Elucidating the relationship between alexithymia and aggression: A Rapid Evidence Assessment

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Abstract

This paper aims to consider the under-researched association between alexithymia and aggression perpetration, accounting for its raised prevalence in offender populations. Using a Rapid Evidence Assessment (REA), a total of 37 papers were included. Five subordinate themes were identified; (1) Those with alexithymia are reactive but not primarily instrumentally/proactively aggressive; (2) Difficulties in identifying and distinguishing between feelings and somatic sensations, is particularly predictive of aggression; (3) Continuum-based measures are more sensitive than categorical-based measures of aggression in detecting an association between alexithymia and aggression; (4) Prison environments could exacerbate the manifestation of alexithymia and the association with aggression, and (5) The association between alexithymia and aggression in forensic and community mental health populations is understudied. Evidence was clear in indicating an association between alexithymia and aggression, thereby raising the value of this clinical concept to future aggression research and considerations for assessment and therapeutic engagement with those presenting with aggression who may otherwise be considered simply to 'lack empathy'. It would appear such a conclusion would be too rudimentary and fail to acknowledge the complexity of what could be an alexithymia presentation.

Keywords: Alexithymia; Aggression; Forensic population; Emotional challenges; Reactive aggression; Planned aggression

Introduction

Alexithymia, which essentially means lack of words for emotions, has been described in the literature for over 50 years (Linden et al., 2014) and yet remains largely under-researched. While the term has been used to delineate a wide cluster of symptoms, at its core, alexithymia has been described as encompassing deficits in (1) understanding, describing, and differentiating between emotions, (2) possessing a cognitive style that is externally oriented, and (3) demonstrating a poor ability for fantasising (Franz et al., 2008). It is also not uncommon. Prevalence rates of 12% have been reported in the general population (Neumann et al., 2017; Sequeira & Silva, 2019), between 24% and 38% in clinical samples (de Zwaan et al., 1995; Iancu et al., 2001; Saarijärvi et al., 1993), and up to 59% in prison populations (Maisondieu et al., 2008; Snow et al., 2016). Given such high incidences in offending populations, the relationship between alexithymia and aggression remains of particular interest.

Despite these high prevalence estimates, the aetiology of alexithymia remains uncertain. Researchers argue that alexithymia may develop (1) as a product of an individual's

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upbringing, (2) stem from neurological deficits or damage, and/or (3) result from the experience of a traumatic event (Leshem et al., 2019). Notwithstanding some aetiological uncertainty, it is accepted that alexithymia consists of two central facets, affective and cognitive, which in conjunction lead to impairments in emotional regulation (Leshem et al., 2019). The affective facet refers to symptoms such as difficulties with identifying emotions and completing word associations (i.e., connecting emotions to their physical associations). The cognitive facet comprises an externally oriented thinking style and limited imagery or fantasising capabilities (Leshem et al., 2019). When taken together, these symptoms result in an individual with limited inner experiences and poor emotional regulation (Linden et al., 2014). Unsurprisingly, given this symptom clustering, alexithymia has been found to be associated with several problems relating to coping. This includes eating disorders, substance dependence, suicidal and self-harming behaviours, and psychosomatic disorders (Hemming et al., 2019; Karukivi et al., 2010; Kupferberg, 2002; Lichev & Wolfradt, 2016; Neumann et al., 2017). Of particular importance, and the focus of this review, alexithymia is suggested to have an association with aggression (Garofalo et al., 2018; Li et al, 2020).

Different associations between alexithymia and aggression have been theorised, including, (1) that those with alexithymia may have difficulties in interpreting social and emotional cues. This is thought to increase the likelihood of behavioural misinterpretation and resultant hostile and reactive aggression (Li et al., 2020); and (2) that those with alexithymia, due to a limited ability to reflect and regulate anger via interpersonal discourse (i.e., conversational de-escalation techniques), are susceptible to reacting aggressively to perceived slights (Garofalo et al., 2018). While these hypothetical explanations have received some support from empirical research (Blomgren, 1999; Evren et al., 2015; Garofalo et al., 2018; Hahn et al., 2019; Hornsveld & Kraaimaat, 2012; Janik McErlean & Lim, 2020; Kealy et al., 2018; Konrath et al., 2012; Kupferberg, 2002; Louth et al., 1998; Neumann et al., 2017; Velotti et al., 2016), other studies have found mixed or insignificant results. This is particularly the case when researchers have compared alexithymia in groups, with different types of aggression (e.g. sexual aggression vs. physical violence, or violent vs. non-violent), used differing measures of alexithymia (e.g., Bagby et al., 2020; Vorst & Bermond, 2001), or studied the phenomenon in specific populations (e.g., adolescents, secure populations; Berke et al., 2017; de Schutter et al., 2016; Hemming et al., 2021; Lichev & Wolfradt, 2016; Moriarty et al., 2001; Romero-Martinez, 2021; Sturgeon, 2004; Wollard Sever, 2007).

Despite the breadth of research within this area, a structured review of the empirical evidence does not currently exist, with little known regarding (1) alexithymia's association with different types of aggression, (2) whether modes of measuring aggression influences the relationship between alexithymia and aggression, and (3) alexithymia's relationship with aggression in different populations. Accordingly, this Rapid Evidence Assessment (REA) aims to provide a holistic and structured examination of the available literature concerning the following broad research question: What is empirically known about the relationship between alexithymia and aggression? This aim will be delineated further in the results section.

Methodology

A REA was completed following the standards set by the Centre for Evidence-Based Management (CEBMa; Barends et al., 2017). Akin to a systematic review, a REA is used to identify, in a comprehensive manner, all relevant studies on a specific topic via a systematic approach based on explicit inclusion and exclusion criteria. This approach allows for transparency, verifiability, and reproducibility (Barends et al., 2017). It also allows for some

procedural concessions, which would be found in a systematic review. Here, for example, the period of review was limited to the past thirty years, to allow for rapid initial exploration. The aim, ultimately, is for a REA to inform future studies, including a more detailed empirical enquiry of the topic under review.

Data Search

The inclusion criteria for the REA were as follows: (1) studies must address the relationship between alexithymia and aggression, and (2) represent empirical work (e.g., not opinion pieces). Studies were excluded if they were published 30 or more years ago and not reported in English. The following search string was used: Alexithymi* OR agnosia[2] AND aggress* OR victim* OR antisocial* OR viol* OR perpetrat* OR offen*. These were applied to the following databases: PubMed, PsycInfo, Medline, PsycNet, and Google Scholar.

Quality appraisal

Methodological quality was assessed using three separate tools, given a noted diversity in study designs. Randomised Control Trials (RCTs; quantitative) were appraised using the CASP RCT Checklist, an 11-item guide appraising the design and report of results. Example items are 'Did the study address a clearly focused research question?' and 'Was the precision of the estimate of the intervention or treatment effect reported?' (Critical Appraisal Skills Programme, 2019a); cross-sectional studies (quantitative) were appraised using the JBI Critical Appraisal Checklist, an 8-item tool for the appraisal of the methodology and analysis of cross-sectional studies. Example items are 'Were objective, standard criteria used for measurement of the condition?' and 'Was appropriate statistical analysis used?' (Joanna Briggs Institute, 2017); and qualitative studies were appraised using the CASP Qualitative Checklist, a 10-item guide for evaluating specific issues with qualitative research. For example, 'Has the relationship between researcher and participants been adequately considered' (Critical Appraisal Skills Programme, 2019b). All tools guided the assessors systematically through the appraisal, enabling critical reflection of each study's results, and assigning weight to each finding.

Thematic analysis

Due to heterogeneity, thematic analysis was conducted. This followed Braun and Clarke's (2006) guidelines. Steps involved (1) becoming familiar with the studies; (2) allocating initial codes; (3) searching for overarching themes; (4) reviewing themes; (5) defining and naming themes; and (6) summarising the analysis' findings in a written report.

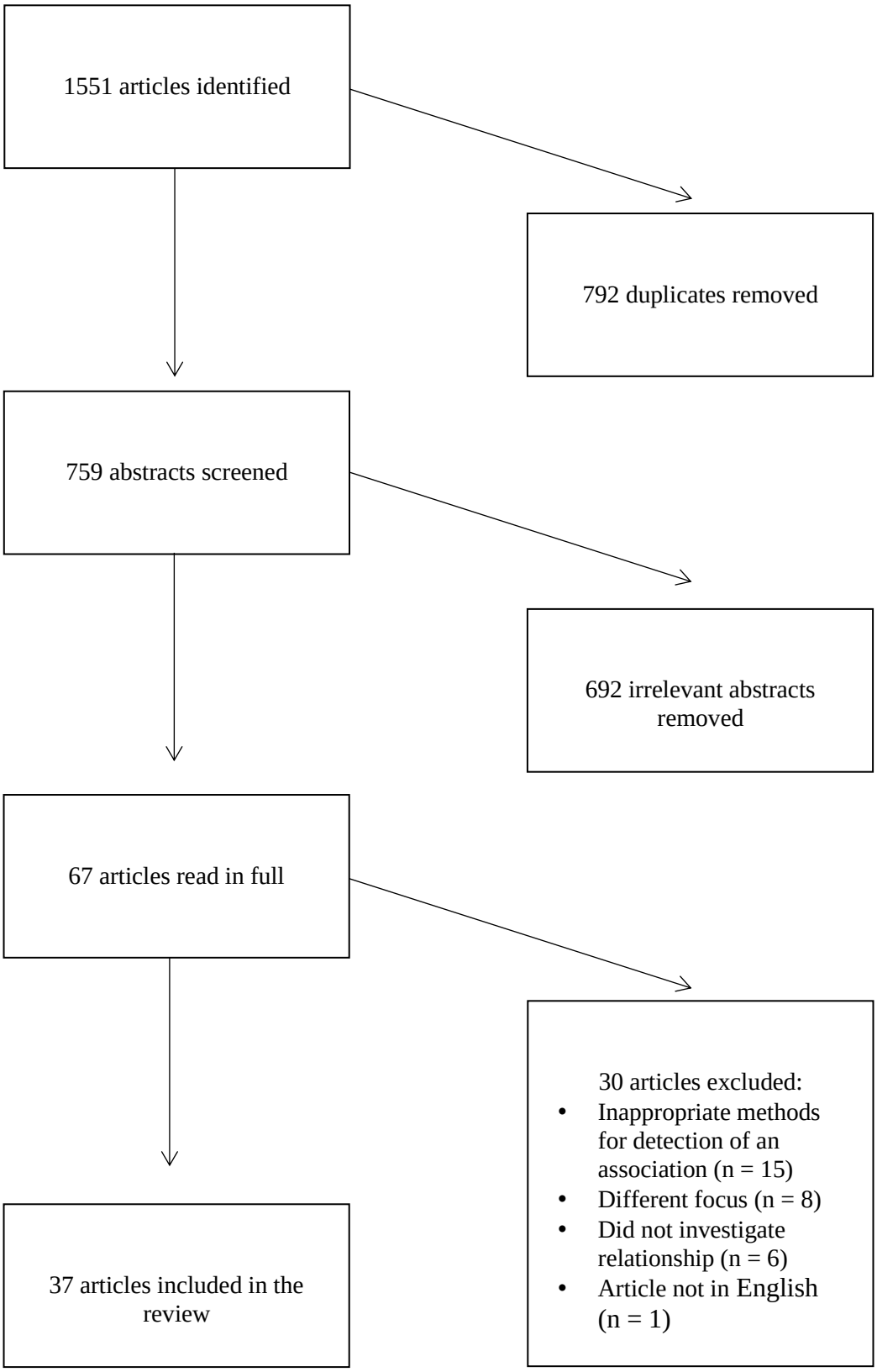
Results

Search Results

The initial search yielded 1,551 articles. After the removal of duplicates, 759 article abstracts were screened. This resulted in 67 articles, which were read in full. Following full-text review, 37 articles remained for inclusion (see Figure 1). Two reviewers (AB and NK) considered the resulting themes, with JI reviewing final content.

[2]This was included simply for thoroughness, since emotional agnosia is arguably a related concept. It was included as a check to ensure if alexithymia was captured in a paper but had failed to be indexed as a keyword.

Figure 1.
Flow Chart of the Rapid Evidence Assessment Process



Characteristics of the included studies

The 37 studies included 13,258 participants with 4,753 women and 8,505 men. Across the 34 articles that provided age parameters, participants had a mean age of 32.4 years. The majority of studies were conducted in the US (14 articles; 38%), using university samples (12 articles; 32%). Studies predominantly focused on general physical and/or verbal aggression (13 articles; 35%). Aggression was primarily measured using the Aggression Questionnaire (AQ; Buss & Perry, 1992; 13 articles; 35%), a 29-item questionnaire loading onto four factors: physical aggression, verbal aggression, hostility, and anger. Alexithymia was measured using the Toronto Alexithymia Scale 20 (TAS-20; Bagby et al., 1994; 35 articles; 94.6%). This appears to represent the dominant measure of alexithymia. It comprises 20 items loaded across three factors: (1) difficulty in identifying and distinguishing between feelings and somatic sensations (DIF subscale); (2) difficulty in describing feelings (DDF subscale), and (3) An externally oriented thinking style (EOT subscale).

Themes

Five superordinate themes were identified via Thematic Analysis: (1) Those with alexithymia are reactive but not instrumentally/proactively aggressive[3]; (2) Difficulties in identifying and distinguishing between feelings and somatic sensations, is particularly predictive of aggression; (3) Continuum-based measures are more sensitive than categorical-based measures of aggression to detecting an association between alexithymia and aggression (4) Prison environments could exacerbate the manifestation of alexithymia and its association with aggression, and (5) The association between alexithymia and aggression in forensic and community mental health populations are understudied. Each theme is outlined next and refer to Table 1 for the study's data extraction table.

1.) *Those with alexithymia are reactive but not primarily instrumentally/proactively aggressive* (43.2%, 16 papers). This theme demonstrated a tendency for alexithymic individuals to primarily display emotional (reactive) aggression as opposed to more planned components (Edwards & Wupperman, 2017; Farah et al., 2018; Fossati et al., 2009; Li et al., 2020). This theme comprised three subordinate themes: (a) alexithymia increases the risk of overall and physical aggression specifically, (b) alexithymia increases the risk of Intimate Partner Violence (IPV) perpetration, and (c) there is an inconsistent or undiscoverable association between alexithymia and the perpetration of sexual aggression. Regarding the second subtheme, when the alexithymia-aggression relationship was extended to consider Intimate Partner Violence (IPV), findings generally found a positive association between alexithymia and IPV (Berke et al., 2017; Romero-Martinez et al., 2021; Strickland et al., 2017). Indeed, Strickland et al. (2017) suggested that compared to general violence offenders, IPV perpetrators all showed similar levels of alexithymia. Interestingly, one study by Berke et al. (2017) found a positive association between psychological IPV and alexithymia, but not with physical IPV. The authors theorised that this inconsistency may be attributable to a low occurrence of physical IPV in their sample (Berke et al., 2017). Regarding the third

[3]The term instrumental can be interchangeably used to describe proactive and/or planned aggression. At the core of this term is an acceptance that the aggression has more planning, with less emphasis placed on emotional dysregulation.

Table 1.
Summary of Characteristics, Main Findings, and Quality of Studies [risk of bias] included in the Rapid Evidence Assessment

Author(s), (Year)	Population	Sample size	Type of aggression	Main findings	Risk of bias
Berke et al., (2017)	Veterans at out-patient forensic mental health care	135 male participants	Intimate partner violence	Alexithymia was not associated with greater use of physical assault. It did, however, predict psychological aggression.	Low
Blomgren (1999)	Female offenders	106 female participants	General aggression	No difference in alexithymia between offenders with violent vs. non-violent index offence. Moderate correlation between total of violent episodes in offenders' records and alexithymia.	Low
de Schutter et al., (2017)	Community mental health patients	42 female and 42 male participants	General aggression	Increased levels on an alternative measure of alexithymia were not associated with higher scores on the AQ.	High
Dietzel (2009)	University students	102 male participants	Sexual aggression	A regression analysis with alexithymia, dysfunctional childhood environment, and face emotions recognition task predicted sexual aggression questionnaire scores, but the individual prediction of alexithymia was not significant. The group reporting a history of sexual aggression perpetration had higher alexithymia levels than the group reporting no history of sexual aggression.	Moderate
Edwards & Wupperman (2017)	University students	73 female, 23 male participants	Impulsive aggression	Alexithymia had a strong, positive relationship with impulsive aggression. This effect was completely mediated by emotion regulation difficulties.	Low
Espinosa et al., (2017)	General community	170 female participants	Potential child abuse	Higher alexithymia was associated with higher child abuse potential scores. In the regression analysis, alexithymia was one of the strongest correlates of child abuse potential scores.	Low
Evren et al., (2017)	Men with substance dependence	200 male participants	General aggression	Positive relationship between alexithymia and aggression AQ scores. Among alexithymia factors, DIF was the main factor related with aggression in male substance dependent inpatients.	Low
Farah et al., (2018)	General population	156 male participants	Reactive and instrumental aggression	Alexithymia was positively associated with reactive, but not instrumental aggression.	Low

Author(s), (Year)	Population	Sample size	Type of aggression	Main findings	Risk of bias
Fossati et al., 2009	University students	424 female and 213 male participants	Impulsive aggression	The DIF and EOT scale were significantly associated with scores on the impulsive aggression measure when controlling for age and gender.	Moderate
Garofalo et al., (2018)	Violent offenders and general population	466 male participants	General aggression	The violent offender and community sample did not differ on alexithymia. When looking at the aggression scores on the AQ, there is a moderate relationship between alexithymia and aggression for both populations.	Low
Gillespie et al., (2018)	Offenders and general population	721 male participants	Sexual, general, and homicidal violence	Violent offenders, but not sexual offenders or homicide offenders, differed from the community sample on alexithymia, in that violent offenders reported more difficulties in identifying feelings.	Moderate
Hahn et al., (2019)	University students	357 female and 146 male participants	General aggression	Alexithymia had a moderate association with the physical aggression measure.	Low
Hawkins et al., (2021)	University students	717 male participants	Sexual aggression	In the US sample, alexithymia was associated with sexual aggression perpetration only when alcohol use severity was low to average. For the Philippines sample, the interaction effect of alcohol severity and alexithymia was significant, but at no severity of alcohol severity was there a significant association of alexithymia and sexual aggression.	Low
Hemming et al., (2020)	Offenders	15 participants, 13 self-identified as male	Self and other violence	The prison environment may stifle the discussion of emotions, especially for prisoners with an inherent difficulty with recognising and articulating emotions. As a consequence of not discussing emotions, participants experienced a build-up of emotions. Following this build-up of emotions, offenders experienced either an emotional numbness or an emotional overload. Both could in turn lead to hurting self or others.	Low
Hemming et al., (2021)	Offenders	80 male participants	Self and other violence	Neither alexithymia, nor its subscales, were found to be significant multivariate predictors of violence behaviour or ideation. There were no differences in alexithymia or subcomponents between those that experienced suicidal/violent ideation only and those who experienced both.	Moderate

Author(s), (Year)	Population	Sample size	Type of aggression	Main findings	Risk of bias
Hopper (1998)	University students	231 male participants	General and sexual aggression directed at adults and children	There was a 'marginal' ($p < .080$) main effect of alexithymia on the perpetration status according to the six perpetration categories.	High
Hornsveld & Kraaimaat (2012)	Adolescent outpatients in forensic mental health care and high-school students	299 male participants	General aggression	In forensic outpatients, but not high school students, moderate and meaningful associations of an alternative measure of alexithymia with aggression were found.	Low
Janik McEarlen et al., (2020)	University students	117 female and 60 male participants	General aggression	There was a positive relationship between alexithymia and aggression. Specifically, alexithymia mediated the relationship between paternal authoritarian parenting style and aggression, while controlling for maternal authoritarian parenting.	Low
Kealy et al., (2018)	General population	1,000 male participants	General aggression	There was a significant relationship between alexithymia and angry and aggressive behaviour.	Low
Konrath et al., (2012)	University students	75 female and 51 male participants	General aggression	There was a positive relationship between alexithymia and trait aggressiveness. High-level alexithymic participants reported being more aggressive after interacting with out-group members.	Low
Kupferberg (2002)	University students and jury pool at court	202 female and 146 male participants	General aggression	Both DIF and DDF were associated with physical aggression, whereas only DIF was correlated with verbal aggression.	Low
Li et al., (2020)	University students	275 female and 210 male participants	Reactive and instrumental aggression	The DIF subscale was the only alexithymia factor with a positive association to reactive aggression, and was also positively associated with instrumental aggression. The EOT was the strongest correlate of proactive aggression, and had a negative association with reactive aggression. The DDF was unrelated to reactive aggression, and had a negative association with instrumental aggression.	Low
Lichev & Wolfradt (2016)	Child molesters in a forensic mental health institution and general population	99 male participants	Child sexual abuse	The child sexual offenders had higher scores on the DIF and the DDF alexithymia subscales, but not on the total scale. In contrast, the control participants scored higher on the EOT subscale.	Low

Author(s), (Year)	Population	Sample size	Type of aggression	Main findings	Risk of bias
				In the logistic regression, none of the alexithymia variables predicted group membership to the offender or the control sample.	
Louth et al., (1998)	Female offenders	37 female participants	General aggression	The mean TAS was higher for the violent sample. Total alexithymia and the DIF and EOT subscales had a moderate correlation to the amount of violence recorded in the offenders' files.	Low
Martinez-Ferrer (2018)	Adolescents in high school	1,195 female and 1,204 male participants	Child to parent violence	Adolescents with high scores on a measure of Child to Parent Violence are more likely to show higher levels of alexithymia.	Low
Moriarty et al., (2001)	Adolescents in a Forensic Youth Centre and in high schools	64 male participants	Sexual aggression	There were no differences in the total alexithymia score or the subscale scores between the adolescent sex offenders and the control group.	Moderate
Neumann et al., (2017)	Traumatic Brain Injury patients and general population	31 female and 64 male participants	General aggression	For the TBI patients, there was a strong association between alexithymia and aggression. For the healthy controls, this association was moderate.	Low
Romer-Martinez et al., (2021)	Perpetrators of intimate partner violence in a community based forensic treatment program, and general population	88 male participants	Intimate partner violence	The perpetrators of intimate partner violence had higher alexithymia than the control participants.	Low
Sfeir et al., (2020)	Lebanese adolescents	302 female and 266 male participants	General aggression	There were higher rates of physical and verbal aggression in the alexithymic adolescents than in adolescents who had moderate or low levels of alexithymia.	Low
Strickland et al., (2017)	Violent incarcerated offenders, IPV offenders in an intervention	190 male participants	General aggression and intimate partner violence	Perpetrators of intimate partner violence and general violent offenders had similar levels of alexithymia, which were higher than those of men from the general community.	Low

Author(s), (Year)	Population	Sample size	Type of aggression	Main findings	Risk of bias
	program, and general population				
Sturgeon (2004)	Offenders	179 male participants	Instrumental, reactive, and sexual aggression, with several subtypes	The various types of violent offenders did not differ in alexithymia levels compared to other aggression categories, nor compared to non-violent offenders.	High
Teten et al., (2008)	Veterans attending a trauma treatment centre	3 female and 35 male participants	General aggression	Alexithymia was uniquely associated with impulsive aggression, but not with the physical or verbal aggression subscales of the AQ.	Low
Velotti et al., (2016)	Community mental health patients and general population	418 female and 456 male participants	General aggression	In the community sample, alexithymia had both a direct and an indirect effect (via emotion regulation and impulsivity) on aggression. In the clinical sample, there was an indirect effect of alexithymia on aggression through emotion dysregulation.	Low
Wachs & Wright (2018)	Adolescents in high schools	897 female and 652 male participants	Bullying aggression	Adolescents who bullied others had higher alexithymia scores than adolescents who did not bully others. Bullies who used both cyber and traditional methods had the highest alexithymic levels.	Moderate
Williams et al., (2018)	Traumatic Brain Injury patients and general community	27 female and 92 male participants	General aggression	Alexithymia had an association to aggression in both TBI patients and control participants. This relation was stronger in TBI patients. Of the alexithymia subscales, only the DDF scale explained a significant amount of variance in the alexithymia measure.	Moderate
Winter (2017)	General population	63 male participants	General aggression	Participants who reported a history of aggression had higher levels of total alexithymia, and of the DIF and EOT subscales, than non-violent participants. Alexithymia was correlated with aggression as measured with the AQ across groups.	Low
Wollard Sever (2007)	Incarcerated child sexual offenders and non-violent offenders in the general population	42 male participants	Child sexual abuse	There were no differences between the child sexual offenders and the non-violent offenders on the total or sub factor levels of alexithymia.	Moderate

subordinate theme, divergent associations were found between alexithymia and sexual aggression. While some studies found a positive association of alexithymia on sexual aggression perpetration (Dietzel, 2009), others either found no relationship (Moriarty et al., 2001), or were underpowered and therefore unable to detect a possible effect (Hopper, 1998; Sturgeon, 2004).

2.) *Difficulties in identifying and distinguishing between feelings and somatic sensations, is particularly predictive of aggression* (29.7%, 11 papers). Of the 37 articles included, 11 examined the subcomponents of alexithymia using the three scales of the TAS-20, comparing the predictive power each in relation to aggression. Most studies found the DIF to be more strongly associated with aggression than either the DDF or EOT (Berke et al., 2017; Evren et al., 2015; Fossati et al., 2009; Garofalo et al., 2018; Gillespie et al., 2018; Kupferberg, 2002; Louth et al., 1998; Moriarty et al., 2001; Strickland et al., 2017). While both Williams et al. (2018) and Louth et al. (1998) found some evidence for the predictive power of the DDF and EOT over the DIF respectively, both these studies suffered from significant methodological limitations. These may have impacted on the reliability of their findings. The findings of a strongly associated DIF with aggression are in line with a more recent study conducted by Li and colleagues (2020), who found that high scores on the DIF strongly predicted reactive aggression and to a lesser extent instrumental/proactive aggression, whilst elevated ratings on the EOT subscale was more strongly predictive of the latter. This is perhaps unsurprising when noted that the EOT is focused on thinking styles and thus captures a more controlled aspect of presentation. This would align with a planned approach to behaviour, such as aggression (Li et al. 2020).

3.) *Continuum-based measures are more sensitive than categorical-based measures of aggression in detecting an association between alexithymia and aggression* (91.2%, 34 papers). The reviewed literature identified two primary methods of measuring aggression in alexithymic individuals: (a) continuum-based instruments, such as the Aggression Questionnaire (AQ; Buss & Perry, 1992), which measure aggression on a continuous scale, or (b) categorical-based measurements, which allocate participants to violent or non-violent groups, based on offences. Thirteen of the included studies used the Aggression Questionnaire (AQ). Eleven of these reported a moderate to strong positive association between alexithymia and aggression (Evren et al., 2015; Fossati et al., 2009; Hornsveld & Kraaimaat, 2012; Janik McErlean & Lim, 2020; Konrath et al., 2012; Kupferberg, 2002; Neumann et al., 2017; Sfeir et al., 2020; Velotti et al., 2016; Williams et al., 2018; Winter et al., 2017), with effects detected in offending samples (Hornsveld & Kraaimaat, 2012). Eleven studies measured aggression using an alternative to the AQ. While heterogeneity of measurement precludes a direct comparison, most studies found an association between alexithymia and aggression (Dietzel, 2009; Edwards & Wupperman, 2017; Espinosa et al., 2017; Farah et al., 2018; Hahn et al., 2019; Hawkins et al., 2021; Kealy et al., 2018; Li et al., 2020; Martínez-Ferrer et al., 2018; Teten et al., 2008). Inconsistent findings were largely attributable to low sample power (Hopper, 1998).

Rather than using continuous measures, six studies examined the alexithymia-aggression association via a categorical based classification system (i.e., allocating participants to either violent or non-violent groups based on index offence, namely their current most serious offence). Two studies found differences in alexithymia levels between violent and non-violent populations (Romero-Martinez et al., 2021; Strickland et al., 2017), two studies showed mixed results (Gillespie et al., 2018; Lichev & Wolfradt, 2016), while two found no difference in alexithymic levels between violent and non-violent populations (Moriarty et al., 2001;

Wollard Sever, 2007). Other studies have compared violent and non-violent populations using a broader categorical classificatory system (i.e., offence *history* rather than index offence). One study did establish large differences in alexithymia between the violent and non-violent groups (Louth et al., 1998), but another suffered from serious methodological limitations and presented mixed results (Sturgeon, 2004).

Two studies shed further light on the effect of the aggression measure by utilising multiple methods of measuring aggression. Garofalo et al. (2018) analysed their data first by comparing violent prisoners to an allegedly non-violent community sample, and found no differences between these groups in alexithymia. They also measured aggression in both samples, and discovered positive associations between the DIF subscale and the physical aggression subscale of the AQ, in contrast to the previous analysis. Similarly, Blomgren (1990) analysed their alexithymia data in an offender sample using the offenders' index offence, and then using their criminal history. In the former analysis, they did not detect any differences in alexithymia between groups. However, when correlating the total number of violent episodes in the offenders' files with their alexithymia scores, a moderate but significant positive correlation appeared (Blomgren, 1999).

4.) *Prison environments could exacerbate the manifestation of alexithymia and the association with aggression* (24.3%, 9 papers). Quantitative studies that have investigated the alexithymia-aggression relationship in prison populations have used heterogenous measures of aggression. These have precluded direct comparisons or accurate estimations of prevalence rates (Blomgren, 1999; Garofalo et al., 2018; Gillespie et al., 2018; Hemming et al., 2020; Hemming et al., 2021; Louth et al., 1998; Strickland et al., 2017; Sturgeon, 2004; Wollard Sever, 2007). Considering and addressing these limitations, Hemming et al. (2020), using a qualitative paradigm, investigated the processes by which alexithymia could lead to aggression in prison populations. Primarily via interviews with prisoners presenting with alexithymia, Hemming et al. (2020) found that difficulties communicating emotions was exacerbated in prison populations. This was thought a result of a culture that promoted emotional avoidance, installed fear around 'emotionally opening up', alongside problems with locating an appropriate time, place and person to express emotions to. This, in turn, led to 'emotional build-up' and the subsequent use of interpersonal and intrapersonal aggression as a regulatory mechanism (i.e., method of releasing emotion and tension) and as a means of regaining individual control and autonomy (Hemming et al., 2020).

5.) *The association between alexithymia and aggression in forensic and community mental health populations is understudied* (24.3%, 9 papers). Out the 37 studies included, only four articles considered the prevalence of alexithymia in community and mental health services (de Schutter et al., 2016; Evren et al., 2015; Teten et al., 2008; Velotti et al., 2016) and five specifically examined forensic mental health populations (Berke et al., 2017; Hornsveld & Kraaimaat, 2012; Lichev & Wolfradt, 2016; Romero-Martínez et al., 2021; Strickland et al., 2017). Furthermore, studies that did examine these populations, suffered from significant methodological limitations including the use of heterogenous within-study measures, arbitrary categorical classifications, and small sample sizes (Lichev & Wolfradt, 2016), thereby limiting the generalisability of the published findings.

Discussion

The current REA aimed to explore what is known empirically about the relationship between alexithymia and aggression. Findings showed that alexithymia and reactive aggression were

likely strongly associated (Edwards & Wupperman, 2017; Farah et al., 2018; Fossati et al., 2009; Li et al., 2020), with the DIF subscale of the TAS-20 considered a significant and notable predictor of reactive/impulsive aggression (Fossati et al., 2009; Li et al., 2020). These results are consistent with numerous relational alexithymia-aggression based understandings. For example, as a consequence of difficulties in identifying and understanding feelings, those with alexithymia can present with behavioural dysregulation, which could lead to reactive aggression (Kupferberg, 2002). Alongside these deregulatory processes, the fact that alexithymia can cause deficits in recognising and interpreting interpersonal emotional cues, increases the likelihood of behavioural misinterpretations, leading to hostile reactions emerging (Li et al., 2020). In addition, whilst it has been suggested that communicating feelings could act as a protective buffer against aggressive acts, this protective factor is absent in those presenting with alexithymia. This makes reactive aggression more accessible to them (Garofalo et al., 2018).

Whilst acknowledging an association between alexithymia and reactive aggression, it is important to also attend to instrumental/proactive aggression as this was associated most with raised levels on the EOT subscale of the TAS-20. Thus, there is an association with planned aggression and alexithymia, but it appears more specific. The EOT subscale measures to what extent an individual has a preference for attending to external stimuli, and is associated with reduced empathy, cold-heartedness, and blame externalisation (Li et al., 2020). Given this, it is possible that those presenting with higher EOT likely regard planned aggression as an efficient means of achieving their goals. This is speculative but worthy of consideration, certainly as a direction for future research.

Regarding aggression types, such as sexual aggression and IPV, alexithymia showed varied predictive power. For general sexual aggression, findings appeared mixed (Dietzel, 2009; Hawkins et al., 2021; Hopper, 1998; Moriarty et al., 2001; Sturgeon, 2004), warranting further investigation; while for IPV, a moderate positive relationship was established (Berke et al., 2017; Romero-Martinez et al., 2021; Strickland et al., 2017). Nevertheless, findings must be interpreted with caution given significant methodological limitations. For example, several sexual aggression studies classified perpetrators based on offence history alone, with both recidivist sexual offenders (i.e., one or more sexual offences), and 'one time' sexual aggressors (i.e., one sexual offence), comprising the same experimental group. Indeed, non-specific group-based classifications may not be appropriate given the finding that single offence sexual offenders are more similar than dissimilar to non-sexual offenders (James & Proulx, 2020). In addition, while the majority of IPV related studies were underpowered and therefore unable to detect significant group differences, it does highlight the value in considering the role of alexithymia further with this aggression type. This would appear particularly valuable when considering the reported raised levels of emotional dysregulation shown by perpetrators. Summarily, what the literature is able to inform us is that when considering aggression motivation (e.g., reactive, instrumental/proactive) the research is clearer on how alexithymia associates. It is the relationship with aggression forms (e.g., sexual, IPV), which remains less clearly captured.

Connected to this, most studies that used a continuum-based instrument found a moderate relationship between alexithymia and aggression (e.g. Dietzel, 2009; Edwards & Wupperman, 2017; Espinosa et al., 2017; Evren et al., 2015; Farah et al., 2018; Fossati et al., 2009; Hahn et al., 2019; Hawkins et al., 2021; Hornsveld & Kraaimaat, 2012; Janik McErlean & Lim, 2020; Kealy et al., 2018; Konrath et al., 2012; Kupferberg, 2002; Li et al., 2020; Martínez-Ferrer et al., 2018; Neumann et al., 2017; Sfeir et al., 2020; Teten et al., 2008; Velotti

et al., 2016; Williams et al., 2018; Winter et al., 2017), while studies that used a categorical based measure reported mixed results (Gillespie et al., 2018; Lichev & Wolfradt, 2016; Moriarty et al., 2001; Romero-Martínez et al., 2021; Strickland et al., 2017; Wollard Sever, 2007). This shows value not only in considering aggression motivation *and* nature when this association is explored, but also the approach taken to measurement. It would appear, thus far, that studies using a classification-based system fail to capture the idiosyncrasies of alexithymic aggressive individuals, and therefore report no or weak associations. Indeed, studies that employed multiple measurement methods confirmed that continuum-based instruments were more sensitive to detecting an association between alexithymia and aggression (Blomgren, 1999; Garofalo et al., 2018).

Due to heterogeneity in the measurement of both the independent variable (e.g., alexithymia), and outcome measure (e.g., aggression), and a lack of direct comparative studies, an estimation and comparison as to the strength of association between alexithymia and aggression in different population settings was not viable. Despite such preclusions, some population specific findings did emerge. Foremost, this review found that alexithymia appears relatively common in prison populations, potentially aggravated in its expression and association with aggression by environmental constraints. Specifically, alexithymia could be more likely to lead to aggressive acts in institutional settings that suppress emotional communications (Hemming et al., 2020). This is, of course, speculative. It is equally acknowledged that studies conducted within prison settings and forensic mental health settings have received little research attention.

Limitations and future directions

The REA suffers from some acknowledged limitations. These comprise a restricted range of publications to consider, limitations on the range of populations available and a noted prevalence of cross-sectional research. The latter limits any consideration of longitudinal and cause and effect relationships. Connected to these limitations are directions for future research. First, there is a need for a wider breadth of study design to be applied in addressing the association between aggression and alexithymia. This should consider longitudinal designs, experimental, and more qualitative enquiry. The latter should consider outlining in more individualised detail why there may be an association between alexithymia and aggression. A broader application of aggression and alexithymia assessment would also be welcome. This could include measuring aggression using behavioural tasks and the measurement of alexithymia using observational approaches (such as the Observer Alexithymia Scale: OAS; Haviland et al., 2000). A consideration of sex differences and the potential comorbidity with mental disorder, including neurodevelopmental disorders, could also be considered. Finally, most studies did not differentiate between types of aggression or subdimensions of alexithymia. As the results of the review demonstrate, it is highly informative to differentiate between different types of aggression, including motivation and nature, and between the subdimensions of alexithymia. Future research could focus on these more detailed areas of research enquiry and perhaps extend them to consider a potential application to therapy.

Conclusion

The current review has been able to arrive at some potentially important conclusions on the relationship between alexithymia and aggression. It was established that there is a positive, in some cases moderate, association between alexithymia and aggression, especially with reactive aggression. Among the subcomponents of alexithymia, the Difficulty in Identifying Feelings

(DIF) subscale presents with the strongest relationship to aggression. Regarding the measurement of aggression, the current review established that it is imperative to measure aggression on a continuum rather than to rely on categorisation of participants into violent and non-violent groups. Finally, this review also concludes that the current literature does not lend itself to a comparison of the strength of the relationship of alexithymia and aggression between populations. However, it is hoped these initial findings will be able to inform the field and guide future research on this important topic. This includes greater consideration being given to why an individual is appearing not to engage emotionally or react accordingly, beyond offering a simple explanation of 'difficulties with empathy'. This would appear too simplistic an interpretation that fails to capture the importance of alexithymia. Such a construct could offer some additional value to how we assess and provide intervention to those whose aggression is associated with difficulties in emotional expression and regulation.

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