The Multidimensional Peer Victimization Scale: A Systematic Review

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Abstract

Developing bullying interventions and testing their success depends on the valid and reliable measurement of peer victimization. The objective of this study was to examine the psychometric properties of the Multidimensional Peer Victimization Scale (MPVS, Mynard & Joseph, 2000). This systematic review examined 34 published studies demonstrating that the MPVS is a reliable, valid, and psychometrically sound measure for capturing multiple facets of peer victimization across a variety of samples. Results also highlighted that there are relatively stable sex differences in the rates and pattern of peer victimization, with males experiencing more direct forms of victimization and females experiencing more indirect forms of victimization. Recommendations for further research are discussed, alongside new ways to further advance the assessment of peer victimization.

Keywords: Peer victimization; bullying; Multidimensional Peer Victimization Scale; systematic review; psychometric properties.

1. Introduction

Peer victimization involves the repeated and systematic abuse of power by one or more peers over a period of time in purposeful attempts to injure or inflict discomfort (Olweus, 1993). Peer victimization is a relatively frequent experience among young people: estimates vary depending on age and gender, but research has suggested that between 5% and 30% of children and adolescents are victims (Eslea et al., 2004; Stassen Berger, 2007). Other estimates have suggested that rates of victimization may reach as high as 32% in high-income countries and 60% in low- to middle-income countries (Currie et al., 2012; Fleming & Jacobsen, 2010).

Peer victimization experiences are associated with a range of physical, emotional, academic and behavioural problems. Several systematic reviews and meta-analyses have demonstrated that victims generally have a lower quality of life and experience poor self-esteem (Hawker & Boulton, 2000); experience loneliness and isolation (Storch & Masia-Warner, 2004); increased psychosomatic complaints (Gini & Pozzoli, 2009); greater anxiety and depression (Hawker & Boulton, 2000); are at greater risk for suicidal ideation and behaviours (van Geel et al. 2014); greater externalising problems such as aggression, delinquency and misconduct (Reijntjes et al., 2011); and perform less well academically (Nakamoto & Schwartz 2010) than those who are not victimized. The psychological difficulties experienced through peer victimization in childhood and adolescence may produce negative outcomes well into adulthood (see McDougall & Vaillancourt, 2015). As such, peer-victimization and how to provide helpful interventions for young people is a topic of much interest to educationalists and other professionals (Crothers & Levinson, 2004).

In order to develop interventions and assess their success it is necessary to accurately, reliably, and comprehensively assess the construct of peer-victimization. As such, researchers have developed numerous self-report measures. A recent review identified 41 unique

measures of peer victimization (Vivolo-Kantor, Martell, Holland, & Westby, 2014). While this number has the advantage of permitting choice over instrument selection, it has simultaneously resulted in significant inconsistencies in measurement that can contribute to conflicting prevalence estimates and research results (Vivolo-Kantor et al., 2014). No one measure is universally recognised as the instrument of choice, although some measures are used more frequently than others.

One commonly used measure is the Multidimensional Peer-Victimization Scale (MPVS; Mynard & Joseph, 2000). The MPVS is a 16-item self-report instrument that contains four subscales: *physical victimization,* comprising items examining how often the child has been subject to physical harm such as being punched or kicked; *verbal victimization,* comprising items examining behaviours such as name calling or being made fun of; *social manipulation,* comprising items concerned with negative social behaviours by some children to turn others against the child; and *attacks on property,* comprising items relating to the damage or theft of possessions. Each item is scored on a three point Likert-scale of 0 = *not at all*, 1 = *once* and 2 = *more than once*, with participants indicating how often during the school year they had experienced each of the 16 victimization experiences. Total victimization scores range from a possible 0 to 32, with subscale scores ranging from 0 to 8. Higher scores indicate that a child has been subjected to more incidents of peer victimization.

The MPVS was developed with a sample of 812 children aged 11-16 years who completed an initial survey of 45 items, reduced using factor analysis to the final 16 items representing the four distinct factors. When developed, the MPVS provided a new, empirically derived, and broader conceptualisation of peer victimization than instruments available at the time, and uniquely provided convergent validity with self-reports of being bullied (Vivolo-Kantor et al., 2014).

Although two relatively recent reviews of bullying scales have been conducted (Vessey, Strout, DiFazio, & Walker, 2014; Vivolo-Kantor et al., 2014), these reviews focused on the range of measures available and commented on the psychometric properties of each measure as reported in their original development and validation studies. As such, the psychometric data on the MPVS presented in both of these reviews was limited to the original study. In the 18 years since its publication the MPVS has become a popular measure and the evidence concerning its psychometric properties has accumulated. Despite the widespread application of the MPVS in the bullying literature, and the relevance of this literature in the wider context of child and adolescent well-being, a comprehensive literature review regarding its use has not been conducted.

Given this gap in the literature, we undertook a systematic review of studies that have employed the MPVS and reported data on its psychometric properties, including findings relating to its factor structure, internal consistency reliability, construct validity and associations with outcome variables. The aims of this paper were to review and summarise the use of the MPVS in peer-reviewed published studies and to evaluate the available evidence for its psychometric properties and applicability to a range of sample types and age groups.

2. Method

2.1 Search and Selection Strategy

During July 2017, four electronic databases (ISI Web of Science, PsycINFO, Wiley Online and GoogleScholar[1]) were searched for empirical papers citing the original MPVS paper (Mynard & Joseph, 2000). These databases were also searched using the search term 'Multidimensional Peer Victimization Scale.' Reference lists from relevant studies were also reviewed to ensure that we had identified all eligible studies that presented empirical results

for the MPVS. Studies were selected for inclusion in the review if the authors: (1) published the paper in English; (2) published the paper in a peer-reviewed scientific journal; (3) reported that the full 16-item MPVS had been administered; (4) used the correct scoring procedure for the MPVS items (0 = *not at all;* 1 = *once;* 2 = *more than once*); (5) provided information regarding psychometric properties such as factor analysis, internal consistency, construct validity, and/or provided mean total scores. Studies were excluded if they were qualitative studies, meta-analyses, literature reviews or did not present original empirical results (e.g. if they provided a summary of ongoing research or studies still in progress).

2.2 Review Strategy

There were three main steps to the review. In Step One, all citations generated by the database searches were reviewed. After eliminating duplicates, a comprehensive abstract screening was conducted whereby information relating to inclusion and exclusion criteria was extracted. This information included basic descriptive data such as the nature of the paper (i.e. empirical study, literature review, book chapter, conference paper, doctoral thesis), the language it was written in, and whether or not the MPVS had been used. Papers that did not meet these criteria were excluded. In cases where it was not discernible from the abstract, the paper was retained for step two.

In Step Two, a list of eligible studies was compiled and full-text articles extracted. Each article was subjected to a thorough review and further descriptive data was documented, including the size and general characteristics of the sample, whether or not the full 16-item MPVS had been used, the scoring system that had been adopted, and whether or not data regarding psychometric properties of the MPVS had been reported. This list was used to finalise the studies to be included in the review.

In Step Three, for the studies that met the inclusion criteria, abstraction of results focused on indicators of scale reliability and validity; results of factor analytic procedures; and key study findings such as correlational and longitudinal relationships with other variables of interest.

3. Results

3.1 Search Results

The search strategy identified 324 original articles published between the initial publication of the MPVS in April 2000 and July 2017. Screening resulted in the exclusion of 290 papers. The flow diagram (Figure 1) details the study selection procedure. The main reasons for exclusion were that the paper was a book chapter, doctoral dissertation or conference paper (99 papers); the paper was not published in English (61 papers); the paper was a review of existing research or summarised results of other published studies (21 papers); the paper was a qualitative study (2 papers); the original MPVS article was cited but the MPVS was not administered (65 papers); the studies used a modified version of the MPVS that did not include all 16 items (10 papers); the studies used the MPVS but did not use the original scoring system (10 papers), or studies modified the MPVS by adding new items to produce an idiosyncratic modified form of the MPVS making comparisons and generalisations about the reliability and validity of the original MPVS impossible (14 papers). Studies were however included if they added new items to produce additional subscales alongside the original MPVS subscales. Morrow, Hubbard and Swift (214) added four items to assess *social rebuff*. Betts, Houston and Steer (2015) added four items to assess *electronic victimization*. In these two studies, results for the original MPVS were reported alongside the new subscales. Finally, an additional 8 papers could not be located despite requests to authors and extensive searches. Therefore, of the 324 papers identified, 34 fulfilled the strict

inclusion and exclusion criteria and were included in the final review (see Table 1 for a summary of each paper).

- *Insert Table 1 about here* –

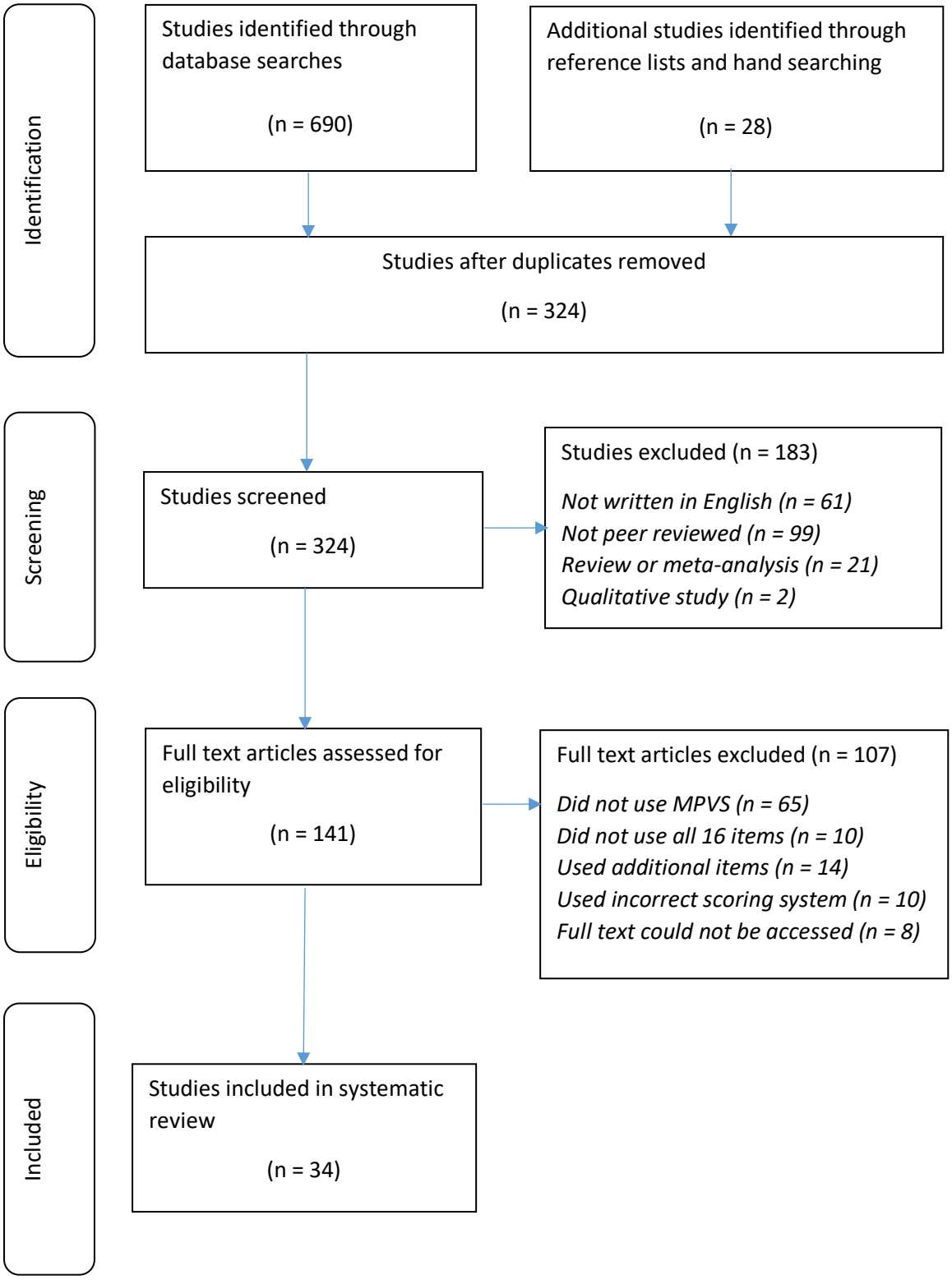

Figure 1. Flow diagram depicting study selection.

3.2 Description of Studies Included

The majority of studies included in this review involved either primary school students (Andreou et al., 2005; Azeredo et al., 2017; Balogun & Olapegba, 2007; Balogun et al., 2006; Defeyter et al., 2015; Litman et al., 2015; Morrow, Hubbard & Swift, 2014; Morrow, et al., 2014; Piek et al., 2005;), secondary school students (Akram & Munawar, 2016; Anderson et al., 2010; Betts et al., 2015; Betts et al., 2017; Betts & Spenser, 2017; Biebl et al., 2011; Bird et al., 2017; Candel & Iacob, 2015; Fontaine et al., 2016; Kaiser & Malik, 2015; McFarlane et al., 2017; Murphy et al., 2015; Mynard et al., 2000; Popoola, 2005; Rao & Kishore, 2013; Scarpa et al., 2012; Shakoor et al., 2015; Waytowich et al., 2011), or both primary and secondary school students (Fung & Raine, 2012; Law & Fung, 2013; Raine, Fung & Lam, 2011). Three studies included samples of university students (Cosgrove, Nickerson & DeLucia, 2017; Lam, Raine & Lee, 2016; Lee, Abell & Holmes, 2015) and one study included a community based sample of adults with or without schizophrenia (McGuire, Barbanel, Brune & Langdon, 2015).

Mean participant ages ranged from a low of 8.4 years (range 5.3 to 10.11 years) in Defeyter, Graham and Russo (2015) to a high of 22.14 years (range 18 to 60 years) in Cosgrove, Nickerson and DeLucia (2017), with the majority of studies reporting a mean participant age in the range of 11 to 15 years old. Of the five studies using adult samples, four studies focused on recent experiences of peer victimization as an adult, while Cosgrove et al. (2017) asked participants to respond to the MPVS with respect to their experiences of victimization during schooling.

A number of studies involved samples with specific characteristics, including adolescents with hearing impairment (Akram & Munawar, 2016), adolescents seeking

treatment for paranoid ideation (Bird et al., 2017), participants with schizophrenia (McGuire, Barbanel, Brune & Langdon, 2015), children at risk of Developmental Co-ordination Disorder (DCD; Piek, Barratt, Allen, Jones & Louise, 2005), obese adolescents (Rao & Kishore, 2013), and juvenile delinquents (Waytowich et al., 2011). Two studies involved participants that were enrolled in the Twins Early Development Study (TEDS; Fontaine, Hanscombe, Berg, McCrory & Viding, 2016; and Shakoor, McGuire, Cardno, Freeman, Plomin & Ronald, 2015), one study involved adolescents that were part of the longitudinal Southern Illinois Twins and Siblings Study (SITSS; Biebl, DiLalla, Davis, Lynch & Shinn, 2011), and one study involved individuals from the Pelotas Cohort Study (Azeredo et al., 2017).

Participants were from a variety of countries including Pakistan (Akram & Munawar, 2016; Kaiser & Malik, 2015; McFarlane et al., 2017), Brazil (Azeredo et al., 2017), Greece (Andreou, Vlachou & Didaskalou, 2005), Nigeria (Balogun & Olapegba, 2007; Balogun, Olapegbe & Opayemi, 2006; Popoola, 2005), Romania (Candel & Iacob, 2015), Hong Kong (Fung & Raine, 2012; Lam, Raine & Lee, 2016; Law & Fung, 2013; Raine, Fung & Lam, 2011), Australia (Piek, Barratt, Allen, Jones & Louise, 2005) and Italy (Scarpa, Carraro, Gobbi & Nart, 2012). Sample sizes varied from a low of 34 in Bird et al. (2017) to a high of 4,972 in Shakoor et al. (2015).

3.3 Examination of Scores

14 out of 34 studies (41%) provided mean scores for the MPVS total; 7 additional studies also provided mean scores for each of the four MPVS subscales. With respect to mean MPVS total, scores ranged from a low of 3.41 in Lam, Raine and Lee (2016) to a high of 23.16 in Popoola (2005), with most studies reporting means between 8 and 11. A notable finding was that the studies with the three highest average scores were conducted with

Nigerian participants (Balogun & Olapegba, 2007; Balogun, Olapegba & Opayemi, 2006; & Popoola, 2005).

Looking across studies, we observed that there was a trend for studies with samples of younger participants to report higher mean scores than studies with older participants. Four studies tested the impact of age on peer victimization: Andreou, Vlachou and Didaskalou (2005) reported that children in 6th grade experienced significantly less attacks on property than children in 4th grade, but no other significant differences by age were observed in this study. Balogun, Olapegba and Opayemi (2006) reported that children aged 9 years or older experienced more social manipulation than children aged below 9 years, but there were no other significant differences by age for the other subscales or total score. Candel and Iacob (2015) reported that MPVS total scores were significantly correlated with age (r = -.31), and that participants aged between 11 and 13 years reported significantly more peer victimization than participants aged between 17 and 19 years old. Lam, Raine and Lee (2016) reported a significant positive correlation between age and peer victimization.

With respect to the average subscale scores, these ranged from a low of 0.18 for physical victimization for females in Cosgrove, Nickerson and DeLucia (2017) to a high of 6.50 for attacks on property in Popoola (2005). More generally, verbal victimization showed the highest subscale scores compared to the other subtypes of victimization, with 6 of the 7 studies that reported subscale means showing the highest mean scores for verbal victimization (Andreou et al., 2005; Fontaine et al., 2016; Fung & Raine, 2012; Kaiser & Malik, 2015; Mynard et al., 2000; Scarpa et al., 2012). Similarly, verbal victimization was reported to be the most prevalent type of bullying in Azeredo et al. (2017) and Morrow, Hubbard and Swift (2014), with 37.9% and 29% of participants endorsing verbal victimization items, respectively. Physical victimization and attacks on property showed the lowest subscale scores.

3.4 Sex Differences

16 out of 34 studies (47%) reported significant sex differences in MPVS total or subscale scores. Overall, boys reported significantly more peer victimization than females, with 6 studies reporting significantly higher MPVS total scores for boys than girls (Azeredo et al., 2017; Kaiser & Malik, 2015; Lam, Raine & Lee, 2016; Litman et al., 2015; McFarlane et al., 2017; Shakoor et al., 2015). An additional 9 studies reported that boys experienced significantly more physical victimization than girls (Akram & Munawar, 2016; Anderson et al., 2010; Andreou et al., 2005; Balogun & Olapegba, 2007; Betts et al., 2015; Cosgrove et al., 2017; Fontaine et al., 2016; Litman et al., 2015; Popoola, 2005) and 5 studies reported that boys experienced significantly more attacks on property than girls (Balogun et al., 2006; Betts et al., 2015; Cosgrove et al., 2017; Fontaine et al., 2016; Litman et al., 2015). Five studies reported that girls experienced more social manipulation than boys (Andreou et al., 2005; Betts et al., 2015; Fontaine et al., 2018; Piek et al., 2005; Popoola, 2005).

3.5 Internal Consistency Reliability and Split Half Reliability

Cronbach's alpha coefficient was reported in 25 studies (74%). The alpha coefficients for the 16-item total score ranged from good to excellent across samples, with the lowest reported as $\alpha = .74$ in Lam, Raine and Lee (2016) and the highest $\alpha = .96$ in Candel and Iacob (2015). For the subscales, alpha coefficients ranged from .60 to .93, again representing good internal consistency reliability. Kaiser and Malik (2015) reported the lowest range of alpha scores (from .62 for physical victimization to .73 for social manipulation) while Morrow, Hubbard and Swift (2014) reported the highest range (from .84 for their newly developed 'social rebuff' subscale to .93 for both verbal and social victimization). Only one study

reported Split half reliability (Balogun & Olapegba, 2007), which was found to be acceptable (r = .76). No studies reported test re-test reliability.

3.6 Tests of Validity

3.6.1 Concurrent Validity. Evidence bearing on the concurrent validity of the MPVS – that is, the extent to which the MPVS is correlated with other measures of peer victimization – was reported in 4 studies. Balogun and Opalegba (2007) reported a correlation of r = .54 for the MPVS and the Aggression Scale (Buss & Durkee, 1975); Betts and Spenser (2017) reported significant positive correlations ranging from r = .21 to r = .62 between all four MPVS subscales and three cyber-victimization subscales in two separate studies; Law and Fung (2013) reported a correlation of r = .31 for the MPVS and the Online Victimization Scale; and Lee, Abell and Holmes (2015) demonstrated a significant positive correlations of r = .31 between the MPVS and the Cyberbullying Victimization scale (CBV) and r = .21 to r = .30 with the CBV subscales.

3.6.2 Convergent Validity. Evidence for the convergent validity of the MPVS – that is, the degree to which the MPVS correlated with measures of conceptually related constructs – was reported in 24 studies. Peer victimization was positively associated with physical and psychological health problems (Akram & Munawar, 2016), rumination (Candel & Iacob, 2015), poor attachment quality (Cosgrove, Nickerson & DeLucia, 2017), conduct problems, emotional problems and negative parental discipline (Fontaine et al., 2016), negative emotion including sadness, anger, embarrassment and nervousness (Morrow, Hubbard, Barhight & Thomson, 2014), schizotypal personality / schizotypy (Fung & Raine, 2012; Lam, Raine & Lee, 2016; Raine, Fung & Lam, 2011), paranoid ideation (Bird et al., 2017), depression, anxiety and stress (Kaiser & Malik, 2015), general aggression, reactive aggression and proactive aggression (Lam, Raine & Lee, 2016; Law & Fung, 2013; Raine, Fung & Lam,

2011), violence attribution errors (Waytowich et al., 2011), PTSD symptoms (Litman et al., 2015; Mynard et al., 2000), posttraumatic cognitions, loneliness, and feelings of inferiority, incompetence and being disliked (as assessed by the Social Comparison Scale; Murphy, Murphy & Shevlin, 2015); and behavioural problems (Rao & Kishore, 2013). Similarly, the MPVS was negatively associated with global self-worth (Mynard et al., 2000; Piek et al., 2005) self-esteem (Betts et al., 2015; Rao & Kishore, 2013); positive interactions with peers (Andreou et al., 2005); and academic achievement (Morrow, Hubbard & Swift, 2015).

Other study findings provide further support for the convergent validity of the MPVS. Biebl et al. (2011) reported that chronic victims of bullying (those that experienced victimization at age 5, 14 and 16 years) showed significantly higher rates of conduct problems, physical health problems and headaches than non-victims (those that did not experience victimization at any time). Fontaine et al. (2016) assessed Callous-Unemotional (CU) traits at 7, 9 and 12 years and found that youths with high CU traits at both 7 and 12 years reported the highest levels of all four subtypes of peer victimization while youths with low CU traits at both 7 and 12 years reported the lowest levels of all forms of peer victimization. Using multi-group path analysis, Betts, Houston, Steer and Gardner (2017) showed that for males, more frequent attacks on property predicted higher levels of loneliness and depressive symptoms and lower levels of social confidence; and higher levels of verbal victimization predicted lower global self-worth and higher levels of loneliness. For females, the only significant path showed that higher levels of verbal victimization predicted lower levels of global self-worth. Longitudinally, bullying victimization at age 12 was positively associated with paranoia, hallucinations and cognitive distortion at age 16 (Shakoor et al., 2015). Finally, maternal mood symptoms during pregnancy were associated with subsequent physical and verbal victimization in their 11-year old offspring (Azeredo et al., 2017).

No studies reported evidence for divergent or discriminant validity.

3.7 Subscale inter-correlations

Nine studies reported significant positive inter-correlations between the four subscales. These ranged from a low of $r = .24$ for physical and social manipulation victimization in Cosgrove et al. (2017) to a high of $r = .65$ for verbal and social manipulation victimization in Kaiser and Malik (2015). Overall, four studies reported that the lowest subscale inter-correlations were between physical and social manipulation (Akram & Munawar, 2016; Cosgrove et al., 2017; Fontaine et al., 2016; and Fung & Raine, 2012) and four studies reported that the highest subscale inter-correlations were between verbal and social manipulation (Anderson et al., 2010; Cosgrove et al., 2017; Fontaine et al., 2018; and Kaiser & Malik, 2015). These findings are in contrast to the subscale inter-correlations reported in the original Mynard and Joseph (2002) study, where physical victimization and social manipulation were actually found to be the most strongly associated, and verbal victimization and social manipulation were the second least strongly associated subscales.

3.8 Factor Structure

Five studies reported on factor analysis of the MPVS. Balogun and Opalegba (2007) performed Principal Components Analysis with varimax rotation and Kaiser normalisation; the results revealed four factors which showed a degree of agreement with the original factor structure although there were some notable differences in item loadings. Items 5 and 9 from the physical victimization subscale, item 4 from the attacks on property subscale and item 2 from the social manipulation subscale loaded on the verbal victimization factor; and item 15 from the verbal victimization factor loaded on the physical victimization factor. This resulted in a 6-item factor that the authors named *Provocative Victimization* (to replace verbal victimization), a 4-item factor that the authors named *Confrontational Victimization* (to

replace Attacks on property), and two 3-item factors which remained as *Physical Victimization* and *Social Manipulation.* As this study was conducted with Nigerian primary school children, the authors suggested that these differences in the factor structure may be due to cultural and value differences.

Law and Fung (2013) employed maximum likelihood estimation Confirmatory Factor Analysis to test a four-factor structure of the MPVS. The high CFI value (0.940), RMSEA = 0.08 and high factor loadings for all items indicated a good fitting four-factor model.

Two studies used all 16 items of the MPVS but included additional items. First, Betts, Houston and Steer (2015) added 4-items to assess *electronic victimization* (e.g., "Sent you a nasty text") and used Confirmatory Factor Analysis to examine the factor structure. The proposed 5-factor model (comprising the original 4 subscales plus the electronic victimization subscale) was compared to a 2-factor model (overt and covert aggression) and a 4-factor model (comprising physical, social & electronic, verbal, and attacks on property). The 5-factor model was the best fitting and met many of the requirements needed for good fit – RMSEA was acceptable, CFI and GFI both exceeded an acceptable value of .90; and all items exceeded or approached the minimum acceptable loading of .60.

Second, Morrow, Hubbard and Swift (2014) added four items designed to capture *social rebuff* and used Confirmatory Factor Analysis to investigate the factor structure of the revised MPVS. Results provided modest support for the proposed 5-factor model: $\chi 2$ (160) = 506.23, p = .00; RMSEA = .11; CFI = .85; SRMR = .08. All standardised factor loadings were significant and greater than .55. This model provided a better fit than any of the 6 competing models that were tested, including a one-factor model and four different four-factor models.

A subsequent study by Morrow, Hubbard, Barhight and Thomson (2014) further investigated the factor structure of this adapted MPVS by performing several Confirmatory

Factor Analyses. The first model to be tested was the five factor model comprising the original four factors plus a social rebuff factor; this model fit the data relatively well, χ^2 (160) = 338.81, $p < .001$; RMSEA = 0.03; CFI = 0.88; SRMR = 0.06. All standardized factor loadings were significant and greater than 0.40. Additionally, all factor correlations were positive and significant, yet did not indicate excessive overlap (0.18– 0.64). They then tested two competing models: a single-factor model that did not fit the data better than the hypothesised 5-factor model; and a four-factor model where social manipulation and social rebuff were merged into one factor due to their conceptual similarity. Although this model fit the data relatively well, the hypothesised five-factor model was a significantly better fit. In summary, evidence supports the separate assessment of the four factors of the MPVS but there may be contexts in which researchers wish to include items that include both electronic victimization and social rebuff.

4. Discussion

We identified 34 articles published between April 2000 and July 2017 that reported results on the Multidimensional Peer Victimization Scale. These studies reflect a broad range of sample sizes of primary school, secondary school and adult populations from a number of diverse backgrounds. The discussion that follows will summarise the salient findings of this review: namely, that the MPVS was found to be a reliable and valid measure with good evidence to support the four-factor structure; and that there are relatively stable sex differences in the rates and pattern of peer victimization when assessed using the MPVS. We will also identify research gaps and provide recommendations for future research.

4.1 Psychometric Properties

Reliability of the MPVS was assessed in terms of internal consistency reliability, with 25 studies reporting Cronbach's alpha coefficient. Based on recommendations that Cronbach's alpha coefficients be ≥ .80 in order to be acceptable for basic research tools (Streiner, 2003), the literature reviewed here supports the reliability of the MPVS. Eight studies reported Cronbach's alpha greater than .80 for the MPVS total score, with an additional 11 studies reporting acceptable internal consistency reliability for the MPVS subscales. One further study reported acceptable split-half reliability (Balogun & Olapegba, 2007). No studies reported test-retest reliability. These additional tests of reliability should be investigated further in future research.

This review revealed evidence to support the validity of the MPVS, with four studies providing evidence for its concurrent validity by demonstrating the expected associations with related measures of similar constructs. With respect to convergent validity, 24 studies reported associations between the MPVS and conceptually related constructs, including measures of physical, psychological and behavioural problems that have previously been shown to be associated with peer victimization. However, it has been argued that in order to establish construct validity it is important to demonstrate both discriminant *and* convergent validity (Campbell & Fiske, 1959), yet no studies reported on the discriminant validity of the MPVS. Future studies employing the MPVS should seek to include measures that examine discriminant validity.

Overall, research on the factor structure of the MPVS supported the original 4 factor structure reported by Mynard and Joseph (2000). The only study that did not adequately support the original four-factor was conducted by Balogun and Olapegba (2007). Although a four-factor solution emerged and there was a degree of agreement with respect to item loadings on some of the factors, the resulting factor structure was not similar enough to the original to be considered comparable. Nevertheless, these divergent results from Balogun and

Olapegba (2007) may be attributed to a number of variables, particularly cultural differences since this study was conducted with a Nigerian population. Other evidence from this review also indicated that cultural factors may play a role in the pattern and extent of bullying reported: the studies with three highest average scores were conducted with Nigerian participants (Balogun & Olapegba, 2007, Balogun et al., 2006, and Popoola, 2005).

Together, these findings concerning the psychometric properties of the MPVS demonstrate the reliability and validity of this scale. The factor analytic studies supported the division of peer victimization into distinct but related subtypes, strengthening the argument that peer victimization is best characterised as a multidimensional rather than singular construct. This review has also reported on the reliability of the MPVS across a range of samples including school children, university students and adult populations, demonstrating that the MPVS can be used with a wide variety of age groups in a range of settings.

4.2 Sex Differences

Results from this review revealed consistent findings regarding sex differences in peer victimization across numerous studies. Overall, males reported significantly more victimization than females. Findings for the victimization subscales showed that direct forms of victimization, namely physical victimization and attacks on property, were more likely to be experienced by boys, while indirect victimization, particularly social manipulation, was more likely to be experienced by girls. This pattern of victimization by gender replicates both that reported in the original MPVS study (Mynard & Joseph, 2000), and that reported in the wider literature (Andreou & Metallidou, 2004; Bjorkqvist et al., 1992; Crick & Grotpeter, 1995; Olweus, 1993; Smith et al., 2002). These relatively stable gender differences in peer victimization have implications for bullying interventions. They suggest that schools could tackle bullying most effectively by tailoring intervention programs in a way that targets

specific gender-related behaviours and victimization experiences. However, these now need to be conducted in such a way that recognises greater diversity and fluidity in constructions of gender than in previous research.

4.3 Future Research Recommendations

There are three broad areas for future development that we wish to highlight. First, notably absent in the reviewed literature were studies testing the MPVS longitudinally. This finding mirrors that of the wider bullying literature, which is largely cross-sectional and presents simple associations between peer victimization and various outcomes. Longitudinal studies would allow examination of the MPVS as a predictive measure, particularly with respect to its efficacy in predicting future behaviours such as aggression, intimacy and self-esteem. Longitudinal studies would enable examination of how victimization is related to subsequent adjustment and how patterns and rates of victimization unfold over time, particularly across the transition from primary to secondary school and from childhood through puberty and into late adolescence.

Second, also notably absent was the use of the MPVS as a tool to evaluate interventions. The prevention of bullying is becoming more of a priority among educators given its widespread short- and long-term deleterious effects (Crothers, Kolbert & Barker, 2006). Numerous intervention and prevention programs have been suggested, including interventions focused on the victim (such as counselling or conflict resolution, social skills and assertiveness training); interventions focused on teachers and other adults (such as encouraging teachers to identify and discipline bullies, and including parents in this process); interventions focused on peers (including teaching bystanders to intervene and peer support methods such as befriending), and interventions focused on the whole school community (including workshops designed to modify the overall culture and climate of the school, and

integrating anti-bullying messages within the curriculum). The MPVS provides a suitable outcome measure to test the efficacy of these types of interventions.

Third, one final issue that became apparent when conducting this review was the number of studies that had used a different scoring system to that recommended in the original validation study (Mynard & Joseph, 2000), or made other amendments. Adopting alternative scoring systems compromises our ability to compare prevalence rates across studies and in this instance, precluded their inclusion in this review. A total of 10 papers were excluded for this reason alone and it is possible that these excluded papers may have contributed relevant information concerning the psychometric properties of the MPVS had they used the original rating scale. Our review also noted that since the development of the MPVS there had been interest in social rebuff and electronic victimization as additional forms of peer-victimization and it may be that in some contexts researchers will also wish to include additional items for both of these dimensions. As such, researchers are encouraged to use this full 24-item version (See Appendix).

4.4 Conclusions

The purpose of this paper was to review the growing literature pertaining to the psychometric properties of the MPVS. Through a synthesis of research findings, the current review establishes the MPVS as a reliable, valid, and psychometrically sound tool for capturing multiple facets of peer victimization across a variety of samples, including primary school and secondary school age children, as well as university students and adults. This exhaustive review has also demonstrated the importance of assessing subtypes of victimization and has highlighted new ways to further refine and advance the assessment of peer victimization.

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References marked with an asterisk (*) are included in the review.

Note: Fontaine et al (2018) was available for inclusion in the review as an online first publication in 2016.

Appendix 1. The Multidimensional Peer Victimization Scale – 24 (MPVS-24).

Subtype	Number	Item
Physical Victimization	1	Punched me
	5	Kicked me
	9	Hurt me physically in some way
	13	Beat me up
Verbal Victimization	3	Called me names
	7	Made fun of me because of my appearance
	11	Made fun of me for some reason
	15	Swore at me
Social Manipulation	2	Tried to get me into trouble with my friends
	6	Tried to make my friends turn against me
	10	When I tried to play with one person, another person would not let me
	14	Made other people not talk to me
Attacks on Property	4	Took something of mine without permission

	8	Tried to break something of mine
	12	Stole something from me
	16	Deliberately damaged some property of mine
Electronic Victimization[2]	17	Sent me a nasty text
	19	Said something mean about me on a social networking site
	21	Wrote spiteful things about me in a chatroom
	23	Wrote nasty things to me using instant messenger
Social Rebuff	18	Ignored me
	20	Refused to talk to me
	22	Would not let me join in their game
	24	Had a secret and would not tell me

NB: The first 16 items are the original MPVS and the final 8 items are new subscales adapted from Betts et al (2015) and Morrow et al (2014), with the exception that item 10 is not an original MPVS item, but was added to the Social Manipulation subscale by Morrow et al (2014) to replace the original MPVS 'Refused to talk to me' item which they moved from the Social Manipulation subscale to the Social Rebuff subscale, now here as item 20.

For a copy of the MPVS-24 see supplementary materials. The MPVS-24 is free to use with permission from the author.

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Supplementary Material:

Multidimensional Peer-Victimization Scale-24 (MPVS-24)

Below is a list of things that some children do to other children. How often during the last school year has another pupil done these things to you? Please answer by putting a tick in one of the three columns for each of the questions.

	Not at all	Once	More than once
1. Punched me			
2. Tried to get me into trouble with my friends			
3. Called me names			
4. Took something of mine without permission			
5. Kicked me			
6. Tried to make my friends turn against me			
7. Made fun of me because of my appearance			
8. Tried to break something of mine			
9. Hurt me physically in some way			
10. When I tried to play with one person, another person would not let me			
11. Made fun of me for some reason			
12. Stole something from me			
13. Beat me up			
14. Made other people not talk to me			
15. Swore at me			
16. Deliberately damaged some property of mine			
17. Sent me a nasty text			
18. Ignored me			
19. Said something mean about me on a social networking site			
20. Refused to talk to me			

21. Wrote spiteful things about me in a chatroom			
22. Would not let me join in their game			
23. Wrote nasty things to me using instant messenger			
24. Had a secret and would not tell me			

Scoring key for the MPVS-24:

Not at all = 0

Once = 1

More than once = 2

Scores on the total scale have a possible range of 0 to 32, and a possible range of 0 to 8 on each of the four subscales.

Subscales

Items 1 + 5 + 9 + 13 = physical victimisation scale

Items 2 + 6 + 10 + 14 = social manipulation scale

Items 3 + 7 + 11 + 15 = verbal victimization scale

Items 4 + 8 + 12 + 16 = attacks on property scale

Items 17 + 19 + 21 + 23 = Electronic victimization

Items 18 +20 + 22 + 24 = Social rebuff

Table 1 Summary of Published Studies Using the Multidimensional Peer-Victimisation Scale

Study	Sample Type	Age	N	M(SD)	Sex difference	Reliability	Correlation with outcome variables	Longitudinal Results	Comments
Akram & Munawar (2016)	Adolescents with hearing impairment attending 2 large schools in Gujrat district of Pakistan's Punjab province. 64% boys	12-15 years	286	-	Boys experienced more physical victimisation than girls ($p < .05$), but there was no significant difference between girls and boys in social manipulation ($p > .05$).	α not reported but subscale inter-correlations ranged from $r = .38$ (for physical and social) to $r = .56$ (for physical and verbal)	All four subtypes were correlated with physical health problems (r's = .36 to .41) and psychological health problems (r's = .35 to .42). Multiple regression analyses showed peer victimisation was a risk factor for physical health problems such as headache, abdominal pain, cough, cold, skin problems and nausea; as well as being positive and significant predictors of psychological problems such as disturbed appetite, nightmares, bed wetting and worrying about going to school.	-	MPVS was translated into Urdu using lexicon equivalence method of translation (translation detail provided in paper).
Anderson, Rawana, Brownlee & Whitley (2010)	7th and 8th grade students attending public schools in a small urban city in North-western Ontario.	Boys mean age = 12.96(.74) and girls mean age = 12.92(.68)	85	-	A sex difference was found for physical victimisation: boys emerged as significantly more likely to be physically	Not reported but all subtypes of victimisation were positively correlated; lowest was between physical and verbal victimisation $r = .495$ $p < .01$, and strongest	-	-	

					victimized than girls, t(76.87)=–1.404, p<.01.	was between verbal and social manipulation r = .629 p < .01			
Study	**Sample Type**	**Age**	**N**	**M(SD)**	**Sex difference**	**Reliability**	**Correlation with outcome variables**	**Longitudinal Results**	**Comments**
Andreou, Vlachou & Didaskalou (2005)	Primary education pupils drawn from 10 primary schools in central Greece	Age range 9-12 years (M = 10.21; SD = 0.86)	448	Physical 2.29(1.9) Verbal 3.09(2.29) Social 2.77(2.36) Attack 2.33(2.20)	Boys scored significantly higher than girls on Physical and Verbal Victimization and significantly lower on Social Manipulation.	Alphas range from .67 to .85 for four subscales	Children in 6th grade had experienced significant less attacks on property than had children in 4th grade (F = 3.15, p > .05). No significant age difference was observed for any other subscale. Total peer victimisation scores were negatively associated with positive interactions with peers (r = -.21, p < .01)	-	
Azeredo, Santos, Barros, Barros & Matijasevich (2017)	Participants were part of the Pelotas Cohort Study (Santos et al., 2014), a study of mothers and infants in Pelotas, Brazil	M = 11.0 years, SD = 0.3 years	3841	Mean scores not reported but verbal victimisation was the most prevalent type of bullying (37.9%)	Males reported significantly more victimisation than females	-	Severe current maternal depression was significantly associated with physical victimisation, social manipulation and attacks on property in their 11 year old offspring.	Maternal mood symptoms during pregnancy were significantly associated with physical and verbal victimisation in their 11 year old offspring.	

Balogun & Olapegba (2007)	Grade 4 pupils attending primary schools in Ibadan, Nigeria.	Age range 7-12 years (*M* = 8.90; *SD* = .94)	240	Total for boys *M* = 16.21; *SD* = 6.85 Total for girls *M* = 15.7 *SD* = 6.36.	No significant difference by gender for total or subscales except Physical Victimisation, which is significantly higher for boys	α = .78 Split half reliability of .76	Concurrent validity test with the Buss & Durkee (1975) Aggression Scale yielded a correlation of .54	-	This study attempte cultural validation o the MPVS with Nigerian children. Item 3 ("called me names") was slightl modified to "Abuse and called me bad/ugly names" so as to be culturally relevant. All other items remained the same.
Study	**Sample Type**	**Age**	**N**	**M(SD)**	**Sex difference**	**Reliability**	**Correlation with outcome variables**	**Longitudinal Results**	**Comments**
Balogun, Olapegba & Opayemi (2006)	Primary school pupils from Ibadan metropolis in Nigeria.	Age range 7 -12 years; (*M* = 8.9; *SD* = 0.94)	240	For boys: *M* = 16.21 (6.85) For girls: *M* = 15.7 (6.36)	No significant gender differences for total score but boys experienced more attacks on property than girls (3.44 vs 2.89; t = 2.38; df = 238, p < .05)	-	Religion and ethnicity were found not to have any significant effect on peer-victimization f(2, 237) = 0.93 p >.05, f(3, 239) = 0.47 p > .05. No age differences for the other subscales.	-	
Betts, Houston & Steer (2015)	Students attending urban secondary schools in a city in the	Age range 11-15 years	371	-	Boys reported experiencing higher levels of physical	Physical α = .91 Social α = .87 Verbal α = .84	All subscales showed significant negative correlation with self-esteem (*r* ranged from -.18 to -.33).	-	Created the MPVS-R by using the MPVS alongside an

	East Midlands of the UK	(*M* = 13.4; *SD* = 1.2)			victimization and greater attacks on property than girls, whereas girls reported experiencing greater levels of social and electronic victimization than boys.	Property α = .90 Electronic α = .91 Subscale inter-correlations ranged from .37 to .60			additional 4 items to assess electronic victimisation

Study	**Sample Type**	**Age**	**N**	**M(SD)**	**Sex difference**	**Reliability**	**Correlation with outcome variables**	**Longitudinal Results**	**Comments**
Betts, Houston, Steer & Gardner (2017)	Students attending two urban secondary schools in a city in the East Midlands of the UK	Age range 11-15 years (*M* = 13 years 4 months, *SD* = 1 year 2 months)	280	-	-	Physical α = .78 Verbal α = .78 Social α = .81 Attacks α = .79 Electronic α = .81	Used multi-group path analysis. For males, more frequent attacks on property predicted higher levels of loneliness and depressive symptoms and lower levels of social confidence. Higher levels of verbal victimisation predicted lower global self-worth and higher levels of loneliness. For females, the only significant path showed that higher levels of verbal victimisation		Used the 20-item MPVS-R which is the MPVS plus 4 items assessing electronic victimisation (see Betts, Houston & Steer, 2015 above).

							predicted lower levels of global self-worth.		
Betts & Spenser (2017) – Study 1	Students attending a secondary school in the East Midlands of the UK.	Age range 11-15 years (*M* = 12.81, *SD* = 1.32)	393	-	-	Alpha's ranged from .62 to .86	All four victimisation subtypes were positively correlated with all three subtypes of cyber victimisation: for Threats *r*'s = .21 to .36; for Sharing Images *r*'s = .23 to .49; for Personal Attack *r*'s = .21 to .55; all *p*'s < .001	-	Study aimed to develop a measure of Cyber bullying and cyber victimisation and used the MPVS to examine convergen validity.
Study 2	Students attending a (different) secondary school in the East Midlands of the UK	Age range 11-15 years (*M* = 12.12; *SD* = 0.98)	345	-	-	Alpha's ranged from .60 to .88	All four victimisation subtypes were positively correlated with all three subtypes of cyber victimisation: for Threats *r*'s = .29 to .42; for Sharing Images *r*'s = .27 to .36; for Personal Attack *r*'s = .38 to .62; all *p*'s < .001	-	

Study	**Sample Type**	**Age**	**N**	**M(SD)**	**Sex difference**	**Reliability**	**Correlation with outcome variables**	**Longitudinal Results**	**Comments**
Biebl, DiLalla, Davis, Lynch & Shinn (2011)	Participants were a subset of youth who participated in the longitudinal Southern Illinois Twins and	T1 *M* = 5.00; *SD* = 0.00. T2 age range 10-18	T1: 283 T2: 85 T3: 70	-	-	Inter-rater reliability at T1 ranged from .80 to .84. At T2, physical victimisation α = .89;	-	-	At T1 when participants were aged 5, a modified version of the MPSV was used to

	Siblings Study (SITSS; DiLalla, 2002).	years, *M* = 14.00; *SD* = 2.52. T3 age range 12-20 years, *M* = 16.24; *SD* = 2.61.				verbal victimisation α = .74; social manipulation α = .82; and attacks on property α = .77. At T3, Relational victimisation α = .89; Physical victimisation α = .83; and Overall victimisation α = .89			create a coding scheme for use during a 20 minute play session. At T2 the full MPVS was used. At T3 a slightly amended version of the MPVS was used (minor adjustments to rating scale and time frame reported on)
Bird, Waite, Rowsell, Fergussen & Freeman (2017)	Clinical sample of adolescents seeking treatment for paranoid ideation. 82% female sample.	Age range 11-16 years *(M* = 14.9; *SD* = 1.25)	34	*M* = 16.0 *SD* = 8.60	-	-	MPVS total was significantly positively correlated with paranoia at baseline (*r* = .56; *p* < .001).	The partial correlation between baseline MPVS and paranoia at 3 month follow-up, controlling for baseline paranoia, approached significance (*r* = .33, *p* = .06).	

Study	**Sample Type**	**Age**	**N**	**M(SD)**	**Sex difference**	**Reliability**	**Correlation with outcome variables**	**Longitudinal Results**	**Comments**

Candel & Iacob (2015)	121 Romanian students aged between 11 and 13 years old; and 95 students aged between 17 and 19 years old.	11-13 years and 17-19 years	216	*M* = 9.44 *SD* = 7.07		Total α = .96	MPVS total was significantly correlated with age (r = -.30; p < .01) and rumination (r = .16; p < .05). High ruminators reported significantly more peer victimisation than low ruminators; t = -2.24; p = 0.02. Participants aged between 11 and 13 years reported significantly more peer victimisation than participants aged between 17 and 19 years; t = 4.67; p < .001.		
Cosgrove, Nickerson & DeLucia (2017)	Undergraduate and graduate students attending 2 universities in the North-eastern US. Sample was 77.7% female	Age range 18-60 years (*M* = 22.14 *SD* = 5.57)	386	Only reported for physical and attacks on property subscales. For men: Physical *M* = 0.60 (0.68); Attacks *M* = 0.84 (0.73) For women: Physical *M* = 0.18 (0.39); Attacks *M* = 0.54 (0.57).	Men experienced more frequent physical and attacks on property victimisations than women: Physical victimisation F(1, 385) = 50.51, p < .001, partial n^2 = .12 and Attacks on Property F(1, 385) = 16.60, p < .001, partial n^2 = .04.	Total α = .89 Inter-correlations between subscales ranged from .24 (for physical and social manipulation) and .56 (for social manipulation and verbal)	MPVS and attachment quality (Revised Adult Attachment Scale; RAAS) r = .37 p < .01 No significant correlation between MPVS and number of current friendships r = -.09, p > .05 Previous verbal victimisation was the most significant predictor of poor attachment quality during young adulthood (β = .19), t(355) = 3.12, p < .01. It was also found that previous relational victimisation significantly predicted less stable attachments above physical or property damage victimisation (β = .16, t(355) = 2.53 p < .05).	-	Because this study was primarily concerned with investigating recalled experiences of peer victimisation, instructions were modified to encourage participants to think back to their experiences in elementary, middle and high school rather than their current experiences

Study	Sample Type	Age	N	M(SD)	Sex difference	Reliability	Correlation with outcome variables	Longitudinal Results	Comments
Defeyter, Graham & Russo (2015)	Participants were recruited from 8 inner-city mixed-gender primary schools in the UK.	Age range 5.3-10.11 years (*M* = 8.4; *SD* = 1.69)	268	-	-	-	Children attending Breakfast Club (BC) and After School Club (ASC) reported lower levels of physical victimisation than students attending no clubs. In addition, a reduction in social victimisation and attacks on property was observed in children attending BC and ASC	Overall, levels of physical, verbal and social victimisation decreased over time, while the level of attacks on property remained constant.	To check that children understood the questions and to make sure that incidents were not just examples of rough and tumble play, children were asked to provide examples to each question.
Fontaine, Hanscombe, Berg, McCrory & Viding (2018)	Participants were drawn from a larger sample of 9,462 families enrolled in the Twins Early Development Study (TEDS). For this study, data from assessments conducted at age 7, 12 and 14 years were analysed.	7, 12 and 14 years	4156	Physical *M* = 0.76 (1.29) Verbal *M* = 2.13 (1.74) Social *M* = 1.45 (1.61) Attacks *M* = 0.99 (1.35)	Compared with girls, boys had higher mean levels of physical victimization, verbal victimization, and attacks on property, whereas girls had higher mean levels of social manipulation.	Physical α = .80 Verbal α = .84 Social α = .82 Attacks α = .83 Subscale inter-correlations ranged from .40 ($p < .001$) for physical and social to .62 ($p < .001$) for verbal and social.	Youths on the stable high trajectory had the highest levels of all forms of peer victimization while youths on the stable low trajectory reported the lowest levels of all forms of victimisation. All four subtypes of victimisation were positively correlated with conduct problems, emotional problems and negative parental discipline.	-	Callous-Unemotional (CU) traits were assessed at 7, 9 and 12 years old. Four trajectorie of CU traits were identified: Stable High (CU traits remained high between 7 and 12 years); Increasing (CU traits increased

									from 7 to 12 years); Decreasing (CU traits decreased fror 7 to 12 years) and Stable Low (CU traits remained low between 7 and 12 years)
Study	**Sample Type**	**Age**	**N**	**M(SD)**	**Sex difference**	**Reliability**	**Correlation with outcome variables**	**Longitudinal Results**	**Comments**
Fung & Raine (2012)	Participants were drawn from 10 primary and 10 secondary schools in Hong Kong.	Age range 9-15 years (male mean = 11.76 (1.84); female mean = 12.04 (1.75)	3508	Physical *M* = 1.57 (3.3) Verbal *M* = 3.56 (4.23) Social *M* = 2.02 (3.58) Attacks *M* = 1.67 (2.86) Total *M* = 8.82 (11.2)		Physical α = .87 Verbal α = .78 Social α = .85 Attacks α = .73 Total α = .90 Subscale inter-correlations ranged from .43 ($p < .001$) for physical and social to .57 ($p < .001$) for verbal and attacks on property.	MPVS total was significantly correlated with SPQ-C total $r = .39$; $p < .001$. All MPVS subscales were significantly positively correlated with all SPQ-C subscales (r's = .20 to .31; p's < .001). Children in the high victimisation group (scoring 1SD above MPVS mean) scored significantly higher on the SPQ-C total and all subscales than children in the low victimisation group (scoring 1SD below MPVS mean).	-	SPQ-C (Schizotypa Personality Questionnaire – Child) is a measure of schizotypal personality adapted for use with children.
Kaiser & Malik (2015)	Participants were recruited from schools and colleges in Sargodha city, Pakistan.	Age range 14-18 years (*M* = 16.14)	400	Physical *M* = 2.68 (2.32) Verbal *M* = 3.25 (2.75) Social *M* = 3.02 (2.63)	Male adolescents reported significantly more peer victimisation than females, scoring significantly	Physical α = .62 Verbal α = .65 Social α = .73 Attacks α = .65 Subscale inter-correlations ranged	All four subtypes of victimisation showed positive correlated with depression, anxiety and stress. Multiple regression analyses showed that all components of peer victimisation positively predicted anxiety (22% of		

				Attacks *M* = 3.09 (2.51)	higher on all four subscales.	from .54 ($p < .001$) for physical and verbal to .65 ($p < .001$) for verbal and social.	variance), depression (19% of variance) and stress (17% of variance).		
Lam, Raine & Lee (2016)	Bilingual undergraduate students recruited in Hong Kong. 68.6% female sample.	Age range 18-25 years (*M* = 18.92; *SD* = 1.16).	237	Total MPVS *M* = 3.41 (*SD* = 3.51)	Males experienced significantly more victimisation than females ($p < .05$).	Total scale α = .74	Peer victimisation was positively correlated with Schizotypy ($r = .29$), General aggression ($r = .42$), Reactive aggression ($r = .38$) and Proactive aggression ($r = .33$) (all p's < .001). Age was positively associated with victimisation ($p < .05$)	-	MPVS was translated and back translated from English to Chinese.
Study	**Sample Type**	**Age**	**N**	**M(SD)**	**Sex difference**	**Reliability**	**Correlation with outcome variables**	**Longitudinal Results**	**Comments**
Law & Fung (2013)	Schoolchildren recruited from four middle schools and one elementary school located in wide-ranging areas of Hong Kong. Sample was 60.6% male.	Age range 9-20 years, (*M* = 13.91; *SD* = 2.52)	1122	-	-	Physical α = .89 Verbal α = .82 Social α = .89 Property α = .82 (although not entirely clear from the paper whether these were based on study sample or are just reporting previously established reliability alphas)	The MPVS total and subscale scores were all significantly higher for children who were categorised as proactive aggressors, reactive aggressors or co-occurring aggressors than for non-aggressive school children. MPVS was significantly correlated with OVS (online victimisation scale) $r = .311$ $p < .001$	-	MPVS was put through thorough back translations to arrive at Chinese version.
Lee, Abell & Holmes (2015)	Undergraduate students enrolled in	Age range 18-25 years	286	-	-	Physical α = .81 Verbal α = .79	The MPVS was positively correlated with the CBV global and subscales (r =	-	Study reports on the development and

	social science disciplines at a large public university in the south eastern US. Sample was 61.9% female.	(*M* = 20.92, *SD* = 1.54)				Social α = .76 Property α = .77	.31 for the global, r = .30 for verbal/written victimization, r = .28 for visual/sexual victimization, and r = .21 for social exclusion victimization). Effect sizes were generally small, ranging from .04 to .10.		validation of 2 new cyberbullying scales: Cyberbullying Perpetration (CBP) and Cyberbullying Victimisation (CBV). The MPVS was used to test the construct converger validity of the CBV

Study	**Sample Type**	**Age**	**N**	**M(SD)**	**Sex difference**	**Reliability**	**Correlation with outcome variables**	**Longitudinal Results**	**Comments**
Litman, Costantino, Waxman, Sanabria-Velez, Rodriguez-Guzman, Lampon-Velez & Cruz (2015)	Hispanic/Latino children from three public schools in New York City.	Age range 6-11 years, (*M* = 8.51, *SD* = 1.23)	358	Percentage reporting having experienced at least one victimisation event more than once during the school year: physical	Boys were more likely to be victimised than girls. Physical victimisation and attacks on property higher for boys than girls. See paper for detailed breakdown of means for each	Physical α = .73 Verbal α = .77 Social α = .71 Property α = .76 Subscale inter-correlations ranged from .54 to .67	Correlation between MPVS total and PTSD symptoms for boys: $r = .33$ $p < .001$ and for girls: $r = .29$ $p < .001$ (see paper for these correlations broken down for each age group 7 to 10 years). For boys, Attacks on Property most strongly correlated with PTSD symptoms ($r = .36$). For girls, Social Manipulation most strongly correlated with PTSD symptoms ($r = .29$).	-	Note participants were pre-screened for trauma experience using th Child Trauma Screening Questionnaire (CTSQ; Constantin et al., 2014). Also note that assessments were

				22.8%; verbal 38.1%, social 38.7%, attacks on property 36.8%.	subscale presented by gender.				conducted by bilingual coauthors (English/Spanish speaking) in face to face sessions with the children in the school setting.
McFarlane, Karmaliani, Khuwaja, Gulzar, Sumani, Ali, Sumani et al. (2017)	6th grade students attending single-gender public schools in Sindh province, Pakistan	Age range 11-13 years, boys *M* = 12.53 (0.06); girls *M* = 12.16 (0.11)	1752	For boys *M* = 12.32 (0.50) For girls *M* = 7.89 (0.47). 94% of boys and 85% of girls reported one or more episode of victimisation in the preceding 4 weeks.	Boys reported significantly more peer victimisation than girls. Study reports frequencies and percentages of every MPVS item by gender.	Total α = .87 Physical α = .67 Verbal α = .64 Social α = .70 Attacks α = .66	No associations with outcomes reported (even though they assessed depression)	-	MPVS was forward translated from English into Urdu and Sindhi. Independent back-translation was then performed; any discrepancies between translators were discussed and resolved until language agreement was reached.

Study	**Sample Type**	**Age**	**N**	**M(SD)**	**Sex difference**	**Reliability**	**Correlation with outcome variables**	**Longitudinal Results**	**Comments**
McGuire, Barbanel, Brüne & Langdon (2015)	24 participants with Schizophrenia (*M* = 45.65 years; *SD* = 9.6) and 20 control participants (*M* =		44	-	-	-	Interpersonal conflict, as measured by the MPVS, was not significantly associated with scores on the Moral Judgements Interview (MJI; an assessment of 'moral symptoms' in people with schizophrenia).	-	

	38.60 years; *SD* = 14.7).						There were no significant differences in MPVS scores for participants with and without schizophrenia.		
Morrow, Hubbard, Barhight & Thomson (2014)	Participants were recruited from eight 5th grade public schools in a Mid-Atlantic state.	Age range 10-11 years	181	-	No significant sex differences for any type of victimisation were found.	Physical α = .71 Verbal α = .84 Social α = .82 Attacks α = .78 Social rebuff α = .74 Subscale inter-correlations ranged from .18 for physical victimisation and social rebuff, to .64 for social manipulation and social rebuff.	Peer rejection was significantly positively correlated with verbal victimisation (r = .16, p < .05). Each peer victimisation variable positively predicted each negative emotion (sadness, anger, embarrassment and nervousness). Results further showed physical victimization positively predicted all four negative emotions, verbal victimization positively predicted anger and embarrassment, and social rebuff positively predicted nervousness.		Used the MPVS but added 4 additional items to capture Social Rebuff, which refers to the experience of being ignored, left out or excluded by peers and is regarded as distinct from social manipulation.
Study	**Sample Type**	**Age**	**N**	**M(SD)**	**Sex difference**	**Reliability**	**Correlation with outcome variables**	**Longitudinal Results**	**Comments**

Morrow, Hubbard & Swift (2014)	Participants were recruited from 5th grade public schools within one school district in a Mid-Atlantic state.	Age range 10-11 years	179	Verbal victimisation was most frequent (29%) followed by social rebuff (22%)	There were no significant sex differences in rates of victimisation.	Physical α = .85 Verbal α = .93 Social α = .93 Property α = .90 Social rebuff α = .84 Subscale inter-correlations ranged from .60 to .78	Social manipulation was negatively correlated with academic achievement (r = -.20, p < .01) but no other victimisation subscales were.		Used the MPVS but added 4 additional items to capture Social Rebuff (see Morrow, Hubbard, Barhight & Thomson 2014 above).
Murphy, Murphy & Shevlin (2015)	Recruited from 10 secondary schools in N Ireland. 56.1% female.	Age range 15-18 years (M = 16.20, SD = 1.06)	785	For total score M = 10.35, SD = 7.80. Subscales not reported		α = .89. Subscales not reported.	ELES (Early Life Experiences Scale; assesses memories of familial threat and subordination) r = .396 SCS (Social Comparison Scale; assesses feelings of inferiority, incompetence and being disliked) r = .265 PTCI (Posttraumatic Cognitions Inventory; assesses negative cognitions about self, world and self-blame) r = .445 APSS (Adolescent Psychotic-Like Symptom Screener; assesses hallucinatory and delusional experiences) r = .380 UCLA Loneliness Scale r = .366. T-tests showed participants who were lonely reported significantly higher MPVS scores (M = 16.61; SD = 8.37) than participants who were not lonely (M = 9.07; SD = 3.04)	-	-

Study	Sample Type	Age	N	M(SD)	Sex difference	Reliability	Correlation with outcome variables	Longitudinal Results	Comments
Mynard, Joseph & Alexander (2000)	Children and adolescents in years 8 to 11 in secondary schools in Essex, UK.	12-16 years	331	Physical *M* = 3.68 (2.83) Verbal *M* = 5.47 (2.55) Social *M* = 3.28 (2.60) Attacks *M* = 2.78 (2.81)	-	-	MPVS total score was positively associated with IES total ($r = .24$, $p < .02$), but when examining MPVS subscales only Social Manipulation was significantly associated with IES. MPVS total score was negatively associated with Global Self-Worth ($r = -.27$, $p < .001$). When examining the subscales, only Verbal Victimisation was significantly negatively associated with Global Self-Worth.	-	IES is the Impact of Event Scale, a measure of PTSD
Piek, Barrett, Allen, Jones & Louise (2005)	Children attending primary schools in Western Australia. Separated into a control group and a group 'at risk' of Developmental Coordination Disorder (DCD)	7-11 years	86	DCD (boys) 11.7(7.76) DCD (girls) 10.8(7.53) Control (boys) 8.78(4.93) Control (girls) 12.10(8.66)	There was a gender effect for the social manipulation subscale ($F(1, 82) = 5.41$, $p = .023$) where girls scored significantly higher ($M = 3.35$; $SD = 2.55$) than boys ($M = 2.26$; $SD = 1.81$)	α for total score = .87; for four subscales α ranged from .66 to .76	Global self-worth $r = -.326$; $p = .002$	-	The wording of 6 items was adapted t cater for the younge age range.

Study	Sample Type	Age	N	M(SD)	Sex difference	Reliability	Correlation with outcome variables	Longitudinal Results	Comments
Popoola (2005)	Secondary school students (Male = 204, Female = 181) selected from ten secondary schools across 10 local government areas in Osun State, Nigeria.	Age range 10-19 years	385	Total *M* = 23.16 (3.15) Physical *M* = 6.18 (1.46) Verbal *M* = 5.48 (1.86) Social *M* = 4.99 (1.73) Attacks *M* = 6.50 (1.50) Low level of victimisation = 2.1% Moderate level = 27.3% High level = 70.6%	Results showed significant differences between males and females on all forms of victimisation, with female participants reporting higher social, verbal and attacks on property than male students. Male students reported significantly higher physical victimisation than female students.	-	-	-	Score of 0 to 16 = Low level of victimisation Score of 17 to 21 = Moderate level Score of 22 to 32 = High level of victimisation

Raine, Fung & Lam (2011)	Participants consisted of schoolchildren (2112 males and 1678 females) drawn from 10 primary and 10 seoncdary schools in Hong Kong.	Age range 8-16 years. Male *M* = 11.7; *SD* = 2.0 Female *M* = 12.04; *SD* = 2.0)	3804	Total score *M* = 8.9; *SD* = 11.27		α for total scale = .90	Total MPVS score was significantly positively associated with reactive aggression (*r* = .38), proactive aggression (*r* = .29), Total SPQ (*r* = .39) and the SPQ subscales: interpersonal (*r* = .29), disorganised (*r* = .30) and cognitive-perceptual (*r* = .35). Peer victimisation mediated the association between schizotypal personality and aggression.		Note SPQ is a measure of Schizotypal personality
Study	**Sample Type**	**Age**	**N**	**M(SD)**	**Sex difference**	**Reliability**	**Correlation with outcome variables**	**Longitudinal Results**	**Comments**
Rao & Kishore (2013)	54 obese and 54 normal weight school-going adolescents.	Age range 11-16 years	108	For obese: *M* = 10.85 (6.49) For normal weight: *M* = 10.78 (6.03)		Alpha's not reported but subscale inter-correlations ranged from *r* = .36 for verbal and attacks on property, and *r* = .56 for physical and verbal (*p*'s < .01)	Peer victimisation was negatively correlated with self-esteem (*r* = -.42, *p* < .01) and positively correlated with behavioural problems (*r* = .24, *p* < .01) in obese adolescents. There was no significant difference in MPVS scores for obese and normal weight adolescents.		
Scarpa, Carraro, Gobbi & Nart (2012)	Pupils attending a middle school (grade 7) in a north-eastern region of Italy.	Age range 12-13 years *M* = 12.2	395	Total victimisation *M* = 5.02 (5.33)		Physical α = .74 Verbal α = .75 Social manipulation α = .68	Negative associations between peer-victimisation during sport practice and enjoyment of physical activity were noted (*r* = -.14, *p* < .01). Verbal		The Italian version of the MPVS, given in this study, was validated by Carraro

				Physical *M* = .23 (.36) Verbal *M* = .54 (.59) Social *M* = .28 (.41) Attacks *M* = .21 (.39)		Attacks on property α = .76	victimisation and total victimisation were both negatively associated with enjoyment of sport (note that the MPVS was completed only with reference to victimisation during physical activity and sport practice at school)		et al. (2011) with th following CFA fit statistics: GFI = .94 AGFI = .92, and RMSEA= .052; Cronbach's alpha values ranged from .70 to .80.

Study	**Sample Type**	**Age**	**N**	**M(SD)**	**Sex difference**	**Reliability**	**Correlation with outcome variables**	**Longitudinal Results**	**Comments**
Shakoor, McGuire, Cardno, Freeman, Plomin & Ronald (2015)	Participants were members of the Twins Early Development Study (TEDS) of twins born in England and Wales between 1994 and 1997.	Participants were tested at age 12 (*M* = 11.56) and age 16 (*M* = 16.32)	4972 pairs 4826 pairs	Total = 7.55 (7.24) Males = 8.40 (7.63) Females = 6.82 (6.79)	Males reported significantly more victimisation than females ($p < .01$)	α = .91	-	Bullying victimisation at age 12 was associated with paranoia at age 16 ($r = .26$, $p < .01$). Associations were lower but still significant for Hallucinations ($r = .18$, $p < .01$),	At age 12 bullying victimisation was assessed using the full MPVS. At age 16, bullying victimisation was assessed using a shortened 6 item version, so only results for full

							Cognitive Disorganisation (r = .20, $p < .01$) and parent-rated negative symptoms ($r = .12$, $p < .01$)	version are included in review.
Waytowich, Onwuegbuzie & Elbedour (2011)	Juvenile delinquents participating in two delinquency intervention programs in Florida, US. 28.2% female sample	Age range 12-16 years ($M = 14.6$; $SD = 1.05$)	181	-	-	Physical α = .80 Verbal α = .78 Social α = .76 Property α = .83	Verbal victimisation and attacks on property significantly predicted violence attribution errors.	

[1] Google Scholar is a commonly used web-based academic search engine, cataloguing between 2 and 100 million records of both academic and grey literature (articles not formally published by commercial academic publishers). It has received considerable attention as a method for searching for literature, particularly in searches for grey literature, as required by systematic reviews. The reliance on GS as a standalone resource has been greatly debated, but recent evidence has suggested that although it should not be used alone for systematic review searches, it forms a powerful addition to other traditional search methods (Haddaway, Collins, Coughlin & Kirk, 2015)

[2] We have reworded the items from the original Betts et al. (2015) paper from the second person pronoun ("sent *you* a nasty text") to the first person pronoun (sent *me* a nasty text; said something mean about *me* on a social networking site) in line with the rest of the MPVS-24 items.