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**Identifying Risks for Male Street Gang Affiliation:**  
A systematic review and narrative synthesis

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## **Abstract**

Gang violence has increased in recent years. Individuals are becoming gang affiliated younger, and many have suffered historic maltreatment. Subsequent exposure to violence can result in profound consequences, including acute psychological harm. This review aims to identify predictive risk factors for male street gang affiliation. A systematic literature search was conducted utilising PsycINFO, PsycARTICLES, Medline, the Cochrane Central Register of Controlled Trials, the Cochrane Database of Systematic Reviews and the Social Policy and Practice databases (from the databases' inception to 03/04/15). From this search, n=244 peer-reviewed papers were included in an initial scoping review, and n=102 thereafter met criteria for a systematic review; a narrative synthesis follows. Gang members have typically faced numerous historic adversities across multiple domains; individual, family, peers, school and community. Cumulative factors generated an independent risk. The meta-narrative described an overarching failure to safeguard vulnerable individuals, with the motivation for gang affiliation hypothetically arising from an attempt to have their basic needs met. Clinical and research recommendations were made to inform early intervention policy and practice.

Keywords: gangs, risks, community, violence, safeguarding, mental health

## **Introduction**

### ***Definition of 'Gang':***

The classification of 'gang' is widely debated within the literature (Esbensen, Winfree, He & Taylor, 2001). This study uses the Eurogang definition (Weerman, Maxson, Esbensen, Aldridge, Medina, & Van Gemert, 2009, p. 20):<sup>1</sup>

'(A gang is) any durable, street-oriented youth group whose involvement in illegal activity is part of its group identity.'

### **Literature:**

Esbensen and Huzinga (1993), Thornberry, Hawkins and Krohn (1998), and Hill, Howell, Hawkins and Battin-Pearson (1999) suggested that gang-affiliated individuals are a particularly vulnerable group, affected by compound risk factors in their early years. A hypothetical developmental model for gang affiliation was proposed by Howell and Egley (2005), suggesting that risks were present across five domains, namely at an individual level, within the family, from peer friendships, at school and within the community. This research highlighted that the cumulative nature of these risks presented a sixth independent risk. Furthermore, risks were seen to begin at the preschool age and to increase throughout childhood (to a point of gang affiliation in mid-adolescence).

Barnes, Boutwell and Fox (2012) and DeLisi, Barnes, Beaver & Gibson (2009) suggested that once gang affiliated, individuals are further violently victimised, with gangs facilitating

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<sup>1</sup> The words 'affiliation', 'involvement' and 'membership' are used interchangeably within the gang literature.

increased aggression and criminal activity (Curry & Spergal, 1992). Coid, Ullrich, Keers, Bebbington, DeStavola, Kallis, ... & Donnelly (2013) highlighted the high level of traumatic exposure experienced by gang members in the United Kingdom (U.K.), resulting in acute psychiatric need, and creating a heavy burden on the National Health Service (NHS). In recent years, public safety in the U.K. has increasingly been threatened by gang violence (UK Centre for Social Justice, 2012; U.K. Mayor's Office for Policing and Crime, 2015), and reports from young offenders' institutions suggest little opportunity for psychological intervention once perpetrators of violence have received custodial sentences, due to chronically low staffing levels (Harris, 2015).

### **Rationale for the Review:**

Gang affiliated individuals are considered to be affected by multiple stress exposure throughout their early developmental stages and, as adults, appear to have significant mental health difficulties. This would suggest a unique role for mental health professionals to assist multi-disciplinary preventative teams to better understand early risk pathways, the impact of risk exposure, and to recommend effective psychological support in an effort to prevent further harm to themselves and others.

Although attempts have been made (Fisher, Gardner & Montgomery, 2008a, 2008b; Hodgkinson, Marshall, Berry, Newman, Reynolds, Burton, . . . Anderson, 2009) to undertake systematic reviews of predictive risks for gang affiliation, Fisher et al. (2008a, 2008b) found that no studies met their specific inclusion criteria, and Hodgkinson et al. (2009) focussed purely on interventions. The current lack of systematic reviews in this area creates an obstacle for already overstretched services to design targeted, evidence-based interventions; an issue that this review attempts to redress.

## Research Aim

This systematic review initially aimed to identify predictive risk factors for male street gang affiliation in the U.K. However, there was a dearth of U.K. centred peer-reviewed research on male street gang affiliation (Marshall, Webb, Tilley & Dando, 2005). Therefore, the search was widened to include international sources.

As males were significantly over-represented in the gang-affiliated population<sup>2</sup> (Pyrooz, 2014; Pyrooz & Sweeten, 2015; Farmer & Hairston, 2013), and given that the Office of the Children's Commissioner (2015) had undertaken extensive research on female gang affiliation, this review focussed on a male population.

There were no age-specific inclusion criteria for this study. However, predictive risks were the main focus. In general, these featured in childhood and early adulthood. Developmental processes were considered in the analysis of the findings.

The overarching question this study set out to answer was whether predictive risks for male street gang affiliation could be identified and summarised from a systematic review of the wider literature.

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<sup>2</sup> The Metropolitan Police Service Trident Matrix<sup>2</sup> stores information about currently known gang members. On 31/3/15, there were 3, 651 gang members on this matrix; 72% were aged between 17-24 years, 99% were male, and 78% were from Black, Asian and minority ethnic (BAME) backgrounds (MOPAC, 2015).

## **Methodology**

### **Design Type:**

This research utilised a systematic review process, and findings were then narratively synthesised (Le Bouillier et al., 2015; Moher, Shamseer, Clarke, Ghersi, Liberati, Petticrew & Stewart, 2015).

### **Search Process:**

An expert group was set up by the 'Ending Serious Group Violence Team' at the Home Office in the U.K. to assist with the identification of appropriate search terms. The group offered suggestions regarding risk factors they considered to be related to gang affiliation, in addition to sending internally published service reports (n=16). Along with reviewing gang literature, this informed the search terms. See Figure 1 for the overall methodological process.

Figure 1 (goes here)

Final search terms were as follows: (Gang, gangs, street gangs) AND (risks, safe, safes, safeties, safety, hazard, united kingdom, mental, mental health, psychological health, mental hygiene, health mental, attachment, attachment behaviour, attachment behaviours, attachment behaviour, attachment behaviours, attachment styles, risk, psyche, childhood, child, children, preschool, pre school, preschool level, preschools, safe, safes, safeties, primary, primaries, primary school, age, ages, current chronological age, adolescence, adolescences, adolescence, 12-20 years old, neurological, neuro, neurologic, neurologies, brain injury, injury brain, injuries brain, brain injuries, predictive, measure, drugs, drug, medication, medications, violence, violences, ptsd, stress disorders post traumatic, traumatic neurosis, traumatic neuroses, stress disorder posttraumatic, stress disorder post traumatic, conduct disorder,

conduct disorders, adhd, attention deficit hyperactivity disorder, attention deficit hyperactivity disorders, anxiety, anxieties, reaction anxiety, anxiety reaction, angst, anxiousness, antisocial personality disorder, sociopathic personality, sociopathic personalities, psychopathic personality disorder, psychopathic personality, psychopathic personalities, neurodevelopmental, neurodevelopmentals, psychosocial, delinquency, delinquencies, delinquent behaviour, school failure, scholastic failure, academic failure, parental control, family, families, discord, discords, opposition, disagreement, absent, absence of, father, adoptive father, fathers, psyche structure, belonging). Commas in the above search terms indicate use of (OR).

Searches were conducted in PsycINFO, PsycARTICLES, Medline, the Cochrane Central Register of Controlled Trials, the Cochrane Database of Systematic Reviews, and Social Policy and Practice databases, using the Ovid search platform (search conducted from the databases' inception to 03/04/15). Truncation was used to avoid overlooking papers using different spellings or terminology. N=244 papers met the initial inclusion criteria. Full copies of these articles were acquired and included in the scoping review.

Papers written in a way that enabled scoring, utilised a quantitative design, and offered information on predictive risk issues for male street gang affiliation were extracted and included in the systematic review. This stage identified no papers using a randomised control design (RCT), no systematic reviews and n=102 observational studies (of which n=78 employed a cross-sectional design and n=24 selected a cohort design utilising longitudinal data).

### **Data Extraction Process:**

Data were extracted based on Howell and Egley's (2005) six categories of risk, with subcategories created under these wider headings. A narrative synthesis, which summarises the findings and highlights emerging themes, follows.

## **Analysis**

### **Quality of Studies:**

Le Bouillier et al. (2015) recommended tabulating the preliminary synthesis of scoping review papers prior to a systematic quality analysis. All papers in the scoping review were therefore tabulated (see Appendix A). Data deemed essential for this review (author, research focus, population group, country research was conducted in, aim of study, methodology, measure used to determine gang affiliation, and findings with regard to risk phenomenon) were tabled.

Papers meeting the systematic review's inclusion criteria (see Figure 1) were extracted from this table and scored using Kmet, Lee & Cook, (2004) Quality Assessment Scoring Framework for Quantitative Studies. Kmet's 14-item checklist covers study design intervention, outcome measures and methods of analysis, and is frequently used for systematic health reviews (Shaw, McNamara, Abrams, Cannings-John, Hood, Longo, ... Williams, 2009). Furthermore, the succinct but rigorous nature of the checklist was considered appropriate, given the number of papers included in the review. A random sample of 62 out of the 102 studies were independently quality rated by a second assessor. The intraclass correlation between the assessors was 0.96, suggesting a high degree of inter-rater reliability.

Table 1 shows a summary of the main criteria, and an explanation of scoring calculations. The complete results of individual scores can be found in in Appendix B.

Table 1 (goes here)

The papers were then coded based on quality. With all things being equal, studies using longitudinal samples are arguably more robust than are cross-sectional designed studies (Farrington & Loeber, 2000) when predicting risks. Studies utilising a longitudinal sample were, therefore, accorded higher value. Papers not utilising a longitudinal cohort were coded hierarchically based on quality (see Table 2 for coding explanations).

A table of papers qualifying for systematic review were extracted from the original information in Appendix A, and additionally assigned quality codes were allocated (see Appendix C).

Table 2 (goes here)

#### **How Risk Areas were Identified:**

Risk areas were extracted from the systematic review papers based on the six areas outlined previously. Patterns of risks were then identified according to the coded quality of the data. The findings have been communicated successively to the reader under generic risk areas, in the sequential order of the quality of the coded evidence (C1-C7) (for the full coded risk table, see Appendix D). When there was no evidence of specific risks under a coded category, it was not mentioned. If controversy arose within the analysis, the merits and shortcomings of individual studies were discussed to guide the level of confidence that could be assigned to the identified area. A diagrammatic explanation of the strategy for reviewing risk findings can be seen in Appendix E.

## **Design Types:**

Due to the volume of papers, and because many quality issues are shared across predictors, a generic critique will be discussed prior to reviewing individual risk predictors. For a full summary of the scored strengths and weaknesses of the systematic review papers in which this is based, see Table 3.

Table 3 (goes here)

### Selected study designs:

Seventy-eight studies were cross-sectional. These studies frequently referred to the risks that were 'predictive' of gang affiliation. Although they were able to classify risks as predictor variables, they could not necessarily infer causation, except in the case of time-irrelevant risk areas such as sex and ethnicity, which remained constant. Cross-sectional studies observed a data set at one point in time to describe specific features within a population (Lindell & Whitney, 2001). These studies were mainly retrospective in nature, and therefore recall bias and a lack of generalisability were particular criticisms (Feldman & McKinlay, 1994).

Twenty-four studies utilised longitudinal samples and adopted a cohort design, allowing for the identification of predictive risk variables. Whilst cohort studies allow for increased insight into the phenomenon under observation over time (Rochon, Gurwitz, Sykora, Mamdani, Streiner, Garfinkel & Geoffrey, 2005), as none of these studies included random allocation to groups (probably due to ethical or pragmatic barriers), causation could not be proved.

Whilst observational studies play an essential role in determining whether investment in more expensive and challenging experimental studies is warranted, they intrinsically lack the

ability to draw causal conclusions. Furthermore, they frequently lack power, are deficient in terms of the inclusion of randomised sampling, and fail to control for confounding factors through statistical analysis. This can lead to findings being rendered invalid or not generalisable (Boccia, Galli, Gianfagna, Amore, & Ricciardi, 2010).

#### Samples:

The processes of participant selection were described fully in 64 of the papers, partially in 37 of the papers and not at all in one paper. Overall, the papers were quite strong in this domain. However, where weaknesses occurred, a consideration of the effect of sampling on later results was not possible. Sample sizes were deemed sufficient in 66 of the papers. In 27 of the studies, this was partially true and sample sizes were deemed inadequate in only seven papers. Although the risks identified were still extracted, generalisation from the findings of lower quality papers was difficult, and determining the robustness of the results was problematic.

Participants' characteristics were reported upon in 54 papers, and the subjects' characteristics were reported on partially in 35 papers. In 49 papers, the participants' characteristics were further supported via the full reporting of estimates of variance (which was also the case for 11 papers to some degree). However, 13 papers did not report on participants' characteristics at all. Furthermore, the investigatory nature of some studies meant that a control group was unnecessary. In these studies, it was impossible to reflect on whether the risk variables identified would have presented in a sample group with different demographics. That 48 papers failed to include an estimation of variance led to additional challenges when striving to communicate risk generalisations.

#### Measures:

Whilst there is currently no consensus on the definition of gang affiliation due to the heterogeneity of gang structures (Coid et al., 2013), only 11 studies used relatively robust tools such as the Eurogang definition (Weerman et al., 2009) or the Gang Membership Inventory (Pillen, Hoewing-Roberson, & Renee, 1992). Esbensen, Winfree, He and Taylor (2001) and Klein (1995) offered evidence of pragmatic questioning and self-reporting being sufficient to determine gang affiliation, and 77 studies used this approach. 14 studies did not report on their method of identification of participants' gang affiliation at all, making it unclear how they clarified participants' gang affiliated status. In these cases, the interpretation of risk variables could only be tenuous.

#### Controlling for confounding factors:

Most cross-sectional papers of C4-C7 quality involved samples who were retrospectively reflecting on risk exposure, potentially introducing reporting bias. Due to the multitude of potentially confounding factors (such as cultural variation, sociopolitical and socioeconomic variables, availability of state and voluntary support services, community disorganisation and levels of gang presence to name but a few), this reduced the confidence in some results, particularly given the transnational nature of the selected papers. Whilst 37 studies did not control for confounding variables at all, 27 partially met this criteria, and 37 papers fully controlled for confounding factors.<sup>3</sup> Given the variability in the locations of the studies (see Table 4), the results of weaker studies could only allow conclusions and the generalisability of findings to be shared with partial confidence.

Table 4 (goes here)

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<sup>3</sup> One paper was excluded from these criteria.

#### Analysis:

Analytic approaches were appropriately selected and described in 56 cases. Thirty-seven papers partially met this criteria, and nine did not. For the most part, the selected analytic procedures were comprehensive, but were often not described at the level of detail that would allow a full critique. In papers scoring lower in this area, it was impossible to ascertain how the results were supported by the analytic processes, limiting confidence in the findings.

#### Reported results:

Results and conclusions were reported in sufficient detail by 77 of the papers, with 20 papers only partially meeting this criteria, and five failing to do so. Identification of risk patterns was for the most part comprehensive, and the extraction of risk was feasible. Where this was more complex, inter-rater discussions and re-reading of papers led to this being possible. Some of the above points will be drawn upon further when the findings are reviewed in detail.

### **Results**

For the full scoring of papers included in the systematic review, see Appendix B. For the tabled findings from the systematic review papers, see Appendix C. See Appendix D for how these relate to risk areas. Below, the findings have been extracted using Howell and Egley's (2005) six categories of risk, with sub categories created under these wider headings. The quality of findings is commented upon, and then summarised in tabular format.

#### **Cumulative Risk:**

Whilst few papers identified independent relationships between an accumulation of risks and gang affiliation, consistent results emerged from these studies. Evidence from medium and medium-low quality longitudinal studies suggested that cumulative risk does present an

independent, predictive risk variable, but that this is mediated by pre-teen stress exposure, poverty and ethnicity. Evidence from a medium cross-sectional level paper suggested that it was the cumulative nature of multiple risks that separated individuals at risk of offending from those at risk of gang affiliation. However, it should be noted that causation cannot be confirmed in the C5 findings due to the cross-sectional nature of the study designs. See Table 5 for an overview of findings in this domain.

Table 5 (goes here)

**Family:**

There was clear evidence of parenting and familial relationships influencing gang affiliation. Studies using longitudinal data suggested that low parental supervision, familial gang involvement and poverty were predictive variables (in addition to evidence of a genetic route). This was widely supported across the literature. However, there was some discrepancy within the cross-sectional studies with regard to how much impact familial criminality had on individual delinquency (Sirpal, 2002; Kakar, 2005). Sirpal (2002) controlled for gang affiliation when analysing the findings, and subsequently found that gang affiliation facilitated delinquency independently of familial influence. As neither of these studies employed longitudinal data, it could have been that the influence of familial criminality would have featured in Sirpal's (2002) population at an earlier date, and that Kakar (2005) may have discovered the relationship to be less strong if gang affiliation had been controlled for. It is impossible, given the design of these studies, to draw clear causal conclusions or make suggestions concerning the directionality of these relationships over time.

The cross-sectional papers suggested an association between gang affiliation and difficult family dynamics, abuse (sexual, physical, emotional and neglect), and also running away from home. However, due to the design of these studies, it was not possible to determine the

directionality of these risk relationships. Although Brownfield (2003; see also C5) found that attachment was not significantly correlated with gang affiliation, measures of attachment in this paper were not validated, and confounding factors were not controlled for. An overall summary of risks related to this domain can be seen in Table 6.

Table 6 (goes here)

### **School**

From the consistent findings above, it appeared that school issues presented risks of gang affiliation. Papers employing a longitudinal design suggested a predictive relationship for gang affiliation arising from school failure and low academic performance. Cross-sectional studies showed an associated risk between gang affiliation and perceived academic performance, commitment to school, negative relationships with teachers, and suspension from school. However, some papers did not control for confounding factors and, with a likely overlap between variables, directionality is difficult to determine. Overall risks related to school can be seen in Table 7.

Table 7 (goes here)

### **Individual:**

Due to the volume of findings in this section, a discussion of each risk presented within this category will be provided.

#### Antisocial behaviour:

There was support for antisocial behaviour being a predictive risk variable from studies employing a longitudinal design; however, these studies also revealed that gangs played a facilitative role for increased violence. Other predictive risks included difficulties in

perspective taking, lack of responsibility and weak prosocial bonds. The reduced self-control, hyperactivity, inattention, low morality, angry ruminations and poor interpersonal skills identified in cross-sectional studies might explain why prosocial bonds were difficult to maintain for this group. Social difficulties could be exacerbated by a transfer from primary school to secondary school at an age at which individuals are considered particularly vulnerable to gang affiliation. Pyrooz (2014) supported that being between the ages of 13 and 15 was a predictive risk for gang affiliation.

Gang-affiliated individuals appeared to hold hostile attitudes towards authority; however, the review identified a complex interplay of factors that could confound this finding relating to ethnicity and social class, and to historic relationships with the police in particular. Gangs were proved to act as facilitators for increased violence, and individuals were exposed to further violent victimisation through gang involvement.

#### Drugs:

Drug use did not appear to be correlated with gang affiliation when explored longitudinally. However, gangs were found to facilitate increased drug use post-gang affiliation, and overall involvement in gangs impacted on lifetime substance use (especially with regard to marijuana).

#### Ethnicity:

The transnational nature of the studies included for this review made it particularly difficult to draw conclusions about the risk presented by 'ethnicity'.

It appeared that being Black, Asian or from an ethnic minority (BAME) was a predictive risk; however, this was confounded by a myriad of additional factors (such as historic relationships with the police, stop-and-search experiences and higher arrest rates, which were more closely

related to ethnicity than they were to gang affiliation). The literature also suggested that the ethnicity of gang-affiliated individuals merely reflected the demographics of the area in which the research was conducted, and was not a unique risk indicator.

### **Poverty**

Economic disadvantage was identified as a predictive risk. It was further suggested by the wider literature that gang affiliation may appear to be an effective way of achieving financial gain in the eyes of vulnerable young people (who are also identified as having had limited opportunities to succeed financially through traditional means). However, being a gang member impacted negatively on the individual's ability to secure employment and financial security upon desisting, creating a vicious cycle.

### **Psychological difficulties:**

This analysis unanimously demonstrated high psychological distress in this cohort. Although low self-esteem was the only predictive risk in this area, high-quality cross-sectional studies showed additional associations between gang affiliation and PTSD, anxiety and depression. There was some conflict in the findings with regard to rates of suicidal ideation and suicide attempts. Coid et al. (2013) found depression and suicide attempts to be lower in gang affiliated individuals when other variables were controlled for. Evans, Albers, Macari & Mason (1996) also found rates to be lower in their gang-affiliated group. However, Yoder (2003) disagreed. Upon closer examination, Yoder, Whitbeck & Hoyt (2003) utilised a sub-sample of gang affiliated individuals who had run away from home or who were homeless. They were also found to have been severely abused. Unlike Coid et al.'s (2013) paper, Yoder (2003) did not control for any confounding variables, and used a smaller sample size, which did not allow for the complex modelling offered by Coid et al. (2013). Evans et al. (1996) found that, although suicidal rumination and attempts were lower in their gang affiliated

group, if gang members had been abused (particularly sexually), they were at increased risk of suicidal ideation and active suicide attempts. The difference in the finding by Yoder et al. (2003) can thus be explained by the utilisation of a biased sample and lack of controlling for confounding variables that might have led the group to run away from home, or to which individuals were exposed whilst homeless.

#### Overall summary:

The lack of control groups, descriptions of sample recruitment, demographic breakdowns and controlling for confounding factors in some studies made drawing clear conclusions in this domain particularly difficult. Without clear directionality, it was impossible to draw generalisable conclusions. The strongest line of narrative from the higher quality papers in this section appears to be that gang affiliated individuals had difficulties with interpersonal skills and had low self-esteem. Although mental health symptoms were suggested, whether these were intrinsic, consequential to gang affiliation, or both intrinsic and exacerbated by gang affiliation, was unclear. However, it appeared evident that gang affiliation created obstacles to future employment and facilitated further violence, exposure to violence and drug use. The summarised risks related to the individual can be seen in Table 8.

Table 8 (goes here)

#### **Peers:**

The evidence summarised in Table 9, offers uncontested support for the impact of peer influence on gang affiliation. Spending time with anti-social peers was a predictive risk indicator, and peer gang affiliation was an associated risk factor identified in cross-sectional studies. In line with previous findings, closer analysis revealed a potential social skills deficit in this group.

Table 9 (goes here)

**Community:**

Being raised in urban, antisocial or socioeconomically deprived environments was predictive of gang affiliation. Communities with highly visible gang presence presented as an associative risk of gang affiliation. The perception of these environments was found to be understandably threatening, which acted as an additional associative risk.

Gang affiliation seemed to be motivated by seeking protection. However, evidence demonstrated that being gang-affiliated further increased violent victimisation and homicide. Risks related to community factors can be seen in Table 10.

Table 10 (goes here)

**Discussion**

This study aimed to undertake a systematic review of the literature in order to search for predictive risks of male gang affiliation. This section will begin with a discussion of the strengths and limitations of the papers included, and will subsequently consider the overall findings.

**Strengths and limitations of studies:**

Due to the intrinsic designs of the studies included, only those utilising longitudinal sample groups could reliably report on predictive risks, and no studies could offer clarity with regard to causation. However, associated risks emerging from cross-sectional studies were useful in interpreting the findings. Although there were many areas with strong support from high-quality papers, weaknesses in reporting on sampling selection, participant characteristics, estimations of variance and measures employed to determine gang affiliation led to concerns

about the generalisability of findings in other areas. Furthermore, given the likely cross-over of risk variables, the directionality of risks was impossible to comment upon, particularly in studies that failed to control for confounding factors.

Although the internal or external validity of the findings may have been compromised (Boccia et al., 2010) by the weaknesses outlined, there were papers that offered robust evidence of risk areas, and the overall consistency of risk patterns that emerged allowed for increased confidence in the reliability of the results. Evidence in this study supported previous research findings (Esbensen & Huzinga, 1993; Thornberry et al., 1998; Hill, Howell, Hawkins & Battin-Pearson, 1999), highlighting that gang affiliated individuals are a highly vulnerable group, affected by multiple risk factors in their early years. This study also supported Howell and Egley's (2005) findings that gang affiliated individuals were exposed to risks across multiple domains.

### **Overall findings:**

Overall findings will be discussed using Howell and Egley's (2005) developmental model of gang affiliation (from preschool to mid-adolescence), as the results suggest a cumulative developmental risk narrative (although as stated previously, directionality was unclear).

#### Preschool:

Evidence suggested that biological and environmental predictive risks could be identified in gang affiliated individuals (genetic predisposition to aggression, low parental supervision, familial gang involvement and poverty). Furthermore, associated risks were detected (parental neglect and abuse), which would suggest early developmental trauma exposure. This could have impacted on the learning of prosocial interpersonal skills and emotional

regulation (Schoore, 1994, 2001, 2003, 2005) which would ordinarily have been taking place during these years.

#### School Entry - Later childhood:

With regard to school aged social relationships, this review demonstrated that gang members had experienced early rejection by pro-social peers and developed anti-social peer bonds, both of which serve as predictors for gang affiliation (together with difficulties with perspective taking and lack of responsibility). Seeking out friendships with anti-social peers might have been a functional way of belonging to a more accepting group by school age. Melde, Taylor & Esbesen (2009) and Grant and Feimer (2007) considered that gangs acted as an alternative socialisation process by providing acceptance and belonging. However, association with antisocial peers then becomes a risk predictor in itself.

With regard to academic ability, early interpersonal trauma or neglect can result in the type of developmental difficulties that can impair academic concentration and performance (Schoore, 2003). The impact of early familial risk exposure, and subsequent individual traits identified in cross-sectional studies (such as low morality, inattentiveness, angry ruminations and hyperactivity), are likely to have contributed to the low academic performance identified as a predictive risk variable in gang affiliated individuals.

Associated risks (such as low commitment to school) could be partially explained by low levels of parental supervision (such as input concerning homework) or low parental education (making it difficult for parents to support their children effectively in this area). Both low levels of parental supervision and low parental education are identified as unique, predictive risk areas. Remaining associated factors (perceived low performance and poor relationship with teachers) could be explained by low self-esteem and antisocial behaviour, both of which were also found to be independent predictive factors.

Early adolescence - mid-adolescence and post-gang affiliation:

School suspension was identified as an associated factor for gang affiliation, and potentially resulted in increased exposure to antisocial, deprived and unstable communities (which are each independent predictive factors) with an overt gang presence (an associated risk).

Cumulative risk exposure appeared to result in a desire to belong, to increase social status, to secure financial independence and to be protected. At a developmental age at which individuals are attempting to develop independence and autonomy, and without protective factors in place (such as adequate adult supervision, positive friendship networks or proactive steps taken by the state to safeguard individuals), gangs can appear to offer security and protection in an otherwise threatening environment.

Evidence demonstrated that (post-gang involvement) gangs acted as facilitators for increased drug use, antisocial behaviour, exposure to violence and violent assault; often thwarting alternative routes to success and autonomy in the future, making desistance difficult, and creating increased psychological harm. This supports previous findings by Barnes et al. (2012), and by DeLisi et al. (2009).

**Limitations:**

There were limitations to this study. No risk of bias for individual studies was considered or included in this review. Only partial extraction of information was conducted, due to the quality appraisal tool utilised and the needs of this review; papers in languages other than English were excluded due to lack of financial capacity for translation.

Furthermore, wide inclusion criteria created challenges when attempting to compare and contrast studies due to variability in the focus, design, style and quality of studies. Decisions

with regard to scoring were weighted by the need to understand rigour (in findings relating to street gang affiliation risks for male participants). However, the identification of street gang affiliation risks was not necessarily the primary aim of these studies. This (as well as priority being given to papers utilising longitudinal cohorts) occasionally led to quality ratings being afforded to included papers, which may not have accurately reflected the overall value of these studies.

Despite the above limitations, this review has uniquely synthesised risk factors for male street gang affiliation using a systematic approach, and outlined where there is predictive or associated validity for these. It was possible to communicate a clear narrative via these findings.

### **Clinical Implications:**

#### Diagnostic accuracy:

Although conduct disorder (CD) (Lahey, Waldman & McBurnett, 1999; Howell & Egley, 2005; Madden, 2013) and subsequent antisocial personality disorder (Coid et al., 2013; Valdez, Kaplan & Codina, 2000) have been associated with gang affiliation, evidence from this review elicited curiosity regarding the accuracy of such diagnoses. Firstly, some ‘symptoms’ of conduct disorder, such as running away from home on two occasions or truanting under the age of thirteen, (The Diagnostic and Statistical Manual of Mental Disorders 5<sup>th</sup> ed. (DSM-V); American Psychiatric Association (APA), 2013) may be explained by factors identified in this review, such as wanting to avoid abuse, lack of supervision and feeling disenfranchised at school. Secondly, early ‘antisocial’ behaviour could instead be symptomatic of developmental trauma histories (van der Kolk, Spinazzola, Blaustein, Hopper, Hopper, Korn & Simpson, 2007). It has been recognised that CD is often

over-diagnosed in areas affected by socioeconomic deprivation, and in males (Keenan, Jacobson, Soleymani, Mayes, & Yaldoo, 1996; McCabe, Rodgers, Yeh & Hough, 2004).

Gang affiliated cohorts are more likely to be male, raised in an area of high socioeconomic deprivation, and to be exposed to both interfamilial and community violence. Evidence demonstrates that males with PTSD present far more frequently with externalising symptoms than do females (Jenkins & Bell, 1994; Gorman-Smith & Tolan, 1998; Fitzpatrick & Boldizar, 1993; Silverthorn & Frick, 1999). It has been proposed that trauma histories are in fact so 'ubiquitous' in the CD population that CD symptoms could in fact simply be a direct expression of post-traumatic symptomatology (Greenwald, 2002). A developmental trauma or PTSD diagnosis could potentially be a more accurate diagnostic pathway for young people at risk of gang affiliation.

The DSM-V's failure to recognise developmental trauma (for a full discussion, see Schmid, Petermann & Fegert, 2013) has created an increased risk of misdiagnosis, or of children with attachment difficulties and protracted trauma histories being overlooked (Kaminer, Seedat & Stein, 2005; Alisic, 2011; Meiser-Stedman, Smith, Glucksman, Yule & Dalgleish, 2008; Scheeringa, Zeanah, Myers & Putman, 2003).). Untreated developmental trauma and PTSD were highlighted in this review (Coid et al., 2013), supported by longitudinal research (Danyko et al., 2002), and emerged as 'perhaps the most significant risk factor' at the first U.K. specialist mental health conference to focus on the mental health needs of gang members (IoP, Gangs Conference, 2015). Although anxiety, low self-esteem, antisocial rumination and psychosis were also identified, Coid (personal communication, 2015) suggested that as his participant group consisted of adults, these presentations quite possibly began via earlier developmental trauma pathways. Evidence from this review would support this position.

That identification and treatment of developmental trauma or PTSD can reduce cyclic victimisation and violence commission (Ruchkin, Henrich, Jones, Vermeiren & Schwab-Stone, 2007) should be of significance not only to ‘clinicians’, but also to policy advisors, voluntary sector organisations, and any organisations or individuals committed to reducing serious group violence. Given the consequences of untreated developmental trauma or PTSD in childhood, a proactive inquiry of exposure to violence in children presenting with CD symptoms is recommended (Bell & Jenkins, 1991; Giaconia, Reinherz, Silverman, Pakiz, Frost & Cohen, 1995), and the use of valid and age-appropriate screening measures (which take in to account both the views and the developmental stage of the child) should be used to improve the accuracy of the diagnosis (Strand, Sarmiento, & Pasquale, 2005).

#### Access to support:

Regardless of which diagnosis is most appropriate at the point of presentation, access to psychological support should be made available to this high-need group as early as possible, and evidence-based interventions must be applied. This review highlighted that gang affiliated individuals actually engage better with treatment than do non-gang affiliated individuals (Coid et al., 2013); however, accessibility of services needs to be considered. If individuals are not attending school or accessing other statutory sector services, they may not be aware of how to access psychological support. Post code territories, the stigma of mental health difficulties, the risk of being perceived as weak, and an inherent lack of trust in authority figures can all create further barriers to seeking help (Department of Health, 2013; MAC-UK, personal communication, 2015).

#### Working in partnership:

Flanagan and Hancock (2010) have suggested that ‘hard to reach’ groups often engage better with voluntary sector organisations than with the statutory sector. Due to the cumulative risks

faced by gang affiliated individuals, and the holistic nature of these, it is imperative for organisations to work in partnership and to share expertise when designing pathways for psychological support or treatment for this group. Furthermore, it would be advisable for voluntary and statutory sector services to actively encourage individuals who have experienced gang involvement to share their expertise through participation routes so as to create innovative and effective services that are youth-centred and accessible.

### **Research Implications:**

As gang violence increases, pressure mounts to identify features underlying this phenomenon in order to assist practitioners striving to identify the most prudent use of limited resources, and to design effective interventions.

Weaknesses in the quality of papers included in this study restricted the ability to draw conclusions about the direction of risk variables, or to generalise results with confidence. Furthermore, there was an overarching lack of emerging predictive psychological or psychiatric factors considered to underpin gang affiliation. This led to difficulties in providing a strong evidence based narrative in this area, or to propose specific mental health interventions, despite the motivation to do so.

Researchers should focus their attention to the individual issues that contribute to gang affiliation, as highlighted in this systematic review, and analyse the strength of these empirically via case-controlled studies (describing sampling methods, including demographic information, ensuring sufficient power, controlling for confounding factors and reporting on estimates of variance) so that these conclusions can be drawn more conclusively. Ideally, these studies would include control groups with similar demographic characteristics, allowing for sensitive analysis of risks that differentiate between the two groups.

The inconsistent use of measures to identify sample groups as ‘gang affiliated’ has led to concern that the phenomenon under analysis might not be consistent. The development of a robust gang affiliation measure is needed in order to increase confidence that researchers are selecting participants with a shared presentation. In the shorter term, researchers should seek to use measurements with some objective validity, and should be transparent about which measures are used and the potential shortcomings thereof.

Cohort studies could offer insights into how identified risks interact, develop and relate to one another over time. The use of longitudinal designs would offer an increased ability to validate predictive risks, reduce the potential impact of recall bias on the validity of findings (Mann, 2003), and offer insight into directionality.

Once predictive risks are identified and confirmed, well designed RCT’s with a focus on the efficacy of specific targeted support could lead to models of gang affiliation prevention through early intervention. This should include a focus on specific predictive mental health risks and evidence based treatment interventions.

### **Conclusion**

This review would suggest that risk exposure for this group begins through the interaction of genes and the environment in the family. Further risk exposure (across a multitude of domains) creates a ‘toxic’ web during crucial developmental stages, resulting in extremely vulnerable young people. Studies analysing data from longitudinal samples demonstrated that pre-teen stress exposure, poverty and ethnicity mediated the impact of this cumulative risk exposure.

The emergent meta-narrative was of gang affiliated males having experienced developmental trauma, and having been drawn to street gangs in order to fulfil their fundamental need to

belong, to be protected and to achieve socioeconomic stability. The evidence supporting this meta-narrative validates the importance of early intervention (including safeguarding, family work and targeted mental health support). Further research is required, to accurately identify those at risk of gang affiliation, and to analyse the efficacy of targeted interventions.

Symbolic demonisation (Goldson, 2011) of gang affiliated young people, through the media or public discourse, will likely fuel young people's sense of rejection from society. Instead, taking collective responsibility and ensuring that evidence based, timely and holistic interventions are offered would offer a more promising way of decreasing the allure of gangs for those identified as susceptible to becoming affiliated, and reducing gang-related violence within our communities.

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## List of Tables

Table 1: Scoring Criteria and Explanations of Calculations for Quantitative Papers

No.	Questions for quantitative studies
1	Is the question or objective sufficiently described?
2	Is the design evident and appropriate to answer the study question?
3	Is the method of subject selection (and comparison group selection, if applicable) or source of information input variables (eg., for decision analysis) described and appropriate?
4	Are the subject (and comparison group, if applicable) characteristics or input variables information (eg., for decision analysis) sufficiently described?
5	If random allocation to treatment group was possible, is it described?
6	If interventional and blinding of investigators to intervention was possible, is it reported?
7	If interventional and blinding of subjects to intervention was possible, is it reported?
8	Are outcome and (if applicable) exposure measure(s) well defined and robust to measurement/ misclassification bias? And are means of assessment reported? <sup>4</sup>
9	Is the sample size appropriate?
10	Is the analysis described and appropriate?
11	Is some estimate of variance (eg., confidence intervals, standard errors) reported for the main outcomes and results (eg., those directly addressing the study question/ objective upon which the conclusions are based)?
12	Are confounding factors controlled for?
13	Are results reported in sufficient detail?
14	Do the results support the conclusions?
<b>Total score</b>	Total sum of scores are calculated by adding yes scores (2), partial scores (1) or no scores (0). Total possible sum is 28, and the summary score is calculated by adding the total score and then dividing by the total possible sum.

<sup>4</sup> As papers explored a diverse range of issues, scoring item 8 was limited to measurement of gang membership only, as opposed to the inclusion of wider measures.

Table 2: Explanation of Allocated Coding of Papers Included in the Systematic Review

<b>Overall percentage score based on Kmet et al (2004)</b>	<b>Utilised longitudinal cohort?</b>	<b>Quality Code</b>	<b>Explanation</b>
<b>90% or over</b>	Yes	C1	High level paper, utilising a longitudinal cohort
<b>70%-90%</b>	Yes	C2	Medium level paper, utilising a longitudinal cohort
<b>50%-70%</b>	Yes	C3	Medium-Low paper, utilising a longitudinal cohort
			There were no low quality studies using a longitudinal cohort
<b>90% or over</b>	No	C4	High level paper, non-longitudinal cohort
<b>70%-90%</b>	No	C5	Medium level paper, non-longitudinal cohort
<b>50%-70%</b>	No	C6	Medium-low level paper, non-longitudinal cohort
<b>50% or below</b>	No	C7	Low level paper, non-longitudinal cohort

Table 3: Overall Strengths and Weaknesses of Studies Included in the Systematic Review

<b>No.</b>	<b>Questions for quantitative studies</b>	<b>Number of papers meeting criteria</b>	<b>Number of papers partially meeting criteria</b>	<b>Number of papers not meeting criteria</b>	<b>Number of papers where this is deemed not applicable</b>
<b>1</b>	Is the question or objective sufficiently described?	70	31	1	0
<b>2</b>	Is the design evident and appropriate for answering the study question?	71	31	0	0
<b>3</b>	Is the method of subject selection (and comparison group selection, if applicable) or source of information input variables (such as for decision analysis) described and appropriate?	64	37	1	0
<b>4</b>	Are the subject's (and comparison group, if applicable) characteristics or input variable information (such as for decision analysis) sufficiently described?	54	35	13	0
<b>5</b>	If random allocation to a treatment group was possible, is this described?	0	0	0	102
<b>6</b>	If interventional and blinding of investigators to intervention was possible, is this reported?	0	0	0	102
<b>7</b>	If interventional and blinding of subjects to intervention was possible, is this reported?	0	0	2	100
<b>8</b>	Are outcome and (if applicable) exposure measure(s) well defined and robust to measurement/misclassification bias? Are the means of assessment reported?	11	77	14	0
<b>9</b>	Is the sample size appropriate?	67	27	7	1 (unclear)
<b>10</b>	Is the analysis described and	56	37	9	0

	appropriate?				
<b>11</b>	Is some estimate of variance (confidence intervals, standard errors) reported for the main outcomes and results (those directly addressing the study question/objective upon which the conclusions are based)?	48	11	42	1
<b>12</b>	Are confounding factors controlled for?	37	27	37	1
<b>13</b>	Are the results reported in sufficient detail?	77	20	5	0
<b>14</b>	Do the results support the conclusions?	80	21	1	0

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Table 4: Summary of Countries the Studies were Undertaken In

<b>Countries studies were undertaken in</b>	<b>Number of studies undertaken in this country (n)</b>
<b>USA</b>	76
<b>El Salvador</b>	1
<b>U.S.A. and El Salvador</b>	1
<b>Mexico</b>	2
<b>U.K.</b>	8
<b>U.K. and U.S.A.</b>	1
<b>Singapore</b>	2
<b>Norway</b>	1
<b>South Africa</b>	1
<b>Denmark</b>	1
<b>Nigeria</b>	1
<b>Hong Kong and China</b>	1
<b>Australia</b>	1
<b>Canada</b>	5
<b>Hong Kong</b>	1

Table 5: Evidence Pertaining to Cumulative Risk

Area of Risk	Quality code	Authors	Summary of findings
Cumulative risk	C2	Eitle (2004)	Cumulative risks present a significant independent risk; mediated by race, family, financial difficulties and pre-teen stress exposure
	C3	Hill et al (1999)	Gang-affiliated young people exposed to $\geq 7$ risk factors were thirteen times more likely to become gang-affiliated than young people exposed to one, or no risk-factors.
	C5	Esbensen, Peterson, Taylor & Frenz (2009)	Whilst gang members and violent offenders often shared generic risks, it was the cumulative nature of these risks which offered an independent route towards gang-affiliation.

Table 6: Evidence Pertaining to Risks Arising from Family Factors

<b>Area of Risk</b>	<b>Quality code</b>	<b>Authors</b>	<b>Summary of findings</b>
<b>Family</b>			
Genetic	C1	Beaver et al. (2009)	There is a genetic predisposition to gang-involvement. In particular, presence of the MAOA gene appeared to increase risk for later gang-involvement.
	C2	Barnes et al. (2012) Krohn et al. (2011)	Genetic factors were identified, and environmental factors could be uniquely experienced based on genetic make up. The interaction of these could lead to gang affiliation. Gang involvement can relate to economic hardship and family problems in adulthood. These failures in the economic and family realms, in turn, contribute to involvement in street crime and/or arrest in adulthood
Parental supervision	C1	Lahey et al., (1999) Pyrooz (2015)	Poor parental supervision was a predictive factor for gang-involvement.
	C4	Alleyne & Wood, (2011) Pederson (2014)	Poor parental supervision was associated with gang-involvement.
	C5	Ngai et al. (2007) Yoder et al. (2003)	Poor parental supervision and less parental monitoring was associated with gang-involvement.
Relationships with parents	C3	Hill et al. (1999)	Family relationships were associated with gang-affiliation.
	C4	Brownfield (2003)	Parental attachment wasn't a significant correlate of gang membership, but the value of positive parental relationships reduced risk of gang-affiliation.

	C5	Walker-Barnes & Mason (2001) Li et al. (2002) Friedman et al. (1975) Hope & Damphousse (2002)	Parenting behaviour predicted gang-involvement; even after controlling for peer influences. Strong family involvement acted as a protective factor for gang-affiliation. Risk-factors for gang-affiliation were identified as difficult relationships with parents, low parental monitoring and parental 'deviance.' Growing up in 'broken homes' was associated with gang affiliation.
	C6	McDaniel (2012) Freng et al. (2012) Wang et al. (1994) Danyko et al. (2002) Florian-Lacy et al. (2002) Lui & Fung (2005) Lachman et al. (2013)	Parental coping skills and monitoring appeared negatively associated with gang-involvement. Gang members reported significantly less parental monitoring and higher levels of perceived parental deviance. Gang members could name fewer role models than non-gang members. Absence of positive parent was predictive of gang membership. Growing up in foster care was associated with gang affiliation. Being in single-parent households with no positive male role model was associated with gang affiliation. The void created by poor family relationships is actively filled by the sense of gang 'belongingness'. Individuals who joined gangs for a sense of belonging were less involved in antisocial behaviour than those who joined for instrumental purposes
Parental abuse	C4	Thompson & Braaten-Antrum (1998)	Maltreatment (physical and sexual abuse) was the most significant indicator of gang-affiliation, independently increasing risk four-fold
	C5	Yoder et al.	Gang affiliated individuals had been exposed to frequent and severe abuse,

		(2003)	and had more frequently run away from home than control groups
	C6	Danyko et al. (2002)	Maternal substance abuse was a risk-factor
Other areas	C1	Lahey et al. (1999) Pyrooz (2015) Pyrooz (2014) Gilman et al. (2014)	Being raised in a low income family was predictive of gang affiliation. Low educational attainment was predictive of gang affiliation. Parental gang-involvement was predictive of gang affiliation
	C5	Baskin et al. (2014) Friedman et al. (1975) Farmer & Hairston (2013) Yoder et al. (2003) Kakar (2005)	Youth who experience less distress will benefit more from family belongingness. Being raised in a low income family was associated with gang affiliation. Having a parent or close relative die in the last year was associated with gang affiliation. Family involvement in criminal activity was associated with gang affiliation. Individual gang membership independently correlated with delinquency, beyond the effects of having delinquent criminal family members.
	C6	Sirpal (2002) Salaam (2011)	Parental criminality enhances gang membership, and delinquency. There's a correlation between large families and gang-involvement.

Table 7: Evidence Pertaining to Risks Arising from School Related Factors

<b>Area of risk</b>	<b>Quality code</b>	<b>Authors</b>	<b>Summary of findings</b>
<b>Family</b>	C2	Dishion (2005; 2010)	School related factors were associated with gang-affiliation.
	C3	Hill et al. (1999)	Found an associated impact of school related factors on gang-affiliation.
	C4	Alleyne and Wood (2011)	Levels of commitment to school were associated with gang-involvement.
	C5	Ngai et al. (2007)	Negative attitudes to teachers featured as a risk.
	C6	Farmer & Hairston (2013) Yoder et al. (2003)	Suspension from school was frequently seen in the profiles of gang-affiliated individuals.
	C7	Dukes et al.(1997)	Perceived academic ability related to gang-affiliation.

Table 8: Evidence Pertaining to Risks at an Individual Level

Area of risk	Quality code	Authors	Summary of findings
<b>Individual</b>			
Antisocial behaviour and relationship difficulties	C1	Lahey et al. (1999) Dmitrieva et al. (2014)	Low responsibility, antisocial behaviour, conduct disorder symptoms and difficulties in perspective taking are identified as predictive risk factors for gang-affiliation.
	C2	Dishion et al. (2005) Weerman et al. (2015) Barnes et al. (2010) Weerman et al. (2015) Gatti et al. (2005)	Identified and associated risk between antisocial and conduct disordered behaviour and gang affiliation. Antisocial behaviour was exacerbated by gang-affiliation. Weak conventional bonds were associated with gang affiliation. The need to belong is associated with gang affiliation.
	C3	Craig et al. (2002) Zhang et al. (1999)	Increased fighting behaviour, hyperactivity, inattention, oppositional behaviour, and self-reported delinquent activities are noted in gang-affiliated cohorts and peers rated them as more aggressive than non-gang-affiliated peers. Antisocial behaviour was further facilitated by gang-affiliation.
	C4	Alleyne & Wood (2013) Pederson (2014)	Moral disengagement and weak prosocial values were associated with gang affiliation. Anti-authority attitudes were associated with gang affiliation.
	C5	Griffin & Hepburn (2006) Hope & Damphousse (2002) Yoder et al. (2003) Ngai et al. (2007) Thornberry et al. (1993) Melde &	Gang affiliation was associated with violence. Antisocial behaviour/ gang association link. Antisocial behaviour/ gang association link. Low control and low morality was associated with gang affiliation. Individuals did not have higher rates of antisocial behaviour than control groups prior to gang membership, and that upon desisting from gang-involvement antisocial behaviour decreased. Gang-involvement affects emotions, attitudes

		<p>Esbensen (2011)  Friedman et al. (1975)  Egan &amp; Beaderman (2011)  Alleyne &amp; Wood (2010)  Lurigio et al. (2008)  Kakar (2008)  Brownfield et al. (2001)  Harper et al. (2008)  Lyon &amp; Hall (1992)</p>	<p>and social controls in ways that increase antisocial behaviour. Aggression was linked to the degree of gang embeddedness and antisocial behaviour. Gang-affiliated individuals displayed anti-authority attitudes. Gang-affiliated individuals were more likely to blame their victims, have negative attitudes to the police and have anti-authority attitudes. Gang-affiliated individuals were more likely to have been stopped and searched, and arrested. Arrest rates in this group were linked to ethnicity and social class; when controlling for gang membership. There was an association between the degree of gang embeddedness and anti-social behaviour.</p>
	C6	<p>Salaam (2011)  McDaniel (2002)  Bsiwas (2011)  Olate et al. (2012)  Vasquez et al. (2012)  Corcoran et al. (2005)  Curry &amp; Spergal (1992)  Kissner et al. (2009)</p>	<p>Correlations between police corruption and gang-affiliation, gang-affiliation and antisocial behaviour, and rumination and gang embeddedness were identified in these papers.</p> <p>Anti-social behaviour was the only variable dividing gang members from non-gang members, after controlling for mental health. Lack of social control is not significant. Gangs offered a facilitative role in antisocial behaviour.</p>
	C7	<p>Dukes et al. (1997)</p>	<p>Negative attitudes to institutions were considered to be associated with gang-affiliation.</p>
Drug use	C2	<p>Gatti et al. (2005)  Bjerragaard (2010)  Weerman et al. (2015)</p>	<p>Gang involved individuals had higher substance use. Gangs facilitated increased alcohol and drug use.</p>
	C3	<p>Zhang et al. (1999)</p>	<p>Drug use is exacerbated by gang-affiliation.</p>
	C5	<p>Thornberry et al (1993)  Yoder et al. (2003)</p>	<p>Individuals did not have higher rates of drug use prior to gang membership, and gang-involvement was directly correlated with increased alcohol and drug use. Gang</p>

		Volkman et al. (2013) Valdez et al. (2006) Harper et al. (2008)	affiliation was associated with drug scene familiarity and increasing levels of substance use. Drug use interacted with an individual gang member's risk for violence to affect violent behaviour outcomes. Once gang-affiliated, increased alcohol and marijuana use was sustained over a lifetime.
	C6	McDaniel (2002) Danyko et al. (2008) Lyon & Hall (1992) Sirpal (2002)	Alcohol and drug use are linked to gang-affiliation. Parental criminality and drug use enhanced gang membership, drug use and delinquency
Ethnicity	C1	Tapia (2011) Pyrooz (2015)	Gang membership, racial minority statuses and their interaction, each increase the risk of arrest. Youth gang members were disproportionately male, black, Hispanic
	C2	Esbensen & Carson (2012)	Ethnicity was not significantly related to gang affiliation, over time, and was considered more likely to be associated with compounding variables.
	C3	Pyrooz, Sweeten & Piquero (2012) Winfrey et al. (2001)	Hispanic and Black individuals were associated with greater continuity in gang-involvement when studied longitudinally. The correlation between gang-affiliation and ethnicity was likely to be mediated by a variety of complex and compounding variables.
	C4	Alleyne & Wood (2011)	The ethnicity of gang-affiliated individuals merely reflected community demographics, and wasn't deemed to be of unique significance.
	C5	Brownfield et al. (2001) Hope & Damphousse (2002)	Although ethnicity interacted with arrest rates (with Black and 'lower class' individuals being arrested more frequently) this wasn't considered related to gang-affiliation. Gang members are more likely to be non-white
Need for protection/	C2	Melde et al. (2012)	Although some individuals are motivated to join gangs for protective purposes, they

violent victimisation		DeLisi (2009) Barnes et al. (2012)	are subsequently exposed to increased violent victimisation; even when personal characteristics have been controlled for. Post gang-affiliated victimisation was related to increased gang membership over time
	C4	Katz et al. (2011) Rufino et al. (2000) Coid et al. (2013)	Historic violent victimisation was strongly correlated with gang-involvement. This relationship remained constant, even when gang-affiliation had been controlled for. Gang affiliated individuals tended to be alone and under the influence of substances when assaulted. Gang affiliated individuals frequently feared further violence, and had high mental health needs; particularly trauma symptomology
	C5	Lurigio et al. (2008) Taylor et al. (2008) Yoder et al. (2003)	Gang affiliated individuals feared further violence. Historic violent victimisation was strongly correlated with gang-involvement
Poverty (and need for social status)	C1	Dmitrieva et al., (2014)	Individuals are motivated to join gangs in order to increase self-esteem.
	C2	Melde et al. (2012) Krohn et al. (2011)	Low social status was a risk associated with gang affiliation, and although individuals are motivated to join gangs for financial gain, economic hardship additionally increased subsequent to gang-affiliation.
	C4	Alleyne & Wood (2013)	A desire for increased social status acted as a motivator for gang-affiliation.
	C5	Alleyne & Wood (2010) Farmer & Hairston (2013) Friedman et al. (1975) Hope & Damphousse	A desire for increased social status acted as a motivator for gang-affiliation. Gang-affiliated individuals had historically been in receipt of free school meals, had less opportunity for success, and had been raised in a lower socioeconomic environment. Gang-affiliated individuals appeared less socially mature, and sought

		(2002) Lyon & Hall (1992)	social status gain as a reaction to growing up in poverty.
	C6	Salaam (2011)	Gang membership seemed to emerge as a functional attempt to ‘improve their lot in life.’
Psychological difficulties	C1	Dmitrieva et al. (2014)	Low self-esteem predicted gang membership.
	C4	Coid et al. (2013) Coid, (personal communication, 2015)	Trauma symptomology was associated with gang affiliation. In a cross-sectional study of 4, 664 men between the ages of 18 and 34 in Great Britain, a higher rate of antisocial Personality Disorder (APD), anxiety and psychotic disorders were identified in the gang-affiliated group. This was hypothetically explained to be mediated through untreated post-traumatic stress disorder (PTSD). Once offered help, gang-involved participants were more likely to use services than a non-gang-affiliated cohort. Lower rates of depression were found in gang-involved men
	C5	Friedman et al. (1975) Yoder (2013) Farmer & Hairston (2013) Li et al. (2002)	Low self-esteem predicted gang membership. Higher rates of suicide were found in gang affiliated men. Gang-affiliation is correlated with generic psychological difficulties.
	C6	Corcoran et al. (2005) Evans (1996) Harper et al. (2008) Danyko et al. (2002) Florian-Lacy et al. (2002) Biswas et al. (2011)	Gang members report more mental health symptoms, and this is a key discriminating factor between gang members and non-gang members. Gang-affiliated individuals experienced less suicidal ideations and suicide attempts than control groups. Depression and anxiety were found to be associated with gang-affiliation. PTSD is a disorder experienced by gang-involved participants. Low self-esteem predicted gang membership. Gang members had a

		Olate et al. (2012) Valdez et al (2000)	sense of foreshortened future which could be symptomatic of PTSD. Gang members had a lower psychopathy score than a forensic group but greater than the control group.
	C7	Corocoran et al. (2005) Dukes et al. (1997)	Higher mental health symptoms, externalised behaviour and 'thought problems' were found in gang members than control groups. Low self-esteem predicted gang membership
Other features	C1	Pyrooz (2014)	Individuals are particularly at risk of gang-involvement between the ages of thirteen and fifteen years
	C5	King et al. (2013) Friedman et al. (1975)	Gang membership was correlated with 'risky sex' and 'thrill seeking' and gang members were found to have less opportunities for success.
	C6	Biswas et al. (2011) Palmer & Tilley (1995)	Gang membership was correlated with 'risky sex'
	C7	Brooks et al. (2011)	Gang membership was correlated with 'risky sex'

Table 9: Evidence Pertaining to Peers Related Risks

<b>Area of risk</b>	<b>Quality code</b>	<b>Authors</b>	<b>Summary of findings</b>
<b>Peers</b>	C1	Lahey et al. (1999) Dmitrieva et al. (2014)	Antisocial peers posed a significant influence in individuals becoming gang-involved.
	C2	Weerman et al. (2015) Evans et al. (1999)	Antisocial peers posed a significant influence in individuals becoming gang-involved. Urban students significantly more likely to report having peers in gangs.
	C4	Alleyne & Wood (2011)	Antisocial peers posed a significant influence in individuals becoming gang-involved.
	C5	Farmer & Hairston (2013) Yoder et al. (2003) Walker-Barnes & Mason (2001) Friedman (1975) Kakar (2005)	Gang members had historically been rejected by peers. Gang members had friendships with ‘deviant peers’. Gang members had been friends with gang-involved individuals. Gang members were frequently motivated to join gangs to satisfy their need for companionship with heterosexual males.
	C6	Chu et al. (2011) Lui & Fung (2005)	In regard to their criminological need profile, it was argued that gang and non-gang couldn’t be differentiated, except in respect to peer delinquency levels. Anti-social peers provide belonging and fill the void left by families.

Table 10: Evidence Pertaining to Risks in the Community

<b>Area of risk</b>	<b>Quality code</b>	<b>Authors</b>	<b>Summary of findings</b>
<b>Community</b>	C1	Pyrooz (2014) Gilman et al. (2014)	Growing up in urban, antisocial, socially disadvantaged areas, predicted gang-affiliation.
	C3	Hill et al (1999) Dupure et al. (2007)	Community environments have a significant impact on gang-affiliation, especially where there is community instability.
	C4	Alleyne & Wood (2013) Evans et al. (1999)	The presence of gangs and perceived threat to personal safety in the community correlated with gang-involvement
	C5	Luyt & Foster, 2001 Farmer & Hairston (2013) Friedman et al. (1975)	The presence of gangs and perceived threat to personal safety in the community correlated with gang-involvement. There was an association between individual perceptions of communities as dangerous and subsequent gang-affiliation. Gang-affiliation motivation arose from a perceived need for safety, and protection
	(C6)	Cadwallader & Cairns (2002) Salaam, 2011	The community environment impacted upon the social development of young people who later become gang-involved. Rural and urban migration were associated with gang-involvement

**Figure 1: PRISMA Flow Diagram**

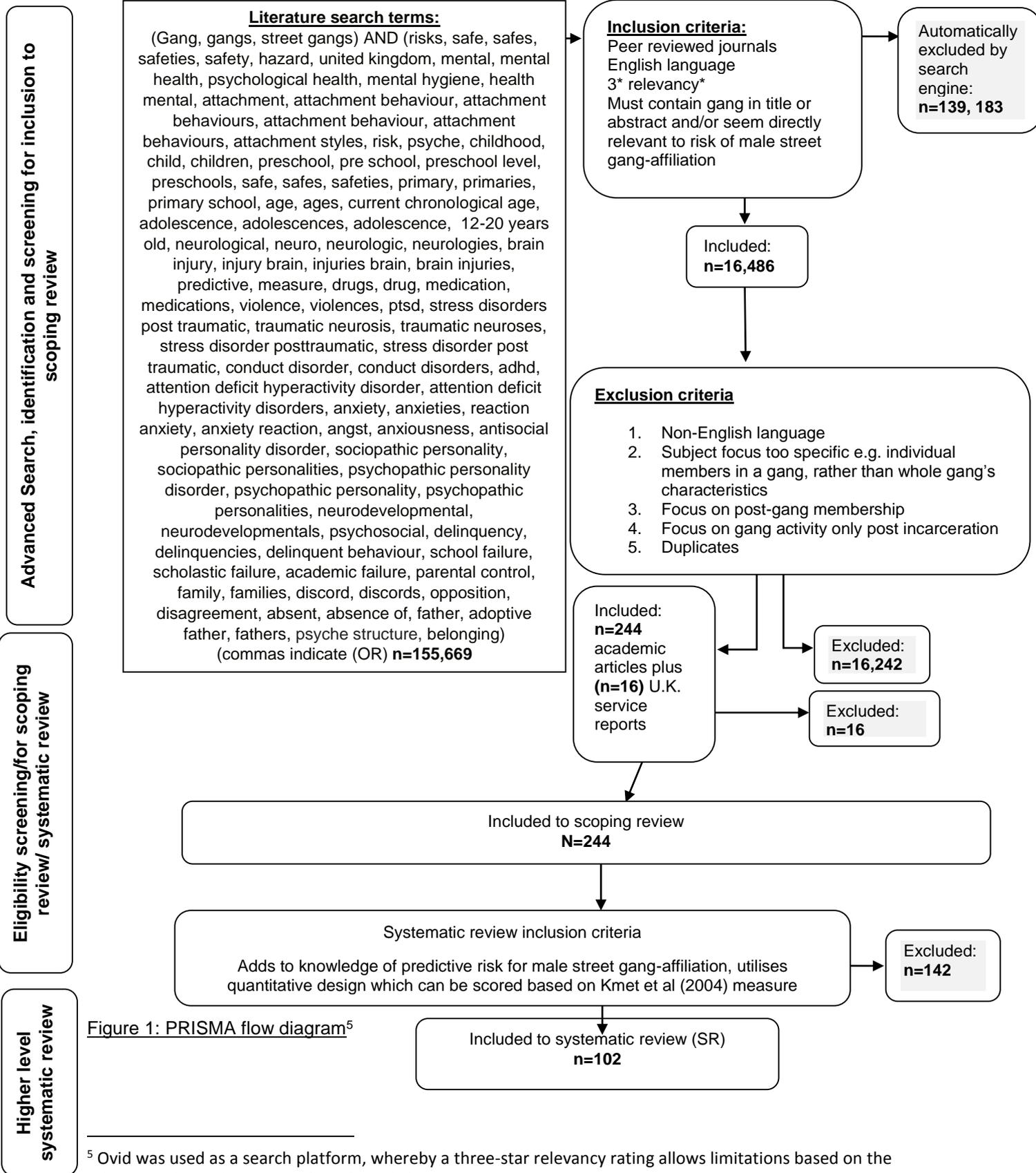


Figure 1: PRISMA flow diagram<sup>5</sup>

<sup>5</sup> Ovid was used as a search platform, whereby a three-star relevancy rating allows limitations based on the relevancy of search terms in the title and abstract.

