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Chi Meng Chu[a,b]*, Michael Daffern[a,c,d,e], Stuart Thomas[a,c] and Jia Ying Lim[b]

[a]Monash University, Centre for Forensic Behavioural Science, Melbourne, Australia; [b]Ministry of Community Development, Youth and Sports, Clinical and Forensic Psychology Branch, Singapore, Singapore; [c]Victorian Institute of Forensic Mental Health, Melbourne, Australia; [d]The University of Nottingham, Division of Psychiatry, School of Community Health Sciences, Nottingham, UK; [e]Nottinghamshire Healthcare NHS Trust, Nottingham, UK

Youth gangs are ubiquitous around the world and have been problematic for the social and criminal justice agencies. Despite widespread public concern, there has been relatively scarce empirical scrutiny of youth gangs internationally and little outside of America and Europe. In particular, the activities of youth gangs, the function of gang membership, the criminogenic needs of gang-affiliated youth, and the risk of criminal recidivism for gang-affiliated youth remain unclear. Against this background, this study explored the sociodemographic characteristics, risk and rate of criminal recidivism in a cohort of 165 male youth offenders in Singapore, of which 58 were gang-affiliated. Multivariate analyses revealed that gang-affiliated youth offenders were significantly more likely to have histories of substance use, weapon use and violence than nongang-affiliated youth offenders. Gang-affiliated offenders also scored higher on measures of risk for recidivism (SAVRY and YLS/CMI), and engaged in violent and other criminal behaviors more frequently during follow-up. These differences indicate a significant relationship between gang affiliation and criminal recidivism in youth offenders. Furthermore, these findings have important clinical and policy implications, indicating an increased requirement for additional and more intensive assessment and tailored interventions for gang-affiliated youth offenders.

Keywords: gang affiliation; recidivism; risk assessment; violence; youth offenders

Introduction

Contemporarily, youth gangs are a ubiquitous phenomenon. Although youth gang behavior varies according to setting and contextual stressors (Hardman, 1967; Spergel, 1995) and that the functions of membership are likely to differ, gang activity universally impacts adversely on the general community. This is due to fear of victimization, and inevitably, because of the costs associated with the provision of social, legal and criminal justice services to gang members and their victims (Covey, 2003). Unfortunately, due to a lack of empirical research in the area, the behaviors of gang-affiliated youth, their criminogenic, social and clinical needs, as well as their risk for criminal recidivism remain relatively unclear.

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*Corresponding author. Email: chimeng.chu@med.monash.edu.au

Definition of a youth gang

There is no universally accepted definition of a youth gang (Horowitz, 1990). Some scholars, working under the aegis of the Eurogang Program, have defined a youth gang as 'any durable, street-oriented youth group whose own identity includes involvement in illegal activity' (Klein, Weerman, & Thornberry, 2006, p. 418; see also Esbensen & Weerman, 2005). Other scholars have disagreed about whether engagement in criminal activities should be a criterion for 'gang'; those who do not see this as necessary emphasize the roles of shared identity, activities, as well as a sense of solidarity and territoriality as critical determinants of 'gang' (see Ball & Curry, 1995; Duffy, 2004; Esbensen, Winfree, He, & Taylor, 2001; Spergel, 1995 for reviews). Further, simply committing criminal behavior with others does not constitute a gang as most criminal behavior perpetrated by young people occurs in concert (Reiss & Farrington, 1991). Notwithstanding the differences in youth gang definitions, the majority of the definitions of gang include the following characteristics: (1) a self-formed youth group that is united by mutual interests, and controls particular territories, facilities, or enterprises; (2) employs symbols in communications; and (3) collectively involved in crime (see Howell, 1998 for a review).

Youth gangs and crime

Despite the continual disagreement with the definition of a youth gang, studies in America and Europe suggest that the prevalence rates of gang affiliation within different youth populations vary between 3% and 37%, depending on the definition that is adopted (e.g. Battin, Hill, Abbott, Catalano, & Hawkins, 1998; Esbensen & Weerman, 2005; Klein et al., 2006; Taylor, Peterson, Esbensen, & Freng, 2007, see also Klein & Maxson, 2006 for a review). In addition, studies in America, Australia, and Europe have shown that youth gang members are significantly more likely than nongang-affiliated youth to engage in a variety of offenses that include, but not limited to, violent and drug offenses as well as using weapons (e.g. Curry, 2000; Curry, Decker, & Egley, 2002; Esbensen & Huizinga, 1993; Huff, 1998; Klein et al., 2006; Thornberry, Krohn, Lizotte, & Chard-Wierschem, 1993; White & Mason, 2006). Moreover, youth gang membership is associated with a higher rate of offending even after accounting for the effect of having delinquent friends (Battin et al., 1998; Klein et al., 2006). Furthermore, youth associated with gangs but not full-fledged members report more delinquency than youths who were not associated with gangs at all, but less delinquency than full-fledged gang members (Curry et al., 2002).

Asian youth gangs in western contexts

Gang research in America has found that Asian youth gangs are similar to other youth gangs, but are also qualitatively different (e.g. Chin, 2000; Tsunokai & Kposowa, 2002 for reviews). For example, Asian youth gangs are active in violent activities as with other youth gangs, but tend to perpetuate different types of violence (simple assault, robberies and extortion vs shootings or aggravated assault). It is also a common misconception that many of the Asian youth gang members are knowledgeable about *triad* and *secret society* values (Joe, 1994), but the internalization of these norms and values, as well as the conflicting cultural identities tend to

increase the likelihood of gang involvement (Chin & Fagan, 1994; Song, Dombrink, & Geis, 1992). Contrary to Posner's (1988) and Bresler's (1981) assertions that Asian youth gangs are part of a bigger hierarchy of organized crime and are responsible for extreme violence, some scholars have since suggested otherwise (e.g. Joe, 1994; Tsunokai & Kposowa, 2002). There are relatively few systematic studies on Asian youth gangs internationally, and an important question will be whether youth gangs in Asia are different from those Asian youth gangs in western contexts. The different functions and activities of Asian gangs in Asia and in western countries may differ. For example, Asian youth in western countries may feel the need to join a gang to protect themselves from threats by other ethnic groups, whereas this need may not be dominant when they are not an ethnic minority. Studying the functions, operations and reasons pertaining to why youth join gangs in an Asian context will help inform whether cross-cultural applications of western interventions and assessment measures for youth gang members in Asia are appropriate, and this may have further implications on crime prevention policy decisions.

Youth gangs in Singapore

Singapore is an independent island-state in South East Asia with a total population of 4.98 million; the ethnic composition of Singapore's resident population is 74.2% Chinese, 13.4% Malay, 9.2% Indian and 3.4% others (Singapore Department of Statistics, 2009). Tracing their origins to the triads in China, secret societies have been active in Singapore since the early 19th century. They played a significant role in the protection and livelihoods of the Chinese immigrants (Lim, 1999). In recent years, secret societies in Singapore have been greatly suppressed through tough laws (e.g. the Criminal Law (Temporary Provisions) Act, 2004) and rigorous law enforcement. However, street gangs, predominantly consisted of youth, remain operational, and continue to pursue criminal activities and engage in violence (Ministry of Home Affairs, 2006).

Although youth gangs in Singapore tend to adopt the names of secret societies and loosely model themselves after triads and secret societies, they are different in several aspects (Covey, 2003). Triads and secret societies are considered highly organized crime groups that are: (1) constituted mainly for economic gains through criminal activities, and (2) operate as a whole group rather than subsets. In contrast, youth gangs have abandoned the traditional secret society practices (e.g. initiation and rituals), and tend to be loosely organized in terms of structure and hierarchy. Moreover, youth gang membership serves a number of different functions, and albeit co-occurring delinquency, youth gang membership may primarily satisfy social (Covey, 2003; Shelden, Tracy, & Brown, 1997) rather than economic needs. As with most countries around the world, youth violence is a major concern in Singapore. According to crime statistics, rioting[1] is one of the three most common youth crimes in Singapore, with almost 13% of all youth offenders being arrested for rioting offenses in 2007 (Singapore Police Force, 2008). In a study of 300 youth rioters (aged 21 years and below), 87.6% were reportedly involved with gangs (Subordinate Courts of Singapore, 1998). However, the only Singaporean study examining gang affiliation and general criminal recidivism within youth offenders (Ang & Huan, 2008) found that gang membership did not significantly predict general recidivism amongst youth

offenders. The authors suggested that gang involvement might be more strongly associated with violent rather general recidivism, although this was not examined.

Risks and criminogenic needs in gang-affiliated youth offenders

Notwithstanding Ang and Huan's (2008) study, the extant literature suggests gang-affiliated youth offenders possess numerous criminogenic needs (e.g. Battin et al., 1998; Curry et al., 2002; Huff, 1998; Subordinate Courts of Singapore, 1998; White & Mason, 2006). According to Andrews, Bonta, and Hoge (1990), the assessment of risk and criminogenic need is important for making informed decisions about the level of supervision and the intensity of treatment required for effective offender rehabilitation. Accurate classification of risk is imperative as it assists clinicians to determine which individuals and groups of offenders require intensive intervention. According to the Risk principle, treatment should be directed towards offenders with the highest level of risk (Andrews & Bonta, 2007).

Historically, the assessment of offenders' risk and criminogenic needs has been based on unstructured clinical judgment, which has been criticized for being subjective and unreliable (Monahan & Steadman, 1994; Quinsey, Harris, Rice, & Cormier, 2006; Webster, Douglas, Eaves, & Hart, 1997). However, there is a current consensus that structured risk assessment methods are superior, in terms of predictive validity (Douglas, Cox, & Webster, 1999; Grove & Meehl, 1996; Quinsey et al., 2006). In the arena of youth risk assessment, the Structured Assessment of Violence Risk in Youth (SAVRY; Borum, Bartel, & Forth, 2002) and the Youth Level of Service/Case Management Inventory (YLS/CMI; Hoge & Andrews, 2002) are two structured risk assessment instruments commonly used for assessing an offender's risk of violent and general offending, respectively.

The emergent literature on the SAVRY and YLS/CMI suggests their predictive validity ranges from modest to good (Catchpole & Gretton, 2003; Dolan & Rennie, 2008; Gammelgård, Koivisto, Eronen, & Kaltiala-Heino, 2008; Jung & Rawana, 1999; Lodewijks, Doreleijers, & de Ruiter, 2008; Lodewijks, Doreleijers, de Ruiter, & Borum, 2008; Meyers & Schmidt, 2008; Schmidt, Hoge, & Gomes, 2005; Thompson & Pope, 2005; Welsh, Schmidt, McKinnon, Chattha, & Meyers, 2008). To the best of our knowledge there has been no study examining the risk of recidivism between those youth who are gang-affiliated or not.

Present study

This study forms part of a program of research into gang-affiliated criminal behavior, risk and treatment needs. The aims of this study were to explore: (1) socio-demographic similarities and differences between gang-affiliated and nongang-affiliated *youth offenders*; (2) the risk ratings and level of criminogenic needs in gang-affiliated and nongang-affiliated youth offenders; and (3) the relationship between gang affiliation and criminal recidivism.

Against the background of previous research, the following hypotheses were formulated: (1) gang-affiliated youth offenders would score higher on contemporary risk assessment measures, considering their likelihood of engaging in substance use and antisocial activities, procriminal attitudes, and association with antisocial peers; and (2) gang-affiliated youth offenders would reoffend more often and sooner after

being sentenced in court than nongang-affiliated offenders. Several exploratory hypotheses were also included: that gang-affiliated youth offenders would be different from nongang-affiliated offenders in terms of offender characteristics (e.g. age at first charge offense, problematic behaviors in school, histories of abuse, substance use, violence and weapon use).

Method

Source sample

The sample comprised 165 youth male offenders (aged 12–18 years). All were referred for psychological evaluation and/or treatment at the Clinical and Forensic Psychology Branch (CFPB; formerly known as the Psychological Services Unit) of the Ministry of Community Development, Youth and Sports, Singapore, between January 2004 and December 2005. All youth were charged with and convicted of the current criminal offenses (which brought them into contact with CFPB), and placed on probation following evaluation and sentencing. The probation services and the courts refer youth offenders to CFPB for a psychological evaluation during pre-sentence assessment when required. Typically referrals include those youth offenders with sexual and violent offending issues, chronic and repetitive offending patterns, as well as mental health issues. In addition, CFPB also accepts referrals post-sentence from the probation services and youth correctional institutions for assessment and treatment of offense-related and/or mental health issues.

Classification of the gang-affiliated youth offender

This study adopted the Klein et al.'s (2006) definition of a youth gang. Youth offenders were classified as 'gang-affiliated' if they had (a) stated their membership of specific youth gangs (i.e. those that met Klein et al.'s criteria) during psychological assessment, and/or (b) had official criminal records that indicated affiliation to specific youth gangs. Having gang members as peers or criminal associates did not automatically qualify the youth as a 'gang-affiliated offender.'

Ethics

Ethical approval to conduct this program of research was granted by CFPB, the Probation Services Branch, and the Residential and Aftercare Services Branch from the Ministry of Community Development, Youth and Sports, Singapore.

Procedure

Data was collected from multiple data sources, including: (a) psychological reports prepared by psychologists at CFPB, (b) pre-sentencing reports prepared by probation officers, (c) charge sheets, (d) statement of facts, (e) any previously existing assessment and treatment reports on the youths' CFPB files, as well as (f) school reports. Psychological interviews conducted at the CFPB follow a standardized semi-structured interview schedule. Hence, the resultant psychological reports contain specific information pertaining to several key areas of assessment (i.e.

personal, family, psychiatric, and criminal offending histories, as well as the current offending behaviors and risk management issues).

The following information were collated from the various data sources:

(1) *Sociodemographic characteristics*: Age at referral, education level (i.e. primary or special needs education vs secondary and above), ethnicity (i.e. Chinese, Indian, Malay or others), and family structure (i.e. intact family of origin vs non-intact family of origin).

(2) *Offender characteristics*: Age at first charged offense, type and number of index offenses (i.e. violent[2], sexual[3], theft/fraud[4], substance use[5], and illegal sale[6]), past offense history (i.e. previous charged and convicted offenses), history of weapon use, history of substance use (i.e. alcohol, illicit drugs, and inhalants), history of abuse[7] (i.e. physical and/or sexual), history of bullying and being bullied in school[8], as well as history of school truancy and expulsion.

(3) *Gang-related characteristics*: Gang affiliation, age at entry to gang, duration of gang affiliation, history of gang-related violence (i.e. gang fights), and history of nonviolent gang-related activities (e.g. illegal sale of videos, cigarettes, and drugs).

(4) *Recidivism*: Recidivism data was obtained from a criminal records check with Singapore Police Force's Criminal Record Office. Criminal convictions were detailed in the criminal records check, which was completed on 4 February 2009. The average length of the follow-up (i.e. from start of court order to end of follow-up) was 1658 days (SD = 299), but varied between 1127 and 2906 days. Recidivism was coded in the following way with a record made as to whether each offender recidivated by engaging in any of the following criminal behaviors during follow-up: violent recidivism, sexual recidivism, nonviolent recidivism (i.e. any offenses not classified as violent or sexual in nature), general recidivism (which includes sexual, violent and other offenses), and type of offenses.

For the purpose of this study the following risk assessment measures were coded from case files using the aforementioned materials:

(1) *Structured Assessment of Violence Risk in Youth* (SAVRY; Borum et al., 2002). The SAVRY is a 24-item risk assessment instrument that was developed from existing research and the professional literature on adolescent development, as well as youth violence. It is based on the structured clinical judgment model (see Webster et al., 1997; Webster, Eaves, Douglas, & Wintrup, 1995), and is designed to assist in the assessment and intervention planning for youths (aged 12–18 years) where there appears to be a risk for violence. The risk items are classified into three risk domains (Historical, Social/Contextual, and Individual/Clinical), and each risk item is rated on a three-point scale (*Low*, *Moderate*, *High*) according to specific rating guidelines. In addition to the 24 risk factors, the SAVRY has six protective factors that are rated as either *Present* or *Absent*.

(2) *Youth Level of Service/Case Management Inventory* (YLS/CMI; Hoge & Andrews, 2002). The YLS/CMI is a structured assessment instrument designed to facilitate the effective intervention and rehabilitation of youth

offenders (aged 12–18 years) by assessing their risk level and criminogenic needs. It consists of 42 items divided into eight subscales (prior/current offenses/dispositions, family circumstances/parenting, education/employment, peer relations, substance abuse, leisure/recreation, personality/behavior, and attitudes/orientation).

The key terms in this study were operationalized to minimize the likelihood of subjective bias in coding process, and any difficulties encountered during the coding process were referred to the first author for discussion and resolution. Where discrepancies between data sources arose, the information recorded in the most recent psychological assessment or progress report was used. A SAVRY or YLS/CMI item was not scored if information necessary for coding was unavailable. The relevant risk assessment data for the SAVRY and YLS/CMI were not analyzed if there were more than two and five omitted items, respectively; only two cases had more than two omitted items for the SAVRY. The retrospective coding of variables and risk assessment measures using file and archival information is an accepted methodology for studying adult and youth samples (see Campbell, Porter, & Santor, 2004; Gray, Taylor, & Snowden, 2008; Welsh et al., 2008).

Five research assistants were involved in the initial data collection and coding of the variables. The inter-rater reliability (intra-class correlation coefficients) for the SAVRY and YLS/CMI total scores were 0.67 and 0.79, respectively. Although the inter-rater reliability were specifically not examined for sociodemographic and offense variables, the research assistants were aided by a set of detailed coding guidelines and were given a daily group debrief to address any coding difficulties. All the research assistants were blind to the recidivism data, which were subsequently sourced and coded by first author following the completion of the initial coding of sociodemographic and offense information.

Statistical analyses

The sample was characterized using descriptive statistics, with categorical data reported as numbers and percentages, and continuous data presented in relation to the mean and standard deviation. Histograms of the continuous data were plotted to check for skewed distributions. Univariate analyses sought to compare the characteristics of offenders with and without gang affiliation, as well as the recidivists and nonrecidivists. Chi-square tests of association were computed for categorical data, while two-tailed independent t-tests were utilized for continuous data. A forward stepwise logistic regression model was also conducted in order to develop the most parsimonious classification model (to identify gang-affiliated offenders from those who were not) including those that were univariately significant with the outcomes of interest. Those that became statistically nonsignificant in the multivariate model were removed to enhance the parsimony of the resultant model. Effect sizes are also computed to demonstrate the strength of the associations between variables.

The area under curve (AUC) of the receiver operating characteristics (ROC) curve was plotted as an indication of the predictive accuracy of the resultant model (Mossman, 1994), and the 'goodness of fit' test of the models checked using the Hosmer–Lemeshow test (Agresti, 1996). Additionally, to consider factors associated

with time to recidivism, Cox regression models were developed to compare the general and violent recidivistic outcomes of the offenders with gang affiliation and those without. In particular, Cox regression models can control for the differences in time-at-risk period, as well as other relevant factors. The end points were a recidivistic[9] act or the end of the follow-up period. Analyses were carried out using the SPSS version 16.

Results

Sample characteristics

Sociodemographics

The average age of the sample at time of referral was 15.97 years (SD = 1.41, range = 12–18). The majority had received at least secondary-level mainstream education (158/165[10], 95.8%), and came from an intact family of origin (103/163[10], 63.2%). The ethnic composition of the sample was 53.9% Chinese (89/165), 37.6% Malay (62/165), 7.9% Indians (13/165), and 0.6% (1/165) of other ethnicity.

Offender characteristics

Table 1 summarizes the sample's sociodemographic characteristics and offense histories. The average age of the youth offenders at their first charged offense was 15.42 years (SD = 1.41), the youngest being 12 and the oldest 18 years old. One-fifth (33/165) of the current sample had committed other offenses prior to their index offenses (i.e. those offenses that brought them into contact with CFPB). More than half (88/165, 53.3%) reoffended during the course of the follow-up period and notably, more than a third (61/165, 37%) reoffended during the confines of their court orders.

Characteristics of gang-affiliated vs nongang-affiliated offenders

Fifty-eight (35.2%) youth offenders were classified as gang-affiliated offenders, and the remainder of the sample (n = 107, 64.8%) was classified as nongang-affiliated offenders. The mean age of entry into gangs was 13.86 years (SD = 1.39, range = 10–17) and the mean duration of gang affiliation until the time of referral was 14.73 months (SD = 13.91, mdn = 10.00, range = 1–60). Ten of the 53[10] gang-affiliated youth offenders (18.9%) held leadership positions in gangs. More than a third (20/57[10], 35.1%) had engaged in gang fights, and 22.8% (13/57[10]) reported having used weapons during gang-related violence.

Univariate analyses indicated that histories of violence, χ^2 (1, N = 165) = 13.01, $p < 0.001$, $\phi = 0.28$; substance use, χ^2 (1, N = 165) = 19.94, $p < 0.001$, $\phi = 0.35$; weapon use, χ^2 (1, N = 165) = 17.65, $p < 0.001$, $\phi = 0.33$; and the presence of index violent offenses, χ^2 (1, N = 165) = 11.28, $p = 0.001$, $\phi = 0.26$ were significantly associated with gang affiliation. However, only the histories of violence, substance use, and weapon use remained statistically significant when applied to a forward stepwise logistic regression model. This model suggested that gang-affiliated offenders were more likely than nongang-affiliated offenders to have histories of violence (OR = 2.80; 95% CI = 1.14–6.90), substance use (OR = 3.13; 95% CI = 1.50–6.54),

Table 1. Characteristics for the overall sample, gang- and nongang-affiliated youth offenders.

Variables	Overall (N = 165) Mean (SD)	Gang (n = 58) Mean (SD)	Nongang (n = 107) Mean (SD)	p
Follow-up Period (days)†	1658 (299)	1715 (356)	1627 (259)	
Time-at-risk Period (days)†	1413 (410)	1348 (401)	1448 (413)	
Age when Assessed†	15.97 (1.41)	16.29 (1.28)	15.79 (1.45)	
Age at First Charged Offense	15.42 (1.41)	15.55 (1.35)	15.35 (1.44)	
SAVRY Total Score	16.76 (6.18)	20.02 (5.30)	14.94 (5.84)	*
YLS/CMI Total Score	13.96 (4.35)	15.81 (4.00)	12.95 (4.21)	*
	N‡ (%)	n‡ (%)	n‡ (%)	
Has History of Physical/Sexual Abuse	32/165 (19.4)	15/58 (25.9)	17/107 (15.9)	
Has History of School Truancy	113/164 (68.9)	47/57 (82.5)	66/107 (61.7)	
Has History of School Expulsion	8/163 (4.9)	5/57 (8.8)	3/106 (2.8)	
Bullied Others in School	33/163 (20.2)	14/57 (24.6)	19/106 (17.9)	
Was Bullied in School	19/163 (11.7)	7/57 (12.3)	12/106 (11.3)	
Has History of Substance Use	67/165 (40.6)	37/58 (63.8)	30/107 (28)	*
Has Prior Offense History§	33/165 (20)	11/58 (19)	22/107 (20.6)	
Has History of Violence against Others	113/165 (68.5)	50/58 (86.2)	63/107 (58.9)	*
Has History of Weapon Use	29/165 (17.6)	20/58 (34.5)	9/107 (8.4)	*
Has Index Violent Offenses	60/165 (36.4)	31/58 (53.4)	29/107 (27.1)	*
Has Index Sexual Offenses	35/165 (21.2)	9/58 (15.5)	26/107 (24.3)	
Has Index Theft/Fraud Offenses	81/165 (49.1)	22/58 (37.9)	59/107 (55.1)	
Has Index Substance Use Offenses	8/165 (4.8)	5/58 (8.6)	3/107 (2.8)	
Has Index Illegal Sale Offenses¶	6/165 (3.6)	5/58 (8.6)	1/107 (0.9)	

Note. Recidivism statistics included charged recidivistic acts that were committed during probation and/or residential orders.
*Differences between gang- and nongang-affiliated offenders were significant after making Bonferroni corrections ($p < 0.0029$).
†These variables were not included in the group comparisons.
‡Due to missing data, there were differences in the denominators.
§Including offenses that resulted in police warnings (without conviction).
¶*Illegal sale offenses* refer to the illegal sale of videos, cigarettes, and drugs.

and weapon use (OR = 2.65; 95% CI = 1.01–6.90). This simple three-factor model correctly classified 75% of the sample. However, it was noted that the model was better at correctly classifying nongang-affiliated offenders (82% correct) as opposed to gang-affiliated offenders (60% correct). The Hosmer–Lemeshow test suggested no evidence of a lack of fit with this model, χ^2 (3, N = 165) = 2.81, $p = 0.421$.

Relationship between gang affiliation and recidivism

As shown in Table 1, gang-affiliated offenders had significantly higher risk for violent offending (i.e. higher SAVRY total score), $t(161) = 5.42$, $p < 0.001$, $d = 0.91$, and general offending (i.e. higher YLS/CMI total score), $t(163) = 4.23$, $p < 0.001$, $d = 0.70$, than nongang-affiliated offenders.

Univariate analyses showed that gang-affiliated offenders were more likely to engage in general (69% vs 44.9%), χ^2 (1, $N = 165$) = 8.78, $p = 0.003$, $\phi = 0.23$; and violent recidivism (25.9% vs 10.3%), χ^2 (1, $N = 165$) = 6.88, $p = 0.009$, $\phi = 0.20$. Moreover, the gang-affiliated offenders were more likely to reoffend during their court orders (55.2% vs 27.1%), χ^2 (1, $N = 165$) = 12.27, $p < 0.001$, $\phi = 0.29$. Further analyses using Cox regression models, accounting for the potentially confounding effects of age at first charged offense and substance use, revealed that gang-affiliated offenders were 1.71 times (95% CI = 1.07–2.73) and 2.46 times (95% CI = 1.02–5.95) more likely to engage in general and violent recidivism. The survival curves are shown in Figures 1 and 2.

Discussion

The extant literature suggests gang affiliation is associated with violent offending and criminal activity. This study describes the characteristics of a cohort of gang and nongang-affiliated youth offenders, shows the relationship between total crimino-genic needs and risk using contemporary risk assessment measures, and reveals a statistically significant relationship between gang affiliation and criminal recidivism. It should be pointed out, before we discuss our findings, that there is a relatively higher percentage of gang-affiliated youth (35%) in our sample as compared to the other youth gang studies that are conducted in America and Europe. This difference is unsurprising considering our comparisons are made in the context of a strictly
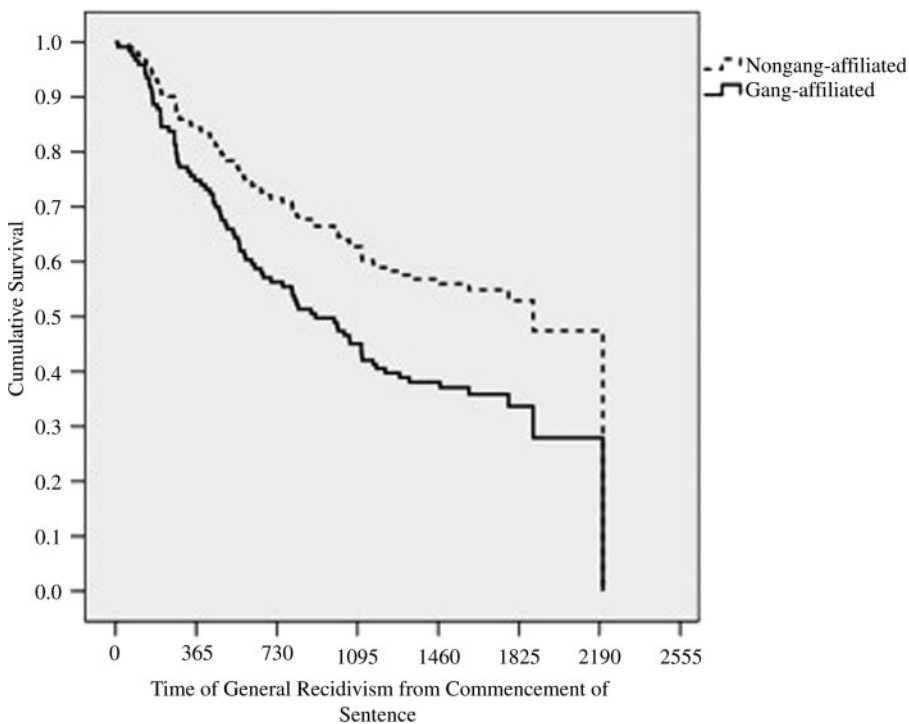

Figure 1.   Survival curves for gang-affiliated and nongang-affiliated youth offenders (general recidivism).
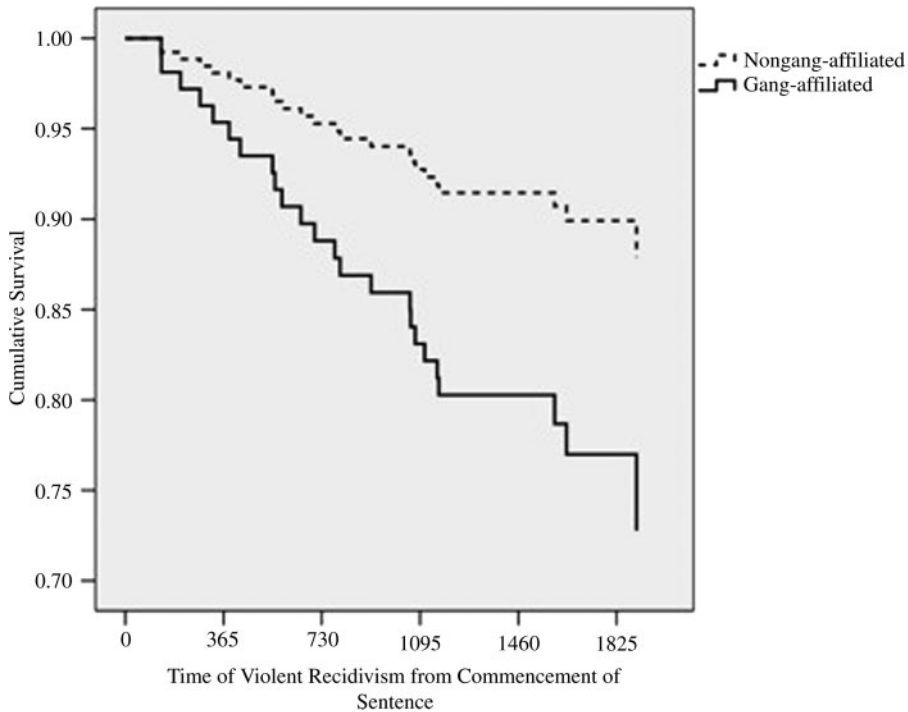
Figure 2.   Survival curves for gang-affiliated and nongang-affiliated youth offenders (violent recidivism).

youth offender instead of the general youth population. Hence, the results of our study will be framed in the context of comparing between gang- and nongang-affiliated *youth offenders*, who have been referred for specialist psychological assessment with regard to offense-related and/or mental health issues. Regardless, this study raises important considerations for mental health and criminal justice professionals responsible for appraising, managing and rehabilitating youth offenders at risk of criminal behavior.

Although differences in psychosocial characteristics (e.g. history of abuse and neglect, as well as school truancy and expulsion) are statistically nonsignificant between gang- and nongang-affiliated youth offenders, several notable differences are identified in this study. Specifically, even within a youth offender population, gang-affiliated youth had significant problems with violent offending behaviors, substance use and a greater likelihood of weapons use comparatively. It is noted that the characteristics of gang-affiliated youth offenders in this study were, broadly speaking, similar to those reported in studies from America, Australia and Europe. This is true for age at joining gangs, age at first charged offense, past substance and weapon use, and previous violent behavior (Battin et al., 1998; Curry, 2000; Curry et al., 2002; Esbensen & Huizinga, 1993; Huff, 1998; Klein et al., 2006; Thornberry et al., 1993; White & Mason, 2006). Therefore, all these can be considered culturally independent youth gang characteristics.

Notwithstanding that weapon use appears to be relatively more common amongst gang-affiliated youth across cultures, it is notable that there were no

instances of gun use in our sample. This is perhaps due to the strict regulations and severe punishment for the illegal possession and discharge of firearms in Singapore. The present data also suggest that youth gang membership in Singapore appears to be more transient than in America. Specifically, only one in six of the present sample remained as gang members after two years as compared to 45% in an American sample (Thornberry et al., 1993).

Risk assessment and recidivism

Compared to nongang-affiliated youth, gang-affiliated youth were assessed to be at significantly higher risk of violent and general recidivism, and to have more criminogenic needs. These findings provide support for our hypothesis that gang-affiliated youth offenders score higher on contemporary risk assessment measures than their nongang counterparts. Higher risk of reoffending amongst gang-affiliated offenders appears to be linked to more prevalent substance use, procriminal attitudes, association with antisocial peers, and engagement in criminal activities; although the differences and similarities in the profile of gang- and nongang-affiliated groups requires additional scrutiny.

After controlling for time-at-risk, substance use and age at first charged offense, gang-affiliated youth offenders were significantly more likely to recidivate violently and to engage in general criminal activity, when compared with nongang-affiliated youth. Approximately 14% and 55% of the gang-affiliated offenders had engaged in further violent and general recidivism within three years of their court orders, respectively, as compared to approximately 6% and 35% of the nongang-affiliated offenders. In direct contrast with Ang and Huan's (2008) findings, which suggested gang membership does not predict *general* recidivism, the present findings, which are consistent with the extant literature, clearly support our hypothesis that gang-affiliated offenders would reoffend more often and more immediately after sentencing than nongang-affiliated offenders. Our findings did not confirm Ang and Huan's suggestion that gang membership is more strongly associated with violent recidivism than general recidivism. Although gang-affiliated offenders appear more likely to engage in violent recidivism than general recidivism, this difference is nonsignificant (Hazard Ratio$_{Violent}$ = 2.46 (95% CI = 1.02–5.95) vs Hazard Ratio$_{General}$ = 1.71 (95% CI = 1.07–2.73)).

Implications

Following the Risk principle, this study clearly shows that gang-affiliated youth, as a group, require additional and intensive intervention. Considering that gang-affiliated offenders appear to have a more established repertoire of violence and substance use as well as a greater facility with weapons, it will be useful for intervention to focus on violence reduction generally, albeit more intensive, but also on drug and alcohol use and abuse, and attitudes towards weapons. Although it is not the focus of this study, the functions of gang membership require delineation and more adaptive means of satisfying these functions should be introduced.

Finally, the average age for joining gangs in this sample appears to be around 13 years. However, in this study youth were, on average, charged for their first offense around the age of 15. In fact, only one gang-affiliated youth offender in this sample

was charged for offenses before entry into a gang. It is possible that some of gang-affiliated youth offenders might have engaged in offending behavior for which they have not been arrested and charged for, and this has not been systematically investigated in the present study. Therefore, we cannot conclusively state that this sample is not criminally inclined before their entry into gangs. Nevertheless, there is perhaps a window of opportunity for effective gang-resistance education programs and identification of gang members during this two-year hiatus for intervention before they enter the criminal justice system (Huff, 1998). In addition, other primary and secondary prevention initiatives that are directed at early teens may also be considered, especially for those considered as being at risk of delinquency and gang affiliation. Our findings suggest that such early prevention efforts may have more utility if targeted at those aged 13 years and younger. Such programs will require collaborative efforts between the relevant youth and police agencies, and early warning signs such as problematic behaviors in school, gang affiliation, substance use and violent behaviors that may indicate the need for immediate intervention.

Limitations

It is important to note a couple of limitations with this study that may impact on generalizability. Firstly, this is a retrospective study of a unique sample of offenders that relied on data collected for the purpose of assessment and management, which were not necessarily designed or collected for the specific purposes of these particular research questions. Nevertheless, it is noted that there is support for the use of file and archival information in the retrospective scoring of youth risk assessment measures (e.g. Campbell et al., 2004; Welsh et al., 2008). Secondly, we were also unable to reliably examine the extent of self-reported delinquency (i.e. nonadjudicated offenses) within this group of youth offenders before their initiation to gangs due to the retrospective nature of this study. Further, it was not possible to determine whether youth who engaged in criminal activity were gang-affiliated during the follow up period, and whether their criminal behavior was a product of gang membership or not (even for the gang-affiliated youth offenders). What this study clearly shows is that past gang affiliation elevates the risk of recidivism whilst serving their court orders, as well as during the follow-up. Lastly, this is not an exhaustive sample of youth who were convicted of criminal offenses during the two-year period, but this study provides a novel comparison of the characteristics and risks (using established risk assessment measures) between gang- and nongang-affiliated youth offenders, as well as a springboard to ultimately understand the youth gang situation in Singapore better.

Conclusion

This study found that over a third of youth male offenders referred for psychological assessment and treatment over a two-year period were gang-affiliated. In addition to several notable differences in terms of offender characteristics, these gang-affiliated youth offenders presented a higher risk of violent and general recidivism and were also more likely than nongang-affiliated youth offenders to engage in violent and general recidivism during follow-up. The higher likelihood of gang-affiliated youth offenders reoffending during their court orders warrants more stringent supervision

and intensive rehabilitation effort. Further research needs to examine (1) whether there are unique criminogenic needs and responsivity factors associated with gang affiliation; (2) the utility of specific interventions targeting the needs and responsivity issues of gang-affiliated youth offenders; (3) prevalence of gang affiliation within the youth population in an Asian context (e.g. Singapore); (4) the long-term trajectories, in terms of offending behaviors and criminogenic needs, of 'general' gang-affiliated youth offenders as compared to those in leadership positions; and (5) the factors that are associated with these youth gang members joining and leaving gangs.

Notes

1. Rioting is defined as a violent public disturbance whereby physical force or violence is used by an unlawful assembly (of five or more people), or any of its members, on another person or group (Singapore Penal Code, 1985).
2. *Violent offenses* refer to armed robbery, (physical) assault, attempted murder, causing bodily harm, making threats to harm or kill, murder, rioting, robbery, and unlawful use of weapon.
3. *Sexual offenses* refer to attempted rape, indecent exposure, molestation, peeping, rape, and sodomy.
4. *Theft/fraud offenses* refer to all forms of theft, criminal breach of trust (to cheat others), embezzlement, as well as possession and handling of stolen goods or proceeds of crime.
5. *Substance use offenses* refer to consumption of illicit drugs (e.g. amphetamines cannabis, cocaine, heroin, and other hallucinogenic drugs), illicit use of inhalants (e.g. glue, paint, and petrol), underage consumption of alcohol, as well as the unauthorized use of prescription drugs.
6. *Illegal sale offenses* refer to the illegal sale of videos, cigarettes, and drugs.
7. *Physical abuse* refers to a situation where the youth has suffered significant and/or repeated harm from an injury inflicted by the youth's parent or caregiver. The injury might be inflicted intentionally or might be the inadvertent result of physical punishment or physically aggressive treatment. Some examples include belting, kicking, punching, severe and/or repetitive caning (where injuries and physical scarring may result), and throwing the youth against a wall.
8. A behavioral definition of *bullying* is adopted in this paper. As a victim, it refers to being punched, insulted, kicked, teased, tripped, and having possessions stolen; consequently, leading the youth to feel distressed and harassed. Conversely, for the perpetrator, these behaviors are typically exhibited with the expressed intention of making others feel distressed or harassed. *Bullying* or *being bullied* is only coded if behavioral examples were included in the reports.
9. For general recidivism, these recidivistic acts were defined as any charged sexual, nonviolent, as well as violent offenses.
10. The differences in the denominators are due to missing data.

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