

Does emotion matter? The role of alexithymia in violent recidivism: A systematic literature review

Rotem Leshem¹  | Pascal H.H.M. van Lieshout^{3,4,5} | Sarah Ben-David⁶ | Boaz M. Ben-David^{2,3,4,5}

¹Department of Criminology, Bar-Ilan University, Ramat Gan, Israel

²Communication, Aging and Neuropsychology lab (CANlab), Baruch Ivcher School of Psychology, Interdisciplinary Center (IDC) Herzliya, Herzliya, Israel

³Oral Dynamics Lab, Department of Speech-Language Pathology, University of Toronto, Toronto, Ontario, Canada

⁴Toronto Rehabilitation Institute, University of Toronto, Toronto, Ontario, Canada

⁵Rehabilitation Sciences Institute, University of Toronto, Toronto, Ontario, Canada

⁶Department of Criminology, Ariel University, Ariel, Israel

Correspondence

Boaz M. Ben-David, Ph.D., Associate Professor of Psychology, Communication, Aging and Neuropsychology Lab (CANlab), School of Psychology, Interdisciplinary Center, Herzliya P.O. Box 167, Herzliya 4610101, Israel. Email: boaz.ben.david@idc.ac.il

Abstract

Background: Several variables have been evidenced for their association with violent reoffending. Resultant interventions have been suggested, yet the rate of recidivism remains high. Alexithymia, characterised by deficits in emotion processing and verbal expression, might interact with these other risk factors to affect outcomes.

Aim: Our goal was to examine the role of alexithymia as a possible moderator of risk factors for violent offender recidivism. Our hypothesis was that, albeit with other risk factors, alexithymia increases the risk of violent reoffending.

Method: We conducted a systematic literature review, using terms for alexithymia and violent offending and their intersection.

Results: (a) No study that directly tests the role of alexithymia in conjunction with other potential risk factors for recidivism and actual violent recidivism was uncovered. (b) Primarily alexithymia researchers and primarily researchers into violence have separately found several clinical features in common between aspects of alexithymia and violence, such as impulsivity (total $n = 24$ studies). (c) Other researchers have established a relationship between alexithymia and both dynamic and static risk factors for violent recidivism ($n = 16$ studies).

Conclusion: Alexithymia may be a possible moderator of risk of violent offence recidivism. Supplementing offenders' rehabilitation efforts with assessments of alexithymia may

assist in designing individually tailored interventions to promote desistance among violent offenders.

1 | INTRODUCTION

"Recidivism is one of the most fundamental concepts in criminal justice. It refers to a person's relapse into criminal behavior, often after the person receives sanctions or undergoes intervention for a previous crime." (United States Sentencing Commission, 2016).

Given the social and physical price of imprisonment, it is surprising to find that 40–70% of incarcerated offenders return to prison (Bondeson, 1989). In a large-scale study of about 400,000 people released from state prisons in 30 states in the United States (Durose, Snyder, & Cooper, 2015), for example, 41% were arrested within 1 year of release, and 77% were arrested within 5 years of release. Of all violent offenders released, about 33% were arrested for another violent offence within 5 years of their release (Durose et al., 2015). Similar rates were reported in a recent review of recidivism rates across 18 countries (Fazel & Wolf, 2015). Sweden, for example, has a 2-year reconviction rate of 43%, whereas the rate is even higher—59%—in England and Wales. These reports indicate a need for more research into the roots of the problem.

To date, scholars have uncovered a great variety of risk factors for offending and reoffending, as presented in Table 1, which can be grouped into two main types: dynamic and static factors. Dynamic factors have the potential for change and may be correctable through intervention (Douglas & Skeem, 2005), whereas static risk factors encompass historical variables, which in themselves are immutable, and community factors, which are unlikely to change (Gendreau, Little, & Goggin, 1996; Latessa & Lowenkamp, 2005; see also Table 1). Although risk factors may indicate an increase in the probability of offending and reoffending, researchers are far from able to make accurate predictions. Difficulty in the processing of emotions in communication may be a critical moderator in the recidivism cycle of violent offenders and has not been sufficiently considered.

TABLE 1 Risk factors for violent offence and recidivism

Types of risk factors	Risk factor
Dynamic (criminogenic) factors encompass individual factors and are time variant, namely, they have the potential to change and are correctable through intervention (Douglas & Skeem, 2005).	Individual factors, which incorporate crime producing factors, antisocial traits, and antisocial associates, such as aggression, impulsivity, lack of empathy, deficient cognitive control, procriminal attitudes, values and beliefs, and criminal-related behaviours, namely, substance use and pathological gambling (Mathias, Marsh-Richard, & Dougherty, 2008; Moffitt et al., 2011; Skeem & Peterson, 2011)
Static factors encompass psychosocial and community factors, and are time invariant. They are not capable of change over time either spontaneously or when targeted in intervention or management strategy (Craig, Browne, Stringer, & Beech, 2005).	Psychosocial factors, which incorporate criminal history, age at first admission to a correctional facility, number of prior incarcerations, and a history of victimisation (Ben-David & Goldberg, 2008), family characteristics, such as poor parenting skills, family size, home discord, child maltreatment, and antisocial parents (Moffitt et al., 2011). Community factors, which incorporate social-deviance factors, such as criminal social networks, neighborhoods, and socio-economic ecology and unstable employment (Onifade, Peterson, Bynum, & Davidson, 2011; Weisburd et al., 2016).

1.1 | Emotion processing in adaptive and maladaptive behaviour

Since the late 1990s, there has been a growing interest in the cognitive and clinical psychology literature in the role of emotion processing in adaptive behaviours, including prosocial and productive social interactions (Kotz & Paulmann, 2011). The communication of emotions is a dynamic process and occurs through multiple dimensions including words (Ben-David, Erel, Goy, & Schneider, 2015) and non-verbal communication, such as that which is expressed in the tone of voice (Ben-David, Multani, Shakuf, Rudzicz, & Van Lieshout, 2016; Ben-David, Thayaparajah, & Van Lieshout, 2013; Ben-David, Van Lieshout, & Leszcz, 2011; Leshem, Arzouan, & Armony-Sivan, 2015). The ability to perceive emotions accurately and process them appropriately is crucial for effective social life (Schwartz & Pell, 2012). In daily communications, an individual has to interpret her/his own emotions, convey them effectively, and identify the emotions expressed by communicating partners, when emotions (even extreme) are presented (see a discussion in Ben-David, Chajut, & Algom, 2012). Indeed, impaired communication of emotions is often associated with a reduced quality of life (Joukamaa, Saarijärvi, Muuriaisniemi, & Salokangas, 1996), significant feelings of depression and reduced relationship well-being (Carton, Kessler, & Pape, 1999), as well as impoverished interpersonal relations (Poole, Tobias, & Vinogradov, 2000). Difficulty in being able to identify one's own emotions and describe them is known as alexithymia (Sifneos, 1973), from the Greek "a" for lack, "lexis" for word, and "thymos" for mood or emotion (see also Nemiah, Freyberger, & Sifneos, 1976). Individuals with alexithymia have also been found to show difficulties in identifying facial emotions in others (Swart, Kortekaas, & Aleman, 2009), emotions expressed in text (sentences and scenarios; Lane et al., 1996), and emotions expressed in spoken sentences (Martínez-Sánchez, Martínez, & De la Cerra, 2002). Alexithymia is also characterised by an impoverished fantasy life and limited imagination, an impaired capacity for empathy, a propensity for impulsive behaviour, and a tendency to somatise emotions (to convert emotions to bodily symptoms; Ogrodniczuk, Piper, & Joyce, 2011; Sifneos, 1973). The Toronto Alexithymia Scale (Taylor, Bagby, & Parker, 2003), the most widely used measure in alexithymia research (e.g. Galván, 2014; Lumley, Neely, & Burger, 2007), divides the different facets of alexithymia into three factors: (a) difficulty identifying and distinguishing between feelings and somatic sensations, (b) difficulty describing feelings, and (c) externally oriented thinking.

Two types of alexithymia have been identified (Freyberger, 1977; Sifneos, 1988). Primary alexithymia is a personality trait, in which the capacity for affective processing is lower than average due to neurobiological factors, such as childhood injury or genetic predisposition. Secondary alexithymia is a condition occurring later in life due to psychological trauma or a life-threatening state (Freyberger, 1977; Messina, Beadle, & Paradiso, 2014). Primary and secondary alexithymia differ in aetiology rather than in manifestations. Indeed, many of the studies examined in our review made no distinction between these two types (e.g. Bibby, 2016; Ogrodniczuk et al., 2011; Zimmermann, 2006). In clinical settings, however, this distinction may be useful (Messina et al., 2014), so we will refer to the two types when discussing rehabilitation programmes.

Our aim was to advance understanding of recidivism by violent offenders by integrating two research fields—social cognition and criminology. We propose an emotion-based outlook on recidivism, in which unbalanced emotional processing is considered a possible moderator between already evidenced risk factors for criminal violent behaviours and recidivism. Our research questions were: What is the role of alexithymia—an indicator of emotional communication deficits—in violent recidivism? Can alexithymia improve risk assessment when added to a model incorporating a standard set of static and dynamic risk factors? What may be the implications of any such links for the rehabilitation of violent offenders?

2 | METHOD

Studies were collected from the earliest online database record until July 31, 2017 (during April–July 2017) by consulting the Web of Science, PsychInfo, and Google Scholar electronic databases. We used a set of crime-related search terms and keywords, as well as a set of emotion-related terms, as presented in

TABLE 2 Search algorithm

A set of crime-related and emotion-related search terms and keywords	
Search:	("Offender" OR "Criminal" OR "Crime" OR "Delinquency" OR "Offence" OR "Deviance" OR "Prison" OR "Recidivism" OR "Addiction" OR "Convicted" OR "Substance Dependency") AND ("Alexithymia" OR "Emotion" OR "Emotion Perception" OR "TAS-20" OR "Risk Factor" OR "Empathy" OR "mentalizing") No limits were set. ^a
Inclusion	(1) Only studies that included at least 20 participants. (2) When focusing on offenders, only violent offenders (see definition in text). ("Violence" OR "Armed" OR "Murder" OR "Assault" OR "Harm" OR "Force" OR "Coercion" OR "Aggression")
Exclusion	All exclusions were tested by examining papers and not only by the following algorithm: (1) Offenders diagnosed with psychopathy, antisocial disorders, and mental health disorder ("Psychopathy" OR "Mental Health" OR "Antisocial" OR "Schizophrenia") (2) Sexual offenders, ^b ("Sex" OR "Sexual Offence" OR "Sexual Assault" OR "Sexual Abuse" OR "Rape" OR "Incest" OR "Pedophile" OR "Molestation") (3) Domestic violence ("Domestic Violence" OR "Family Violence" OR "Intimate Partner Violence") ^c (4) Juveniles ("Juvenile" OR "Children" OR "Adolescent" OR "Teen") (5) Papers that were not published in English.

Note: TAS-20: Toronto Alexithymia Scale.

^aTo avoid reaching literature that is not pertinent to our search, we did not include parts of words as search terms (e.g. /viol/). Instead, the references in the retrieved articles were carefully consulted in order to identify additional suitable studies.

^bSexual offenders, as most are diagnosed with antisocial personality disorders (e.g. Borchard, Gnoth, & Schulz, 2003; Chen, Chen, & Hung, 2016; Francia et al., 2010).

^cDomestic violence is violent, abusive, or intimidating behaviour in a relationship. Thus, the motives and the emotional and cognitive mechanisms underlying this pattern of violent behavior may differ from those underlying general violent offences. Therefore, can have different implications when discussing the role of alexithymia in violent recidivism in this population (see World Health Organization, 2012).

Table 2, alongside inclusion and exclusion criteria. We also investigated the reference list of retrieved papers to locate more papers.

All titles and abstracts were examined by the first author and research assistants. Seventy-two full articles were then assessed for inclusion by the first and the last authors. Whenever a disagreement occurred (around 6%), it was discussed until a consensus was reached. Figure 1 presents the preferred reporting items for systematic reviews and meta-analysis (Moher, Liberati, Tetzlaff, Altman, & PRISMA Group, 2009) flow diagram for title capture and paper selection. Thirty-two articles were excluded, 15 on grounds of exclusion criteria. A further 17 were excluded as they were not directly relevant for the topic: Seven considered risk factors for recidivism but were not related to emotion processing, and 10 discussed violent offenders but were not related to alexithymia. Consequently, 40 papers were included in the review.

3 | RESULTS

3.1 | Critical appraisal of the literature

Our main finding from this review is the lack of research directly relating alexithymia to violent recidivism. Indeed, we did not uncover any testing of alexithymia as a predictor for recidivism in any adequately sized sample of violent

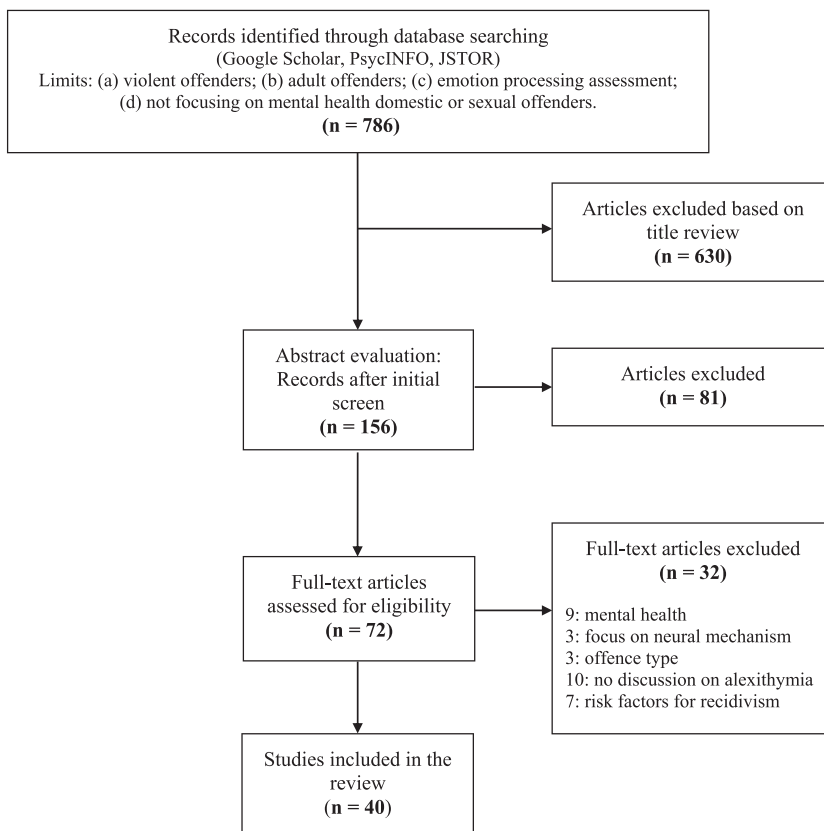


FIGURE 1 PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) flow diagram showing the identification of included papers

offenders, alongside other risk factors. More generally, studies on alexithymia in prisoners are limited, as alexithymia was usually tested as a scientific endeavour and not as a standard measure for offenders. Moreover, it appears that alexithymia was regarded in several studies as a dichotomous measure (below or above a threshold), and in other studies as a continuum (from low, moderate to severe, e.g. see de Haan et al., 2012).

3.2 | Alexithymia and violent recidivism: Common clinical features

Table 3 presents the 24 studies, which have, between them, shown four major clinical features that are in common to alexithymia and violent behaviours. These suggest cognitive-emotional mechanisms underlying the possible link between recidivism and alexithymia.

1. Lack of empathy. Lack of empathy relates directly to alexithymia—as individuals with a high level of alexithymia have difficulties in experiencing compassion and sympathy for others in need (Beadle, Paradiso, Salerno, & McCormick, 2013). In offender samples, violent offences have been associated with deficits in empathy (Seidel et al., 2013).
2. Emotion dysregulation. Based on clinical observations, individuals with alexithymia are prone to violent bursts of emotional behaviours (Wise, Mann, & Hill, 1990), but are unaware of the underlying feelings expressed and thus might experience no empathy for the other person (Kroner & Forth, 1995; Nemiah et al., 1976). These specific deficits have been found to predict aggression in offenders (Velotti et al., 2016). Indeed, poor awareness of

TABLE 3 Common features of alexithymia and violent offences

Feature	Alexithymia researcher	Year	Violence researcher	Year
Lack of empathy	Beadle, Paradiso, Salerno, and McCormick	2013	Hare and Neumann	2008
	Jonason and Krause	2013	Buffone and Poulin	2014
Emotion dysregulation	Zimmerman	2006	Bechara, Damasio, and Damasio	2000
	Ferguson et al.	2009	Anderson and Bushman	2002
	Swart, Kortekaas, and Aleman	2009	Yang and Raine	2010
	Velotti et al.	2017	Roberton, Daffern, and Bucks	2014
Impulsivity	Teten, Miller, Bailey, Dunn, and Kent	2008	Hoaken, Shaughnessy, and Pihl	2003
			Andrews and Bonta	2006
			Mathias, Marsh-Richard, and Dougherty	2008
			Krämer, Kopyciok, Richter, Rodriguez-Fornells, and Münte	2011
			Velotti et al.	2016
Cognitive bias	Lundh and Simonsson-Sarnecki	2002	Huesmann	1988
	Donges, Kersting, and Suslow	2014	Smith and Waterman	2003
			James and Seager	2006
			Bailey and Ostrov	2008

emotions and a diminished ability to think and talk about feelings are mechanisms likely to underpin maladaptive forms of aggression and violent criminal behaviour (Anderson & Bushman, 2002).

3. Impulsivity. Emotion dysregulation partly overlaps with trait impulsivity, especially in the domain of inhibitory control in emotionally aroused states. As noted by Zimmerman in relation to alexithymia (2006, p. 329): "Unawareness of feeling may contribute to engage in uncontrollable behaviour." Individuals with high levels of trait impulsivity might lack the cognitive resources necessary to inhibit aggressive reaction or refrain from acting out the fantasies of self-protective aggression (Velotti et al., 2016). Indeed, impulsivity is one of the key components that is strongly associated with violent crime (Mathias et al., 2008), as well as one of the most studied risk factors for violent reoffending (Andrews & Bonta, 2006). Literature on alexithymia shows that trait impulsivity is correlated with high levels of alexithymia and emotional dysregulation (see Table 3).
4. Cognitive bias. Evidence suggests that individuals with high alexithymia show a cognitive bias to threat and negative stimuli (Lundh & Simonsson-Sarnecki, 2002). Cognitive bias encompasses an attentional bias to perceived threat and an interpretive bias, where ambiguous stimuli are perceived as a threat (White, Suway, Pine, Bar-Haim, & Fox, 2011). Given an exposure to a threat stimulus, a bias may trigger impulsive action or lead to an exaggerated reaction. The behaviour, and the response to that behaviour, may operate in a feedback loop, subsequently increasing the likelihood for recidivism.

3.3 | Alexithymia and risk factors for violent recidivism

In the general adult population, the reported prevalence of alexithymia is around 10% (Parker, Taylor, & Bagby, 2003; Salminen, Saarijärvi, Äärelä, Toikka, & Kauhanen, 1999). Studies identified in our search indicate that aggression and

alexithymia appear to be positively correlated (Konrath, Novin, & Li, 2012; Winter, Spengler, Bermpohl, Singer, & Kanske, 2017). In various criminal populations, the prevalence of alexithymia was found to be significantly higher, for example, 43% of prisoners serving lengthy sentences (Maisondieu, Tarrieu, Razafimamonjy, & Arnault, 2008) and 33% among female offenders (Louth, Hare, & Linden, 1998).

A potential link between alexithymia and delinquency is supported by evidence showing an association between alexithymia and risk factors for delinquency and recidivism. The top panel of Table 4 reports the method and main findings of studies that document the link between alexithymia and dynamic (criminogenic) risk factors. The bottom panel reports studies that document the link between alexithymia and static risk factors.

4 | DISCUSSION

To date, recidivism research has not directly addressed alexithymia as a potential moderator for risk factors. In a dedicated systematic review of the literature, we examined the moderating role of alexithymia on the link between risk factors and recidivism. Surprisingly, we did not find any study that directly tested alexithymia in a violent recidivist sample. The literature reviewed suggests that those who are diagnosed with alexithymia share common clinical features with those who commit violent acts, as presented in Table 3. Alexithymia was also associated with a variety of criminogenic (dynamic) factors and static risk factors, as presented in Table 4. Taken together, the current review of the literature suggests that alexithymia coupled with dynamic and static risk factors may engender a vicious criminal life cycle (see Figure 2). As such, alexithymia should be considered in risk assessment and rehabilitation programs among violent offenders, providing an additional tool for professionals working in this area.

4.1 | Implications and applications of assessing alexithymia in violent offenders

The suggested association between alexithymia and recidivism has potential implications for offender risk assessment and rehabilitation outcomes. Namely, to improve the management of dangerous offenders for both rehabilitation and public protection purposes, recidivism prevention and intervention efforts hinge not only on identifying risk and protective factors but also on identifying potential moderators. However, at present, our literature review suggests that alexithymia has not been considered as a main factor in assessing offender rehabilitation, unlike the existing focus on criminogenic needs. Tailoring rehabilitation programmes for offenders with alexithymia may present a pathway for more effective interventions to prevent recidivism and improve the chances for reintegration to society.

This brings us back to the distinction between primary and secondary alexithymia. Primary alexithymia is thought to be a personality trait, in which affective processing is less developed than normal due to biological predisposition. In contrast, secondary alexithymia is thought to be a consequence of psychological stress or trauma, such as criminal environments and dysfunctional families (Sifneos, 1988). Following this distinction, treatment outcomes are expected to be poorer in primary alexithymia, as a stable-trait phenomenon than in secondary alexithymia, a state-related phenomenon (see Messina et al., 2014). One must note the extensive debate in the literature on the absolute and relative stability of alexithymia as a personality trait (see de Haan et al., 2012). In offenders, primary and secondary alexithymia may be better viewed as extremes of a continuum (Messina et al., 2014). Primary alexithymia can reinforce a tendency towards violent reoffending in the presence of risk factors, whereas secondary alexithymia may serve as a protective factor against the emotional significance of stressful situations (Freyberger, 1977; Sifneos, 1988), which in turn heightens the risk for violent reoffending.

Given the high rates of violent reoffending, together with the fact that dynamic (criminogenic) and static risk factors are common among individuals with alexithymia, we suggest considering the supplementation of assessment tools with measures of unbalanced emotional processing as found in alexithymia (e.g. low awareness of one's own emotions). This is of special interest, as to the best of our knowledge, routine risk and personality assessments in the correctional system do not include a direct assessment of alexithymia (for a discussion on the U.S. system, see

TABLE 4 The association between alexithymia and risk factors for violence recidivism

Alexithymia – as related to – Dynamic (Criminogenic) factors				
Researchers	Year	risk factors	Method	Results
Parker, Wood, Bond, and Shaughnessy	2005	Pathological gambling	<i>Participants:</i> 562 postsecondary students (Age 19.86 years; 113 male and 449 females). <i>Measures:</i> South Oaks Gambling Screen (SOGS) and TAS-20.	Approximately 12% of the sample was classified with alexithymia. These individuals were found to have significantly more gambling problems than individuals without alexithymia. Approximately 9% of the sample were classified as pathological gamblers. These individuals were found to have significantly higher level of alexithymia than non-problem gamblers.
Mitrovic and Brown	2009	Distorted cognitions; Gambling	<i>Participants:</i> 96 poker players (Age, 23.3 years; 75 males and 18 females, with 3 not specifying gender). <i>Measures:</i> The Canadian Problem Gambling Index, Gambling Motivation Scale, Gambler's Beliefs Questionnaire, and TAS-20	Problem gambling was significantly related to distorted cognitions, non-self-determined motivation, and difficulty identifying feelings.
Bibby	2016	Gambling and loss-chasing; Impulsivity	Two experiments are reported. <i>Participants:</i> (E1: N=60, Males,11; Age, 21.6 years. E2: N=49, Males, 22; Age, 21.1 years). <i>Measures:</i> E1, the Cambridge Gambling Task (CGT) and TAS-20. E2, the CGT, TAS-20, and Barratt Impulsiveness Scale.	Experiment 1 shows loss-chasing behavior in participants high in alexithymia but not those low in alexithymia ($\eta^2_p = 0.09$). Experiment 2 shows loss-chasing behavior in participants both low and high in alexithymia but it was greater for participants high in alexithymia ($\eta^2_p = 0.09$). The effect of impulsivity was not statistically significant ($\eta^2_p = 0.01$).
Toneatto, Lecce and Bagby	2009	pathological gambling	<i>Participants:</i> 296 Pathological, problem and non-problem gamblers (Age, 43.4 years, Males, 43.9%) were recruited from the community via advertisements. <i>Measures:</i> an assessment of their gambling behavior and TAS-20.	Alexithymia was higher among male pathological gamblers who identified slot machines, cards, and lotteries as their primary gambling problem. Participants with high versus low alexithymia scored higher on Diagnostic and Statistical Manual symptoms related to poor self-regulation, communication, and problem-solving skills
Lindsay and Ciarrochi	2009	Substance dependence	<i>Participants:</i> 40 drug treatment sample residents (Age, 31 years; 28 male, 12 female) that have been admitted voluntarily to one of three alcohol and/or drug residential treatment programs. Findings compared to a nonsubstance-dependent control	Substance abusers were more likely than normal adults and psychiatric outpatients to say they had trouble identifying and describing their emotions on the TAS-20; Negative mood was also associated with self-reported alexithymia.

(Continues)

TABLE 4 (Continued)

Alexithymia – as related to – Dynamic (Criminogenic) factors				
Researchers	Year	risk factors	Method	Results
			group consisted of 89 (31 males, 58 females) university students. <i>Measures:</i> TAS-20, Emotional Awareness Scale (LEAS), and measures of fluid and crystallized intelligence and the Positive and Negative Affect Scale (PANAS).	
Bonnet, Bréjard and Pedinielli	2013	substance dependence	<i>Participants:</i> 256 students (62.1% women, Age 20.7 years) <i>Measures:</i> a substance-use questionnaire, the Emotionality positive and negative a 31 emotionality scale (EPN-31), and TAS-20	Mediation analyses validated the hypothesis that emotional dimensions of alexithymia act as mediators between emotionality (negative emotionality and emotional arousal) and substance use.
Christopher and McMurran	2009	social problem-solving skills, empathic concern	<i>Participants:</i> 79 convicted male offenders, (Age 32 years). <i>Measures:</i> Social Problem-Solving Inventory (SPSI-R), TAS-20, Interpersonal Reactivity Index (IRI) and Selective Optimization with Compensation	Alexithymia was associated with less effective social problem solving, with externally oriented thinking linked to all of the maladaptive SPSI-R scales and to two IRI scales.
Garfalo, Velotti and Zavattini	2017	Emotional dysregulation, impulsivity	<i>Participants:</i> Male violent offenders ($N = 221$, Age 40.9 years) and community participants ($N = 245$, Age 38.9 years). <i>Measures:</i> TAS-20, Barratt Impulsiveness Scale-11 (BIS), The Difficulties in Emotion Regulation Scale (DERS), Aggression Questionnaire (AQ), and Psychopathological distress scales.	Offenders reported higher levels of difficulties identifying feelings, emotional non acceptance, physical aggression, and hostility. Difficulties in identifying and describing feelings, and motor and attentional impulsivity, explained unique variance in physical aggression, anger, and hostility in both samples, and also in verbal aggression among community participants. Emotion dysregulation and impulsivity mediated the relation between alexithymia and aggression in both samples, with emotion dysregulation demonstrating a relatively stronger effect.
Velotti et al.	2017	Emotional dysregulation	<i>Participants:</i> 111 male offenders (59 prisoners convicted of violent crimes, recruited from a northern Italian prison mean age = 41.34, and 52 offenders living in the community and recruited from Community Corrections Offices across Melbourne, mean age = 38.21). <i>Measures:</i> Emotion	Findings showed that alexithymia predicts the maladaptive expression of anger inwardly directed. Individuals with high levels of inwardly experienced anger are those who report greater difficulties understanding and labelling their own emotional experience (i.e. greater alexithymia).

(Continues)

TABLE 4 (Continued)

Alexithymia – as related to – Dynamic (Criminogenic) factors				
Researchers	Year	risk factors	Method	Results
			Regulation Scale (DERS), TAS-20, and State-Trait Anger Expression Inventory-2 (STAXI-2).	
Strickland, Parry, Allan and Allan	2017	Difficulties identifying, communicating, and thinking about emotions	<i>Participants:</i> 78 male general violent offenders incarcerated in Western Australian prisons (Age 36.48), 31 male intimate partner violence (IPV) perpetrators (Age 35.23) from IPV intervention programs, and 80 men from the general community (Age = 33.42). <i>Measures:</i> TAS-20	General violent offenders and IPV perpetrators both scored significantly higher than men from the general community on total alexithymia score and the subscales that measure difficulty identifying and describing feelings
Winter et al.	2017	Aggression and Impairments in empathy	<i>Participants:</i> 29 men with a history of legally relevant aggressive behavior (i.e. serious assault) and 32 control participants (Age, 32.17 and 31.7, respectively). <i>Measures:</i> a social video task (EmpaToM) that differentiates empathy and Theory of Mind, questionnaires on aggression and alexithymia	Aggressive participants showed reduced empathic responses to emotional videos of others' suffering, which correlated with aggression severity. Theory of Mind performance, in contrast, was intact. A mediation analysis revealed that reduced empathy in aggressive men was mediated by alexithymia.
Möller, Falkenström, Holmqvist Larsson and Holmqvist	2014	Impaired mentalizing	<i>Participants:</i> 42 male offenders in a closed medium-security prison (Age = 20.1). <i>Measures:</i> Adult Attachment Interview (AAI), reflective functioning (RF) scale, Reflective Functioning Crime-Specific Interview, TAS-20 and Psychopathy Checklist (PCL).	positive correlation was found between crime-specific RF and the subscale of the TAS called "difficulty in identifying feelings and distinguishing them from the bodily sensations of emotion." i.e. higher RF was related to more self-reported difficulty in identifying feelings.
Alexithymia – as related to – Static factors				
Researchers	Year	risk factors	Method	Results
Salminen et al.	1999	Sociodemographic variables	A self-administered questionnaire including sociodemographic variables and the TAS-20 was mailed in August 1996 to participants representing the general population of Finland. The analyses of alexithymia were based on 1285 participants (Age, 39; 577 male and 708 female).	Multivariate analysis showed that alexithymia was associated with male gender, advanced age, low educational level, and low socioeconomic status.
Kokkonen et al.	2001	Sociodemographic variable	The study forms part of the Northern Finland 1966 Birth Cohort. In 1997, a 31-year follow-up study was conducted on a part of the initial sample. The 20-item version of the Toronto Alexithymia Scale (TAS-20)	The prevalence of alexithymia (TAS-20 score > 60) was 9.4% in male and 5.2% in female subjects. Alexithymia was associated with poor education and low income level and it was more common among unmarried subjects.

(Continues)

TABLE 4 (Continued)

Alexithymia – as related to – Static factors				
Researchers	Year	risk factors	Method	Results
			was given to 5,993 participants; 84% returned the questionnaire properly answered.	After adjusting for psychological distress, these associations remained statistically significant. The prevalence of alexithymia was higher in men than in women and alexithymia was associated with poor social situation
Kooiman et al.	2004	Family environment, physical, sexual abuse in childhood	In a cross-sectional study psychiatric outpatients from the Psychiatric Outpatient Department at the Leiden University Medical Center (Age, 38.7; 85 female and 63 male) were administered a structured interview on childhood physical and sexual abuse as well as a number of questionnaires about the parenting styles of their parents, and about alexithymia, dissociation and mood pathology (Clinical group	Maternal and paternal parenting styles were moderately correlated with alexithymia. Optimal parenting of one of the parents had a buffering effect on the degree of alexithymia, but not on the severity of other forms of affect dysregulation. positively perceived maternal parenting style was found to have a buffering effect in terms of the degree of alexithymia, if sexual abuse had also taken place.
Chen, Xu, You, Zhang and Ling	2017	Education, childhood trauma	<i>Participants:</i> 1705 adult prisoners (Age, 54 ≤ 18, 1059 men and 646 female) in five main jails. <i>Measures:</i> TAT-20, Childhood Trauma Questionnaire, Beck Depression Inventory, Beck Anxiety Inventory, Beck Hopelessness Scale and several short demographic questions	Over 30% of prisoners were classified with alexithymia and as high as 96.2% of prisoners suffered from at least one traumatic experience in their childhood. Education, childhood trauma, negative emotional symptoms including depression, anxiety and hopelessness of the respondents, were negatively or positively associated with alexithymia among prisoners.

Note: TAS-20: Toronto Alexithymia Scale.

James, 2015). Measuring the presence and extent of alexithymia in violent offenders may serve to assist professionals in choosing an appropriate intervention, as discussed next.

4.2 | Tailored treatment methods

In the recent literature, there is a call to shift from one-size-fits-all rehabilitation to more individualised rehabilitation efforts, tailored to the offender (see Griffiths, Dandurand, & Murdoch, 2007). We suggest that knowledge of the presence of alexithymia may present professionals with an additional angle when considering rehabilitation programmes.

Recent studies show that individuals with alexithymia have the will to participate in treatment (Ogrodniczuk et al., 2011). However, they typically respond poorly to interventions, as they lack the ability to discuss their emotions or to

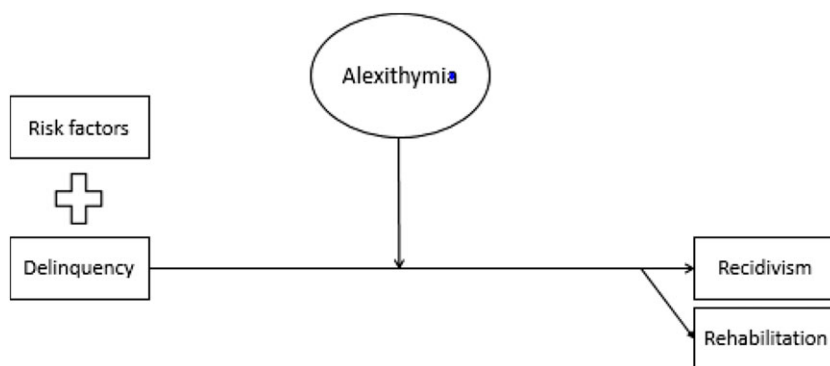


FIGURE 2 A framework delineating the moderating role of alexithymia on the link between risk factors and recidivism that can increase or decrease the risk for recidivism or alternatively the likelihood of successful rehabilitation process [Colour figure can be viewed at wileyonlinelibrary.com]

understand the emotions of others in verbally mediated interventions (Sifneos, 1973; Zimmermann, 2006). We suggest adopting evidence-based treatment methods (such as tasks to train recognition of emotional expressions) that have been found to be effective in treatment of alexithymia with nonoffender populations (for a review, see Samur et al., 2013). Furthermore, offenders with alexithymia who display a cognitive bias to threat generally perceive the world as threatening and hostile. Suggested interventions for these individuals focus on shifting attention away from threatening stimuli, as well as adapting neurofeedback techniques (Samur et al., 2013; see van der Velde et al., 2013).

5 | LIMITATIONS

There is no study to date that shows a direct link between alexithymia and recidivism. The current review only provides arguments in support of possible links between alexithymia and recidivism. We note that some of the papers reviewed are based on a relatively small number of participants (e.g. Zimmerman, 2006). We maintain that these arguments may serve as emerging support for the model presented in Figure 2. However, a dedicated longitudinal study with a large number of inmates, across different cultures, is called for. Finally, we acknowledge the risk for bias in publication of manuscripts that present significant effects. We also acknowledge that our exclusion criteria, as well as our choice of search terms, may affect the results.

6 | CONCLUDING REMARKS

Little attention has been given to the role played by deficits in emotional processing underlying alexithymia and recidivism of violent offenders. Indeed, no study to date directly links alexithymia and the chance for recidivism. There is also no consensus in the literature on whether alexithymia should be used as a dichotomous measure or as a continuum. However, our literature review suggests that alexithymia plays an important role in recidivism of violent offenders. It appears that offenders with alexithymia may be more affected by risk factors and, thus, more prone to reoffend. We suggest supplementing the arsenal of assessment tools with direct observations of alexithymia. This addition can assist in designing individually tailored interventions to increase successful reintegration of the offender to society. We also suggest conducting a dedicated study with a large sample of offenders to identify the link between alexithymia and recidivism.

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ORCID

Rotem Leshem  <https://orcid.org/0000-0002-3685-7028>

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