (1995). *What works: Reducing reoffending. Guidelines from research and practice*. West Sussex, England: Wiley.
- McGuire, J., & Broomfield, D. (1994). Violent offences and capacity for self-control. *Psychology, Crime & Law, 1*, 117-123.
- Meganck, R., Vanheule, S., & Desmet, M. (2008). Factorial validity and measurement invariance of the 20-Item Toronto Alexithymia Scale in clinical and nonclinical samples. *Assessment, 15*, 36-47.
- Mehrotra, S. (1998). Re-examining TAT alexithymia indices: A preliminary study. *Journal of Projective Psychology and Mental Health, 5*, 51-58.
- Mikolajczak, M., & Luminet, O. (2006). Is alexithymia affected by situational stress or is it a stable trait related to emotion regulation? *Personality and Individual Differences, 40*, 1399-1408.
- Miller, L. (1998). Psychotherapy of crime victims: Treating the aftermath of interpersonal violence. *Psychotherapy, 35*, 336-345.
- Miller, P. A., & Eisenberg, N. (1988). The relation of empathy to aggressive and externalizing / antisocial behavior *Psychological Bulletin, 103*, 324-344.
- Modestin, J., Furrer, R., & Malti, T. (2004). Study on alexithymia in adult non-patients. *Journal of Psychosomatic Research, 26*, 707-709.
- Modestin, J., Furrer, R., & Malti, T. (2005). Different traumatic experiences are associated with different pathologies. *Psychiatric Quarterly, 76*, 19-32.
- Moeller, F. G., Ernest, S. B., Donald, M. D., Joy, M. S., & Alan, C. S. (2001). Psychiatric aspects of impulsivity. *The American Journal of Psychiatry, 158*, 1783.
- Moormann, P. P., Bermond, B., Vorst, H. C. M., Bloemendaal, A. F. T., Teijn, S. M., & Rood, L. (2008). New avenues in alexithymia research: The creation of

- alexithymia types. In A. J. M. Vingerhoets, I. Nyklicek & J. Denollet (Eds.), *Emotion regulation: Conceptual and clinical issues* (pp. 27-42). New York, USA: Springer Science + Business Media.
- Morera, O., Culhane, S. E., Watson, P. J., & Skewes, M. C. (2005). Assessing the reliability and validity of the Bermond-Vorst Alexithymia Questionnaire among U.S. Anglo and U.S. Hispanic samples. *Journal of Psychosomatic Research, 58*, 289-298.
- Moriarty, N., Stough, C., Tidmarsh, P., Eger, D., & Dennison, S. (2001). Deficits in emotional intelligence underlying adolescent sex offending. *Journal of Adolescence, 24*, 743-751.
- Moriguchi, Y., Decety, J., Ohnishi, T., Maeda, M., Mori, T., Nemoto, K., . . . Komaki, G. (2007). Empathy and judging others pain: An fMRI study of alexithymia. *Cerebral Cortex, 17*, 2223-2234.
- Muller, J., Buhner, M., & Ellgring, H. (2003). Is there a reliable factorial structure in the 20-item Toronto Alexithymia Scale? A comparison of factor models in clinical and normal adult populations. *Journal of Psychosomatic Research, 55*, 561-568.
- Muller, J., Buhner, M., & Ellgring, H. (2004). The assessment of alexithymia: Psychometric properties and validity of the Bermond-Vorst alexithymia questionnaire. *Personality and Individual Differences, 37*, 373-391.
- Narayan, V. M., Narr, K. L., Kumari, V., Woods, R. P., Thompson, P. M., Toga, A. W., & Sharma, T. (2007). Regional cortical thinning in subjects with violent antisocial personality disorder or schizophrenia. *The American Journal of Psychiatry, 164*(9), 1418-1427.
- Nemiah, J. C. (1977). Alexithymia: Theoretical considerations. *Psychotherapy and Psychosomatics, 28*, 199-206.
- Nemiah, J. C. (1978). Alexithymia and psychosomatic illness. *Journal of Continuing Education in Psychiatry, 39*, 25-37.
- Nemiah, J. C., & Sifneos, P. E. (1970). Psychosomatic illness: A problem in communication. *Psychotherapy and Psychosomatics, 18*, 154-160.
- Norton, N. C. (1989). Three scales of Alexithymia: Do they measure the same thing? *Journal of Personality Assessment, 53*, 621-637.
- Novaco, R. W. (1975). *Anger control: The development and evaluation of an experimental treatment*. Oxford, England: Lexington.
- Novaco, R. W. (1976). The functions and regulation of the arousal of anger. *The American Journal of Psychiatry, 133*(10), 1124-1128.
- Novaco, R. W. (1997). Remediating anger and aggression with violent offenders. *Legal and Criminological Psychology, 2*, 77-88.
- Nussbaum, D., Collins, M., Cutler, J., Zimmerman, W., Ferguson, B., & Jacques, I. (2002). Crime type and specific personality indicia: Cloningers TCI impulsivity, empathy and attachment subscales in non-violent, violent and sexual offenders. *American Journal of Forensic Psychology, 20*, 23-56.

- Ogrodniczuk, J. S., Piper, W. E., & Joyce, A. S. (2010). Effect of alexithymia on the process and outcome of psychotherapy: A programmatic review. *Psychiatry Research, In press*.
- Ogrodniczuk, J. S., Piper, W. E., Joyce, A. S., & Abbass, A. A. (2009). Alexithymia and treatment preferences among psychiatric outpatients. *Psychotherapy and psychosomatics, 78*, 383-384.
- Orobio de Castro, B., Veerman, J. W., Koops, W., Bosch, J. D., & Monshouwer, H. J. (2002). Hostile attribution of intent and aggressive behavior: A meta-analysis. *Child Development, 73*, 916-934.
- Pallone, N. J., & Hennessy, J. J. (1994). *Criminal behaviour: A process psychology analysis*. New Jersey, USA: Transaction Publishers.
- Pallone, N. J., & Hennessy, J. J. (1996). *Tinder box aggression: Neuropsychology, demonography, phenomenology*. New Jersey, USA: Transaction Publishers
- Pallone, N. J., & Hennessy, J. J. (1998). Counterfeit courage: Toward a process psychology paradigm for the "heroic rescue fantasy". *Current Psychology: Developmental, Learning, Personality, Social, 17*, 197-211.
- Pandey, R., Mandal, M. K., Taylor, G. J., & Parker, J. D. A. (1996). Cross-cultural alexithymia: Development and validation of a Hindi translation of the 20-item Toronto Alexithymia Scale. *Journal of Clinical Psychology, 52*, 173-176.
- Parker, J. D. A., Bagby, R. M., Taylor, G. J., Endler, N. S., & Schmitz, P. (1993). Factorial validity of the 20-item Toronto Alexithymia Scale. *European Journal of Personality, 7*, 221-232.
- Parker, J. D. A., Keightley, M. L., Smith, C. T., & Taylor, G. J. (1999). Interhemispheric transfer deficit in alexithymia: An experimental study. *American Journal of Psychiatry, 61*(4), 464-468.
- Parker, J. D. A., Shauhnessy, P. A., Wood, L. M., Majeski, S. A., & Eastabrook, J. M. (2005). Cross-cultural alexithymia. Validity of the 20-item Toronto Alexithymia Scale in North American aboriginal populations. *Journal of Psychosomatic Research, 58*, 83-88.
- Parker, J. D. A., Taylor, G. J., & Bagby, R. M. (1989). The alexithymia construct: Relationship with sociodemographic variables and intelligence. *Comprehensive Psychiatry, 30*(5), 434-441.
- Parker, J. D. A., Taylor, G. J., & Bagby, R. M. (2001). The relationship between emotional intelligence and alexithymia. *Personality and Individual Differences, 30*, 107-115.
- Parker, J. D. A., Taylor, G. J., & Bagby, R. M. (2003). The 20-item Toronto Alexithymia Scale III. Reliability and factorial validity in a community population. *Journal of Psychosomatic Research, 55*, 269-275.
- Picardi, A., Toni, A., & Caroppo, E. (2005). Stability of alexithymia and its relationships with the 'Big Five' factors, temperament, character, and attachment style. *Psychotherapy and Psychosomatics, 74*, 371-378.

- Piper, W. E., Joyce, A. S., Azim, H. F., & McCallum, M. (1998). Interpretive and supportive forms of psychotherapy and patient personality variables *Journal of Consulting and Clinical Psychology*, *66*, 558-567.
- Piper, W. E., Joyce, A. S., McCallum, M., & Azim, H. F. (1998). Interpretive and supportive forms of psychotherapy and patient personality variables. *Journal of Consulting and Clinical Psychology*, *66*(3), 558-567.
- Piper, W. E., McCallum, M., Joyce, A. S., Rosie, J. S., & Ogrodniczuk, J. S. (2001). Patient personality and time-limited group psychotherapy for complicated grief. *International Journal of Group Psychotherapy*, *51*(4), 525-552.
- Piquero, N. L. (2003). A recidivism analysis of Maryland's community probation program. *Journal of Criminal Justice*, *31*, 295-307.
- Pitts, J. (1992). The end of an era. *Howard Journal of Criminal Justice*, *31*, 133-148.
- Polaschek, D. L. L. (2011). Many sizes fit all: A preliminary framework for conceptualizing the development and provision of cognitive-behavioral rehabilitation programs for offenders. *Aggression and Violent Behavior*, *16*, 20-35.
- Poortinga, Y. H. (1995). Cultural bias in assessment: Historical and thematical issues. *European Journal of Psychological Assessment*, *11*, 140-146.
- Porcelli, P., Bagby, R. M., Taylor, G. J., DeCarne, M., Leandro, G., & Todarello, O. (2003). Alexithymia as predictor of treatment outcome with patients with functional gastrointestinal disorders. *Psychosomatic Medicine*, *65*, 911-918.
- Porcelli, P., Leoci, C., Guerra, V., Taylor, G. J., & Bagby, R. M. (1996). A longitudinal study of alexithymia and psychological distress in inflammatory bowel disease. *Journal of Psychosomatic Research*, *41*, 569-573.
- Porcelli, P., & Meyer, G. J. (2002). Construct validity of Rorschach variables for alexithymia. *Psychosomatics*, *43*, 360-369.
- Powell, M. (2000). Pride: The essential elements of a forensic interview with an Aboriginal person. *Australian Psychologist*, *35*(3), 186-192.
- Prochaska, J. O., & di Clemente, C. C. (1984). *The transtheoretical approach: Crossing traditional boundaries of therapy*. Homewood, IL: Dow Jones Irwin.
- Raine, A., Meloy, J. R., Bihrlle, S., Stoddard, J., LaCasse, L., & Buchsbaum, M. S. (1998). Reduced prefrontal and increased subcortical brain functioning assessed using positron emission tomography in predatory and affective murderers. *Behavioral Sciences and the Law*, *16*(3), 319-332.
- Robertson, K., & Murachver, T. (2006). Intimate partner violence: Linguistic features and accomodation behavior of perpetrators and victims. *Journal of Language and Social Psychology*, *25*, 406-422.
- Robertson, K., & Murachver, T. (2007). Correlates of partner violence for incarcerated women and men. *Journal of Interpersonal Violence*, *22*, 639-655.
- Romito, P., Turan, J. M., & March, M. D. (2005). The impact of current and past interpersonal violence on womens mental health. *Social Science and Medicine*, *60*, 1717-1727.

- Rorschach, H. (1941). *Psychdiagnostik* (H. H. Verlag, Trans.). Bern, Switzerland: Bircher. (Original work published 1921).
- Ross, T., & Fontao, M. I. (2007). Self-regulation in violent and non-violent offenders: A preliminary report. *Criminal Behaviour and Mental Health*, *17*, 171-178.
- Ruesch, J. (1948). The infantile personality. The core problem of psychosomatic medicine. *Psychosomatic Medicine*, *10*, 134-144.
- Salminen, J. K., Saarijarvi, S., Aarela, E., Toikka, T., & Kauhanen, J. (1999). Prevalence of alexithymia and its association with sociodemographic variables in the general population of Finland. *Journal of Psychosomatic Research*, *46*, 75-82.
- Salvoney, P., & Mayer, J. D. (1989-90). Emotional intelligence. *Imagination, Cognition and Personality*, *9*, 185-211.
- Sauvola, A., Koskinen, O., Jokelainen, J., Hakko, H., Järvelin, M.-R., & Räsänen, P. (2002). Family type and criminal behaviour of male offspring: The Northern Finland 1966 Birth Cohort Study. *International Journal of Social Psychiatry*, *48*, 115-121.
- Scarr, S. (1988). Race and gender as psychological variables. *American Psychologist*, *43*(1), 56-59.
- Schaffer, C. E. (1993). *The role of adult attachment in the experience and regulation of affect*. Doctor of Philosophy, Yale University, New Haven, CT.
- Schneider, P. B. (1977). The observer, the psychosomatic phenomenon and the setting of the observation. *Psychotherapy and Psychosomatics*, *28*, 36-46.
- Schontz, F. C., & Green, P. (1992). Trends in research on the Rorschach: Review and recommendations. *Applied and Preventive Psychology*, *1*, 149-156.
- Schutte, N. S., Malouff, J. M., Hall, L. E., Haggerty, D. J., Cooper, J. T., Golden, C. J., & Dornheim, L. (1998). Development and validation of a measure of emotional intelligence. *Personality and Individual Differences*, *25*, 167-177.
- Seager, J. A. (2005). Violent Men: The Importance of Impulsivity and Cognitive Schema. *Criminal Justice and Behavior*, *32*, 26-49.
- Sellers, C. S., Cochran, J. K., & Branch, K. A. (2005). Social learning theory and partner violence: A research note. *Deviant Behavior*, *26*, 379-395.
- Serin, R. C., & Kuriyuchuk, M. (1994). Social and cognitive processing deficits in violent offenders: Implications for treatment. *International Journal of Law and Psychiatry*, *17*, 431-441.
- Shands, H. C. (1975). How are 'psychosomatic' patients different from 'psychoneurotic' patients? *Psychotherapy and Psychosomatics*, *26*, 270-275.
- Sharifian, F. (2010). Cultural conceptualisations in intercultural communication: A study of Aboriginal and non-Aboriginal Australians. *Journal of Pragmatics*, *42*, 3367-3376.
- Shill, M. A., & Lumley, M. A. (2002). The Psychological Mindedness Scale: Factor structure, convergent validity, and gender in a non-psychiatric sample. *Psychology and Psychotherapy: Theory, Research and Practice*, *75*, 131-150.

- Shipko, S., Alvarez, W. A., & Noviello, N. (1983). Towards a teleological model of alexithymia: Alexithymia and post-traumatic stress disorder. *Psychotherapy and Psychosomatics*, *39*, 122-126.
- Shipko, S., & Noviello, N. (1984). Psychometric properties of self-report scales of alexithymia. *Psychotherapy and Psychosomatics*, *41*, 85-90.
- Sifneos, P. E. (1972). The prevalence of 'alexithymic' characteristics in psychosomatic patients. *Psychotherapy and Psychosomatics*, *22*, 255-262.
- Sifneos, P. E. (1986). The Schalling-Sifneos Personality Scale Revised. *Psychotherapy and Psychosomatics*, *45*(3), 161-165.
- Sifneos, P. E. (1988). Alexithymia and its relationship to hemispheric specialization, affect, and creativity *Psychiatric Clinics of North America*, *11*, 287-292.
- Sifneos, P. E. (1996). Alexithymia: Past and present. *American Journal of Psychiatry*, *153*, 137-142.
- Sifneos, P. E., Apfel-Savitz, R., & Frankel, F. H. (1976). The phenomenon of 'alexithymia': Observations in neurotic and psychosomatic patients. *Psychotherapy and Psychosomatics*, *28*, 47-57.
- Skuja, K., & Halford, W. K. (2004). Repeating the Errors of Our Parents? Parental Violence in Men's Family of Origin and Conflict Management in Dating Couples. *Journal of Interpersonal Violence*, *19*, 623-638.
- Speilberger, C. D., Gorsuch, R. L., Lushene, R., Vagg, P. R., & Jacobs, G. A. (1983). *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press.
- Spielberger, C. D. (2006). Cross-cultural assessment of emotional states and personality traits. *European Psychologist*, *11*(4), 197-303.
- Spitzer, C., Brandl, S., Rose, H.-J., Nauck, M., & Freyberger, H. J. (2005). Gender-specific association of alexithymia and nonpinephrine / cortisol ratios. A preliminary report. *Journal of Psychosomatic Research*, *59*, 73-76.
- Steen, K., & Hunskaar, S. (2004). Gender and physical violence. *Social Science & Medicine*, *59*, 567-571.
- Stermac, L. E. (1987). Anger control treatment for forensic patients. *Journal of Interpersonal Violence*, *4*, 446-457.
- Stevens, J. P. (2002). *Applied multivariate statistics for the social sciences* (3rd ed.). Mahwah, New Jersey: Lawrence Erlbaum Associates Inc.
- Stevens, J. P. (2009). *Applied multivariate statistics for the social sciences* (5th ed.). New York, USA: Routledge.
- Stingl, M., Bausch, S., Walter, B., Kagerer, S., Leichsenring, F., & Leweke, F. (2008). Effects of inpatient psychotherapy on the stability of alexithymia characteristics. *Journal of Psychosomatic Research*, *65*, 173-180.
- Stuart, G. L., & Holtzworth-Munroe, A. (2005). Testing a theoretical model of the relationship between impulsivity, mediating variables, and husband violence. *Journal of Family Violence*, *20*, 291-303.
- Swift, L., Stephenson, R., & Royce, J. (2006). The 20-item Toronto Alexithymia Scale: Validation of factor solutions using confirmatory factor analysis on

- physiotherapy out-patients. *Psychology and Psychotherapy: Theory, Research and Practice*, 79, 83-88.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (Fifth ed.). Boston, USA: Allyn and Bacon.
- Tapper, K., & Boulton, M. J. (2005). Victim and peer group responses to different forms of aggression among primary school children. *Aggressive Behavior*, 31, 238-253.
- Taylor, G. J. (1984). Alexithymia: Concept, measurement and implications for treatment. *American Journal of Psychiatry*, 141, 725-731.
- Taylor, G. J. (1987). Alexithymia: History and validation of the concept. *Transcultural Psychiatric Research Review*, 24, 85-95.
- Taylor, G. J. (2000). Recent developments in alexithymia theory and research. *The Canadian Journal of Psychiatry*, 45, 134-142.
- Taylor, G. J., Bagby, R. M., & Parker, J. D. A. (1991). The Alexithymia construct: A potential paradigm for psychosomatic medicine. *Psychosomatics*, 32, 153-164.
- Taylor, G. J., & Bagby, R. M. (1988). Measurement of alexithymia: Recommendations for clinical practice and future research. *Psychiatric Clinics of North America*, 11, 351-364.
- Taylor, G. J., & Bagby, R. M. (2004). New trends in alexithymia research. *Psychotherapy and Psychosomatics*, 73, 68-77.
- Taylor, G. J., Bagby, R. M., & Parker, J. D. A. (1992). The revised Toronto Alexithymia Scale: Some reliability, validity and normative data. *Psychotherapy and Psychosomatics*, 57, 34-41.
- Taylor, G. J., Bagby, R. M., & Parker, J. D. A. (1997). *Disorders of affect regulation: Alexithymia in medical and psychiatric illness*. Cambridge, United Kingdom: Cambridge University Press.
- Taylor, G. J., Bagby, R. M., & Parker, J. D. A. (2003). The 20-item Toronto Alexithymia Scale IV. Reliability and factorial validity in different languages and cultures. *Journal of Psychosomatic Research*, 55, 277-283.
- Taylor, G. J., & Doody, K. (1985). Verbal measures of alexithymia: What do they measure? . *Psychotherapy and Psychosomatics*, 43, 32-37.
- Taylor, G. J., Doody, K., & Newman, A. (1981). Alexithymic characteristics in patients with inflammatory bowel disease. *Canadian Journal of Psychiatry*, 26, 470-474.
- Taylor, G. J., Ryan, D., & Bagby, R. M. (1985). Toward the development of a new self-report alexithymia scale. *Psychotherapy and Psychosomatics*, 44, 191-199.
- Tedeschi, R. G. (1999). Violence transformed: Posttraumatic growth in survivors and their societies. *Aggression and Violent Behavior*, 4, 319-341.
- Thorberg, F. A., Young, R. M., Sullivan, K. A., Lyvers, M., Hurst, C., Connor, J. P., & Feeney, G. F. X. (2010). A confirmatory factor analysis of the Toronto

- Alexithymia Scale (TAS-20) in an alcohol-dependent sample. *Psychiatry Research*, 178, 565-567.
- Tibon, S., Weinberger, Y., Handelzalts, J. E., & Porcelli, P. (2005). Construct validation of the Rorschach Reality-Fantasy scale in alexithymia. *Psychoanalytic Psychology*, 22, 508-523.
- Tremblay, P. F., & Belchevski, M. (2004). Did the Instigator Intend to Provoke? A Key Moderator in the Relation Between Trait Aggression and Aggressive Behavior. *Aggressive Behavior*, 30, 409-424.
- Tull, M. T., Medaglia, E., & Roemer, L. (2005). An investigation of the construct validity of the 20-item Toronto Alexithymia Scale through the use of a verbalisation task. *Journal of Psychosomatic Research*, 59, 77-84.
- Ullrich, S., & Marneros, A. (2004). Dimensions of personality disorders in offenders. *Criminal Behaviour and Mental Health*, 14, 202-213.
- Umberson, D., Williams, K., & Anderson, K. (2002). Violent behavior: A measure of emotional upset? *Journal of Health and Social Behavior*, 43, 189-206.
- Valkamo, M., Hintikka, J., Honkalampi, K., Niskanen, L., Koivumaa-Honkanen, H., & Viinamaki, H. (2001). Alexithymia in patients with coronary heart disease. *Journal of Psychosomatic Research*, 50, 125-130.
- van de Vijver, F., & Poortinga, Y. H. (1997). Towards an integrated analysis of bias in cross-cultural assessment. *European Journal of Psychological Assessment*, 13, 29-37.
- van de Vijver, F., & Tanzer, N. K. (2004). Bias and equivalence in cross-cultural assessment: an overview. *Revue européenne de psychologie appliquée*, 54, 119-135.
- Vane, J. R. (1981). The thematic apperception test. A review. *Clinical Psychology Review*, 1, 319-336.
- Vollhardt, B. R., Ackerman, S. H., & Shindledecker, R. D. (1986). Verbal expression of affect in rheumatoid arthritis patients. *Acta Psychiatrica Scandinavia*, 74, 73-79.
- Vorst, H. C. M., & Bermond, B. (2001). Validity and reliability of the Bermond-Vorst alexithymia questionnaire. *Personality and Individual Differences*, 30, 413-434.
- Waller, E., & Scheidt, C. E. (2004). Somatoform disorders as disorders of affect regulation: A study comparing the TAS-20 with non-self-report measures of alexithymia. *Journal of Psychosomatic Research*, 57, 239-247.
- Ward, T., Melsner, J., & Yates, P. M. (2007). Reconstructing the Risk-Need-Responsivity model: A theoretical elaboration and evaluation. *Aggression and Violent Behavior*, 12, 208-228.
- Ward, T., & Stewart, C. A. (2003). Criminogenic needs and human needs: A theoretical model. *Psychology, Crime & Law*, 9, 125-143.
- Wareham, J., Boots, D. P., & Chavez, J. M. (2009). A test of social learning and intergenerational transmission among batterers. *Journal of Criminal Justice*, 37, 163-173.

- Wasman, M., & Flynn, J. P. (1962). Directed attack elicited from hypothalamus. *Archives of Neurology* 6(3).
- Watt, B. D., & Howells, K. (1999). Skills training for aggression control: Evaluation of an anger management programme for violent offenders. *Legal and Criminological Psychology*, 4, 285-300.
- Way, B. B., Miraglia, R., Sawyer, D. A., Beer, R., & Eddy, J. (2005). Factors related to suicide in New York state prisons. *International Journal of Law and Psychiatry*, 28, 207-221.
- Williamson, P., Day, A., Howells, K., Bubner, S., & Jauncey, S. (2003). Assessing offender readiness to change problems with anger. *Psychology, Crime & Law*, 9, 295-307.
- Wolff, H. H. (1977). The contribution of the interview situation to the restriction of fantasy life and emotional experience in psychosomatic patients. *Psychotherapy and Psychosomatics*, 28, 58-67.
- Wood, J., & Newton, A. K. (2003). The role of personality and blame attribution in prisoners experiences of anger. *Personality and Individual Differences*, 34, 1453-1465.
- Woodman, T., Cazenave, N., & LeScanff, C. (2008). Skydiving as emotion regulation: The rise and fall of anxiety is moderated by alexithymia. *Journal of Sport & Exercise Psychology*, 30, 424-433.
- Wormith, J. S., & Olver, M. E. (2002). Offender treatment attrition and its relationship with risk, responsivity, and recidivism. *Criminal Justice and Behavior*, 29, 447-471.
- Yelsma, P. (1996). Affective orientations of perpetrators, victims, and functional spouses. *Journal of Interpersonal Violence*, 11, 141-161.
- Yelsma, P., Hovestadt, A. J., Anderson, W. T., & Nilsson, J. T. (2000). Family of origin expressiveness: Measurement, meaning and relationship to alexithymia. *Journal of Marital and Family Therapy*, 26, 353-363.
- Yelsma, P., Hovestadt, A. J., Nilsson, J. E., & Paul, B. D. (1998). Clients' positive and negative expressiveness within their families and alexithymia. *Psychological Reports*, 82, 563-569.
- Zech, E., Luminet, O., Rime, B., & Wagner, H. (1999). Alexithymia and its measurement: Confirmatory factor analyses of the 20-Item Toronto Alexithymia Scale and the Bermond±Vorst Alexithymia Questionnaire. *European Journal of Personality*, 13, 511-532.
- Zeitlin, S. B., Lane, R. D., O'Leary, D. S., & Schrift, M. J. (1989). Interhemispheric transfer deficit and alexithymia. *The American Journal of Psychiatry*, 146(11), 1434-1439.
- Zhu, X., Yi, J., Yao, S., Ryder, A. G., Taylor, G. J., & Bagby, R. M. (2007). Cross-cultural validation of a Chinese translation of the 20-item Toronto Alexithymia Scale. *Comprehensive Psychiatry*, 48, 489-496.
- Zimmerman, G., Rossier, J., Stadelhofen, F. M. d., & Gaillard, F. (2005). Alexithymia assessment and relations with dimensions of personality. *European Journal of Psychological Assessment*, 21, 23-33.

Appendix A

Consultation with Indigenous Psychologists

During the process of the first administration of the instrument and collection of data from violent offenders at Casuarina Prison, it became apparent that there were problems with the use of the instrument with a number of Indigenous offenders. Ten Indigenous offenders participated in the study; many stated they were illiterate and asked to have the questions read to them. A large number of the Indigenous offenders appeared to have difficulty understanding the meaning of the questions and frequently asked for clarification. In response, the administrators explained each item to the participant in detail. Often the explanation provided by the administrator did not appear to have any impact on the participants' understanding and they requested further clarification. The implications of explaining the questions are noted and the possible effects this may have had on their responses. Moreover, the administrators observed the participants were eager to please the administrators and would frequently respond yes to every question even after they were told of the choices on the Likert scale. The validity of these responses was considered to be highly questionable and the use of the instrument was seemingly problematic among Indigenous offenders.

Cross-Cultural Research with TAS-20

Difficulties with translating language or adapting existing Western developed psychological instruments has been widely debated throughout the literature (Kreitler & Kreitler, 1988; Spielberger, 2006). The issues of bias and equivalence have dominated these discussions. In particular, many researchers have argued construct

bias is a major issues in cross-cultural research (van de Vijver & Poortinga, 1997; van de Vijver & Tanzer, 2004). The construct being measured may not transcend the cultures and have significantly different manifestations (van de Vijver & Poortinga, 1997). In association with construct bias is item bias, whereby participants from different cultures may score differently on various items as a result of cultural differences (van de Vijver & Poortinga, 1997).

As discussed in the literature review, the TAS-20 has previously been translated into various languages, tested and utilised in many different cultures with reported success (Taylor, et al., 2003). Based on the results of the various studies Taylor, Bagby, and Parker (2003) have argued that the TAS-20 is applicable for use cross-culturally. Researchers such as Dion (1996), however, have argued that although the factor structure may have been found to be stable across various cultures it cannot be assumed that the meaning inferred in specific items or the scale overall transcended to the different culture. Furthermore, differences in the levels of alexithymia have been reported between varying cultures. Le, Berenbaum, and Raghaven (2002) speculated there might be inherent differences in alexithymia between cultures or differences in the meaning of the construct or certain items.

Through examination of Taylor and colleagues (2003) research, it appears each time the TAS-20 has been translated it has been done without accounting for differences in meanings and interpretations of various words. It is possible in many cases issues may have arisen such as in the current study. Some words may not exist in certain cultures or it may be necessary to use different words to describe the intended emotion.

The validity of the scale was explored with Indigenous North Americans in a forensic and community setting (Parker, et al., 2005). Support for the original factor

structure of the TAS-20 was found; however, once again it does not appear as though potential differences in language or the meaning behind such language were explored. Furthermore, low factor loadings were reported for a number of the items, some of which overlapped with those identified as potentially problematic by the consultants for the current study, for example item 20.

Consultants

In response to the issues surrounding the use of the instrument with the Indigenous offenders in the current study, two Indigenous psychologists from Western Australia were consulted. A male and a female Indigenous psychologist each examined the TAS-20 and advised the researcher regarding its use with Indigenous participants in the community, and particularly in regards to Indigenous participants in the prisons or those involved with the criminal justice system in Western Australia. As one consultant did not wish to be identified the anonymity of each consultant will be protected by referring to them as Indigenous Psychologist Consultant One (IPC1) and Indigenous Psychologist Consultant Two (IPC2).

The consultants highlighted a number of problems with the instrument itself which might have impacted upon Indigenous participants' understanding and responses. The problems identified revolved largely around the language utilised and differences in the meaning of certain words or interpretation of certain items. The consultants also identified experiences unique to Indigenous persons that may have affected their responses. Diversity within the Indigenous culture was discussed as it may have resulted in different interpretations of the scale. The consultants detailed problems with the researcher administering the scale given the disparity of gender and culture. Further the forensic setting was discussed as possibly implicating on the

participant's responses. These issues identified by the consultants are discussed below with reference to relevant research.

Language

Both consultants indicated problems with the language used in the scale. In particular, that it is not representative of everyday language used by many Indigenous Australians. This issue was raised for both the wording of the items particularly in regards to those surrounding emotions and the descriptions for each of the responses on the Likert scale. The inclusion of Aboriginal English was recommended in order to translate the scale appropriately for use with Indigenous Australians. It was proposed that the language used in the instrument might create confusion for some Indigenous people and impact upon the quality and the validity of their responses.

IPC1: It has to be really written in more basic English... perhaps even some Aboriginal English words, to make sure that people understand what your trying to say... the language needs to be simplified... Again, "prefer" what does that mean? Talking about "daily activities" what does that mean? And again "rather than their feelings", "rather" people might know "instead of" that might be more plain English.

The language for the most part is not user-friendly, it's using words that are too big, that Aboriginal people here don't use in their everyday language. So, I think things have to be written in everyday language so people understand exactly what you are asking so they can respond to it. Otherwise, if they're confused or unclear

about what it is you're asking, that impacts on the responses or the quality or the validity of their responses.

Researchers such as Sharifian (2010) have investigated Aboriginal English and miscommunication in language between non-Indigenous Australians and Indigenous Australians. Sharifian states differences in the meanings of words arise because of differences in experiences, beliefs and practices between the two cultures. Words common to both languages and cultures can therefore have substantially different meanings. Likewise, words to describe certain experiences, events or emotions may not exist in one culture.

Emotional Language

In accordance with Sharifian's (2010) research discussed above the primary issue identified by the consultants with the language of the scale was that the meaning of the items might not be clear to some Indigenous people. In particular, the consultants highlighted emotional words such as emotion, sad, angry or frightened, which are used throughout the scale may be difficult for many Indigenous people to understand as a result of difference in language between Indigenous and non-Indigenous people.

IPC1: *"Emotions", you can't talk about emotions with some Aboriginal people. "Emotion", well what's that?.... The word itself, I don't think Aboriginal people will really understand... When we were growing up we never used the word "angry", we did use "frightened", didn't use "sad", although people may use sad. "Worried" is a term people do know, they might be worried about something instead*

of angry. You know words that we used were “feeling hot”, which equates to “hot under the collar” or “wild”, you know or someone is “getting worked up”. Something like that, but not angry... Again it depends on whether people accept that “angry” is a way to describe anger, you know feeling that way.

IPC2: A lot of Aboriginal people might not be confused about their emotions. But often haven't had the opportunity or the space to talk about what that emotion is, and potentially because there is a language difference, they may not have the same vocabulary to express what it is and what they feel.

Complexity

The complexity of the items was highlighted as an issue by the consultants. They indicated some of the items are worded in such a manner that may create confusion as to what the question is actually asking. Both consultants identified that the items needed to be worded in a more basic manner, or broken into two distinct questions for the scale to be usable and valid with Indigenous people.

IPC1: Ok it's just too complex...because when you start getting abstract, or depersonalise it, it can be difficult for people to understand what you're talking about, or what you're trying to convey.

Sociocultural Context

One of the prominent themes was that the experience of the individual may impact upon their responses. In this respect, the consultants proposed that an individual's experience including early socialisation and exposure to stressors or

trauma, might impact upon their responses and or interpretation of the items.

Although this is a confounding factor for the assessment of alexithymia in general, it was proposed by the consultants that stressors or trauma unique to Aboriginal persons might influence their responses. For example, the Stolen Generation where Indigenous children were forcibly removed from their families and homes and placed in missions to instil European values and work ethics into the children (Human Rights and Equal Opportunity Commission, 1997).

IPC1: I think it's part of that process, going back to colonisation and how we can become colonised people ourselves, and a lot of our people grew up in missions with that sort of influence where you were taught not to question. Very authoritarian environments, you know I'm 45 and when I was born I had no rights in my own country and yeah we weren't allowed to do this, we weren't allowed to do that, they were there to regulate and control us. We come from that background.

IPC2: The other one is, that fits within that is, because of the level of trauma that Aboriginal people have experienced, the co-morbidness, the mortality rate etc etc etc, for some communities, some of this stuff is now normalised behaviour. So what I start to look at is, two buckets, and for this bucket we've got non-Aboriginal people and in here we've got financial stress, daily living, work stress, partner stress whatever its in here. Now for Aboriginal people we have exactly the same amount of stuff, we have all of those, plus you then have racism, Stolen Generation, over-policing, discrimination. So this bucket is constantly full with all this stuff which isn't currently being addressed. And so you can see how these buckets are essentially equal, and then when you go and put another stress in here, this bucket [non-

Aboriginal bucket] is able to contain that amount of stress, because it's not carrying the same amount of crap that this bucket [Aboriginal bucket] is carrying, and you try and put that on here and it just doesn't fit. And because of the different lifestyles and the different journey, that ability to be able to verbalise some of this stuff just doesn't happen.

Acquiescence

The consultants provided insight as to the reasons behind Indigenous participants' frequent yes responses. It was observed by the researcher Indigenous participants would respond yes to each question on the scale when it was read even after being provided with all the possible responses on the Likert scale. According to the consultants, providing the interviewer with a favourable response, in this case frequent yes responses, enables the Indigenous person to endure the interview with little harm to themselves. This issue was compounded by the fact the TAS-20 was administered in a prison. The consultants highlighted Indigenous offenders in a prison may be more concerned as to the implications of their responses. The validity of their responses may be questionable.

Powell (2000) has described the phenomenon of favourable responding. Powell reported Indigenous persons in a forensic setting would frequently respond to direct questions in a favourable manner because of uneasiness with the style of questioning and or a desire to end the interview quickly.

IPC1: Even in courts, you'll find that Aboriginal people say "yes yes" to everything.

And they'll say "yes" even if they don't agree. I think part of it is a survival mechanism, so I'll say yes to you and you'll get whatever you think you're getting and then I'll go away and say nah I don't agree at all, but I've survived my encounter with you. Aboriginal people don't necessarily feel as though they can question particularly the church, because it has been this institution and big part of their lives. So if there are institutions and the police are one, prisons are another, so there are some institutions in society that people won't necessarily think of questioning or think that they can, and there is a fear of not knowing what's going to happen to me if I do. Because of course with a lot of stories that get passed down, you know people tell the stories of responses to when people have stood up and taken a stand. So I think it is to do with surviving their encounter with you, so they may not necessarily agree or if they don't understand they'll say yes.

Diversity Within the Indigenous Culture

It was identified that the region or Nation from which the individual originated may impact upon their responses. The consultants detailed individual sub-cultures within each region or Nation of Indigenous people could potentially have influenced their interpretation of items. In particular, different meanings to certain words may apply due to differences in experiences.

IPC1: The biggest thing is the diversity of Aboriginal people. Even though we're doing it (administering the TAS-20) in an urban setting we've got fellas coming from all remote regional communities that are in the prisons. That's what I'm saying it's important that diversity. You look at other areas, towards the north of the state, you're going to find people who don't speak English, you know towards the

central lands and central desert area and up into the Northern Territory. Where you've got people who are practicing a traditional way of life still, speaking their own language, you're probably going to have difficulties.

IPC2: I would expect to see very clear differences within the data or even subtle differences within certain items because of different locations, different experiences, different acculturation.

Normalisation of Symptoms

The consultants proposed normalisation of the symptoms of alexithymia as a factor that might potentially impact upon responses. In this respect, the consultants advised that many Indigenous individuals might experience symptoms outlined in the items but consider them to be a normal way of functioning and respond neutrally.

IPC2: Some of this stuff is now normalised behaviour, which is the really unfortunate thing, but for some to be living with some of these is now what happens for us in this community, so it's not necessarily seen as a problem it's seen as a way of life. So that's also going to create some huge complexities for you when you look at some of these items around do I feel anxious, do I feel angry, yeah but, everyone in my community does, and if that's the community norm then no it's not an issue because that's what we all have got and experienced.

Gender and Culture of the Administrator

Issues were identified throughout the interviews with the consultants in regards to the gender of the interviewer; specifically, a female researcher presenting

the questionnaire to men, and particularly traditional men. One consultant commented that it is taboo for traditional men to be spending one-on-one time with a non-Indigenous female. A female researcher may have impacted upon the participants' responses by creating a situation whereby participants were uncomfortable or felt the need to respond in a socially desirable manner.

In conjunction with issues surrounding the gender of the researcher, the consultants additionally identified issues with the culture of the researcher. Namely, in many cases it is not appropriate for a non-Indigenous person to be discussing feelings with, or to be presenting a questionnaire about feelings to an Indigenous person. One consultant identified that this issue may have been compounded by the fact the researcher was a non-Indigenous female.

Powell (2000) reported gender and cultural differences between the interviewer and interviewee could impact on the interview. In accordance with the consultants' statements, Powell stated the interviewer might not be permitted to hear or ask about certain matters. This is particularly the case when the interviewer is the opposite gender or non-Indigenous.

IPC1: When the traditional men have been through the Lore, I suppose there are some rules about their contact with women, females. But I'd be careful about my contact with men who had been initiated, traditional men.

IPC2: Let's just say if you've got a young Aboriginal male who's been through initiation and is considered a man, and the rights in his community to be a man and be treated as a man. For some communities he will now outrank, loosely women, and that includes his own mum. If he as a man has that sort of status, then

how is he going to relate to you as a non-Aboriginal white female? Because you're essentially worlds apart from where he's come from. The flip side to that, is there is also another dynamic at play for some Aboriginal men in terms of, I usually say that for some Aboriginal men, non-Aboriginal women are almost like that forbidden meat. You don't have relationships with attractive non-Aboriginal women. So there can be a lot of shame or a lot of emotions attached to having one-on-one conversations and engaging in eye contact and doing some of that stuff with non-Aboriginal women which a lot of men are going to find really uncomfortable, either because they really enjoy it, or because they've been brought up culturally that they shouldn't be doing it, or they shouldn't enjoy it.

Conclusion

According to the consultants, the language utilised in the TAS-20 may have contributed to possible construct bias and item bias. Words to describe particular emotional states, such as anxiety and depression do not exist in some cultures (Fields, 2010). Many different words are used to describe varying emotional states and uniformity in terms of the meaning of certain words cannot be assumed (Geisinger, 1994; Poortinga, 1995; Spielberger, 2006). The interpretation of meaning is at the very essence of communication and the meaning and interpretation of language is dependent upon the experiences of the person within the culture, differences in societal practices and social or familial structures (Byrne et al., 2009; Kreitler & Kreitler, 1988). If transfer of meaning across cultures cannot be determined with a given scale then it would be safe to assume the construct being measured may differ across the cultures.

Furthermore, in light of the issues with the administration of the TAS-20, a third form of bias was evident and that is method bias. Method bias occurs when the method in which an instrument is administered is culturally biased (van de Vijver & Poortinga, 1997). In conjunction with the form of responding (for example pen and paper versus practical or observation) the issue of race and gender of the administrator can seemingly influence method bias (Scarr, 1988; van de Vijver & Poortinga, 1997).

Overall, the consultants indicated the instrument is not appropriate for use with Indigenous persons, particularly in a forensic setting. The instrument does not transcend the Australian Indigenous culture and while it may be appropriate for use within a Western society, the language used and the meaning behind the items is not necessarily familiar to Australian Indigenous persons. Based on issues of construct, item and method bias the consultants suggested the responses obtained from the small group of Indigenous participants would not be comparable to those of non-Indigenous participants. The instrument therefore does not demonstrate equivalence. If equivalence is not demonstrated valid comparisons cannot be made between the results of the varying cultures (Hambleton & Kanjee, 1995). Because of advice and information provided by the consultants it was decided to exclude Indigenous offenders from the sample. Following the interviews with the consultants, only non-Indigenous offenders were approached to participate in the study. Furthermore, due to validity concerns, the questionnaires completed by Indigenous offender participants during the first administration were removed from the sample.

Appendix B

Methodological Issues

The process of collecting data from offenders was slow and relatively unsuccessful. The reasons for this included difficulties communicating with prisons, the length of time to co-ordinate the data collection and administration of the TAS-20.

The method of data collection that involved visiting the prisons to administer the TAS-20 in person proved time-consuming. This was largely due to communication difficulties with staff at the prison, and the workload of Department of Corrective Services (DOCS) staff. It proved difficult to get responses from prison staff and co-ordinate a time that was suitable and agreeable for prison staff, DOCS staff and offenders. This meant the time between the return of signed consent forms and visiting the prisons was long, in many cases months had passed. Consequently by the time the researcher was able to visit the prison a number of participants had been released or relocated to another prison and were unable to be contacted.

It further proved inconvenient to participants to administer the questionnaire in the official visits centre, as was the case at most prisons at the request of staff. In maximum security prisons, participants were required to change their clothes prior to entering and leaving the official visits centre and many simply declined to participate as a result. Many participants were also unavailable at the time of administration as they were participating in other activities.

The process of administration was also time-consuming. In order to complete the questionnaire participants were asked to attend the official visits centre in groups of three or four. Due to the problems described above, however, groups typically

comprised only one or two participants. In order to allow participants sufficient time to attend the official visit centre, change their clothing, explain the purpose of the assessment and any time for questions each session took 30 to 45 minutes. Further, it was observed the process placed increased demands on prison staff who were already contending with high workloads. Staff were required to organise the participants to attend the visit centre, and monitor the researcher and a non-prison staff member (there to assist the researcher with the administration) at all times during administration.

The method of administration also meant regional prisons had to be excluded from the data collection, as the researcher was unable to visit these prisons in person. A privately run prison with an offender population of almost 1000 at any given time, also indicated they were not amenable to participating in the study with the method of data collection as it was. The branch of DOCS responsible for managing offenders in the community also declined to provide any assistance, although the reasons behind their refusal were unclear. This rejection unfortunately meant that a large proportion of the potential sample was inaccessible.

As a result of the problems encountered the number of completed questionnaires was much smaller than the potential sample would have indicated. Due to the difficulties encountered and the length of time involved with very little data collected, changes were made to the data collection process. As outlined in Chapter Four the researcher proposed to instigate a two-stage mail-out system whereby participants would be mailed the Information Sheet and Consent Form, and once the Consent Form was returned they would be mailed the questionnaire with additional instructions on how to complete it. The changes to the data collection were

submitted and approved by the Ethics Committees at DOCS and Edith Cowan University.

Following ethics approval, prisons were contacted regarding participation in the study. The researcher acknowledged this process would largely eliminate participants with literacy issues, and there was a possibility participants may not complete the questionnaire individually, the benefits of this approach were considered to outweigh the potential disadvantages. The new method of data collection enabled a much wider sample to be reached, as regional prisons could now be included. Regional prisons were originally excluded as it was not possible for the researcher and a DOCS staff member to travel to administer the questionnaires, and prison staff did not have the time or resources to administer the questionnaire. Prisons that had previously refused to participate were amenable to participating with the new method of data collection. It was further anticipated the new approach would expedite the data collection and reduce the impact upon prison staff.

The rate of completion for the mail-out method was nevertheless disappointing with only 8.65% of potential participants requesting and returning completed questionnaires. At the time of ceasing data collection, the process had continued for the period of almost three years. Due to the length of time involved, it was decided to cease the offender data collection at this point. The difficulties encountered with data collection for studies two and three can largely account for the small sample size of the violent of non-violent offender samples.

Appendix D

INFORMATION SHEET

Dear Participant,

My name is Cate Joseph and I am a student at Edith Cowan University. I am currently in the process of completing my degree in Doctor of Philosophy (Forensic Psychology). A substantial component of this course is research. The aim of my research is to establish how individuals identify and manage their emotions, and how their emotions influence their behaviour. It is hoped that this examination of particular aspects of emotion regulation will lead to a greater understanding of people's behaviour. This research has been approved by the Ethics Committee, Edith Cowan University, and also by the Department of Corrective services.

If you choose to participate in this study you will be asked to complete a questionnaire comprising of 20 questions. The questionnaire is designed to assess how people control their emotions. The questionnaire should only take about 5-10 minutes to complete. You are not required to place your name on the questionnaire. Once you have completed the questionnaire, your responses and your score will be used as a part of a research project. Your responses on the questionnaire will be kept in a secure location at Edith Cowan University and not given to anybody else. Your participation in the study will remain confidential at all times and no identifying information will be included in the research project. You have a right to withdraw from the study at any time, and in which case your responses and score on the questionnaire will not be included in the report.

You are not under any obligation to participate in this study, and you may withdraw from the project at any stage without penalty or prejudice. Should you have any further concerns or questions you can contact either my supervisors or myself.

Researcher
Cate Joseph
School of Psychology
Edith Cowan University

Principal Supervisor
Professor Alfred Allan
School of Psychology
Edith Cowan University
100 Joondalup Drive,
Joondalup, WA, 6027
1 800 993 323

Associate Supervisor
Dr Ricks Allan
School of Psychology
Edith Cowan University
100 Joondalup Drive,
Joondalup, WA, 6027
1 800 993 323

If you have any concerns or complaints about the research project and wish to talk to an independent person, you may contact;

Research Ethics Officer
Edith Cowan University
100 Joondalup Drive
Joondalup, WA, 6027
PH: (08) 6304 2170
Email: research.ethics@ecu.edu.au

CONSENT FORM

I _____ have been provided with an information sheet. I have read and understood the information sheet and any questions I have asked have been answered to my satisfaction. I am aware that if I have any further questions I can contact a member of the research team.

I agree to be complete the Toronto Alexithymia Scale – 20. I understand that my completed questionnaire will only be used for the purposes of the current research project. I also understand my completed questionnaire will remain confidential and will be stored in a secure location. I am aware that only the researchers will have access to my completed questionnaire and it will not be given to any one else.

I further understand that I can withdraw my consent at any time without penalty or prejudice and without providing explanation. I agree that the research data gathered for this study may be published provided that I am not identifiable in any way.

I freely agree to participate in the study.

Participant:

Date:

Researcher:

Date:

Researcher
Cate Joseph
School of Psychology
Edith Cowan University

Principal Supervisor
Professor Alfred Allan
School of Psychology
Edith Cowan University
100 Joondalup Drive,
Joondalup, WA, 6027
1 800 993 323

Associate Supervisor
Dr Ricks Allan
School of Psychology
Edith Cowan University
100 Joondalup Drive,
Joondalup, WA, 6027
1 800 993 323

<p>Please ensure that you have signed the consent form before completing the TAS-20</p>
--

Appendix E

Information Sheet

Project: The nature of the association between male violent offending and alexithymia

Partners: Edith Cowan University (ECU) and Corrective Services across Australia

What is the project?

The aim of this project is to find out how individuals recognise and control their emotions, and how their emotions affect their behaviour. It is hoped that this research will lead to a greater understanding of people's behaviour. To do this, the researcher is going to different prisons and community locations and asking people to complete a questionnaire about emotions. The researcher is looking to see if there is a difference between how people in the community experience their emotions compared to people in prison. After all the questionnaires have been completed, there will be a report written. This research is part of a Doctor of Philosophy degree. This research has been approved by the Ethics Committee, Edith Cowan University, and also by the Department of Corrective services.

What is your role? What do you need to do?

You are one of a number of people we would like to ask to complete the questionnaire. The questionnaire is designed to assess how people control their emotions. It contains 20 questions asking you about your feelings. The questionnaire should only take about 5-10 minutes to complete. You are not required to place your name on the questionnaire

What are your rights?

It is important for you to know that you do not have to do the questionnaire. It is up to you, but it would be really helpful if you did. Also, you can stop at any time and if you have questions you would like to ask. If you do not wish to complete the questionnaire you can stop at any time. If you choose not to complete the questionnaire your answers will not be used in the final report.

Your answers on the questionnaire will not be shared with anyone outside the research team. People in Corrections, like case managers and parole officers, will not find out your answers. Your answers on the questionnaire will have no impact on you inside prison or in the community. When I write up the report your name will not be in it. You will not be identified.

What happens after I complete the questionnaire?

If you feel upset after completing the questionnaire you may ask to speak to someone at the prison or community counselling services.

How can you get the report once it is finished?

When all the questionnaires have been collected and the report is finished you may contact the researchers and ask for a copy.

Who can you contact about the research?

If you would like to participate, please speak to staff at Offender Programs Edith Cowan (OPEC)

If you would like more information about the research, you are welcome to write to the researcher at:

Cate Joseph
School of Psychology
Edith Cowan University
100 Joondalup Drive
Joondalup, WA, 6027

This study has been approved by the Department of Corrective Services Research Application and Review Committee (RARC).

If you have any concerns or complaints about the research project and wish to talk to an independent person, you may contact;

Research Ethics Officer
Edith Cowan University
100 Joondalup Drive
Joondalup, WA, 6027
PH: (08) 6304 2170
Email: research.ethics@ecu.edu.au

The nature of the association between male violent offending
and alexithymia

CONSENT FORM

I, (print full name)

_____ consent to take part in the research project titled: The nature of the association between male violent offending and alexithymia

- I have read the information sheet regarding the research and have been given an opportunity to ask questions regarding this study.
- I understand that my participation is voluntary and that I may withdraw at any time.
- I understand that the information that I give will remain confidential.
- I understand that while information gathered for the study may be published, I will not be identified in any publications, and my personal results will not be told to anyone else.

Signature: _____

Date: _____

Please return to the researchers before completing the questionnaire.

Appendix F

Offences Classified as Violent

Attempted armed robbery in company
Attempted armed robbery with wounding
Attempted assault driver of passenger vehicle
Attempted assault ferry operator
Attempted assault occasioning bodily harm
Attempted Assault with Intent to commission a crime
Attempted assault with intent to prevent arrest of a person
Attempted assault with intent to do grievous bodily harm
Attempted cause fear by going or pretending to go armed in public
Attempted cause poison to be administered
Attempted caused substance to be taken / received with intent to cause grievous bodily harm
Attempted demand property with threats with intent to steal
Attempted demanding property by oral threats
Attempted demanding property by written threats
Attempted detained another with intent to cause detriment
Attempted detained another with intent to gain a benefit
Attempted detained another with intent to prevent/hinder person doing act
Attempted did an act with intent to cause explosion likely to do serious injury to property
Attempted discharged a firearm to cause fear
Attempted grievous bodily harm
Attempted grievous bodily harm when stealing motor vehicle
Attempted infanticide
Attempted killing on provocation
Attempted manslaughter
Attempted person armed with intent to commit an offence
Attempted robbery in company with actual violence
Attempted robbery with violence
Attempted threaten person from giving evidence before a royal commission
Attempted threaten person on the account of having given evidence
Attempted threaten any person giving evidence before either House of Parliament
Attempted threaten to kill
Attempted threatening witnesses after giving evidence before parliament
Attempted unlawful wounding
Attempted unlawful and indecent assault (repealed 3/86)
Attempted unlawfully casts/throws any such fluid/substance on any person
Attempted unlawfully causes any explosive substance to explode
Attempted wilful murder
Abduction
Administer poison-intent to harm
Affray

Aggravated assault
Aggravated assault-female
Aggravated assault-male child
Aggravated assault-not specified
Aggravated assault-police
Armed with intent to commit a crime
Assault aircraft crew
Assault in d/hse & break out in night
Assault occasioning bodily harm
Assault person protecting wreck
Assault with intent aide escape
Assault with intent to resist arrest
Assault with intent to steal
Assault-not otherwise specified
Assault/interfere trade work
Assaulting a public officer
Attempt assault
Attempt cause explosion
Attempt escape using violence
Attempt grievous bodily harm
Attempt murder
Attempt robbery wound/company
Attempt robbery while armed in company
Attempt robbery while armed
Attempt robbery with violence
Attempt unlawful killing
Attempt unlawfully kill policeman
Attempt wounding to prevent arrest
Act or omission causing bodily harm
Aggravated armed assault with intent to rob
Aggravated armed robbery
Aggravated assault occasioning bodily harm
Aggravated assault with intent to rob
Aggravated robbery
Armed assault with intent to rob
Armed robbery
Armed robbery in company
Armed robbery with wounding
Armed robbery
Assault driver of passenger vehicle
Assault driver of a vehicle travelling on rails
Assault ferry operator
Assault occasioning bodily harm
Assault or threaten health officer

Assault or threaten health officer
Assault person aiding a public officer
Assault person performing a public function
Assault public officer- canine
Assault public officer
Assault wildlife officer
Assault with intent to rob
Assault on Rottnest Island
Assault person over 60 years of age and is liable
Assault resist or obstruct officer in the exercise of his powers
Assault with intent to commission a crime
Assault with intent to prevent arrest of a person
Assault with intent to do grievous bodily harm
Assault with intent to resist/prevent arrest/detention
Assault, hinder, resist federal police officer
Assault/hinder/resist federal police officer
Assaulted a liquor licensing court director
Assaulted a liquor licensing court judge
Assaulted a liquor licensing court registrar
Assaulted a party of hearing of the liquor licensing court
Assaulted a witness of hearing of the liquor licensing court
Assaulted an officer of the liquor licensing court
Assaulted with an intent to resist lawful arrest/prevent lawful arrest/detention with circumstances of aggravation
Assaulted with intent to commit/facilitate a crime under circumstances of aggravation
Assaulted with intent to do grievous bodily harm under circumstances of aggravation
Assaulting crew
Assaults a person
Assaults on members of crew of aircraft
Attempt to murder (act/omission likely to endanger life)
Attempt to murder
Attempt to strike a person with any kind of projectile
Attempted aggravated armed robbery
Attempted aggravated robbery
Attempted armed robbery
Attempted robbery with violence whilst armed and in company
Attempted robbery with violence whilst in company
Attempted to intimidate or annoy person, threaten to enter or damage dwelling or committed any other breach of peace
Bodily harm
Bomb hoax
Behaved in a riotous manner
Being armed or pretending to be armed in a way that may cause fear
Carry firearm to cause terror

Cause explosion-endanger life
Conspiracy to steal with violence
Conspiring to murder
Carried (possessed) an article with intent to cause fear that someone
Carried a controlled weapon in a manner likely to cause fear
Carried a controlled weapon in a manner likely to cause someone to be
Cause poison to be administered
Caused acceleration of death
Caused substance to be taken/received w/intent to cause grievous bodily harm
Caused harm to a Commonwealth official
Commit act likely result in serious disease to do grievous bodily harm
Committed an act on board a flight namely assault
Common assault
Continuing to be riotously assembled
Demand money by threat
Demand money by written threats
Demand prop with threats and with intent to steal
Demand property with menaces
Demand property written threats
Demands with menaces
Discharge firearm cause public fear
Discharge firearm to prevent arrest
Demand property with threats with intent to steal
Demanding property by oral threats
Demanding property by written threats
Detained another with intent to cause detriment
Detained another with intent to compel the doing of an act
Detained another with intent to gain a benefit
Detained another with intent to prevent/hinder person doing act
Discharged a firearm to cause fear
Found armed-intent commit crime
Going armed at night to commit crime
Going armed in public
Going armed so as to cause terror
Grievous assault
Grievous bodily harm
Grievous bodily harm with intent
Grievous bodily harm when stealing motor vehicle
Injuring animals
Intended grievous bodily harm
Intimidate/annoy-violence or other
Infanticide
Intent to maim by unlawful wounding
Kidnapping

Killing on provocation
Malicious injuries-general
Manslaughter
Murder
Manslaughter
Offer violence minister religion
Permit dog to attack person
Person assaults/hinders/obstructs a fisheries officer performing duty
Person found armed, etc with intent to commit an offence
Possessed an article with intent to injure (disable)
Pursued another person in a manner to intimidate with circumstance of aggravation
Pursued another with an intent to intimidate under circumstances of aggravation
Riotous behaviour
Robbery armed with violence
Robbery armed w/violence in company
Robbery whilst armed
Robbery whilst armed and in company
Robbery with aggravation
Robbery with violence
Robbery with violence and in company
Rioters causing damage by fire
Send threat letter-harm/destroy
Serious assault
Shooting to prevent arrest
Steal with threats of violence
Stealing with violence and wounding
Stealing with violence armed in company
Stealing with violence in company
Stealing with violence while armed
Stealing with violence
Threat witness royal commission
Threaten to kill
Threaten witnesses parliament
Threatening violence
Threaten person from giving evidence before a royal commission
Threaten person on the account of having given evidence
Threaten any person giving evidence before either house of parliament
Threaten to kill
Threaten to kill injure endanger or harm any person
Threatening witnesses after giving evidence before parliament
Took part in a riot
Unlawful possession weapon with intent to cause injury
Unlawful (common) assault
Unlawful assault police officer

Unlawful detention
Unlawful killing
Unlawful wounding
Unlawful wounding intent cause grievous bodily harm
Unlawful wounding to prevent arrest
Unlawfully assault police officer
Unlawfully kill policeman
Unlawfully wounded in circumstances of aggravation
Unlawful homicide
Unlawful killing of a human being
Unlawful wounding with a circumstance of aggravation
Unlawfully casts/throws any such fluid/substance on any person
Unlawfully causes any explosive substance to explode
Unlawfully assaulted doing grievous bodily harm with a circumstance of aggravation as per section 221 criminal code
Unlawfully assault and thereby did bodily harm with circumstances of aggravation
Unlawfully assaulted a person of/over the age of 60 years and thereby did that person bodily harm
Unlawfully assaulted another who died as a direct or indirect result of the assault
Unlawfully assaulted with circumstances of aggravation
Unlawfully killed another under such circumstances as not to constitute murder
Used physical force/undue harassment or coercion in connection with disposal/possible disposal of payment for any inter
Used physical force/undue harassment/coercion in connection with the supply of goods to a customer
Written threats to murder
While in place of another without consent committed offence (in aggravated circumstances)
While in the place of another without consent committed offence in circumstance of aggravation
Wilful murder
With intent to do grievous bodily harm does grievous bodily harm to another
With intent to do grievous bodily harm unlawfully wounds another
With intent to harm, omitted to do or did an act which resulted in life, safety or health was endangered

Appendix G



Government of **Western Australia**
Department of **Corrective Services**

Mr (Participant Name)

Prison:

Unit: Cell:

Dear Mr (Participant Surname)

RE: ALEXITHYMIA STUDY – QUESTIONNAIRE (TAS-20)

About a week ago you would have received a letter with an Information Sheet and Consent Form asking you to take part in the research project, *“The nature of the association between male violent offending and alexithymia”*. You have received this letter because you have signed and returned the Consent Form. By reading the information sheet and signing and returning the consent form you have agreed to participate in the study. Your participation in the research project is very helpful and I thank you very much.

It is important for you to remember that you do not have to complete the questionnaire. Your participation in voluntary and you can stop at any time if you would like.

What you need to do

With this letter you will find a two-page questionnaire. The questionnaire is designed to assess people’s emotions. It contains 20 questions asking you about your feelings. If you look down the pages you will see there are numbers. These numbers show how much you agree or disagree with each of the questions. To answer each question simply draw a circle around one number for each question.

The questionnaire should only take about 5-10 minutes to complete. You do not need to write your name on the questionnaire.

If you feel upset after completing the questionnaire you may ask to speak to someone at the prison counselling services.

After you have completed the questionnaire

Please return to the questionnaire to Graham Bond in the envelope provided. The questionnaire will then be posted directly back to me. Your answers on the questionnaire will remain completely confidential, and your questionnaire will not be seen by anyone outside of the research team. When I write up the report your name will not be in it. You will not be identified.

If you would like a copy of the report when it is finished you may contact the researchers and ask for a copy. Or if you would like more information about the research you are welcome to write to me at:

Cate Joseph
School of Psychology
Edith Cowan University
100 Joondalup Drive
Joondalup, WA, 6027

This study has been approved by the Department of Corrective Services Research Application and Review Committee (RARC).

If you have any concerns or complaints about the research project and wish to talk to an independent person, you may contact:

Research Ethics Officer
Edith Cowan University
100 Joondalup Drive
Joondalup, WA, 6027
PH: (08) 6304 2170
Email: research.ethics@ecu.edu.au

Yours sincerely

A handwritten signature in black ink, appearing to read 'Cate Joseph', written over a horizontal line.

Cate Joseph
Researcher