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**Alexithymia in a Psychiatric Population: Stability
and Relationship with Therapeutic Outcome**

By

Lauren McGillivray

BA (Psychology) Hons

This thesis is submitted in fulfilment of the requirements for the award of

Doctor of Philosophy (Clinical Psychology)

School of Psychology and Social Science

Faculty of Health, Engineering, and Science

Edith Cowan University

Western Australia

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ABSTRACT

Alexithymia has been defined as a personality construct that involves difficulties identifying and describing feelings, as well as an externally oriented thinking style and impoverished fantasy life, which places individuals at risk for various psychopathologies. For psychiatric populations, it represents an obstacle to therapeutic success. Despite extensive research, there is no consensus on the prevalence rate of alexithymia in the general psychiatric population and no data on alexithymia prevalence in the Australian general psychiatric population. In addition, there is inconsistency in the literature regarding the role of alexithymia in therapeutic intervention and a lack of robust studies involving control or comparative therapeutic conditions.

Two systematic literature reviews were conducted to evaluate the prevalence rate of alexithymia in the psychiatric and community populations and the role of alexithymia in the therapeutic process, respectively. The first review, comprising 124 studies, revealed that prevalence rates of alexithymia, although extremely varied, were much higher in psychiatric samples compared to community samples. While different psychiatric diagnoses were likely to have contributed to the variation in rates of alexithymia across psychiatric samples, it was unclear whether other sample characteristics may have contributed. The second review, involving 31 studies, identified a balance between studies that found a negative influence of alexithymia on some therapeutic outcomes and studies that found no influence of alexithymia on therapeutic outcomes. In addition, numerous types of therapeutic intervention reduced alexithymic features on average. All of the reviewed studies found a consistent degree of change between individual's alexithymia scores from before to after treatment (relative stability).

Study 1 examined differences in alexithymia between 166 general psychiatric outpatients and 216 community participants from Australia. Alexithymia was measured with the 20-item Toronto Alexithymia Scale. Analysis of variance indicated that the psychiatric sample, independent of demographic factors, had higher alexithymia scores than the community sample. Chi-Square analysis showed a greater proportion of alexithymic participants in the psychiatric sample compared to the community sample. The strength of the associations between alexithymia and psychological distress (measured with the Depression Anxiety Stress Scale) were found to be similar for both sample groups.

Study 2 examined the role of alexithymia in the therapeutic process in a subset ($n = 61$) of the original psychiatric sample who were subject to one of two treatment conditions: emotion focused group therapy or cognitive-behavioural focused group therapy. Higher alexithymia scores before treatment were associated with less change in psychological distress severity during treatment. This association was not significant in either treatment condition when examined separately. Analysis of variance showed that mean-level change in alexithymia from before to after treatment was not dependent on treatment condition. Correlation and hierarchical regression analyses showed a high degree of relative stability in alexithymia despite moderate change in psychological distress severity. Regression analysis showed that change in alexithymia could not be directly accounted for by change in psychological distress. Regression analysis also showed that less change in alexithymia severity during treatment significantly predicted higher psychological distress scores after treatment, even after controlling for group therapy type and psychological distress severity before treatment.

The theoretical, research, and clinical implications of these research findings are discussed.

The importance of identifying alexithymic patients prior to conducting therapeutic

intervention was emphasised, as was the need to provide those patients, who were alexithymic after treatment, with further psychiatric care.

DECLARATION

I certify that this thesis does not, to the best of my knowledge and belief:

- i. incorporate without acknowledgment any material previously submitted for a degree or diploma in any institution of higher education;
- ii. contain any material previously published or written by another person except where due reference is made in the text of this thesis; or
- iii. contain any defamatory material;

This project involved access to confidential information. Approval from the Department of Health was granted, subject to complying with a number of conditions relating to the use, security, and confidentiality of the data. All Department of Health conditions were complied with. In addition, although data were identifiable when initially accessed, the research data for this project were made confidential by making the data non-identifiable.

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CHAPTER 1

INTRODUCTION

More than 25% of all people will develop a psychiatric disorder at some point in their lives (World Health Organization, 2001). Individuals diagnosed with a psychiatric disorder have high rates of socioeconomic disadvantage (e.g., unemployment, poor housing, less social support, and less access to health services), morbidity (physical and mental disability and non-fatal health outcomes) and premature mortality (AIHW et al., 2007). In fact, mental illness was the third leading contributor to total burden of disease and the leading cause of the disability burden in Australia in 2003 (AIHW et al.). The global burden of mental illness is likely to increase rapidly in the future (Murray & Lopez, 1996). For these reasons, there is a growing body of research investigating the prevention and treatment of psychopathology, as well as potential risk factors for developing psychiatric disorders.

Alexithymia is considered an important risk factor in the development, maintenance, and recovery from a broad range of psychiatric disorders, symptom presentations, and maladaptive behaviours (Taylor, Bagby, & Parker, 1997). Alexithymia is a personality trait that reflects a comprehensive deficit in the cognitive processing of emotions, that is the way in which individuals experience and express emotion (Sifneos, 1994; Taylor et al., 1997). Although alexithymia represents a trait that is normally distributed in the general population (Mattila et al., 2010), rates of alexithymia are typically far greater in psychiatric populations than in general populations. A number of studies have noted greater rates of alexithymia amongst psychiatric patients, including those diagnosed with depression (Son et al., 2012), anxiety and trauma related disorders (Frewen, Lanius, et al., 2008), somatoform disorders (Müller & Bühner, 2006), eating disorders (Beales & Dolton, 2000), and substance misuse (Evren, Cagil, et al., 2012).

Alexithymia may pose a particular problem for psychiatric patients by contributing to the chronicity of their disorder and interfering with their recovery. Alexithymia has been associated with persistent high levels of psychological distress following treatment (Grabe et al., 2008; Leweke, Bausch, Leichsenring, Walter, & Stingl, 2009; Ogrodniczuk, Piper, & Joyce, 2004). Further, alexithymia has been associated with higher levels of psychiatric symptomatology over extended periods of time (Bach & Bach, 1995; Speranza, Loas, Wallier, & Corcos, 2007). Understandably, there is growing interest into the extent to which alexithymia can be mitigated and the most effective treatments to achieve this.

Numerous studies have explored the extent to which alexithymia levels change over time (alexithymia stability) as a result of therapeutic treatment for psychiatric disorders. Conclusions from prospective studies as to whether alexithymia is stable or not largely depend on the types of analyses conducted. The most common analyses conducted in alexithymia studies assess mean-level stability (average alexithymia score in the overall sample is consistent over time) and relative stability (differences between individual's alexithymia scores are consistent over time). Some studies have found mean-level stability in alexithymia following treatment with multimodal cognitive-behavioural therapy (Rufer et al., 2004) and pharmacotherapy (Schmidt, Jiwan, & Treasure, 1993; Todarello, Porcelli, Grilletti, & Bellomo, 2005). However, many more studies have shown significant reductions in alexithymia following multimodal psychotherapy (Honkalampi, Hintikka, Laukkanen, Lehtonen, & Viinamäki, 2001), emotion regulation training (Clyne & Blampied, 2004), and cognitive-behavioural therapy (Spek, Nyklíček, Cuijpers, & Pop, 2008).

The present thesis progressed in four stages: two systematic literature reviews and two empirical studies. The first literature review is presented in Chapter 2. This literature review evaluated the occurrence of alexithymia in psychiatric and community samples, prevalence rates of alexithymia according to psychiatric diagnosis (e.g., mood disorders and somatoform

disorders) and psychiatric setting (inpatient and outpatient settings), and the influence of demographic factors of the study sample (e.g., gender) on alexithymia scores.

The second literature review is presented in Chapter 3. This literature review evaluated the influence of alexithymia on therapeutic outcome in psychiatric samples. The stability of alexithymia following different therapeutic interventions was also evaluated in this review.

The two empirical studies conducted in the present research sought to address some of the gaps and limitations that were highlighted in the literature reviews. Study 1 (Chapter 4) established the prevalence of alexithymia in an Australian psychiatric outpatient sample and then compared this rate to an Australian general community sample. To the researcher's knowledge, this is the first study to examine alexithymia rates in an Australian general psychiatric sample. Given some conflicting findings reported on in the literature review (Chapter 2) regarding the potential influence of demographic factors on alexithymia, Study 1 considered whether alexithymia poses a greater risk for particular groups of people by examining the impact of participants' gender, education level, and employment status on alexithymia scores. The relationship between alexithymia and psychological distress for both sample groups was also considered in this study in order to explore the role of alexithymia as a predisposing factor to the development and/or maintenance of psychopathology.

Study 2 (Chapter 5) examined the role of alexithymia in the maintenance of psychiatric symptomatology after group intervention. As very few studies in this area have compared different therapeutic approaches, this study investigated the influence of alexithymia on psychological distress levels in a sample of psychiatric outpatients after they had completed one of two therapeutic groups. In addition, this study examined the effectiveness of these therapy groups in reducing alexithymia over time.

The final chapter (Chapter 6) of this thesis provided a general discussion of the combined research findings from each chapter. This discussion included a general overview of what has been covered in the present thesis and a synthesis of the main findings from each chapter. This chapter also highlighted the strengths and limitations of the present research, provided theoretical and practical implications of the findings, and offered recommendations for future research.

The stress-diathesis model was applied as a theoretical framework to guide the design and interpretation of the present research. The stress-diathesis model is a widely accepted model of causation used to explain the interaction of multiple factors in the development and maintenance of psychopathology (Zuckerman, 1999). In simple terms, this model suggests that psychopathology is a result of environmental stressors (stress) in individuals who have a vulnerability or predisposition (diathesis) to a given psychiatric disorder. Stress and a combination of predisposing factors exceed a threshold through which the individual will develop a psychiatric disorder. Factors that predispose an individual to develop a psychiatric disorder may be inherited (genetic), biological stressors during the prenatal to postnatal periods (e.g., damage to the neurological system), and/or psychological (e.g., early learning experiences that influence cognitive and emotional aspects of personality). Psychological predisposing factors are generally considered relatively stable but not necessarily permanent. In the stress-diathesis model, alexithymia is considered a stable personality trait, or psychological predisposing factor, that interacts with stressors to increase general susceptibility to psychopathology.

The remainder of the present chapter has been written as an introduction to the alexithymia construct. This section provides a brief history of alexithymia as well as how it was conceptualised and is currently described, a discussion of various measures that have

been designed to assess and validate alexithymia, and an outline of the prominent aetiological theories that have been proposed to explain the origins of alexithymia.

History of Alexithymia

Freud was interested in the origin and treatment of patients with hysteria who experienced a pattern of physical symptoms, such as blindness and paralysis, that had no definable organic cause (also known as psychoneurotic disorders) (Breuer & Freud, 1895). He theorised that many of the physical symptoms experienced by hysterical patients could be connected to distressing childhood experiences that could not be recalled by the patient. Freud attributed the manifestation of somatic symptoms to an attempt by the unconscious mind to protect the patient from psychological distress. That is, whereby the somatic symptoms function to relieve this distress directly (by redirecting attention toward the presenting symptoms) or indirectly (e.g., avoiding work or responsibility).

Freud's psychogenic explanation of somatic symptoms was central to the development of psychoanalysis and the conceptualisation of psychosomatic disease (Taylor, Bagby, & Parker, 1991). For instance, several psychoanalysts (e.g., Alexander, 1950) advanced the idea that unconscious psychological conflicts and the distress associated with them might play a role in the development, presentation, and maintenance of a definable physical illness. However, psychoanalytic therapy as a treatment for psychosomatic disorders (e.g., ulcerative colitis or essential hypertension) did not prove to be as effective as anticipated (Eysenck, 1952; Lipowski, 1968). Many patients benefited more from supportive psychotherapy and/or behavioural interventions (Kellner, 1975; Sifneos, 1983) than psychoanalytic therapy, and other patients reported aggravated psychosomatic symptoms in response to psychoanalysts' attempts to identify and interpret unconscious psychological conflicts (Sifneos, 1975). These limitations led several researchers to reject Freud's

conceptualisation and treatment of psychosomatic disorders (e.g., Macalpine, 1952; MacLean, 1949; Ruesch, 1948).

Alternative hypotheses about somatic symptoms emerged after World War Two. These approaches emphasised the role of affective disturbance rather than unconscious psychological conflict in the development of psychosomatic disorders. For instance, Ruesch (1948) and MacLean (1949) noticed that many patients with psychosomatic disorders showed difficulties verbalising their emotions. Ruesch described these patients as having an infantile personality, who lacked the symbolic and verbal skills necessary for the self-expression of emotion. He also observed that these patients did not discharge tension by means of action or through verbal, gestural or creative symbolism like mature adults. Moreover, psychoanalysts Marty and de M'Uzan (1963) recognised a pattern of thinking in psychosomatic patients that was devoid of fantasy, symbolism, imagination and personal elements. They referred to this deficient form of thinking as *pensee operateire* (operational thinking).

It was the investigations of Nemiah and Sifneos (1970) that resulted in the formal classification of the alexithymia construct. These clinicians began systematic investigations into the cognitive and affective characteristics of patients with psychosomatic disorders. The results of their investigations indicated that, unlike psychoneurotic patients, many psychosomatic patients had noticeable difficulty describing subjective feelings and elaborating fantasies, and a style of thinking that was similar to operational thinking (Marty & de M'Uzan, 1963). Sifneos (1973) proposed the term alexithymia (from the Greek: *a* = lack, *lexis* = word, *thymos* = emotion) to categorise the set of characteristics he had observed in patients with psychosomatic disorders.

The introduction of the alexithymia construct promoted great interest in the subject and was chosen to be one of the main themes of the 11th European Conference on Psychosomatic Research (Bräutigam & Rad, 1977), alongside psychosomatic disease and

operational thinking. Several key outcomes emerged from this conference, including a distinction between psychoneurotic and psychosomatic disorders, further clarification of a definition of alexithymia, a need to integrate different fields of research that would facilitate a holistic approach to investigating alexithymia, and the need for more extensive and detailed investigations into the treatment of alexithymia.

Describing Alexithymia

Before presenting a description of the alexithymia construct it is important to take into consideration that alexithymia is not an independent psychiatric diagnosis that is included in any diagnostic manual of mental disorders (Swiller, 1988). Rather, the term alexithymia describes a number of related psychological disturbances. Taxometric analyses have indicated that alexithymia is best conceptualised as a dimensional rather than a categorical construct (Mattila et al., 2010; Parker, Keefer, Taylor, & Bagby, 2008). That is, alexithymia is viewed as a characteristic that is normally distributed in the general population. While alexithymia may be a dimensional construct, research often requires the identification of high (alexithymic) or low (non-alexithymic) alexithymic participants. Throughout this thesis, and the literature cited herein, the terms alexithymia and alexithymic are used to identify individuals with more severe or problematic levels of alexithymia.

Alexithymia is currently defined by a set of four characteristics: 1) difficulties identifying feelings and distinguishing feelings from bodily sensations of emotional arousal; 2) difficulties describing and communicating feelings to others; 3) constricted imaginal processes, as indicated by a relative deficiency of affect-related fantasies; and 4) a style of thinking characterised by a fixation on external stimuli. Although these characteristics are conceptually different, it has been suggested that they are logically interrelated and commonly manifest together (Taylor et al., 1997). For example, the ability to describe

feelings to others is dependent on the ability to identify and distinguish feelings (Bagby, Parker, & Taylor, 1994).

Alexithymic individuals have a greater tendency to experience negative emotions like anger, anxiety, depression, and feelings of shame and embarrassment, as well as a reduced capacity to experience positive emotions, such as happiness and affection (Bagby, Taylor, & Parker, 1994; Krystal, 1988). However, while these individuals may report episodes of emotional disturbance, they have difficulty identifying them as feelings and differentiating them from physiological responses to emotional arousal (e.g., increased heart rate, sweating, or dry mouth). For example, the experience of anxiety and hunger may be confused. The limited capacity of alexithymic individuals to identify and differentiate negative emotion, together with difficulties expressing these emotions in a sufficient or healthy way, leads them to intensify and misinterpret ordinary bodily sensations associated with emotional arousal as physical disease (Lane & Schwartz, 1987; Taylor et al., 1997). Consequently, individuals who present to doctors with persistent complaints about bodily symptoms may be incorrectly treated or diagnosed with a somatoform disorder (Taylor et al., 1997).

In addition to difficulties identifying and differentiating feelings, individuals with alexithymia have difficulty describing and communicating their feelings to others, both verbally and nonverbally. They often describe their feelings as vague tension states of which they cannot interpret or elaborate any further (Taylor et al., 1997). Their communication style is characterised as flat and monotone, with an absence of nuance, metaphor, or the use of emotional language (Meganck, Vanheule, Inslegers, & Desmet, 2009; Taylor, 1984). These features generate conversation that has been described by therapists as dull, lifeless, and boring (Nemiah & Sifneos, 1970; Taylor, 1977). Furthermore, difficulties communicating feelings nonverbally can produce a stiff wooden posture and limited facial expressions in the individual (Taylor et al., 1997).

Since emotions are not adequately communicated, it is difficult for individuals with alexithymia to elicit support and comfort from others. Difficulty recognising emotions that are being experienced by another person also limits their empathy and support for others (Grynberg, Luminet, Corneille, Grèzes, & Berthoz, 2010; McNeill, 2014). Alexithymic individuals may appear cold, detached, and socially avoidant (Vanheule, Desmet, Meganck, & Bogaerts, 2007). This characteristic may limit their chances of developing a strong working relationship with a therapist, forming intimate relationships (Humphreys, Wood, & Parker, 2009), and from using social interactions in everyday life as a way of regulating and coping with negative affect (C. Spitzer, Siebel-Jürges, Barnow, Grabe, & Freyberger, 2005).

Another feature of alexithymic individuals is a reduction or absence of fantasies, imagination, or other phenomena related to their inner, private mental life of attitudes, feelings, desires, and drives (Taylor et al., 1997). They lack the ability to self-reflect or examine their conscious thoughts and feelings (introspection, Taylor et al., 1997) and to form new images and sensations that are not perceived through their senses (imaginative ability, Campos, Chiva, & Moreau, 2000), including daydreaming and dream recollection.

The externally-oriented cognitive style of alexithymic individuals is, to some extent, reflected by their impoverished inner fantasy life (Bagby, Parker, et al., 1994; Marty & de M'Uzan, 1963). The reduced fantasy and imaginal activity in alexithymic individuals are replaced by a primary focus on external stimuli in their immediate environment, such as physical sensations. Conversations often involve repetitive recitation of concrete facts in excessive detail (Krystal, 1988). This monotonous style of communication in alexithymic patients, as well as their inability to interact emotionally and to link physical symptoms to feelings, may generate boredom and frustration in their therapist, which may ultimately affect the outcome of psychotherapy (Ogrodniczuk, Piper, & Joyce, 2005).

In addition to determining a definition of alexithymia, researchers have examined various aspects of emotion processing in order to substantiate clinical observations of individuals with alexithymia. Three interrelated sets of processes broadly define emotion: physiological processes (e.g., activation of the autonomic nervous system), behavioural processes (e.g., facial expression and tone of voice), and cognitive-experiential processes (subjective awareness and verbal reporting of feelings) (Gross, 2013; Mauss, Levenson, McCarter, Wilhelm, & Gross, 2005). The fundamental assumption underlying the alexithymia construct is that features of alexithymia reflect a deficit in the cognitive-experiential or cognitive processing of emotion (Taylor et al., 1997). Since these processes are interrelated, a deficit in the cognitive processing of emotion disrupts emotional processing on a physiological level as well as on a behavioural level.

Several studies have examined differences in autonomic activity between alexithymic and non-alexithymic individuals, both at rest and in response to stressors or emotion-eliciting slides. Findings across the literature are inconsistent. A number of studies have found that, compared to non-alexithymics, individuals with alexithymia exhibit higher resting heart rate (Fukunishi, Sei, Morita, & Rahe, 1999; Wehmer, Brejnak, Lumley, & Stettner, 1995) and electrodermal activity (Friedlander, Lumley, Farchione, & Doyal, 1997; Stone & Nielson, 2001), as well as greater physiological reactivity during emotion provoking situations (Waldstein, Kauhanen, Neumann, & Katzel, 2002). In contrast, some studies have found that alexithymic individuals exhibit lower physiological reactivity when viewing emotion-eliciting slides compared to non-alexithymic individuals, evidenced by fewer skin conductance responses (Pollatos, Schubo, Herbert, Matthias, & Schandry, 2008) and heart rate decelerations (Franz, Schaefer, & Schneider, 2003; Wehmer et al., 1995). Furthermore, other studies have not found any differences at baseline between alexithymic and non-alexithymic individuals in heart rate or electrodermal activity (Franz et al., 2003; Neumann,

Sollers, Thayer, & Waldstein, 2004; Roedema & Simons, 1999) or in blood pressure during stressful tasks (Fukunishi et al., 1999; Newton & Contrada, 1994). Inconsistent findings across the literature regarding autonomic activity associated with alexithymia may reflect a number of differences in methodologies and indicators of autonomic activity, measures used to identify alexithymia, and tasks used to elicit emotion and induce stress (Freund, 2012).

Evidence that is more consistent has been found for differences in brain activity between alexithymic and non-alexithymic individuals. Individuals with alexithymia display lower brain activity in response to emotional stimuli compared to non-alexithymics when studied using positron emission tomography (Kano et al., 2003; Karlsson, Näätänen, & Stenman, 2008). In particular, individuals with alexithymia have been found to exhibit low levels of brain activity in regions associated with empathic ability and perspective-taking ability (Moriguchi et al., 2007; Moriguchi et al., 2006). Difficulties with empathy and perspective-taking result in problems differentiating between emotional states of the self and others and may lead to the contagion of others distress (Moriguchi et al., 2007; Moriguchi et al., 2006). Moriguchi et al. (2006) have suggested that poor empathic ability and perspective-taking partly explain the association between alexithymia and psychological distress, as well as difficulties reading emotion from facial expressions. A literature review of 24 studies that have investigated the association between alexithymia and the processing of emotional facial expressions showed that alexithymia was associated with global impairments in perceiving emotional facial expressions to such an extent that individuals with alexithymia had difficulties detecting, matching, and labelling negative, positive, and neutral emotions (Grynberg et al., 2012).

Studies that have examined brain activation, using functional magnetic resonance imaging, have shown reduced blood flow and neural activity in the anterior cingulate cortex (ACC) of alexithymic individuals (Frewen, Pain, Dozois, & Lanius, 2006; Heinzl et al.,

2010). Abnormal activity in the ACC is viewed as a neurobiological correlate of alexithymia since it has been linked to cognitive deficits in emotion awareness and appraisal of emotion (Berthoz et al., 2002; Gündel et al., 2002). In addition to abnormal activity in the ACC, individuals with alexithymia have shown greater activation in sensory and motor cortices of their brains during emotion-provoking situations compared to non-alexithymic individuals (Karlsson et al., 2008; Moriguchi et al., 2009). It has been suggested that the combination of diminished emotion awareness and intensified bodily awareness may explain the external focus or heightened awareness of physical sensations seen in those with alexithymia (Karlsson et al., 2008).

Researchers that have examined the functioning of brain hemispheres have observed lower activation of the right hemisphere in alexithymic individuals compared to non-alexithymic individuals (Hatin, 2011; Jessimer & Markham, 1997; Tabibnia & Zaidel, 2005). The right hemisphere of the brain is thought to be primarily involved with emotion processing; an idea known as the right hemisphere hypothesis (e.g., Smith & Bulman-Fleming, 2005). It has been suggested that right hemisphere dysfunction is responsible for poor emotion recognition and relative dominance of the left hemisphere, which may lead to the externally oriented style of thinking seen in individuals with alexithymia (Aftanas & Varlamov, 2007). However, evidence for the right hemisphere hypothesis has been conflicting. In particular, many studies have shown that individuals with alexithymia display low activation of both the left and right hemispheres (Grabe et al., 2004; Parker, Keightley, Smith, & Taylor, 1999; Richter et al., 2006; Romei et al., 2008; Tabibnia & Zaidel, 2005). Some researchers have proposed that low activation of both brain hemispheres is linked to deficits in the ability to verbally articulate (left hemispheric function) emotions (right hemisphere function) in individuals with alexithymia (Berenbaum & Prince, 1994; Hariri, Bookheimer, & Mazziotta, 2000).

By examining different aspects of emotional processing in alexithymic individuals, researchers have provided evidence to support the idea that features of alexithymia reflect a deficit in the cognitive processing of emotion (Taylor & Bagby, 2004). While research into autonomic activity associated with alexithymia remains contentious, previous studies have found that alexithymic individuals show low brain activation in response to emotional stimuli (Kano et al., 2003) as well as comprehensive difficulties in the processing of emotional facial expressions (Lee et al., 2011). Studies finding reduced blood flow and neural activity of the ACC in alexithymic individuals (Frewen et al., 2006; Heinzl et al., 2010) have provided insight into the cognitive deficits in emotion awareness and appraisal of emotion present in these individuals. Findings of greater activation of sensory and motor cortices of the brain in response to emotional stimuli have helped to explain the externally-oriented focus or heightened somatic awareness in individuals with alexithymia (Karlsson et al., 2008). In addition, findings of low brain activation of the right (e.g., Aftanas & Varlamov, 2007) and left and right hemispheres (e.g., Berenbaum & Prince, 1994) have substantiated clinical observations of difficulties in emotion recognition and verbal expression of emotion in alexithymic individuals, respectively.

The advancement of cognitive and physiological research on emotional processing in individuals with alexithymia could not have been achieved if not for previous research efforts to develop a uniform, valid, and reliable psychometric tool for measuring alexithymia. What follows is an evaluation of some of the most common measures of alexithymia.

Measurement of Alexithymia

Following the 11th European Conference on Psychosomatic Research (Bräutigam & Rad, 1977) several measures for assessing alexithymia were developed. However, many of these measures lacked empirical support. The Schalling-Sifneos Personality Scales (Apfel & Sifneos, 1979) and the Minnesota Multiphasic Personality Inventory alexithymia Scale

(Kleiger & Kinsman, 1980) for example, were found to show little evidence of scientific rigour in their construction, lacked validity and reliability as a result, and were eventually abandoned (Taylor, Bagby, & Luminet, 2000).

Two main approaches for assessing alexithymia have been proposed, which most commonly include observer-rated measures and self-report measures. Observer-rated measures, such as the Beth Israel Hospital Psychosomatic Questionnaire (BIQ; Sifneos, 1973), the Observer Alexithymia Scale (OAS; Haviland, Warren, & Riggs, 2000), and the Toronto Structured Interview for Alexithymia (TSIA; Bagby, Taylor, Parker, & Dickens, 2006) are based on questionnaires that are completed by a clinician after interviewing the participant or by someone (such as a family member) who is familiar with the participant. Self-report measures, such as the Bermond-Vorst Alexithymia Questionnaire (BVAQ; Vorst & Bermond, 2001) and the 20-item Toronto Alexithymia Scale (TAS-20; Bagby, Parker, et al., 1994), are based on questionnaires that participants complete by themselves without interference from others.

The following description of the psychometric properties and methodologies of a range of common assessment measures of alexithymia was provided to inform the most appropriate instrument to measure alexithymia in the present research samples. Only measures that have been normalised on adult samples were considered as the present research involved adult samples. This is not a major limitation, since few measures of alexithymia have specifically targeted children or adolescents; the majority of measures have been normalised using university student samples, which are comprised of adults.

Beth Israel Hospital Psychosomatic Questionnaire

The original BIQ (Sifneos, 1973) is a 17-item measure developed in the United States of America (USA) in order to identify differences in alexithymia between patients with psychosomatic disorders and patients with “neurotic complaints” (e.g., borderline personality,

depression, hysterical personality, and alcoholism, Sifneos, 1973, p. 257). From the 17 questions, 8 key items were selected (Sifneos, 1973) that best assess alexithymia characteristics. All items are scored by an interviewer or observer as either present (*score 1*) or absent (*score 0*), whereby the more key items endorsed the higher the presence of alexithymia. The questionnaire involves a combination of unstructured conversation with the patient followed by semi-structured probing to determine the patient's ability to verbalise feelings and to report fantasies and dreams.

The use of dichotomous questioning has been criticised as being unstable in factor analysis (Taylor & Bagby, 1988). In addition, although some research has supported the validity of the BIQ (Gardos, Schniebolk, Mirin, Wolk, & Rosenthal, 1984) less support has been found for the inter-rater reliability of this measure (e.g., $r = .30$, Taylor, Doody, & Newman, 1981), which may be due to the fact that it does not include a set of standardised interview questions (Lumley, Neely, & Burger, 2007). In addition, as an observer-rated measure, the reliability of the BIQ may be affected by the observer's previous experiences, biases, and/or interviewing style (Taylor & Bagby, 1988). Furthermore, the BIQ has received criticism for its lack of specificity in measuring the alexithymia construct, as only 8 items out of the 17 are related and used to obtain an alexithymia score (Taylor et al., 2000).

Based on these criticisms, the BIQ was modified (Bagby, Taylor, et al., 1994) to enhance reliability: four new items were included, nine items less relevant to alexithymia were excluded, and the dichotomous questioning methodology was replaced with a 7-point Likert-type design. The resulting 12-item modified BIQ comprises a two-factor structure: six items relate to affect awareness (the ability to identify and communicate feelings) and six items relate to operational thinking (imaginal activity and externally oriented thinking). Therefore, the modified BIQ assesses both affective and cognitive traits of alexithymia. Support for the two-factor structure of the BIQ has been shown in clinical samples in the

USA (Haviland, Warren, Riggs, & Nitch, 2002) and university students and clinical samples in Japan (Fukunishi, Nakagawa, Nakamura, Kikuchi, & Takubo, 1997).

The findings of several studies support the modified BIQ as a reliable and valid measure of alexithymia (Bagby, Taylor, et al., 1994; Taylor et al., 2000), with good internal consistency ($\alpha = .85$, Haviland et al., 2002) and concurrent validity with the TAS-20 (Lumley, Gustavson, Partridge, & Labouvie-Vief, 2005). However, the modified BIQ is not widely used amongst clinicians and researchers, possibly due to the demands of training, the time required for interviewing, and the lack of standardised interview (Lumley et al., 2007). Recommendations to obtain inter-rater reliability when using the modified BIQ (Taylor et al., 2000) may have limited its use further.

Observer Alexithymia Scale

The OAS (Haviland et al., 2000) is another observer-rated measure of alexithymia. It relies on collateral information obtained from a clinician, family member, or friend of the patient being assessed and is therefore based on the idea that reliable observations of alexithymia can be made by those close to the patient. The OAS consists of 33 items that yield a total score of alexithymia as well as five factor scores that correspond to alexithymia characteristics: Distant, Uninsightful, Somatizing, Humourless, and Rigid.

The psychometric properties of the OAS were originally assessed in university student samples in the USA. The OAS was shown to demonstrate good internal reliability ($\alpha = .90$, Haviland, Warren, Riggs, & Gallacher, 2001) and two week test-retest reliability ($r = .87$, Haviland et al., 2000). The five-factor structure of the OAS has been supported in English and French-speaking university students (Berthoz, Haviland, Riggs, Perdereau, & Bungener, 2005), Chinese-speaking university students (Yao, Yi, Zhu, & Haviland, 2005), and a clinical sample (Haviland et al., 2001). However, concurrent validity of the OAS is not strongly supported, with some studies showing small correlations with the TAS-20 ($r \leq .27$,

Lumley et al., 2005; Meganck, Vanheule, Desmet, & Inslegers, 2010). Furthermore, inter-rater reliability of four out of five OAS factors has been shown to be insufficient ($\alpha \leq .62$, Meganck et al., 2010).

Toronto Structured Interview for Alexithymia

The TSIA (Bagby et al., 2006) is an interview-based observer-rated measure for assessing alexithymia. It consists of 24 interview items that yield a total score of alexithymia that ranges from 0 to 48, with higher scores indicating a greater degree of alexithymia. Each item is scored along a 3-point Likert scale from zero to two. For some items, the scoring is based on the frequency of the presence of a characteristic, and for other items, it is based on the degree of the presence of a characteristic. For example, a score of zero is given if the characteristic is never or rarely present, or is not a feature of the respondent; a score of one is given if the characteristic is present some of the time or is a partial feature of the respondent; and a score of two is given if the characteristic is present most of the time or is a strong feature of the respondent. For each item, there are standardised prompts and probes designed to elicit information to assist in the accurate scoring of the item. Administration of the TSIA takes between 30 and 45 minutes.

The TSIA was developed and initially validated with Canadian psychiatric outpatients and community participants where it demonstrated adequate item characteristics, acceptable levels of inter-rater, internal, and test-retest reliability, as well as concurrent validity with the TAS-20 (Bagby et al., 2006). Factor analysis identified a hierarchical four-factor model with four lower-order factors nested within two higher-order factors consistent with the theoretical underpinnings of the construct. This four-factor model consists of 24 items, 6 items for each of the four lower-order facet scales: difficulty identifying feelings (DIF), difficulty describing feelings (DDF), externally oriented thinking (EOT), and imaginal processes (IMP). The two lower-order facet scales DIF and DDF formed a single higher-order domain scale labelled

Affect Awareness (AA) and the other two lower-order facet scales EOT and IMP formed a single higher-order domain scale labelled Operative Thinking (OT). Acceptable levels of internal and inter-rater reliability have been obtained with German, Italian, and Dutch language translations of the TSIA (Caretto et al., 2011; Grabe et al., 2009; Inslegers et al., 2013). Confirmatory factor analyses with the German, Italian, and Dutch language versions also supported the four-factor structure of the TSIA obtained with the original English version.

Bermond-Vorst Alexithymia Questionnaire

The BVAQ (Vorst & Bermond, 2001) is a 40-item self-report scale designed to measure alexithymia. Items are scored using 5-point Likert scales. The BVAQ is an extension of the earlier 20-item Amsterdam Alexithymia Scale (AAS; Bermond, Vorst, Vingerhoets, & Gerritsen, 1999), both of which have the same five-factor structure: Identifying, Verbalising, Analysing, Fantasising, and Emotionalising. The goal of extending the AAS to the BVAQ was to have two paralleled versions (A and B), each consisting of 20 items, and an extended test (A+B) of 40 items (Vorst & Bermond, 2001). Each factor of the BVAQ comprises eight balanced indicative and contra-indicative items.

The BVAQ has been translated into several languages. The BVAQ was shown to be a valid and reliable measure of alexithymia in English, Dutch, and French (Belgian) speaking university student samples, with good internal reliability between translations ($\alpha > .80$) and concurrent validity with the TAS-20 (Vorst & Bermond, 2001). However, confirmatory factor analyses have provided contradictory findings, with some studies showing support for the five-factor model of the BVAQ (Müller, Bühner, & Ellgring, 2004) and other studies showing less support for the five-factor model (Zech, Luminet, Rimé, & Wagner, 1999). Using data collected from a clinical sample, Müller et al. (2004) found that the five-factor model of the BVAQ yielded a better global fit than the three-factor model of the TAS-20. On

the other hand, they found that the smallest item loadings occurred in the factors Analysing and Emotionalising, which yielded loadings below Chronbach's alphas of .49. At a conceptual level, Taylor et al. (2000) have argued that since the concept of Emotionalising (the degree to which a person is emotionally aroused by emotion-inducing events, Vorst & Bermond, 2001) was not part of the original definition of alexithymia, this factor should only be considered a correlate of alexithymia.

Toronto Alexithymia Scale

Probably the most well-known and used self-report measure of alexithymia is the Toronto Alexithymia Scale (TAS). There have been three revisions of the TAS: the original TAS-26 scale (Taylor, Ryan, & Bagby, 1985), the revised TAS-R (Taylor, Bagby, & Parker, 1992), and the current TAS-20 (Bagby, Parker, et al., 1994). Factor analysis of the TAS-26, conducted with Canadian university students, supported a four-factor structure that was theoretically congruent with the alexithymia construct. The scale was shown to have good internal reliability ($\alpha = .79$) and test-retest reliability over five weeks ($r = .75$). However, several shortcomings of the scale have been noted, including a high correlation between two of the factors, low magnitude correlations between the items comprising the daydreaming factor and the full-scale score, and a lack of congruence between the overall compositional structure of the scale and features of alexithymia (Taylor et al., 1985).

Through a revision of TAS-26, three items relating to imaginal activity were removed, which resulted in the 23-item TAS-R. Factor analysis of the TAS-R yielded a two-factor model: the first factor comprised items assessing the ability to describe feelings to others and the ability to distinguish between bodily sensations and feelings, and the second factor comprised items assessing externally-oriented thinking. However, subsequent confirmatory factor analyses found that the two-factor structure was not a good representation of the data and so the scale was revised again (Bagby, Parker, et al., 1994).

The TAS-20 is the most current revision of the scale. In constructing the TAS-20 Bagby, Parker, et al. (1994) extracted a new set of items from the item pool used in the development of the TAS-R and included 17 newly written items relating to imaginal capacity and daydreaming. The TAS-20 was cross-validated using a Canadian university student sample and a psychiatric patient sample. Factor analysis supported a three-factor structure: Difficulty Identifying Feelings (DIF; seven items); Difficulty Describing Feelings (DDF; five items); and Externally-Oriented Thinking (EOT; eight items). Items relating to imaginal capacity from the TAS-26 were removed from the TAS-20 due to high correlations with measures of social desirability (Parker, Taylor, & Bagby, 2003). Some authors have criticised the removal of items that reflect the reduced fantasy dimension of alexithymia and argue that without this dimension, alexithymia is not being measured as was originally conceptualised (see Sifneos, 1996; Vorst & Bermond, 2001). However, Bagby, Parker, et al. (1994) suggest that reduced fantasy is measured indirectly because it correlates negatively with the EOT factor.

Items of the TAS-20 are scored on a 5-point Likert type rating scale, from 1 (*strongly disagree*) to 5 (*strongly agree*). The negatively keyed items are reversed prior to scoring (i.e., items 4, 5, 10, 18, and 19). Confirmatory factor analyses have found that the TAS-20's three-factor structure is the best fitting model (Meganck, Vanheule, & Desmet, 2008; Parker, Bagby, Taylor, Endler, & Schmitz, 1993; Parker et al., 2003). The TAS-20 has demonstrated high internal reliability ($\alpha = .81$), test-retest reliability over three weeks ($r = .77$, Bagby, Parker, et al., 1994), construct validity, and concurrent validity with observer-rated measures, such as the original BIQ ($r = .53$, Bagby, Parker, et al., 1994) and the Spanish version of the BIQ ($r > .47$, Martínez-Sánchez, 1996). The TAS-20 has been shown to be a valid and reliable measure of alexithymia for use in both psychiatric and community populations (Meganck et al., 2008; Parker et al., 2003). In addition, the TAS-20 has been translated into

several languages and has demonstrated cross-cultural validity in several countries (see Taylor, Bagby, & Parker, 2003).

A total score measuring alexithymia as well as three factor scores can be calculated. Preliminary cut-off scores for the total TAS-20 were developed. Individuals scoring below 52 are considered non-alexithymic and those scoring above 60 are considered alexithymic (Taylor et al., 1997). While the applicability of these cut-off scores has not been investigated in many countries they have been applied in numerous clinical and non-clinical samples worldwide. The TAS-20 cut-off scores have enabled comparative studies on alexithymia among diverse samples, including investigations into the prevalence of alexithymia across various populations.

The main criticism of the TAS-20 has been that the EOT factor has shown low internal reliability ($\alpha = .56$, Meganck et al., 2008), far lower than the DIF and DDF factors (Bressi et al., 1996; Kooiman, Spinhoven, & Trijsburg, 2002; Leising, Grande, & Faber, 2009; Loas et al., 2001; Loïselle & Cossette, 2001; Thorberg et al., 2010). Several studies have also noted low factor loadings of some items on the EOT factor (Bressi et al., 1996; Meganck et al., 2008; Müller, Bühner, & Ellgring, 2003; Pandey, Mandal, Taylor, & Parker, 1996). Gignac, Palmer, and Stough (2007) have interpreted the low internal reliability of the EOT factor as indicating possible problems with the content of the items loading onto that factor.

Researchers have also suggested that having an imbalance of positively and negatively worded items between the three factors would result in response tendencies or bias (Vorst & Bermond, 2001), and that this issue is especially exaggerated in the EOT factor because four out of the five items are negatively phrased (Meganck et al., 2008). Revision of the EOT factor and the use of negatively worded items has been suggested (Besharat, 2008; Gignac et al., 2007; Meganck et al., 2008). Furthermore, Gignac et al. (2007) have

recommended that future researchers who observe low internal reliability of the EOT factor interpret the total TAS-20 score as a general measure of alexithymia rather than interpret the separate TAS-20 factor scores as specific measures of alexithymia characteristics. While limiting a more detailed assessment of alexithymia, interpreting the total TAS-20 score rather than the factor scores of the TAS-20 may reduce concerns regarding the EOT factor when comparing alexithymia results across studies.

The present review of observer-rated (BIQ, OAS, and TSIA) and self-report (BVAQ and TAS-20) measures of alexithymia revealed methodological advantages and disadvantages for use in clinical and research settings. A major problem with observer-rated measures has been maintaining consistency between interviewers (Meganck et al., 2010) who are subject to bias, differences in interviewing style, and differences in interpretation of the construct being measured (McCrae, 1994). In addition, the increased time and complexity involved in administering observer-rated measures makes them more appropriate to clinical settings rather than research settings. In contrast, self-report measures are inexpensive, simple, and fast to administer compared to observer-rated measures, which make them more applicable to research settings. Self-report instruments have been used more frequently in research and thus more information is available on the psychometric properties of these measures. On the other hand, some authors have criticised the use of self-report measures to assess alexithymia, questioning the extent that they can be used to accurately assess a construct whose central characteristic involves inadequate self-awareness (Lundh, Johnsson, Sundqvist, & Olsson, 2002; Mayer, Caruso, & Salovey, 2000; Suslow & Junghanns, 2002). It has been recommended that in ideal situations, where time and resources allow, alexithymia should be assessed using a multiple method approach (Caretta et al., 2011; Eid & Diener, 2006; Taylor & Bagby, 2004; Taylor et al., 2000), such as by using observer-rated and self-report measures of alexithymia together.

Despite criticisms of self-report measures, the TAS-20 has remained the most widely used measure of alexithymia. The TAS-20 provides a sound assessment of alexithymia and appears to meet the standards of validity and reliability necessary for research purposes. Studies have found the TAS-20 to be suitable for use in both psychiatric and community populations (Meganck et al., 2008; Parker et al., 2003), as well as in several cultures (see Taylor et al., 2003). While some critics question the use of self-report scales to assess alexithymia, studies have shown agreement between TAS-20 scores and observer ratings of alexithymia (Bagby, Taylor, et al., 1994; Martínez-Sánchez, 1996). In addition, the TAS-20 cut-off scores used to identify alexithymic and non-alexithymic individuals offers a unique advantage that is beneficial for research purposes by allowing for comparisons of rates of alexithymia across studies (Taylor et al., 1997).

Aetiology of Alexithymia

The development of valid and reliable psychometric tools for measuring alexithymia not only refined the definition and quantification of the construct, but also allowed for extensive empirical research on alexithymia to accumulate. For instance, a considerable body of empirical research has replaced much conjecture regarding the origin or aetiology of alexithymia.

The aetiology of alexithymia has been considered and debated for over three decades (see Bräutigam & Rad, 1977). Understanding the aetiology of alexithymia has theoretical and practical implications, particularly for the way it is described, assessed, and approached in the therapeutic setting. Early distinctions were made between primary alexithymia, which is considered a life-long disposition, derived from genetic factors and/or factors that impact on affect development during early childhood; and secondary alexithymia, which is considered to arise not during development, but as a consequence of psychological and/or medical-surgical events occurring later in life (Freyberger, 1977; Sifneos, 1988).

Studies have found significant correlations between alexithymia scores obtained from individuals and their first-degree relatives (Grabe et al., 2006; Lumley, Mader, Gramzow, & Papineau, 1996). These findings of significant intrafamilial associations of alexithymia indicate that underlying familial or genetic factors might contribute to the development of alexithymia (Grabe et al., 2006). Heritability studies involving twin pairs have provided stronger evidence to support views suggesting genetic and environmental factors underlying alexithymia, yet only four investigations have been conducted concerning alexithymia.

In an early study, Heiberg and Heiberg (1977) examined genetic influences on alexithymia in 33 twin pairs. The findings of their study showed less variation in alexithymic characteristics between monozygotic twins (identical twins with an extremely high degree of genetic similarity) than dizygotic twins (fraternal twins that are genetically like any other sibling, just born at the same time).

Three studies have examined the influences of genetic factors as well as shared and non-shared environmental factors on alexithymia in twin pairs. Shared environmental factors include features that make siblings similar, such as the socioeconomic status of the family and parental strategies on child rearing. On the other hand, non-shared environmental factors include features that make siblings different, such as unpredictable events in the child's life, peer relationships, and differential parental treatment. Valera and Berenbaum (2001) examined the influences of genetic, shared, and non-shared environmental factors on alexithymia in 45 monozygotic and 32 same-sex dizygotic twin pairs. Results showed that characteristics of alexithymia relating to an externally-oriented style of thinking were influenced more by genetic factors than by aspects of the shared family environment. However, characteristics relating to difficulties identifying and describing feelings were influenced more by aspects of the shared family environment than by genetic factors. These

results indicate that inheritance may contribute more strongly to the development of certain aspects of alexithymia.

Jørgensen, Zachariae, Skytthe, and Kyvik (2007) conducted the first large-scale heritability study of alexithymia which involved 8,785 twin pairs (2,688 monozygotic, 3,248 same-sexed dizygotic, and 2,849 opposite-sexed dizygotic twins). The authors demonstrated the heritability of alexithymia to range from 30 to 33%. The remaining similarities in alexithymia scores between the twin pairs were accounted for by shared family environmental factors (12–20%), whereas differences in alexithymia scores between the twin pairs were accounted for by non-shared environmental factors (50–56%). The authors concluded that the primary source of environmental influence on alexithymia scores was related to factors that created differences in sibling's alexithymia scores rather than similarities in sibling's alexithymia scores. This finding was in contrast to Valera and Berenbaum (2001), who found that the primary source of environmental influence was related to factors that created similarities in alexithymia scores (i.e., shared family environmental factors).

Baughman et al. (2012) conducted a recent study to examine genetic and environmental contributions to alexithymia in 216 monozygotic and 45 dizygotic same-sex twin pairs. Consistent with the findings of Jørgensen et al. (2007), Baughman et al. (2012) demonstrated the heritability of alexithymia to range from 33 to 50%. In addition, they found that alexithymia was best accounted for by additive genetic and non-shared environmental influences. Together, these studies provide evidence for both genetic and environmental influences, particularly non-shared environmental influences, in the development of alexithymia.

In addition to genetic factors and non-shared environmental influences, heritability studies found evidence for the shared family environment as a contributing factor in the

development of alexithymia (Jørgensen et al., 2007; Valera & Berenbaum, 2001). Some researchers have proposed that, to some extent, the aetiology of alexithymia is related to factors that impact on affect development during early childhood (McDougall, 1982; Taylor et al., 1997), including parental emotion socialisation, infant attachment, and trauma.

Parental emotion socialisation refers to parental reactions to children's emotions, discussion of emotion, and expression of emotion (Eisenberg, Cumberland, & Spinrad, 1998). There is strong empirical evidence to suggest that parental emotion socialisation has longstanding influence on the emotional experience and expression in children as well as social competence and emotion regulation strategies that will be employed in adulthood (Eisenberg, Spinrad, & Eggum, 2010; Le, Berenbaum, & Raghavan, 2002). Berenbaum and James (1994) have suggested that difficulties identifying and communicating emotion - an essential characteristic of alexithymia - may be a consequence of a childhood environment where parents fail to model nonthreatening expressions of emotion. Indeed, alexithymia has been shown to occur more frequently in adults who recall childhood family environments that did not encourage the expression of opinions and feelings within the family (Kench & Irwin, 2000), and especially the expression of positive feelings and physical affection (Le et al.). Joukamaa et al. (2003) conducted a 31-year prospective study that examined the association between alexithymia in adulthood and the social situation of the child's family 31 years earlier. They found that unwanted children or children born into families with many children (≥ 5) reported elevated levels of alexithymia in adulthood. The authors concluded that factors such as having unwanted or numerous children may limit the time and attention given to the child and disturb the development of normal early mother-infant intimacy.

It has been suggested that the family environment influences a child's affect development at even earlier stages in life. Bowlby's attachment theory (1969, 1973) provides an explanation for the effects of early attachment relationships on affect development.

According to this theory, emotional expression of the infant, particularly expression of negative affect such as distress and discomfort, alerts caregivers to regulate the infant's biological and psychological needs. Insecurely attached infants have learned not to rely on the caregivers' responsiveness to regulate their emotional states, and these infants are thought to have adapted their attachment strategies (i.e., insecure-avoidant and insecure-anxious) based on these expectations in an attempt to regulate emotional states on their own (Cassidy, 1994; Mallinckrodt & Wei, 2005). Consequently, it has been suggested that insecure attachment might prevent the infant from experiencing a variety of affective states and from processing, communicating, and regulating these states effectively without resorting to a defensive strategy (Fonagy, Gergely, Jurist, & Target, 2002; Harris, 1999).

Findings from a meta-analysis by Fraley (2002) have provided evidence that attachment style remains relatively stable across the life span. It is possible that problems with affect development arising from insecure attachment in childhood also remain stable across the life span. For example, numerous studies have found associations between alexithymia and insecure attachment style in adults (Mallinckrodt & Wei, 2005; Montebanocci, Codispoti, Baldaro, & Rossi, 2004; Oskis et al., 2013; Picardi, Toni, & Caroppo, 2005; Troisi, D'Argenio, Peracchio, & Petti, 2001; Wearden, Lambertson, Crook, & Walsh, 2005).

Another framework for conceptualising affect development in childhood has been proposed by Lane and Schwartz (1987). Lane and Schwartz proposed a model where emotional awareness progresses along five developmental levels: 1) awareness of bodily sensations or somatic responses to emotion arousal; 2) action tendencies associated with emotions, whereby the individual is only aware of how he or she would like to act as a result of an emotion; 3) awareness of unidimensional feelings, such as feeling good or bad but nothing more differentiated; 4) awareness of combinations of discrete and differentiated

feelings, such as joy, excitement, sadness, and fear; and 5) awareness of complex blends of differentiated feelings in self and others, where multiple, often contradictory, feelings may be present at one time. Taylor et al. (1997) claim that alexithymia and disorders of affect regulation represent lower level functioning within this model that have occurred as a result of developmental disturbances that prevent progress to higher levels or bring about regression to lower levels.

One such disturbance that prevents affective development in early childhood is trauma. Krystal (1988) theorised that infantile or childhood psychic trauma, resulting from a lack of sufficient ego development (distinction between the inner self and the outer environment) and defences to regulate the impact of the trauma, prevents the child from progressing to more advanced affective developmental levels. This theory is supported by studies finding that alexithymic individuals are more likely to have experienced sexual (Hund & Espelage, 2005; McLean, Toner, Jackson, Desrocher, & Stuckless, 2006) and non-sexual childhood abuse (Mazzeo & Espelage, 2002; McCaslin et al., 2006). Krystal also suggested that trauma in adulthood would result in a regression in affective-cognitive function to an infantile level of affect development. He proposed that the consequence of this regression would result in an adult who lacks the ability to verbalise, tolerate, and modify their emotions and whose affects remain undifferentiated and somatised.

Alexithymia that arises from traumatic events that occur in later life has been seen as a defence mechanism in an attempt to cope with the stress of trauma (Freyberger, 1977), whether it be psychic trauma or physical trauma (e.g., a life threatening illness or conditions requiring intensive care). That is, alexithymia that develops secondary to a psychologically or physiologically traumatic event has been considered a defence or protection against highly emotional events. This view is supported by findings from a meta-analysis showing large effect sizes associating Posttraumatic Stress Disorder with alexithymia (Frewen, Dozois,

Neufeld, & Lanius, 2008) as well as studies finding higher levels of alexithymia in holocaust survivors (Yehuda et al., 1997) and victims of sexual assault (Zeitlin, McNally, & Cassidy, 1993).

In summary, the present review of research into the aetiology of alexithymia has revealed extensive research efforts incorporating biological theories and environmental theories in particular. Heritability studies on twin pairs have found genetic factors to play a role in the development of alexithymia, in addition to shared and non-shared environmental factors. Environmental factors that influence affect development during early childhood, such as negative childhood family environments and insecure attachment in childhood, are also likely to play an important role in the development of alexithymia. Experiences of trauma at any stage in life, including psychic and physical trauma, may also contribute to the development of alexithymia. It has been suggested that the numerous yet interrelated biological and environmental explanations for the origins of alexithymia indicates that the aetiology of alexithymia is likely to involve multiple contributory factors (Taylor et al., 1997).

CHAPTER 2

ALEXITHYMIA AND PSYCHOPATHOLOGY

Alexithymia reflects a deficit in the cognitive processing of emotions that has been shown to affect around 10% of the general population (Franz et al., 2008; Honkalampi, Hintikka, Tanskanen, Lehtonen, & Viinamäki, 2000; Mattila, Salminen, Nummi, & Joukamaa, 2006). Several researchers have argued that deficits in the cognitive processing and regulation of emotions, such as those observed in alexithymia, lead to dysfunctional emotional states, and it is dysfunctional emotional states that are a central feature to most psychopathology (Krystal, 1988; Lane & Schwartz, 1987; Taylor, 1987). This idea is consistent with several studies that have found greater rates of alexithymia in psychiatric samples compared to community samples (Müller et al., 2003; Todarello, Taylor, Parker, & Fanelli, 1995; Vanheule et al., 2007). In fact, studies have found rates of alexithymia at over 40% in patients diagnosed with depression (Saarijärvi, Salminen, & Toikka, 2001), anxiety disorders (Fukunishi, Kikuchi, Wogan, & Takubo, 1997), somatoform disorders (Cox, Kuch, Parker, Shulman, & Evans, 1994), addictive disorders (Evren, Evren, Dalbudak, Ozcelik, & Oncu, 2009), schizophrenia (Todarello et al., 2005), and in general psychiatric samples with varied diagnoses (Lecours & Bouchard, 2011).

However, the rates of alexithymia across studies of alexithymia in psychiatric samples appear to be highly variable. For example, rates of alexithymia have ranged between 6% (Karvonen et al., 2005) and 56.7% (Celikel & Saatcioglu, 2006) for patients diagnosed with somatoform disorders and between 11% (Grabe et al., 2006) and 56% (Fukunishi, Kikuchi, et al., 1997) for patients diagnosed with anxiety disorders. Several factors may affect the proportion of patients who are identified as alexithymic in such studies, including the method of assessing alexithymia as well as sample characteristics. Most studies that have reported rates of alexithymia have utilised the TAS-20 as cut-off scores are provided to identify

alexithymic and non-alexithymic individuals (Taylor et al., 1997). Therefore, variations in the prevalence rate of alexithymia in psychiatric studies may be better accounted for by sample characteristics, such as psychiatric diagnosis and illness severity.

The issue of whether psychiatric diagnosis may affect the proportion of patients identified as alexithymic in psychiatric studies is unclear. Some researchers have questioned whether alexithymia occurs more frequently in specific diagnostic groups or psychiatric disorders, such as somatoform disorders or depression (Bankier, Aigner, & Bach, 2001; Leweke, Leichsenring, Kruse, & Hermes, 2012). The conceptualisation of the alexithymia construct originated from observations of patients with psychosomatic disorders (or somatoform disorders) and thus some have considered alexithymia a pathological process underpinning somatic distress (Sifneos, 1973; Taylor et al., 1997). It has been proposed (Bräutigam & Rad, 1977; Taylor et al., 1991) that alexithymia is a useful conceptual framework for explaining the interactions between emotions, personality, and bodily functions that contribute to the aetiology of disease. Some studies support the theoretical and clinical impression of a link between alexithymia and somatic symptoms (Burba et al., 2006; Landa, 2009; Taylor, Parker, Bagby, & Acklin, 1992). However, some researchers have questioned this association, finding that alexithymia scores were no higher for patients diagnosed with somatoform disorders than for patients diagnosed with other disorders (Bankier et al., 2001; Leweke et al., 2012).

Some researchers have suggested that there is a conceptual overlap between alexithymia and depressive symptoms (e.g., Leising et al., 2009). Müller et al. (2004) has proposed that depressive symptomatology, such as reduced cognitive processing speed, distractibility, social withdrawal, and pessimistic views of one's abilities, can lead to the over reporting of symptoms like difficulties identifying and verbalising feelings that are also common in alexithymia. Depressive symptoms may therefore increase the rate of alexithymia

observed in patients diagnosed with depression. However, many studies have found no differences in alexithymia scores between two (Duddu, Isaac, & Chaturvedi, 2003) and three (Celikel & Saatcioglu, 2007; Onur, Alkin, Sheridan, & Wise, 2013) diagnostic groups, or in mean alexithymia scores between six diagnostic groups (Subic-Wrana, Bruder, Thomas, Lane, & Kohle, 2005).

Another sample characteristic that may affect prevalence rates of alexithymia in psychiatric studies is the severity of psychopathology. Alexithymia has been shown to correlate positively with psychopathology severity (Bach, Bach, Bohmer, & Nutzinger, 1994; Leweke et al., 2009) and psychological distress (Liang & West, 2011; Mikolajczak & Luminet, 2006). The treatment setting for psychiatric patients may be a general indicator of psychopathology severity. Higher rates of alexithymia are likely to be identified in psychiatric inpatient samples because patients admitted for inpatient hospitalisation are in more acute phases of their illness and require more intensive intervention compared to patients attending outpatient clinics for treatment. Therefore, the treatment setting of sample populations needs to be taken into account when evaluating the prevalence of alexithymia in psychiatric populations.

Further variation in the prevalence rate of alexithymia may arise from demographic differences in the population surveyed. Some researchers have proposed that alexithymia is likely to be more prevalent in certain demographic groups, such as males (Levant, 1992) and those with less education or socioeconomic status (Borens, Grosse-Schulte, Jaensch, & Kortemme, 1977). Few studies have explicitly reported differences in prevalence rates of alexithymia between different demographic groups. Rather, a large number of studies have examined differences in alexithymia scores between different demographic groups. While these studies vary in the way alexithymia and demographic factors have been assessed (e.g., using continuous or categorical variables), a broad evaluation of these studies may offer

insight into whether demographic differences in study samples are likely contributors to variation in the prevalence rate of alexithymia.

It should be noted that Levant et al. (2006) included a narrative review of studies that examined the link between alexithymia and gender that was part of the background to their study. They found that the majority of studies in their review that involved clinical samples (psychiatric and medical patients) reported no gender differences in alexithymia, whereas the majority of studies that involved non-clinical samples reported significantly higher alexithymia scores in males compared to females. Levant et al. (2006) concluded that this finding provided support for Levant's theory of a gender-linked, subclinical alexithymia syndrome (see Levant, 1992). Unlike systematic reviews, narrative reviews are more likely to involve bias as only research selected by the author is included. Hence, narrative reviews are also more likely to provide a summary of evidence that is outdated and contradictory to available evidence (Montori, Swiontkowski, & Cook, 2003). In contrast, systematic reviews apply scientific strategies that limit bias, such as addressing a specific question, conducting a comprehensive literature search, and providing explicit and objective criteria to identify relevant studies (Montori et al., 2003). The narrative review that was conducted by Levant et al. (2006) failed to include 10 studies that examined the link between alexithymia and gender prior to and including 2006, which is equivalent to approximately 26% of the literature. The present systematic review will extend the narrative review conducted by Levant et al. (2006) by including the 10 studies that were missed and any additional studies post 2006, making it a more comprehensive and current review of the literature in this area.

Furthermore, no study to date has systematically compiled and examined studies that have reported rates of alexithymia in either the psychiatric or community populations. A greater understanding of the prevalence rates of alexithymia in psychiatric and community populations is desirable, particularly given the association between alexithymia and the

development of psychiatric symptomatology in community samples (Heinrichs et al., 2005; McCaslin et al., 2006; Tolmunen et al., 2011) and with the persistence of psychiatric symptomatology in psychiatric samples over time (Bach & Bach, 1995; Loas, Fremaux, Otmani, Lecercle, & Delahousse, 1997; Reese, 2008; Viinamäki et al., 2002). Confounding factors, such as psychiatric diagnosis, severity of illness, and demographic differences make it difficult to compare the prevalence data for alexithymia across the literature. It is therefore necessary to take these factors into account when comparing data from different studies. This improved theoretical understanding could, in turn, generate awareness of the alexithymia construct amongst clinicians (mental health practitioners, including psychologists and psychiatrists) and researchers who work with psychiatric populations, in an attempt to help improve clinical outcomes and research practices.

The purpose of the present literature review was to compare rates of alexithymia in studies involving psychiatric samples while taking psychiatric diagnosis and psychopathology severity into consideration. In addition, a comparison of alexithymia rates in studies involving community samples was conducted, and studies that have examined alexithymia and demographic differences in psychiatric and/or community samples were evaluated in order to obtain a clearer understanding of the factors that may influence alexithymia rates.

It is important to note that the present review exclusively evaluated studies that have utilised the TAS-20 as a measure of alexithymia. This decision was taken because the TAS-20 provides cut-off scores, which have been applied to diverse samples. These cut-off scores allow for the comparison of alexithymia rates across numerous international studies. The TAS-20 is also been translated into more languages than any other measure, cross-culturally validated in several countries (Taylor et al., 2003), and since it is the most widely used

measure of alexithymia worldwide there is more information about alexithymia available using the TAS-20 than any other measure.

Method

Search

A systematic search was conducted through Medline, ProQuest Psychology Journals, and Web of Science databases to obtain potentially relevant articles. The database searches were supplemented by searching Google Scholar for relevant articles and by crosschecking the articles that were included in the subsequent systematic review (Chapter 3). All databases were searched using combinations of the following keywords: alexithymia, prevalence, demographics, gender, and TAS-20. The title and abstract of the identified articles were then screened for relevance against the inclusion and exclusion criteria. If abstracts were not available or unable to provide sufficient information, the full-text article was retrieved and screened in the same manner.

Inclusion and Exclusion Criteria

For inclusion, studies were required to: (1) include adults (≥ 18 years old), (2) measure alexithymia using the total TAS-20 score, (3) include psychiatric participants (patients presenting for psychiatric treatment) and/or community participants, and (4) be published in the English language. Studies involving psychiatric participants diagnosed with organic mental disorders (e.g., dementia), mental retardation, developmental disorders, or physiological conditions as the primary diagnosis were excluded. Also excluded were studies involving community samples that had been screened for past or present psychiatric illness as they are not representative of the general population. The census data for inclusion ranged from 1994 to 2014.

Data Extraction

Data from the included studies were independently extracted onto a standardised form developed for this review. The following data were extracted: author(s) and date, country of the study, characteristics of participants (sample size and psychiatric diagnosis for psychiatric patients), prevalence rate of alexithymia (percentage), and study findings concerning the link between alexithymia and demographic variables.

Results

The search effort resulted in 394 citations. Seventy-six duplicate citations were removed and 107 citations were excluded as irrelevant after they were screened for potential relevance. The remaining 211 full-text articles were assessed for eligibility. Eighty-six studies were excluded for the following reasons: 43 studies did not report rates of alexithymia (and rates could not be calculated from the data provided) or did not report demographic variables (e.g., De Panfilis et al., 2008; Lumley & Sielky, 2000), 30 studies were follow-up studies or studies that shared a participant sample with a larger study that was included in the present review (e.g., Honkalampi, Hintikka, Laukkanen, et al., 2001; Mattila et al., 2010), 7 studies did not use the TAS-20 (e.g., Bermond et al., 1999; Sayar, Acar, & Ak, 2003), 2 studies provided sample descriptions that lacked sufficient in detail for rates of alexithymia to be identified (Berthoz et al., 2002; Graugaard, Holgersen, & Finset, 2004), 1 study was a literature review (Kooiman et al., 2002), 1 study did not use the total TAS-20 score (Kiyotaki & Yokoyama, 2006), 1 study did not involve adults (Guttman & Laporte, 2002), and 1 study involved a community sample that was screened for mental illness (de Vente, Kamphuis, & Emmelkamp, 2006). As a result of the exclusion process, 125 studies were identified as being eligible for the present review. Of the 125 studies, 72 studies involved psychiatric samples,

62 studies involved community samples, and 9 studies involved both psychiatric and community samples.

Table 1 presents the data from studies that reported prevalence rates of alexithymia in psychiatric samples and Table 2 presents the data from studies that reported prevalence rates of alexithymia in community samples. The studies that involved both psychiatric and community samples appear in both Tables 1 and 2.

Characteristics of the Studies

Across the 125 studies in the present review, 76 studies reported rates of alexithymia, 84 studies examined demographic differences in alexithymia, and 35 studies reported both rates of alexithymia and demographic differences in alexithymia.

Studies that reported prevalence rates of alexithymia.

Fifty-five studies that involved psychiatric samples reported rates of alexithymia. The majority of these studies were undertaken in Europe ($n = 40$), followed by North America (Canada and the USA, $n = 10$), Asia ($n = 3$), Australia ($n = 1$), and Britain ($n = 1$). Most of the studies involved sample sizes greater than 100 ($n = 26$) that ranged from 20 to 1461 patients. Patients were most commonly recruited from outpatient ($n = 23$) and inpatient settings ($n = 14$). The studies that involved inpatient settings generally involved larger sample sizes (≥ 100) compared to the studies that involved outpatient settings. Two studies recruited patients from both outpatient and inpatient settings, and the remaining studies recruited patients from hospitals, mental health clinics and associations, community advertisement, a social insurance office, or did not specify the setting. The studies involved patients diagnosed with addictive disorders (e.g., eating disorders and substance misuse disorders, $n = 21$), varied diagnoses (i.e., general psychiatric samples, $n = 13$), anxiety disorders ($n = 10$),

somatoform disorders ($n = 5$), depressive disorders ($n = 5$), and one study involved patients diagnosed with schizophrenia.

Twenty-six studies that involved community samples reported rates of alexithymia. The majority of these studies were undertaken in Europe ($n = 15$), followed by North America ($n = 6$), Australia ($n = 3$), Asia ($n = 1$), and Britain ($n = 1$). Most of the studies involved sample sizes greater than 100 ($n = 21$). The size of the samples ranged from 67 to 5028 participants, with five studies involving samples sizes greater than 1000. A greater proportion of the studies undertaken in Europe involved larger sample sizes (≥ 100) compared to the studies undertaken outside of Europe, with most of these European studies involving samples greater than or equal to 300. Participants were most commonly recruited from university campuses ($n = 13$) and the general community ($n = 8$). Three studies recruited employees from various places of employment (e.g., childcare centre) and two studies recruited participants from both university campuses and the general community. The studies that involved community and student participants often referred to these samples interchangeably.

Studies that examined demographic differences in alexithymia.

The majority of the studies that examined demographic differences in alexithymia were undertaken in Europe ($n = 45$), followed by North America ($n = 27$), Asia ($n = 5$), Australia ($n = 3$), Britain ($n = 1$), and North Africa ($n = 1$). One study was undertaken in three locations (Europe, Canada, and the USA) and another study was undertaken in two locations (the USA and South America). The majority of the studies involved sample sizes greater than 100 ($n = 65$). The size of the samples ranged from 42 to 5028 participants, with 11 studies involving samples sizes greater than 1000. Psychiatric samples were involved in 41 studies, community participants were involved in 48 studies, and 5 studies involved both psychiatric and community samples.

Most of the studies examined multiple demographic factors, including gender ($n = 70$), age ($n = 56$), education ($n = 37$), economic status (including SES and income, $n = 27$), marital status ($n = 22$), employment status ($n = 8$), and other factors (including ethnicity, church membership, and rural or urban residency, $n = 4$). Age and education were examined either as continuous variables (e.g., age and education in years) or as categorical variables (e.g., age categories and levels of education). Gender, employment status, economic status, SES, income, and marital status were only examined as categorical variables.

Prevalence of Alexithymia in Psychiatric and Community Samples

Overall, prevalence rates of alexithymia in the psychiatric samples ranged from 11.0% to 76.6% (median = 37.5%). Most of the studies that involved smaller sample sizes (< 100) reported rates of alexithymia that were greater than 37.5%, whereas most of the studies that involved larger samples (≥ 100) reported rates of alexithymia that were less than 37.5%.

Approximately half of the studies undertaken in Europe reported rates of alexithymia that were greater than 37.5% and the other half reported rates that were less than 37.5%. The vast majority of the non-European studies (predominately studies in North America) reported rates of alexithymia that were greater than 37.5%.

In regards to treatment setting, approximately half of the studies that recruited patients from outpatient settings reported rates of alexithymia that were greater than 37.5% and the other half reported rates that were less than 37.5%. The majority of the studies that recruited patients from inpatient settings reported prevalence rates of alexithymia that were less than 37.5%.

Prevalence rates of alexithymia in community samples ranged from 0.0% to 22.9% (median = 10.0%). Approximately half of the studies reported rates of alexithymia that were greater than 10.0% and the other half reported rates that were less than or equal to 10.0%. This distribution did not appear to change according to the sample size of the study (< 300 or

≥ 300), the location of the study (European countries or non-European countries), or whether the study recruited community or student participants.

Table 1
Prevalence of Alexithymia^a in Psychiatric Samples, as well as Demographic Differences in Alexithymia

Study	Country	Sample	Prevalence (%)	Results
Akkerman (1996)	USA	131 substance misuse inpatients		≠ gender
Bagby, Parker, et al. (1994)	Canada	218 general psychiatric outpatients		≠ gender; ≠ age
Bankier et al. (2001)	Austria	297 general psychiatric inpatients		≠ gender; ≠ age; lower education > higher education (elementary school, junior high school, and high school)
Beales and Dolton (2000)	Britain	79 members of an eating disorder association	74.0	
Bonnaire, Bungener, and Varescon (2009)	France	84 community sourced pathological gamblers	53.6 ^{b, c}	≠ gender
Carano et al. (2006)	Italy	101 binge eating disorder patients		≠ gender; older patients > younger patients (age in years; did not report correlation coefficient); lower education > higher education (< high school and ≥ high school); ≠ employment status; ≠ marital status
Celikel et al. (2010)	Turkey	81 depressed outpatients	33.3	≠ gender; ≠ age; ≠ education; ≠ profession; ≠ marital status
Celikel and Saatcioglu (2007)	Turkey	124 depressive, anxiety, and somatoform disorder outpatients		≠ age; ≠ education; ≠ marital status
Celikel and Saatcioglu (2006)	Turkey	30 somatoform disorder (chronic pain) outpatients (female)	56.7	
Coriale et al. (2012)	Italy	110 alcohol dependent inpatients	34.5	
Cox et al. (1994)	Canada	55 somatoform disorder outpatients (chronic pain)	53.0	≠ gender; ≠ age

Table 1 (continued)

Study	Country	Sample	Prevalence (%)	Results
Cox, Swinson, Shulman, and Bourdeau (1995)	Canada	146 anxiety disorder patients from a clinic	31.1	
Cucchi et al. (2012)	Italy	139 panic disorder outpatients	25.9	
De Berardis et al. (2005)	Italy	112 obsessive-compulsive disorder outpatients	35.7	
De Berardis et al. (2007)	Italy	84 panic disorder outpatients	38.1	≠ gender; ≠ age; lower education > higher education (< high school and ≥ high school); ≠ employment status; ≠ marital status
Deborde et al. (2008)	France	45 eating disorder patients from unspecified setting	53.2 ^b	
de Haan et al. (2013)	Netherlands	187 substance dependent inpatients		≠ gender; ≠ age; fewer years of education > greater years of education ($r = -.19$); ≠ employment status; ≠ marital status
de Haan, Schellekens, et al. (2012)	Netherlands	100 alcohol dependent inpatients (male)	45.0	≠ age; fewer years of education > greater years of education ($r = -.21$); ≠ employment status; ≠ marital status
de Haan, van der Palen, Wijdeveld, Buitelaar, and De Jong (2014)	Netherlands	130 substance dependent inpatients		≠ gender; ≠ age; ≠ education; ≠ employment status; ≠ marital status
De Panfilis, Rabbaglio, Rossi, Zita, and Maggini (2003)	Italy	64 eating disorder outpatients (female)	14.4	

Table 1 (continued)

Study	Country	Sample	Prevalence (%)	Results
de Timary, Luts, Hers, and Luminet (2008)	Belgium	70 alcohol dependent inpatients	32.4	≠ gender
Eizaguirre, de Cabezón, de Alda, Olariaga, and Juaniz (2004)	Spain	151 eating disorder patients (female) referred from an eating disorder association	57.0	
El Rasheed (2001)	Egypt	200 substance misuse inpatients		≠ gender; ≠ age; ≠ education; ≠ employment status; ≠ marital status
Evren, Cagil, et al. (2012)	Turkey	118 alcohol dependent inpatients (males)		≠ age; fewer years of education > greater years of education ($r = -.28$)
Evren, Cinar, and Evren (2012 ^d)	Turkey	200 substance dependent inpatients	34.0	
Evren, Dalbudak, and Çakmak (2008)	Turkey	176 alcohol dependent inpatients	30.1	≠ age; ≠ education; ≠ employment; ≠ marital status
Evren, Dalbudak, Cetin, Durkaya, and Evren (2010)	Turkey	156 alcohol dependent inpatients	30.1	
Evren et al. (2009)	Turkey	159 alcohol and other drug dependent inpatients	45.3	≠ age; lower education > higher education (elementary school, 6-8 years high school, 9-12 years high school, and university); unemployed > employed; ≠ marital status
Frewen, Lanius, et al. (2008)	Canada	105 post-traumatic stress disorder patients from unspecified setting	47.0	
Fukunishi, Kikuchi, et al. (1997)	Japan	50 anxiety disorder patients from a hospital and clinic	56.0 ^c	
Galderisi et al. (2008)	Italy	32 panic disorder outpatients	29.0	

Table 1 (continued)

Study	Country	Sample	Prevalence (%)	Results
Grabe et al. (2008)	Germany	414 general psychiatric inpatients	27.0	Females > males; ≠ age; ≠ education; ≠ marital status
Grabe et al. (2006)	Germany	82 obsessive-compulsive disorder outpatients	11.0	
Güleç et al. (2013)	Turkey	100 depressive disorder patients		Males > females
Haviland, Hendryx, Shaw, and Henry (1994)	USA	204 substance dependent inpatients	41.7	Females > males
Honkalampi, Hintikka, Saarinen, Lehtonen, and Viinamäki (2000 ^d)	Finland	169 depressive disorder outpatients	39.0	Males > females; ≠ age; lower education > higher education (\leq high school and > high school); ≠ economic status; ≠ marital status
Joukamaa et al. (2008)	Finland	161 general psychiatric outpatients	34.2 ^c	≠ gender
Joyce, Fujiwara, Cristall, Ruddy, and Ogrodniczuk (2013)	Canada	51 general psychiatric outpatients	51.0	
Kim et al. (2008)	Korea	104 depressive disorder patients from a hospital	50.0	≠ gender; ≠ age; ≠ education
Kubota et al. (2012)	Japan	44 schizophrenia patients		≠ gender; ≠ age
Landa (2009)	USA	20 somatoform disorder patients from several clinics	40.0	
Lecours and Bouchard (2011)	Canada	64 general psychiatric outpatients		≠ gender; ≠ age; lower education > higher education (elementary school, high school, university preparation course, and university)

Table 1 (continued)

Study	Country	Sample	Prevalence (%)	Results
Leweke et al. (2012)	Germany	1461 general psychiatric outpatients	21.4	Males > females; ≠ age; lower education > higher education (9 years, 10 years, and 13 years of school, still in school, and other graduation)
Loas et al. (2001)	France	659 substance misuse and eating disorder inpatients and outpatients		≠ gender
Luminet, Bagby, and Taylor (2001)	Canada	46 depressive outpatients		≠ gender; ≠ age; ≠ education; ≠ SES; ≠ marital status
Lundh and Broman (2006)	Sweden	100 general psychiatric patients (with insomnia) from a sleep disorders unit	20.4	
Marchesi, Fonto, Balista, Cimmino, and Maggini (2005)	Italy	101 panic disorder patients from a clinic	44.2	
Melin, Thulesius, and Persson (2010)	Sweden	54 somatoform disorder outpatients (chronic pain)	36.0	
Müller and Bühner (2006)	Germany	300 general psychiatric inpatients	35.0	
Müller et al. (2003)	Germany	204 general psychiatric patients from inpatient and clinic settings ^e	17.6	
Özsahin, Uzun, Cansever, and Gulcat (2003)	Turkey	65 depressive disorder outpatients	49.2 ^c	≠ gender; ≠ age; ≠ education; ≠ SES; ≠ marital status
Pinaquy, Chabrol, Simon, Louvet, and Barbe (2003)	France	40 binge eating disorder outpatients (female)	62.5	
Pinard, Negrete, Annable, and Audet (1996)	Canada	48 substance dependent patients		≠ gender; ≠ age

Table 1 (continued)

Study	Country	Sample	Prevalence (%)	Results
Porcelli et al. (2004)	Italy	52 general psychiatric outpatients	21.1	
Reese (2008)	USA	84 somatoform disorder patients from clinics and community	23.8	≠ gender; ≠ age; ≠ employment status; ≠ marital status; ≠ ethnicity
Rufer et al. (2010)	Germany	55 panic disorder outpatients		≠ gender; ≠ age
Rufer et al. (2004)	Germany	42 obsessive-compulsive disorder inpatients	14.0	≠ gender; ≠ age; ≠ employment status; ≠ marital status
Saladin et al. (2012)	USA	40 substance dependent patients from clinics and community	15.0	
Saarijärvi et al. (2001)	Finland	120 depressive disorder patients from social insurance offices ^f	46.0	
Son et al. (2012 ^d)	Korea	388 general psychiatric inpatients and outpatients	37.1 ^c	Younger patients > higher patients ($r = -.20$); fewer years of education > greater years of education ($r = -.12$)
Speranza et al. (2004)	France, Switzerland, & Belgium	564 addictive disorder inpatients and outpatients (anorexia, bulimia, and alcohol dependence)	52.8 ^b	≠ gender
C. Spitzer et al. (2005)	Germany	149 general psychiatric inpatients	35.5	≠ gender; ≠ age
Taylor, Parker, Bagby, and Bourke (1996)	Canada	48 eating disorder patients from private clinics	68.8	
Thorberg et al. (2011)	Australia	254 alcohol dependent outpatients	32.4	
Todarello et al. (2005)	Italy	29 schizophrenic outpatients	65.5	

Table 1 (continued)

Study	Country	Sample	Prevalence (%)	Results
Todarello et al. (1995)	Italy	113 general psychiatric outpatients	32.7	≠ gender; ≠ age; fewer years of education > greater years of education ($r = -.37$)
Toneatto, Lecce, and Bagby (2009)	Canada	143 pathological gamblers from community	76.6	
Tutkun et al. (2004)	Turkey	154 general psychiatric outpatients	46.8	≠ age; fewer years of education > greater years of education
Uzun (2003)	Turkey	56 alcohol dependent outpatients	48.2	≠ age; fewer years of education > greater years of education; lower economic status > higher economic status (good and poor [§]); ≠ marital status
Vanheule et al. (2007)	Belgium	404 general psychiatric outpatients	38.0	
Verrocchio, Conti, and Fulcheri (2010)	Italy	77 substance dependent inpatients	44.2	
Zhu et al. (2007)	China	179 general psychiatric outpatients		≠ gender; ≠ age; ≠ education

Note. ≠ = no significant correlation between the demographic variable and alexithymia, or no significant differences between the categorical variables (e.g., male and female) in alexithymia scores; > and < = respectively higher or lower levels of the demographic variable correlated with alexithymia (e.g., older age in years) or significantly greater alexithymia scores in higher or lower levels of the categorical variable (e.g., older age group); SES = Socioeconomic status.

^aPercentage of patients with TAS-20 scores ≥ 61 .

^bAlexithymia prevalence was determined using TAS-20 cut-off scores derived for French samples (see Loas et al., 1996).

^cPercentage of Alexithymia was calculated by the author.

^dThe authors have published multiple articles using this participant sample. Therefore, either the original study was included or, if the sample was expanded in a subsequent study, the study with the largest sample was included.

^eThis sample was counted as a general psychiatric sample in present calculations as primary diagnoses were a mix of anxiety, somatoform, and alcohol dependence disorders.

^fEmployees paid > 2 months sickness allowance due to major depression were included (excluded inpatients).

[§]Author did not define economic status beyond categories 'good' and 'poor'.

Table 2

Prevalence of Alexithymia^a in Community Samples, as well as Demographic Differences in Alexithymia

Study	Country	Sample	Prevalence (%)	Results
Bagby, Parker, et al. (1994)	Canada	965 university students; 401 university students		Males > females, younger participants > older participants (965 sample; $r = -.13$); \neq gender, \neq age (401 sample)
Balaban et al. (2012)	Turkey	246 university students	3.6	
Berenbaum, Davis, and McGrew (1998)	USA	62 university students		Males > females
Beyer (2008)	USA	190 community participants		\neq age
Bogutyn, Kokoszka, Pałczyński, and Holas (1999)	Poland	387 university students	10.1	
Bonnaire et al. (2009)	France	100 community participants (gamblers)		\neq gender
Bonnet, Brejard, and Pedinielli (2013)	France	256 university students		\neq gender
Bouchard (2009)	Canada	270 university students and community professionals		\neq gender
Bressi et al. (1996)	Italy	206 community participants and university students		\neq gender; \neq age; fewer years of education > greater years of education ($r = -.33$)

Table 2 (continued)

Study	Country	Sample	Prevalence (%)	Results
Byrne and Ditto (2005)	Canada	610 community participants (blood donors)		≠ age
Carpenter and Addis (2000)	USA	172 university staff		Males > females; lower education > higher education (some high school or graduate, some college, 4-year college graduate, graduate degree)
Campos et al. (2000)	France	1171 university students	10.7	
Chen, Xu, Jing, and Chan (2011)	China	1788 university students		≠ gender; older participants > younger participants ($r = .05$); ≠ education; ≠ income
De Berardis et al. (2009)	Italy	546 university students (female)		≠ age; ≠ employment status; ≠ marital status
Deborde et al. (2008)	France	253 university students and university staff	13.8 ^b	
Declercq, Vanheule, and Deheegher (2010)	Belgium	136 nurses and ambulance staff		Males > females; ≠ age
Dion (1996)	Canada	950 university students		≠ gender
Franz et al. (2008)	Germany	1859 community participants	10.0	Males > females; ≠ age; lower education > higher education (school degree and university degree); lower income > higher income (3 categories of income); unemployed > employed; divorced > married; church membership > no church membership

Table 2 (continued)

Study	Country	Sample	Prevalence (%)	Results
Honkalampi, Hintikka, Tanskanen, et al. (2000)	Finland	2018 community participants	10.3	Males > females; older participants > younger participants (age in years); fewer years of education > greater years of education; lower economic status > higher economic status (subjective rating of good and poor), ≠ marital status
Jørgensen et al. (2007)	Denmark	8785 community participants (twins)		Males > females; significant difference in age (did not report correlation coefficient or direction)
Joukamaa et al. (2003 ^e)	Finland	5028 community participants	7.1	Males > females; lower social class > higher social class (high, low, and farmer); rural location > urban location
Katz, Martin, Page, and Calleri (2009)	Canada	67 university students	10.0	
Kench and Irwin (2000)	Australia	92 university students	10.9	≠ gender; older participants > younger participants ($r = .07$)
Kojima, Senda, Nagaya, Tokudome, and Furukawa (2003)	Japan	120 employees of a gas utility company	19.2	
Lane, Sechrest, and Riedel (1998)	USA	380 community participants		Males > females; older participants > younger participants (five age categories); fewer years of education > greater years of education ($r = -.30$); lower SES > higher SES (working, middle, and upper classes)
Levant et al. (2006)	USA	407 university students		Males > females
Levant et al. (2003)	USA	1151 university students and community participants		≠ age; ≠ SES; ≠ marital status; lower income > higher income (six categories)

Table 2 (continued)

Study	Country	Sample	Prevalence (%)	Results
Loas et al. (2001)	France	769 community participants		≠ gender
Loiselle and Cossette (2001)	USA; Peru	561 university students (USA and Peruvian campuses)		Males > females; ethnicity (Peruvian sample > USA sample)
Lundh et al. (2002)	Sweden	88 community participants and university students		Males > females; lower education > higher education (university students vs. community participants)
Lundh and Simonsson-Sarnecki (2001)	Sweden	137 community participants	2.2	Males > females; ≠ age; ≠ education; ≠ SES
Lyvers, Onuoha, Thorberg, and Samios (2012)	Australia	314 community participants (drinkers)		Younger participants > older participants ($r = -.14$)
Mason, Tyson, Jones, and Potts (2005)	Britain	371 university students	17.9	Females > males
Mattila et al. (2006)	Finland	5418 community participants		Males > females; Older participants > younger participants (6 age categories); lower education > higher education (basic, secondary, and higher schooling); lower income > higher income (3 categories); unmarried > married
McCaslin et al. (2006)	USA	166 urban police officers		Males > females
McNeill (2014)	Australia	171 community participants (couples)	8.2 ^d	Males > females
Messina, Fogliani, and Paradiso (2010)	Italy	111 university students		≠ gender
Montebarocci et al. (2004)	Italy	301 university students	8.3	≠ gender

Table 2 (continued)

Study	Country	Sample	Prevalence (%)	Results
Müller et al. (2003)	Germany	224 office workers and skilled workers	6.3	
Pandey et al. (1996)	India	285 teachers, office workers, and university students		≠ gender; ≠ age; fewer years of education > greater years of education ($r = -.23$)
Paradiso, Vaidya, McCormick, Jones, and Robinson (2008)	USA	24 volunteers from unspecified setting		Older participants > younger participants ($r = .48$)
Parker, Bagby, et al. (1993)	Canada; Germany; USA	1003 university students (Canadian, German, and USA campuses)		Males > females in all samples; location (USA and Canadian sample > German sample)
Parker, Shaughnessy, Wood, Majeski, and Eastabrook (2005)	Canada	123 aboriginal community participants		≠ gender; ≠ age
Parker, Taylor, and Bagby (1993)	Canada	70 university students	22.9	
Parker, Taylor, and Bagby (2001)	Canada	734 community participants		Males > females
Parker et al. (2003)	Canada	1933 community participants		Males > females; fewer years of education > greater years of education ($r = -.23$)
Parker, Wood, Bond, and Shaughnessy (2005)	Canada	562 university students	12.0	≠ gender
Parry (2012)	Australia	323 university students and general community	9.0	
Peters (2006)	USA	162 community participants (African American)	8.0	

Table 2 (continued)

Study	Country	Sample	Prevalence (%)	Results
Picardi et al. (2005)	Italy	221 university students		≠ gender; younger participants > older participants ($r = -.17$)
Posse, Hallstrom, and Backenroth-Ohsako (2002)	Finland	864 childcare employees (female)	7.9	≠ age; lower education > higher education (< high school and \geq high school)
Salminen, Saarijärvi, Äärelä, Toikka, and Kauhanen (1999)	Finland	1285 community participants	12.8	Males > females; older participants > younger participants ($r = .15$ in men and $r = -.10$ in women); lower education > higher education (secondary school graduate and non-graduate); lower SES > higher SES (private entrepreneur, white-collar workers, blue-collar workers, and others)
Samson, Huber, and Gross (2012)	USA	27 community participants	0.0	
Scimeca et al. (2013)	Italy	300 university students	10.0	
Scott (2009)	USA	150 university students		≠ gender
Taylor et al. (1996)	Canada	234 university students	13.7	Males > females
Tsaousis et al. (2010)	Greece	340 university students		Males > females; ≠ age
Vanheule et al. (2007)	Belgium	157 university students	2.0	
Verrocchio et al. (2010)	Italy	77 university students and community participants	20.8	
Viinikangas et al. (2009)	Finland	669 community participants		Males > females; ≠ age
Yelsma, Hovestadt, Anderson, and Nilsson (2000)	USA	295 university students		≠ gender

Table 2 (continued)

Study	Country	Sample	Prevalence (%)	Results
Zhu et al. (2007)	China	870 university students		≠ gender

Note. ≠ = no significant correlation between the variable and alexithymia or no significant differences between the categorical variables (e.g., male and female) in alexithymia scores; > and < = respectively higher or lower levels of the variable correlated with alexithymia (e.g., older age in years) or significantly greater alexithymia scores in higher or lower levels of the categorical variable (e.g., older age group); SES = Socioeconomic status.

^aPercentage of patients with TAS-20 scores ≥ 61 .

^bAlexithymia prevalence was determined using TAS-20 cut-off scores derived for French samples (see Loas et al., 1996)

^cThe authors have published multiple articles using this participant sample. Therefore, either the original study was included or, if the sample was expanded in a subsequent study, the study with the largest sample was included.

^dPercentage of Alexithymia was calculated by the author.

Prevalence of alexithymia according to psychiatric diagnosis.

In order to evaluate whether psychiatric diagnosis impacted on the proportion of patients identified as alexithymic, each of the studies were categorised according to one of five broad diagnostic groups as follows: depressive disorders ($n = 5$), anxiety and stress related disorders (various anxiety disorders, panic disorder, obsessive-compulsive disorder, and post-traumatic stress disorder, $n = 10$), somatoform disorders (somatoform disorders, chronic pain disorder, somatoform disorder with chronic pain, and functional dyspepsia, $n = 5$), addictive disorders (eating disorders, alcohol and/or substance-dependence, and pathological gambling, $n = 21$), or general psychiatric (various diagnoses, $n = 13$). The study that involved patients diagnosed with schizophrenia was not included because rates of alexithymia within this group could not be compared.

The majority of the studies in the addictive, depressive, and somatoform disorders groups reported rates of alexithymia that were greater than 37.5%, whereas the majority of the studies in the anxiety and stress-related disorders, and the general psychiatric disorders groups reported rates of alexithymia that were less than 37.5%. Across all of the diagnostic groups, two studies in the anxiety and stress-related disorders group reported the lowest rates of alexithymia at 11.0% (Grabe et al., 2006) and 14% (Rufer et al., 2004) in patients diagnosed with obsessive-compulsive disorder. Five studies in the addictive disorders group reported the highest rates of alexithymia at 57% (Eizaguirre et al., 2004), 62.5% (Pinaquy et al., 2003), 68.8% (Taylor et al., 1996), and 74% (Beales & Dolton, 2000) in patients diagnosed with eating disorders, and 76.6% in community participants diagnosed as pathological gamblers (Toneatto et al., 2009).

Two studies in the present review directly compared prevalence rates of alexithymia and alexithymia scores (as a continuous variable) between different diagnostic groups (Leweke et al., 2012; Son et al., 2012). Leweke et al. (2012) conducted a study with 1,461

German psychiatric outpatients and found that the proportion of alexithymic patients was significantly greater in the group of patients diagnosed with depressive disorders compared to four other diagnostic groups (adjustment disorders, psychological and behavioural factors associated with disorders or diseases, somatoform disorders, and eating disorders). In addition, after controlling for depression symptoms in the anxiety disorders group, alexithymia scores were only found to correlate significantly with depressive disorders compared to the other diagnostic groups. In contrast, Son et al. (2012) conducted a study with 388 Korean psychiatric inpatients and outpatients and found no differences in alexithymia scores or in the proportion of alexithymic patients between four diagnostic groups (depressive disorders, somatoform disorders, anxiety disorders, and psychotic disorders).

Alexithymia and demographic factors.

Some studies recruited and examined demographic factors in multiple samples. Therefore, the following results refer to the number of samples rather than the number of studies. In addition, age and education were the only demographic variables to be examined as either continuous variables (e.g., age and education in years) or as categorical variables (e.g., age categories and levels of education). Results of correlational analyses will be reported on first, for each of these variables. All other demographic variables (e.g., gender and employment status) were examined as categorical variables only.

In 70.3% of the samples where age was examined as a continuous variable ($n = 38$), age was not found to be associated with alexithymia. Small correlations were found between younger age and higher alexithymia score in four samples (r ranged between $-.13$ and $-.20$) and small to moderate correlations were found between older age and higher alexithymia score in seven samples (r ranged between $.05$ and $.48$). One study reported a significant correlation between age and alexithymia in their sample but did not report the correlation coefficient or specify the direction of the association (Jørgensen et al., 2007) and another

study reported a significant correlation in their sample between older age and higher alexithymia score but did not report the correlation coefficient (Carano et al., 2006).

In 90% of the samples that examined categorical differences between age and alexithymia ($n = 18$), no significant differences were found. In two samples, groups of older participants reported higher alexithymia scores compared to groups of younger participants.

In 20% of the samples that examined education as a continuous variable ($n = 3$), no association was found between years of education and alexithymia score. Small to moderate correlations were found between fewer years of education and higher alexithymia score (r ranged between $-.12$ and $-.37$) in the remaining 12 samples.

In 41% of the samples that examined categorical differences between education and alexithymia ($n = 9$), no significant differences were found. In 13 samples, participants with lower education levels reported higher alexithymia scores compared to participants with higher education levels.

In 59.2% of the samples ($n = 45$), no differences in alexithymia scores were found between genders. Males reported higher alexithymia scores than females in 28 samples, whereas females reported higher alexithymia scores in three samples.

In 66.7% of the samples ($n = 18$), there were no differences in alexithymia scores between various economic factors (including SES, employment status, and income). In nine samples, participants who identified as having a lower economic status or income rate reported higher alexithymia scores. There were no differences in alexithymia scores between married and unmarried participants in 91% of the samples ($n = 20$), whereas higher alexithymia scores were found in unmarried participants in 9% of the samples ($n = 2$). The studies that examined other demographic factors generally found significant differences in alexithymia scores between the factors under examination. One study found higher alexithymia scores in participants from Peru compared to participants from the USA (Loiselle

& Cossette, 2001). Another study found no differences in alexithymia scores between participants from the USA who were identified as Caucasian, African-American, and Hispanic (Reese, 2008). One study reported higher alexithymia scores in participants who were members of a church compared to non-members of a church (Franz et al., 2008), and another study reported higher alexithymia scores in participants residing in a rural location compared to an urban location (Joukamaa et al., 2003).

Finally, differences were observed in the findings of the present studies based on whether the study involved a psychiatric sample or a community sample. In 70.5% of the psychiatric samples, alexithymia scores were not found to be related to demographic variables, such as gender, age, education, economic status, marital status, employment status, and other factors included in the present findings (demographic variables were measured as categorical or continuous variables). In contrast, alexithymia scores were related to demographic variables in 71.2% of the community samples. In addition, the studies conducted in psychiatric and community settings where greater prevalence rates of alexithymia were reported (above the median rate of alexithymia for each group of studies, respectively) generally found significant differences in alexithymia scores between demographic variables compared to the psychiatric and community studies that reported lower prevalence rates of alexithymia. Essentially, the effect of demographic variables on alexithymia was more salient in studies that involved community participants and in studies that identified high prevalence rates of alexithymia.

Discussion

A systematic literature review was carried out to obtain a clearer understanding of the factors that may influence alexithymia rates in order to generate awareness of the alexithymia construct amongst clinicians and researchers who work with psychiatric populations. This review examined rates of alexithymia in studies involving psychiatric samples while taking

psychiatric diagnosis and psychopathology severity into consideration. Rates of alexithymia in the psychiatric samples were compared to rates of alexithymia reported in studies involving community samples. This review also evaluated studies that have examined alexithymia and demographic differences in psychiatric and/or community samples to obtain a clearer understanding of the factors that may influence alexithymia rates.

Findings from the studies that involved psychiatric samples indicated a high degree of variability in prevalence rates of alexithymia independent of the study location (Europe or elsewhere) or sample size (< 100 or \geq 100 patients). In addition, greater rates of alexithymia were more frequently reported in psychiatric studies that were undertaken outside of Europe (predominately North America). The prevalence range of alexithymia in the community samples were similar across studies involving European samples, which tended to be larger, and studies involving non-European samples, which tended to be smaller. The similarity in prevalence range of alexithymia in the community samples, despite sample size or location, indicates that the differences in prevalence rates in the psychiatric samples for different countries is unlikely to be a result of sample size or cultural influences on alexithymia scores, but rather something to do with psychopathology in the different cultures. More specifically, the variety of psychiatric diagnoses did not differ according to the location that the studies were undertaken. Therefore, the differences in prevalence rates in the psychiatric samples for different countries are likely to be a result of diagnostic severity or other unknown factors that influence psychopathology in different cultures.

It was expected that a greater proportion of studies involving patients with severe psychiatric illness that are commonly observed in inpatient settings would report higher rates of alexithymia compared to studies involving patients in outpatient settings. However, most of the studies that involved inpatient samples reported lower rates of alexithymia compared to the studies that involved outpatient samples. One explanation for this finding is that treatment

setting of a patient sample in the studies reviewed did not offer an ideal indication of psychopathology severity. For example, many studies that involved patients diagnosed with chronic and acute psychiatric disorders, such as somatoform disorder with chronic pain (Celikel & Saatcioglu, 2006; Cox et al., 1994) and schizophrenia (Todarello et al., 2005), recruited patients from outpatient settings. These studies in particular reported some of the highest rates of alexithymia across studies that involved outpatient samples. Therefore, speculation about whether psychopathology severity is a likely contributor to greater rates of alexithymia requires further examination.

Type of psychiatric diagnosis was another sample characteristic considered to influence the prevalence rate of alexithymia. Most of the studies reviewed where patients were diagnosed with addictive disorders, depressive disorders, and somatoform disorders reported higher rates of alexithymia (that is, rates of alexithymia > 37.5%), whereas most of the studies reviewed where patients were diagnosed with anxiety and stress-related disorders and general psychiatric samples reported lower rates of alexithymia. These general trends in the literature were not consistent with a study in the present review (Son et al., 2012) that directly compared prevalence rates of alexithymia between various psychiatric diagnoses and found no significant differences. However, the present findings are partially consistent with the findings of Leweke et al. (2012) who found a significantly greater prevalence rate of alexithymia amongst patients diagnosed with a depressive disorder compared to other psychiatric diagnoses. The present findings are also partially consistent with early alexithymia researchers who considered alexithymia a pathological process underpinning somatic distress (Sifneos, 1973; Taylor et al., 1997). Moreover, and based on the present findings, a greater proportion of patients with addictive disorders, particularly eating disorders, may be identified as alexithymic given that some of the highest rates of alexithymia were reported in studies involving patients diagnosed with eating disorders.

The prevalence rates of alexithymia reported in studies that involved psychiatric patients were generally much higher than the rates reported in studies that involved community participants, with median rates of alexithymia at 37.5% and 10%, respectively. Comparing psychiatric and community samples has emphasised the link between alexithymia and psychopathology. In addition, the common practice across the alexithymia literature of employing and referring to community and student samples interchangeably was supported by the present finding that the distribution of alexithymia rates was similar in studies involving community and student samples.

The relative number of studies that found no differences in alexithymia between various demographic groups, such as gender, age, employment status, SES, income, and marital status, indicate that prevalence rates of alexithymia are unlikely to be influenced by demographic factors. In addition, there were a number of contradictory findings in the literature regarding age and gender. While most studies found non-significant correlations between age and alexithymia score, some studies found small to moderate negative or positive correlations between age and alexithymia, indicating that alexithymia was related to younger participants in some samples and older participants in other samples. Similarly, most studies reported no differences in alexithymia between genders, yet some studies reported higher alexithymia scores in males and other studies reported higher alexithymia scores in females. It may be premature to conclude that these demographic factors do not influence or relate to the alexithymia construct in some way. However, inconsistencies in the literature, particularly concerning differences in alexithymia by age and gender, further complicate the relationship between alexithymia and demographic factors.

In contrast, there is more evidence to suggest that education level may influence alexithymia rates in psychiatric and/or community populations, as most studies found that higher alexithymia scores were related to fewer years or a lower level of education. The small

to moderate correlations that were found between fewer years of education and higher alexithymia scores across the literature indicate that difficulties identifying, communicating, and examining ones feelings may have a small to moderate negative impact on the amount of time an individual spends at school. Perhaps alexithymia prevents individuals from continuing with higher education, or removes their desire to do so, due to the difficulties they experience in processing and regulating emotions. Alternatively, additional years of schooling, particularly at a tertiary level, may have enhanced individuals' ability to communicate and verbally articulate their feelings. It would be interesting to assess whether additional years of schooling was linked to the Difficulty Describing Feelings subscale specifically, and whether this subscale was responsible for higher total TAS-20 scores in these studies.

Over two thirds of the studies that found significant differences in alexithymia scores between demographic factors involved community samples. The exact opposite was true of the psychiatric studies, with over two thirds of these studies finding non-significant differences in alexithymia scores between demographic factors. This finding supports a previous observation by Levant et al. (2006), where significant differences in alexithymia scores between males and females were more frequently found in non-clinical studies compared to clinical studies that involved psychiatric and medical patients. Levant suggested that this observation provided support for his theory of a gender-linked subclinical alexithymia syndrome (Levant, 1992). However, the present findings dispute the specificity of a gender-linked subclinical alexithymia syndrome and rather indicate that this syndrome would be linked to numerous demographic variables and not just to gender. A more probable explanation for the finding that the effect of demographic factors on alexithymia was more salient in studies that involved community samples compared to psychiatric samples, is that the larger sample sizes employed in the community studies provided greater statistical power

to detect small effects between alexithymia and demographic factors. In addition, the relationships between alexithymia and different demographic factors may have been detected more easily in the community samples because variables related to psychopathology were not present to confound or dilute analyses. The finding that significant differences in alexithymia scores between demographic factors were more often reported in studies that reported higher rates of alexithymia could be explained in a similar way: a greater proportion of alexithymic participants may provide greater statistical power to detect relationships between alexithymia and different demographic factors. Overall, the findings from the present review indicate that the possible effect of demographic factors such as gender, age, employment status, SES, income, and marital status on prevalence rates of alexithymia is likely to be small.

Limitations and Recommendations

There are several limitations to the findings of the present review. The review focused on studies where the TAS-20 was used as the measure of alexithymia. Although a number of studies were not included in this review because they employed other measures of alexithymia, such as the TAS-26 or BVAQ, the populations they studied were represented in the selection of studies included in this review. Therefore, the decision to include only the studies employing the TAS-20 was unlikely to make the selected studies unrepresentative of the populations studied to date. In addition, while systematic reviews do have a number of advantages, findings from studies that vary in sample size are treated equally when evaluating the impact of the findings on the conclusions made. The samples sizes of individual studies identified for this review varied from 20 to 8785. Further empirical examination of these data is required to draw findings that are more conclusive (i.e., by conducting a meta-analysis) where issues such as sample size are accounted for in determining the size of effects.

The main limitation observed across the literature was the underrepresentation of studies undertaken in countries outside of Europe and North America. This lack of

representation may affect the international applicability of the present findings to psychiatric and community populations. Previous researchers who have examined the international prevalence rates of attention-deficit/hyperactivity disorder (see Faraone, Sergeant, Gillberg, & Biederman, 2003; Polanczyk, de Lima, Horta, Biederman, & Rohde, 2007) have also raised this issue. The examination of alexithymia rates in Australian psychiatric and community samples that is conducted in Chapter 4 of the present thesis will contribute to this gap in the alexithymia literature. There is also a need for more research to directly compare prevalence rates of alexithymia by psychiatric diagnosis in order to examine the role that psychiatric diagnosis has on the prevalence rate of alexithymia in the psychiatric population. The findings of this research need to be extended into clinical practice, with a better awareness of alexithymia and effective means of alleviating alexithymic features on the individual. The influence of alexithymia on therapeutic outcome and the impact of different treatment approaches will be the focus of Chapters 3 and 5 in the present thesis, whereby more detailed recommendations on these topics are provided.

Conclusion

The purpose of the present literature review was to evaluate prevalence rates of alexithymia in psychiatric and community samples. The data from studies using the TAS-20 to assess the prevalence of alexithymia indicates that, despite some variability, alexithymia reflects a pervasive problem affecting a large proportion of psychiatric patients because the prevalence rates of alexithymia were far greater in the psychiatric population than in the community population. Trends across the literature indicate that variation in the prevalence rate of alexithymia in the psychiatric population might have been influenced by psychiatric diagnosis, with higher rates being reported more frequently in studies involving patients diagnosed with depressive and somatoform disorders, and especially in studies involving patients diagnosed with addictive (eating) disorders. This finding is consistent with some

previous research, yet more studies are needed to directly examine prevalence rates of alexithymia between different diagnostic groups. In addition, there are other unknown factors that may influence differences in psychopathology between European and non-European samples, which might have contributed to the variation in the prevalence rate of alexithymia in the psychiatric population.

Findings in the literature revealed numerous inconsistencies regarding the influence of demographic factors on prevalence rates of alexithymia in psychiatric and community populations, and thus speculation about the impact of demographic differences in study samples on alexithymia rates remains valid. Future researchers should continue to account for the potential confounding influence of demographic factors on alexithymia, particularly the influence of gender, education level, and economic status. Further studies are needed to report prevalence rates of alexithymia, particularly studies involving large samples and samples recruited from populations outside of Europe and North America. Studies assessing the prevalence of alexithymia and directly comparing the prevalence of alexithymia in different countries are also required to provide a clearer picture of the affliction of alexithymia worldwide.

CHAPTER 3

ALEXITHYMIA AND THERAPEUTIC INTERVENTION

Since the early conception of alexithymia, it has been widely assumed that alexithymia would have an adverse role in the therapeutic process. In particular, alexithymic individuals were thought to produce poorer therapeutic outcomes compared to non-alexithymic individuals and it has been suggested that alexithymic features are difficult to improve during therapy (Sifneos, 1972/1973, 1975; Taylor et al., 1997).

There are several reasons for why alexithymia has been considered an obstacle for therapeutic success. The original clinical observations of patients with alexithymic features described them as having responded poorly to psychodynamic psychotherapy (Sifneos, 1975). Many forms of psychotherapy regard a certain level of introspection or awareness of emotion as fundamental to achieving positive outcomes. It has been suggested that an externally-oriented thinking style predisposes patients to experience difficulties with insight-oriented therapies, and a reduced capacity to examine ones thoughts and feelings and to think symbolically or imaginatively about inner experiences impedes client engagement (Taylor et al., 1997). Difficulties communicating feelings to others, particularly to healthcare providers, may hinder the detection and diagnosis of psychiatric disorders as well as the development of appropriate treatment approaches for individuals with alexithymia (Bamonti et al., 2010). Alexithymia may also interfere with the utilisation of emotion regulation skills such as modification and acceptance of emotions, which have been shown to significantly contribute to the prediction of mental health and treatment gains (Berking et al., 2008). In particular, an awareness and understanding of emotions are considered basic skills that are needed to facilitate the application of the emotion regulation skills of modification and/or acceptance (Berking et al., 2008; Lumley et al., 2005). Therefore, core characteristics of alexithymia,

namely difficulties identifying and differentiating emotions, may be counter to effective emotion regulation, thereby obstructing therapeutic success.

Although alexithymia has been defined by deficits that are thought to interfere with therapeutic outcome, the empirical evidence to support this reasoning has not been consistent. Some studies have found higher baseline levels of alexithymia to be a predictor of poor therapeutic outcome (Bach & Bach, 1995; Leweke et al., 2009; Özsahin et al., 2003) while others have found no link between alexithymia and therapeutic outcome (de Haan, Schellekens, et al., 2012; Rufer et al., 2010; Rufer et al., 2004; C. Spitzer et al., 2005). Moreover, some authors have proposed that alexithymia may interfere less with behavioural-based treatments, such as cognitive behavioural therapy (CBT, Rufer et al., 2010), because an external focus of alexithymic patients may enhance their adherence to structured exercises and behavioural recommendations (Lumley et al., 2007). In contrast, it has been proposed that alexithymic patients may respond unfavourably to treatments that focus on insight or emotional awareness because they have difficulties examining their problems from a psychological perspective (Lumley et al., 2007; Sifneos, 1973).

In addition to the assumption that alexithymic individuals produce poor therapeutic outcomes, it has also been suggested that alexithymic features are difficult to improve during therapy (e.g., Sifneos, 1972/1973). One reason why alexithymia has been considered difficult to treat involves the view that alexithymia is a personality trait. The perception of alexithymia as a personality trait implicates the construct as a vulnerability factor for psychological distress and persistent psychopathology (Taylor & Bagby, 2004). Personality traits are defined in such a way as to be pervasive and entrenched aspects of a person's behaviour, affect, and cognition (Allemand, Steiger, & Hill, 2013). In this context, alexithymia may create a persistent problem for patients receiving psychiatric treatment. Moreover, the stable nature of personality traits mean that they are more resistant to change or change at a slower

rate over time compared to clinical states, such as negative affect (Allemand et al., 2013). Nevertheless, stability does not imply that meaningful changes to personality do not occur (Widiger, 2003). Thus, what is of interest to clinicians is whether alexithymia is a stable personality trait and the therapeutic approaches most effective at reducing alexithymia.

Researchers have argued that assessment of change in personality is best done by assessing multiple forms of stability because assessing mean-level stability alone for example, cannot account for individual differences in personality in response to treatment effects nor can it provide strong support for the stable nature of personality traits (Allemand et al., 2013; Santor, Bagby, & Joffe, 1997). Change in personality, and alexithymia, has typically been approached by assessing mean-level stability and relative stability.

Mean-level stability refers to the extent to which the average alexithymia score for a group of patients remains consistent over time (Allemand et al., 2013). It is typically measured using t-tests or analysis of variance, where a significant difference in the average scores measured across time equates to mean-level change. Mean-level stability provides a general indication of change in alexithymia scores on average: at a group level. However, while this form of assessment can produce a constant standard deviation with a varying mean, there is no guarantee that patients' scores are not changing by roughly the same amount for each patient in the group. That is, alexithymia scores in a group can maintain the same distribution from the mean even though some patients' scores may increase and other patients' scores may decrease over time. Relative stability, on the other hand, is a stronger indicator that patients' scores are roughly changing by the same amount.

Relative stability is implied by a high test-retest correlation, where a perfect positive correlation indicates that patients' alexithymia scores have changed by exactly the same amount over time (Allemand et al., 2013). Furthermore, high test-retest correlations can be interpreted as, for an arbitrary score the distances to nearby scores before treatment are

roughly maintained after treatment. This would amount to an approximation of a movement or translation of scores.

It is noteworthy that relative stability and mean-level stability are conceptually and statistically distinct as they provide different interpretations of change in a set of scores over time (Allemand et al., 2013). Therefore, observing average change in scores at a group level does not rule out the possibility of observing relative stability among scores at an individual level (Santor et al., 1997). For example, high degrees of relative stability have been observed in the personality traits neuroticism and extraversion over a five-week treatment period in addition to significant mean-level declines in these traits and in depression severity (Santor et al., 1997). Similarly, relative stability and mean-level change in alexithymia has been observed in previous studies (e.g., Luminet et al., 2001).

Some have argued that, in addition to examining numerous forms of stability, change in alexithymia must be examined in the context of acute change in clinical symptoms before judgments are made concerning the degree to which alexithymia can change following treatment (Luminet et al., 2001). Significant reductions in alexithymia scores alongside reductions in clinical symptoms is one of the primary observations that led critics to conclude that alexithymia is not a stable trait construct, and rather that alexithymia is dependent on change in clinical symptoms and thus does not constitute a personality vulnerability to psychopathology (Honkalampi, Hintikka, Saarinen, et al., 2000). Few studies have examined different forms of stability in the context of change in clinical symptoms. Therefore, premature conclusions are likely to have been reached regarding the stability of alexithymia, whether it is dependent on clinical symptoms, and whether it influences the onset and course of psychopathology (Luminet et al., 2001; Santor et al., 1997).

Many studies examining change in alexithymia have found significant mean-level reductions in alexithymia over time in response to various therapeutic interventions,

including pharmacotherapy (Luminet et al., 2001), CBT (Rufer et al., 2010), and psychotherapy (Ogrodniczuk, Sochting, Piper, & Joyce, 2012). Given the responsiveness of alexithymia to various interventions, many researchers have speculated about the most effective interventions to treat alexithymia. Taylor (1992) and Lumley et al. (2007) have suggested the potential value of autogenic training and biofeedback for the treatment of alexithymia, yet no empirical studies have examined these approaches. In addition, some authors have also described targeted treatments for alexithymia including: a three-step integrative therapy that helps patients to develop accounts of their own affective experiences and make use of communication with others in order to manage stress (Vanheule, Verhaeghe, & Desmet, 2011), a skills-based training intervention that helps patients to attend to and express their feelings more effectively (Kennedy & Franklin, 2002), and a hypnotic imagery intervention that helps patients process emotions and activate mental images (Gay, Hanin, & Luminet, 2008). However, the majority of studies that have investigated change in alexithymia have done so incidentally to investigating change in clinical symptoms following treatment for a psychiatric disorder of interest. Therefore, researchers have speculated about which prevailing approaches to treatment would be the most effective in reducing levels of alexithymia. Treatments conducted in a group format have been considered beneficial for alexithymic patients as groups provide a safe and supportive environment for patients to experience and learn about emotions through a wide range of interpersonal situations (Apfel-Savitz, Silverman, & Bennett, 1977; Swiller, 1988). Supportive therapy, which has a more directive and external focus, has been considered more effective at reducing alexithymia in patients compared to traditional interpretive or analytic psychotherapies (Ogrodniczuk, Joyce, & Piper, 2013; Sifneos, 1975), which demand a level of introspection that may be challenging for these patients (Ogrodniczuk et al., 2013). Behavioural interventions like CBT also provide a directive and external focus and have been suggested to be less anxiety

provoking for alexithymic patients as they focus on coping with unpleasant emotions and bodily sensations due to physiological reactivity (Rufer et al., 2010) rather than an inward examination of the self. Lastly, some have proposed that emotion-focused interventions that target the identification and expression of emotion are the most effective type of treatment to mitigate alexithymia features (Becker-Stoll & Gerlinghoff, 2004; Hyer, Woods, & Boudewyns, 1991; Vanheule et al., 2011), since these interventions aim to enhance the way patients process and experience emotions.

Overall, questions remain in the literature regarding the impact of alexithymia on therapeutic outcome, the stability of alexithymia following therapeutic intervention, and the most effective treatment approaches for reducing alexithymia levels. Vast differences between studies, including psychiatric diagnosis, treatment approaches, and outcome measures, have made it difficult to discern a clear picture of alexithymia's role in the therapeutic process. Understanding this role is essential if therapeutic interventions designed to treat psychiatric disorders are to be improved, particularly since alexithymia is considered to be a predisposing factor for psychological distress and persistent psychopathology (Taylor et al., 1997).

The purpose of the present literature review was to evaluate the role of alexithymia in the therapeutic process, while taking factors such as therapeutic approach and outcome measure into consideration. This review also evaluated the stability of alexithymia following therapeutic intervention and the effectiveness of several therapeutic interventions in reducing alexithymia levels. A comprehensive and systematic review of the literature will help to clarify the most effective therapeutic interventions that are currently available as well as provide more compelling recommendations for clinicians and future researchers working in psychiatric settings about how to improve alexithymic features in psychiatric patients.

It should be noted that Kojima (2012) conducted a recent review of the prognostic value of alexithymia among clinical populations. However, it was judged that the focus and inclusion criteria of the present review differed significantly enough to be carried out. For example, the present review focused on the role of alexithymia in therapeutic intervention rather than the influence of alexithymia on prognosis of psychopathology. In addition, the present search criteria included psychiatric samples exclusively rather than clinical samples in general (i.e., medical and psychiatric). Therefore, the present review offers a broader insight into the role of alexithymia in the therapeutic process and is more specific to the psychiatric population.

Method

Search

A systematic search was conducted through Medline, ProQuest Psychology Journals, and Web of Science databases to obtain potentially relevant articles. The database searches were supplemented by searching Google Scholar for relevant articles and by crosschecking the articles that were included in the previous systematic review (Chapter 2). All databases were searched using combinations of the following keywords: alexithymia, treatment outcome, stability, and TAS-20. The title and abstract of the identified articles were then screened for relevance against the inclusion and exclusion criteria. If abstracts were not available or unable to provide sufficient information, the full-text article was retrieved and screened in the same manner.

Inclusion and Exclusion Criteria

For inclusion, studies were required to: (1) include adults (≥ 18 years old), (2) measure alexithymia using the total TAS-20 score, (3) include psychiatric participants, and (4) be published in the English language. Studies involving participants diagnosed with

organic mental disorders (e.g., dementia), mental retardation, developmental disorders, or physiological conditions as the primary diagnosis were excluded. Also excluded, were studies examining change in categories of alexithymia exclusively without examining change in alexithymia scores because categorical changes in alexithymia can give a misleading impression of instability since alexithymia scores bordering a category would only need to change slightly to move into another category (Luminet et al., 2001). The census data for inclusion ranged from 1994 to 2014.

Data Extraction

Data from the selected studies were independently extracted onto a standardised form developed for this review. The following data were extracted: author(s) and date, country of the study, characteristics of participants (sample size and psychiatric diagnosis), treatment approach, format (individual or group), method (whether the study used comparative or control groups), outcome measure(s), and study findings (which included information about the form of stability examined and whether the study accounted for change in clinical symptoms). This information is summarised in two tables: Table 3 presents the data from studies that examined the impact of alexithymia on therapeutic outcome and Table 4 presents the data from studies that examined the stability or change in alexithymia following treatment. In addition, the recruitment setting and treatment specifications (duration of treatment and individual sessions) for each study were extracted (recruitment setting data not shown in tables).

Results

The search effort resulted in 177 citations. Twelve duplicate citations were removed and 118 citations were excluded as irrelevant after they were screened for potential relevance as based on the inclusion and exclusion criteria. The remaining 47 full-text articles were

assessed for eligibility. Sixteen studies were excluded for the following reasons: five studies were follow-up studies that shared a participant sample with a study that was already included in the present review (Honkalampi, Hintikka, Antikainen, Lehtonen, & Viinamäki, 2001; Honkalampi et al., 2007; Honkalampi, Hintikka, Laukkanen, et al., 2001; Rufer et al., 2006; Saarijärvi, Salminen, & Toikka, 2006), four studies examined TAS-20 factors only rather than total TAS-20 score (De Gucht, Fischler, & Heiser, 2004; McCallum, Piper, Ogrodniczuk, & Joyce, 2003; Ogrodniczuk et al., 2004, 2005), three studies were not prospective (Carton et al., 2010; Chen et al., 2011; Coriale et al., 2012), two studies examined alexithymia at baseline only (Joyce, O'Kelly, Ogrodniczuk, Piper, & Rosie, 2012; Viinamäki et al., 2003), one study examined change in TAS-20 categories exclusively (Honkalampi, Hintikka, Saarinen, et al., 2000), and one study examined change in TAS-20 scores in remitted patients only rather than the whole patient sample (Marchesi et al., 2005). Cleland, Magura, Foote, Rosenblum, and Kosanke (2005) published a second study (Rosenblum et al., 2005) that involved the same sample but they examined and reported on different aspects of alexithymia and therapeutic outcome, and thus these studies were counted as two separate studies in the present review. In addition, Speranza, Loas, Guilbaud, and Corcos (2011) extended their earlier study (Speranza et al., 2007) by examining whether treatment approach influenced alexithymia stability. Their latter study was not counted as a separate study in the present review, but the findings were noted in the results column of the 2007 study. After this process of eligibility, 31 relevant studies were retained for review. Of these 31 studies, 16 studies examined the role of alexithymia in therapeutic outcome (the impact of alexithymia on treatment outcome), 24 studies examined the stability or change in alexithymia following therapeutic intervention (the impact of treatment on change in alexithymia), and 9 studies examined both the role of alexithymia in therapeutic outcome and change in alexithymia following therapeutic intervention.

Characteristics of the Studies Examining Alexithymia and Therapeutic Outcome

Most of the 16 studies that examined the influence of alexithymia on therapeutic outcome were undertaken in Europe ($n = 9$) and involved sample sizes smaller than 100 participants ($n = 10$). The size of the samples ranged from 32 to 297 (median = 77.5). The studies involved psychiatric samples with the following diagnoses: addictive disorders ($n = 6$), anxiety disorders ($n = 3$), varied diagnoses (i.e., general psychiatric samples, $n = 4$), depressive disorders ($n = 2$), and somatoform disorders ($n = 1$). The study samples were recruited from outpatient settings ($n = 9$), inpatient settings ($n = 4$), and hospitals and/or clinics ($n = 2$). One study did not specify a recruitment setting. All of the studies reported that the therapeutic interventions employed were effective at reducing clinical symptomatology in patient samples.

The formats of treatment employed in the present studies were group therapy ($n = 8$), individual therapy ($n = 2$), and a combination of group and individual therapy ($n = 3$). Three studies did not specify a treatment format. Approaches to treatment included CBT ($n = 6$), psychodynamic psychotherapy ($n = 3$), CBT or a motivational intervention ($n = 2$), unspecified psychotherapy ($n = 2$), pharmacotherapy ($n = 1$), pharmacotherapy with exposure techniques ($n = 1$), and psychoeducation with assertiveness training ($n = 1$). Half of the studies conducted treatments that ran for less than 12 weeks, ranging between 5 to 10 weeks and half of the studies conducted treatments that ran for 12 weeks or more, ranging between 12 to 18 weeks. Two studies did not specify the duration of treatment. Ten studies specified the number of days per week sessions were conducted (ranging between 1 to 7 days per week) and seven studies specified session duration (ranging between 1 to 9 hours per session). Eight studies used specific measures of therapeutic outcome relevant to psychiatric diagnosis (e.g., Beck Depression Inventory, Beck, Steer, & Brown, 1996), four studies used general outcome measures such as those assessing psychological distress (e.g., Global

Severity Index, Derogatis, 1983), and four studies used a combination of specific and general measures of therapeutic outcome.

All of the studies that examined the influence of alexithymia on therapeutic outcome employed a prospective research design. Four studies involved longitudinal follow-up periods of 3 months (Ogrodniczuk et al., 2012), 6 months (Rufer et al., 2010), and 12 months (de Haan, Schellekens, et al., 2012; Spek et al., 2008). One study employed an experimental research design with a control group (Reese, 2008). Two studies employed a comparative research design, yet only one of these studies examined the influence of alexithymia on therapeutic outcome between the treatment conditions (Rosenblum et al., 2005).

The Influence of Alexithymia on Therapeutic Outcome

It is important to note that the studies that found alexithymia to have a negative influence on therapeutic outcome(s) refer to findings that higher alexithymia scores correlated with lower outcome scores or that alexithymic patients produced less improvement in outcomes compared to non-alexithymic patients. This is different to finding that alexithymic patients, or patients with higher alexithymia scores, made no therapeutic gains or that they reported greater clinical symptomatology after treatment than at the beginning of treatment. Moreover, no study in the present review found that higher alexithymia scores were associated with better therapeutic outcome.

Of the 16 studies that examined the influence of alexithymia on therapeutic outcome, 2 studies found that higher levels of alexithymia before treatment had a negative influence on therapeutic outcome. Six of the remaining studies that were reviewed found that higher levels of alexithymia had a negative influence on some therapeutic outcomes (i.e., these studies reported mixed findings) and eight studies found that alexithymia had no influence on therapeutic outcome.

The two studies that found higher alexithymia levels before treatment to have a negative influence on therapeutic outcome examined categorical levels of alexithymia (TAS-20 scores ≥ 61) on therapeutic outcome. Grabe et al. (2008) conducted a study on 297 general psychiatric inpatients who were treated with 8 to 12 weeks of psychodynamic group psychotherapy. In this study, patients identified as alexithymic had significantly higher psychological distress scores before, during, and after treatment compared to the non-alexithymic patients. Özsahin et al. (2003) conducted a study on 65 patients diagnosed with depression who were treated with 10 weeks of pharmacotherapy and found that although alexithymic patients and non-alexithymic patients had similar levels of depression before treatment, the alexithymic patients reported significantly smaller reductions in depression severity after treatment compared to the non-alexithymic patients. In addition, higher alexithymia scores before treatment were found to significantly predict higher depression scores after treatment.

The six studies that reported mixed findings regarding the influence of alexithymia on therapeutic outcome employed a variety of therapeutic approaches that most commonly involved CBT ($n = 3$). The average duration of treatment across the studies that reported mixed findings was 10 weeks (ranging between 10 and 12 weeks). In addition, all of these studies were primarily conducted in North America and involved patients diagnosed with addictive disorders. One of these studies conducted a 3 month follow-up assessment of 68 general psychiatric patients treated with intensive integrated therapy (Ogrodniczuk et al., 2012). Ogrodniczuk et al. (2012) found that, after controlling for change in depression severity, less improvement in alexithymia over the course of treatment was associated with less improvement in interpersonal problems after treatment and with higher levels of aggression at the 3 month follow-up. However, alexithymia during the treatment period (measured at pre, post, and change score from pre to post treatment) was not associated with

interpersonal problems at the 3 month follow-up. One study in the present review examined the impact of alexithymia after treatment on therapeutic outcome (Fukunishi, Kikuchi, et al., 1997). In this study, patients who were identified as alexithymia after treatment reported significantly greater anxiety severity compared to patients who were non-alexithymic after treatment.

The eight studies that found alexithymia to have no influence on therapeutic outcome involved CBT (n = 5), psychodynamic psychotherapy (n = 2), and intensive psychotherapy (n = 1). The average duration of treatment in these studies was 10 weeks (ranging between 5 and 18 weeks). These studies were conducted primarily in Europe and involved various diagnostic samples. Four of the five studies that employed CBT conducted follow-up assessments. These studies found alexithymia to have no impact on therapeutic outcome at 6 month (Rufer et al., 2010) and 12 month follow ups (de Haan, Schellekens, et al., 2012; Reese, 2008; Spek et al., 2008).

There were two studies in the present review that examined the influence of alexithymia on therapeutic outcome using a control or comparative condition (Reese, 2008; Rosenblum et al., 2005). Reese (2008) conducted a study involving 84 patients diagnosed with somatoform disorders who were treated with either 10 weeks of CBT or a control condition that involved regular visits to their primary care physician. Alexithymia was not found to be a mediator in the association between treatment type and therapeutic outcome (somatisation symptoms, physical functioning, and mental health). Reese concluded that alexithymia could not account for the difference in effectiveness of CBT, compared to the control condition, in modifying therapeutic outcomes. Rosenblum et al. (2005) conducted a study involving 186 patients diagnosed with substance misuse disorders who were treated with either 10 weeks of CBT or motivational intervention. Alexithymia was not shown to moderate the differences in addiction severity after treatment between the treatment

conditions. However, patients with higher levels of alexithymia before treatment abstained from alcohol for shorter periods following motivational intervention compared to CBT.

Table 3
Influence of Alexithymia on Therapeutic Outcome

Reference	Country	Sample	Treatment	Outcome measure	Results
Balestrieri, Isola, Baiano, and Ciano (2013)	Italy	98 binge eating disorder and eating disorders not otherwise specified outpatients	Psychoeducation and assertiveness training (10 weeks, 1x p/week for 1.5 hours)	Eating disorder symptoms - subscales body dissatisfaction and bulimia (EDI-BD and EDI-BU); mean body mass index (BMI); median weekly frequency of binges; recovery (proportion of patients without diagnosis)	Pre TAS-20 \neq Δ BMI, Δ EDI-BD, Δ EDI-BU, frequency of binges; lower pre TAS-20 scores \sim recovery
Becker-Stoll and Gerlinghoff (2004)	Germany	47 eating disorder outpatients (female)	Intensive group psychotherapy (16 weeks, 7x p/week, from 08:00 to 17:00 hours)	Eating disorder symptoms (EDI); recovery score ^a (higher = better recovery); prognosis score ^a (higher = better prognosis)	Pre TAS-20 \neq any outcome variable
Cleland et al. (2005 ^b)	USA	186 substance misuse outpatients	(1) group CBT or (2) group motivational intervention (10 weeks, 2x p/week); data collected at pre and post treatment 9-21 weeks (average 15 weeks)	Addiction Severity Index for alcohol and drug use (ASI); therapeutic alliance (HAQ)	Higher pre TAS-20 predicted higher ASI alcohol, \neq ASI drugs; higher pre TAS-20 \sim lower HAQ scores

Table 3 (continued)

Reference	Country	Sample	Treatment	Outcome measure	Results
de Haan, Schellekens, et al. (2012)	Netherlands	100 alcohol dependent inpatients (male)	One month detox before inpatient group therapy: cognitive behavioural approach; data collected at 12 month follow up	Abstinence one month before follow up; ≤ 5 units of alcohol use p/day over 12 months before follow up; time in treatment; improvement on EuropASI domains Alcohol, Psychiatry, and Drugs	Pre TAS-20 \neq any outcome measures at 12 month follow up
Fukunishi, Kikuchi, et al. (1997)	Japan	50 anxiety disorder patients	Pharmacotherapy and repeated hyperventilation provocations and respiratory training combined with exposure in vivo (12 weeks, 1x p/week)	Severity of anxiety (HAM-A); severity of depression (HAM-D)	Higher pre TAS-20 ~ higher post HAM-A, \neq HAM-D; alexithymic patients post treatment ~ higher post HAM-A
Grabe et al. (2008)	Germany	297 general psychiatric inpatients	Psychodynamic group therapy (8-12 weeks, 3x p/week for 1.5hrs); data collected at pre, during (4 weeks), and post treatment; individual therapy (1hr p/week)	General psychological distress (GSI)	Alexithymics (TAS-20 ≥ 61) had higher GSI pre, during, and post treatment

Table 3 (continued)

Reference	Country	Sample	Treatment	Outcome measure	Results
Joyce et al. (2013)	Canada	32 general psychiatric outpatients	(1) psychodynamic group psychotherapy (18 weeks); (2) 73% patients had concomitant pharmacotherapy	Symptom distress, interpersonal relationships, social role performance and global functioning (OQ-45); interpersonal distress (IIP); quality of life (QOLI)	Controlling for trait anxiety, pre TAS-20 \neq any outcome measures
Ogrodniczuk et al. (2012)	Canada	68 general psychiatric outpatients	Intensive integrated group therapy (12 weeks, 5x p/week, for 3hrs); data collected at pre and post treatment, and 3 month follow up	Interpersonal problems (IIP-28) total score and subscales: Interpersonal Sensitivity, Interpersonal Ambivalence, and Aggression	Controlling for Δ depression, pre to post Δ TAS-20 \sim pre to post Δ IIP-28 scores and lower Aggression (IIP-28 subscale) at follow up; post to follow-up Δ TAS-20 \sim post to follow-up Δ IIP-28 scores; pre, post, or Δ TAS-20 \neq IIP-28 scores at follow-up
Özsahin et al. (2003)	Turkey	65 depressive outpatients	Pharmacotherapy (SSRI 20mg/day for 10 weeks)	Severity of depression (HAM-D)	Higher pre TAS-20 \sim higher post HAM-D
Reese (2008)	USA	84 somatoform disorder patients	(1) individual CBT or (2) control: primary care physician medical treatment as usual (10 weeks, 1x p/week, for 1hr); data collected at pre and post treatment, and 6 and 12 month follow up	Somatisation symptoms (CGI); physical functioning & mental health (SF-36)	Pre TAS-20 not mediator of \sim between treatment and outcomes

Table 3 (continued)

Reference	Country	Sample	Treatment	Outcome measure	Results
Rosenblum et al. (2005 ^b)	USA	186 substance misuse outpatients	(1) group CBT or (2) group motivational intervention (10 weeks, 2x p/week); data collected at pre and post treatment 9-21 weeks (average 15 weeks)	Addiction Severity Index for alcohol and drug use (ASI); days abstinent (TLFB method)	Pre TAS-20 moderated abstinence but not ASI in type of therapy: higher pre TAS-20 ~ higher abstinence after group CBT vs. group motivational intervention
Rufer et al. (2004)	Germany	42 obsessive-compulsive disorder inpatients	(1) individual and group CBT (mean 10 weeks, individual 3-4x p/week + group unspecified; (2) 60% patients had concomitant pharmacotherapy (SSRI)	OCD symptoms (Y-BOCS change scores)	Pre TAS-20 \neq Δ Y-BOCS
Rufer et al. (2010)	Germany	55 panic disorder outpatients	(1) short-term group CBT (5 weeks, 1x p/week, for 2.5 hrs); (2) 35% patients had concomitant pharmacotherapy; data collected at pre and post treatment, and 6 month follow up	Panic and agoraphobia symptoms (PAS); global improvement (CGI)	Pre TAS-20 \neq post or follow up PAS or CGI
Spek et al. (2008)	Netherlands	119 sub-threshold depressive patients	CBT; data collected at pre and post treatment, and 1 year follow up	Depression severity (BDI)	Pre TAS-20 \neq BDI post or follow up
C. Spitzer et al. (2005)	Germany	100 general psychiatric inpatients	Psychodynamic group therapy (mean 6 weeks, 3x p/week, for 1hr)	Interpersonal functioning (IIP-C); post scores and change scores	Pre TAS-20 category \neq post IIP-C or Δ IIP-C

Table 3 (continued)

Reference	Country	Sample	Treatment	Outcome measure	Results
Stasiewicz et al. (2012)	USA	71 alcohol dependent outpatients	(1) group CBT plus one of two treatment enhancers: (a) affect regulation training, or (b) health and lifestyle (12 weeks, 1x p/week)	Alcohol dependence severity (SADD); drinking-related negative consequences (DrInC); drinks per drinking day; percent days heavy drinking	Controlling for anxiety, depression, pre-treatment scores, and number of sessions attended, higher pre TAS-20 ~ higher post SADD, but no other outcome measure

Note. \neq = no association; \sim = association; Δ = change score from pre to post treatment; ASI = Addiction Severity Index (McLellan et al., 1992); BDI = Beck Depression Inventory (Beck et al., 1996); CGI = Clinical Global Impression Scale (Guy, 1976); DrInC = The Drinker Inventory of Consequences (W. R. Miller, Tonigan, & Longabaugh, 1995); EDI = Eating Disorder Inventory (Garner, Olmstead, & Polivy, 1983); EuropASI = European Addiction Severity Index (Hendriks, Kaplan, van Limbeek, & Geerlings, 1989); GSI = Global Severity Scale (Derogatis, 1983); HAM-A = Hamilton Anxiety Rating Scale (Hamilton, 1959); HAM-D = Hamilton Depression Rating Scale (Hamilton, 1960); HAQ = Helping Alliance Questionnaire (Luborsky et al., 1996); IIP = The Inventory of Interpersonal Problems (L. M. Horowitz, Rosenberg, Baer, Ureño, & Villaseñor, 1988); IIP-C = The Inventory of Interpersonal Problems-Circumplex Scales (L.M. Horowitz, Alden, Wiggins, & Pincus, 2000); IIP-28 = Inventory of Interpersonal Problems-28 (Stern, Kim, Trull, Scarpa, & Pilkonis, 2000); OQ-45 = The Outcome Questionnaire-45 (Asay, Lambert, Gregersen, & Goates, 2002); PAS = The Panic and Agoraphobia Scale (Bandelow, 1995); QOLI = The Quality of Life Inventory (Lehman, 1996); SADD = The Short Alcohol Dependence Data Questionnaire (Davidson & Raistrick, 1986); SF-36 = Short-Form Health Survey (Ware & Sherbourne, 1992); TLFB = Time-Line Follow-Back (Sobell & Sobell, 1992); Y-BOCS = Yale-Brown Obsessive Compulsive Scale (Goodman et al., 1989).

^aRecovery scores based on improvement in body mass index and/or frequency of bingeing and/or vomiting p/week; prognosis scores based on danger of relapse.

^bThese studies shared data, but were counted as two separate studies as they assessed different therapeutic outcomes.

Characteristics of the Studies Examining Change in Alexithymia

The majority of the 24 studies that examined change in alexithymia following therapeutic intervention were undertaken in Europe ($n = 13$) and involved sample sizes smaller than 100 patients. The sample sizes ranged from 3 to 297 (median = 61.5). The studies involved psychiatric samples with the following primary diagnoses: addictive disorders ($n = 10$), varied diagnoses (i.e., general psychiatric samples, $n = 5$), anxiety disorders ($n = 4$), depressive disorders ($n = 2$), somatoform disorders ($n = 2$), and schizophrenia ($n = 1$). The study samples were recruited from outpatient settings ($n = 10$), inpatient settings ($n = 7$), hospitals and/or clinics ($n = 6$), and community advertisement ($n = 1$).

Most studies did not specify a treatment format. However, the studies that did specify a treatment format employed group therapy ($n = 5$), individual therapy ($n = 3$), and a combination of group and individual therapy ($n = 3$). Approaches to treatment included CBT ($n = 6$), naturalistic and non-active approaches (e.g., detoxification, $n = 4$), psychoeducation with assertiveness training or behavioural management skills ($n = 2$), pharmacotherapy ($n = 2$), and eight studies used a variety of other therapeutic approaches (including a 12-step program, psychodynamic psychotherapy, unspecified psychotherapy, pharmacotherapy with exposure techniques, a targeted treatment for alexithymia, affect school therapy, and an interpretive or supportive psychotherapy condition). Two of the studies reviewed did not specify a treatment approach. Most of the studies conducted treatments that ran for less than 12 weeks ($n = 11$), ranging from 2 to 12 weeks. Five studies did not specify the duration of treatment. Eleven studies specified the number of days per week that sessions were conducted (ranging between 1 to 7 days per week) and seven studies specified session duration (ranging between 50 minutes to 9 hours per session).

All of the studies that examined change in alexithymia employed a prospective research design. Eight studies were longitudinal and involved follow-up periods of 2 to 3 months (Clyne & Blampied, 2004), 3 months (Ogrodniczuk et al., 2012), 6 months (Ogrodniczuk et al., 2013; Rufer et al., 2010), 12 months (Kennedy & Franklin, 2002; Reese, 2008), or numerous follow up periods of 3 to 12 months (Todarello et al., 2005) and 6 to 24 months (Honkalampi et al., 2004). One study employed an experimental research design with a control group (Reese, 2008) and one study employed a comparative research design (Ogrodniczuk et al., 2013). One study employed a case-series design that involved three patients (Kennedy & Franklin, 2002).

Stability and Treatment of Alexithymia

All of the 24 studies that examined change in alexithymia following therapeutic intervention assessed mean-level stability. Relative stability was assessed in 12 of these studies in addition to mean-level stability. In addition, 14 of the studies that examined change in alexithymia following therapeutic intervention took into account change in clinical symptoms. All together, 20 studies found mean-level instability or change in alexithymia scores following treatment. The remaining four studies found mean-level stability, or no change, in alexithymia scores following treatment.

Of the 20 studies that reported mean-level change in alexithymia over time, 9 studies examined whether this change was dependent of the severity of clinical symptoms. Two studies found significant moderate to large positive correlations (according to Cohen, 1988) between alexithymia change scores and clinical severity change scores (Baker et al., 2012; Fukunishi, Kikuchi, et al., 1997). However, the other seven studies found that mean-level change in alexithymia was independent of baseline clinical severity (Rufer et al., 2010) or change in clinical severity (Ogrodniczuk et al., 2013), and that change in clinical severity accounted for a non-significant amount of variance in alexithymia change (de Timary et al.,

2008; Luminet et al., 2001; Melin et al., 2010; Ogrodniczuk et al., 2012) or a small amount of variance in alexithymia change (16%, Grabe et al., 2008).

Three of the four studies that found mean-level stability in alexithymia showed that alexithymia scores remained stable despite significant decreases in clinical symptomatology during the same period (Picardi et al., 2012; Rufer et al., 2004; Todarello et al., 2005). The other study that found mean-level stability in alexithymia showed that, while depression severity decreased over time, alexithymia and general psychopathology severity remained stable (Pinard et al., 1996). These studies involved small sample sizes (≤ 42), which were below the median sample size of the studies in the present review. Sample size was the only factor to differentiate the studies that found change in alexithymia scores across time from those that did not; factors such as the country of the study, sample diagnosis, recruitment setting, or duration of treatment were similarly varied across all of the studies that examined change in alexithymia.

Relative stability in alexithymia was reported by 100% of the 12 studies that assessed it. Three studies confirmed the relative stability of alexithymia during follow up periods of 6 months (Rufer et al., 2010), 12 months (Todarello et al., 2005), and 3 years (Speranza et al., 2007).

Seven of the 12 studies also examined factors that could impact on the relative stability of alexithymia. Using regression analyses, all of these studies showed that alexithymia before treatment was the best predictor of alexithymia after treatment compared to various measures of clinical severity assessed before and after treatment, such as depression severity (de Haan, Joosten, et al., 2012; de Haan et al., 2014; de Timary et al., 2008; Grabe et al., 2008; Luminet et al., 2001; Picardi et al., 2012; Todarello et al., 2005).

There were two studies in the present review that examined change in alexithymia using a control or comparative condition (Ogrodniczuk et al., 2013; Reese, 2008). These

studies showed significant declines in alexithymia scores across all treatment conditions. However, even greater declines in alexithymia scores were observed following particular treatment conditions. Reese (2008) found a significant decline in alexithymia scores in both a CBT and control condition during treatment and at 12 month follow up. While significantly greater declines in alexithymia scores were found in the CBT condition during treatment compared to the control condition, from post treatment to 12 month follow up there was no difference in the amount of change in alexithymia between the treatment conditions. Ogrodniczuk et al. (2013) obtained similar findings in 112 general psychiatric patients when comparing supportive and interpretive psychotherapy conditions. While alexithymia scores declined significantly from before to after 20 weeks of treatment in both conditions, there was a significantly greater decline in alexithymia scores from before to after treatment in the supportive psychotherapy condition. However, despite further decreases in alexithymia scores at 6 month follow up, there was no difference between the treatment conditions in the amount of change in alexithymia scores during this time.

Table 4
Change in Alexithymia Following Treatment

Reference	Country	Sample	Treatment	Results
Akkerman (1996)	USA	139 substance misuse inpatients ^a	12-step program with AA components (7-10 days of detox then 26-30 day treatment)	Mean instability
Baker et al. (2012)	United Kingdom	55 general psychiatric patients	Individual CBT; unspecified duration	Mean instability; Δ TAS-20 ~ Δ BSI
Balestrieri et al. (2013)	Italy	98 binge eating disorder and eating disorders not otherwise specified outpatients	Psychoeducation and assertiveness training (10 weeks, 1x p/week for 1.5 hours)	Mean instability
Becker-Stoll and Gerlinghoff (2004)	Germany	47 eating disorder outpatients (female)	Intensive group psychotherapy (16 weeks, 7x p/week from 08:00 to 17:00 hours)	Mean instability; relative stability
Clyne and Blampied (2004)	New Zealand	11 binge eating disorder participants ^b (female)	Group psychoeducation and behavioural management (11 weeks, 1x p/week for 2hrs); data collected at pre and post, and 2-3 month follow up	Mean instability at each study phase
de Haan, Joosten, et al. (2012)	Netherlands	140 substance use disorder inpatients	Individual and group CBT for 3 months; some patients received additional 5 sessions of CBT with motivational interviewing, relapse prevention, and social skills training	Mean instability and relative stability; pre TAS-20 score predicted post TAS-20 score over and above clinical symptoms of anxiety and depression; intervention type did not account for change in TAS-20

Table 4 (continued)

Reference	Country	Sample	Treatment	Results
de Haan et al. (2014)	Netherlands	101 substance use disorder inpatients	Detoxification (2-3 weeks, average 14 days); pharmacotherapy in first few days (benzodiazepines and/or methadone)	Mean instability and relative stability; pre TAS-20 score predicted post TAS-20 score over and above post depression severity
Fukunishi, Kikuchi, et al. (1997)	Japan	50 anxiety disorder patients	Pharmacotherapy, repeated hyperventilation provocations, respiratory training and exposure in vivo (12 weeks, 1x p/week)	Mean instability; Δ TAS-20 \sim Δ HAM-A; Δ TAS-20 \neq Δ HAM-D
Grabe et al. (2008)	Germany	297 general psychiatric inpatients	Psychodynamic group therapy (8-12 weeks, 3x p/week for 1.5hrs); data collected at pre, during (4 weeks), and post treatment; individual therapy (1hr p/week)	Mean instability from pre to post, and pre to discharge; Δ TAS-20 \sim Δ GSI; relative stability from pre to discharge; pre TAS-20 best predictor of post TAS-20
Honkalampi et al. (2004)	Finland	106 depressive outpatients	\geq 50% of time patients received pharmacotherapy, psychotherapy, and inpatient care; data collected at pre treatment and 6 month, 12 month, and 24 month follow ups	Mean instability at each study phase
Kennedy and Franklin (2002)	Australia	Case series: 3 anxiety disorder patients	Skills-based intervention for alexithymia specifically (16-24 weeks, 1x p/week); data collected at pre (average of 4 weeks prior to treatment and pre treatment), post, and 4 weeks post treatment, and 12 month follow up	Mean instability from pre to post; 2/3 cases mean instability at 4 week post and 12 month follow up
Luminet et al. (2001)	Canada	46 depressive outpatients	Pharmacotherapy (antidepressants); data collected at pre treatment and 14 week follow up	Mean instability; Δ TAS-20 \neq Δ HAM-D; relative stability; pre TAS-20 best predictor of post TAS-20

Table 4 (continued)

Reference	Country	Sample	Treatment	Results
Melin et al. (2010)	Sweden	46 somatoform disorder outpatients (chronic benign pain)	(1) Affect School group therapy (8 weeks, 1x p/week); (2) 22% had concomitant pharmacotherapy (antidepressants)	Mean instability; Δ TAS-20 \neq Δ HAD-D
Ogrodniczuk et al. (2013)	Canada	112 general psychiatric outpatients	(1) interpretive individual psychotherapy or (2) supportive individual psychotherapy (20 weeks, 1x p/week, for 50mins); data collected at pre and post treatment, and 6 month follow up	Mean instability during each study phase and therapy type, after controlling for pre to 6 month follow up Δ BDI; pre to post TAS-20 > decline in supportive vs. interpretive therapy; post to follow up TAS-20 \neq between therapy types
Ogrodniczuk et al. (2012)	Canada	68 general psychiatric outpatients	Intensive integrated group therapy (12 weeks, 5x p/week for 3hrs); data collected at pre and post treatment, and 3 month follow up	Mean instability from pre to post; pre to post Δ TAS-20 \neq pre to post Δ BDI; stability from post to 3 month follow up
Picardi et al. (2012)	Italy	41 general psychiatric inpatients	Unspecified treatment (average 8 weeks, \pm 32.6 days)	Mean and relative stability for both groups; pre TAS-20 best predictor of post TAS-20
Pinard et al. (1996)	Canada	21 substance dependent patients	Detoxification (4-6 weeks, average 36.6 days)	Mean stability; Δ TAS-20 \sim Δ BDI and Δ GSI
Reese (2008)	USA	84 somatoform disorder patients	(1) individual CBT or (2) control: primary care physician medical treatment as usual (10 weeks, 1x p/week, for 1hr); data collected at pre and post treatment, and 6 and 12 month follow up	Mean instability from pre to post: pre to post TAS-20 > decline in treatment vs control; relative stability from pre to post in both groups; post to follow up TAS-20 \neq between groups

Table 4 (continued)

Reference	Country	Sample	Treatment	Results
Rufer et al. (2010)	Germany	55 panic disorder outpatients	(1) short-term group CBT (5 weeks, 1x p/week, for 2.5 hrs); (2) 35% patients had concomitant pharmacotherapy; data collected at pre and post treatment, and 6 month follow up	Mean instability from pre to post and pre to follow up, after controlling for BDI; relative stability from pre to post and post to follow up
Rufer et al. (2004)	Germany	42 obsessive-compulsive disorder inpatients	(1) individual and group CBT (mean 10 weeks, individual 3-4x p/week + group unspecified); (2) 60% patients had concomitant pharmacotherapy (SSRI)	Mean stability and relative stability
Speranza et al. (2007 ^c)	France	102 eating disorders patients (female)	Unspecified treatment: 57% psychotherapy, 40% pharmacotherapy, and/or combination of these; data collected at pre treatment and 3 year follow-up	Mean instability and relative stability; independent of treatment type (Speranza et al., 2011)
Stasiewicz et al. (2012)	USA	71 alcohol dependent outpatients	(1) group CBT plus one of two treatment enhancers: (a) affect regulation training, or (b) health and lifestyle (12 weeks, 1x p/week)	Mean instability in both samples
de Timary et al. (2008)	Belgium	70 alcohol dependent inpatients	Detoxification (14-18 days); pharmacotherapy in first 48hrs (benzodiazepines)	Mean instability; Δ TAS-20 \neq Δ BDI or Δ STAI-S; relative stability; pre TAS-20 best predictor of post TAS-20
Todarello et al. (2005)	Italy	29 schizophrenic outpatients	Pharmacotherapy (antipsychotics, antidepressants, and/or mood stabilisers); data collected at pre treatment and 3, 6, and 12 month follow ups	Mean stability at 3, 6, and 12 month follow ups; relative stability from pre to 12 month follow up; pre TAS-20 best predictor of post TAS-20

Table 4 (continued)

Reference	Country	Sample	Treatment	Results
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Note. AA = alcoholics anonymous; ≠ = no association; ~ = association; Δ = change score from pre to post treatment; BDI = Beck Depression Inventory (Beck et al., 1996); HAD-D = Hospital Anxiety and Depression Scale – depression subscale (Zigmond & Snaith, 1983); HAM-A = Hamilton Anxiety Rating Scale (Hamilton, 1959); HAM-D = Hamilton Depression Rating Scale (Hamilton, 1960); GSI = Global Severity Index (Derogatis, 1983); STAI-S = State-Trait Anxiety Inventory – state portion (Spielberger, 1983).

^a68 patients completed post-tests.

^bParticipants were recruited via community advertisement and then diagnosed using The Binge Eating Scale (Gormally, Black, Daston, & Rardin, 1982) and The Questionnaire on Eating and Weight Patterns (R. L. Spitzer et al., 1993).

^cThis study published follow up data, which is presented in the corresponding results column.

Discussion

Assumptions about the role of alexithymia in the therapeutic process have been widely debated in the literature and infrequently investigated. A systematic literature review was carried out to evaluate the influence of alexithymia on therapeutic outcome, to investigate the stability of alexithymia during therapeutic intervention, to evaluate the efficacy of different therapeutic approaches that are currently available to improve alexithymic features in psychiatric patients, and to provide more compelling recommendations for clinicians and future researchers working with alexithymic patients.

The studies in the present review were evenly divided between those that found higher levels of alexithymia to have a negative influence on all or some therapeutic outcomes and those that found alexithymia to have no influence on therapeutic outcomes. The studies that conducted follow-up assessments also presented conflicting findings, with one study finding that change in alexithymia scores during treatment had a negative influence on patients' aggression levels 3 months after treatment (Ogrodniczuk et al., 2012) and other studies finding that alexithymia scores before treatment had no influence on therapeutic outcome 6 to 12 months after treatment (e.g., de Haan, Schellekens, et al., 2012; Rufer et al., 2010). No major differences were found between these groups of studies concerning the therapeutic approach or outcome measures that were employed.

However, the studies that found alexithymia to have a negative influence on all or some therapeutic outcomes differed to the studies that found alexithymia to have no impact on therapeutic outcomes in terms of the psychiatric diagnosis of the study samples and the location where the studies were undertaken. The studies that reported alexithymia to have a negative influence on all or some therapeutic outcomes involved samples that were mainly diagnosed with addictive disorders and that were predominately undertaken in North America whereas the studies that found alexithymia to have no influence on therapeutic outcomes

involved various diagnostic samples and were predominately undertaken in European countries. This finding indicates that alexithymia is more problematic for patients with addictive disorders and for patients residing in North America in terms of the benefit they may receive from treatment. A probable explanation for this finding is that the greater proportions of alexithymic patients reported in the studies that involved patients diagnosed with addictive disorders and the studies that were undertaken in North America (see Chapter 2) provided more statistical power to detect a relationship between alexithymia and therapeutic outcome.

One study in the present review provided a stronger level of evidence than the other studies on this issue by employing a control group. Reese (2008) found that the effectiveness of CBT compared to a control condition in modifying therapeutic outcome was independent of alexithymia score. However, as the study sample was small and involved patients diagnosed with somatoform disorders, the generalisability of the finding to other psychiatric populations may be limited.

It was difficult to observe trends regarding whether alexithymia has more or less influence on therapeutic outcome following certain interventions because there was a scarcity of studies employing comparative conditions. The overrepresentation of CBT compared to other therapeutic interventions across the studies in the present review added to the ambiguity. Given that most of the present studies employed CBT and reported that alexithymia had no impact on therapeutic outcome, it is reasonable to suggest that alexithymia interferes less with CBT compared to other interventions. One study in the present review provided some evidence to support the idea that alexithymia may interfere less with behavioural-based treatments, such as CBT (Rufer et al., 2010). Rosenblum et al. (2005) found that patients with higher alexithymia scores before treatment achieved better a therapeutic outcome (abstaining from alcohol) following CBT compared to motivational

intervention. However, the lack of influence of alexithymia on therapeutic outcome does not appear to be specific to CBT as studies that employed numerous other interventions also found alexithymia to have no influence on therapeutic outcomes. Moreover, alexithymia was shown to have no influence on outcomes following treatments that demanded insight and emotional awareness from patients (psychodynamic psychotherapy, Joyce et al., 2013; C. Spitzer et al., 2005), and which are considered more problematic for alexithymic patients compare to CBT (Lumley et al., 2007; Sifneos, 1973).

The vast majority of studies that examined change in alexithymia following therapeutic intervention observed mean-level change in alexithymia scores. Numerous treatment approaches were shown to be effective at reducing alexithymia scores, including CBT (e.g., Reese, 2008; Stasiewicz et al., 2012), pharmacotherapy (Luminet et al., 2001), and more traditional psychodynamic psychotherapies (Grabe et al., 2008). Therefore, in general, alexithymic patients appear to be able to improve their abilities to recognise, communicate, and examine their feelings following most therapeutic interventions. However, given that the majority of these studies involved quasi-experimental designs that did not involve control groups, it is not clear whether reductions in alexithymia were a result of treatment effects or other factors. The only study in the present review that did employ a control condition found that alexithymia scores declined during both CBT and the control condition (Reese, 2008). This finding raises the question about whether alexithymia levels are likely to decline over time regardless of therapeutic intervention, perhaps as a response to declines in clinical symptomatology. Moreover, studies that found declines in alexithymia following non-active therapeutic interventions, such as detoxification (de Haan et al., 2014; de Timary et al., 2008), support the idea that change in alexithymia may be dependent on change in clinical symptoms.

Many of the studies that did investigate whether mean-level change in alexithymia was dependent on change in clinical symptoms showed that change in alexithymia after treatment was largely independent of baseline clinical severity or change in clinical symptoms from before to after treatment (de Timary et al., 2008; Grabe et al., 2008; Luminet et al., 2001; Melin et al., 2010; Ogrodniczuk et al., 2013; Ogrodniczuk et al., 2012; Rufer et al., 2010). The findings from these studies do not support the idea that alexithymia is merely a state-dependent construct (see Honkalampi, Hintikka, Saarinen, et al., 2000) that fluctuates alongside fluctuations in clinical states. Rather these findings indicate that reductions in alexithymia are more likely to result from other influences, such as treatment effects.

The present review of the literature found that there is not enough evidence to clarify speculation about which treatment approaches may be more effective at reducing alexithymia because only one study compared the influence of different therapeutic interventions. Ogrodniczuk et al. (2013) found a greater decline in alexithymia following supportive psychotherapy compared to interpretive psychotherapy. This finding strengthens the proposition that supportive psychotherapy is more suited to alexithymic patients compared to traditional interpretive or analytic psychotherapies because supportive approaches provide more reassurance and less anxiety provocation, which alexithymic patients require (Sifneos, 1975). On the other hand, in the same study Ogrodniczuk et al. (2013) also found no differences in the amount of change in alexithymia between supportive psychotherapy and interpretive psychotherapy at 6 month follow-up despite further decreases in alexithymia scores. Reese (2008) observed a similar finding where alexithymia scores declined more during CBT compared to a control condition. However, there was no difference in the amount of change in alexithymia between the treatment conditions from post treatment to 12 month follow up. The findings from these studies indicate that although alexithymia scores may be reduced to a greater extent during certain interventions and compared to no treatment at all,

once an intervention has finished so does the added benefit of that intervention for alexithymic patients and that the superiority of one treatment over another does not appear to be long lasting.

All of the studies in the present review that examined relative stability in alexithymia confirmed that alexithymia was relatively stable. Several studies in the present review also observed relative stability in alexithymia during follow-up periods of 6 months (Rufer et al., 2010), 12 months (Todarello et al., 2005), and 3 years (Speranza et al., 2007). In addition, all of the studies that went on to examine the relative stability of alexithymia in the context of change in clinical symptoms provided stronger evidence to support alexithymia as a stable personality trait by showing that the relative stability of alexithymia was independent of individual differences in clinical severity (de Haan, Joosten, et al., 2012; de Haan et al., 2014; de Timary et al., 2008; Grabe et al., 2008; Luminet et al., 2001; Picardi et al., 2012; Todarello et al., 2005).

Some studies in the present review indicated that while alexithymia scores may decline on average for a group of patients following treatment, moderate to high levels of alexithymia can persist for some patients (Grabe et al., 2008) and may increase their risk of experiencing ongoing psychiatric symptomatology (Fukunishi, Kikuchi, et al., 1997). Fukunishi, Kikuchi, et al. (1997) found that although alexithymia scores declined during treatment, patients that remained alexithymic after treatment reported significantly greater anxiety severity compared to patients that were non-alexithymic after treatment. In addition, Ogrodniczuk et al. (2012) found that less change in alexithymia during treatment (i.e., more stable alexithymia) was associated with poorer therapeutic outcomes after treatment. Patients with persistent levels of alexithymia that remain after treatment are more likely to experience residual symptoms (symptoms that persist despite evident response to treatment or remission of mental illness) that may prolong their recovery from a psychiatric illness.

Limitations and Recommendations

A delimitation of the present systematic review was a focus on the consistency of reported associations rather than an assessment of the strength of these associations. Thus, the results of studies that found large effect sizes could be masked by the results of many studies that found small effect sizes. In addition, the sample sizes of individual studies identified for this review varied from 3 to 297 and the findings from these studies were treated equally with this method. Further empirical examination of these data will help to substantiate the present findings (i.e., by conducting a meta-analysis) where issues such as sample size are accounted for in determining the size of effects.

A number of limitations were observed across the majority of studies in the present review. In general, small sample sizes were included, which reduced the statistical power and generalisability of findings. The studies were predominately conducted in Europe and North America, and most studies involved patients diagnosed with addictive disorders. Thus, conclusions from the present review would be most applicable to psychiatric populations similar in nature to those with eating and substance use disorders and those receiving psychiatric treatment in Europe and North America.

Little was known about the degree of treatment integrity involved in the present studies that were reviewed, as few studies assessed the extent to which interventions were delivered as intended, or provided detailed information about the interventions that were employed, including how they differed from other interventions. A lack of treatment integrity poses a threat to inferences drawn about the relationship between treatment and outcome as well as the comparative efficacy of different treatments (Bhar & Beck, 2009). The mixed findings in literature regarding the relationship between alexithymia and therapeutic intervention raise questions about treatment integrity. For example, it is not known whether

the present studies that employed CBT adhered to a similar CBT protocol or how many of the interventions delivered were unique to CBT.

An important factor that has received little attention in the reviewed literature is the influence of persistent or stable levels of alexithymia after treatment on therapeutic outcome. Preliminary evidence suggests that patients are at greater risk of experiencing residual symptoms when their level of alexithymia is high after treatment (Fukunishi, Kikuchi, et al., 1997) or changes little during treatment (Ogrodniczuk et al., 2012). Replication of these studies is needed to confirm whether stable levels of alexithymia influence therapeutic outcome. From a practical perspective, acknowledgement that alexithymic patients may be vulnerable to residual symptomatology following treatment may encourage clinicians to closely monitor their patient's progress and help alexithymic patients to prepare and accommodate for such difficulties.

Only one study in the present review employed a control condition when examining the influence of therapeutic intervention on change in alexithymia (Reese, 2008). Unfortunately, this study did not report whether there were significant reductions in clinical symptoms for the control group nor was there an investigation into whether the change in alexithymia scores was dependent on change in clinical symptoms. Therefore, there is a lack of experimental research to examine whether alexithymia levels are likely to decline regardless of therapeutic intervention or in response to a decline in clinical symptomatology. In addition, only three studies (Cleland et al., 2005; Ogrodniczuk et al., 2013; Rosenblum et al., 2005) employed different therapeutic interventions for comparison and consequently a detailed understanding of alexithymia's role across different therapeutic interventions could not be acquired. It will be necessary for future researchers to compare different therapeutic approaches in order to understand whether alexithymia interferes more with particular approaches or whether particular approaches are more effective at reducing alexithymia.

Study 2 (Chapter 5) in the present thesis will contribute to this body of research by examining the relationship between alexithymia and two types of group therapy.

Conclusion

The purpose of the present literature review was to evaluate the role of alexithymia in the therapeutic process. It can be confidently stated that the role of alexithymia in the therapeutic process remains contentious. Findings from the studies that examined the influence of alexithymia on therapeutic outcome were divided, including findings from studies that employed control or comparative conditions. Half of the literature in the present review indicated that higher levels of alexithymia before treatment may lead to poorer therapeutic outcomes, particularly in patients diagnosed with addictive disorders and in patients receiving treatment in North America. However, robust studies with experimental designs are needed to corroborate these findings. In addition, speculation about whether alexithymia may interfere more with certain interventions remains unresolved as very few studies in the present review compared different therapeutic interventions.

The literature also indicates that numerous therapeutic approaches are likely to be effective at improving alexithymia at a group level. However, questions remain regarding the most effective therapeutic approach to improve alexithymia as very few studies in the present review employed comparative treatment conditions. There was strong evidence in the literature to support the idea that alexithymia is a relative stable personality trait. Therefore, although alexithymia can be reduced following therapeutic intervention, some degree of alexithymia is likely to remain as a stable aspect of a patient's psychology. Future studies will need to examine the extent of change in alexithymia compared to clinical states (e.g., effect sizes) in order to substantiate that alexithymia is more resistant to change following intervention compared to clinical states.

CHAPTER 4

STUDY 1

Alexithymia is typically more prevalent in the psychiatric population compared to the general community population (see Chapter 2). It has been proposed that individuals who experience greater difficulties identifying, communicating, and examining their inner thoughts and feelings are at greater risk of developing psychiatric illness (Taylor et al., 1997). However, even simple estimates of an alexithymic individual's risk of developing psychiatric illness are problematic because rates of alexithymia in the psychiatric literature have been shown to vary substantially (see Chapter 2). For instance, rates of alexithymia have ranged from 17.6% (Müller et al., 2003) to 51.0% (Joyce et al., 2013) in studies that have involved general psychiatric samples.

The majority of studies reporting on prevalence rates of alexithymia have been undertaken in Europe and North America. The literature review conducted in Chapter 2 noted that psychiatric rates of alexithymia reported in studies undertaken outside of Europe (mainly in North America) tended to be greater than the psychiatric rates of alexithymia reported in studies undertaken in Europe. There are few studies on alexithymia in the Australian population, and no information about the prevalence rate of alexithymia in the Australian general psychiatric population. Australian research evaluating the occurrence of alexithymia in psychiatric samples would contribute to the literature by examining where these rates fall in comparison to the range of alexithymia rates that have been reported globally. Research in this area would also provide normative information for clinicians working with psychiatric populations in Australia (as compared to norms derived from the original Canadian outpatient sample, Bagby, Parker, et al., 1994).

Comparisons of prevalence rates of alexithymia in psychiatric and community populations have generally been made across international studies that have examined these

populations separately. Studies that compare prevalence rates of alexithymia between psychiatric and community samples from a common population are ideal as they reduce the amount of variation that is incurred between international samples, whereby the main difference between the samples is the presence of a psychiatric diagnosis and not numerous cultural differences, including social, political, historical, and economic circumstances. However, few researchers have compared prevalence rates of alexithymia between general psychiatric and community samples from one common population.

Another way to obtain accurate estimates of prevalence rates of alexithymia is to consider the influence of potential confounding factors on alexithymia, such as demographic differences in study samples. Previous researchers have suggested that higher rates of alexithymia are found in certain demographic groups, such as males (e.g., Levant, 1992). However, the literature review reported on in Chapter 2 revealed many inconsistencies in the literature regarding the relation between alexithymia and demographic factors, particularly gender, education level, and economic status. In addition, this review found that alexithymia was related to demographic factors more often in studies that involved community samples and less often in studies that involved psychiatric samples. Examining the extent to which these demographic factors may impact on high levels of alexithymia in general psychiatric and community samples from one common population may lead to a more accurate understanding of this issue. Moreover, research in this area could help to identify demographic groups of people who experience higher levels of alexithymia as well as encourage researchers to control for the potential confounding influence of these factors in future alexithymia research.

Differences in psychological distress severity may also help to explain variability in the prevalence rates of alexithymia in general psychiatric and community populations. There is growing evidence of a link between alexithymia and psychological distress, with the

outcomes of several studies showing that alexithymic individuals report significantly greater levels of psychological distress than non-alexithymic individuals in psychiatric (Evren et al., 2008; Leweke et al., 2009; C. Spitzer et al., 2005) and community samples (Bouchard, 2009; Liang & West, 2011). While the direction of causality is unclear, a prominent theory proposes that alexithymia poses a vulnerability to the development and maintenance of psychiatric illness because it reflects a broad deficit in the cognitive processing of emotion that leads to elevated psychological distress (Taylor et al., 1997).

Some evidence for the theory that alexithymia is a risk factor for psychiatric illness has been provided by studies that have found high alexithymia scores to be associated with the new incidence of psychiatric symptomatology in non-clinical samples (Heinrichs et al., 2005; McCaslin et al., 2006; Tolmunen et al., 2011) and with the persistence of psychiatric symptomatology in psychiatric samples over time (Bach & Bach, 1995; Loas et al., 1997; Reese, 2008; Viinamäki et al., 2002). Another way to examine the link between alexithymia and psychological distress is to compare the strength of this association in different populations, such as in general psychiatric and community samples. If the strengths of the relationship between alexithymia and psychological distress were similar in a psychiatric and community sample, it would indicate that sample group is not a contributing factor to the relationship and that psychological distress is a probable consequence for most individuals with alexithymia. Findings about the relationship between alexithymia and psychological distress may reinforce our understanding of alexithymia as a risk factor in the development of psychopathology.

The overall aim of Study 1 was to examine differences in alexithymia between a sample of Australian psychiatric patients and a sample of Australian community participants. There were three specific aims: 1) to compare differences in alexithymia between the sample groups; 2) to examine the potential influence of gender, education level, and employment

status on alexithymia scores in the sample groups; and 3) to compare the association between alexithymia and psychological distress in the sample groups. Alexithymia was expected to be more prevalent in the psychiatric sample compared to the community sample, in line with overall findings in the literature. Differences in alexithymia scores were expected to be dependent on demographic variables of gender, education level, and employment status in the community sample but not in the psychiatric sample, in line with the general trend in the literature. Also, given the theory that alexithymia is a risk factor for psychiatric illness (Taylor et al., 1997), the relationship between alexithymia and psychological distress was expected to be a similar strength in both sample groups.

Method

Participants

The present study drew data from an outpatient mental health facility, which was linked with a tertiary hospital in the southern suburbs of Perth Western Australia. The psychiatric sample comprised 151 patients¹ who attended the outpatient facility at some time in 2008 to 2011, inclusive. The overall sample ranged in age from 18 to 66 years ($M = 41.89$ years, $SD = 12.23$ years) and comprised 109 (72.2%) females patients. Hospital psychiatrists had diagnosed patients based on the International Classification of Mental and Behavioural Disorders (ICD-10, World Health Organization, 2010). When a patient had been diagnosed with more than one psychiatric condition, only the primary diagnosis was noted in the present research. Patients had been diagnosed with a variety of psychiatric conditions (see Table 6)

¹ Note: Data was initially collected from 284 psychiatric patients. Since many of the patients attended more than one therapy group and completed additional tests data were retained from patients' earliest therapy group to try to control for possible cumulative treatment effects. In addition, some patients were removed from the dataset if they had not completed corresponding sets of pre and post alexithymia and psychological distress tests. These conditions resulted in the final sample size of 151.

and many had been prescribed psychotropic medication as part of their ongoing treatment. They had also experienced a diverse treatment history, ranging from one inpatient hospitalisation to numerous hospitalisations and/or ongoing private treatment. All patients required a written referral from their case-manager to attend the facility, who was either a general practitioner or an allied health professional from an external agency. Only patients who did not require inpatient care or major adjustments to their medication and who were free of alcohol or substance misuse were eligible for the outpatient program.

The community sample consisted of 216 participants living in Perth, Western Australia. This sample ranged in age from 18 to 75 years ($M = 33.48$ years, $SD = 14.37$ years) and comprised 157 (72.7%) females participants.

Measures

Psychiatric patients completed the 20-item Toronto Alexithymia Scale (TAS-20), the 42-item Depression Anxiety Stress Scale (DASS, Lovibond & Lovibond, 1995), and a demographic questionnaire and consent form for the data to be used in research (see Appendices A and B for a copy of these documents; the TAS-20 is not provided for copyright reasons). Community participants completed the TAS-20, 21-item DASS, a demographic questionnaire, and a consent form for the data to be used in research (see Appendices C, D, and E for a copy of these documents).

Alexithymia.

The TAS-20 (Bagby, Parker, et al., 1994) is a self-report questionnaire designed to measure alexithymia as a personality trait. Participants respond on a 5-point Likert type rating scale for each of the 20 items, from 1 (*strongly disagree*) to 5 (*strongly agree*). Each item corresponds to one of three factors associated with the TAS-20: difficulties identifying feelings and distinguishing feelings from bodily sensations of emotional arousal (DIF, factor

one), difficulties describing feelings to others (DDF, factor two), and externally oriented thinking (EOT, factor three). Three factor scores and a total score can be calculated. Cut-off scores for the TAS-20 have been recommended: individuals scoring below 51 are considered non-alexithymic and those scoring above 61 are considered alexithymic (Taylor et al., 1997). A recent study by Parry (2012) determined that the cut-off scores developed by Taylor et al. (1997) were appropriate for use in Western Australian samples. The TAS-20 is the most well-established and widely used instrument to measure alexithymia, with evidence of high internal consistency in community and psychiatric samples ($\alpha > .79$, Bagby, Parker, et al., 1994; $\alpha > .77$, Meganck et al., 2008), as well as adequate test-retest reliability, construct validity, and criterion validity in community and psychiatric samples (Bagby, Parker, et al., 1994).

Psychological distress.

The DASS is a self-report questionnaire designed to measure symptoms of depression, anxiety and stress. There are two versions of the DASS: the short 21-item version and the original 42-item version. It has been suggested that the DASS-21 is preferable for research purposes because it reduces administration time (The University of New South Wales, 2013). Participants respond on a 4-point Likert type rating scale, where response options range from 0 (*did not apply to me at all*) to 3 (*applied to me very much, or most of the time*). The DASS-21 and DASS-42 yield three scale scores for depression, anxiety, and stress, as well as a total composite score (ranging from 0 to 63 and 0 to 126, respectively). The total score measures negative emotional symptoms (Sinclair et al., 2012; The University of New South Wales, 2013) and can be interpreted as reflecting negative affectivity or psychological distress (Gregorio, 2010; Page, Hooke, & Morrison, 2007; Willemsen, Markey, Declercq, & Vanheule, 2011). The DASS-21 is found to have good reliability for the separate scales of depression ($\alpha = .91$), anxiety ($\alpha = .84$), and stress ($\alpha = .90$) (Lovibond & Lovibond,

1995). Similarly the DASS-42 is found to have good reliability for depression ($\alpha = .94$), anxiety ($\alpha = .88$), and stress ($\alpha = .93$) (Nieuwenhuijsen, de Boer, Verbeek, Blonk, & van Dijk, 2003). Both versions of the DASS have been found to be valid and reliable measures for psychiatric populations (Ng et al., 2007; Page et al., 2007) and community populations (Crawford & Henry, 2003; Gregorio, 2010). The total score of the DASS-21 for the community sample was doubled so that it could be compared to the norms of the original DASS-42 (The University of New South Wales, 2013).

Procedure

Both the Faculty of Computing Health and Science Ethics Committee at Edith Cowan University and the ethics committee of the tertiary hospital granted approval for the present research. The psychiatric patients completed the TAS-20 and DASS-42 assessments at the beginning and at the completion of group therapy. These assessments were then filed at the outpatient mental health facility, collected by the researcher, and organised into an electronic database.

The participants from the community sample were recruited using snowball sampling. A study flyer was placed at various community-oriented locations around Perth (Appendix F). Participants were offered a chance to win one of two \$100 department store gift vouchers for participating in the present research. Participants who responded to the study flyer accessed the package of assessments via a web link (URL) to Qualtrics (a password protected survey software program). The package included an information sheet for potential participants (Appendix G), a consent form, the TAS-20, DASS-21, a demographic questionnaire, and a list of counselling and support organisations (Appendix H).

Participant anonymity was maintained as names and contact details were not necessary in completing the package of assessments. However, participants were given the choice to enter a draw to win one of two \$100 Department store gift vouchers by emailing an

address created specifically for this purpose. This email address was provided following completion of the assessments and the personal details were not linked to any assessment information. Participants were informed that winners would be required to nominate a postal address in order to obtain their prize. Data were obtained from the Qualtrics database approximately six months after collection began. This data were then organised and exported into Statistical Package for the Social Sciences version 19.0 (SPSS, IBM Corp., 2010) for analysis.

Statistical Analysis

While a large body of research has supported the TAS-20 as a good measure of alexithymia, several studies have challenged this view, arguing that there is unacceptably low internal reliability in the externally oriented thinking factor in particular (Besharat, 2008; Gignac et al., 2007; Meganck et al., 2008; Vorst & Bermond, 2001). In addition, while previous studies have evaluated the reliability of the TAS-20 for use in Australian community populations (see Gignac et al., 2007; Parry, 2012), no study could be located that has evaluated the reliability of the TAS-20 for use in Australian psychiatric populations. Therefore, the present study examined the internal reliability of the overall TAS-20 scale and three factors for use with the psychiatric and community samples before further analyses were conducted. Bivariate correlations between the separate TAS-20 factors were also examined. Internal reliabilities of the overall TAS-20 and three factors were estimated using Chronbach's alpha (α), where coefficient values of .50, .60, and .70 correspond to unacceptable, acceptable, and good levels of internal reliability, respectively (see George & Mallery, 2003).

Chi-Square analysis was used to examine differences in demographic factors between the psychiatric and community samples. Three, two-way analysis of variance (ANOVA) tests were conducted to examine whether differences in alexithymia scores (dependent variable)

between the psychiatric and community samples (independent variable) were dependent on the gender of the participants, their educational background, or current employment status (independent variables). Chi-Square analysis was used to examine differences in categorical levels of alexithymia between the psychiatric and community samples. An ANOVA was conducted to examine differences in psychological distress scores between the psychiatric and community samples. Pearson's correlations and Fisher's Z transformation were used to examine correlations between alexithymia and psychological distress and to standardise these distributions, respectively. Pearson's correlation coefficient (r) values of .10, .30, .50, and .70, correspond to small, medium, large, and very large effect sizes, respectively (see Cohen, 1988). Effect sizes for ANOVA's were estimated using partial eta-squared ($partial \eta^2$), where values of .01, .09, and .25, correspond to small, medium, and large effect sizes, respectively (see Cohen, 1988). All data were analysed using SPSS version 19.0 (IBM Corp., 2010).

Results

Data Preparation

No data was missing from the community sample. There were a small number of missing items remaining in the psychiatric dataset (0.23%). These missing items were assumed to be missing at random (see Fichman & Cummings, 2003). The expectation maximisation (EM, IBM Corp., 2010) method was chosen over listwise deletion in order to maximise the size of the dataset. The EM method involved replacing missing test items with imputed values (by estimating the means, correlations, and covariances). No univariate outliers were detected as each test variable was equivalent to standardised test scores, or z -scores, below 3.29 (as recommended by Field, 2005), with 95% of the data having standard scores below 1.96 ($p < .05$, two-tailed test). The assumption of normality was assessed by way of the Shapiro-Wilks statistics. Normality was found to be violated for the DASS in the

community sample only. However, this sample was sufficiently large and the DASS data was used in a one-way ANOVA, which is robust against deviations from normality (Keppel & Wickens, 2004; Tabachnick & Fidell, 2007).

Internal reliability of the TAS-20.

Cronbach alpha (α) coefficients for the overall TAS-20 scale in the psychiatric sample was .80 and .76 in the community sample. Alpha coefficients for the three TAS-20 factors differed greatly. In the psychiatric sample, the DIF, DDF, and EOT factors obtained α coefficients of .86, .51, and .29, respectively. The α coefficient of the DDF factor would have increased to .76 if item 4 (“*I am able to describe my feelings easily*”) was deleted. The α coefficient of the EOT factor could not be improved by deleting any item. In the community sample, the DIF, DDF, and EOT factors obtained α coefficients of .89, .36, and .20, respectively. The α coefficients of the DDF or EOT factors could not be improved by deleting any item. Due to the unacceptable internal reliability of the EOT factor in the psychiatric and community samples for the present study, it was unlikely that any meaningful interpretation of the separate factor scores could be possible, except taken together in total TAS-20 score as a general indication of alexithymia (Gignac et al., 2007; Vorst & Bermond, 2001). Consequently, all further analyses of alexithymia in the present psychiatric and community samples used the total TAS-20 score only.

Bivariate correlations between the separate TAS-20 factors for the psychiatric and community samples are displayed in Table 5. All Pearson’s correlations between the separate TAS-20 factors were positive and significant in both group samples, $p < .01$. There was a moderate ($r = .30$ to $.69$) and strong ($r > .70$) association between the DIF and DDF factors for the psychiatric and community samples, respectively (based on criteria established by Cohen, 1988). In both group samples, the DDF and EOT factors were moderately associated whereas the DIF and EOT factors were weakly associated ($r < .30$).

Table 5
Bivariate Correlations Between TAS-20 Factors for the Psychiatric and Community Samples

Factors	DIF	DDF	EOT
Psychiatric			
DIF	1.0		
DDF	.66**	1.0	
EOT	.27**	.45**	1.0
Community			
DIF	1.0		
DDF	.71**	1.0	
EOT	.29**	.41**	1.0

** $p < .01$.

Demographic Characteristics

Demographic details of the psychiatric and community samples are presented in Table 6. This table includes frequency counts and percentages for gender, education level, employment status, and ICD-10 diagnosis (diagnosis for the psychiatric sample only).

Females were overrepresented in the psychiatric sample, with a similar high proportion of females observed in the community sample, $\chi^2(1) = 0.01, p = .916$. The proportion of psychiatric patients who had completed primary/secondary education and who had completed some form of post-secondary education (including technical college and university) was relatively balanced. The community sample, on the other hand, included a higher percentage of post-secondary educated participants compared to the psychiatric sample, $\chi^2(1) = 58.21, p < .001$. There were also a higher percentage of employed participants in the community sample compared to the psychiatric sample, $\chi^2(1) = 147.79, p < .001$.

Over half of the psychiatric patients had been diagnosed with a mood (affective) disorder that included bipolar affective disorder, depressive episodes, recurrent depressive disorders, and persistent mood disorders such as cyclothymia and dysthymia. Approximately

one quarter of the patients had been diagnosed with a neurotic, stress-related, and somatoform disorder; including social phobia, panic disorder, generalized anxiety disorder, obsessive-compulsive disorder, and adjustment disorders (i.e., post-traumatic stress disorder). The remaining patients had been diagnosed with schizophrenia, schizotypal, and delusional disorders (i.e., paranoid and simple schizophrenia, delusional disorder, schizoaffective disorder, and unspecified non-organic psychosis); behavioural syndromes associated with physiological disturbances and physiological factors (i.e., anorexia nervosa); and disorders of adult personality and behaviour (i.e., borderline personality disorder, avoidant personality disorder, and mixed personality disorder).

Table 6
Demographic Characteristics of the Psychiatric and Community Samples

Characteristic	Psychiatric (<i>N</i> = 151)		Community (<i>N</i> = 216)	
	Frequency (%)		Frequency (%)	
Gender				
Female	109	72.2	157	72.7
Male	42	27.8	59	27.3
Total	151	100	216	100
Education				
Primary/Secondary	80	53	38	17.6
Post-Secondary ^a	62	41	178	82.4
Total	142	94	216	100
Missing	9	6		
Total	151	100		
Employment				
Paid	33	21.9	184	85.2
Unpaid/Unemployed	118	78.1	32	14.8
Total	151	100	216	100
Diagnosis^b				
F20-F29	13	8.6		
F30-F39	79	52.3		
F40-F48	38	25.2		
F50-F59	1	0.7		
F60-F69	20	13.2		
Total	151	100		

^aPost-Secondary includes technical and university education.

^bDiagnosis by ICD-10 Category: F20-F29 schizophrenia, schizotypal, and delusional disorders; F30-F39 mood (affective) disorders; F40-F48 neurotic, stress-related, and somatoform disorders; F50-F59 behavioural syndromes associated with physiological disturbances and physiological factors; and F60-F69 disorders of adult personality and behaviour.

Alexithymia in the Psychiatric and Community Samples

Means and standard deviations of alexithymia scores by gender, education level, and employment status as well as overall scores for the psychiatric and community samples are presented in Table 7. Overall, the psychiatric patients reported significantly greater alexithymia scores compared to the community participants, $F(1, 365) = 103.38, p < .001$. Even when accounting for demographic variables the size of the group differences in alexithymia was still significant, $partial \eta^2 = .22$ (medium to large effect).

Table 7
Descriptive Statistics of Alexithymia Scores by Gender, Education, and Employment

Demographic Variable	Psychiatric		Community	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Gender				
Male	59.74	12.09	48.52	13.01
Female	59.89	12.30	45.55	12.54
Education				
Secondary/ High school	60.92	12.03	46.42	12.87
Tertiary/ TAFE	57.93	12.52	46.35	12.71
Employment				
Employed	58.97	13.29	46.10	12.87
Unemployed	60.09	11.93	47.84	11.82
Overall	59.85	12.20	46.36	12.71

Results of the two-way ANOVA tests examining the influence of gender, education level, and employment status on differences in alexithymia scores between the psychiatric and community samples are presented in Table 8. The difference in alexithymia scores between the samples did not depend on the gender, education level, or employment status of the participants as the interactions between sample group and demographic variables were not significant.

Table 8
Results of Two-Way ANOVAs by Sample Group and Demographic Variables

Variables	<i>F</i>	<i>p</i>	Partial η^2
Gender x Sample ^a	1.11	.292	
Gender ^a	0.91	.341	
Sample ^a	74.27	< .001	.17
Education x Sample ^b	0.89	.345	
Education ^b	0.98	.322	
Sample ^b	71.40	< .001	.17
Employment x Sample ^a	0.03	.858	
Employment ^a	0.69	.406	
Sample ^a	53.27	< .001	.13

Note. Sample = psychiatric and community; gender = male and female; education = secondary/ high school; and employment = employed and unemployed.

^a*df* = 1(363). ^b*df* = 1(354).

According to TAS-20 cut-off scores, 87 patients (57.6%) in the psychiatric sample were identified as alexithymic (TAS-20 scores of ≥ 61) and 35 patients (23.2%) were identified as non-alexithymic (TAS-20 scores ≤ 51). In the community sample, 33 participants (15.3%) were identified as alexithymic and 148 participants (68.5%) were identified as non-alexithymic. Pearson's Chi-Square indicated that there was a significant difference between the psychiatric and community samples in the proportion of participants that were identified as alexithymic and non-alexithymic, $\chi^2(1) = 85.84, p < .001$. Cramer's V indicated a large and significant association (.53, $p < .001$) between categorical level of alexithymia and group sample (see Cohen, 1988). Alexithymia was 3.8 times more prevalent in the psychiatric sample than in the community sample.

Alexithymia and Psychological Distress in the Psychiatric and Community Samples

Results of the ANOVA showed that the psychiatric patients reported significantly greater psychological distress scores ($M = 58.22, SD = 29.94$) compared to the community

participants ($M = 26.03$, $SD = 21.78$), $F(1, 365) = 142.16$, $p < .001$, $partial \eta^2 = .28$ (large effect). Results from Pearson's correlations showed a medium positive and significant association (see Cohen, 1988) between DASS and TAS-20 scores for both the psychiatric, $r(166) = .46$, $p < .001$, and community, $r(216) = .46$, $p < .001$, samples. A Fisher's Z transformation showed that the difference in the correlation sizes between DASS and TAS-20 scores for the two sample groups was not significant, $z_{-obs} = .06$, $p = .951$.

Discussion

The purpose of Study 1 was to examine differences in alexithymia between a sample of Australian psychiatric patients and a sample of Australian community participants. This study also examined the influence of the gender, education level, and/or employment status of the participants on differences in alexithymia between the sample groups. Lastly, the present study examined the relation between alexithymia and psychological distress in the psychiatric and community samples.

Prior to the analyses, the internal reliability of the TAS-20 and the three separate factors were evaluated for use in the present research. The overall TAS-20 scale demonstrated good internal reliability ($\alpha \geq .70$, George & Mallery, 2003) in both the psychiatric and community samples. This finding was consistent with previous studies where good internal reliability for the overall scale has been found for both psychiatric samples (Loas et al., 2001; Müller et al., 2004; Stasiewicz et al., 2012) and community samples (Martínez-Sánchez, Ato-García, & Ortiz-Soria, 2003; Scott, 2009; Tsaousis et al., 2010), including Australian community samples (Gignac et al., 2007; Parry, 2012). In addition, correlations between the TAS-20 factors for the psychiatric and community samples indicated the existence of discriminant validity as the correlation coefficients were all less than .80 (see Anderson & Gerbing, 1988). Correlation coefficients less than .80 between the

TAS-20 factors indicate that each factor is likely to be measuring a theoretically unique facet of alexithymia (see Groth-Marnat, 2009).

Although the overall TAS-20 scale has been found to have good internal reliability, there were inconsistencies in the internal reliability of the separate TAS-20 factors in the present study. The DIF factor demonstrated good internal reliability in the psychiatric and community samples, yet the DDF and EOT factors demonstrated poor to unacceptable internal reliability, respectively. Alpha coefficients for the EOT factor in the present samples were much lower than α coefficients for the DIF and DDF factors, which has also been found in many previous studies (Kooiman et al., 2002; Leising et al., 2009; Loas et al., 2001; Loiselle & Cossette, 2001; Meganck et al., 2008; Thorberg et al., 2010). It has been suggested that the low internal reliability of the EOT factor may result from a response bias to the large number of reverse-scored items that load onto the EOT factor (Meganck et al., 2008; Vorst & Bermond, 2001). Revision of the EOT factor and the use of reverse-scored items has been suggested (Besharat, 2008; Gignac et al., 2007; Meganck et al., 2008). The unacceptable internal reliability of the EOT factor in the present study indicates that revision of this factor is needed before meaningful interpretation of the separate factor scores can be made in Australian samples.

The mean TAS-20 score for the psychiatric sample was consistent with previous research (Clyne & Blampied, 2004; de Haan, Schellekens, et al., 2012; Frewen, Lanius, et al., 2008; Meganck et al., 2009) and was similar to findings reported from a study of 404 general psychiatric outpatients in Belgium (Vanheule et al., 2007). The mean TAS-20 score for the community sample was also consistent with previous research (Bouchard, 2009; Kreitler, 2002; Lundh & Simonsson-Sarnecki, 2001; Parker et al., 2001; Scott, 2009) and was similar to the mean TAS-20 scores reported by Gignac et al. (2007) and Parry (2012) in their Australian community studies.

There was a medium to large difference in alexithymia scores between the psychiatric and community sample. As expected, the psychiatric patients reported significantly greater alexithymia scores than the community participants. These findings were consistent with previous international studies that have demonstrated greater alexithymia scores in psychiatric samples compared to community or student samples (Müller et al., 2003; Vanheule et al., 2007). Comparing differences in categories of alexithymia (alexithymic and non-alexithymic) between the sample groups also produced expected results, as the proportion of participants identified as alexithymic was significantly greater in the psychiatric sample than in the community sample. The prevalence rate of alexithymia was almost four times higher in the psychiatric sample compared to the community sample. This finding highlights the pervasiveness of alexithymia amongst general psychiatric patients and supports the idea that dysfunctional emotional states, characterised by alexithymia, are a central feature to most psychopathology (Krystal, 1988; Lane & Schwartz, 1987; Taylor, 1987).

The prevalence rates of alexithymia in the present psychiatric and community samples fell within the range of alexithymia rates that have been reported globally (see Chapter 2). Furthermore, the prevalence rate of alexithymia in the psychiatric sample was greater than the prevalence rates of alexithymia reported in previous European studies involving general psychiatric outpatients (Joukamaa et al., 2008; Leweke et al., 2012; Porcelli et al., 2004; Todarello et al., 1995; Tutkun et al., 2004; Vanheule et al., 2007), but was comparable to the prevalence rate reported in a Canadian study that involved general psychiatric outpatients (Joyce et al., 2013). This finding supports a trend reported on in Chapter 2 where, on average, prevalence rates of alexithymia in psychiatric samples tended to be higher across studies undertaken outside of Europe.

Differences in alexithymia scores between the psychiatric and community samples in the present study were not explained by the demographic factors of gender, education level,

and employment status. This finding indicates that demographic factors are unlikely to play a role in the alexithymia construct. This finding is in contrast to the expectation that differences in alexithymia scores would be dependent on demographic factors in the community sample, but not in the psychiatric sample, as most of the studies reviewed in the literature (see Chapter 2) that involved community samples found a significant influence of demographic factors on alexithymia scores. However, this finding is partially consistent with the overall trend reported on in the Chapter 2, which showed that the majority of the reviewed studies (59.2%) reported no significant differences in alexithymia scores between males and females (e.g., Bouchard, 2009; Speranza et al., 2004) or between employed and unemployed participants (e.g., de Haan, Schellekens, et al., 2012; El Rasheed, 2001). The present finding that education level did not account for differences in alexithymia scores between the sample groups was in contrast to most of the studies in the same review that reported significantly higher alexithymia scores in participants with fewer years of education (e.g., Franz et al., 2008; Leweke et al., 2012). Ultimately, the findings from Study 1 indicate that males, lower educated individuals, or unemployed individuals are no more at risk of experiencing alexithymia than females, higher educated individuals, or employed individuals.

In line with previous research (e.g., Antony, Bieling, Cox, Enns, & Swinson, 1998), the psychiatric patients reported significantly greater psychological distress severity than the community participants did. The mean DASS score in the psychiatric sample was consistent with previous studies involving Australian (e.g., Ng et al., 2007; Page et al., 2007) and Canadian (Clara, Cox, & Enns, 2001) psychiatric patients. The mean DASS score for the community participants in the present study was also consistent with various studies involving community and student populations (e.g., Lozano, 2010; Osman et al., 2012; Sinclair et al., 2012; Tully, Zajac, & Venning, 2009).

While the psychiatric patients reported greater psychological distress severity than the community participants, the strength of the association between alexithymia and psychological distress was similar for both sample groups. Moderate associations were found in the present study between alexithymia and psychological distress in both the psychiatric and community samples. This finding was consistent with a number of previous studies linking alexithymia to various measures of psychological distress in both psychiatric (Evren et al., 2008; Leweke et al., 2009; C. Spitzer et al., 2005) and community (Bouchard, 2009; Liang & West, 2011) samples. In addition, this finding supports the hypothesis that inability in recognising and expressing feelings results in a failure to regulate distressing emotions, leading to elevated psychological distress (Taylor et al., 1997). A similar strength of the association between alexithymia and psychological distress between the sample groups indicates that the relationship between alexithymia and psychological distress is not influenced by, or an outcome of, psychiatric illness. That is, alexithymic individuals in the community are not exempt from experiencing a similar degree of psychological distress to alexithymic patients in the general psychiatric population. Essentially, alexithymic individuals may be vulnerable to developing or maintaining a greater level of psychological distress regardless of whether they are seeking treatment for a psychiatric disorder or are a member of the general community.

Limitations and Recommendations

The findings from Study 1 were limited by a cross-sectional design, where no causal inferences about the relationship between alexithymia and clinical severity could be made. In addition, a high proportion of community participants were educated to a technical college or university level. This proportion is much higher than would be expected in a representative sample of the Australian population (see Australian Bureau of Statistics, 2011). While a high level of education in the community sample may suggest an increased willingness for highly

educated individuals to participate in psychological research, it is also possible that the sampling process was limited by placing recruitment posters at locations in close proximity to local universities. Some of the present findings may have been biased because there was an under representation of males in the psychiatric and community samples as well as an underrepresentation of individuals with a lower level of education in the community sample.

Another potential limitation worth mentioning is that the community participants completed study materials online whereas the psychiatric patients completed study materials using a more traditional paper and pencil format. While most studies have shown that psychometric properties of data do not significantly change when questionnaires are completed online rather than on paper (e.g., Herrero & Meneses, 2006; E. T. Miller et al., 2002; Vallejo, Jordán, Díaz, Comeche, & Ortega, 2007), differences in the assessment format between the present study samples may have had a small impact on participants' responses (for a description of the potential problems associated with comparing online and paper assessments, see Fouladi, McCarthy, & Moller, 2002).

The present findings have implications for clinicians and researchers working in psychiatric settings. Early recognition of alexithymia in psychiatric patients may be important to clinicians in managing the psychological distress that is associated with alexithymia. This is especially important as a large proportion of the psychiatric population (possibly the majority of them) experiences increased difficulties recognising, communicating and examining their feelings in treatment. Early recognition of alexithymia in psychiatric patients may also influence the therapeutic approach chosen by clinicians to treat these patients. Determining effective interventions to reduce alexithymia levels may be crucial for the management of psychological distress and potential prognosis in a large percentage of psychiatric patients. Chapter 5 of the present research will examine the efficacy of different

group therapy approaches in reducing alexithymia in psychiatric patients and will provide recommendations to clinicians working with these populations.

Conclusion

The overall aim of Study 1 was to examine differences in alexithymia between Australian psychiatric and community samples. To the researcher's knowledge, this is the first study to have evaluated the reliability of the overall TAS-20 score and separate factors in an Australian psychiatric sample. It is also one of the few studies to have examined the effect of demographic variables on differences in alexithymia scores between psychiatric and community samples from a similar location. The added inclusion of a community sample in Study 1 meant that any correlates of alexithymia (i.e., demographic variables and psychological distress) could be attributed to associations with the alexithymia construct, rather than a mere association with the presence of a psychiatric disorder. In line with previous research, higher alexithymia scores and a greater prevalence rate of alexithymia were observed in the psychiatric sample compared to the community sample, which highlights the predominance of emotion processing difficulties in the Australian psychiatric outpatient population. More than half of the psychiatric patients were identified as alexithymic, which was several times the rate of alexithymia identified in the community sample. Differences in alexithymia scores between the psychiatric and community samples were not dependent on gender, level of education, or employment status. Thus, identifying individuals who may be vulnerable to experiencing alexithymia remains a complicated task, as alexithymia scores are likely to be similar within various demographic groups. Likewise, the severity of psychological distress is likely to be similar for all individuals with high levels of alexithymia, regardless of whether they are psychiatric patients or individuals in the community. This finding supports the theory that alexithymic individuals have a vulnerability

to developing and/or maintaining psychological distress and psychiatric illness (see Taylor et al., 1997).

CHAPTER 5

STUDY 2

Alexithymic patients are thought to respond poorly to many standard therapeutic interventions (Krystal, 1979; McCallum et al., 2003; Sifneos, 1975; Taylor et al., 1997). Specifically, core features of alexithymia, such as a reduced capacity for introspection, to attend to emotional cues, and to communicate feelings to others, are believed to undermine the therapeutic process and be difficult to treat (McCallum et al., 2003; Sifneos, 1972/1973; Taylor et al., 1997).

The empirical evidence to support the idea that alexithymia undermines therapeutic intervention is not consistent. The findings from a systematic review of the literature (see Chapter 3) indicated that alexithymia scores before treatment did not influence therapeutic outcome in some studies (e.g., de Haan, Schellekens, et al., 2012; Joyce et al., 2013; Rufer et al., 2004). On the other hand, some studies reviewed had found a link between high alexithymia scores before treatment and poor therapeutic outcomes, such as greater alcohol dependence severity (Stasiewicz et al., 2012) and poor therapeutic alliance (Cleland et al., 2005). Previous studies have also found that elevated or more stable levels of alexithymia that persist after treatment are related to poor therapeutic outcomes, such as greater anxiety severity (Fukunishi, Kikuchi, et al., 1997) and less improvement in interpersonal problems during treatment (Ogrodniczuk et al., 2012).

It is unclear if the approach or focus of therapy is a factor that influences the relationship between alexithymia and poor therapeutic outcome. Some researchers have proposed that alexithymia may have less of a negative impact on behavioural-based treatments, including CBT (Rufer et al., 2010), because the external focus of alexithymic patients undergoing CBT may improve their adherence to structured exercises and behavioural recommendations (Lumley et al., 2007). In contrast, it has been suggested that

alexithymia may interfere with traditional psychotherapies that demand a greater degree of insight or emotional awareness, such as psychodynamic psychotherapy, as alexithymic patients have difficulties examining their problems from a psychological perspective (Lumley et al., 2007; Sifneos, 1973). Some support has been provided for the idea that alexithymia has less of a negative impact on CBT compared to other therapeutic approaches, such as motivational intervention (Rosenblum et al., 2005).

In addition to examining the impact of alexithymia on therapeutic outcome, researchers have examined how alexithymia might change as a result of undergoing therapy. Assessing change in alexithymia has typically been approached in two ways: by assessing mean-level stability, where the average alexithymia score of a whole group is examined over time; and relative stability, where relative differences among individuals' alexithymia scores are examined over time. Analysis of mean-level stability provides a general indication of change in alexithymia at a group level. However, analysis of mean-level stability does not provide detailed information of change in alexithymia at an individual level, such as whether patients' scores are roughly changing by the same amount. Personality researchers have argued that mean-level change is commonly observed in personality traits in addition to relative stability (Allemand et al., 2013).

Previous studies have supported the idea that alexithymia is a personality trait by finding high degrees of relative stability in alexithymia scores following therapeutic intervention in spite of significant mean-level declines (e.g., Grabe et al., 2008; Luminet et al., 2001; Rufer et al., 2010; Speranza et al., 2007). These studies are consistent with findings of relative stability and mean-level change in other personality traits, such as neuroticism and extraversion (Santor et al., 1997). It has been suggested that both mean-level and relative stability of alexithymia should be considered when examining the influence of therapeutic intervention on alexithymia so that accurate conclusions can be reached concerning the extent

to which alexithymia can change over time (Mikolajczak & Luminet, 2006). Luminet et al. (2001) have argued that, in addition to examining different forms of stability, only by demonstrating the relative stability of alexithymia in the context of acute change in clinical symptoms is strong evidence provided to support alexithymia as a personality trait. A systematic review of the literature (see Chapter 3) found that relative stability in alexithymia scores has been observed alongside acute change in clinical symptoms (e.g., de Timary et al., 2008; Luminet et al., 2001; Picardi et al., 2012; Todarello et al., 2005).

Studies that have examined change in alexithymia following therapeutic intervention have employed interventions that are available to treat various psychiatric disorders rather than interventions designed specifically to treat alexithymia. Some researchers have speculated about the efficacy of available therapeutic interventions to reduce alexithymia levels in psychiatric patients. Behavioural-based interventions such as CBT are thought to be less anxiety provoking for alexithymic patients as they are more directive and focus externally on coping with unpleasant emotions and bodily sensations (Rufer et al., 2010) rather than focusing on examining inner thoughts and feelings. In contrast, some researchers have proposed that emotion-focused interventions with skills-training components that address emotion awareness and modulation would be effective at reducing alexithymia levels since these interventions aim to enhance the way patients process and experience emotions (Hyer et al., 1991; Sifneos, 1973). A number of emotion-focused interventions, which typically place emphasis on identifying emotions, promoting verbal and non-verbal expression of emotions, and understanding emotional states and associated bodily sensations, have been found to be effective at reducing alexithymia (e.g., Beresnevaite, 2000; Kennedy & Franklin, 2002; Melin et al., 2010).

In addition to differences in therapeutic approach, some researchers have considered a group therapy format to be effective for alexithymic patients because groups provide a

supportive environment for patients that maximises their opportunity to learn about emotions through a wide range of interpersonal situations (Apfel-Savitz et al., 1977; Swiller, 1988). Furthermore, alexithymic patients have been shown to prefer group therapy compared to individual therapy (Ogrodniczuk, Piper, Joyce, & Abbass, 2009), which may enhance their engagement in treatment and improve therapeutic outcomes.

Studies that have examined the effects of therapeutic intervention on alexithymia while employing comparative treatment conditions are rare and consequently information about the superiority of a particular therapeutic approach for reducing alexithymia remains unclear. Studies that have examined the influence of alexithymia on therapeutic outcome have also produced inconsistent findings. The idea that alexithymia undermines the therapeutic process requires further examination because the relevance of alexithymia as a risk factor in the maintenance of psychiatric illness relies on the value of alexithymia as a predictor of therapeutic outcome.

The overarching aim of Study 2 was to examine the relationship between alexithymia and therapeutic intervention. There were four specific aims: 1) to investigate the influence of alexithymia before treatment on change in psychological distress during treatment, and examine whether this influence was different for group therapy type (emotion focused therapy and cognitive-behavioural focused therapy); 2) to examine the mean-level and relative stability of alexithymia while accounting for group therapy type and change in psychological distress over time; and 3) to investigate the influence of change in alexithymia during treatment on psychological distress after treatment, and examine whether this influence was dependent on group therapy type.

Higher alexithymia scores before treatment were expected to be associated with less change in psychological distress severity following emotion focused (EF) group therapy but not following cognitive-behavioural focused (CBF) group therapy, similar to findings by

Rosenblum et al. (2005). Mean-level change in alexithymia was expected over time, independent of group therapy type, in line with the literature. Changes in alexithymia were also expected to be largely independent of changes in psychological distress, as this finding would be consistent with previous research. In addition, and in line with previous research, it was anticipated that alexithymia would show a high degree of relative stability, even after controlling for the influence of psychological distress severity before and after treatment. Finally, less change in alexithymia severity during treatment was expected to predict higher psychological distress scores after treatment, independent of group therapy type, similar to findings by Ogrodniczuk et al. (2012).

Method

Participants and Procedure

The sample for Study 2 consisted of 61 psychiatric outpatients who were selected from the original psychiatric sample used in study one ($N = 151$). The 61 patients were selected because they had completed corresponding measures of alexithymia and psychological distress before and after treatment. The sample included 47 (77.0%) females, with age in the total sample ranging from 19 to 66 years ($M = 42.40$ years, $SD = 12.45$ years). Twenty-seven of the patients had completed some form of post-secondary education (including technical college and university) and 14 were employed. ANOVA and Chi-Square tests showed no significant differences in demographic factors and in pre-treatment TAS-20 or DASS-42 scores between the original sample and the subset involved in the present study.

All patients completed TAS-20 and DASS-42 tests before (time 1) and after (time 2) the completion of a therapy group. Some patients had attended more than one therapy group and completed additional tests. Therefore, in order to control for the possible confound of a cumulative treatment effect, only the first alexithymia and psychological distress tests that

were from a patient's earliest therapy group were retained for use in the present study. Recruitment methods, eligibility for service, and details about the present sample can be found in Chapter 4. Each patient had attended one of the two different types of group therapy conducted at the outpatient facility: emotion focused group therapy ($n = 30$) or cognitive-behavioural focused group therapy ($n = 31$).

Measures

Psychiatric patients completed the 20-item Toronto Alexithymia Scale (TAS-20), the 42-item Depression Anxiety Stress Scale (DASS), and a demographic questionnaire and consent form for the data to be used in research. The psychometric characteristics of the measures were reported on in Chapter 4.

Therapy.

The outpatient mental health facility offers a broad range of therapeutic group interventions to assist patients to recover from a variety of mental health problems. The facility aims to reduce psychiatric symptomatology and to develop patients' personal, social, and emotional skills required for effective self-management of their mental illness. The group interventions encourage progress towards developing self-respect, balanced thinking, a healthy lifestyle with meaning, and enhance more effective functioning and a greater sense of belonging in the wider community.

As part of the induction process, staff at the facility conducted interviews with new patients to help determine their suitability to group therapy and allocation to a specific therapy group. Group therapy suitability and allocation was based on a patient's level of functioning, current needs and expectations, diagnoses or their most pressing difficulty, and availability. The groups were therefore diagnostically heterogeneous. All eligible patients

were required to complete an introductory 4-week therapy group before re-enrolling into other therapy groups.

Two clinical staff from various disciplines, including clinical psychology, social work, occupational therapy, and psychiatric nursing facilitated the groups. Each group included approximately 5 to 12 patients and were run during standard business hours with the occasional after-hours group for those with daytime commitments. All groups were structured and time limited: sessions ran for 2 hours over an average of eight weeks (min = 4, max = 10). The theoretical approach to group therapy at the facility was predominately guided by cognitive-behavioural theory.

Categorising the types of therapy groups for use in this research was based on the most prominent difference between the groups, which was the therapeutic focus. Two types of group therapy were designated: emotion focused (EF) group therapy and cognitive-behavioural focused (CBF) group therapy. EF group therapy addressed patients' dysfunctional emotions through various goal-oriented interventions, such as psychoeducation (in identifying and differentiating emotions, understanding the role of emotions, and the physiological impact of emotions on the body), emotion awareness and mindfulness training, assertive communication, relaxation, and homework (e.g., mindfulness techniques). Emotion expression was encouraged during the sessions. CBF group therapy addressed patients' maladaptive thoughts, behaviours, and emotions through various goal-oriented interventions, such as psychoeducation (in identifying and challenging maladaptive thoughts and behaviours, and understanding the interaction between cognition, behaviour, and emotion), cognitive restructuring, development of adaptive coping strategies, role-play, goal setting, relaxation, and homework (e.g., thought records). There were no differences in the length of the sessions or duration of the interventions between the two group types as both group types ran for 2 hours over an average of 8 weeks.

Statistical Analysis

Bivariate correlations were calculated to examine relationships between all variables under consideration at time 1 and time 2. Three bivariate correlations were conducted to examine the relation between alexithymia at time 1 and change in psychological distress during treatment (i.e., DASS scores at time 2 minus DASS scores at time 1) for the overall group, and for each group therapy type. In order to examine mean-level change in alexithymia over time, a mixed model ANOVA was performed, with alexithymia scores at time 1 and time 2 as the within-subjects variable and group type as the between-subjects variable. Pearson's correlation was used to examine the relative stability of alexithymia scores from time 1 to time 2. In order to estimate the relative stability of alexithymia while controlling for psychological distress severity, hierarchical regression analyses were conducted. Alexithymia scores at time 2 served as the criterion variable. In the first model, group type was entered as the dummy-coded predictor variable. In the second model, psychological distress scores at time 1 and time 2 were the predictor variables, and in the third model alexithymia score at time 1 was added as an additional predictor variable (as was done by Grabe et al., 2008; Luminet et al., 2001; Picardi et al., 2012). In a separate regression analysis, change scores in alexithymia (i.e., TAS-20 scores at time 2 minus TAS-20 scores at time 1) were regressed on change scores in psychological distress to examine the extent to which expected change in alexithymia might be accounted for by change in psychological distress. Finally, a multiple regression analysis was conducted to predict psychological distress at time 2 based on change scores in alexithymia, while controlling for psychological distress at time 1 and group therapy type.

Cohen's (1998) guidelines were used to interpret effect sizes. Accordingly, correlation coefficient (r) values of .10, .30, .50, and .70, correspond to small, medium, large, and very large effect sizes, respectively. Effect sizes for ANOVA were estimated using partial eta-

squared (*partial* η^2), where values of .01, .09, and .25, correspond to small, medium, and large effect sizes, respectively. Effect sizes for simple and multiple regression analyses were estimated using Cohen's f (f^2), where f^2 values of .02, .15, and .35, correspond to small, medium, and large effect sizes, respectively. Lastly, effect sizes for hierarchical regression analyses were estimated using ΔR^2 , where values of .10, .30, .50, and .70, correspond to small, medium, large, and very large effect sizes, respectively. All data were analysed using SPSS version 19.0 (IBM Corp., 2010). The TAS-20 and DASS-42 test scores were subject to a number of data preparation procedures, which were detailed in Chapter 4.

Results

Bivariate Correlations Among Variables

Bivariate correlations between alexithymia and psychological distress at time 1 and time 2 are reported in Table 9. Alexithymia at time 1 was related to psychological distress at time 1, and alexithymia at time 2 was related to psychological distress across time.

Table 9
Bivariate Correlations for Variables Under Consideration at Time 1 and Time 2

	1	2	3	4
1. Alexithymia t1	1.0			
2. Alexithymia t2	.74***	1.0		
3. Psychological Distress t1	.48***	.32*	1.0	
4. Psychological Distress t2	.25	.39**	.47***	1.0

Note. Boldface coefficients are test-retest correlations.

* $p < 0.05$.

** $p < .01$.

*** $p < .001$.

Influence of Alexithymia at Time 1 on Change in Psychological Distress

Results from Pearson's correlations showed a medium negative and significant correlation between alexithymia at time 1 and change in psychological distress, $r(61) = -.32$, $p = .013$ in the overall group. Correlations were not significant between alexithymia and

change in psychological distress for the EF group, $r(30) = -.35, p = .056$, or for the CBF group, $r(31) = -.28, p = .125$, when examined separately.

Mean-Level Change and Relative Stability of Alexithymia

Results of a mixed model ANOVA showed no significant interaction effect between change in alexithymia and group therapy type, $F(1, 59) = 1.99, p = .163$. There was a significant main effect for change in alexithymia, with a decrease in alexithymia scores from before ($M = 58.98, SD = 13.37$) to after group therapy ($M = 56.51, SD = 12.35$), $F(1, 59) = 4.52, p = .038, partial \eta^2 = .07$ (small effect size). The main effect for group type was not significant, $F(1, 59) = 0.28, p = .596$.

Results of Pearson's test-retest correlations (see Table 9) showed a high degree of relative stability in alexithymia evidenced by a very large positive and significant correlation between alexithymia at time 1 and time 2. A medium positive and significant correlation was observed between psychological distress at time 1 and time 2.

Explaining the Relative Stability of Alexithymia

Results of the hierarchical regression analyses are presented in Table 10. Group therapy type did not explain a significant amount of variance in alexithymia at time 2 in the first model. In the second model, group therapy type and psychological distress at time 1 and time 2 explained a statistically significant 13.5% of the variance in alexithymia at time 2, $F_{chg}(2, 57) = 6.18, p = .004, \Delta R^2 = .18$ (small effect size). Psychological distress at time 2 was a positive predictor of alexithymia at time 2. The addition of alexithymia at time 1 in the third model explained a statistically significant 59.5% of the variance in alexithymia at time 2, $F_{chg}(1, 56) = 65.78, p < .001, \Delta R^2 = .44$ (medium effect size), which was beyond that explained by group therapy type and psychological distress at time 1 and time 2. Alexithymia at time 1 was a positive predictor of alexithymia at time 2. Inspection of the standardised coefficients

revealed that alexithymia at time 1 explained approximately 8 times the variance in alexithymia at time 2 compared to psychological distress at time 2.

Table 10
Hierarchical Regression Summary Explaining the Relative Stability of Alexithymia

Model		Unstandardised Coefficient	Std. Error	β	t	p
1	Group Type	-0.02	3.19	-.001	-0.005	.996
2	Group Type	0.47	2.95	.02	0.16	.874
	Psychological Distress t1	0.08	0.06	.18	1.31	.194
	Psychological Distress t2	0.18	0.08	.31	2.27	.027
3	Group Type	-1.89	2.04	-.08	-0.93	.359
	Psychological Distress t1	-0.79	0.04	-.18	-1.74	.087
	Psychological Distress t2	0.16	0.05	.27	2.95	.005
	Alexithymia t1	0.71	0.09	.77	8.11	.000

Note. β = Standardised Coefficient; outcome variable was Alexithymia t2; Group Type dummy coding 0 = CBF group therapy and 1 = EF group therapy; multicollinearity was not considered a problem (tolerance level for each predictor was > 0.60).

Influence of Change in Alexithymia on Change in Psychological Distress

Change scores in alexithymia were regressed on change scores in psychological distress. Results showed that change in psychological distress explained 17.5% of the variance in change in alexithymia, $\beta = .42$, $F(1,59) = 12.51$, $p = .001$, $f^2 = .21$ (medium effect size). That is, as alexithymia change score increased by 1 standard deviation, psychological distress change score increased by .42 of a standard deviation.

Influence of Change in Alexithymia on Psychological Distress at Time 2

Results of the multiple regression analysis are presented in Table 11. The model explained a statistically significant 30.4% of the variance in psychological distress at time 2,

$F(3, 57) = 8.31, p < .001, f^2 = .44$ (large effect size). After controlling for psychological distress at time 1 and group type, alexithymia change score made a significant contribution to the model: as alexithymia change score increased by 1 standard deviation, psychological distress at time 2 increased by .30 of a standard deviation.

Table 11
Multiple Regression Summary Examining the Influence of Change in Alexithymia on Psychological Distress at Time 2

	Unstandardised Coefficient	Std. Error	β	t	p
Psychological Distress t1	0.41	0.09	.55	4.77	.000
Alexithymia Change Score	0.69	0.27	.30	2.59	.012
Group Type	-0.69	4.72	-.02	-0.15	.884

Note. β = Standardised Coefficient; outcome variable was Psychological Distress t2; Assumption of independent errors was met (Durbin-Watson = 1.79); and multicollinearity was not considered a problem (tolerance level for each predictor was > 0.89).

Discussion

The purpose of Study 2 was to investigate the relationship between alexithymia and therapeutic intervention for psychiatric patients by examining the influence of alexithymia before treatment on psychological distress severity (as a measure of therapeutic outcome) for all of the participants as well as each group therapy type. In addition, this study examined the extent of stability in alexithymia scores following group therapy in terms of mean-level and relative stability. The potential influences of different group therapy approaches as well as change in psychological distress severity on alexithymia stability were accounted for. Lastly, this study examined the influence of stability in alexithymia on psychological distress after treatment, while controlling for group therapy type and psychological distress before treatment.

Alexithymia before treatment was found to influence therapeutic outcome, as higher alexithymia scores correlated significantly with less reduction in psychological distress in the

overall group. That is, patients with higher alexithymia scores made less improvement in psychological distress from before to after group therapy compared to patients with lower alexithymia scores. This finding supports previous studies that have shown alexithymia scores before treatment to negatively influence therapeutic outcomes (e.g., Fukunishi, Kikuchi, et al., 1997; Özsahin et al., 2003; Stasiewicz et al., 2012). This finding is also consistent with the idea that alexithymia poses a particular problem for psychiatric patients by contributing to the maintenance of their disorder and interfering with their recovery (Taylor et al., 1997).

There are a number of possible reasons why alexithymia was found to negatively influence therapeutic outcome in the present study. It has been suggested that alexithymic patients' difficulties with empathy and perspective-taking may partly explain the association between alexithymia and psychological distress as these difficulties lead to the contagion of others distress (Moriguchi et al., 2007; Moriguchi et al., 2006). Psychological distress severity may have been exaggerated for alexithymic patients during treatment in the present study since, by the nature of group therapy, alexithymic patients would have interacted and/or been in close contact with several other highly distressed patients during each therapy session. In addition, difficulties communicating feelings to others may have made it difficult for alexithymic patients in the present study to elicit support and comfort from others during group therapy by limiting their chances of developing social relationships with their peers (see C. Spitzer et al., 2005).

The influence of alexithymia before treatment on change in psychological distress in the present study was not moderated by group therapy type as this relationship dropped below significance levels when each type of group therapy was examined separately. The effect of the relationship between alexithymia and change in psychological distress may not have been large enough to replicate this outcome in smaller groups, such as in the present emotion

focused (EF) and cognitive-behavioural focused (CBF) therapy groups. Suggestions that alexithymia may interfere less with certain therapeutic approaches, such as behavioural – based treatments (Rufer et al., 2010), could not be addressed in the present study and remains inconclusive in the literature.

Although alexithymia before treatment was found to influence group therapy outcome in the present study, the moderate relationship between alexithymia and change in psychological distress indicates that patients are not strongly disadvantaged during treatment by lacking emotion awareness, introspection, and the ability to communicate their feelings. In combination with inconsistent findings in the literature, the present finding indicates that the influence of alexithymia on therapeutic outcome may not be direct. A study of emotion regulation skills by Berking et al. (2008) showed that emotion modification and acceptance of negative emotions contributed significantly to the prediction of mental health and treatment gains, over and above awareness of emotion-related sensations, awareness of emotions, and emotional clarity. The authors hypothesised that awareness and understanding of emotion are important but only to the extent that they facilitate the modification and acceptance of emotions. Therefore, an awareness and understanding of emotional states may be the basic or primary skills needed to utilise successive and adaptive emotion regulation skills (Berking et al., 2008; Lumley et al., 2005). Information about the influence of alexithymia on therapeutic outcome would be enhanced if alexithymia were examined in conjunction with other related constructs, such as emotion regulation, because researchers could observe the complex connections and interactions alexithymia may have with other constructs that influence the therapeutic process.

Group therapy was effective at reducing alexithymia scores for the psychiatric sample as a whole. This finding was in line with numerous studies that have found significant mean-level reductions in alexithymia scores following group therapy for various psychiatric

disorders (e.g., Grabe et al., 2008; Ogrodniczuk et al., 2012; Stasiewicz et al., 2012). In addition, the approach to group therapy in the present study did not account for the reduction in patients' alexithymia scores following treatment as mean-level change in alexithymia was found to be independent of group therapy type (EF or CBF group therapy). In other words, the cognitive-behavioural focused and emotion-focused group therapy approaches were equally effective at reducing alexithymia levels in the psychiatric patients.

Although group therapy was effective at reducing alexithymia scores for the psychiatric sample as a whole, the effect was small. In addition, the small reduction in alexithymia could not be directly accounted for by the reduction in psychological distress as less than one fifth of the variance in the change of alexithymia scores was explained by the change of psychological distress scores from before to after treatment. The finding of a small mean-level change in alexithymia scores following group intervention is consistent with the idea that alexithymia is a personality trait (Taylor et al., 1997) that hence is unlikely to show change over time that is large in magnitude (Allemand et al., 2013). Moreover, the finding that mean-level change in alexithymia was largely independent of change in clinical severity indicates that alexithymia is not exclusively dependent on the severity of clinical states.

In addition to the present finding of a small mean-level reduction in alexithymia, a high degree of relative stability in alexithymia was observed from before to after treatment. Stronger evidence for the relative stability of alexithymia was provided by hierarchical regression analyses where alexithymia scores before treatment were found to make a significant contribution to the prediction of alexithymia scores after treatment over the effects contributed by group therapy type and psychological distress severity before and after treatment. This finding is in line with several previous studies (de Timary et al., 2008; Luminet et al., 2001; Picardi et al., 2012; Todarello et al., 2005) where alexithymia scores before treatment have been found to be the best predictor of alexithymia scores after

treatment. In this respect, alexithymia can be compared to other personality traits such as neuroticism and extraversion, which have shown a high degree of relative stability and a lack of mean-level stability over short periods in the presence of change in clinical symptoms (Santor et al., 1997).

The present findings of a small mean-level reduction in alexithymia as well as relative stability in alexithymia in the context of change in psychological distress indicate that patients who enter treatment with pronounced difficulties in recognising, examining, and communicating their feelings are likely to find that these difficulties persist after treatment despite experiencing a marked decline in psychological distress. In fact, reduction in alexithymia severity during treatment explained a significant amount of variance in therapeutic outcome. Patients who reported less reduction in alexithymia during treatment were more likely to report higher psychological distress scores after treatment compared to patients who reported greater reduction in alexithymia during treatment. This finding indicates that continued difficulties in recognising, verbalising, and examining ones feelings once treatment has ended may interfere with patients' abilities to use psychotherapy effectively. Similar findings were made by Ogrodniczuk et al. (2012) where less change in alexithymia during treatment (i.e., more stable alexithymia) was associated with less improvement in interpersonal problems. Patients with resistant or more stable levels of alexithymia are likely to be at greater risk of experiencing persistent clinical symptomatology after treatment, which as a result may contribute to the maintenance of their psychiatric illness.

Limitations and Recommendations

The findings of the present study were limited by the method of data collection. Since the data were archival, the researcher could not control for a number of variables that may have influenced outcomes of the present study, including the number or types of concomitant

treatments patients received and the psychometric scale used to assess therapeutic outcome. Since many patients had attended more than one therapy group at the outpatient facility, an attempt was made to manage this by only retaining a patient's earliest set of completed tests (i.e., the first group a patient attended where they completed pre and post TAS-20 and DASS tests). In addition, the varied lengths of therapy across the different groups at the facility may have confounded treatment effects, yet the sample size was not large enough to control for treatment duration. Findings concerning the relationship between alexithymia and therapeutic outcome were limited to the data provided by using one general measure of psychological distress to assess therapeutic outcome, rather than using multiple measures to assess general symptomatic improvement or other aspects of outcome, such as therapeutic alliance.

Based on outcomes and restrictions from the present study, it is recommended that future studies employ comparative treatment formats (e.g., group therapy compared to individual therapy) as well as distinctive approaches to treatment (e.g., CBT compared to psychodynamic psychotherapy) when examining the role of alexithymia in therapeutic intervention. In addition, it will be important for future researchers to consider different forms of stability in the assessment of alexithymia as growing evidence shows that alexithymia is relatively stable and can change in response to therapeutic intervention.

The present evidence of alexithymia as a personality trait underscores how difficult it will be to enact large or acute changes in alexithymia. On the other hand, if alexithymia is a stable trait, then any real changes that result from therapeutic intervention will likely have long lasting effects. Longitudinal studies involving longer follow up periods would help to establish if changes in alexithymia were stable over time following intervention and if elevated levels of alexithymia that persisted after treatment had an impact on longstanding therapeutic outcome. Clinicians are encouraged to monitor the progress of patients who score high in alexithymia throughout treatment to prepare these patients for a potentially slower

recovery and/or the use of ongoing specialised care as alexithymia may offer a more stable prediction of therapeutic efficacy in the presence of marked improvement in clinical symptoms.

Conclusion

The overall aim of Study 2 was to investigate the influence of alexithymia on therapeutic outcome across comparative treatment approaches as well as the effects of comparative treatment approaches on the stability of alexithymia over time. To the researcher's knowledge, this is the first study to have examined the impact of alexithymia on group therapy outcome in a general psychiatric outpatient sample. It is also one of the few studies to compare different approaches to treatment in relation to alexithymia and to examine the stability of alexithymia in the context of change in clinical symptoms. Overall, alexithymic patients are therapeutically disadvantaged, to some extent, compared to non-alexithymic patients as higher alexithymia scores at the beginning of treatment were moderately associated with poor therapeutic outcome. Present findings provided evidence to suggest that alexithymia is a personality trait that is somewhat responsive to therapeutic intervention as the small mean-level reduction and high degree of relative stability in alexithymia during treatment were largely independent of the reduction in psychological distress during treatment. Patients who reported more stable alexithymia scores over the course of treatment were more likely to experience greater psychological distress after treatment compared to patients who reported greater reductions in alexithymia over the course of treatment. Therefore, despite observing noticeable improvement to patients' general wellbeing, many alexithymic patients are likely to experience ongoing difficulties identifying, communicating, and examining their feelings after treatment, as well as ongoing psychiatric problems and a need for ongoing therapeutic intervention.

CHAPTER 6

GENERAL DISCUSSION

The central purpose of this thesis was to advance the understanding of alexithymia by addressing a number of gaps in the literature relating to the prevalence of alexithymia in the psychiatric and community populations, the role alexithymia plays in explaining the perpetuation of psychiatric symptomatology, and the extent to which alexithymia can be mitigated by different therapeutic interventions. This research was conducted in four stages, which involved two systematic literature reviews and two empirical studies. Although this research essentially has a clinical focus, this research also investigated the prevalence of alexithymia in the community population to provide a comparative perspective. Accordingly, the first literature review (Chapter 2) evaluated the prevalence of alexithymia in psychiatric and community samples and Study 1 (Chapter 4) examined the prevalence of alexithymia in Australian psychiatric and community samples. The second literature review (Chapter 3) examined the role of alexithymia in the therapeutic process across the psychiatric literature. Study 2 (Chapter 5) extended the clinical focus of the present research by examining the role of alexithymia in different group therapy interventions for psychiatric outpatients.

The main findings were detailed and summarised within the respective chapters: Chapter 2 through 5. The overall purpose of this chapter is to synthesise the findings of the systematic literature reviews and the empirical studies to address the goals of the present research.

The Prevalence of Alexithymia in the Psychiatric and Community Populations

The systematic review in Chapter 2 found that prevalence rates of alexithymia reported across the psychiatric literature were typically far greater than the rates reported across the community literature. In addition, there was a very high range in prevalence rates of alexithymia in psychiatric samples. Following a more detailed evaluation of this literature,

it was found that certain populations may have a higher prevalence rate of alexithymia (e.g., patients diagnosed with depressive, somatoform, and addictive disorders; and psychiatric populations receiving treatment outside of Europe), but this cannot be concluded on the basis of the available data. It is unclear why the prevalence of alexithymia should be higher in non-European samples of psychiatric patients. Given that rates of alexithymia were found to be similar in European and non-European studies involving community samples, it is possible that differences in psychopathology (e.g., diagnostic severity) between European and non-European samples will have contributed to the variation in prevalence rates of alexithymia in the psychiatric population. Direct comparisons between different psychiatric populations are required to accurately assess the relative prevalence of alexithymia in different cultures and countries.

The results from Study 1 were consistent with the overall trend in the literature as there was a significantly greater prevalence rate of alexithymia, and higher alexithymia scores, in the psychiatric sample compared to the community sample. In addition, the particularly high prevalence rate of alexithymia that was found in the Australian psychiatric sample in Study 1 was consistent with the trend in the literature where high rates of alexithymia were reported in non-European psychiatric samples compared to European psychiatric samples. If the findings of the present study were generalised to other tertiary hospitals in Australia, then more than half of all outpatients receiving treatment for a psychiatric disorder in Australia experience difficulties recognising, communicating, and examining their feelings.

There were a large number of inconsistencies across the literature regarding the influence of demographic factors on alexithymia, including the influence of gender, age, education, employment, socioeconomic status, income, and marital status. This trend suggests that certain demographic factors may influence alexithymia scores but are unlikely

to be leading contributors to variance in the prevalence rate of alexithymia in the psychiatric or community populations. The findings from Study 1 supported the trend in the literature as no differences were found in alexithymia scores between males and females and between employed and unemployed psychiatric and community participants. In contrast to most of the studies in the literature however, no differences were found in alexithymia scores between lower educated (secondary and high school) and higher educated (technical and tertiary) psychiatric and community participants. Together, the overall trend from the literature review and findings from Study 1 suggest that no particular demographic group is likely to be more vulnerable to experiencing alexithymia. Instead, difficulties recognising, communicating, and examining ones feelings are widespread; particularly in populations that are receiving treatment for a psychiatric disorder.

The Role of Alexithymia in Explaining the Perpetuation of Psychiatric Symptomatology

The systematic review in Chapter 3 found inconsistent findings across the studies that examined the influence of alexithymia scores before treatment on therapeutic outcome, with some studies finding higher alexithymia scores to have a negative influence on some therapeutic outcomes and other studies finding alexithymia to have no influence on therapeutic outcomes. Studies that examined the impact of change in alexithymia on therapeutic outcome found that elevated or more stable levels of alexithymia that persist after treatment were related to poor therapeutic outcome on some measures (Fukunishi, Kikuchi, et al., 1997; Ogrodniczuk et al., 2012). The overall finding from this review was that alexithymia was more likely to interfere with therapeutic outcome in certain contexts, such as in treatments conducted for patients diagnosed with addictive disorders as well as treatments conducted in North America.

The findings in Study 2 were consistent with some studies in the literature, as higher alexithymia score before treatment was associated with poorer therapeutic outcome (less

reduction in psychological distress severity during treatment). However, this finding did not resolve speculation about the influence of alexithymia being treatment specific (i.e., that alexithymia interferes less with behavioural-based interventions such as CBT, Rufer et al., 2010) because the association between alexithymia and therapeutic outcome was not found in either treatment approach (cognitive-behavioural focused and emotion-focused group therapy) when examined separately. In addition, Study 2 found that less reduction in alexithymia over the course of treatment (more stable levels of alexithymia) was associated with higher psychological distress after treatment. Overall, findings from Study 2 indicate that psychiatric patients are vulnerable to experiencing ongoing clinical symptomatology after treatment when their level of alexithymia is high before treatment or changes little during treatment.

The Extent to Which Alexithymia can be Mitigated by Therapeutic Intervention

The majority of studies in the literature review that was conducted in Chapter 3 reported a reduction in alexithymia scores following various therapeutic interventions. Results of Study 2 were in line with this literature as alexithymia scores reduced following group therapy, independent of the two group therapy approaches. In general, it remains unclear whether alexithymia is more responsive to specific treatments as few studies have compared the efficacy of different therapeutic interventions for treating alexithymia in psychiatric patients. Further investigation is needed to determine the most effective therapeutic context for treating alexithymia.

What was observed in Study 2 was that the reduction in alexithymia scores were small and largely independent of the reduction in psychological distress scores. Alexithymia was also found to be relatively stable even after controlling for psychological distress severity before and after treatment and type of group therapy. This finding is in line with the literature where alexithymia has been consistently found to be relatively stable. Evidence in the

literature, and from Study 2, support the proposition (Taylor et al., 1997) that alexithymia is a personality trait as evidenced by a high degree of relative stability, independent of change in clinical symptoms. Overall findings indicate that while alexithymia can improve with therapeutic intervention to a certain degree, clinically problematic levels of alexithymia are likely to persist after treatment in spite of apparent reductions in clinical symptomatology.

Implications of the Research

The present studies have provided support for the theoretical framework underlying this research, wherein the alexithymia construct was considered a potential predisposing factor that interacts with stressors to increase general susceptibility to psychopathology. The high rates of alexithymia amongst psychiatric samples and the therapeutic challenge that alexithymia represents, indicates that alexithymia is an important construct to consider within the psychiatric domain.

The present findings have a number of implications for future research. Increased recognition of the prevalence of alexithymia amongst psychiatric patients should encourage researchers to consider alexithymia as a confounding factor when evaluating the efficacy of existing and novel therapeutic interventions. That is, a large proportion of alexithymic patients in a sample group are likely to impact on the efficacy of therapeutic interventions by increasing the severity of clinical symptomatology both during and after treatment for the overall sample.

Strong empirical evidence of relative stability in alexithymia in the context of change in clinical symptoms will contribute to the acknowledgment of alexithymia as a personality trait. Increased recognition of alexithymia as a personality trait may in turn influence research methods by encouraging researchers to consider more complex models that differentiate relative stability from mean-level change when assessing how alexithymia and clinical states relate during therapeutic intervention. For instance, change in alexithymia may be a direct

outcome of therapeutic effects on alexithymia or an indirect outcome of change in clinical states influencing other important variables, which moderate or mediate the relationship between alexithymia and clinical states.

The present research has raised doubt as to whether alexithymia would be considered a major obstacle to therapeutic success. Although the present research indicates that there is an increased risk imposed by alexithymia on therapeutic outcome for psychiatric patients, evidence in the literature about the influence of alexithymia on therapeutic outcome has been inconsistent, with many studies finding that alexithymia scores before treatment had no impact on therapeutic outcomes (e.g., Rufer et al., 2010; Spek et al., 2008). The effects of alexithymia, both before and during treatment, on therapeutic outcome in the present study were significant, yet they were small to moderate. The present findings should encourage researchers to consider broader elements of the therapeutic context in an attempt to expand the theoretical understanding of alexithymia in the therapeutic process. For instance, other factors related to alexithymia that have a more direct influence on or that are more essential to the success or failure of therapeutic intervention need to be investigated. The direct role of alexithymia in the therapeutic process may need to be reconsidered to involve examinations of variables that may moderate or mediate the relationship between alexithymia and therapeutic outcome. For example, given that emotion regulation is gaining popularity in the transdiagnostic understanding of therapeutic outcome, and that alexithymia has been found to be negatively correlated with several measures of emotion regulation (e.g., Pandey, Saxena, & Dubey, 2011; Stasiewicz et al., 2012), examination of the relation between alexithymia and emotion regulation skills may help to explain the mechanism through which alexithymia influences therapeutic outcome (for an overview of the potential mediating mechanisms that link alexithymia with physical and mental health related problems, see Dubey, Pandey, & Mishra, 2010).

Additionally, increased recognition of alexithymia as a personality trait that affects a considerable number of psychiatric patients in many countries is important for the psychiatric care of alexithymic patients. The present findings that higher alexithymia scores before treatment and greater stability of alexithymia during the course of treatment were related to poorer therapeutic outcome show that alexithymic patients are more vulnerable to experiencing greater clinical severity after treatment than non-alexithymic patients are. It is likely that alexithymic patients will require longer periods of treatment over the course of their illness in order to achieve a similar rate of recovery to non-alexithymic patients. Subsequently, alexithymic patients are likely to be engaged with mental health services for considerably longer periods compared to non-alexithymic patients. Assessing alexithymia at intake will be important for clinicians and mental health services as alexithymic patients have different treatment responses and may require different service delivery responses, such as parallel treatment where patients are treated for alexithymia at the same time as receiving treatment for a primary psychiatric disorder. Early detection and successful treatment of alexithymia is likely to impact on future service usage and costs in mental health settings.

Findings from the present research indicate that successful treatment of alexithymia has the potential to result in improved therapeutic outcomes, as non-alexithymic patients and patients who made greater reductions in alexithymia during treatment reported lower levels of psychological distress following treatment. Successful treatment of alexithymia could be defined as at least moderate to large mean-level reductions in scores, which would be in line with the average effects of psychotherapy that are widely shown to be significant and large (for a review of psychotherapy efficacy and effectiveness research, see Lambert & Ogles, 2004). However, the enduring nature of alexithymia as a personality trait combined with small reductions in alexithymia scores following group therapy found in the present research indicate that successful treatment of alexithymia by this comparison may prove difficult.

Moreover, attempts to uncover the most effective therapeutic intervention to treat alexithymia may be unproductive because comparisons of different therapeutic interventions for treating psychiatric disorders, including personality disorders, have been shown to result in similar treatment outcomes (see Livesley, 2007; Wampold, 2001). Wampold (2001) has provided evidence to indicate that interventions developed for particular deficits (e.g., cognitive-behavioural therapy for patients with maladaptive cognitions) are no more effective than interventions not developed for the deficit (interpersonal therapy for patients with maladaptive cognitions). The present finding that the reduction in alexithymia during treatment was not differentiated by the approach to group therapy supports the argument that different therapeutic approaches result in similar treatment outcomes and thus clarity about the treatment of alexithymia is unlikely to be achieved by comparing the effectiveness of interventions based on theoretical orientation. Rather, to improve the treatment of alexithymia it is suggested that researchers and clinicians examine common factors of treatment, such as therapeutic alliance, therapist competence, and therapist allegiance to theoretical orientation, that have been found to account for more variance in therapeutic outcome than specific approach to treatment (see Messer & Wampold, 2002).

Strengths and Limitations of the Research

There were a number of strengths in the present research. The present research was carefully designed and empirically rigorous. This included evaluating the reliability of the total TAS-20 and three factors for use in the present empirical studies. Two extensive literature bases were compiled, upon which further empirical examination can develop. A systematic review of prevalence data on alexithymia was undertaken for the first time, which helped to clarify the global prevalence rate of alexithymia in both psychiatric and community populations. The addition of community samples in the literature review and in the first empirical study also provided a comparative perspective on the prevalence of alexithymia.

The second empirical study expanded previous research on the role of alexithymia in therapeutic outcome by comparing cognitive-behavioural focused and emotion focused approaches not previously examined. The potential therapeutic efficacy of these different approaches in treating alexithymia was examined through robust statistical methods, which considered different forms of stability in alexithymia. In addition, issues of dependence between change in alexithymia and change in clinical states were addressed.

In contrast to the strengths of the present research, there were also a number of limitations. The conceptualisation of the alexithymia construct was restricted to how it is defined by the TAS-20 as the present research focused solely on the TAS-20 as a measure of alexithymia. However, the TAS-20 was judged the most psychometrically sound and applicable measure to use when comparing international studies and for use in the present samples of the empirical studies. Furthermore, the use of archival data for the psychiatric sample in the empirical stages of this research limited the design and direction of the research as the variables under consideration were predetermined. This limitation included a lack of follow-up data to confirm whether alexithymia scores before or after treatment had long-standing influence on therapeutic outcome. This limitation also included the use of one measure to assess therapeutic outcome. Measuring different aspects of outcome would have been ideal to determine the influence of alexithymia on multiple aspects of therapeutic outcome, including general domains of well-being and functioning as well as specific changes in clinical symptoms.

Directions for Future Research

There are several directions for alexithymia research based on the findings of the present research. While the systematic literature reviews provided comprehensive summaries of relevant studies on the prevalence of alexithymia and role of alexithymia in the therapeutic process, respectively, clinicians and future researchers would benefit from further empirical

examination of these data. Specifically, meta-analyses will yield a more precise (narrower confidence intervals) overall estimate of the prevalence rate of alexithymia in the psychiatric and community populations and a more precise effect of alexithymia on therapeutic outcome.

Future research examining the role of alexithymia in the therapeutic process would benefit from replicating the findings of the present research with a larger sample size while addressing the methodological limitations mentioned above. It is also important for future researchers to conduct longitudinal studies to provide a more comprehensive understanding of the role of alexithymia in the therapeutic process over time. Studies involving longer periods of follow-up would help to confirm expectations of the long-standing influence of alexithymia on therapeutic outcome as well as long-term stability of alexithymia following therapeutic intervention.

Findings from the present research indicate that alexithymia is a complex construct that requires equally complex methods for assessing its role in the therapeutic process. In this, future researchers could examine potential mediating or moderating factors that may be related to alexithymia and the therapeutic context. In particular, investigation into the interaction of common treatment factors with alexithymia (e.g., therapeutic alliance and therapist characteristics) will expand the understanding of alexithymia and provide valuable information for the treatment of alexithymic patients.

Conclusion

The present research examined the prevalence of alexithymia in the psychiatric and community populations, the role alexithymia plays in explaining the perpetuation of psychiatric symptomatology, and the extent to which alexithymia can be mitigated by different therapeutic interventions. Findings from this research substantiated the strong presence of alexithymia in the psychiatric population and contributed to improving the understanding of the role of alexithymia in the therapeutic process. There is evidence to

suggest that the influence of alexithymia on therapeutic outcome is indirect and to challenge the notion that specific therapeutic interventions may have superior treatment effects on reducing alexithymia in psychiatric patients. The present findings will incite future researchers to advance sophisticated inquiry into the influence of alexithymia on therapeutic outcome. Strong evidence of the persistent nature of alexithymia as a personality trait supports the need for future researchers to understand the exact mechanisms underlying the relationship between alexithymia and therapeutic intervention. Although alexithymia cannot provide a single explanation for patient response to therapeutic intervention, the principal conclusion of the present research is that alexithymia should be considered a connected part of an overall strategy for the prevention and treatment of psychopathology.

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Appendix A
Depression Anxiety Stress Scale Version 42

DASS

Name: _____

Date: _____

Please read each statement and circle a number 0, 1, 2 or 3 that indicates how much the statement applied to you *over the past week*. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

- 0 Did not apply to me at all
- 1 Applied to me to some degree, or some of the time
- 2 Applied to me to a considerable degree, or a good part of time
- 3 Applied to me very much, or most of the time

1	I found myself getting upset by quite trivial things	0	1	2	3
2	I was aware of dryness of my mouth	0	1	2	3
3	I couldn't seem to experience any positive feeling at all	0	1	2	3
4	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5	I just couldn't seem to get going	0	1	2	3
6	I tended to over-react to situations	0	1	2	3
7	I had a feeling of shakiness (eg, legs going to give way)	0	1	2	3
8	I found it difficult to relax	0	1	2	3
9	I found myself in situations that made me so anxious I was most relieved when they ended	0	1	2	3
10	I felt that I had nothing to look forward to	0	1	2	3
11	I found myself getting upset rather easily	0	1	2	3
12	I felt that I was using a lot of nervous energy	0	1	2	3
13	I felt sad and depressed	0	1	2	3
14	I found myself getting impatient when I was delayed in any way (eg, elevators, traffic lights, being kept waiting)	0	1	2	3
15	I had a feeling of faintness	0	1	2	3
16	I felt that I had lost interest in just about everything	0	1	2	3
17	I felt I wasn't worth much as a person	0	1	2	3
18	I felt that I was rather touchy	0	1	2	3
19	I perspired noticeably (eg, hands sweaty) in the absence of high temperatures or physical exertion	0	1	2	3
20	I felt scared without any good reason	0	1	2	3
21	I felt that life wasn't worthwhile	0	1	2	3

Reminder of rating scale:

- 0 Did not apply to me at all
- 1 Applied to me to some degree, or some of the time
- 2 Applied to me to a considerable degree, or a good part of time
- 3 Applied to me very much, or most of the time

22	I found it hard to wind down	0	1	2	3
23	I had difficulty in swallowing	0	1	2	3
24	I couldn't seem to get any enjoyment out of the things I did	0	1	2	3
25	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0	1	2	3
26	I felt down-hearted and blue	0	1	2	3
27	I found that I was very irritable	0	1	2	3
28	I felt I was close to panic	0	1	2	3
29	I found it hard to calm down after something upset me	0	1	2	3
30	I feared that I would be "thrown" by some trivial but unfamiliar task	0	1	2	3
31	I was unable to become enthusiastic about anything	0	1	2	3
32	I found it difficult to tolerate interruptions to what I was doing	0	1	2	3
33	I was in a state of nervous tension	0	1	2	3
34	I felt I was pretty worthless	0	1	2	3
35	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
36	I felt terrified	0	1	2	3
37	I could see nothing in the future to be hopeful about	0	1	2	3
38	I felt that life was meaningless	0	1	2	3
39	I found myself getting agitated	0	1	2	3
40	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
41	I experienced trembling (eg, in the hands)	0	1	2	3
42	I found it difficult to work up the initiative to do things	0	1	2	3

Appendix B

Demographic Questionnaire and Consent Form for Psychiatric Patients

Group Therapy Program, Ellen Street

**Introductory
Planning Session**

Surname:	URMN:	Sex:
Forenames:		Birth date:
Address:		Phone:

GP details: _____

Who referred you? _____

To help us assist you with planning suitable groups, and so that we can monitor if the groups have helped you, please complete the following questions as openly and honestly as possible:

Do you have any physical health concerns? No Yes

If yes, please describe: _____

Other factors (those factors apart from the physical problems just described) **that might interfere with your attendance at the group program** (e.g. work, transport, sleep pattern, reading, and writing)

What are your reasons for attending the Group Therapy Program at Ellen Street?

What are you hoping to get out of groups?

Tell us about your hobbies and/or interests?

General Information:

What country were you born in? _____

What language do you speak at home? _____

Do you live: Alone With family Shared accommodation

Do you have supportive: Family Friends Neither

Current employment type

- No current employment
- Casual paid work
- Part-time paid work
- Full time paid work
- Voluntary work
- Other, please specify: _____

Work – Have you been employed in the last 2 years:

- No current employment
- Casual paid work
- Part-time paid work
- Full time paid work
- Voluntary work
- Other, please specify: _____

What education have you completed:

- Primary school
- High school
- University
- Technical Education

How many years of education have you completed in total? _____

Do you identify any communication or learning difficulties? No Yes

Please specify: _____

Would you like to attend other groups aimed at?

Domestic Violence

By signing this form you are giving the Group Therapy Program, Ellen Street, permission to use the information on this questionnaire, as well as other questionnaires during intake and when attending groups, for evaluation and research purposes. Personal information will not be released in any form to protect your privacy.

Signature: _____ Date: ____/____/____

Clinician: (print name) _____

Signature: _____

Appendix C

Depression Anxiety Stress Scale Version 21

DASS₂₁

Name: _____

Date: _____

Please read each statement and circle a number 0, 1, 2 or 3 that indicates how much the statement applied to you *over the past week*. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

- 0 Did not apply to me at all
- 1 Applied to me to some degree, or some of the time
- 2 Applied to me to a considerable degree, or a good part of time
- 3 Applied to me very much, or most of the time

1	I found it hard to wind down	0	1	2	3
2	I was aware of dryness of my mouth	0	1	2	3
3	I couldn't seem to experience any positive feeling at all	0	1	2	3
4	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5	I found it difficult to work up the initiative to do things	0	1	2	3
6	I tended to over-react to situations	0	1	2	3
7	I experienced trembling (eg, in the hands)	0	1	2	3
8	I felt that I was using a lot of nervous energy	0	1	2	3
9	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10	I felt that I had nothing to look forward to	0	1	2	3
11	I found myself getting agitated	0	1	2	3
12	I found it difficult to relax	0	1	2	3
13	I felt down-hearted and blue	0	1	2	3
14	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15	I felt I was close to panic	0	1	2	3
16	I was unable to become enthusiastic about anything	0	1	2	3
17	I felt I wasn't worth much as a person	0	1	2	3
18	I felt that I was rather touchy	0	1	2	3
19	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0	1	2	3
20	I felt scared without any good reason	0	1	2	3
21	I felt that life was meaningless	0	1	2	3



Appendix D
Demographic Questionnaire for Community Participants

Do you live in Perth, Western Australia?

Yes No

Gender

Male Female

Age at last birthday

.....

Employment

Full-time Part-time/Casual Unemployed

Education

High school Technical/Tafe University

If you have attended university, are you a current student?

Yes No



Appendix E
Consent Form for Community Participants

Please read the following statements and click ‘Yes, I consent to participate in this study’ if you agree.

- I have read and understand the information sheet and wish to participate in the research.
- I understand that my participation in this study is entirely voluntary, that my name and contact details are not required, and that I am free to quit the survey at any time before submission without consequence.
- I understand that if I experience any distress I will be provided with the details of support services following this survey.
- I understand that any identifying information will be erased from the final project, that I have the right to view the results of the final project, and that the study may be published.

Do you want to be part of a psychology study?

**You could win one of two \$100 Myer gift
vouchers.**

My name is Lauren McGillivray and I am a PhD student in Clinical Psychology at Edith Cowan University. I am studying people's ability to connect with and talk about their emotions. People who experience difficulties with emotion may also have problems with other aspects of their lives. Emotion is an important area in mental health and this study will help inform future therapeutic applications.

If you are over the age of 18 year, your participation would be greatly appreciated. You will need to complete a short online survey, which will take approximately 20 minutes.

Go to the following website to learn more:

“URL link”

Thank you for your time!

This study has been approved by the Edith Cowan University Human Research Ethics Committee. **Your participation can be anonymous** - your contact details are not required, unless you enter the prize draw. All information will remain strictly confidential.



Appendix G

Information Sheet for Community Participants

Thank you for your interest. My name is Lauren McGillivray and I am a PhD candidate studying Clinical Psychology at Edith Cowan University. My research, titled *Alexithymia in a psychiatric population: stability and relationship with therapeutic outcome*, involves an investigation into the relationship between Alexithymia (a deficit in identifying and describing emotion) and therapeutic intervention. Although this research is primarily focused on the psychiatric population, for one of my studies I require student and community participants as a comparison sample, which is where I need your help.

Please note that this project has received ethical approval from the Faculty of Computing Health and Science Ethics Committee at Edith Cowan University.

This survey includes three sections for you to complete: one demographic questionnaire and two assessments.

If you choose to participate in this project, you may enter into the draw to win one of two \$100 Myer gift vouchers.

Please note that your contact details are not required unless you enter the draw to win a \$100 Myer gift voucher. In this case, you will be required to send an email to an address separate from this survey, thus your details will not be linked back to any assessment results. Any information collected will remain strictly confidential, between my supervisors and me, with any identifying information being erased from the final project.

You may quit the survey at any time before submission without consequence. However, it would be beneficial for the research if you could take the time to answer all of the questions: there are no right or wrong answers.

Participants will be able to access results of the final research project. If you have any questions or concerns please feel free to email me at lmcgilli@our.ecu.edu.au or call my supervisors: Dr. Rodrigo Becerra and Dr. Craig Harms on (08) 6304 2786 and (08) 6304 5715, respectively. Alternatively, if you wish to contact someone who is not connected with this study, please call the ECU ethics research officer, Kim Griftkins on (08) 6304 2170. Thank you for reading this information and I hope you can participate in my study.

Kind regards

Lauren McGillivray



Appendix H

Counselling and Support Organisations for Community Participants

Centrecare

Confidential counselling service

Ph: (08) 9325 6644

Email: www.centrecare.com.au

Crisis Care

Confidential counselling service

Ph: (08) 9223 1111 (24hr)

Email: www.dcp.wa.gov.au/crisisandemergency/pages/crisiscare.aspx

Lifeline

Confidential telephone counselling service

Ph: 13 11 14 (24hr)

Email: www.lifeline.org.au

Edith Cowan University Psychological Services

Confidential counselling service

Joondalup House, 8 Davidson Terrace, Joondalup

Ph: (08) 9301 0011

Email: www.ecu.edu.au/schools/psychology-and-social-science/facilities

Edith Cowan University Student Counselling Service

Confidential counselling service for ECU students on all campuses

Ph: (08) 9370 6706

Email: student.ecu.edu.au/support/counselling